Aggregates in Ontario
Presentation to the Standing Committee on General Government –
Aggregate Resources Act Review Team

May 7, 2012
Ministry of Natural Resources
What are Aggregates?

- Sand, gravel, clay, earth and bedrock that underlie our natural landscape.
- Does not include:
  - Underground excavations;
  - Metallic ores (e.g. gold, copper); and
  - Materials excluded from the definition of in the Act (e.g. graphite, gypsum).
Aggregates are a major component in infrastructure development…

- Roads and highways - major component in concrete and asphalt, 60% of aggregates used in road infrastructure.
- Buildings from homes to hospitals - concrete, bricks, glass.
- Airports, subway tunnels, sidewalks, dams and sewers.
- Government (provincial and municipal) is largest consumer (>50%).
- Aggregates provide the basis of a $45 billion construction industry that employs over 245,000 people in infrastructure development and renewal (and aggregate industry employs 35,000 people directly or indirectly)
Aggregates – Where do we find them?

Stone from bedrock deposits (e.g. limestone) – extraction sites called “quarries” (may involve dewatering/blasting)

Sand & gravel from glacial deposits – extraction sites called “pits” (generally no dewatering/no blasting)

Central Ontario map, for illustrative purposes (aggregates found throughout the Province)
Limitations on aggregate supply

- Delivered cost of product is affected by distance to market - aggregates are heavy and bulky, moving them long distances makes them more expensive.
- Restrictions on land use may affect availability
- Quality varies, depending on the deposit aggregates are extracted from
- Some aggregates may not be suitable for all purposes.
Policy framework for aggregates

- Ontario’s *Planning Act* and *Aggregate Resources Act* provide overarching legislative framework for managing aggregate resources.

- Other legislation influences aggregate extraction operations, e.g. *Ontario Water Resources Act, Environmental Protection Act, Niagara Escarpment Planning and Development Act, Endangered Species Act, federal Fisheries Act*.

Ministries
- MNR – Extraction approval/site regulation
- MNDM - Resource identification
- MOE – Environmental protection (water, air, land)
- MMAH – Land use planning
- MTO – Aggregate specification standards, consumer, extraction approval/site regulation MTO sites
- MOI – Consumer

Others
- Municipalities
- Aggregates Industry
- Niagara Escarpment Commission
Modules

1. Aggregate Resources Act (including operations and rehabilitation)
2. Fees / Royalties
3. Planning for Aggregates (siting, aggregate resource development and protection)
4. Recycling of Aggregates
5. State of the Aggregate Resource in Ontario Study (SAROS)
6. On the Horizon - new developments
Module 1:
Aggregate Resources Act,
including operations and rehabilitation
Aggregate Resources Act (ARA)

- Provides for the management of aggregate resources in Ontario
- Controls and regulates aggregate operations on Crown and private lands
- Requires rehabilitation of lands from which aggregate has been excavated
- Minimizes adverse impact on the environment with respect to aggregate operations
- Establishes the Aggregate Resources Trust to collect/manage fees, manage abandoned sites, etc.
- Minister of Natural Resources is responsible for administering this Act and its regulations
- Aggregate Resources Act first came into place in 1990 and was last significantly updated in 1997.
Where does ARA apply?

- All aggregate and topsoil that is the property of the Crown (“Aggregate Permit” is used to authorize extraction)

- All land under water, i.e. natural waterbodies (Aggregate permit)

- Designated private land (“Aggregate Licence” is used to authorize extraction), designation via regulation (see next slide)
Areas Designated Under the ARA

Legend
- MNR Districts
- Areas Designated Prior to 2007
- Areas Designated in 2007

Produced by:
Lands and Non-Renewable Resources Section
Natural Heritage, Lands and Protected Spaces Branch
Ministry of Natural Resources
April 2011
Aggregate Resources Act (ARA)

**Aggregate Resources Act**
Establishes provincial approval and regulatory requirements for the operation of pits and quarries.

**Regulation**
Provides reporting deadlines; specifies annual fees; specifies where private land is subject to Act; requires compliance with Provincial Standards, etc.

**Provincial Standards**
Provides application requirements for new sites (consultation requirements/timeframes, environmental studies, site plan content, standard approval conditions).

**Policies & Procedures**
## ARA Instruments

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Total Issued</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Licences</strong></td>
<td></td>
</tr>
<tr>
<td>Class A: &gt;20,000 tonnes / year</td>
<td>~3,720 current</td>
</tr>
<tr>
<td>Class B: &lt;20,000 tonnes / year</td>
<td>~45 new / year</td>
</tr>
<tr>
<td><strong>Wayside Permits</strong></td>
<td></td>
</tr>
<tr>
<td>Temporary approval for municipal road projects</td>
<td>~4 current</td>
</tr>
<tr>
<td>Temporary approval for Ministry of Transportation road projects</td>
<td>&lt;2 / year</td>
</tr>
<tr>
<td><strong>Aggregate Permits</strong></td>
<td></td>
</tr>
<tr>
<td>Aggregate permits</td>
<td>~2,230 current</td>
</tr>
<tr>
<td>~50 new / year</td>
<td></td>
</tr>
<tr>
<td>Ministry of Transportation Aggregate Permits</td>
<td>~600 current</td>
</tr>
<tr>
<td>~20 new / year</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>~6,550</td>
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</tbody>
</table>
Licence Application Process

- Process follows a set of legal standards that are prescribed by regulation under ARA regarding:
  - Site Plan
  - Reports
  - Prescribed Conditions
  - Notification & Consultation
  - Operational Standards
  - Compliance Reporting Standards

- Process is **proponent driven**, i.e. the stages and requirements are set out in detail, and it is the applicant’s responsibility to follow them (MNR ensures compliance with process).
Notification and Consultation Standards

For Private Land
Once application deemed complete by MNR, proponent initiates a 45 day objection period:
• Sign posting on site/ newspaper ad re: application and public information session
• Written notice to landowners within 120 metres, and circulation to agencies and stakeholders
• Objections must be received by proponent/MNR
• Environmental Registry posting (done by MNR)

Once 45 day notification/consultation period completed
• Proponent must attempt to resolve objections within 2 years; Proponent must submit final package to MNR, which would include how they attempted to resolve objections
• MNR may refer to Ontario Municipal Board for a hearing (if outstanding objections) or may make decision if no objections.
• Ontario Municipal Board will host hearings regarding ARA applications, often jointly with Planning matters – and will make a decision (MNR Minister will be directed to issue or refuse licence).

For Crown Land
• Class Environmental Assessment screening applies (no Environmental Registry posting)
• Window to submit a final package is 6 months which can be extended (vs. 2 years for a private land licence which can not be extended)
• No appeal provision re: issuance decision
Rehabilitation

- **Rehabilitation** of an aggregate site means to restore the land to its former use or change it to another use compatible with surrounding land.

- **Progressive rehabilitation** means to rehabilitate parts of the site where aggregate has been removed, while aggregate is still being excavated in other parts of site.

- Rehabilitation is approved when licence/permit is issued, and may be modified with site plan amendments.
Rehabilitation Requirements

- **Site plan** outlines specific rehabilitation requirements, which are legally binding

- Provincial Standards impose minimum standards, for example:
  - sloping, alleviate compaction, ensure adequate drainage and vegetation, erosion control

- Specialty crop lands or Class 1 to 3 prime agricultural lands must be returned to same average soil quality, in accordance with Provincial Policy Statement

- May include post-rehabilitation monitoring to verify that productivity and soil capability standards have been met
Compliance tools available

- For non-compliance, MNR has a variety of enforcement tools including
  - Warnings;
  - Inspection report;
  - Suspension of the Licence or Permit;
  - Rehabilitation Orders;
  - Inspector’s Order for Compliance;
  - Charges; and
  - Revocation of the Licence or Permit

- Aggregate Resources Act provides penalties (between $500 and $30,000/day), e.g. non-compliance with orders, licence/permit, and operating without authorization

- MNR recently developed and implemented a renewed, risk-based approach to compliance. Part of this effort will be to encourage education and outreach to operators.
Module 2:
Fees / Royalties
Overview of fees

- **Aggregate Resources Act** provides for fees for different authorizations.

- Fees collected under the *Aggregate Resources Act* were increased in 2007, generally doubling fees.

- Fee structure represented a balance that provides revenue to municipalities while encouraging economic growth.

<table>
<thead>
<tr>
<th>Disbursement in 2010</th>
<th>($ Million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local municipalities</td>
<td>8.7</td>
</tr>
<tr>
<td>Counties and Regions</td>
<td>2.2</td>
</tr>
<tr>
<td>Management of Abandoned Aggregate Properties (MAAP) program</td>
<td>0.7</td>
</tr>
<tr>
<td>Province (from licence fees)</td>
<td>5.0</td>
</tr>
<tr>
<td>Province (royalties &amp; permit fees)</td>
<td>1.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>18.5</strong></td>
</tr>
</tbody>
</table>
## Fees

### Fees established in Regulation 244/97

<table>
<thead>
<tr>
<th>Fee</th>
<th>Class A Licence</th>
<th>Class B Licence</th>
<th>Wayside Permit</th>
<th>Aggregate Permit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Fee</td>
<td>11.5¢/tonne or $400*</td>
<td>11.5¢/tonne or $200*</td>
<td>11.5¢/tonne or $400*</td>
<td>$200</td>
</tr>
<tr>
<td>Application Fee</td>
<td>$1,000</td>
<td>$500</td>
<td>$400</td>
<td>$500</td>
</tr>
<tr>
<td>Transfer Fee</td>
<td>$500</td>
<td>$300</td>
<td>N/A</td>
<td>$300</td>
</tr>
<tr>
<td>Major Site Plan Amendment Fee</td>
<td>$500</td>
<td>$200</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Crown Royalties</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>min. 50¢/tonne (unless exempted)</td>
</tr>
</tbody>
</table>

* Licence and Wayside Permit fees are calculated at the rate per tonne or the minimum fee, whichever is greater.*
Current Licence Fee Distribution (private land)

Licence Fee (11.5 cents/tonne)

- Crown – Consolidated Revenue (3.5 cents)
- MAAP for rehabilitation and research (0.5 cents)
- County or Regional Municipality (1.5 cents)
- Local Municipality (6 cents)
Production Statistics (2010)

<table>
<thead>
<tr>
<th>Production from Aggregate Sites (tonnes/year)</th>
<th># of Aggregate Operations (approximate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 100,000</td>
<td>5,515</td>
</tr>
<tr>
<td>100,000 – 250,000</td>
<td>182</td>
</tr>
<tr>
<td>250,001 – 500,000</td>
<td>83</td>
</tr>
<tr>
<td>500,001 – 1,000,000</td>
<td>47</td>
</tr>
<tr>
<td>&gt; 1,000,000</td>
<td>24</td>
</tr>
<tr>
<td><strong>Total (not including MTO permits)</strong></td>
<td><strong>5,851</strong></td>
</tr>
</tbody>
</table>

* Totals include aggregate licences, permits and wayside permits
Aggregate Resources Trust

- Aggregate Resources Trust is established under the ARA, and is responsible for: invoicing, collecting and dispersing fees and royalties, rehabilitation of abandoned pits and quarries and revoked sites, research and such other matters as specified by Minister (e.g. education).
- “Abandoned” means that the pit or quarry was never authorized under ARA (after 1989); while “revoked” is when an approval has been issued and then cancelled for non-compliance reasons.
- Where licences/permits revoked by MNR, Trust can be used to rehabilitate - any amount spent on rehabilitation is a debt to Trust (collected from licensee/permittee where feasible)
- The Ontario Aggregate Resources Corporation (TOARC) acts as trustee for the Trust.

The Ontario Aggregate Resources Corporation (TOARC)

- TOARC is a private corporation (Trustee) that is funded through investment earnings on initial fund (Aggregate Resources Trust)
- Ontario Stone, Sand & Gravel Association (OSSGA) is TOARC’s single shareholder
- Manage the abandoned pits and quarry fund through the Management of Abandoned Aggregate Properties (MAAP) Program (See next slide)
Management of Abandoned Aggregate Properties (MAAP) Program

• MAAP Program is funded through a portion of annual licence fee (0.5 cents per tonne)
• Pit or quarry must be abandoned to qualify for the program
• Rehabilitation provided at no cost to the landowner, however landowner must consent to rehabilitate lands and authorize entry
• From 1992 to 2010, more than $6.3 million was spent on rehabilitating about 540 hectares of land
Module 3:
Planning for Aggregates -
siting, aggregate resource development
and protection
Planning Framework (Private Land)

**PLANNING ACT**
Sets out the ground rules for land use planning in Ontario and describes how land uses may be controlled, and who may control them.

**Provincial Policy Statement (PPS)**
*Planning decisions must be consistent with PPS*
Includes policies for the protection and availability of aggregate resources (applied in conjunction with all other policies) for consideration in land use planning decisions.

**Official Plan**
Municipality's general policies for future land use.

**Zoning**
Puts Official Plan into effect, contain specific requirements that are legally enforceable.
Provincial Policy Statement (PPS) - Aggregate Policies

- PPS provides policy direction on matters of “provincial interest” related to land use planning and development
- Aggregates are considered a provincial interest
- PPS provides for development while also protecting resources, health and safety and environment, and ensuring wise use and management of resources over long term.
- Key policies related to aggregates within PPS are:
  - Official Plan policies should allow for establishment of new operations and continued use of existing operations
  - As much of the aggregate resources shall be protected (as realistically possible) close to markets
  - Mineral aggregate operations (licenced operations) require appropriate zoning
  - Rehabilitation is required, ensure compatibility of land uses, and also provides direction for extraction in prime agricultural areas
  - Conservation of aggregates shall be promoted (i.e. recovering and recycling, etc)
- Municipalities rely on Aggregate Resources Inventory Papers, or ARIP's, produced by Ministry of Northern Development and Mines (MNNDM). MNNDM uses criteria to determine high potential areas (e.g. quality of material, how much soil on top of bedrock resource, etc).
Municipal Involvement

- Planning and Aggregate Resources Act approvals are often sought concurrently, as Official Plan and zoning approvals are mandatory before a licence can be issued. One can start independent of the other, however hearings are normally heard concurrently at Ontario Municipal Board (OMB).
- Comments on new applications (and amendments):
  - Regarding zoning (location)
  - Other matters that may impact the municipality (hours of operations, haul routes, etc.)
- Municipal zoning does not apply to Crown land (but aggregate permit applications are submitted to municipalities for comments)
Siting Considerations
(for aggregate sites)

- Quality/quantity of aggregate material
- Compliance with all relevant PPS policies
- Constraining factors, such as Provincially Significant Wetlands, Greenbelt Plan, may prohibit or limit ability to extract.
- Size of available lands (to make it viable)
- Ownership of lands (lease or freehold)
- Proximity to transportation routes and markets

Note: State of the Aggregate Resource in Ontario Study (SAROS) indicated that 93% of the high quality bedrock resource was constrained to some degree by other land uses
Hypothetical example illustrating possible constraints on aggregate availability
Aggregate Supply

Majority of Ontario’s aggregate production takes place in southern Ontario, where demand is highest.

<table>
<thead>
<tr>
<th>Top producing municipalities</th>
<th>2010 Production (million tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Ottawa</td>
<td>12.7</td>
</tr>
<tr>
<td>City of Hamilton</td>
<td>5.3</td>
</tr>
<tr>
<td>Municipality of Clarington</td>
<td>4.9</td>
</tr>
<tr>
<td>City of Kawartha Lakes</td>
<td>4.6</td>
</tr>
<tr>
<td>Town of Caledon</td>
<td>3.9</td>
</tr>
<tr>
<td>Township of N. Dumfries</td>
<td>3.8</td>
</tr>
<tr>
<td>Town of Milton</td>
<td>3.7</td>
</tr>
<tr>
<td>Puslinch Township</td>
<td>3.6</td>
</tr>
<tr>
<td>Township of Uxbridge</td>
<td>3.4</td>
</tr>
<tr>
<td>Township of Zorra</td>
<td>3.3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>49.2</strong></td>
</tr>
</tbody>
</table>
Module 4: Recycling of Aggregates
Recycling aggregates

- In 2007, about 7% of the aggregate used in Ontario was estimated to come from recycled sources (e.g. concrete, asphalt).
- MTO has been using recycled aggregates since the mid-1970s to build Ontario’s roads.
- Still overcoming perceptions regarding quality of recycled materials by some consumers.
- MNR encourages recycling:
  - allows recycling activities within aggregate sites subject to municipal by-laws.
Module 5:
State of the Aggregate Resource in Ontario Study (SAROS)
State of the Aggregate Resource in Ontario Study (SAROS)

- SAROS Goals to:
  - Gain better understanding of aggregate resources
  - Gather current information (previous study completed in 1992 – close to 20 years ago)
  - Gather current science and review practices from other jurisdictions
  - Provide data to inform decision makers on policy and management

- Six papers prepared by six sector experts:
  - Paper 1: Aggregate Consumption and Demand
  - Paper 2: Future Aggregate Availability and Alternatives Analysis
  - Paper 3: The Value of Aggregates
  - Paper 4: Recycling and Reuse
  - Paper 5: Aggregate Reserves in Existing Operations
  - Paper 6: Rehabilitation

- 1400 page study released July 2010.

- MNR established an Aggregate Resource Advisory Committee to provide overall guidance and review of the study, and to submit recommendations and advice to government (recommendations were released publicly July 2010)
SAROS key findings

- **Demand:** Ontario’s consumption of aggregates will average about 186 million tonnes per year over the next 20 years, which is 13% higher than the level of the past 20 years. 184M tonnes consumed in 2007.

- **Availability:** up to 93% of bedrock resource may be constrained with environmental, agricultural or social considerations (for southern Ontario). Close to market policies most cost effective and greenhouse gases (GHG) efficient; alternative transportation produces at least 2 times more GHG emissions and doubles costs.

- **Value** – Aggregates contribute $3.2 Billion to Ontario’s economy, 18,000 direct jobs, and governments buy ~60% of all aggregates produced.

- **Recycling:** In the last 20 years, use of recycled material increased from 6 million tonnes per year to 13 million tonnes (7% of consumption). Asphalt and concrete well recycled. Identified a lack of a methodology or system to effectively track recycled materials.

- **Reserves:** total estimate of high quality bedrock reserves (currently licenced) in study area is approximately 1.47 billion tonnes. Need to maximize high quality reserves in high specification uses.

- **Rehabilitation:** generally occurring on sites in Ontario, and includes a wide range of land uses (i.e. agriculture, open space, natural heritage); need for more, better and more timely rehabilitation.
SAROS: Paper 1 – Consumption & Demand

- Last 20 years, Ontario consumed over 3 billion tonnes, averaging about 164 million tonnes/year
- GTA consumes ~1/3 of all aggregates used
- Consumption has slightly declined over last 20 years per capita, (presently 14 tonnes/person/year) - trend expected to continue as population increases
- Ontario expected to experience strong growth over next 20 years
- Consumption will rise to ~186 million tonnes/year over next 20 years (or 13% higher than last 20 years)
SAROS: Paper 2 – Future Availability and Alternatives

- Analysis of planning, environmental and agricultural constraints for southern Ontario
- 20 constraints applied (e.g. significant woodlands, Prime Agricultural Land, Provincial Significant Wetlands (PSW’s))
- 93% of bedrock resource constrained, to some extent, by other land uses
SAROS: Paper 3 – Value of Aggregates

- Substantial positive economic impact from extraction and secondary use ($3.2 billion Ontario GDP, ~ 35,000 jobs)
- Public survey revealed:
  - Balance social and environmental costs with positive effects of infrastructure
  - Lack of public awareness/knowledge of industry
- Study of recent licences revealed:
  - Loss of agricultural lands to extraction, being replaced by natural features through rehabilitation
  - Aggregate use provides environmental benefits (e.g. maintain biodiversity, landscape restoration/rehabilitation, water purification)
Use of recycled material increased from 6 to 13 million tonnes per year (about 7% of consumption)

Primary recycled materials (e.g. concrete & asphalt) nearly entirely consumed

Need for better reporting/tracking of recycled aggregate

Barriers to using recycled material include lack of experience, unfavourable past experience, desired use of high-performance materials (do not allow recycled material)
• Limestone and dolostone in existing operations (sample of 97 sites in south-central Ontario)
• 1.47 billion tonnes high quality reserves
• Only 317 million tonnes high quality <75km from GTA
• Replacement reserves has not kept pace with consumption in the GTA resulting in a 2.5:1 (depletion to replacement ratio) for almost 20 years (1991 to 2009 period)
• Need to maximize high quality reserves in high specification uses (e.g. concrete, asphalt)
SAROS: Paper 6 - Rehabilitation

- Existing policies/legislation generally well suited to guiding rehabilitation
- Generally occurring on sites, but progressive rehabilitation is slow
- Final rehabilitation generally well integrated into surrounding landscape
- Rehabilitation can contribute to healthy communities
- Opportunities for improved documentation and public outreach/education
Module 6: On the Horizon - New developments
Aggregate Recycling

- Industry groups that produce, recycle and consume aggregate materials in Ontario have come together

- **Aggregate Recycling Ontario** was established in 2011 to expand the opportunities for recycling aggregates

- Initiated by the Ontario Stone, Sand & Gravel Association (OSSGA) and the Toronto and Area Road Builders Association. Members include 16 recycling companies and 7 associations

- Workshop (December 2011) hosted with municipalities, stakeholders, industry; Municipal Survey Results presented identified barriers/opportunities

- Resources available on Aggregate Recycling Ontario website:
  - Best Practices Guide for Recycling Aggregate
  - Recycling Facilities in Ontario
  - ABCs of Recycled Aggregate
  - Urban Mining Using Recycled Aggregates
  - Aggregate Recycling Ontario
Rehabilitation

• Ontario Stone, Sand & Gravel Association (OSSGA) recently studied rehabilitation on former licenced aggregate sites in Ontario [results of that study are pending]
  • Study focused on southern and eastern Ontario where licences surrendered and rehabilitation completed (approximately 300+ sites)

• MNR “best practices” for rehabilitation to enhance biodiversity at sites

• The Ontario Aggregate Resources Corporation (TOARC) continues to fund various rehabilitation research projects
Water

- Aggregate extraction often requires water to be taken and sometimes moved to access the resources. Some sites use sophisticated groundwater recharge methods to keep water features constant, and minimize environmental impacts (can be adaptive).

- OSSGA recently commissioned 2 studies (not released yet):
  - Effects of aggregate extraction on groundwater quality
  - Case study on selected Ontario sites within source water protection zones

- Two studies related to cumulative effects assessments, one specific to pits and another to quarries
Certification

- Socially and Environmentally Responsible Aggregates (SERA)
  - Environmental Defence and Holcim Canada announced in June 2011 – establishment of a not-for-profit organization, SERA, that will create voluntary certification standards for responsibly sourced sand, stone and gravel
  - Committee panel currently developing certification standards

- Ontario Aggregate Forum’s ‘Change Agenda’
  - In June 2011, a group of six environmental NGOs and the Ontario Stone, Sand & Gravel Association (OSSGA) announced they are proceeding with the development of a certification program that will enhance standards of environmental stewardship and community engagement across Ontario’s aggregate industry.
For questions, please contact…

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