



Office of the Auditor General of Ontario

Value-for-Money Audit:
Management of
Aggregate Resources



December 2023

Management of Aggregate Resources

1.0 Summary

From highways and subway tunnels to hospitals, schools and houses, aggregates—such as sand, gravel, stone and rock—are essential for building much of Ontario’s infrastructure. These natural materials are extracted from the earth’s surface, with loose aggregates dug out from pits, and solid bedrock materials blasted from quarries.

The extraction of aggregates can fundamentally transform landscapes, temporarily or permanently altering features such as woodlands, wetlands and farmland. The ongoing operation of a pit or quarry, as well as the accompanying heavy-duty truck traffic, can also have a number of negative impacts—particularly when close to communities—including noise, vibration (from blasting) and air pollution (such as dust and particulate matter).

The Ministry of Natural Resources and Forestry (Ministry) is responsible for administering the *Aggregate Resources Act* (Act), which was enacted in 1990. Those wishing to extract aggregates must obtain either a licence (to extract on private land) or a permit (to extract on Crown land) from the Ministry. Approval holders must inspect their operations and self-report on their compliance to the Ministry annually, and must pay an annual extraction fee on a per-tonne basis. Approval holders must also fully rehabilitate their sites once they have finished extraction. The Ministry has

delegated a number of responsibilities to The Ontario Aggregate Resources Corporation (TOARC), including collecting production reports and extraction fees from aggregate operators, and rehabilitating legacy pits and quarries that operated before the Act came into effect and were abandoned.

Our audit found that the Ministry is falling short in balancing its competing roles of facilitating the extraction of aggregate resources and minimizing the impacts of aggregate operations, particularly through its role in regulating the industry to ensure approval holders comply with all necessary requirements. The Ministry has made recent progress to streamline and expedite the approvals process, but we found that this improvement has come at a cost to its inspection, enforcement and oversight activities.

The following are some of our most significant observations:

Inspections

- **The Ministry had a significant shortage of experienced aggregate inspectors, with challenges in recruitment and retention.** Ministry inspections are key to ensuring that aggregate operators are meeting their approved operating conditions, rehabilitating their sites as required, and properly self-reporting any non-compliance issues. Despite the important role aggregate inspectors serve as the Ministry’s “eyes on the ground,” we found that there was a lack of

experienced staff. We determined that, as of May 31, 2023, there was a total of 34 designated aggregate inspectors Ministry-wide, with an average of two aggregate inspectors per district. Seven districts each had a single designated inspector, and two districts had none. A further 19 staff were being trained to be designated inspectors as of November 2023. Furthermore, we found that the inspectors lacked experience. As of May 31, 2023, almost half (41%) of the 34 designated aggregate inspectors had held their designation for less than one year. We heard from environmental, community and resident groups that they have difficulty trying to contact inspectors when they have concerns; similarly, aggregate operators raised concerns about the level of technical knowledge held by inexperienced inspectors when they come on site.

- **The limited number of inspectors has contributed to declining and low inspection rates.** We found that inspection rates decreased by 64% between 2018 and 2022. While some decrease can be attributed to paused activity in 2020 and 2021 during the COVID-19 pandemic, the trend began prior to 2020 and continued in 2022, despite there being no stay-at-home restrictions that year. The four district offices we reviewed in depth had inspected only 35% of the licensed or permitted sites in our sample within the previous five years. Further, based on our analysis of 2022 inspection data, we found that three of the four offices had each inspected less than 5% of operations in their jurisdiction in that year. The Ministry's failure to conduct inspections on a regular basis, or at all, increases the risk that negative social and environmental impacts from non-compliance issues at aggregate sites go unreported and undetected. As well, it signals to both the regulated community and concerned stakeholders that there are few consequences associated with non-compliance.

Non-Compliance and Enforcement

- **Non-compliance within the aggregate industry remains high.** Over the past five years, the percentage of inspected sites deemed satisfactory by Ministry inspectors has remained low, fluctuating between 36% and 52%. During this period, inspectors filed 1,750 inspection reports that identified operational non-compliances, such as extracting below the approved depth or failing to conduct progressive rehabilitation. As well, TOARC reports certain violations under the Act to the Ministry, including operators' failures to submit annual production reports, pay required annual fees, or comply with extraction limits. At the end of each calendar year, TOARC reports the number of these violations that remained outstanding. The number reported by TOARC increased 74% from 206 in 2018 to 359 in 2022; across the five years, there were 1,654 violations.
- **Despite the high rate of non-compliance, the Ministry rarely pursued charges.** When inspectors identify non-compliance issues they have a range of options, such as education and outreach, to encourage voluntary compliance or issuing a warning. Alternatively, they can take additional steps such as referring a case to the Ministry's Enforcement Branch to investigate and potentially issue a charge. Between 2018 and 2022, inspectors made 26 referrals, representing less than 1% of the over 3,400 violations identified during this time. While not all instances of non-compliance warrant enforcement action, Ministry policy states that charges should be pursued when operators significantly exceed their allowable extraction tonnage. Yet, we noted three companies that exceeded their allowable extraction volume by over 1,000%, but were not referred to the Enforcement Branch, and so were not investigated or charged. We also found that over the past five years, the Ministry issued only two fines, for a combined total of \$1,230, for unpaid fees. This represented 0.4% of the total fees outstanding in December 2022.

- **The Ministry did not enforce self-reporting requirements.** Every year, aggregate approval holders must inspect their operations to assess whether they comply with operating and progressive rehabilitation requirements, and submit a compliance assessment report to the Ministry by September 30. The penalty for failing to do so is an immediate and automatic deemed suspension of their operations. However, we found that these reports were often not submitted on time, and that the Ministry did not enforce the suspension for operators that failed to submit reports on time or at all. We reviewed records from four Ministry offices and found that, as of May 2023, 25% of all 1,030 operators within the offices' jurisdictions had not submitted a 2022 report more than seven months after the due date. Apart from sending a letter notifying non-compliant operators that they were suspended, none of the offices did anything more to enforce the suspension. We found 11 out of a sample of 80 sites continued to produce aggregate in 2021 despite never having submitted a self-assessment report for 2020, which should have resulted in an automatic suspension.
- **Fees to extract aggregates are likely too low to cover the costs needed to effectively administer the program.** The Ministry has a goal of achieving full cost recovery for its aggregate program. However, in 2019, the Ministry estimated that the annual extraction fees paid by operators would result in \$7.96 million in annual revenue, covering approximately 80% of the program's costs at that time. The Ministry restructured the program in 2020, but as of 2023, it still could not determine its current program costs. Stakeholders have expressed concerns about the Ministry's lack of capacity to enforce compliance, with some industry members stating that the Ministry's limited enforcement efforts contribute to a lack of public trust and opposition to aggregates projects. This concern is significant enough that organizations representing both aggregate operators and

municipalities (a key consumer of aggregates) have expressed support for higher aggregate fees to pay for increased enforcement.

Final Rehabilitation

- **The Ministry did not have processes in place to ensure that sites are promptly rehabilitated, and returned to productive use, after extraction is complete.** Under the Act, aggregate pits and quarries must be rehabilitated after extraction has ceased. While many aggregate operators properly rehabilitate their sites, we found 1,524 sites that have sat dormant (without reporting any aggregate extraction) for at least 10 years. These sites represent more than 25,000 hectares of land, approximately the size of Brampton, Ontario. There may be valid reasons why a site sits dormant for multiple years, other than the fact that the pit or quarry has been fully extracted. However, for sites that have sat dormant for many years, there is a risk that those sites have, in fact, finished extraction and operators are avoiding rehabilitation efforts. Allowing sites to remain dormant for long periods without final rehabilitation violates the notion that aggregate extraction is an interim use of land, one of the key tenets of aggregate management in the Provincial Policy Statement.

Supply and Demand for Aggregates

- **The Ministry has not provided the public with complete and accurate information on the supply and demand for aggregates.** Absent such information, many stakeholders have concluded, based on the limited available data, that there is an oversupply of aggregates already approved for extraction. This contributes to opposition to proposals for new or expanded pits and quarries. To assist with its understanding of supply and demand, the Ministry has commissioned several studies over the years. The most recent study from 2016 estimated that the Greater Golden Horseshoe region had reserves of 3,337 million tonnes

of unextracted aggregates in licensed pits and quarries, and annual demand of 111 million tonnes. However, the consultant who conducted the study cautioned against viewing the estimates as a realistic indication of supply, noting that the data was based on limited and outdated information. In January 2023, the Ministry commissioned an updated supply and demand study, which uses a voluntary and anonymous survey of industry members for information on their supply of aggregates. However, there is no mechanism to verify the anonymous data, nor a plan to corroborate it through field verification, which could leave the Ministry with potentially inaccurate data. Accurate data is important to inform Ministry decisions on managing the province's aggregate resources, as well as to foster more informed discussions and potentially reduce conflict among stakeholders.

Recycled Aggregate

- **Low fees for extracting virgin material provide little incentive to use recycled aggregate.** Recycled aggregate can, if of sufficient quality, be used in place of virgin aggregate. Its use can reduce the need for new or expanded pits and quarries and the associated environmental and social impacts of extracting virgin aggregate. Charging fees to extract virgin aggregate can increase its cost, and so help make recycled aggregate more cost-effective by comparison. While Ontario charges fees only for extracting virgin aggregate, and not for producing recycled aggregate, we found that the fees were too low to provide a meaningful financial incentive to use recycled aggregate instead. By contrast, the United Kingdom (UK) has a much higher extraction fee, equivalent to about \$3.20 per tonne for 2023, approximately 14 times higher than what Ontario currently collects (\$0.23 per tonne). The explicit objectives

of the UK fee are to address the environmental costs associated with quarry operations, cut demand for virgin aggregate, and encourage the use of alternative materials where possible. While numerous factors may contribute to the UK's higher recycling rates, it is noteworthy that the use of recycled aggregate in the UK (roughly 25% of total aggregate use) is more than triple Ontario's estimated 7%.

Databases

- **Outdated information systems made it difficult for Ministry staff to execute their duties and for applicants to track their submissions.** We found the Ministry used paper records, five different information systems, and Excel spreadsheets to deliver various aspects of the aggregate resources program. The outdated databases and lack of digital records made it challenging for Ministry staff to execute their duties. For example, the 30-year-old system that staff used to issue approvals cannot track the progress of applications for licences, permits, or approval amendments. A separate database used by staff at the district level to record inspection reports did not record or track the use of other compliance tools, such as warnings or rehabilitation orders, or the status of compliance. The Ministry did not have a centralized, integrated database that contained all information about each aggregate pit and quarry, including approval documents and compliance and enforcement data.

This report contains 18 recommendations, with 31 action items, to address our audit findings.

Overall Conclusion

Our audit found that the Ministry did not have effective systems and processes in place to ensure compliance with the *Aggregate Resources Act* and aggregate-related

regulations, policies and approvals, nor to oversee aggregate development and operations in a manner that minimizes adverse impacts on the environment.

The limited number of experienced inspectors who play a front-line compliance role, and the infrequency with which aggregate operations are inspected, raise significant concerns that non-permissible activities will remain unchecked—perhaps for years on end. The intention of the self-compliance approach is to encourage operators to proactively self-identify, disclose and rectify any issues of non-compliance. The success of this approach rests upon the premise that operators who fail to self-disclose issues of non-compliance (that are subsequently identified through complaints or Ministry inspections) will be more harshly penalized than those that do. Through our audit, however, we have found that this was not the case.

We also found that the Ministry was not ensuring that land from which aggregates are fully extracted is rehabilitated effectively and in a timely manner. The number of sites that have remained dormant and unrehabilitated for more than 10 years, and in some cases for over two decades, challenges the notion within the Provincial Policy Statement that aggregate extraction is an interim use of land. This has also given rise to public concerns that more than enough aggregate sites have already been approved, and there is no need to issue more approvals for extraction. Also feeding into these concerns, the Ministry did not have reliable data about supply and demand, further compounding perceptions of an oversupply. Finally, we found that the Ministry was missing opportunities to increase the use of recycled aggregate, which can be an effective way to reduce the need for new or expanded pits and quarries and limit impacts on the environment.

OVERALL MINISTRY RESPONSE

The Ministry of Natural Resources and Forestry (Ministry) thanks the Auditor General for this report and its recommendations. The Ministry plays an important role in balancing the environmental

impacts with the economic development opportunities created by resource extraction and is committed to working collaboratively with First Nations and Indigenous communities, municipalities, the public and the aggregate industry to ensure that systems are in place to manage and regulate these activities.

The findings of this report align with the path the Ministry is on to modernize and improve aggregate resource management in Ontario. The Ministry made legislative and regulatory changes under the *Aggregate Resources Act* and established four new Aggregate Resources of Ontario Provincial Standards between 2019 and 2022. Approval functions were centralized in 2020, with additional staffing capacity added in 2022, to ensure consistent and efficient delivery of aggregate licensing and permitting functions. The observations and recommendations contained in this audit align with actions under way to renew the Ministry's compliance function and to increase field presence.

2.0 Background

2.1 Overview of Aggregates in Ontario

Aggregates is a broad term for the group of natural materials—sand, gravel, clay, stone and rock—that are extracted from the earth's surface. They are excavated from either a pit or a quarry, depending on their type: loose aggregates (such as sand and gravel) are dug out from pits; solid bedrock materials (such as granite and limestone) are removed from quarries through blasting (see **Appendix 1** for a glossary).

Aggregates are a core material of many construction products. For example, limestone is used to make cement, which is a key ingredient in concrete. Sand and gravel are also used to make concrete as well as asphalt pavement (see **Figure 1** for information on aggregate types and uses). Aggregates are essential for the construction of almost everything from major public

Figure 1: Types of Aggregates and Their Common Uses

Prepared by the Office of the Auditor General of Ontario

Type of Aggregates	Description	Common Uses
Extracted from pits		
Sand	Hard, naturally occurring granular rock material that is finer than gravel and coarser than dust.	To make concrete, asphalt pavement, mortar, plaster and glass.
Gravel	Small, naturally occurring stones and pebbles, or a mixture of sand and small stones.	Directly in driveways, walkways and decorative landscaping, and to make concrete and asphalt pavement.
Clay/Shale	Fine-grained, naturally occurring earthy material.	To make bricks and ceramics; also an ingredient in cement.
Extracted from quarries		
Bedrock	Naturally occurring deposits of hard, solid rock (such as granite, limestone and sandstone).	<p>May be used, as slabs or blocks, for landscaping projects, home countertops and monumental buildings.</p> <p>More commonly used to create crushed stone, which is used to make concrete and asphalt pavement and generally any kind of base for construction, including building foundations, roads and driveways.</p>

infrastructure projects, such as hospitals, schools, highways and subway tunnels, to smaller projects, such as roads, sidewalks, sewer pipes and homes. **Figure 2** provides examples of the amount of aggregates needed for various types of construction projects.

Ontario's growing population and the corresponding growth in new housing and infrastructure has resulted in high demand for aggregates, especially in the Greater Golden Horseshoe region around Toronto. To meet the high demand, Ontario produces the largest volume of aggregates of any Canadian province or territory. The most common types of aggregates produced in Ontario are sand, gravel and crushed stone. In total, 172 million tonnes of aggregates were extracted in Ontario in 2022. Aggregate extraction has increased, on average, by 3.2 million tonnes (2%) per year over the past 10 years (see **Figure 3** for aggregate extraction volumes from 2013 to 2022).

The most recent provincial estimate on the breakdown of how aggregates are used is from a 2016 consultant's report prepared for the Ministry of Natural Resources and Forestry. This report estimated that

the majority (79%) of extracted aggregates from 2010 to 2014 was used for construction (such as for roads, homes and buildings). Another 19% was used for non-construction purposes (such as sand for glass and road ice control). The remaining 2% was exported to other provinces or countries as raw aggregates (see **Figure 4** for a breakdown).

2.1.1 Where Are Aggregates Extracted in Ontario?

The location of aggregate extraction is determined by two main factors. First, aggregates are only found where nature has deposited them. While Ontario is generally rich in aggregate resources, the types and quantity of available aggregates varies considerably around the province, depending on the geology and rock formation of the particular area. For example, southern Ontario's geology includes large areas of limestone, formed hundreds of millions of years ago, but the quality of bedrock for aggregate purposes varies by location. Thousands of years ago, retreating

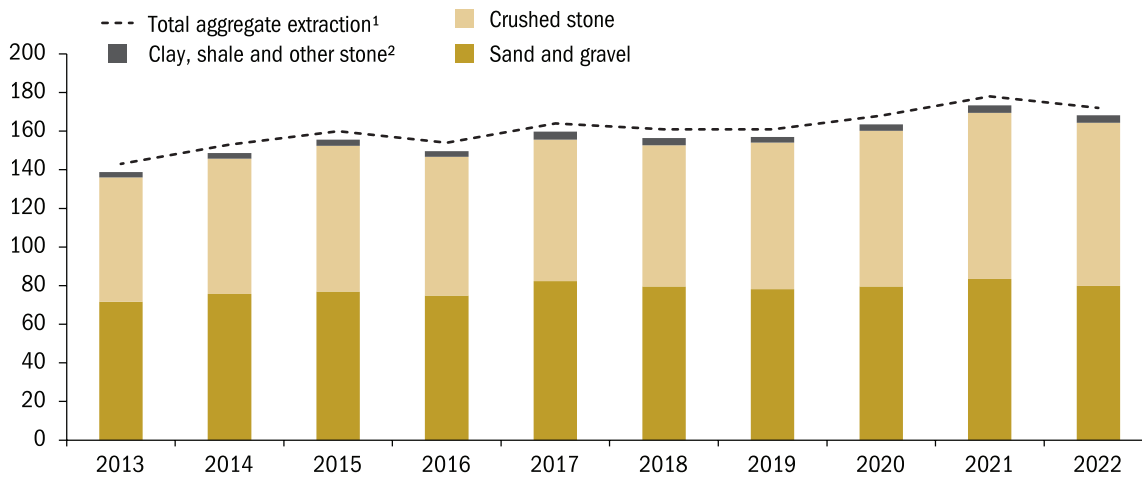
Figure 2: Examples of the Amount of Aggregates Needed for Various Construction Projects

Source of data: The Ontario Aggregate Resources Corporation; Ontario Stone, Sand & Gravel Association

Type of Project	Approximate Amount of Aggregates Required	
	Tonnes	Truckloads
Average-sized brick house	250	12
Average-sized school	13,000	650
Average-sized hospital	94,000	3,760
One kilometre of a four-lane highway	36,000	1,760
One kilometre of a subway tunnel	91,200	4,560

Figure 3: Total Aggregate Extraction¹ Volumes in Ontario, 2013–2022 (million tonnes)

Source of data: The Ontario Aggregate Resources Corporation



1. Total aggregate extraction includes all aggregates extracted in Ontario pursuant to either an aggregate licence (on private land in designated areas) or an aggregate permit (on Crown land), as well as the small volume (2.5% of total aggregates) that is extracted either on private land in undesignated areas or in forest pits on Crown land, both of which do not require a licence or permit (see **Section 2.2.1**).
2. Other stone includes slabs or blocks of rock/stone (such as granite, limestone, flagstone or marble) for uses such as ornamental surfacing of buildings, landscaping or countertops.

glaciers left behind abundant deposits of sand and gravel across many parts of this region.

Second, the location of aggregate extraction is dictated by where the aggregate product is needed. Aggregates are heavy and therefore expensive to transport long distances; they also contribute to greater pollution the farther they are transported given the dust, noise and vehicle emissions that come from trucking. As a result, the vast majority (90%) of all aggregates extracted in Ontario between 2013 and 2022 came from southern Ontario, close to where population growth and development pressures are greatest. See **Appendix 2** and **Appendix 3** for maps

showing the locations and prevalence of extraction operations across Ontario.

2.1.2 Environmental and Social Impacts of Extracting Aggregates

The digging, blasting, processing and transporting of aggregate materials can cause a number of environmental and social impacts.

Aggregate extraction can fundamentally—and irreversibly—transform the landscape, which can affect important natural features on or near extraction sites. For example, aggregate operations can temporarily or

Figure 4: Estimated Breakdown of End Uses of Raw Aggregates in Ontario, 2010–2014

Source of data: Supply and Demand Study of Aggregate Resources Supplying the Greater Golden Horseshoe (2016)

End Use	% of Total Use
Construction projects	79
New roads and highways	31
New homes, condominiums and apartments	14
Non-residential buildings	12
Road and other construction repair	12
Other new infrastructure	10
Non-construction purposes (such as sand for road ice control, abrasive cleaners and glass products)	19
Export to other provinces or countries as raw aggregates	2
Total	100

permanently alter or destroy woodlands, grasslands, wetlands or farmland, which each serve important functions, such as providing wildlife habitat, drainage to prevent flooding, or productive soil in which to grow food. Further, while aggregate extraction itself is not a direct threat to water quality, it may pose a risk to local groundwater resources by exposing new pathways for pollutants (such as fuel used onsite) to flow into the groundwater. Aggregate extraction below the natural water line, which typically involves pumping out large volumes of water, may also have localized impacts on groundwater levels and flow patterns.

Although all aggregate sites are required by law to be rehabilitated (both progressively during operation while extraction continues elsewhere on the site, and fully after extraction is complete), some aspects of the landscape may be permanently altered. So, while certain natural features can be restored (such as recreating some wildlife habitat through planting), other features cannot. For example, aggregate extraction often results in a large depression that creates a new pond or lake, which can permanently alter the way water drains and refills the groundwater reserves.

In addition to the environmental impacts caused by the establishment of a pit or quarry, their ongoing operations have other impacts. The majority of

extraction in the province occurs in southern Ontario, often near populated areas. Local residents of communities in proximity to aggregate pits and quarries frequently express strong concerns about noise and vibrations from extraction operations (especially from blasting) and the accompanying heavy-duty truck traffic, and about increased air pollution (such as dust and particulate matter) from both onsite operations and trucking. Siting pits and quarries farther from communities can reduce the impact of site operations on neighbouring residents, but can increase pollution and greenhouse gas emissions, as well as costs, when aggregate materials are transported greater distances to reach those communities.

Although the Province considers aggregate extraction an interim use of land, an aggregate site may remain open for decades. In some cases, sites have been operating for over a century. Because aggregate operations and their impacts can be so long-lasting, few people want to live near one. As a result, applications for new or expanded pits and quarries are often highly controversial.

2.2 Regulation and Oversight of Aggregate Resources

The Ministry of Natural Resources and Forestry (Ministry) is responsible for regulating aggregate development in Ontario (see **Appendix 4** for an organizational chart of the divisions and branches involved). The Ministry's oversight of aggregates is guided by the *Aggregate Resources Act* (Act) and the general regulation (O. Reg. 244/97) under that Act.

The purposes of the Act are to:

- provide for the management of Ontario's aggregate resources to meet local, regional and provincial demand;
- regulate aggregate operations on both Crown and private land;
- minimize the adverse environmental impacts of aggregate operations; and
- require the rehabilitation of land from which aggregates have been excavated.

In essence, the Act sets out a dual role for the Ministry to support and facilitate aggregate extraction on the one hand, while also regulating the industry so as to minimize the negative impacts of that extraction to the extent possible.

Aggregate development in Ontario is also guided by other provincial laws and land-use plans (see **Appendix 5**). Most notably, according to the Provincial Policy Statement, aggregate extraction has primacy over other land uses, aggregates must be made available as close to market as possible, and demand for these resources does not have to be demonstrated. Similar to the *Aggregate Resources Act*, the Provincial Policy Statement also

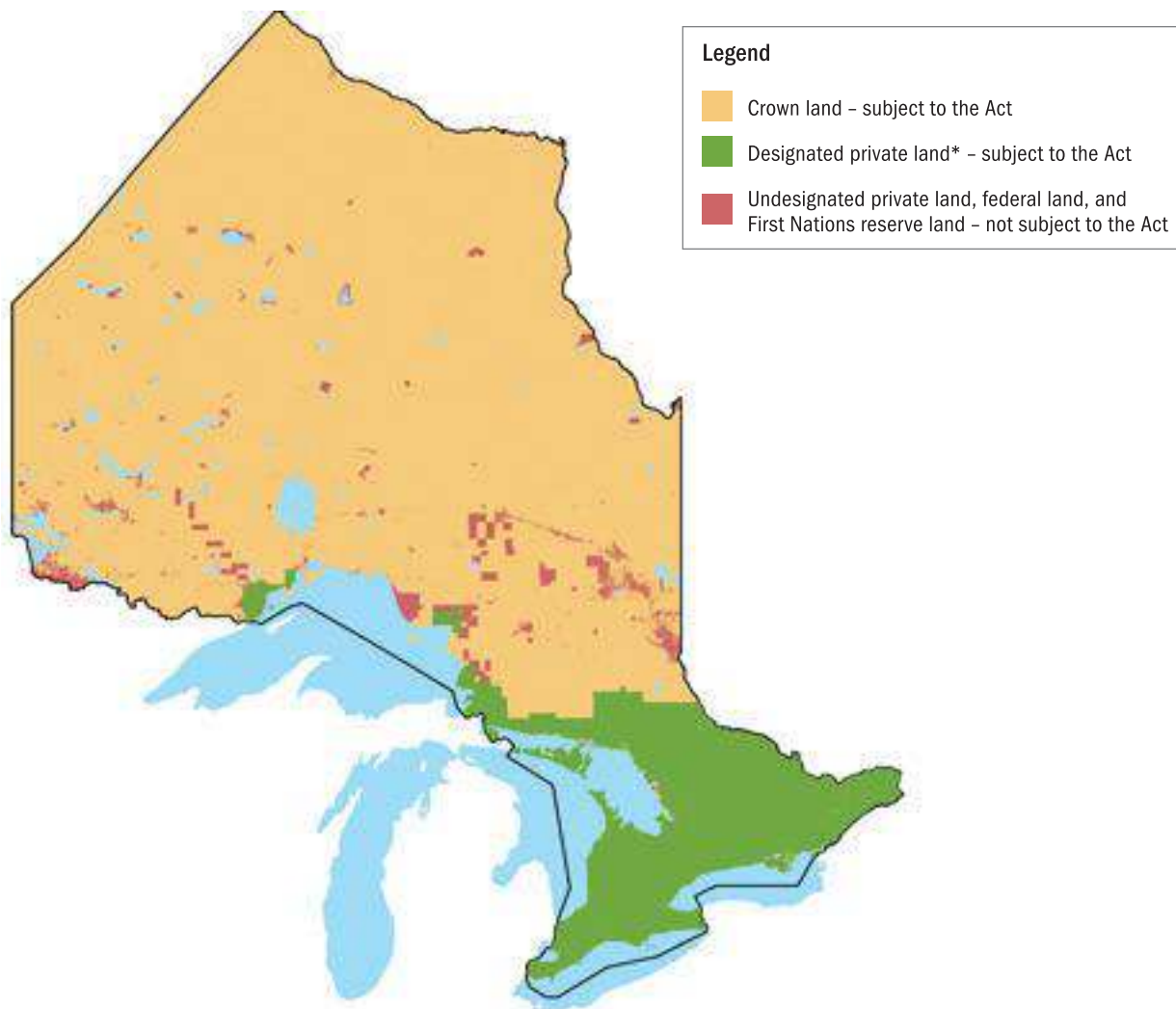
states that extraction should be conducted in a manner that minimizes negative impacts, and that sites must be rehabilitated in order to mitigate negative impacts and allow for future land uses.

2.2.1 Approvals for Extracting Aggregates

Subject to a few exceptions, anyone wishing to extract aggregates from land subject to the Act must obtain an approval from the Ministry. As seen in **Figure 5**, the Act applies to all provincial public (Crown) land and most private land except for a few small areas (mostly in Northern Ontario) that have not been designated; the

Figure 5: Provincial Area Subject to the *Aggregate Resources Act*

Source: Ministry of Natural Resources and Forestry



* Areas of the province identified under the *Aggregate Resources Act* regulation in which a licence is required to excavate aggregates from private land.

Act also does not apply to either federal or First Nations reserve land. In general, to extract on public land, applicants must obtain an aggregate *permit*; to extract on private land, applicants must obtain an aggregate *licence*. See **Figure 6** for a description of the approval types and the exceptions.

From 2012 to 2022, the Ministry issued an average of 40 new approvals per year, for a total of 261 new licences and 178 new permits issued over this period. By tonnage, 93% of aggregate extracted from 2012 to 2022 was on private land pursuant to a licence, with 4% extracted on Crown land pursuant to a permit; less than 3% was extracted pursuant to one of the exceptions (**Figure 7**). As approvals can remain valid indefinitely (unless revoked or surrendered), at the end of 2022, there were 6,015 valid approvals (3,573 licences and 2,442 permits) authorizing aggregate extraction in Ontario.

To obtain an approval for a new licence or permit, applicants must follow a prescribed process, as set out in **Appendix 6**. In general, this process begins with the applicant submitting a draft site plan and several technical reports to the Ministry (see **Appendix 7**); then, notifying and consulting with the public and relevant ministries, municipalities, conservation authorities, agencies and Indigenous communities; and, finally,

attempting to address all comments and objections received.

Ministry staff then review all information in the application, as well as external comments submitted. The Ministry may also provide its own comments on applications. As part of the review process, Ministry staff also confirm that the applicant has fulfilled its obligations to ensure that the siting of the proposed operation complies with municipal zoning and provincial land-use plans (see **Appendix 5**). As well, staff may identify other approvals that may be required by the Ministry of the Environment, Conservation and Parks (see **Appendix 8**), based on the information provided in the application.

Upon completing their review, Ministry staff either recommend that the Minister issue or refuse the licence application, or, where there are unresolved issues, the Ministry may refer the licence application to the Ontario Land Tribunal for a decision. For permits, a director in the Regional Operations Division has delegated authority to issue or refuse the application.

If an approval holder wishes to later amend its site plan or approval document, the process varies depending on the type and complexity of the change sought (see **Appendix 9**).

Figure 6: Types of Approvals for Extracting Aggregates

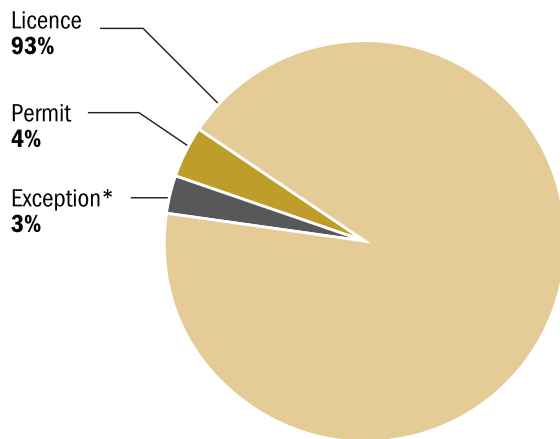
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Location	Approval Type	Exceptions (subject to alternative types of approval)*
Crown land	Aggregate Permit	<ul style="list-style-type: none"> Pits used for forest operations are regulated under the <i>Crown Forest Sustainability Act, 1994</i>.
Private land	Aggregate Licence <ul style="list-style-type: none"> Class A authorizes the removal of more than 20,000 tonnes annually Class B authorizes the removal of 20,000 tonnes or less annually 	<ul style="list-style-type: none"> Municipalities and the Ministry of Transportation may obtain a wayside permit instead of a licence for short-term (< 18 months) aggregate removal on private land for the sole use of road construction or maintenance. However, wayside permits are rarely used. As of January 2022, farm businesses may excavate up to 3,000 cubic metres from a pit (depending on the type of aggregate) and individuals may excavate up to 300 cubic metres from a pit for personal onsite use without a licence if they register for permit-by-rule. Registrants must meet all pre-conditions (e.g., minimum distance from a well or water body) and follow all operating rules set out in the regulation. As of June 2023, four individuals had registered under the permit-by-rule exception.

* By tonnage, 2.5% of total extracted aggregate from 2013 to 2022 was extracted pursuant to one of the exceptions.

Figure 7: Breakdown of Aggregate Extraction by Approval Type, 2012–2022

Source of data: The Ontario Aggregate Resources Corporation



* Subject to alternative types of approval, such as a wayside permit or permit-by-rule.

2.2.2 Self-Inspection: Compliance Assessment Reports

All approval holders are required to inspect their operations annually to assess whether they comply with all operating and progressive rehabilitation requirements, and to document this assessment in a compliance assessment report. The report format is a simple checklist that lists all applicable operating and rehabilitation requirements that must be inspected and reported on, by answering yes or no to each item. For example, the form asks whether site entrances and exits are clearly marked and whether fencing has been installed to limit public access to the site. Approval holders must submit the report to the Ministry by September 30 each year.

If a self-report indicates an issue of non-compliance, the approval holder must immediately stop the contravention (if operational) and remedy the situation within 90 days. Under the Act, an approval is deemed to be automatically suspended if the report is not submitted on time, or if it discloses a contravention that is not remedied within 90 days of report submission. The suspended approval is deemed reinstated once the required report has been submitted, or the contravention has been remedied. If the contravention remains

unaddressed, the Ministry may eventually revoke the licence or permit.

2.2.3 Ministry Inspection and Enforcement

Ministry inspections of aggregate operations are conducted by staff, called integrated resource management technical specialists (IRMs), who are spread across the Ministry's 36 offices (in 18 districts). Each IRM can work across several program areas (such as lands and waters, fish and wildlife, and forestry) in addition to aggregates. For an IRM to perform onsite aggregate inspections, they must be specifically designated under the Act to serve as an inspector by a district manager. During an aggregate inspection, inspectors are to assess compliance with all operating and progressive rehabilitation requirements as set out in the Act, the regulation, the approval holders' site plans, and any licence or permit conditions.

According to the Ministry, aggregate sites are to be randomly inspected, in accordance with the Ministry's risk-based compliance inspection model. Sites may receive higher priority for inspection if, for example, the site is newly approved, the licensee or permittee has failed a previous inspection, or complaints have been received.

Inspectors have several options to resolve non-compliance issues (see **Appendix 10**). They may begin with education and outreach to encourage voluntary compliance. Depending on various factors, including the type and seriousness of the violation and history of non-compliance, they may take additional steps, such as issue a warning or an order for compliance. Alternatively, inspectors may refer the case to conservation officers at the Ministry's Enforcement Branch to investigate (that is, collect evidence of a violation) and potentially issue a charge. In more serious cases, the Ministry can also revoke a licence.

2.2.4 Final Rehabilitation and Surrendering Approvals

Once an approval holder has ceased its extraction operations and deemed the site to be fully rehabilitated,

it submits a request to the Ministry to surrender its approval. The Ministry may accept the surrender only after the site has been inspected and the Ministry inspector is satisfied that the site has, in fact, undergone final rehabilitation, and all fees (and royalties as applicable) have been paid (see **Section 2.2.5**). Once the Ministry accepts the surrender, the approval holder no longer has any obligations for the property under the Act.

Typically, final rehabilitation consists of grading (levelling) the landscape, replacing top soil, and revegetating the land to return it to its former condition, or to a condition that is similar to surrounding land uses. While there is a range of rehabilitation strategies, sites where aggregates have been extracted below the water table are typically converted into ponds and lakes. As of 2023, there were 971 active pits and quarries that were approved to extract below the water table, representing 18% of all active sites in the province. A wider range of options exists for operations above the water table, as these can be naturalized for habitat or converted for agricultural, recreational, residential or commercial use.

2.2.5 Fees and Royalties

As required by the Act and regulation, both licence and permit holders must pay an annual extraction fee on a per-tonne basis, or an annual minimum fee, whichever is greater. Permit holders must also pay royalties for the use of Crown-owned resources. Each year, the Ministry adjusts the fees and royalties to account for inflation

and publicly posts the adjusted amounts by January 1 (see **Figure 8** for 2022 and 2023 fee and royalty rates). Using 2023 rates, **Figure 9** illustrates the fees and royalties that would apply to the aggregates used in different construction projects.

The Ministry does not collect or disburse the fees itself, but has delegated this responsibility, and others, to The Ontario Aggregate Resources Corporation (see **Section 2.3**).

2.3 The Ontario Aggregate Resources Corporation

The Ontario Aggregate Resources Corporation (TOARC) is a private corporation created in 1997 to act as the trustee of the Aggregate Resources Trust, a trust established under the *Aggregate Resources Act* to hold and disburse aggregate fees and royalties. A Memorandum of Understanding between TOARC and the Ministry sets out the parties' respective roles and processes. TOARC's key responsibilities are outlined below.

2.3.1 Collecting Fees, Royalties and Production Reports

By January 31 of each year, aggregate operators must submit production reports to TOARC showing both the quantity and type of aggregates they extracted the previous year. Based on this information, TOARC invoices approval holders for the amounts owing, and approval holders must pay their invoices by March 15 of that year. TOARC sends a report to the Ministry every April

Figure 8: Annual Fees and Royalty Rates, 2022 and 2023

Source of data: Ministry of Natural Resources and Forestry

	2022	2023
Fee		
Class A licences and aggregate permits authorized to remove more than 20,000 tonnes annually	21.3 cents/tonne or \$741, whichever is greater	22.7 cents/tonne or \$789, whichever is greater
Class B licences and aggregate permits authorized to remove 20,000 tonnes or less annually	21.3 cents/tonne or \$370, whichever is greater	22.7 cents/tonne or \$394, whichever is greater
Royalty (for use of Crown-owned resources)		
Aggregate permits only	53.9 cents/tonne	57.4 cents/tonne

Figure 9: Examples of Aggregate Fee and Royalty Costs Generated by Typical Construction Projects*, 2023

Prepared by the Office of the Auditor General of Ontario

	Fee (\$0.227/tonne)	Royalty (\$0.574/tonne)
Brick house (250 tonnes)	56.75	143.50
Subway tunnel , 1 km in length (91,200 tonnes)	20,702.40	52,348.80

* Aggregate fees and royalties are paid by aggregate operators based on their total annual extraction volumes; these examples illustrate the fees and royalties that would be generated by the amount of aggregates needed for two typical construction projects.

of all outstanding production reports and fees that were due for the previous year, and then subsequently sends updated monthly reports.

Since 2000, TOARC has conducted audits of selected approval holders' reported extraction tonnage to confirm that operators are accurately reporting their extraction tonnage and paying fees and royalties based on the tonnes of aggregate extracted. As of December 2022, TOARC had audited 1,334 approval holders, holding a total of 3,598 licences and permits. The audits have resulted in the collection of an additional \$1.8 million in net aggregate fees.

2.3.2 Distributing Fees

TOARC distributes the collected fees and royalties among the Province and the municipal and regional governments with pits or quarries within their boundaries, in accordance with the formula set out in the regulation. Fee revenues are distributed as follows:

- 61% to the local municipality in which a pit or quarry is located;
- 15% to the county or regional municipality in which the site is located;
- 21% to the Province (paid into the Consolidated Revenue Fund); and
- 3% to a fund for rehabilitating legacy sites (**Section 2.3.3**) and related research.

Royalties, which are paid by permit holders only, are paid to the Province for the use of Crown-owned aggregate. In 2022, \$39.6 million was collected in fees and royalties, of which \$28.4 million was disbursed to local and regional municipal governments, and \$10.1 million was disbursed to the Province (see **Figure 10**).

2.3.3 Rehabilitating Legacy Sites

TOARC rehabilitates legacy sites through its Management of Abandoned Aggregate Properties (MAAP) program, a program that was originally run by the Ministry. Legacy sites are abandoned pits and quarries that operated before the Act came into effect in 1990, and that were left unrehabilitated. Once a site is added to TOARC's work plan, it surveys the site, designs a rehabilitation plan, and then publicly tenders the rehabilitation work to contractors. TOARC visits the site for the next two to five years to monitor the effectiveness of the rehabilitation. These legacy sites are typically small, as the aggregate was often extracted only to construct nearby roads. An average of \$1 million per year has been directed to the MAAP program over the past five years from the annual fees paid by operators.

According to TOARC's database, there are 8,237 legacy sites across Ontario, but as of October 2023, TOARC has closed the files for 6,578 of these sites because they are no longer candidates for rehabilitation through the MAAP program. Files are closed for various reasons, including that the site has been rehabilitated, the site has re-naturalized, or the current landowner has declined rehabilitation (see **Figure 11** for the reasons for file closure). For details on TOARC's rehabilitation work see **Section 4.5.3**.

2.3.4 Rehabilitating Sites with Revoked Approvals

Prior to 1997, security deposits were collected from pit and quarry operators to guarantee funding for post-extraction rehabilitation. In 1997, however, the

Figure 10: Distribution of Fees and Royalties, 2018–2022 (\$ million)

Source of data: The Ontario Aggregate Resources Corporation

Disbursement	2018	2019	2020	2021	2022
Local municipalities	9.4	19.4	20.0	21.4	22.8
Counties and regional municipalities	2.4	4.8	5.0	5.3	5.6
Province (from licence fees)	5.5	6.7	7.0	7.5	7.9
Province (from royalties and permit fees)	1.7	1.8	1.7	1.9	2.2
Abandoned Pits and Quarries Rehabilitation Fund for the Management of Abandoned Aggregate Properties program	0.8	1.0	1.0	1.1	1.1
Total	19.8	33.7	34.7	37.2	39.6

Figure 11: Reasons for File Closures in the Management of Abandoned Aggregate Properties (MAAP) Database, as of October 2023

Source of data: The Ontario Aggregate Resources Corporation

Reason File Closed	# of Files
Site rehabilitated	
Site rehabilitated by MAAP program and the Ministry	643
Site rehabilitated by owner	796
Site no longer requires rehabilitation	
Site developed	766
Site naturalized	2,650
No historical extraction on site ¹	396
Other	
Site now licensed	355
Site situated on Crown land ²	268
Landowner declined rehabilitation ³	704
Total files closed	6,578

1. Either no land disturbances could be found on site, or it was determined the site disturbance was not a result of aggregate extraction, or the extracted aggregates were not used off site.
2. These sites have been closed because The Ontario Aggregate Resources Corporation does not currently have explicit responsibility for them (see **Section 4.5.3**).
3. These files are not formally closed and could be reopened in the future if landowner changes their mind or if land changes ownership.

Province eliminated security deposits, and operators who had already paid securities received partial refunds based on a formula established by the Ministry. The remaining balance of approximately \$10.6 million was transferred to TOARC when it was established.

Through investments, TOARC has increased this amount to \$16 million in 2022. TOARC uses these monies to both pay for its operational expenses and rehabilitate sites with revoked approvals where rehabilitation is still required. Since 1997, TOARC has rehabilitated 18 formerly licensed sites and 10 formerly permitted sites using these monies.

3.0 Audit Objective and Scope

Our audit objective was to assess whether the Ministry of Natural Resources and Forestry (Ministry) had effective systems and processes to:

- regulate aggregate development and operations on Crown and private land in a manner that minimizes adverse impacts on the environment;
- ensure compliance with the *Aggregate Resources Act*, and regulations, policies, permits and licences related to aggregate operations;
- ensure the land from which aggregates have been excavated is effectively rehabilitated; and
- measure and publicly report on the state of Ontario's aggregate resources and the delivery of the Province's aggregate resource program.

In planning for our work, we identified the audit criteria we would use to address our audit objective. These criteria were established based on a review of applicable legislation, policies and procedures, internal and external studies, and best practices. Senior

management reviewed and agreed with the suitability of our objectives and associated criteria as listed in **Appendix 11**.

Our audit scope focused on the Ministry's oversight, licensing and permitting of aggregate extraction operations on both Crown and designated private land. Aspects of aggregate operations that are regulated by other ministries (such as air emissions, which are regulated by the Ministry of the Environment, Conservation and Parks, and workplace safety, which is regulated by the Ministry of Labour, Immigration, Training and Skills Development) were not part of the scope of this audit.

We conducted our audit between January 2023 and August 2023. We obtained written representation from Ministry management that, effective November 21, 2023, they had provided us with all the information they were aware of that could significantly affect the findings or the conclusion of this report.

Our audit work was conducted primarily at the Ministry's office in Peterborough. We also obtained compliance information from the Ministry district offices in Aurora, Bancroft, Guelph and Thunder Bay. We selected Aurora because of its proximity to the Greater Golden Horseshoe region, an area with significant development and high aggregate demand; Bancroft as it has a mix of permits and licences; Guelph because of the high number of licences and volume of aggregate produced within its jurisdiction; and Thunder Bay as a northern office.

As part of our audit work, we:

- interviewed Ministry staff responsible for approvals, inspections and enforcement to understand their practices to issue approvals and inspect and enforce compliance with the *Aggregate Resources Act*, regulation and other requirements;
- reviewed Ministry documents, including a sample of new and amended aggregate approvals, to assess the timeliness and completeness of the Ministry's review and approval processes;
- analyzed data on production reporting and outstanding fee payments to determine non-compliance trends;

- reviewed a sample of inspection reports and compliance assessment reports from the four Ministry offices to determine timeliness of submission, completeness and Ministry verification practices;
- reviewed Ministry-wide enforcement data to analyze enforcement trends; and
- attended inspections (planned, follow-up, and surrender) to observe how Ministry inspections are conducted.

We also met with external stakeholders, including those representing:

- The Ontario Aggregates Resources Corporation;
- the Ministry of Transportation and the Ministry of the Environment, Conservation and Parks;
- industry, including representatives of the Ontario Stone, Sand & Gravel Association, as well as individual operators and consultants; and
- other relevant stakeholder groups, such as Gravel Watch Ontario, Environmental Defence, Reform Gravel Mining Coalition, the Canadian Environmental Law Association, the Toronto and Area Road Builders Association, and the Top Aggregate Producing Municipalities in Ontario.

We conducted our work and reported on the results of our examination in accordance with the applicable Canadian Standards on Assurance Engagements—Direct Engagements issued by the Auditing and Assurance Standards Board of the Chartered Professional Accountants of Canada. This included obtaining a reasonable level of assurance.

The Office of the Auditor General of Ontario applies Canadian Standards on Quality Management and, as a result, maintains a comprehensive system of quality management that includes documented policies and procedures with respect to compliance with rules of professional conduct, professional standards and applicable legal and regulatory requirements.

We have complied with the independence and other ethical requirements of the Code of Professional Conduct of the Chartered Professional Accountants of Ontario, which are founded on fundamental principles

of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

4.0 Detailed Audit Observations

4.1 Ministry Inspections

4.1.1 Ministry Lacked Experienced Inspectors

Ministry inspections are a key mechanism for ensuring that aggregate approval holders comply with all operating and progressive rehabilitation requirements. Despite the important role inspectors play as the Ministry’s “eyes on the ground,” we found that there was a significant shortage of experienced individuals performing this function.

Each of the Ministry’s 18 district offices is responsible for filling its own staffing needs. We determined that, as of May 31, 2023, a total of 34 integrated resource management technical specialists (IRMs) had been designated as aggregate inspectors Ministry-wide, up from 22 designated inspectors in 2022. Further, an additional 19 IRMs had been hired and/or were being trained to be designated aggregate inspectors as of November 2023. Despite the increased staffing, some district offices continued to experience vacancies and staff turnover. As of May 31, 2023, the Ministry had an average of two designated aggregate inspectors per district. Seven districts each had a single designated inspector, and two districts had none. Furthermore, only 16 inspectors conducted field inspections in 2022, with a single inspector responsible for 27% of all inspections conducted that year.

Moreover, we found that the inspectors lacked experience, having been in their positions for only a short time. As of May 2023, almost half (41%) of the 34 designated aggregate inspectors had held their designation for less than one year.

This lack of experience limits staff’s ability to respond to public complaints in a thorough and informed manner and to address potential issues of non-compliance. Aggregate inspections entail checking a variety of technical operational and safety

requirements, which requires training and expertise. For example, inspectors must check that operators are not extracting below the allowable depth, that blasting activities are being properly monitored, and that land is being progressively rehabilitated according to the site plan.

We heard from stakeholders, such as environmental, community and resident groups, that not only did they have difficulties identifying which inspectors to contact about their concerns, they also felt that inspectors were slow to respond, and were not fully informed. Two large aggregate operators also told us they felt the inspectors who inspected their operations were inexperienced. The industry association has also raised concerns with the Ministry about inspectors’ technical and safety knowledge that seemed to show inadequate training.

To understand the Ministry’s challenges in attracting and retaining aggregate inspectors, we spoke with 16 Ministry staff who currently hold, formerly held, or supervise this position. We learned that the aggregate inspector role can be more demanding and challenging than other similar positions in several ways. First, compliance work can require inspectors to interact with the public and operators in a difficult conflict-resolution capacity. Several Ministry staff told us the work is highly stressful for an entry-level position, and there are more attractive options to work in less stressful positions at the same pay grade. Second, several inspectors told us they did not feel sufficiently experienced, and lacked training and mentorship for their inspection role.

In speaking with aggregate inspectors we learned that, in contrast to other program areas within the Ministry (such as fish and wildlife), the aggregate program does not have a regional contact who can support inexperienced staff if they have questions. This role existed before, but was lost when the Ministry reorganized in spring 2020. Before then, all approvals for aggregate pits and quarries were handled by district offices across the three regions, alongside inspection activities. In April 2020, the Ministry centralized all aggregate licence and permit approvals into an integrated Aggregates Section under the Divisional Delivery Branch; staff in district offices are

no longer responsible for reviewing applications (see **Appendix 4**). Many staff members who had previously worked as aggregate inspectors moved into the Aggregates Section to focus solely on processing applications. These employees already had experience with the approvals process (which was within their responsibilities when they worked in district offices) and their new positions provided better financial compensation. The Ministry centralized the approvals process to improve efficiency, decrease wait times and provide consistency; however, this restructuring resulted in a significant loss of inspection expertise in the field.

In April 2023, the Ministry launched a new formalized training program that requires inspectors to participate in onsite training. As part of this, the Ministry adopted a mentorship approach with a goal of improving the knowledge and capacity of inspection staff. However, the lack of experienced mentors in the district offices could make this goal difficult to achieve.

RECOMMENDATION 1

To provide proper inspection coverage for aggregate pits and quarries, and ensure compliance with the *Aggregate Resources Act*, we recommend that the Ministry of Natural Resources and Forestry:

- develop and implement processes to address the challenges identified in recruiting, training, and retaining staff serving as aggregate inspectors, and
- provide on-the-ground training and mentorship in district offices.

MINISTRY RESPONSE

The Ministry of Natural Resources and Forestry (Ministry) acknowledges the challenges in recruiting, and retaining trained staff, and that these challenges are not unique to the aggregate program.

In early 2021, the Ministry launched an internal review of the Regional Operations Division organizational structure. Outcomes of the review included adjusting the structure of the division to improve

client service and build flexibility into delivery approaches, and creation of the integrated resource management technical specialist positions. The Ministry has invested in significant and ongoing recruitment efforts to fill vacancies in these positions across the province.

The Ministry recognizes there is more work to be done to ensure the attraction, recruitment, training and retention of these critical positions that deliver the aggregates and other resource management programs. Several initiatives are already under way, including compliance training initiatives, outreach to students and new professionals, exit interviews and development of recruitment tools and streamlined processes.

The Ministry will continue to develop and provide training as well as promote mentoring of integrated resource management technical specialists, to ensure staff have the required knowledge to perform their duties.

4.1.2 Ministry Inspected Aggregate Operations Infrequently

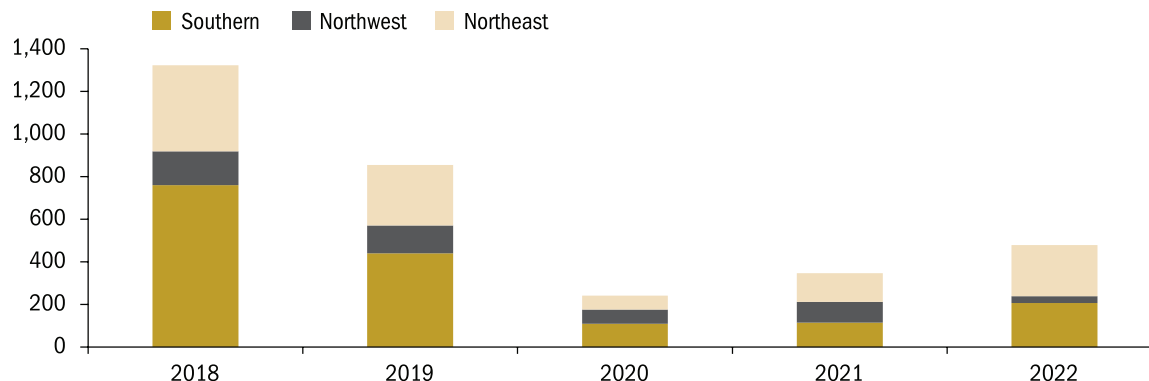
We found that the number of inspections across the province was low, and has decreased over the past five years.

Aggregate approvals can contain various conditions intended to minimize impacts on neighbours (such as noise, dust and vibrations) and to protect the environment (such as water resources and species at risk). Regular and thorough inspections help to ensure compliance with these conditions, as well as maintain a level playing field across the industry, and increase community support for operations. Without regular inspections, the Ministry cannot verify that aggregate pits and quarries are complying with their operating conditions. This leads to complaints from the public and an overall negative perception of the industry.

We reviewed the Ministry's inspections data between 2018 and 2022, and found that inspection rates decreased by 64%, from 1,322 inspections in 2018 to 479 in 2022 (see **Figure 12**). Some of this decrease, particularly in 2020 and 2021, can be attributed

Figure 12: Number of Aggregate Inspections Per Year, By Ministry Region, 2018–2022

Prepared by the Office of the Auditor General of Ontario



to a pause in activity due to lockdowns during the COVID-19 pandemic. However, the decreasing trend began prior to the pandemic and continued through 2022, despite there being no stay-at-home order during that year's inspection season. Our audit found that the primary reason for the decrease was a shortage of Ministry inspectors (see **Section 4.1.1**).

We reviewed the inspection records from the past five years for 80 licensed or permitted sites that we randomly selected from four Ministry offices across the province, with 20 sites selected from each. As shown in **Figure 13**, only 35% of the sites had been inspected within the previous five years. Recognizing that the most recent five-year period is an anomaly on account of the pandemic, we also analyzed the inspection data from just 2022 (when inspection activity should have returned to normal). Based on this analysis, we found that the Aurora office had inspected 22% of operations within its jurisdiction in 2022, while the other three offices had each inspected less than 5% of operations that year (see **Figure 14**).

In the absence of regular inspections, the Ministry cannot verify that pit and quarry operators are meeting all of their operating conditions, rehabilitating their sites as required, and properly self-reporting any non-compliance issues. Indeed, we found the lack of inspections was frequently raised as a concern. Community groups and neighbours of aggregate operations complained to us of dust, noise and vibration impacts going unchecked by the Ministry. Members of the

Figure 13: Percentage of Sites Inspected within the Past Five Years (2018–2022)*

Prepared by the Office of the Auditor General of Ontario

Ministry Office	# of sites in sample	# of sites inspected in 2018–2022	% of sites inspected in 2018–2022
Aurora	20	8	40
Bancroft	20	3	15
Guelph	20	6	30
Thunder Bay	20	11	55
Total	80	28	35

* Based on a sample of 20 randomly selected sites (including licensed and permitted sites) from each of four Ministry offices from four different districts.

Figure 14: Percentage of Aggregate Sites Inspected, by Ministry Office, 2022

Prepared by the Office of the Auditor General of Ontario

Ministry Office*	% of operations inspected in 2022
Aurora	22
Bancroft	1
Guelph	4
Thunder Bay	2

* The four Ministry offices were selected to represent a range of geographic areas and levels of aggregate activity and demand, on both private and Crown land.

aggregate industry also expressed concerns about how the lack of inspections of poorly run aggregate operations hurts the image of the entire industry.

4.1.3 Ministry Did Not Properly Plan its Annual Inspections

Inspection planning is an important process for identifying aggregate pits and quarries that are a high priority for inspection and for determining inspection schedules. However, we found that Ministry offices were not properly planning their annual inspections, which increases the risk that non-compliance issues go undetected and unresolved.

Each aggregate inspector's workload consists of both planned and unplanned inspections. Unplanned inspections (generally conducted in response to complaints) make up a small percentage of the workload. Between 2012 and 2023, the Ministry conducted 438 unplanned inspections, representing 4% of all inspections. This leaves the bulk of inspectors' time for planned inspections. Since aggregate extraction is a seasonal activity, generally running from spring to fall, Ministry inspections are conducted during the same period. Precise timing depends on the weather and area of the province (for example, aggregate extraction may begin in April in southern Ontario, but in June in Northern Ontario), but each district has a reasonably predictable season for inspections, and is responsible for developing its own annual plan for carrying them out.

The Ministry provides a prioritization matrix to help inspectors identify which sites are a higher priority for inspection. For example, the Ministry considers newly approved sites to be a high priority for inspection so that it can set a baseline of compliance. Operators with a history of non-compliance or operations with major site plan amendments are also considered high priorities for inspection. Prioritizing sites for annual inspections is especially important when staffing resources are limited.

We requested the inspection plans for the Aurora, Bancroft, Guelph and Thunder Bay offices. As of July 2023, only Aurora and Thunder Bay were able to provide us with documented plans. Aurora indicated eight planned inspections for the 2023 season and Thunder Bay indicated 38 planned inspections. We were advised that the other offices did not have

inspection plans for various reasons, including not having the staff capacity to conduct planned inspections or staff lacking experience or training.

RECOMMENDATION 2

To maximize inspection resources for higher-priority aggregate pits and quarries, and better ensure compliance with the *Aggregate Resources Act*, we recommend that the Ministry of Natural Resources and Forestry require every district office to develop an inspection plan before the start of each inspection season that sets out a sufficient number of planned inspections according to priority level, and to follow the plan when conducting inspections for that season.

MINISTRY RESPONSE

The Ministry of Natural Resources and Forestry (Ministry) acknowledges the Auditor General's recommendation and recognizes the importance of a strategic approach to guiding inspection effort and assessing compliance outcomes. Through its Compliance Renewal Initiative, the Ministry is reviewing its approach to annual compliance planning and reporting for multiple programs, including aggregates. This includes consideration of a clear process and criteria to identify the number of inspections needed in each district based on priorities, defined accountabilities for completing inspections, and modern tools to document inspection effort and track results. Implementation is planned to begin in 2024/25.

4.1.4 Inspection Reports Often Incomplete or of Poor Quality

Ministry inspectors must complete a report every time they inspect an aggregate pit or quarry. Our review of these inspection reports from 2012 to 2022 reveals that many of them are incomplete or of poor quality.

Inspection reports are divided into six sections, and a final section for additional notes. Each of the

six sections contain items for an inspector to review (see **Figure 15**). For each item being reviewed, there is a checkbox for the inspector to indicate whether the operations are compliant, non-compliant, not applicable or not inspected for that particular item.

We requested inspection reports for all planned inspections conducted between 2012 and 2022 for 80 randomly selected aggregate operations across four offices (20 operations from each). Three of the four offices were unable to provide us with inspection reports for all of the selected sites (see **Figure 16**). Of the inspection reports we received, we found a number of issues with the quality and completeness of the reports. We found that, overall:

- 39% of the reports did not provide evidence that all key items had been inspected. While not every item on the list would need to be inspected during every inspection, our Office identified several key items that one would expect to be inspected in all cases (such as boundary markers and gates), but which were not consistently marked as inspected. We note that the digital inspection form has a default setting of “not inspected” for each item. As such, it is not possible for our Office, Ministry staff reviewing the reports, or any member of the public that requests a report, to be able to verify that all key items have indeed been inspected.

Figure 15: Items Listed for Inspection on an Aggregate Inspection Template*

Prepared by the Office of the Auditor General of Ontario

Section	Items to be Inspected
General	<ul style="list-style-type: none"> • Identification signs, gates, entrance/exit.
Operational	<ul style="list-style-type: none"> • Berms, setbacks, stockpile location, excavation face heights, trees within five metres of extraction face, extraction depth, buildings, stripping, progressive rehabilitation, inert fill, undercutting of excavation face, global positioning system corners, boundary demarcation.
Equipment	<ul style="list-style-type: none"> • Asphalt plant, concrete plant, portable crusher, permanent crusher, wash plant, screening plant.
Environmental	<ul style="list-style-type: none"> • Pumping and discharging of water, ditching, Permit to Take Water, Environmental Compliance Approval for noise, discharges and wastes, scrap, dust, fuel storage, <i>Endangered Species Act</i> agreement or permit. • Setbacks for Provincially Significant Wetlands, woodlands, or Areas of Natural and Scientific Interest.
Recycling	<ul style="list-style-type: none"> • Asphalt (reclaimed asphalt paving), concrete, glass, bricks, slag, asphalt shingles.
Monitoring reports	<ul style="list-style-type: none"> • Water monitoring, noise monitoring, blast monitoring, adaptive management plan.
Other/notes	<ul style="list-style-type: none"> • Any other item deemed necessary to achieve compliance. A space for recording general comments.

* Not all items are applicable to all aggregate operations.

Figure 16: Issues Identified by our Office in a Sample* of Ministry Inspection Reports, 2012–2022

Prepared by the Office of the Auditor General of Ontario

Issue	Ministry Office				Overall
	Aurora	Bancroft	Guelph	Thunder Bay	
% of sites for which reports could not be provided to our Office	0	55	10	25	23
Of reports provided:					
% missing key items	40	64	50	17	39
% with no notes	27	0	8	25	20
% with no photographs (where corrective action was required)	65	67	42	37	50

* Our sample included 80 randomly selected sites, including 20 from each of four Ministry offices from four different districts.

- 20% of the reports had no notes attached, making the purpose or outcome of the inspection difficult to determine. Without notes, it is also difficult to understand why certain elements of an operation were not inspected.
- 50% of inspection reports that required corrective actions did not include photographs, as required by Ministry procedures. Taking photos of an inspected site is important for recording the state of an operation at the time and for proving conditions of non-compliance. Without photos, it is also difficult to track progress over time, especially if the inspector changes between inspections. In the absence of photos, a subsequent inspector would have difficulty confirming any non-compliance and determining whether conditions have worsened or improved.

In addition, we found that for one office, 45% of the inspection reports provided an overall assessment that the site was “in compliance,” even though they showed some of the individual items as being non-compliant and noted remedial actions that were required.

RECOMMENDATION 3

So that the Ministry of Natural Resources and Forestry has accurate and reliable inspection records to inform compliance activities and program improvements, we recommend that the Ministry develop and implement processes to ensure that inspection records are filled out consistently, completely, and properly.

MINISTRY RESPONSE

The Ministry of Natural Resources and Forestry (Ministry) agrees with the recommendation and acknowledges the importance of ensuring operational staff are continually learning and collaborating so that aggregate inspections and compliance efforts across all districts are undertaken consistently and completely and are properly documented. The Ministry will review training materials and update as needed to ensure staff are equipped to conduct inspections and complete inspection records properly.

4.2 Enforcement of Non-Compliance

4.2.1 High Rates of Non-Compliance at Aggregate Sites

We found that the aggregate sector has a high rate of non-compliance, considerably higher than other Ministry program areas.

Up until 2017/18, the Ministry tracked the annual compliance rate of its various program areas. In 2018, the Ministry published its last Performance Measures Annual Report covering the period from April 1, 2017, to March 31, 2018. That report indicated that, based on 1,693 inspections conducted in 2017/18, the compliance rate for aggregate pits and quarries was 38%, similar to the rate from the three previous years. In comparison, the Ministry found that this compliance rate was considerably lower than the compliance rate achieved by other Ministry program areas, including forestry (91%) and petroleum exploration, extraction and production (67%).

The Ministry stopped tracking overall annual compliance rates for program areas in 2018, as it ceased to be a Ministry priority. In the absence of Ministry tracking and reporting, we compiled data from all inspections conducted on aggregate pits and quarries across the Ministry from 2018 to 2022. Using this data, we calculated the compliance rate (the percentage of inspected sites that were deemed satisfactory by the Ministry) over these five years, and found that it has remained low, fluctuating between 36% and 52%. Over the five-year period, inspectors filed 1,750 inspection reports identifying non-compliances.

In addition to violations identified through inspections, violations of the Act may also be identified by TOARC. All approval holders are required to submit production reports to TOARC by January 31 each year, and to pay fees by March 15 based on the volumes reported or the set minimum fee, whichever is higher. A failure by an approval holder to provide a production report (which is required even if no aggregate was produced), to pay annual fees, or to comply with the annual extraction limits set out in its approval, are all violations under the Act. TOARC is responsible for providing the Ministry with reports on operators’

compliance with these requirements, but the Ministry is responsible for enforcement.

As outlined in **Section 2.3.1**, TOARC provides the Ministry with a monthly report of operators that have either outstanding production reports or annual fees. TOARC also reports annually to the Ministry on operators that report extraction volumes that exceed their authorized amounts. TOARC reported that there were 206 instances of these three types of non-compliance remaining at the end of 2018; in 2022, this number increased 74% to 359 (see **Figure 17**). Between 2018 and 2022, TOARC reported a total of 1,654 of these types of violations.

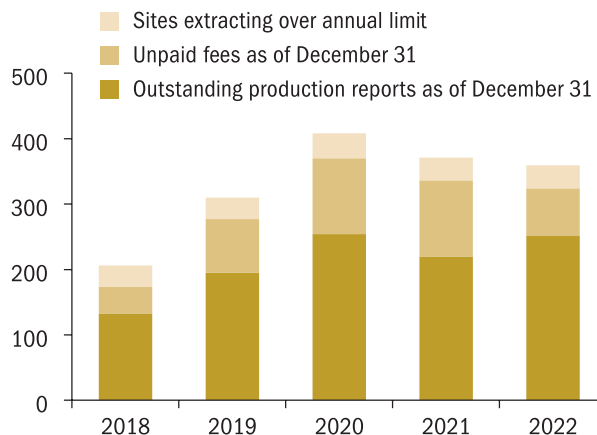
4.2.2 Ministry Rarely Pursued Charges Despite High Rates of Non-Compliance

Despite the high rates of non-compliance repeatedly identified by Ministry inspectors and reported by TOARC (see **Section 4.2.1**), we found that inspectors rarely made use of a key compliance tool: referrals to the Enforcement Branch to pursue charges and, ultimately, fines. For minor offences, charges can be in the form of a ticket up to \$750. For more serious offences, charges can be in the form of a court summons, which can result in a prosecution and fines of up to \$1,000,000. While not all violations merit action by the Enforcement Branch, and many violations may be best addressed through measures like education, the lack of a reasonable threat of enforcement could encourage non-compliance. Indeed, the continuing high rate of non-compliance among aggregate operators suggests that they may not fear any repercussions for failing to comply with the Act, regulation and other requirements. A lack of enforcement not only undermines the Act's purpose "to control and regulate aggregate operations," it also increases the risk of negative impacts on nearby communities and the environment.

Although the Ministry has a variety of compliance tools available (see **Appendix 10**), we specifically examined referrals the Ministry's aggregate inspectors made to the Enforcement Branch to pursue charges as a key tool to encourage and enforce compliance. Inspectors from across all district offices made a total

Figure 17: Number of Cases of Non-Compliance Reported to the Ministry of Natural Resources and Forestry by The Ontario Aggregate Resources Corporation, 2018–2022

Source of data: The Ontario Aggregate Resources Corporation



of 26 referrals to the Enforcement Branch from 2018 to 2022. These referrals, averaging five per year, represent less than 1% of the 3,404 violations identified at aggregate pits and quarries by either the Ministry's inspection reports (1,750) or TOARC reports (1,654) during this time period.

Although, as noted above, not all instances of non-compliance necessarily require enforcement action, the Ministry's internal policy explicitly states that the Ministry should pursue charges (which can lead to fines) if an operator significantly exceeds its allowable extraction tonnage. However, we examined the 2018–2022 records as reported by TOARC to the Ministry and found that three companies had exceeded their annual extraction limit by over 1,000%, with one up to 1,800%. We found that, in all three cases, the Ministry had not made an enforcement referral, and therefore the Ministry did not investigate or charge these companies for these violations.

As discussed in **Section 4.1.1**, external stakeholders have expressed concern about the Ministry's lack of capacity to enforce compliance. Although the Ministry's Enforcement Branch includes 209 field conservation officers (after successfully filling 25 new positions in 2022), the district offices responsible for inspecting aggregate pits and quarries have high staff turnover rates and unfilled inspector positions. Therefore, the

Enforcement Branch's ability to enforce requirements at aggregate sites is constrained, in part, by the capacity for district offices to identify and refer cases of non-compliance.

4.2.3 Enforcement Tools and Practices Too Weak to Deter Violations

We found that the Ministry's enforcement tools and practices can be ineffective at compelling aggregate operators to comply with the Act, and provide little incentive to fix violations.

For example, the Ministry has acknowledged in internal documents that it has a particular challenge in collecting unpaid aggregate fees and that its existing enforcement tools are not always the most effective to address overdue accounts. We analyzed TOARC data on unpaid aggregate fees from 2018 to 2022, and found that, as of December 31, 2022, 432 sites had not paid their annual aggregate fee, as required by the Act, for at least one of the last five years; of these, 41 had not paid their annual aggregate fees for all five years. We also analyzed the fines issued over the past five years for overdue fees and found that the Ministry issued only two fines for this offence, for a combined total of \$1,230 in fines. The total fines levied represent just 0.4% of the \$327,676 unpaid aggregate fees that TOARC calculated as remaining outstanding as of December 31, 2022. The total amount of unpaid fees is even higher; there were 649 production reports due in the past five years that remained outstanding at the end of 2022, meaning that TOARC could not calculate the fees owed by these operators.

Not only does the Ministry rarely pursue charges as a means to collect unpaid fees, the Ministry also does not charge interest on overdue aggregate fees, although the Act gives it the legislative authority to do so. Charging interest on unpaid fees is a commonly used mechanism across financial fields to encourage prompt payment of fees, and is used by the Ministry itself for overdue Crown timber charges.

Further, TOARC also audits operators' record keeping and reporting, and provides copies of its audit assessment to the Ministry. We found, however, that

the Ministry did not have a procedure to systematically follow up on deficiencies identified in TOARC's assessments. TOARC has raised concerns that the Ministry does not follow up with operators, especially those who do not comply with the Act by keeping proper and detailed records. A lack of Ministry oversight and enforcement of proper record-keeping and reporting creates a risk that operators may be underreporting their extraction rates and therefore underpaying their fees.

In 2022, the Ministry introduced tickets as a more efficient means to fine violators of the Act, without resorting to resource-intensive court prosecutions. While it is too soon to evaluate its effectiveness, we noted that the maximum ticket fine is relatively low, and so provides only a small penalty for failing to comply with the annual fee requirements. A ticket for failing to pay the annual aggregate fee (which is a minimum of \$394) carries a \$300 fine, and operating without a licence or permit carries a \$750 fine. By comparison, the maximum fine for traveling on GO Transit without paying a \$3.70 fare is \$200, which is over 50 times the cost of complying with the fare rules.

Administrative monetary penalties are another type of enforcement tool that can be used to discourage non-compliance and, like tickets, do not involve a resource-intensive court prosecution. For example, the Ministry issues administrative monetary penalties for violations by the forestry sector of the *Crown Forest Sustainability Act, 1994*, but does not use them for violations of the *Aggregate Resources Act*. Unlike the low maximum fine limit for tickets, the Ministry can issue much higher fines through the administrative monetary penalties for forestry violations. For example, whereas a ticket for operating without an aggregate licence or permit has a fine of \$750, the administrative penalty for harvesting timber without a licence is either \$15,000 or five times the value of forest resources harvested, whichever is greater. Also, unlike tickets, the fines imposed through an administrative monetary penalty cannot be appealed in court, which can make them a more efficient compliance tool. As noted in **Section 4.2.1**, the Ministry has found that the compliance rate for its forestry program has been much higher than for its aggregate program.

4.2.4 Ministry Does Not Enforce Payment of All Fines

When regulators impose substantial fines for non-compliance, it not only penalizes illegal activity, it also communicates to the regulated industry that non-compliance will not be tolerated, which can help deter future non-compliance. However, these benefits are lost if payments are not actually enforced. We found cases of unpaid fines for violations at aggregate pits and quarries, and noted that the Ministry did not have a mechanism to enforce the payment of fines.

Fines issued for violations of the Act, a provincial statute, are collected along with all other provincial offences, and not by the Ministry. Since 2002, Ontario municipalities have been responsible for collecting fines levied for provincial offences. In 2011, the Ontario Association of Police Services Boards (Association) noted that municipalities were not prepared or resourced to collect unpaid fines and that the amount of unpaid fines had grown considerably. The Association did report success, however, in collecting parking ticket and red-light camera fines, as well as Highway 407 tolls and fees. This success was due to the fact that the Ministry of Transportation has a process for municipalities to report these unpaid fines to it so that it can deny validation of a vehicle licence plate. The Association also reported some success when the Ministry of Transportation suspends driver's licences, which it does for other violations such as speeding. By contrast, the Ministry of Natural Resources and Forestry does not have a mechanism by which municipalities can report unpaid fines to it so that the Ministry can suspend or deny aggregate permits and licences.

We analyzed data provided by the Ministry of the Attorney General on defaulted fines for aggregate pits and quarries. The data included \$217,940 in fines issued under the Act that were in default as of December 2022, and were issued as far back as 1991. The data also indicated that \$81,000 is owed by three businesses that each hold an active aggregate licence or permit; these fines were issued between 2011 and 2013.

RECOMMENDATION 4

So that compliance with the *Aggregate Resources Act* is effectively encouraged and enforced, we recommend the Ministry of Natural Resources and Forestry:

- centrally track annual compliance data based on the results of Ministry inspections and the reports from The Ontario Aggregate Resources Corporation;
- review the Ministry's processes and practices for district office staff to make referrals to the Enforcement Branch and, based on the outcome of the review, implement any changes to its compliance and enforcement policies and practices;
- charge interest for overdue annual fees and royalties;
- review and adopt additional enforcement tools needed to address non-compliance; and
- determine options to further improve fine payments to municipalities.

MINISTRY RESPONSE

The Ministry of Natural Resources and Forestry (Ministry) acknowledges that centralized tracking of compliance data would help support efforts to achieve compliance with the *Aggregates Resources Act*. The Ministry has initiated a review of the internal systems being used to track existing aggregate compliance and enforcement activities and outcomes.

The Ministry will undertake a review of *Aggregates Resources Act* compliance tools and processes and explore opportunities for enhancement. Guidance to staff on the enforcement referral process will be developed to further support decision-making related to non-compliance.

The Ministry acknowledges the recommendation to charge interest on overdue fees and royalties and, with government direction, will work with The Ontario Aggregate Resources Corporation to explore potential options.

The Ministry will explore options to further influence fine payments to municipalities.

4.3 Self-Inspection and Self-Reporting by Operators

4.3.1. Ministry Not Enforcing Compliance Assessment Report Requirements

Ministry staff advised our Office that the self-compliance approach (see **Section 2.2.2**) is intended to encourage operators to proactively self-identify, disclose and rectify any issues of non-compliance. The Ministry seeks to encourage operators to self-disclose non-compliance on the basis that they will be rewarded through leniency by the Ministry, whereas operators who fail to self-disclose issues that are later found through complaints or Ministry inspections will, in theory, be more harshly penalized. However, we found that the Ministry did not have processes in place to ensure that this approach is meeting its intended goal of encouraging operators to properly self-report.

We found that the Ministry did not have a centralized database or standardized mechanism in place to track late or improperly completed reports. The Ministry encourages approval holders to submit their reports through the centralized online Natural Resources Information Portal; however, the reports can also be submitted to Ministry offices via email, fax, or by dropping off or mailing a hard copy. As such, we found that each office has developed its own internal processes for receiving and tracking these reports. While staff in some offices we visited have developed very detailed databases that effectively track which reports they have received and the content of the self-reported information, other offices use basic spreadsheets with varying levels of functionality.

We reviewed records from 2022 at four Ministry offices and found that these reports were not consistently received on time. (We focused exclusively on reports from 2022 because three of the four offices were unable to confirm receipt of all reports submitted in 2020 and 2021 due to staffing and technology challenges during the COVID-19 pandemic.) Overall, as of May 2023, we found that 25% of all 1,030 operators within the four offices' jurisdictions had not submitted a 2022 report more than seven months after the due date (September 30, 2022). The Bancroft office was

missing 46% of the required reports, while the Guelph, Thunder Bay and Aurora offices were missing 32%, 3% and 2%, respectively.

We also reviewed all reports received by the Ministry over the past three years from 20 randomly selected active operations from four Ministry offices to assess their completeness. We found that 15% of the reports were incomplete or of poor quality. For example, some reports had sections that were left blank. Others appeared to be exact copies of reports submitted from previous years, while others did not include the sketches required when remedial actions were identified or rehabilitation was conducted.

Furthermore, the compliance assessment report does not require operators to confirm that they have filed their annual production report with TOARC and paid their annual fees. As noted in **Section 4.2.1**, there are high rates of non-compliance with these requirements and the Ministry relies on TOARC to identify those operators that are not compliant. Including this requirement in the compliance assessment report could serve as a further incentive to submit reports and pay fees in a timely fashion.

Finally, we found the Ministry did not enforce suspensions for operators that did not submit reports on time or at all. In reviewing the procedures that Ministry staff used to address late or incomplete reports, we found inconsistencies among the four offices. In particular, the offices differed as to when they would send letters to operators with outstanding reports to notify them that they are suspended. For the 2022 reporting year, one office started sending letters as early as October 14, two weeks after the reports were due. Two other offices started in February and May 2023—four and seven months, respectively, after they were due.

The Act stipulates that a failure to submit a report by the due date will result in an immediate and automatic deemed suspension to operate. However, none of these four offices did anything more to enforce the suspension beyond sending a letter, such as conducting a site visit to confirm operations were halted. Furthermore, we found that deemed suspensions were not documented in the Ministry's central databases. This raises a risk that sites that hold licences deemed

to have been suspended continue to operate. In our review of 80 sites from four district offices, we found 11 sites continued to produce aggregate in 2021 despite never having submitted a self-assessment report for 2020, which should have resulted in an automatic suspension.

RECOMMENDATION 5

So that annual compliance assessment reports serve as an effective tool for ensuring compliance with the *Aggregate Resources Act*, we recommend that the Ministry of Natural Resources and Forestry implement and standardize processes across all districts to:

- consistently track when compliance assessment reports are received;
- review compliance assessment reports in a timely and thorough manner to identify reports that are late, incomplete or improperly completed; and
- enforce suspensions of operators who do not comply with the reporting requirements, and reflect that status in internal Ministry systems.

MINISTRY RESPONSE

The Ministry of Natural Resources and Forestry (Ministry) acknowledges the recommendation and agrees that a consistent, standardized approach to the delivery of the aggregate program across all regions and districts is important.

The Ministry will explore options to track the submission rates and quality of annual compliance assessment reports and leverage existing Ministry systems to collect and track information submitted by the regulated community.

The Ministry will consider training opportunities that will further educate staff on the appropriate compliance options for aggregate licensees and permittees who fail to submit, or improperly complete a compliance assessment report.

The Ministry will review existing procedures with respect to automatic suspensions of licensees and permittees who fail to submit an annual

compliance assessment report and explore options to improve Ministry follow-up and internal tracking.

4.4 Fees to Extract Aggregates Likely Too Low to Cover Program Costs

The Ministry has a goal of achieving full cost recovery for its aggregate program. In other words, the Ministry aims to recover the full cost of all services it provides for the aggregate program—including reviewing approvals and inspecting and enforcing compliance—from aggregate-related fees. However, we found that the Ministry's fee structure for extracting aggregates was likely not enough to cover the costs of administering the existing program, let alone to cover additional costs needed to effectively deliver the mandate of the Act.

In 2014, the Ministry began a process to update its fee structure to try to achieve full cost recovery for the future delivery of the program. The Ministry determined it would need to assess the program capacity required to effectively and efficiently deliver the mandate of the Act. Following stakeholder consultations, the Ministry brought in a new fee structure in 2019 that would increase revenue and index all fees going forward to account for inflation.

At that time, the Ministry estimated these changes would result in \$7.96 million in annual revenue for the Province. It also estimated that the Province would receive approximately \$100,000 per year in additional application and related fees. By contrast, using 2015/16 fiscal data, the Ministry estimated that the Province spent approximately \$9.91 million each year on activities related to managing aggregate resources, excluding the aggregate-related costs of other ministries. The increased revenue would therefore cover only about 80% of its program costs. The Ministry acknowledged that, while the annual fee increase would not achieve full cost recovery, it would be a step toward that goal.

Moreover, the Ministry also recognized that the expenses associated with delivering the aggregate program would increase after implementing other policy changes proposed at the time. Three years later,

however, the Ministry was unable to provide our Office with the annual cost of delivering its program.

As noted in **Section 4.1** and **Section 4.2**, many stakeholders, including from the aggregate industry, have expressed concerns about the Ministry's lack of capacity to inspect and enforce compliance. Some industry members have stated that the Ministry's limited enforcement has contributed to a lack of public trust and opposition to aggregate pits and quarries. This concern is significant enough for organizations representing both operators and municipalities, a key consumer of aggregates, to call for higher aggregate fees to pay for increased enforcement. In 2012, the Ontario Stone, Sand & Gravel Association and the Top Aggregate Producing Municipalities of Ontario formed a committee to advocate for increased Ministry enforcement paid for by higher aggregate fees, among other issues. In 2021, despite the 2019 increase in fees, both groups reiterated their continued support to the Ministry for this approach.

In addition to these concerns that aggregate fees are too low to support the Ministry's inspection and enforcement activities, the fees may also be too low to support other program goals, including to conserve aggregate resources and encourage aggregate recycling, as set out in the Provincial Policy Statement (see **Section 4.7.2**).

RECOMMENDATION 6

To effectively deliver the mandate of the *Aggregate Resources Act*, we recommend that the Ministry of Natural Resources and Forestry:

- assess the Province's full cost of operating its current aggregate program, as well as the additional resources necessary to adequately enforce aggregate policies; and
- explore options to recover the full program costs, including those related to enhanced enforcement.

MINISTRY RESPONSE

The Ministry of Natural Resources and Forestry (Ministry) acknowledges this recommendation

and recognizes the importance of having sufficient resources to implement the aggregate program. The Ministry will assess the full program costs and consider options to recover those costs in future modernization of the aggregate program.

4.5 Final Rehabilitation

4.5.1 Ministry Did Not Have Processes to Ensure Aggregate Sites are Promptly Rehabilitated After Extraction is Complete

Ontario's Provincial Policy Statement states that, "to recognize the interim nature of extraction," aggregate pits and quarries must be rehabilitated to allow for future land uses. However, we found that the Ministry did not have mechanisms in place to ensure that aggregate extraction is, in practice, a temporary land use and that sites are promptly returned to productive use after extraction is fully completed.

While final rehabilitation is required under the Act once extraction is complete, it is up to the approval holder to determine when extraction is finished. As such, there is no clear time frame for the Ministry to begin enforcing the requirement for an approval holder to undertake final rehabilitation of the site.

Furthermore, there is some incentive for an approval holder to retain its aggregate licence or permit, even if it is no longer actively extracting aggregate, rather than complete rehabilitation and surrender its approval. Rehabilitation can entail considerable costs, depending on the particular property and the site plan requirements. For example, in 2022, The Ontario Aggregates Resources Corporation (TOARC) spent an average of \$37,549 per hectare to rehabilitate sites to the baseline requirements of regrading and revegetating. By contrast, the annual fee to maintain a permit or licence for a dormant aggregate site is less than \$800.

While many aggregate operators properly rehabilitate their sites and promptly return the land to productive use after extraction is complete, we found numerous sites across the province that have not been surrendered, even though extraction was no longer taking place on them. We analyzed extraction

data provided by TOARC and found that 1,524 sites reported zero aggregate extraction in at least the past 10 years (see **Figure 18**). Of these, 257 sites reported zero aggregate extraction for at least the past 25 years (since 1998). The sites that have sat dormant for at least 10 years represent more than 25,000 hectares of land, approximately the size of Brampton, Ontario.

There may be valid reasons why a site sits dormant for multiple years, other than the fact that the pit or quarry has been fully extracted. A site may sit dormant because it does not have the specific type or quality of aggregate in demand by the local market at a point in time (and shipping heavy aggregates to farther markets can be prohibitive), but may still have reserves of other aggregates that can potentially be used for future projects. However, for sites that have sat dormant for many years, there is a risk that those sites have, in fact, finished extraction and are avoiding rehabilitation efforts. Allowing sites to remain dormant for long periods without final rehabilitation violates the notion that aggregate extraction is an interim land use, one of the key tenets of aggregate management in the Provincial Policy Statement.

RECOMMENDATION 7

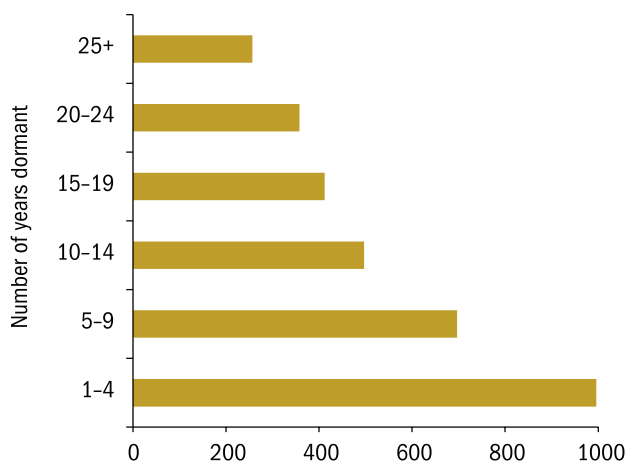
To give credence to the Provincial Policy Statement's recognition that aggregate extraction is an interim land use, and to ensure that disturbed land is returned to productive use in a timely manner that accommodates subsequent land uses, we recommend that the Ministry of Natural Resources and Forestry develop and implement a strategy to assess sites that have been dormant for more than 10 years and ensure that sites that have completed extraction are rehabilitated and surrendered.

MINISTRY RESPONSE

The Ministry of Natural Resources and Forestry (Ministry) agrees with this recommendation and is currently undertaking an analysis of rehabilitation and dormant aggregate sites in Ontario. The Ministry notes that progressive and final rehabilitation are legal requirements of any approval pursuant

Figure 18: Number of Dormant Aggregate Sites

Source of data: The Ontario Aggregate Resources Corporation



to the *Aggregate Resources Act*. Between 2013 and 2022, roughly 8,000 hectares have been rehabilitated and surrendered. Depletion rates of individual aggregate operations will vary based on market conditions, proximity to larger population centres and demand for certain aggregate products.

4.5.2 Ministry Does Not Require Long-Term Monitoring to Ensure Final Rehabilitation of Aggregate Sites Is Successful

Once the Ministry accepts the surrender of an aggregate licence or permit, the approval holder no longer has any obligations under the Act for that property. However, in some cases, it cannot be immediately determined whether measures to rehabilitate the land have been fully effective. As such, long-term monitoring is considered a best practice to ensure that rehabilitation has been successful. However, we found that the Ministry does not require approval holders to monitor their rehabilitation measures over a longer term before it approves surrender requests.

As discussed in **Section 2.2.4**, an approval holder may apply to surrender its licence or permit after it deems a site's rehabilitation to be complete. Complete rehabilitation means the site has been regraded and the soil has been replaced and revegetated, so that the land is restored to its former condition, or to a

condition that is similar to surrounding land uses. For sites where below-the-water-table extraction has occurred, complete rehabilitation typically involves creating a lake or pond, and revegetating the surrounding area. If rehabilitation meets the specifications stated in the Act, the regulation and the approval holder's site plan, an aggregate inspector may accept the surrender request.

There are a number of examples across Ontario of former aggregate pits and quarries that have been successfully rehabilitated back to a former land use or to a new productive use. For example, after the completion of extraction on a gravel pit in Fonthill, new techniques used during progressive and final rehabilitation led to the successful growth of specialty crops, including peaches, cherries and pears, on the site. In another example, a former gravel pit in Hamilton was rehabilitated to become part of the horticultural rock garden collection at the Royal Botanical Gardens. During our audit, we visited several successfully rehabilitated sites, including a former gravel pit near Cambridge that has been converted into an aquaculture operation that raises rainbow trout. However, rehabilitation measures require both time and money, and not all operators exercise the same level of care and diligence in these efforts.

As such, long-term site monitoring is important to fully assess the effectiveness of rehabilitation. For example, monitoring species population numbers may be needed to assess whether wildlife habitat is being re-established; monitoring soil productivity levels may be needed to assess whether a former agricultural site is being effectively returned to farmland. Long-term monitoring can also detect any unintended impacts that become apparent only later—for example, if revegetation efforts do not succeed, or if regrading results in unwanted changes in water drainage patterns.

TOARC, which is responsible for rehabilitating legacy pits and quarries in Ontario (see **Section 4.5.3**), monitors and revisits the sites that it rehabilitates for another two to five years (depending on the site and landowner access) to check on soil development and

ensure that the site remains vegetated and rehabilitation has been successful.

In 2008, TOARC, which is also responsible for providing education and training on rehabilitation to interested parties, released best practice guidelines for rehabilitating aggregate pits and quarries. These best practices indicated that monitoring and reporting should be included as part of all rehabilitation plans, even if it is not required by law. Similarly, the Ministry's 2010 State of the Aggregate Resource in Ontario report identified long-term monitoring of rehabilitated sites as a best practice. Despite this guidance, long-term monitoring is not required in Ontario. As part of regulatory changes made in 2020, however, the Ministry may require that applicants seeking to extract aggregate within a prime agricultural area continue monitoring after final rehabilitation has been completed. While this is a positive step, it is too recent to evaluate whether it is being effectively implemented.

RECOMMENDATION 8

To help ensure that final rehabilitation measures at aggregate pits and quarries have been effective, we recommend that the Ministry of Natural Resources and Forestry develop and implement procedures for confirming, at the time of surrender of approvals, that final rehabilitation measures have been successful and have not resulted in any unintended consequences.

MINISTRY RESPONSE

The Ministry of Natural Resources and Forestry (Ministry) acknowledges the importance of ensuring the successful and effective rehabilitation of pits and quarries. The Ministry will review current policy and procedures with respect to the inspection and decision on the surrender of an aggregate site. The Ministry will consider measures to improve how staff determine that final rehabilitation has been completed in accordance with the licensee or permittee's site plan.

4.5.3 TOARC Progressing with Rehabilitation of Legacy Sites on Private Land, but Ministry Not Ensuring Crown Land Legacy Sites Are Rehabilitated

After almost 30 years of the Ministry's and TOARC's work rehabilitating legacy sites, most high-priority legacy sites on private land have been rehabilitated (with the exception of sites where TOARC was not permitted access). By comparison, we found that the Ministry was not ensuring that legacy sites on Crown land have been, or are being, rehabilitated. This does not instil public confidence that the Ministry is effectively fulfilling its role in managing Crown land, which is meant to be used and accessed by all Ontarians.

From 1990—when the Act came into effect—until 1997, the Ministry was responsible for rehabilitating legacy sites. The Ministry created an inventory of sites, and developed a rating system to prioritize sites for rehabilitation, considering public access and safety, environmental risks, size and visibility. For example, high-priority sites might contain unstable slopes, deep water, vertical cliffs and easy public access, while low-priority sites might have more gradual slopes and less public access. In 1997, the Management of Abandoned Aggregate Properties program was created, with TOARC taking over responsibility for rehabilitating legacy sites (see **Section 2.3.3**).

Since the program's creation, 643 legacy sites on over 905 hectares of private land have been rehabilitated. This includes 25 high-priority, 508 medium-priority and 72 low-priority sites, and 20 with no priority rating. As of October 2023, 1,659 files remained open in TOARC's database. This included 22 high-priority, 1,161 medium-priority and 374 low-priority sites, and 102 sites categorized as unknown priority. Despite their priority status, TOARC has stated that it is unable to conduct rehabilitation work on the remaining 22 high-priority sites because the current private land-owners refuse to grant TOARC access to the sites.

The Act assigns TOARC responsibility for rehabilitating legacy pits and quarries, but it does not explicitly state that legacy sites on both private and Crown land

are included. To date, TOARC has only rehabilitated legacy sites on private land.

In 2018, the regulation under the Act, which sets out how to distribute aggregate fees, was changed to allow a portion of the annual aggregate fees for permits (for extraction on Crown land) to be put toward the program. Previously, only a portion of the annual aggregate fees for licensees (for extraction on private land) were contributed to this program. However, the Ministry never directed TOARC to expand its efforts, and the Ministry has made no final decision to formally add legacy sites on Crown land to TOARC's rehabilitation responsibilities.

Under the *Public Lands Act*, the Ministry is responsible for managing public, or Crown, land. However, the Ministry has limited records of where legacy sites on Crown land are and has made no attempt to categorize the risk these sites pose to public safety. As noted above, TOARC has an extensive database, which includes some limited information on legacy sites located on Crown land (acquired through both its own work and historical information provided by the Ministry). We were advised by the Ministry that because 30 years have passed since the *Aggregate Resources Act* came into effect, it has assumed that many sites have naturalized and that district offices had previously addressed any safety risks in their areas.

RECOMMENDATION 9

So that risks associated with legacy aggregate sites on Crown land are addressed, we recommend that the Ministry of Natural Resources and Forestry work with The Ontario Aggregate Resources Corporation to:

- update and clarify responsibility for rehabilitating legacy sites on Crown land; and
- identify and assess legacy sites on Crown land, including the level of risk to public safety, and undertake the rehabilitation of any high-risk sites where feasible.

MINISTRY RESPONSE

The Ministry of Natural Resources and Forestry acknowledges the recommendation and, with government direction, will work with The Ontario Aggregate Resources Corporation to clarify roles and responsibilities with respect to identifying and rehabilitating any potentially high-risk abandoned aggregate sites on Crown land.

4.6 Supply and Demand for Aggregates

4.6.1 Ministry Not Verifying Accuracy of Supply Data

We found issues with the quality of the underlying data that is used in studies commissioned by the Ministry to estimate the supply of aggregates in Ontario. We also found that the Ministry did not have a process to verify the accuracy of this data. Having an accurate understanding of the availability of aggregate reserves (unextracted supply), as well as demand and consumption trends for such resources, at the local and regional level is important so that the Ontario government can make informed decisions about how it manages its aggregate resources.

The Act states that the Ministry may, in administering the Act, initiate various studies relating to the supply and demand for aggregates. To assist with gathering this important information, the Ministry previously commissioned five supply and demand studies for aggregates, with the most recent study completed in 2016. The 2016 study focused on the Greater Golden Horseshoe region. Comparing both supply and demand in a particular region, as opposed to the entire province, is important because aggregates are generally sought out as close as possible to where they are needed, which minimizes the impacts of transporting heavy aggregates long distances. The study focused on the Greater Golden Horseshoe region because it has the greatest need for aggregates in the province.

The 2016 study estimated that the region would consume 111 million tonnes of aggregates per year over the next 20 years. It also estimated that the region had

reserves of 3,337 million tonnes (545 million tonnes in licensed quarries and 2,792 million tonnes in licensed pits). The estimates in the study appeared to suggest that total available reserves were more than sufficient to meet future demand for the next two decades (2,220 million tonnes).

However, the consultant who conducted the study cautioned against viewing these high-level estimates as a realistic indication of available supply. The consultant noted a high degree of uncertainty with the supply data because of limitations with the information used to estimate the quantity, quality and type of below-ground aggregate resources.

The 2016 study used site plans (which outline the allowable extraction areas and depths of licensed pits and quarries), aerial photos from 2002 (the most recent available at the time), digital elevation data and basic geological information to roughly estimate the amounts and types of aggregate reserves. However, aggregate operators did not participate in the study, which limited the study's ability to fill data gaps with specific site assessments of the types and quality of available reserves at operators' sites. The study also did not involve any field verification (such as taking samples of open site sections or from boreholes drilled in unextracted areas) to evaluate the type and quality of the unextracted aggregate reserves.

The consultant therefore recommended that, in addition to updating estimates with newer information as it becomes available, field verification should be conducted to improve data quality. In January 2023, the Ministry commissioned an updated supply and demand study for the Greater Golden Horseshoe region, to be completed by December 2023. The contract includes plans to use more up-to-date aerial photos and to survey industry members on the different types, amounts and quality of aggregates in their individual reserves. In contrast to the previous study, the Ministry has proactively sought to gain industry support for this study, which has the potential to improve the information it collects about aggregate reserves.

However, we noted that the industry survey was voluntary and, with a goal of providing confidentiality to aggregate operators, anonymous. A voluntary,

anonymous survey with no mechanism to verify the data creates a high risk of incomplete and inaccurate reporting. Instead, there are other ways to obtain higher-quality data while still addressing industry's confidentiality concerns. For example, the Ministry already requires aggregate approval holders to provide TOARC with confidential data on aggregate extraction, which is audited by TOARC and publicly reported at the municipal level, rather than by site. However, the Ministry does not require industry to similarly report data on the unextracted reserves remaining on aggregate sites. Moreover, the contract for the 2023 study also did not include field verification for quality control.

4.6.2 Lack of Publicly Available Supply and Demand Information Contributes to Public Concern

We found that the Ministry was not providing the public and stakeholders with information to create a detailed and accurate picture of aggregate supply and demand. Ontario's Provincial Policy Statement is clear that there is no requirement that demand for more aggregate resources be shown before making more supply available. However, absent information on supply and demand, many stakeholders have concluded that there is an oversupply of aggregates already approved for extraction. This contributes to frequent opposition to proposals for new or expanded pits and quarries. By publishing more detailed and accurate information about aggregate supply and demand, the Ministry could help foster more informed discussions and potentially reduce conflict among industry, community groups, municipalities and other stakeholders.

As discussed in **Section 4.6.1**, the Ministry's most recent (2016) supply and demand study appeared to suggest that available supply in the Greater Golden Horseshoe region (3,337 million tonnes) was more than adequate to meet demand for the next two decades (2,220 million tonnes). However, the study also estimated that only 1,470 million tonnes (44%) of the total reserves were high-quality, but the Ministry did not publish this information online. Ministry staff

deemed the full report to be long and very technical, so the Ministry ultimately published only a summary of the report, which did not include an estimate or description of high-quality reserves.

Detailed information about the type and quality of aggregates that are available relative to those in demand is important context. Aggregate materials come in different sizes, shapes and chemical compositions. Different end uses require different types and qualities of aggregate. For example, high-rise developments and highway construction typically only use high-quality concrete and asphalt pavement, which can reduce future maintenance and repair costs. Lower-quality aggregates can be used as base (below the surface) material for roads, and even lower-quality material can be used to backfill holes.

In the absence of detailed supply and demand information, stakeholders turn to other forms of available information. For example, publicly available data on annual extraction tonnage shows that approval holders typically extract less than their maximum allowable annual tonnage limits. This information may be seen to indicate that approved aggregate supply exceeds demand. However, the maximum-allowable annual tonnage is included in a licence or permit to mitigate the impacts of aggregate operations, particularly by limiting local truck traffic; it does not indicate the amount of aggregates available at a site.

In 2022, a coalition of environmental organizations (comprising Environmental Defence, the Council of Canadians, Water Watchers and the Wilderness Committee) called for a moratorium on the approval of new aggregate sites in Ontario, arguing that the Ministry had already approved the extraction of 13 times more aggregate than is actually removed each year and, therefore, that no more pits or quarries are needed. Several municipalities, including those with the highest volume of aggregate extraction in Ontario within their borders (for example, Caledon, Halton Hills and Milton) have also expressed support for a moratorium. The coalition dismisses industry's claim that there is a shortage of high-quality aggregate reserves, pointing to a lack of publicly released data to support it.

RECOMMENDATION 10

To improve public trust, better inform government decision-making, and support more informed discussions with and among stakeholders, we recommend that the Ministry of Natural Resources and Forestry:

- implement processes to obtain accurate and complete data, including on the amounts, types and quality of available supply of aggregates;
- establish a regular interval for updating supply and demand data; and
- regularly publish all non-confidential aggregate supply and demand data online, including information on estimated amounts, types and quality of supply.

MINISTRY RESPONSE

The Ministry of Natural Resources and Forestry (Ministry) agrees with this recommendation. Going forward, the Ministry will retain leading industry engineering consultants, working with the Ministry and industry to implement modern technologies to provide more accurate and complete data on supply. Estimates for the upcoming study have been made using the best available satellite imagery and LiDAR data (laser-derived elevation data) to create reserve estimates for several hundred sites in the Greater Golden Horseshoe. The upcoming supply and demand study is augmented by quality surveys of over 100 individual operations and expands on existing information and data gathered from earlier comprehensive studies.

The Ministry also acknowledges the importance of undertaking regular review of the availability of aggregate resources to meet market demand.

Related to current market demand for aggregate, each aggregate licence and permit is required to report annual production so annual demand is well documented and understood.

The Ministry does undertake supply and demand updates on a regular basis and will

continue to do so. In recent years, studies reviewing supply of aggregate and related issues have been published in 2009 and 2016, with another to be completed in 2023. The 2023 study will include a more detailed assessment of aggregate availability on a geographic basis.

The Ministry strives to make all non-confidential information publicly available. The Ministry will generally make all non-proprietary information, including on estimated amounts, types and quality of available supply, available on its website or upon request.

4.7 Recycled Aggregate

Recycled aggregate includes crushed concrete and asphalt pavement that is processed and reused in other building projects. Aggregate recycling can occur within pits and quarries, which are regulated by the Ministry. Recycling can also occur in separate aggregate recycling facilities, which are outside the Ministry's jurisdiction.

Recycled aggregate can, if of sufficient quality, be used in place of virgin aggregate. Its use can reduce the need for new or expanded pits and quarries, and the associated environmental and social impacts of extracting virgin aggregate. Recycling aggregates also diverts construction waste from landfill. However, recycling aggregates within a pit or quarry may also extend the life of an aggregate site, and may result in impacts on neighbours and the environment.

Ontario's Provincial Policy Statement states that aggregate resources must be conserved, including through aggregate recycling, where feasible. While the Ministry does not have the power to increase the use of recycled aggregate in Ontario on its own, it has the lead role in managing the province's aggregates. Accordingly, the Ministry developed a policy in 2007 in which it committed to "encourage the reduction, reuse and recycling of aggregate materials in all facets of its partnerships" with the industry, ministries and others.

4.7.1 Ministry Lacked Accurate Estimates for Recycled Aggregate Use

The Ministry's most recent estimate is that 13 million tonnes of recycled aggregate is used annually, which is equivalent to 7% of Ontario's total aggregate use. However, the Ministry's estimate is for the year 2006, almost two decades ago. The lack of recent data limits the Ministry's ability to assess trends on recycled aggregate supply and use, and its ability to make informed aggregate management decisions.

The consultant that provided the 2006 estimate to the Ministry warned that Ontario lacked a methodology or system to effectively track the use of recycled materials. The consultant recommended an approach for the government that included developing guidelines on how and what materials to track, creating an online database for public agencies (such as municipal governments) to input information on their recycled aggregate use, and reporting annually to promote the benefits of aggregate recycling.

In 2018, the Ministry developed a plan to survey aggregate operators to gather data on recycled aggregate imported and exported from their sites. However, that work did not proceed after a change in government in 2018.

In April 2021, the Ministry started to require approval holders with new aggregate recycling operations to report on the amount of recycled material leaving their sites. However, this reporting requirement excludes the vast majority of sites where aggregate recycling actually occurs. The requirement does not apply to sites that were approved to recycle aggregates before April 2021, or to sites where aggregates are recycled external to a pit or quarry. As a result, only 1,000 tonnes of recycled material were reported in 2022. This reported value is 0.01% of the Ministry's 2006 (most recent) estimate of annual recycled aggregate use in Ontario.

At the time of our audit, the Ministry was commissioning a supply and demand study update (see **Section 4.6**). However, the contract for this study did not include work to update data on recycled aggregate as a source of supply. This omission reflects

the Ministry's focus on meeting Ontario's aggregate demand through approvals of new pits and quarries, rather than through alternatives such as recycling.

RECOMMENDATION 11

To make informed decisions regarding recycled aggregate, we recommend that the Ministry of Natural Resources and Forestry work with other relevant ministries to:

- implement a system to track major sources of recycled aggregate supply and use in Ontario; and
- regularly report publicly on summarized results.

MINISTRY RESPONSE

The Ministry of Natural Resources and Forestry (Ministry) acknowledges the recommendation and will share it with the other ministries that are involved in the usage of recycled aggregate off a licensed aggregate pit or quarry. It is important to note that recycling of aggregate does not need approval under the *Aggregate Resources Act* to occur outside of a pit or quarry (e.g., sites with municipal approval to recycle).

The Ministry will explore the feasibility of tracking recycled aggregate on pits or quarries. However, requiring operators to undertake reporting of recycled material at each site would result in additional regulatory burden to the industry, and would only report on a portion of aggregate recycling that occurs in Ontario.

4.7.2 Low Fees for Extracting Virgin Material Provide Little Incentive to Use Recycled Aggregate

In some jurisdictions, governments charge fees for the extraction of virgin aggregate but not for the production of recycled aggregate, which can help make the use of recycled aggregate more cost-effective by comparison. While Ontario does charge fees only on virgin aggregate extraction, we found that the fees were not

high enough to provide a significant financial incentive to use recycled aggregate instead.

Multiple factors influence the cost of recycled aggregate, and therefore its economic competitiveness compared to virgin aggregate. For example, purchasing recycled aggregate from a source close to where it will be used can reduce transportation costs compared to trucking virgin aggregate from a distant pit or quarry. Conversely, rigorous processes to remove contaminants and ensure quality control can render recycled aggregate more expensive than virgin materials.

A 2022 study commissioned by the Toronto and Area Road Builders Association analyzed the potential benefits of using recycled aggregate in infrastructure projects. The study estimated that the cost to deliver virgin “Granular A” aggregate to make roads and parking lots in four sites in the Greater Toronto Area would be \$22–\$24 per tonne. It also estimated that recycled aggregate could potentially be \$8 per tonne cheaper (that is, cost \$14–\$16 per tonne) if transportation costs could be reduced by sourcing these materials closer to the project rather than using virgin material from pits or quarries farther away. Although the avoidance of paying aggregate fees could be considered another benefit of using recycled aggregate, the study’s authors did not even mention this potential benefit. Ontario’s aggregate fees comprised only about 1%–3% of the estimated purchase cost of virgin aggregate in the study.

The United Kingdom (UK), by contrast, has a much higher extraction fee to encourage the use of recycled, rather than virgin, aggregate. The 2023 UK fee for virgin aggregate is equivalent to about \$3.20 per tonne, approximately 14 times higher than what Ontario collected for extracting virgin aggregate in 2023 (\$0.23 per tonne). The explicit objectives of the UK fee are to address the environmental costs associated with quarry operations, cut demand for virgin aggregate, and encourage the use of alternative materials where possible. While a number of factors may contribute to the UK’s higher recycling rates, it is noteworthy that the use of recycled aggregate in the UK (making up roughly

25% of total aggregate use) is more than three times higher than Ontario’s estimated 7%.

4.7.3 Ministry Has Made Little Progress in Addressing Barriers to Recycled Aggregate

Despite Ministry commitments to encourage the use of recycled aggregate, we found that the Ministry had made little progress addressing the barriers preventing a greater uptake of recycled aggregate among consumers.

There are several barriers that limit the use of recycled aggregate, including technical ones. For example, virgin aggregate is typically preferred for high-performance applications, such as rut-resistant asphalt, because it provides greater assurance that high-quality standards will be met. There are also concerns that recycled aggregate can be contaminated with foreign materials, which can affect the safety and performance of the recycled aggregate. For example, metal rebar and other demolition waste can be mixed in with the crushed concrete.

Another barrier is resistance by some users of aggregate that stems from a lack of information or education. Several studies have highlighted a need for more education and promotion in this area. For example, in 2009, a Ministry consultant found little support for the use of recycled aggregate by municipalities and recommended continuing education on the benefits of recycled aggregate. In 2018, the Toronto and Area Road Builders Association commissioned a survey of 25 municipalities and found that municipal policies often prohibit or severely limit the use of recycled aggregate in construction projects. The survey found that performance and reliability were the municipalities’ main considerations. The Association concluded that there is an opportunity to encourage municipalities to realize the benefits of using more recycled aggregate. The Association suggested that municipalities can learn from each other and the Ministry of Transportation, which uses recycled aggregate for highways.

A further barrier relates to concerns raised by some stakeholders about the process of recycling aggregates within pits and quarries. A lack of data that evaluates the risks of recycling within aggregate sites, and an absence of best practices to address any such risks, contributes to these concerns.

Despite past commitments to encourage aggregate recycling and provide education, the Ministry has made very little progress. In 2007, the Ministry committed to “encourage the reduction, reuse, and recycling of aggregate materials in all facets of its partnerships with the public, the aggregate industry and other key ministries.” In 2014, the Ministry reaffirmed that education and information are the strongest tools to increase the acceptance and use of recycled aggregate materials. However, in 2019, the Ministry’s internal review of its aggregate recycling policy noted that “no guidance documents or other records [from the Ministry were] found that would indicate any initiative by the ministry to educate stakeholders or to promote the benefits of recycling aggregates.”

In May 2023, during the course of our audit, the Ministry established a multi-stakeholder working group to share information on recycled aggregate. As part of its role, the group is to help identify barriers and inform the development of best practices and policies to support access to, and the use of, recycled aggregate in Ontario. The group plans to meet four times over six months; it first met in June 2023 and identified issues to discuss at the three future meetings. Although these meetings are an important first step, further action will be required to remove barriers identified by the working group.

RECOMMENDATION 12

To support the increased use of recycled aggregate and responsible recycling processes, we recommend that the Ministry of Natural Resources and Forestry work with stakeholders to develop and implement a plan to reduce educational, informational and financial barriers and establish best practices for the production and use of recycled aggregate.

MINISTRY RESPONSE

The Ministry of Natural Resources and Forestry (Ministry) acknowledges this recommendation and is working with the Ministry of Transportation, the Ministry of the Environment Conservation and Parks, and the Ministry of Municipal Affairs and Housing to explore barriers to recycled aggregate usage in Ontario. Based on the outcome of this, the Ministry will work with other relevant ministries and stakeholders to develop a plan to reduce barriers and establish best practices.

4.8 Approvals for Aggregate Licences and Permits

4.8.1 Late or Absent External Technical Reviews Mean Some Important Factors May Not Be Considered

An important part of the application process is the external review of the application and associated technical reports by other agencies with specialized expertise to assess and comment on the potential impacts of the proposed new pit or quarry. Many agencies (such as the local municipality, conservation authority and partner ministries) are sent the application, and their comments can provide valuable input for the Ministry. In particular, the Ministry relies on the expertise of the Ministry of the Environment, Conservation and Parks (Environment Ministry) on protecting species at risk, and the expertise of the Ministry of Agriculture, Food and Rural Affairs (Agriculture Ministry) on conserving agricultural land. We reviewed a sample of applications and found, however, that these expert reviews were not done consistently. Without a consistent approach, important factors included in the technical reports, such as protecting species at risk and preserving agricultural land, may not be reviewed and commented upon by the appropriate agencies for all approvals.

The external review process begins with applicants sending their application, including the relevant technical reports (see **Appendix 7**), to all applicable

agencies for review and comment. Any agency that wishes to comment on the application must do so within the prescribed 60-day consultation time frame. The applicant must then work to address these comments, including revising the application and site plan. Comments that are not submitted within the prescribed time frame do not have to be addressed by the applicant (unless the application is ultimately forwarded to the Ontario Land Tribunal, which has discretion to consider comments made outside the formal comment period). The applicant then submits a final information package to the Ministry that indicates how it has attempted to address all comments received.

We reviewed a sample of 15 final information packages from applications that were approved in 2022, and examined whether the Environment Ministry (Species at Risk Branch) and the Agriculture Ministry (Policy Division) reviewed and provided comments within the prescribed consultation period. We found, however, that these expert reviews were not done consistently, and important factors were not properly considered or addressed in some approvals.

Species at Risk Considerations

We found that in four (or 27%) of the 15 information packages, the Environment Ministry did not respond at all to the applicant's request to review the application for concerns about species at risk, such as endangered or threatened species. In another six (or 40%) packages, the Environment Ministry responded to the request after the 60-day consultation deadline. In these six cases, the Environment Ministry responded an average of 184 days (six months) after the consultation deadline, ranging from 26 to 455 days late.

In addition to the request for the Environment Ministry's review through the aggregate application process, every site that identifies habitat of threatened or endangered species also triggers a review by the Environment Ministry under the *Endangered Species Act, 2007* to ensure that proposed operations do not harm the species or their habitat. While operations will therefore still be reviewed by the Environment Ministry through the *Endangered Species Act, 2007* process, many concerns about species at risk can be

addressed by modifying the site plan conditions during the aggregate application process. When comments are not provided on the application, or are provided long after the legislated deadline and well into the period in which applicants are making changes to address the feedback received, the opportunity to improve a proposed application and site plan based on expert input is more likely to be missed.

Agricultural Considerations

Similarly, applicants must circulate their aggregate application to the Agriculture Ministry where the applicant has either submitted an Agricultural Impact Assessment report, or has proposed aggregate operations on prime agricultural land (having the highest quality and capability for agriculture) and does not intend to restore the land to the previous soil quality. We reviewed all five final information packages from 2022 that were sent to the Agriculture Ministry for comment. We found that in two (or 40%) of the five packages, the Agriculture Ministry did not respond to the request for comments at all, and in one (20%) of the packages, the Agriculture Ministry commented 123 days (four months) after the consultation period ended.

Unlike the review of species at risk, which is triggered for all applications that identify habitat of threatened or endangered species, the only time an applicant must attempt to address agricultural comments is if they are raised during the consultation period. Therefore, if the Agriculture Ministry misses the consultation deadline or does not respond to application review requests, applications for operations that will degrade agricultural land may be approved without any conditions to minimize impacts.

RECOMMENDATION 13

So that important expert input from other agencies is incorporated into aggregate licences and permits to mitigate the negative impacts from proposed new aggregate pits and quarries, we recommend that the Ministry of Natural Resources and Forestry work with the Ministry of the Environment,

Conservation and Parks; the Ministry of Agriculture, Food, and Rural Affairs; and any other commenting agencies to ensure a full review of aggregate licence and permit applications within the prescribed timelines.

MINISTRY RESPONSE

The Ministry of Natural Resources and Forestry (Ministry) agrees that expert input from reviewing agencies is an important input to the development of a new aggregate authorization. Earlier this year, the Ministry engaged with staff from both the Ministry of the Environment, Conservation and Parks and the Ministry of Agriculture, Food and Rural Affairs to explain the aggregate approval process in detail and outline the importance of commenting within the required timelines. The Ministry is committed to exploring further opportunities with these ministries, as well as any other commenting agencies who express an interest in better understanding how to participate in the approvals process, to ensure a full review of aggregate licence and permit applications within prescribed timelines.

4.8.2 Cumulative Impacts Not Taken into Consideration in Approvals

Some areas in Ontario—such as the Townships of North Dumfries and Puslinch and the Town of Caledon—are naturally rich in aggregate deposits and therefore have multiple licensed pits and quarries in close proximity. For example, we visited an area in Cambridge during our audit that had 11 pits located within 2.8 kilometres of one another. The siting of multiple pits and quarries together can have cumulative (or combined) negative impacts on surrounding communities, local roads, and ecosystems (such as a loss of local natural areas) beyond the individual impacts of any one site alone. We found, however, that the Ministry does not have guidelines or processes for staff to consider the cumulative impact of multiple nearby aggregate operations when issuing approvals for new aggregate licences or permits.

British Columbia, by contrast, takes cumulative effects into consideration before approving new aggregate pits and quarries. British Columbia has a framework on cumulative impacts that provincial staff use to assess each new project across the natural resource sector—including aggregate operations—in the context of its combined or additive environmental, social and economic effects.

While the Ministry has not developed a provincial framework for assessing the cumulative impacts of aggregate operations, it has worked on developing two site-specific guidelines:

- In 2010, the Ministry collaborated with the Grand River Conservation Authority and the Ontario Stone, Sand & Gravel Association to develop best practice guidelines for addressing cumulative effects of new below-water aggregate operations in priority areas within the Grand River watershed. However, these guidelines are geographically limited to the cumulative effects of aggregate operations on water quality and quantity in this particular area. Moreover, as they are only best practices and not required as part of the approval considerations, Ministry staff do not take them into consideration when issuing aggregate approvals in this watershed.
- In December 2022, the Ministry formed a working group to develop a framework on cumulative impacts that Ministry staff can use to assess applications for new aggregate pits and quarries on the Saugeen Peninsula (also known as the Bruce Peninsula). As part of this, the Ministry has been working with the Saugeen Ojibway Nation to determine whether aggregate operations are having a cumulative adverse impact on traditional values and treaty rights. At the time of our audit, the Ministry was working on an internal draft report on the status of black bears on the peninsula and how they are affected by various development activities, including aggregates. The Ministry told our Office that this report will inform future discussions on how to consider the cumulative impacts of aggregate development on black bear populations.

A provincial cumulative impacts framework could provide guidance and processes for Ministry staff to consider the additive impacts of an additional aggregate operation within an area (beyond the regular consideration of impacts on an individual site basis) when issuing a licence or permit. Such a framework could provide the Ministry with a fair and defensible approach for working with applicants to incorporate, as needed, more stringent conditions or restrictions in site plans and licences or permits—such as lower daily maximum tonnages to limit truck traffic, reduced extraction depths, or increased dust control or noise mitigation measures—to address the cumulative impacts imposed by a new or expanding operation on the environment and neighbours in an already heavily burdened area.

RECOMMENDATION 14

To minimize the cumulative impacts of aggregate pits and quarries on the environment and nearby communities, we recommend that the Ministry of Natural Resources and Forestry develop a framework to incorporate consideration of cumulative impacts of aggregate operations when making decisions on new or amended approvals.

MINISTRY RESPONSE

The Ministry of Natural Resources and Forestry (Ministry) acknowledges the recommendation and will continue exploring approaches, including the development of a framework, to consider cumulative impacts in decision-making.

The Ministry will continue its work to understand the cumulative impacts of aggregate extraction activities on Aboriginal and Treaty rights in the review of permit and licence applications.

The Ministry also acknowledges that land-use planning conducted by municipalities is an effective way to address the cumulative impacts of various development activities, including aggregates, on the environment and nearby communities and First Nations. The Ministry will continue to encourage

interested parties to participate in municipal planning processes to guide where aggregate resource development may be permitted to occur.

As part of the application process under the *Aggregate Resources Act*, there are technical reports, prepared by qualified professionals, that must support an application. These reports look at potential impacts to the environment and the community. These include planning and land-use considerations, haulage routes and truck traffic, a cultural heritage report, noise assessment, natural environment impact assessment and a hydrogeological report, which includes an impact assessment when the potential for impacts exist.

The Ministry has made regulatory changes under the *Aggregate Resources Act* to strengthen environmental protections through enhanced studies and source water protection, and require additional reporting for site rehabilitation, which help assess cumulative impacts.

4.8.3 Better Ministry Oversight of Self-Filed Amendments Needed

In September 2020, Ontario Regulation 244/97 under the Act was amended to allow applicants to amend their site plans or licences without Ministry approval for six different types of lower-risk changes (such as changing the type of fencing or updating contact information following the transfer of an approval to a new holder) provided that certain eligibility criteria are met and specified conditions are followed. The self-filed amendment process provides an opportunity to increase efficiencies and reduce administrative burdens for both industry and Ministry approvals staff. However, we identified gaps in the Ministry's oversight, which needs to be improved before the self-filed amendment process is further expanded.

Self-filed amendments can be submitted via a designated Ministry email address or the Natural Resources Information Portal. They do not require Ministerial approval, as long as the change is within the list of permitted activities. We found that self-filed amendments

submitted to the Ministry were only periodically monitored by Ministry staff and were not consistently reviewed to ensure they met the permitted list of changes set out in the regulation. We reviewed all self-filed amendments submitted to the Ministry in 2022, and found that 35 (or 48%) of the 73 submissions were not permissible. For example, impermissible self-filed amendments that were submitted included changes to the setback distance (the distance extraction will occur from the licence boundary), alterations to the rehabilitation plan, and a request for a licence surrender. Each of these proposed amendments were not permissible for the self-filed process, and should have undergone staff review and approval. According to the Ministry, it does not take any steps to verify self-filed amendments, and instead relies on the attestations of applicants that their submissions comply with the regulation. As such, the Ministry has neither confirmed whether operators implemented any of their self-filed changes, nor taken steps to prevent them from doing so.

Additionally, we found that another three (or 4%) of the 74 submissions did not contain required information—a completed self-filed amendment form and an updated site plan. This means that Ministry staff were unable to conclude whether the proposed activity qualified as a self-filed amendment. The Ministry internally identified that self-filed amendments should be reviewed to prevent impermissible activities from being submitted as self-filed amendments. However, the Ministry had not yet implemented any such process, and told us it believes the attestation process is sufficient.

The Ministry initiated the self-filed amendments approach in September 2020 in an effort to improve the efficiency of its approvals program. Prior to the regulatory amendment, the Ministry had 292 amendment applications waiting to be processed in June 2020. However, an internal Ministry review in 2022 found that the initial list of six allowable types of self-filed amendments did not yield significant efficiencies.

Ministry staff therefore recommended that additional lower-risk activities be added to the regulation to reduce burden on staff and improve efficiencies for operators. In August 2023, the Ministry changed O. Reg. 244/97 to expand the list of self-filed amendments to include the following five additional site plan changes: import materials for recycling where processing facilities have already been approved; change the location of entrances and exits; add, remove or change the location of above-ground fuel storage tanks; allow portable processing equipment on site; and allow portable concrete or asphalt plants on site for public road authority projects.

RECOMMENDATION 15

To ensure compliance with Ontario Regulation 244/97 under the *Aggregate Resources Act*, we recommend that the Ministry of Natural Resources and Forestry create and implement a system to review all submitted self-filed amendments to ensure the proposed activities are permissible.

MINISTRY RESPONSE

The Ministry of Natural Resources and Forestry (Ministry) acknowledges the recommendation and will explore options to develop and implement a process to audit the submissions and quality of amendments without approvals (self-filed amendments) submitted by the regulated community.

To ensure a consistent approach across all districts with respect to the receipt of amendment without approval submissions, the Ministry will continue to develop and provide training to ensure staff have the required knowledge to perform their duties and initiate appropriate compliance actions and follow up on aggregate licensees and permittees who submit an ineligible or improperly completed amendment without approval form.

4.9 Information Systems and Policies

4.9.1 Ministry's Outdated Information Systems Make It Difficult for Staff to Execute Duties and for Applicants to Track Submissions

The Ministry uses paper records, five different information systems (see **Figure 19**) and Excel spreadsheets to deliver different aspects of the aggregate resources program. The databases are limited in their ability to share information, which makes it challenging for Ministry staff to execute their duties.

The existing Aggregate Licence and Permit System (ALPS), which contains basic information about

individual sites, lacks the ability to track the progress of applications for new licences or permits, amendments, transfers and surrenders. The system is more than 30 years old and does not offer the functionality that the current approvals program requires. Because of the limitations of ALPS, Ministry approvals staff currently rely on four different non-integrated spreadsheets to track the progress of applications.

The Aggregate Site Inspection Application (ASIA) database, which has been in use since 2012, is primarily used by staff at the district level to record inspection reports. It also includes digital site plans. However, it does not record or track the use of other compliance

Figure 19: Ministry of Natural Resources and Forestry Aggregate-Related Information Systems

Prepared by the Office of the Auditor General of Ontario

Information System	Details
Aggregate Licence and Permit System (ALPS) Implemented in 1992	<ul style="list-style-type: none"> Internal database used by Ministry to manage approved licences and permits. Includes: <ul style="list-style-type: none"> contact information of approval holders; site locations; and some compliance activities (e.g., suspended and revoked sites). Ministry can perform queries internally for information on existing and historical sites.
Aggregate Site Inspection Application (ASIA) Implemented in 2012	<ul style="list-style-type: none"> Internal database used by site inspectors in district offices to store compliance and inspection records for aggregate operations. Ministry staff use it to: <ul style="list-style-type: none"> generate inspection reports; generate province-wide inspection summary reports; and store digital site plans. Ministry can filter/prioritize sites for inspection based on risk categories (e.g., extraction depth, berms and setbacks).
Natural Resources Information Portal (NRIP) Implemented in 2021	<ul style="list-style-type: none"> Publicly accessible online application system. Aggregate operators use it to submit compliance assessment reports. The goal is to eventually allow them to: <ul style="list-style-type: none"> submit a new approval application or amend an existing approval; and monitor the status of their submission. Ministry uses Excel spreadsheets to track applications internally, but is working to move this function, and all other functions, to NRIP for internal use.
NICHE Records Management System	<ul style="list-style-type: none"> Used by the Enforcement Branch to manage cases of non-compliance referred to it by documenting: <ul style="list-style-type: none"> occurrences of non-compliance; progress of investigations; and outcomes of prosecutions.
Pits and Quarries Online	<ul style="list-style-type: none"> Publicly accessible online tool that provides information on licensed and permitted pits and quarries, including: <ul style="list-style-type: none"> licensee/permittee name; location; type of operation (i.e., pit or quarry); and maximum allowable annual tonnage.

tools, such as warnings or rehabilitation orders, or the status of compliance.

Furthermore, these databases are not integrated. In fact, the Ministry does not have any centralized database that contains all information about each aggregate pit and quarry, including site plan and approval documentation, as well as compliance and enforcement data. Until recently, aggregate approvals (and all supporting documentation such as site plans) were paper-based and stored at district offices. As of September 2023, the information relating to 26% of active licences and permits has been scanned and digitized. This means, for example, that when approvals staff review applications for an amendment, they must request paper records from district offices and search shared folders for digitized documents, including email correspondence. They must also review ASIA to see an applicant's most recent site plan.

In January 2021, the Ministry made a commitment to issue all approvals, including those for aggregates, through the Natural Resources Information Portal (NRIP), a publicly accessible online application system that was implemented that year. The Ministry started integrating elements of the aggregate approvals process into NRIP in 2021. At the time of our audit, however, aggregate approval holders were able to use NRIP only to submit their annual compliance assessment reports. The Ministry plans to integrate other aggregate program functions, including the information contained in both ALPS and ASIA, into NRIP and aims to complete the integration by 2026/27.

Ideally, Ministry staff and applicants would be able to log into NRIP and view application details and transaction history, and applicants would also be able to submit the documentation required for each approval. Currently, applicants submit the required documentation by email and the only notification they receive is an automatic reply that the documents have been received, with no information provided on next steps or timelines.

RECOMMENDATION 16

To deliver the services of its aggregate program more efficiently, we recommend that the Ministry of Natural Resources and Forestry integrate all existing approval information, as well as compliance information, into the Natural Resources Information Portal in a timely manner.

MINISTRY RESPONSE

The Ministry of Natural Resources and Forestry agrees and is prioritizing the integration of aggregate approval and compliance information in future development of the Natural Resources Information Portal.

4.9.2 Out-of-date Policies Cause Confusion and Delays in the Approvals Process

The Ministry's out-of-date policies and procedures manual has contributed to delays in issuing aggregate approvals, and has left stakeholders confused about the applicable rules.

The Ministry's Aggregate Resources Policies and Procedures Manual (manual), which is posted on the Ministry's website, provides guidance to Ministry staff on how the Act is to be implemented. As well, aggregate operators, members of the public, and other stakeholders rely on this manual—along with information on the Ministry's website—to understand the regulatory framework.

Despite its importance, however, the manual has not been updated as a whole in almost 20 years. In most cases, individual policies and procedures date back to 2006 and do not include the recent regulatory changes made in September 2020, April 2021, and January 2022. Significantly, some of these changes, such as allowing applicants to self-file some types of amendments, are not included in the manual.

Internally, the Ministry has identified that the manual is one of the most important resources applicants use during the application process, but that it

is currently failing to meet applicants' needs because it lacks clear and up-to-date information. This outdated information increases the amount of time that aggregate specialists—the Ministry staff that process approvals—spend addressing applicants' questions during the approvals process. The Ministry is currently updating the manual with an expected completion date of 2025, although the Ministry has noted that this timeline may change as Ministry priorities evolve.

RECOMMENDATION 17

To provide clearer guidance to staff about how to implement the *Aggregate Resources Act*, and to applicants about their obligations during the application process, we recommend that the Ministry of Natural Resources and Forestry update all sections of the *Aggregate Resources Policies and Procedures Manual* by 2025, and release updated sections as completed.

MINISTRY RESPONSE

The Ministry of Natural Resources and Forestry (Ministry) agrees with this recommendation and has identified a number of priority policies to be updated in a phased approach. The first batch of these policies will be released in the near future for public and industry comment and review before finalizing. Other policies have been identified by the Ministry for update in subsequent stages of the manual update. Updated policies will be released once the consultation process is completed. Given the number of policies requiring revision due to program and legislative change, the review and update of the *Policies and Procedures Manual* may extend beyond March 2025.

4.10 Ministry Lacked Performance Measurement Framework for Aggregate Program

We found that the Ministry had not developed a performance measurement framework for its aggregate

program. These frameworks outline processes to collect, analyze and report on a program's performance and whether it is achieving its intended outcomes. Without such a framework, decision-makers and the public cannot determine how effectively the Ministry is managing aggregate resources.

The Treasury Board Secretariat has provided guidance to all ministries emphasizing the importance of developing key performance indicators and targets to track performance, report on progress and drive continuous improvement. For over a decade, the Secretariat has encouraged ministries to develop performance measurement frameworks.

It is a best practice to establish and collect information on performance measures that show whether current actions are working and targets are being met. For Ontario's aggregate resources program, such measures would help inform what corrective actions need to be taken to deliver the program in an efficient and effective manner, while at the same time minimizing the impact of aggregate operations on the environment and nearby communities.

Our audit found that, since the 2019/20 fiscal year, the Ministry has had one key performance indicator that pertains to a service standard of determining, within 20 calendar days of receipt, whether application requirements have been met for aggregate licence applications. Apart from this one key performance indicator, the Ministry had not established a performance measurement framework or any other performance indicators to measure outcomes of the aggregate program as they relate to the purposes of the Act. These could include indicators that measure the effectiveness of the Ministry's regulation of aggregate operations (such as overall compliance rates), the rehabilitation status of excavated land, and the frequency of adverse impacts on the environment.

RECOMMENDATION 18

To assess the effectiveness of its aggregate program at achieving intended objectives, improve public transparency about the impacts of aggregate

operations on the environment and nearby communities, and to drive continuous improvement, we recommend that the Ministry of Natural Resources and Forestry:

- develop a performance measurement framework for its aggregate program, including meaningful, measurable, and outcome-based performance indicators with targets and timelines; and
- regularly report to the public on the status of these performance indicators and targets.

MINISTRY RESPONSE

The Ministry of Natural Resources and Forestry (Ministry) agrees that a performance measurement framework would be helpful to assess and report on the effectiveness of the aggregate program. As a first step, the Ministry is committed to updating our policies and procedures and the information management systems that will improve how we collect and evaluate aggregate program data. As progress is made to implement **Recommendations 16 and 17**, the Ministry will explore opportunities to develop performance measures that include targets, timelines and a mechanism to provide status reports to the public.

Appendix 1: Glossary

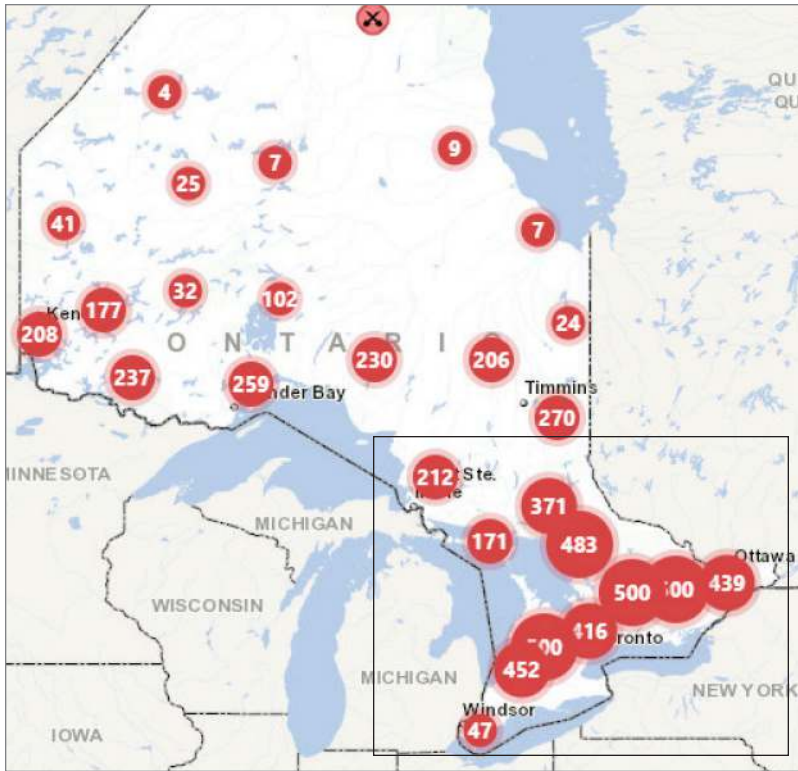
Prepared by the Office of the Auditor General of Ontario

Aggregates	Gravel, sand, limestone, granite, or other rock that is excavated with the purpose of building things such as roads, highways, schools and hospitals, as well as making other products such as toothpaste and glass.
Aggregate approvals	The umbrella term for aggregate licences and aggregate permits.
Aggregate licence	An approval for a pit or quarry issued under the <i>Aggregate Resources Act</i> allowing for the excavation of aggregates on privately owned property. Licences are broken out into either Class A (for removal of more than 20,000 tonnes of aggregates annually) or Class B (for removal of 20,000 tonnes or less of aggregates annually).
Aggregate permit	An approval for a pit or quarry issued under the <i>Aggregate Resources Act</i> allowing for the excavation of aggregates that are Crown property, on land where the surface rights are Crown property, or from land under water.
Aggregate Licence and Permit System	A Ministry database that contains information relating to the management of aggregate extraction, and is used for issuing licences and permits across the province.
Compliance assessment report	An annual report that aggregate operators must submit to the Ministry that assesses their compliance with the <i>Aggregate Resources Act</i> , regulation, their site plan and the conditions of their approval.
Cement	Product made by heating various aggregates, such as limestone, shale, clay and crushed rock, at extremely high temperatures and then grinding the resulting substance to a fine powder. When mixed with water, it creates a paste, which is the primary ingredient to make concrete.
Concrete	Product made by combining aggregates (usually sand and gravel or crushed stone) with a paste made from water and cement. When the cement/water mixture hardens, it binds the aggregates into a rock-like mass. Concrete is the most widely used building material in the world.
Dormant site	A pit or quarry that is still subject to a valid licence or permit under the <i>Aggregate Resources Act</i> (i.e., the approval has not been revoked or surrendered), but where extraction is no longer occurring.
Legacy site	A pit or quarry where operations stopped before the <i>Aggregate Resources Act</i> , which requires a licence or permit, came into effect. These sites were abandoned and left unrehabilitated.
Pit	A location where loose aggregates such as sand or gravel are being or have been excavated. Excavation from pits occurs through digging.
Production report	An annual report that aggregate operators must submit to The Ontario Aggregate Resources Corporation that sets out the quantity and type of aggregate extracted and removed from a site in each month during the previous year. Approval holders that received their approval after April 1, 2021, must also report the amount of recycled aggregate removed.
Progressive rehabilitation	The rehabilitation of disturbed land in phases as extraction continues elsewhere within a site. Progressive rehabilitation is required by the Act, and the phases and order in which they are to be completed must be set out in the site plan. Licence or permit conditions may also outline further requirements.
Quarry	A location where solid aggregates such as limestone or granite are being or have been excavated. Quarries are located at the surface of the land (rather than underground) and are rarely deeper than 30 metres. Excavation from quarries occurs through blasting.
Recycled aggregate	Used cement, concrete or asphalt, or construction or demolition waste, debris or by-products, that has been reclaimed and processed for reuse in other building projects, in place of virgin aggregates. Recycled aggregates are used to make various new construction materials, such as asphalt and concrete for roads and sidewalks.

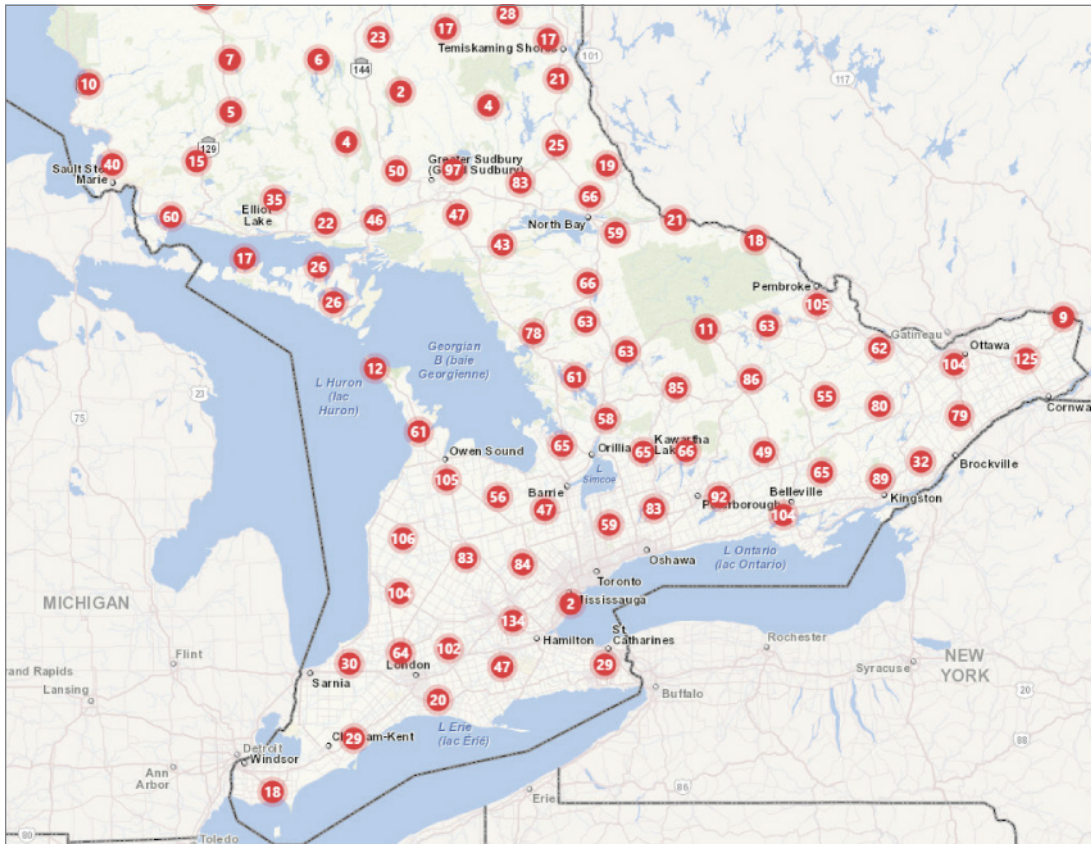
Rehabilitation	Treatment of land from which aggregates have been excavated so that the use or condition of the land is restored to its pre-excavation condition or use, or to a condition compatible with the use of adjacent land.
Reserves	In-ground aggregate resources that can be readily accessed.
Revoked licence or permit	An approval that has been rescinded by the Minister of Natural Resources and Forestry. Under the <i>Aggregate Resources Act</i> the Minister may revoke an approval for various reasons, including: a contravention by the approval holder of the Act, regulation, site plan or condition; or the insolvency of the approval holder.
Royalty	A payment made to the Crown in recognition of the extraction of aggregates owned by the Crown. Under the <i>Aggregate Resources Act</i> , the minimum royalty is set at 50 cents/tonne, and increased annually to account for inflation. The Minister of Natural Resources and Forestry may set a higher rate or may allow exemptions.
Site plan	<p>A legally binding document that contains the applicant's contact information, geographic information for the site, maps, and details relating to:</p> <ul style="list-style-type: none"> • existing site features; • site operations; • rehabilitation plans; and • cross sections of the site. <p>The Ministry of Natural Resources and Forestry has established standards that outline all required information.</p>
Surrendered licence or permit	An approval that has been voluntarily relinquished by an approval holder. The Minister of Natural Resources and Forestry may accept the surrender if satisfied that the approval holder has paid all required annual fees, and has completed final rehabilitation of the site.
The Ontario Aggregate Resources Corporation	A corporation that performs several duties on behalf of the Ministry of Natural Resources and Forestry as outlined in an indenture between itself and the Ministry, including collecting and disbursing aggregate fees, rehabilitating legacy pits and quarries, and collecting and reporting extraction statistics.

Appendix 2: Location and Number of Pits and Quarries in Ontario

Source: Ministry of Natural Resources and Forestry

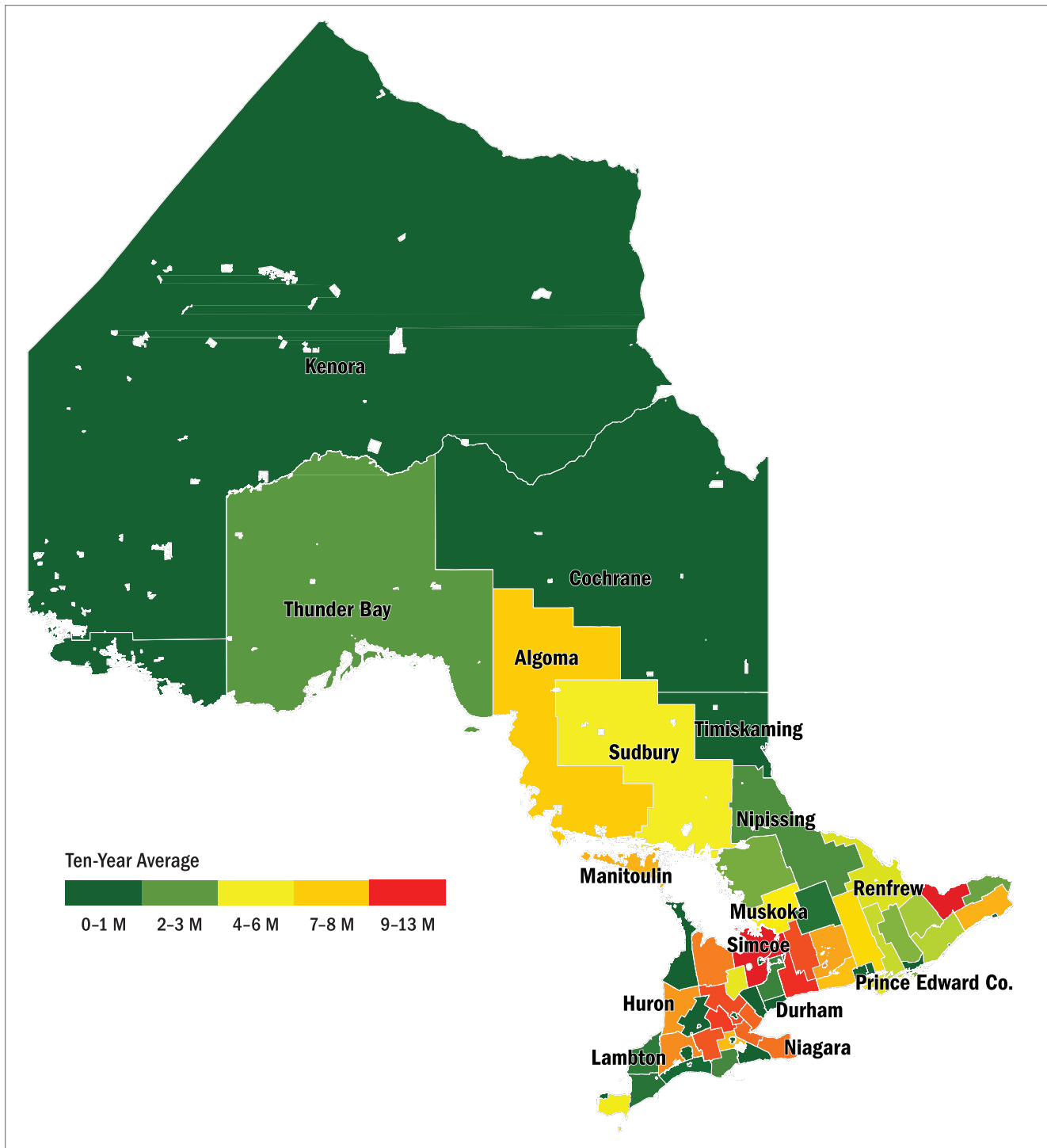


Southern Ontario



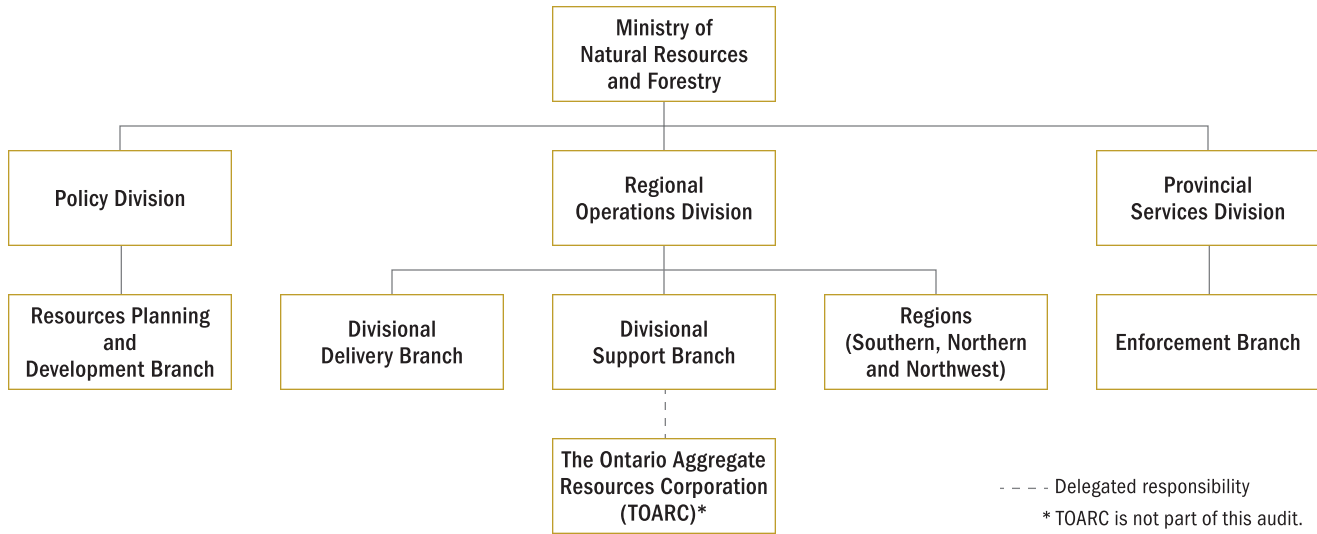
Appendix 3: Ten-Year Average of Annual Extraction by Licensed Operators, by Upper Tier Municipality, 2013-2022 (millions of tonnes)

Source of data: The Ontario Aggregate Resources Corporation



Appendix 4: Entities Involved in the Oversight of Aggregate Resources

Prepared by the Office of the Auditor General of Ontario



Policy Division	Develops policies, programs, regulations and legislation to manage Ontario's natural resources, including aggregates.
Resources Planning and Development Branch	Resources Development Section provides policy analysis, advice, and interpretation related to aggregates management.
Regional Operations Division	Implements policies and delivers programs related to natural resources, including aggregates, across Ontario.
Divisional Delivery Branch	Aggregates Section reviews and approves new aggregate licences and permits, and authorizes changes to existing approvals and surrenders of approvals.
Divisional Support Branch	Provides support for other branches, including data collection, digital services and program co-ordination.
Regions	District offices across the three regions inspect and oversee compliance at licensed and permitted sites, and refer cases of non-compliance to the Enforcement Branch, as necessary.
Provincial Services Division	Oversees a range of province-wide services, including: aviation, forest fire and emergency services; fish and wildlife services; and enforcement.
Enforcement Branch	Investigates cases of non-compliance and pursues charges and convictions.
The Ontario Aggregate Resources Corporation	<ul style="list-style-type: none"> • Acts as trustee of the Aggregate Resources Trust. • Rehabilitates legacy aggregate sites and unrehabilitated sites where the approval has been revoked. • Collects and disburses aggregate fees and royalties. • Collects and publishes statistics on aggregate extraction. • Conducts research and education on aggregates.

Appendix 5: Laws and Land-Use Plans that Provide Additional Direction* for Siting Aggregate Operations

Prepared by the Office of the Auditor General of Ontario

Planning Act (Provincial Policy Statement, 2020)

To establish a legislative framework for provincial land-use planning, with which all municipalities and other approval authorities must comply. The Provincial Policy Statement provides specific policy direction on matters related to land-use planning and development, including the siting of aggregate pits and quarries.

States that aggregate resources are to be:

- identified and protected for long-term use;
- made available as close to market as possible, and that a demonstration of need for aggregates (including any type of supply/demand analysis) shall not be required, regardless of the availability of other local aggregate resources;
- extracted in a manner that minimizes social, economic and environmental impacts; and
- conserved, including through aggregate recycling, where feasible.

Requires progressive and final rehabilitation in order to recognize the interim nature of extraction, allow for subsequent land uses, and mitigate negative impacts.

Greenbelt Act, 2005 (Greenbelt Plan, 2017)

To permanently protect land around the Greater Golden Horseshoe, including to protect against the loss and fragmentation of agricultural land, and give permanent protection to the natural heritage and water resources that sustain ecological and human health.

- Prohibits new aggregate pits and quarries in significant wetlands, significant woodlands, or in the habitat of endangered or threatened species, in the Greenbelt's Natural Heritage System (with exceptions). Sets out enhanced final rehabilitation requirements for pre-existing aggregate operations.
- Sets out a maximum allowable disturbed area limit for new aggregate operations in the Greenbelt's Protected Countryside, and requires pre-existing operations to rehabilitate any disturbed area that exceeds this limit.
- Sets out additional criteria for applications for new aggregate operations in the Greenbelt (e.g., requires applicants to demonstrate how the connectivity between key natural heritage features and key hydrologic features will be maintained).

Niagara Escarpment Planning and Development Act (Niagara Escarpment Plan, 2017)

To provide for the maintenance of the Niagara Escarpment and land in its vicinity as a continuous natural environment, and to ensure only such development occurs as is compatible with that natural environment.

- Prohibits aggregate pits and quarries in 76% of the area covered by the Niagara Escarpment Plan.
- In the two areas where pits and quarries are allowed—the Escarpment Rural Area (23%) and the Mineral Resource Extraction Area (1%)—requires an additional development permit and plan amendment (for operations extracting more than 20,000 tonnes annually) from the Niagara Escarpment Commission.

Oak Ridges Moraine Conservation Act, 2001 (Oak Ridges Moraine Conservation Plan, 2017)

To protect the ecological and hydrological integrity of the Oak Ridges Moraine Area.

- Prohibits new aggregate pits and quarries in 46% of the area covered by the Oak Ridges Moraine Conservation Plan (Natural Core Areas and Settlement Areas).
- Allows aggregate extraction in 24% of the area (the Natural Linkage Areas), but not below the water table.
- Allows aggregate extraction below the water table in the remaining 30% of the area (Countryside Areas).
- Sets out strict rehabilitation requirements for the allowed aggregate operations.

Places to Grow Act, 2005 (A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2020)

To support the development of complete communities with access to transit, employment, and a variety of housing.

- Establishes policies restricting the location of new and expanded aggregate operations, and policies affecting the rehabilitation of aggregate sites within the Greater Golden Horseshoe.

Provincial Parks and Conservation Reserves Act, 2006

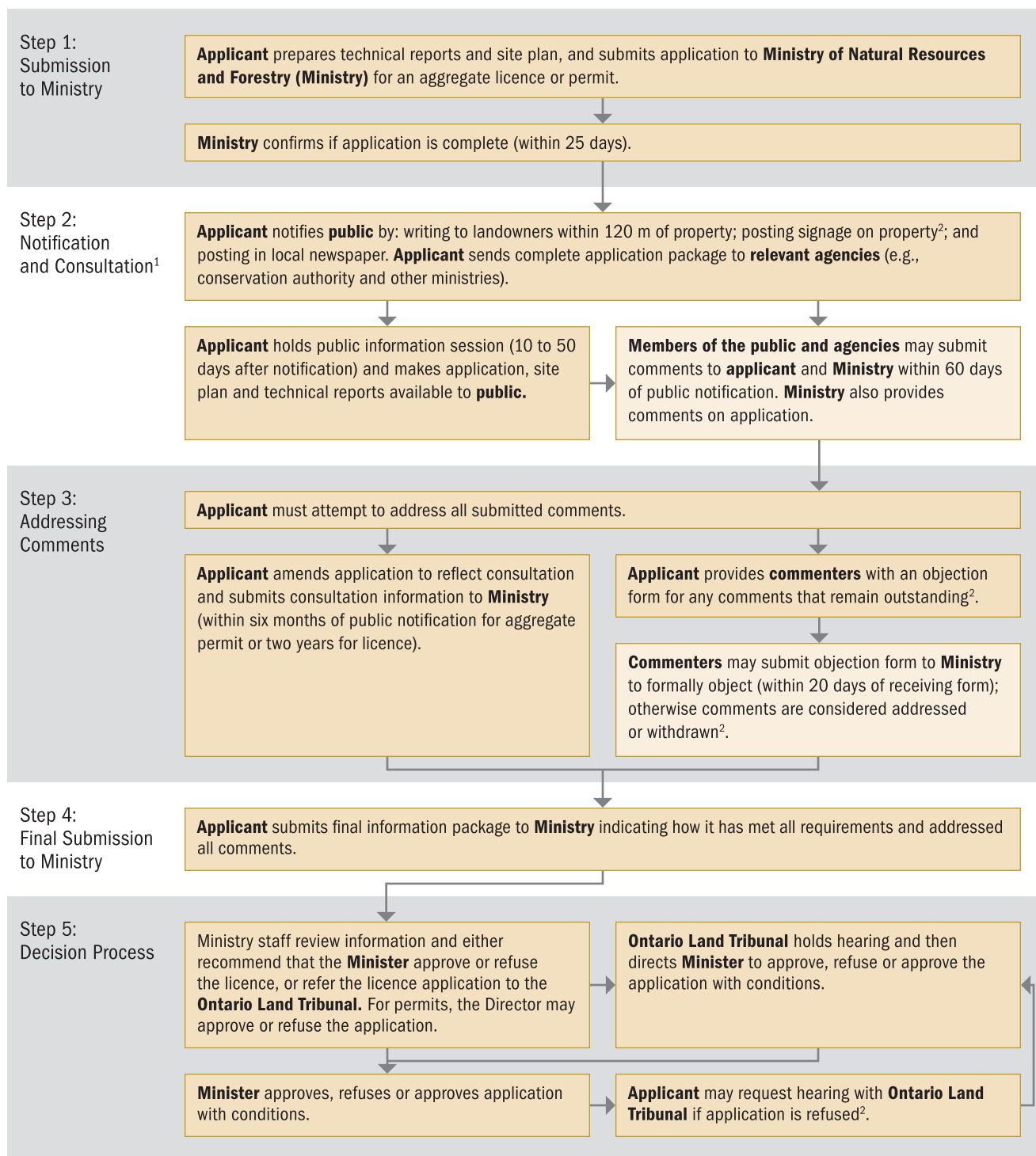
To permanently protect a system of provincial parks and conservation reserves.

- Prohibits aggregate extraction in any provincial park or conservation reserve.

* Prohibitions and restrictions in legislation (and supporting land-use plans) that limit the siting of aggregate operations are implemented through the adoption of municipal official plans.

Appendix 6: Process to Obtain a New Aggregate Licence or Permit

Prepared by the Office of the Auditor General of Ontario



1. As licences and permits are prescribed instruments under the *Environmental Bill of Rights, 1993*, the Ministry is also required to conduct a separate consultation process pursuant to that law.

2. These steps apply to aggregate licences only (not to aggregate permits).

Appendix 7: Site Plan and Technical Report Requirements for Applications for New or Amended Aggregate Approvals

Prepared by the Office of the Auditor General of Ontario, based on the requirements set out in the Ministry of Natural Resources and Forestry's Aggregate Resources of Ontario Standards

Applications for New Approvals

Site plan: Gives background information about existing site features prior to extraction, operational information about the proposed site, and information about how a site is to be extracted (such as phasing, depth and types of equipment). It is the primary instrument used for administering the *Aggregate Resources Act*. Must include:

- mitigation measures to be taken, where potential impacts have been identified;
- monitoring programs to be followed, where recommended by technical reports or to address concerns raised;
- areas to be avoided and protected;
- map of the proposed location; and
- proposed progressive and final rehabilitation plans.

Summary statement: Depending on the application type, the summary statement may include background and operational information, rehabilitation plans, and hauling routes to/from the site.

Technical reports and information: Gives technical and operational information to help assess the environmental and social impacts on the proposed site area. Depending on the proposed application, may require technical reports on the following:

- maximum predicted water table;
- natural environment (including impacts on habitat of endangered or threatened species);
- cultural heritage;
- agricultural impact assessment;
- water report (for extraction below the water table);
- noise assessment; and/or
- blast design.

Applications for Prescribed Significant Amendments to Approvals (see Appendix 9)

Technical reports and information: Gives technical information to help assess the environmental and social impacts of the proposed significant amendment.

- Applicants seeking to lower the depth of extraction below the water table must submit:
 - a water assessment;
 - a natural environment assessment;
 - planning and land use considerations; and
 - source water considerations.
- Applicants seeking to expand into an adjacent road allowance must submit:
 - a water assessment (if extracting below the water table);
 - a natural environment assessment;
 - a cultural heritage assessment;
 - an agricultural assessment;
 - planning and land-use considerations; and
 - source water considerations.

Appendix 8: Ministry of the Environment, Conservation and Parks Approvals that May be Required for Aggregate Operations

Prepared by the Office of the Auditor General of Ontario

Endangered Species Act, 2007

To identify and protect species at risk (e.g., endangered and threatened species) and their habitats, and promote the recovery of species that are at risk.

- Aggregate operators must meet conditions to mitigate the impacts of pits and quarries on endangered and threatened species (e.g., prepare and implement a mitigation plan; prepare and provide an annual report on the operation's effects on identified species at risk).
- For certain endangered species (named in regulation under the Act), the Environment Ministry may require a permit if an aggregate project or activity is expected to have an impact on the species or its habitat.

Environmental Protection Act

To provide for the protection and conservation of the natural environment.

- Aggregate operators must obtain an Environmental Compliance Approval for any air and noise emissions.
- Establishes guidelines for excess soil brought into aggregate operations.

Ontario Water Resources Act

To provide for the conservation, protection and management of Ontario's waters and for their efficient and sustainable use.

- Aggregate operators wishing to take or remove more than 50,000 litres of water per day (e.g., to pump water out of a quarry) must obtain a Permit to Take Water.
- Aggregate operators must obtain an Environmental Compliance Approval if discharging any wastewater back into the environment.

Appendix 9: Types of Aggregate Approval Amendments

Prepared by the Office of the Auditor General of Ontario

Type of Amendment	Description	Examples	Amendment Process
Prescribed significant amendments	Two specific types of major changes as set out in the <i>Aggregate Resources Act</i> .	<ul style="list-style-type: none"> Lowering the extraction from above to below the water table. Expanding a licence boundary into an adjacent road allowance. 	<ul style="list-style-type: none"> Applicants must follow the same application process as for new approvals (see Appendix 6). Applicants must submit additional technical reports (see Appendix 7).
Other significant amendments	Major changes to a site plan or approval document that would significantly alter the operation or rehabilitation of a site, other than the two prescribed significant amendments.	<ul style="list-style-type: none"> A change in maximum annual tonnage. A significant change to the progressive or final rehabilitation plans. A change that will increase potential negative impacts to natural heritage features. 	<ul style="list-style-type: none"> Approval from the Ministry is required. Applicants must first notify and consult with other ministries, agencies and municipalities that have a direct interest in the proposed change. Must also notify neighbouring landowners if they are potentially affected by the proposed change. Technical reports may need to be submitted to support proposed changes.
Non-significant amendments	Changes to a site plan or approval document that would not significantly alter the operation or rehabilitation of the site.	<ul style="list-style-type: none"> Changes to location of gates and fencing. Changes to final slopes or grading during rehabilitation. 	<ul style="list-style-type: none"> Ministry approval is required. Notification and consultation procedures are not required (however, the Ministry may require notification and consultation if it determines the change is significant).
Self-filed amendments	Small or routine types of changes to a site plan only (as set out in the regulation).	<ul style="list-style-type: none"> Updating the name and contact information of an approval holder following the transfer of an approval. Changing the type of fencing. 	<ul style="list-style-type: none"> Does not require review or approval by the Ministry, provided specific conditions are met (e.g., annual fees are up to date). Approval holder must provide a copy of the amended site plan to the Ministry.

Appendix 10: Compliance and Enforcement Options

Source of data: Ministry of Natural Resources and Forestry's Aggregate Compliance Handbook

	Description/Features	Issued By	Best Used For
Warning	<ul style="list-style-type: none"> More informal process; can be written or verbal 	Aggregate inspector	<ul style="list-style-type: none"> Very minor infractions (e.g., minor over-tonnage) First-time offence
Inspection report	<ul style="list-style-type: none"> Issued after a site inspection Lists non-compliance issues identified by inspector, with remedial action dates 	Aggregate inspector	<ul style="list-style-type: none"> Minor violations No immediate need to cease activities
Rehabilitation order	<ul style="list-style-type: none"> Outlines specific rehabilitation work to be done within specified time frame 	Aggregate inspector	<ul style="list-style-type: none"> Where progressive or final rehabilitation has not been performed in accordance with site plan
Inspector's order for compliance	<ul style="list-style-type: none"> Written direction ordering an operator to rectify a violation within specified time frame, or to stop extraction from an illegal site and require rehabilitation 	Aggregate inspector	<ul style="list-style-type: none"> Illegal operations Moderate violations, or violations that have not been rectified following a warning or inspection report
Notice of suspension	<ul style="list-style-type: none"> Requires operator to stop operations, effective immediately Creates strong incentive to correct a violation 	Aggregate inspector	<ul style="list-style-type: none"> Any serious violation where there is an immediate need to stop the activity or obtain compliance on site
Charge	<ul style="list-style-type: none"> Charges for minor offences can be in the form of a ticket with a fine of up to \$750 Charges for more significant offences can result in a court prosecution and, if found guilty, a fine of up to \$1,000,000 plus \$100,000 for each day the offence occurs or continues Court prosecutions can also result in a court order to rectify a violation 	Conservation officer	<ul style="list-style-type: none"> Illegal operations When there has been non-compliance with previous notices or orders Serious violations that warrant "an overall message to the industry"
Notice of revocation	<ul style="list-style-type: none"> Order that revokes a licence or permit Provides a final resolution 	Minister (licences) or District manager (permits)	<ul style="list-style-type: none"> When pit or quarry has been abandoned or owner/operator declares bankruptcy Violations where past charges and enforcement tools have had no effect When rehabilitation is not the primary concern

Appendix 11: Audit Criteria

Prepared by the Office of the Auditor General of Ontario

1. The Ministry of Natural Resources and Forestry (Ministry) reviews applications for new and amended aggregate approvals and makes approval decisions in an efficient and effective manner and in accordance with the requirements and purposes of the *Aggregate Resources Act*, regulation, standards and policies.
2. The Ministry's operating requirements are sufficient to minimize the local impacts of aggregate operations on surrounding communities and the environment.
3. The Ministry has effective inspection and enforcement processes in place to ensure compliance by aggregate operators with the *Aggregate Resources Act*, and relevant regulations, policies, permits and licences.
4. The Ministry has timely, complete and accurate information about Ontario's aggregate resources to inform decision-making related to managing aggregate resources sustainably. The Ministry publicly reports on such information.
5. The Ministry has processes to ensure that The Ontario Aggregate Resources Corporation complies with, and performs, all responsibilities in an effective and efficient manner as outlined in the Act, the regulation, the Indenture Agreement and its Memorandum of Understanding.
6. Through its own operations and oversight of The Ontario Aggregate Resources Corporation, the Ministry ensures that land from which aggregates have been excavated is effectively restored to its former use or condition, or is changed to another use or condition that is or will be compatible with the use of adjacent land.
7. The Ministry encourages the environmentally and socially responsible production and use of recycled aggregate.
8. The Ministry establishes meaningful performance targets related to the delivery and effectiveness of its aggregate resource program, and measures and publicly reports on progress toward targets.



Office of the Auditor General of Ontario

20 Dundas Street West, Suite 1530
Toronto, Ontario
M5G 2C2
www.auditor.on.ca