

Attachment #1:
Document Under Separate Cover
Refer to LPS103-19



2019

State of Aggregate Resources

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State of Aggregate Resources In Halton Region

Overview

The 2009 Halton Regional Official Plan (ROP) requires a State of Aggregate Resources Report to be prepared on a biennial basis.

This report prepared for the 2017 and 2018 period provides information on the following:

- A. Number of active, new, suspended, revoked and surrendered licences;
- B. An overview of active extractive operations in Halton;
- C. History of complaints on the extractive operations and transportation of aggregate products;
- D. History of violations of Site Plan or conditions of licence under the *Aggregate Resources Act*;
- E. Status of the implementation of approved rehabilitation plans;
- F. Status of the operation and implementation of approved adaptive management plans;
- G. An assessment of the cumulative impact of extraction operations on both the Greenbelt and Regional Natural Heritage System; and,
- H. Number and status of active and potential applications for Mineral Resource Extraction Areas.

A. Active, New, Suspended, Revoked and Surrendered Licences

In the Province of Ontario, all aggregate licences are issued by the Ministry of Natural Resources and Forestry (MNRF) under the *Aggregate Resources Act, 1990* (the *ARA*). In Halton Region, licensed quarries (rock extraction) and licensed pits (clay, sand and gravel extraction) are located in Burlington, Halton Hills and Milton. There are no licensed quarries or pits in Oakville. In 2017, there were 23 licensed sites in Halton Region, compared to 22 *ARA* sites in 2016, due to issuance of one new license by MNRF in March 2017. In 2018, the number of licences changed to 22 due to the MNRF's acceptance of a licence surrender in May 2018. The locations of *ARA* sites and *ARA* applications are shown on Map 1, and the site locations and ownership are identified in Table 1. *ARA* licences and the operational status of each site are described in Appendix 1.

As noted in Table 2, there were 12 licensed sites with active aggregate extraction during this 2017 and 2018 reporting period. No active extraction occurred at a number of licensed sites where resources had been depleted or operations completed. However, some sites continued with other permitted activities (e.g. aggregate processing, rehabilitation, remedial actions).

Map 1: Location of Aggregate Sites in Halton Region

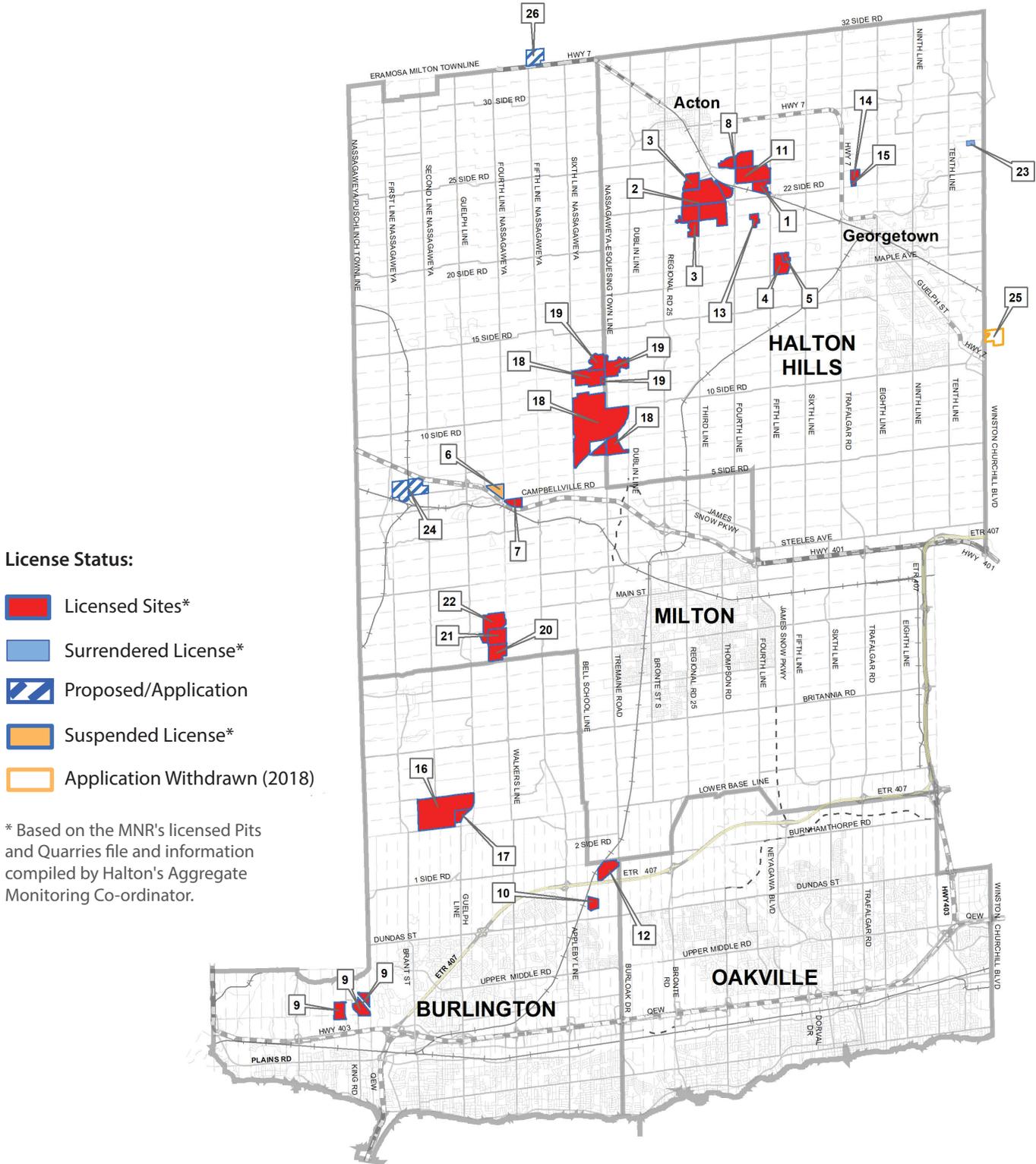


Table 1: Licensed Sites and Aggregate Applications/Proposals in and Bordering Halton Region

Map ID	ARA Licence #	Site Name	Current Owner (Applicant)	Location Lot/Concession	Town (Former Township)
1	5480	Acton Limehouse Pit	Fountain Green South Inc. since May 31, 2018; formerly St Marys Cement	Lot 23, Con. (Concession) 5	Halton Hills (Esquesing)
2	5492	Acton Quarry - Phases: 1, 2, 3	Dufferin Aggregates, a Division of CRH Canada Group Inc.	Part of Lots 22 and 23, Con. 3; and Part of Lots 21- 24, Con. 4	Halton Hills (Esquesing)
3	625003	Acton Extension Quarry - Phases: 4, 5E, 5/6W	Dufferin Aggregates, a Division of CRH Canada Group Inc.	Part of Lots 21, 22 and 24, Con. 3; and Part of Lots 21 and 22, Con. 4	Halton Hills
4	20660	Brockton Farms	Brockton Farms	Lot 18 and Part Lot 19, Con. 6	Halton Hills
5	5720	Hilltop Quarry	Hilltop Stone and Supply Inc.	Part East and West half Lot 18, Part West half Lot 19, Conc. 6	Halton Hills (Esquesing)
6	5479	Campbellville Pit-north	555816 Ontario Inc.	Part of Lot 6, Conc. 4	Milton (Nassagaweya)
7	5478	Campbellville Pit-south	4000 Campbellville Rd. Inc.	Part of Lot 5, Con. 5	Milton (Nassagaweya)
8	5616	Bot Holdings Pit	Bot Holdings Ltd. since November 2017 (formerly Bot Duff Resources Ltd.); operated by St Marys Cement	Parts of east half and west half of Lot 25, Con. 4 and 5	Halton Hills (Esquesing)
9	5500	Aldershot Quarries	Meridian Brick Canada Ltd.	Part of Lots 2 and 3, Con. 1 and Part of Lots 1, 2, 3, Con. 2	Burlington (E. Flamborough)
10	5605	Burlington Pit/Quarry	Meridian Brick Canada Ltd.	Lot 3, Conc. 1 North Dundas Street (NDS)	Burlington (Nelson)
11	5546	Wilroy Brooks Pit	St. Marys Cement Inc. (Canada)	Part of Lot 24, Con. 5	Halton Hills (Esquesing)
12	613081	Tansley Quarry	Meridian Brick Canada Ltd.	Part of Lots 1 and 2, Conc. 1, North Dundas Street (NDS)	Burlington
13	5716	Rice and McHarg Quarry	Rice and McHarg Quarries Ltd.	Part of east half and Part of west half of Lot 21, Con. 5	Halton Hills (Esquesing)
14	5614	Limehouse Clay Products - north	Limehouse Clay Products Ltd.	Part of Lot 23, Con. 8	Halton Hills (Esquesing)
15	5711	Limehouse Clay Products - south	Limehouse Clay Products Ltd.	Part of west half of Lot 23, Con. 8	Halton Hills (Esquesing)
16	5499	Burlington Quarry-The Majority	Nelson Aggregates Co.	Lot 2, Con 3; west half of Lot 1, Con. 3; and east half of Lots 1 and 2, Con. 2	Burlington (Nelson)
17	5657	Burlington Quarry-The Minority	Nelson Aggregates Co.	Part east half of Lot 1, Con. 3 (N.S.)	Burlington (Nelson)

Table 1: Licensed Sites and Aggregate Applications/Proposals in and Bordering Halton Region

Map ID	ARA Licence #	Site Name	Current Owner (Applicant)	Location Lot/Concession	Town (Former Township)
18	5481	Milton Quarry - Main and North	Dufferin Aggregates, a Division of CRH Canada Group Inc.	Part of Lots 7-13, Con. 7 (Milton) and Part of Lots 8-10, Con. 1 (Halton Hills)	Milton (Nassagaweya) and Halton Hills (Esquesing)
19	608621	Milton Quarry Extension: Phases 1, 2, 3	Dufferin Aggregates, a Division of CRH Canada Group Inc.	Part of Lots 13-14, Con. (Halton Hills) and Part of Lots 12-14; Con. 7 (Milton)	Milton and Halton Hills
20	5484	Milton Pit	368574 and 579813 Ontario Inc.	Northeast half of Lot 11, Con. 4	Milton (Nelson)
21	5507	Hayward Pit	Springbank Sand and Gravel Ltd.	Northeast half of Lot 12, Con. 4	Milton (Nelson)
22	5619	Leaver Pit	Springbank Sand and Gravel Ltd.	Part of Lots 12 and 13, Con. 4	Milton (Nelson)
23	5462 Licence surrendered in May 2018.	David Anderson Pit	David T. Anderson	Part of Lot 24, Con. 11	Halton Hills (Esquesing)
Active Aggregate Application/Proposal in Halton Region (2017-2018)					
24	-	Reid Road Reservoir Quarry Application	James Dick Construction Ltd.	Part of Lots 6 and 7, Con. 2	Milton
Active Aggregate Applications Bordering Halton Region (2017-2018)					
25	-	Norval Quarry Application withdrawn by applicant on April 9, 2018	Brampton Brick Ltd.	West Half of Lot 12, Con. 6, WHS	Brampton: east side of Winston Churchill Boulevard
26	-	Hidden Quarry Application	James Dick Construction Ltd.	Part of Lot 6, Con. 1	Township of Guelph Eramosa

Table 2: Licensed Aggregate Sites in Halton Region with Active Extraction

Area	Operation/Site Name (ARA Licence No.)	Current Owner/Operator	*Tonnes/year (max)
Town of Halton Hills	¹ Acton Quarry (5492)	Dufferin Aggregates/CRH	4,000,000***
	¹ Acton Extension Quarry (625003)****	Dufferin Aggregates/CRH	4,000,000***
	² Brockton Farms Quarry (20660)	Brockton Farms	20,000
	² Hilltop Quarry (5720)	Hilltop Stone and Supply Inc.	20,000
	³ Limehouse Clay Quarry-north (5614)	Limehouse Clay Products	20,000
	² Rice and McHarg Quarry (5716)	Rice and McHarg Quarries	20,000
	⁴ Limehouse Pit (5480)	St. Marys Cement Inc.	Unlimited
Town of Milton	¹ Milton Quarry – Main and North (5481)	Dufferin Aggregates, a division of CRH	Unlimited
	¹ Milton Quarry Extension (608621)	Canada Group Inc.	Unlimited
City of Burlington	³ Aldershot Quarries (5500)	Meridian Brick Canada Ltd.	Unlimited
	³ Tansley Quarry (613081)	Meridian Brick Canada Ltd.	300,000**
	¹ Burlington Quarry – The Majority (5499)	Nelson Aggregates Co.	Unlimited
<p>Notes: ¹Dolostone Quarry, ²Sandstone Quarry, ³Shale Quarry, ⁴Sand and Gravel Pit. Information sources: ARA Licences, ARA Site Plans, and Compliance Assessment Reports (CARs) *Max tonnes per year indicates extraction limit per year under the ARA licence. ** Maximum permitted extraction at Tansley Quarry is 150,000 tonnes/year until Tremaine Road is upgraded. *** Maximum permitted at Acton Quarry is 4,000,000 tonnes/year in total for ARA 5492 and ARA 625003. ****ARA 625003: Extraction in Phase 5E in 2018; site preparation in Phase 4.</p>			

New ARA Licence:

On March 9, 2017, the MNRF issued ARA licence No. 625003 to Dufferin Aggregates, a Division of CRH Canada Group Inc., to operate the Acton Extension Quarry (Phases 4, 5E, and 5/6 West) as per a Joint Board hearing decision (October 11, 2016).

ARA Licence Suspensions:

The ARA Licence for Campbellville Pit - north (ARA 5479), which was suspended in March 2012 for contravention of Section 15 of the ARA, remained suspended between 2017 and 2018.

ARA Licence Surrenders:

The MNRF accepted one licence surrender during the current reporting period: David Anderson Pit (ARA 5462) in Halton Hills on May 2, 2018.

B. Overview of Active Extractive Operations in Halton

Discussion on the active operations in Halton Region includes areas under extraction, the amount of aggregate produced, as well as extraction trends in the Region, Local Municipalities in Halton and other jurisdictions in Ontario.

Areas Under Extraction

As of 2018, the total licensed area was 1,606.6 hectares (ha), of which the permitted extraction area totalled 1,282 ha (Table 4). This total licensed area includes the Acton Extension Quarry (ARA 625003, licensed on March 9, 2017) and David Anderson Pit (ARA 5462 surrendered on May 2, 2018).

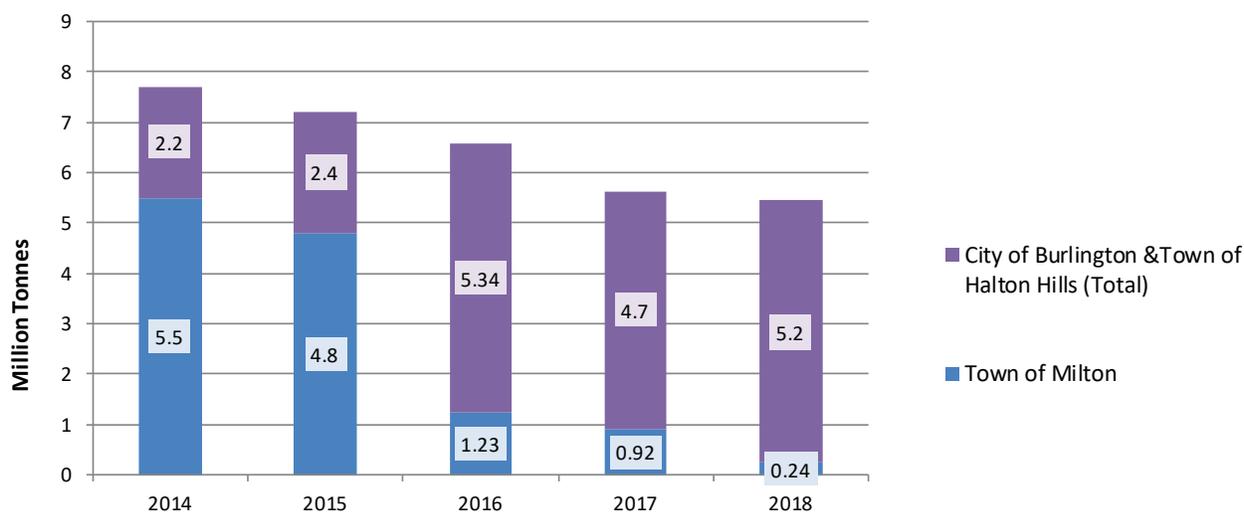
Aggregate Production in Halton Region and Local Municipalities

Annual extraction volumes for the Province and upper- and lower-tier municipalities are provided in the Mineral Aggregates of Ontario Statistical Update reports prepared by The Ontario Aggregate Resources Corporation (TOARC). Table 3 displays production tonnage statistics for the 2017 and 2018 period for Halton Region and Local Municipalities.

Municipality	2017	2018
Town of Halton Hills and City of Burlington (total)	4,661,211	5,184,815
Town of Milton	923,257	244,429
Halton Region	5,584,468	5,427,244

Between 2014 and 2018, the total aggregate production in Halton Region has decreased by a total of 2,276,665 tonnes. Up to 2015, most of the production occurred in the Town of Milton. Since 2016, the City of Burlington and the Town of Halton Hills (reported together) have had the highest total production in Halton Region. The change is due to shift in extraction activities at the Milton Extension Quarry intercepting a local municipal boundary.

Figure 1a: Aggregate Production by Local Municipalities in Halton Region: 2014-2018

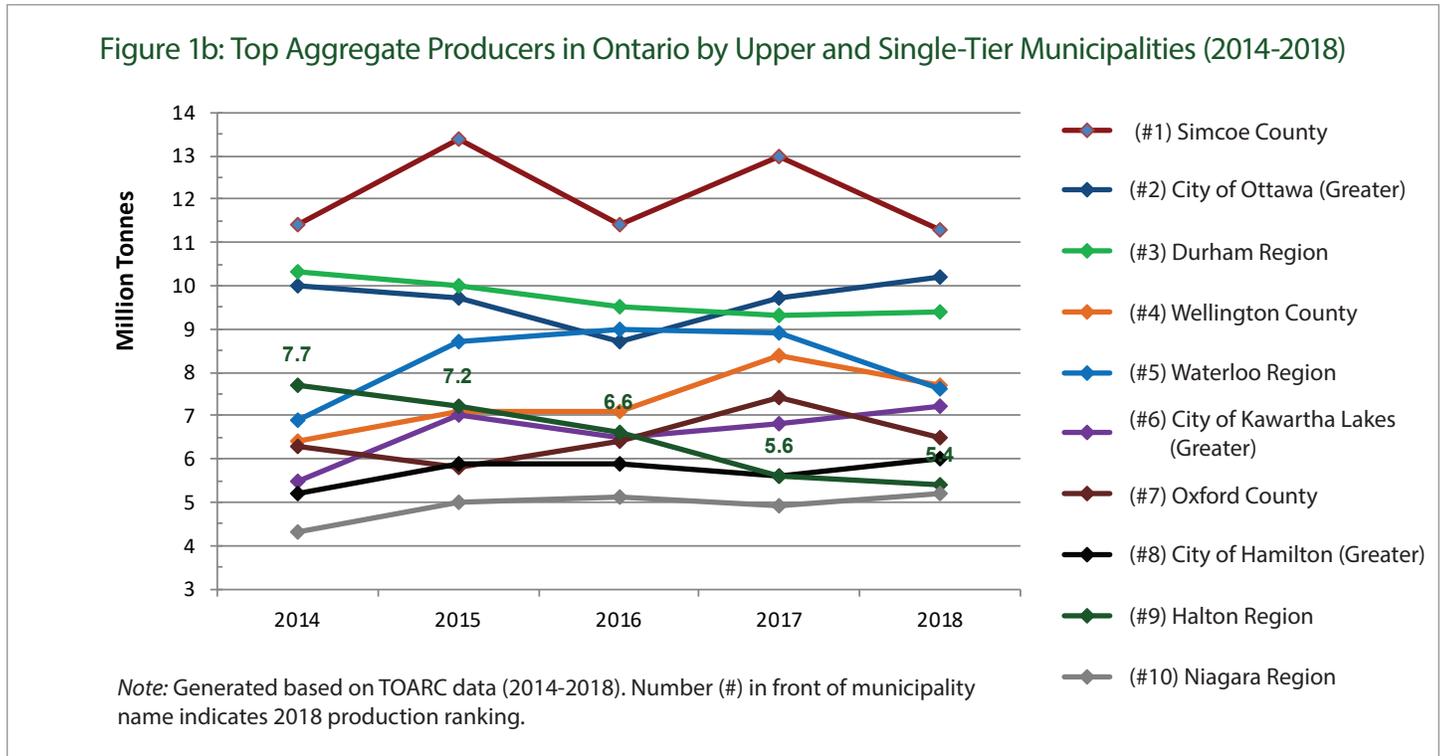


Generated based on Mineral Aggregates in Ontario Statistical Update reports; The Ontario Aggregate Resources Corporation, 2014-2018. HR=5.4 - total production in Halton Region (in million tonnes)

Aggregate Production in Upper/Single-Tier Municipalities

Halton Region has consistently been among the highest producers in Ontario since annual production data became available in 1990. Halton Region was the eighth highest aggregate producing municipality in Ontario in 2017 and the ninth in 2018.

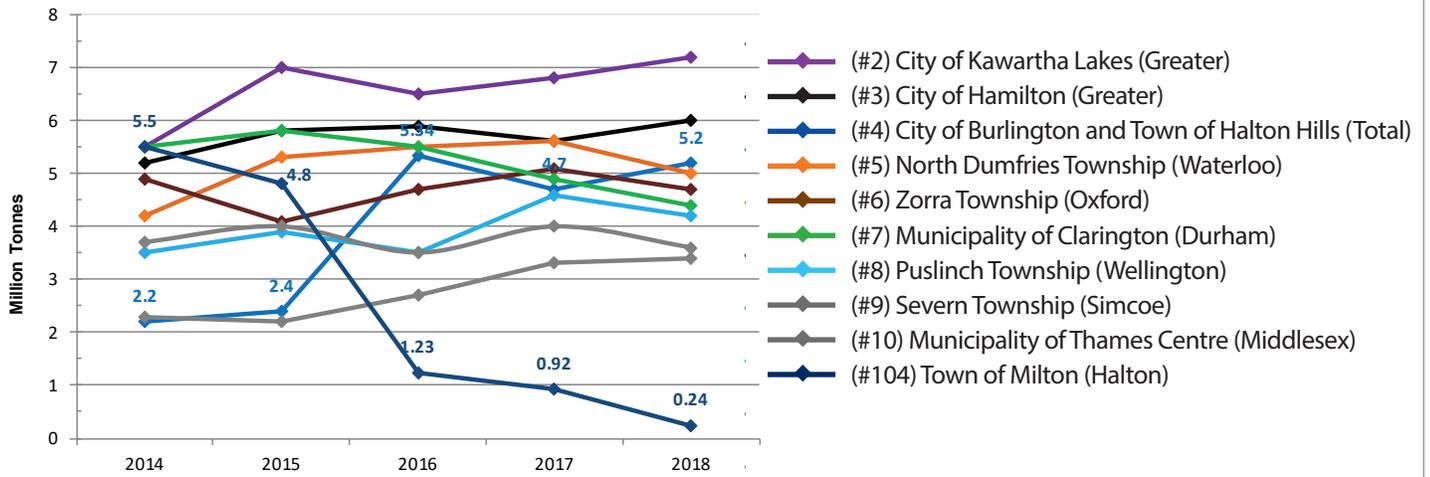
The top 10 upper-and-single tier producing municipalities in 2018 were as follows (production rounded to nearest million [M] tonnes): Simcoe County (11.3 M), City of Ottawa - Greater (10.2 M), Durham Region (9.4 M), Wellington County (7.6 M), Waterloo Region (7.6 M), City of Kawartha Lakes – Greater (7.2 M), Oxford County (6.5 M), City of Hamilton – Greater (6 M), Halton Region (5.4 M), and Niagara Region (5.2 M). Figure 1b displays the production trend for top upper- and single-tier municipalities for the 2014-2018 period.



Aggregate Production in Lower-Tier Municipalities

Among the lower-tier municipalities, Milton had been among the highest producers in the Province from the time annual data for lower-tier municipalities became available (1993) until 2015. It was ranked #29 by TOARC in 2016, #41 in 2017 and #104 in 2018. Since 2016, the City of Burlington and the Town of Halton Hills were ranked within the highest producers in the Province, including #7 in 2017 and #4 in 2018, based on the total (amalgamated) extraction tonnage (TOARC does not separate tonnage for these municipalities in Halton). Figure 1c displays the production trend for top lower- and single-tier municipalities for the 2014-2018 period. The increase in production for Burlington and Halton Hills (merged production) is due to shift in extraction activities at the Milton Extension Quarry intercepting a local municipal boundary (i.e. from Milton to Halton Hills).

Figure 1c: Top Aggregate Producers in Ontario by Lower (and Single-Tier) Municipalities (2014-2018)



Note: Generated based on TOARC's data (2014-2018). Production for #1 City of Ottawa (Greater) is shown in Figure 1b. Number (#) in front of municipality name indicates 2018 production ranking. City of Burlington and Town of Halton Hills ranked based on total production. Town of Milton ranked #29 in 2016, #41 in 2017, and #104 in 2018.

Disturbed and Rehabilitated Areas at Four Largest ARA Sites in Halton Region

The available Compliance Assessment Reports (CARs) submitted by aggregate operators to MNRF (with copies to municipalities) annually, provide a checklist of compliance with ARA Site Plans, including reporting on disturbed and rehabilitated areas. Based on the recent CARs, total disturbed areas at ARA sites in Halton Region were 751 ha (2017) and 736 ha (2018), and total rehabilitated areas were 583 ha (2017) and 601 ha (2018). The total sums of disturbed and rehabilitated areas (1,334 ha in 2017 and 1,337 ha in 2018) are higher than the total area permitted for extraction (1,282 ha for both years) and this is in part due to different methodologies in reporting by operators.

As of 2017-2018, three ARA sites in Halton were over 100 ha in size: Acton Quarry (ARA 5492), Milton Main and North Quarry (ARA 5481), and Nelson Burlington Quarry (ARA 5499). The approximate total disturbed and rehabilitated areas at these three sites were 429 ha and 385 ha, respectively. For further information, refer to Table 4.

Figure 2 shows total areas in Halton Region since 2014.

Figure 2: Total Permitted, Disturbed and Rehabilitated Areas for ARA Sites in Halton Region (2014-2018) in hectares

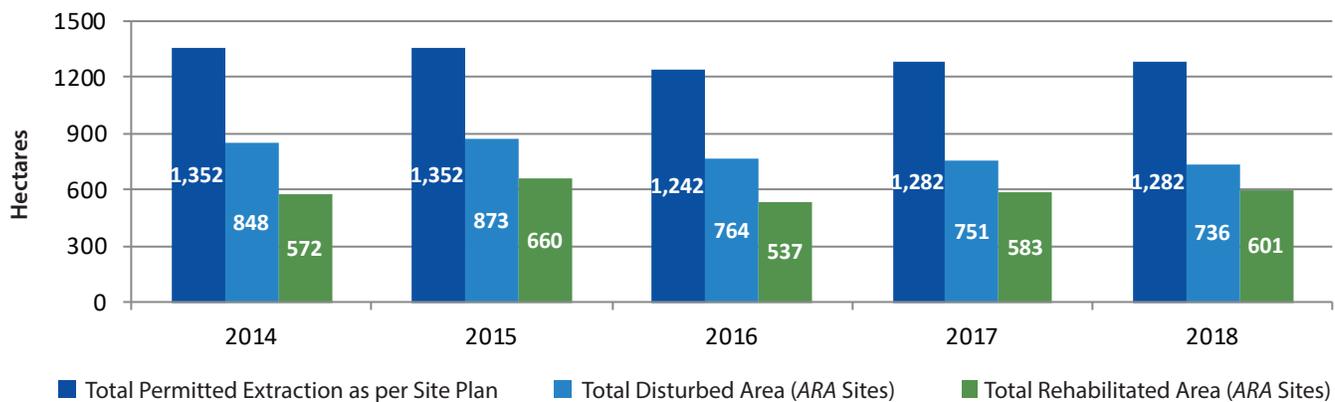


Table 4: Licensed, Permitted, Disturbed and Rehabilitated Areas at ARA Sites in Halton Region (2018)

Site Name, Owner, ARA Licence Number	¹ ARA Licensed Area (ha)	² Permitted Extraction (ha)	³ Total Disturbed Area (ha) as of 2018	³ Total Rehabilitated Area (ha) as of 2018
1. Acton Limehouse Pit; St. Marys Cement Inc. (5480)	26.3	22.6	6.9	6.75
2. Acton Quarry - Dufferin Aggregates, a division of CRH Canada Group Inc. (5492)	222.3	193.25	112.45	85.85
3. Acton Extension Quarry - Dufferin Aggregates, a division of CRH Canada Group Inc. (625003)	65.6	49.3	8.04	0.25
4. Brockton Farms; Brockton Farms (20660)	36.8	25.7	1	0.6
5. Hilltop Quarry; Hilltop Stone and Supply Inc. (5720)	9.4	6.9	5	0.7
6. Campbellville Pit-north; 55816 Ontario Inc.(5479)	22.2	8.3	16.7	16.7
7. Campbellville Pit-south; 4000 Campbellville Road Inc. (5478) [formerly: 55816 Ontario Inc.]	15.9	12.8	15.88	15.88
8. Bot Holdings Pit; Bot Holdings Ltd. (5616)	58.6	49.2	38.1	23.55
9. Aldershot Quarries; Meridian Brick Canada Ltd. (5500)	62.4	62.1	20.3	8
10. Burlington Pit/Quarry; Meridian Brick Canada Ltd. (5605)	17.1	16	20.3	8
11. Wilroy-Brooks Pit; St. Marys Cement Inc. (5546)	79.2	28.3	1.1	21.45
12. Tansley Quarry; Meridian Brick Canada Ltd. (613081)	37.8	28.9	17.2	8
13. Rice and McHarg Quarry; Rice and McHarg Quarries Ltd. (5716)	12.9	1.9	3.25	6.25
14. Limehouse Clay Products – north; Limehouse Clay Products Ltd. (5614)	12.8	10.6	2.7	0.3
15. Limehouse Clay Products – south; Limehouse Clay Products Ltd. (5711)	3.2	3.2	1.7	0.8
16. Burlington Quarry - The Majority; Nelson Aggregates Co. (5499)	202.5	193.8	122	112
17. Burlington Quarry - The Minority; Nelson Aggregates Co. (5657)	16.2	16.2	16.2	16.2
18. Milton Quarry - Main and North; Dufferin Aggregates, a division of CRH Canada Group Inc. (5481)	467.7	382	194.45	187.05
19. Milton Quarry-Expansion; Dufferin Aggregates, a division of CRH Canada Group Inc. (608621)	84.5	70.6	56.64	1.41
20. Milton Pit; 368574 Ontario Ltd. and 5798813 Ontario Inc. (5484) [formerly The Warren Paving Group Ltd.]	40.7	25.5	5	2.5
21. Hayward Pit; Springbank Sand and Gravel Ltd. (5507)	52.0	19.5	20.9	17.2
22. Leaver Pit; Springbank Sand and Gravel Ltd. (5619)	54.3	52.6	52.6	52.6
23. David Anderson Pit; David T. Anderson (5462)	6.3	2.75	6	5
		<i>Licence surrendered on May 2, 2018</i>		
Total Areas for ARA Sites in Halton	1,606.6	1,282	736.41	601.34

Notes:

Site numbers reflect locations on Map 1;

¹Licensed Area is derived from ARA licences;

²Permitted Extraction Area is derived from latest approved Site Plans; where permitted extraction area is not available, the licensed area is used as an equivalent;

³Total Disturbed Area and Total Rehabilitated Area - based on Compliance Assessment Reports (2018), or prior, where recent data is not available.

C. History of Complaints on Extractive Operations and Transportation of Aggregate Products

In accordance with a MNR-MOE (currently MNRF-MECP) Agreement (2008), MNRF is the first responder to public complaints on extractive operations and aggregate transportation. MNRF has an administrative role under the *ARA*, while the Ministry of Environment, Conservation and Parks has roles under the *Environmental Protection Act (EPA)* and the *Ontario Water Resources Act (OWRA)*. The Ministry of Transportation (MTO) has delegated authority under the *ARA* to administer wayside permits and aggregate permits. Niagara Escarpment Commission (NEC) has roles related to NEC's development permits, including inspection and compliance with conditions of the permits. Since August 2016, all third-party complaints must be reported directly to the applicable Provincial Ministry - MECP Spills Action Centre for water related concerns, and MNRF for operational and other complaints.

Occasionally, the Region receives complaints on water quality and quantity from local residents living adjacent to aggregate operations. Water quality complaints are directed to Halton Region Health Department where follow-up is carried out by a Public Health Inspector. Issues are sometimes directed to MNRF/MECP if they require further investigation. When a complaint pertains to water quantity, Public Health refers the complaint to the MECP. Following an inspection, the Ministry provides feedback directly to the resident regarding the water quantity issue.

Complaints Received Between 2017 and 2018

The 2017-2018 public inquiries, requests and complaints were in regards to Aldershot Quarries - East Quarry (ARA 5500), Milton Pit (ARA 5484), and Acton Quarry (ARA 5492).

Summary of 2017 Complaints

Aldershot Quarries (ARA 5500) – East Quarry

- In May 2017, the Region received a resident's inquiry about the Region's ability to stop eastward advancement of the quarry and the need for environmental studies prior to such advancement. The Region advised that the ARA licence for the Aldershot Quarries (West, Central, and East) was issued in 1990, and to the staff's knowledge has been operating in accordance with the licence and all specified requirements, that the Region had no ability to study environmental/ecological attributes of the East Quarry, and that the Region did not have the ability to stop, delay, or change the area of tree removal for mineral extraction purposes.
- In November 2017, the Tyandaga Environmental Coalition Inc. (TEC) requested Regional support concerning their Applications for Requests for Review pursuant to Section 61 of the Environmental Bill of Rights (November 16, 2017) pertaining to the East Quarry. The TEC wanted to stop site preparation involving clear-cutting of 9,000 trees and extraction of the East Quarry area, given the current environmental policy regime and its natural heritage attributes. However, the Aldershot licence and site plan conditions do not contain conditions requiring Regional reviews. The status of the TEC's Applications for Requests for Review pursuant to Section 61 of the Environmental Bill of Rights was not known at the time of writing. The Region received no further enquires regarding this matter.
- In November 2017, TEC contacted the Region regarding health concerns, particularly the risk of dust exposure to members of the nearby community. Halton Region's Health Department responded that the Site Plan for the Aldershot Quarries requires the licensee to implement a dust control plan prior to excavation, including requiring dust suppression as often as required, and providing dustfall stations to be operated by a qualified dust consultant. Staff further indicated that the MNRF is a regulatory authority responsible for ensuring that the conditions in the Site Plan are adhered to and that, regardless of the company's compliance with the Site Plan, if there is an impact off-site, it would be the responsibility of the MECP to investigate and, if this should occur, the Region's Health Department would also be involved.
- In January 2018, the MNRF posted an information notice on the Environmental Bill of Rights (EBR) Registry regarding the East Quarry owned by Meridian Brick Canada Ltd. The purpose of the notice was to provide general information to the public about the East Quarry operation, as authorized by ARA licence No. 5500, in response to requests from public on the planned extraction and related activities at the East Quarry site. In addition, Meridian Brick placed information regarding their studies on its website <http://aldershotquarry.ca/report-highlights/>.

Milton Pit (ARA 5484)

- In December 2017, the Region received a complaint from a local resident regarding new activities observed at a long-inactive pit on Derry Road west of Walker's Line. The resident reported a new portable structure and vehicles at the site, propane tank truck delivery, and installation of a new gate on the property. Upon referral, the NEC's Compliance Specialist contacted the site's representatives and advised that the installation of gates was exempt from an NEC permit and that the temporary parking of commercial vehicles required approval from the NEC and MNRF. As a result, a Notice of Violation was issued to the landowner who was reminded that NEC should be appropriately consulted prior to making any changes to the use of the site. The NEC informed the Region that the propane trucks parked at the pit (i.e. 3333 Derry Road) were being removed and, once complete, the NEC would close the file on this matter. The NEC subsequently confirmed that the issue had been resolved by the landowner and that the NEC closed the file on this complaint.

Summary of 2018 Complaints/Notifications

Aldershot Quarries (ARA 5500) - East Quarry

- Between the April and July 2018, a local resident inquired about an Endangered Species report being prepared for Meridian Brick's East Quarry. The Region followed up with the Province and Meridian Brick, and provided the resident with direct contact information to both parties. Meridian Brick followed up in June and July on the report status and study outcomes. The Region received no further inquiries regarding this matter. The Meridian Brick's website (<http://aldershotquarry.ca/report-highlights/>) provides overall information on Salamander habitat surveys. The MNRF's questions and answers (<https://apps.mnr.gov.on.ca/ebr/docs/meridian-qa.pdf>), linked to the EBR information notice, also refer to the Salamander surveys that were being undertaken by Meridian Brick in 2017 and 2018.

Acton Quarry (ARA 5492)

- In 2018, Dufferin Aggregates notified MNRF, MECP, and Halton Region of three complaints received from homeowners near the Acton Quarry in July, August, and September. All three complaints were in regards to water supply wells. Based on the 2018 Monitoring Report (GHD, April 2019), none of the situations reported by residents was the result of interference from the Acton Quarry operations. Two of the concerns were linked to mechanical/maintenance issues associated with the owners' well/well equipment. Dufferin provided assistance/advice to these two residents and the issues were alleviated by repair/maintenance of the well or well equipment by the well owners. The third concern was in regards to low water condition; however, the resident continued to have a suitable water supply.

Milton Pit (ARA 5484)

- In May 2018, Halton Region was copied on communication from the NEC regarding a resident's complaint about new activities at the pit. The NEC's Compliance Specialist indicated that a site visit established that there were no violations of the *Niagara Escarpment Plan Development Act (NEPDA)* and that a small machine onsite, used to conduct minor grading at the front of the property, was consistent with the site plan. The NEC had no further concerns regarding this matter. No further notifications were received by the Region on this issue.

Milton Quarry (ARA 5481 and ARA 608621)

- The 2018 Monitoring Report for the Milton Quarry (GHD, March 2018) indicated that Dufferin was contacted by a neighbour in July 2018 regarding their residential well water quality concerns following some recent work done on the residential water system. The resident inquired whether Dufferin was doing anything different at the quarry that could be causing change in the water quality. The 2018 Report indicated that the subject residence was located approximately five kilometers away and below the escarpment, and hence, quarry operations did not affect the water supply conditions. Dufferin offered to recommend a licensed well technician; however, no further assistance was required. Dufferin reported the interaction to the MECP; the Report indicated that the MECP was satisfied with the communication.

The Region is not aware of any other quarry-related complaints received by other agencies or operators during this reporting period.

D. History of Violations of Site Plan or Conditions of Licence under the Aggregate Resources Act (ARA)

Campbellville Pit - South (ARA 5478)

- The site, which is partially located within the current wellhead protection area of the Kelso municipal wells, has been undergoing infilling and rehabilitation activities for a number of years. In addition to requirements specified in the ARA Site Plan, other conditions apply to infilling and rehabilitation activities including: OMB Decision #2688 and "MOE/CS andGS Off-Site Fill Acceptance Protocol." In 2017 and 2018, the MNRF conducted several inspections at this site. The MNRF's Inspection Reports revealed some non-compliance matters with the Site Plan and the fill protocol, and directed corrective actions to be fulfilled by MNRF-specified dates. The Region was copied on the MNRF's Inspection Reports, and communication and reporting from the operator's responses. Regional staff have reviewed the available water quality monitoring data and concluded that, based on the reported monitoring results, there were no water-quality concerns that could have affected the Kelso municipal wells.

Milton Pit (ARA 5484)

- As noted in Section C, the Region received an enquiry from a local resident regarding new activities observed at this site in December 2017. Upon a site visit, the NEC's Compliance Specialist issued a Notice of Violation. As the violation had been resolved voluntarily by the landowner, the NEC closed the file on this violation. This was the second violation of the *Niagara Escarpment Planning and Development Act*. The first violation was in 2016 regarding importation of concrete material for recycling. The NEC indicated that the 2016 matter was lead by the MNRF's aggregate inspector as the violation was in regards to both the *NEPDA* and the *ARA*. The NEC confirmed that the material had been removed by the landowner and that the NEC closed the file on this matter.
- In December 2018, the Region was copied on communication from the NEC's Compliance Specialist regarding the status of a NEC Development permit application for the Browns Fuel trucks parked on the site, as none was issued and further to the direction contained in the January 2018 correspondence. The NEC proposed to discuss this matter further with the appropriate party within the Browns Fuel organization. No further communication was received by the Region on this matter.

Bot Holding Pit (ARA 5616)

- Based on the 2018 CAR, rehabilitation was put on hold upon issuance of the MNRF's Notice of Suspension in July, 2018. Progressive and final rehabilitation using imported material was reported by operator as being under review. The remedial actions listed in the 2018 CAR were to be completed by October 31, 2018. Progressive and final rehabilitation tasks were to be re-initiated upon removal of the Notice of Suspension by the MNRF. No further information was received by the Region on this matter.

For the remaining active ARA sites, most operators or their consultants have checked off "in compliance" or "not applicable" in their annual CAR submittals. The "remedial action" notes and/or "general comments" in some of the 2017-2018 CARs refer to site maintenance, such as:

- repairs to perimeter-fencing and screening
- monitoring for potential erosion of pit faces
- (re)grading and (re)seeding of slopes
- re-instatement of missing site-identification signage
- installation of marker posts at unfenced boundaries
- removal of stone from unlicensed areas of the site

The "remedial actions" section in CARs includes due-dates for completion of the required actions. The MNRF oversees implementation of CARs' directives and compliance matters by operators. There were no posts on MNRF's website on violations, enforcements, or rehabilitation orders related to aggregate operations in the Province.

E. Status of the Implementation of Approved Rehabilitation Plans

Rehabilitation at Licensed Sites

Progressive and final rehabilitation of aggregate sites are regulated under *ARA* (1990) and the nature of rehabilitation is governed by approved *ARA* Site Plans. Compliance with approved Site Plans is administered by the MNRF. Appendix 2 provides post-rehabilitation end-use descriptions for licenced sites in Halton, as per the individual Site Plan notes. For older (legacy) disturbed areas at these sites, rehabilitation was perpetuated by older standards (i.e. former *Pits and Quarries Control Act (P&QCA)*, 1971). Sites licensed under the 1971 Act had been required to prepare replacement site plans in accordance with the *ARA* (1990) and Provincial Standards. The *ARA*-licensed sites are subject to the requirements for progressive and final rehabilitation in accordance with site plans amended under *ARA*, 1990.

Historically, some degree of progressive rehabilitation has occurred at all licensed sites. Appendix 1 contains information on the 2017-2018 total rehabilitation areas for all licensed sites in Halton Region. Descriptions of the status of the implementation of approved rehabilitation plans are provided in Appendix 2. A number of former aggregate sites, licensed under *P&QCA* (1971) and then *ARA* (1990), are no longer licensed; their rehabilitation status is discussed in Section G in relation to the Regional NHS.

According to the CARs, a total of 583 ha had been rehabilitated as of 2017 and 601 ha as of 2018. Comparatively, a total of 660 ha were rehabilitated as of 2015 and 537 ha as of 2016 (the 2016 reduction was largely a result of surrendered licences - *ARA* 5493 in 2015 and *ARA* 5510 in 2016). The highest increases in rehabilitated areas during the 2017-2018 compliance reporting period were at Acton Quarry (*ARA* 5492), Milton Quarry (*ARA* 5481), Hayward Pit (*ARA* 5507), and Leaver Pit (*ARA* 5619). Rehabilitation of less than 1-1.5 ha were reported at five sites: Acton Limehouse Pit (*ARA* 5480), Wilroy Brooks Pit (*ARA* 5546), Acton Extension Quarry (*ARA* 625003 - restoration of WMS construction areas), and Milton Extension Quarry (*ARA* 608621).

No changes to rehabilitated and disturbed areas had been reported for a number of years at the following sites: Brockton Farms Quarry (*ARA* 20660), Hilltop Quarry (*ARA* 5720), Limehouse Clay Products Pit (*ARA* 5711 and *ARA* 5614), Nelson Quarry (*ARA* 5499), Aldershot Quarries (*ARA* 5500), and Rice and McHarg Quarry (*ARA* 5716). No changes to rehabilitation area was reported at Tansley Quarry (*ARA* 613081) since 2015, where extraction continued within the sinking cut stage and overburden stripping was taking place within Initial Stage. Burlington Pit (*ARA* 5605) and Burlington Quarry – the Minority (*ARA* 5657) have been considered rehabilitated for a number of years, with licences being maintained by the licensees. The Anderson Pit (*ARA* 5462 surrendered in 2018) was deemed rehabilitated by MNRF on May 2, 2018.

Overall, total rehabilitated areas increased by 46.6 ha in 2017 and by 18.5 ha in 2018. The annual fluctuation in total rehabilitated area is contingent on a number of active licences, nature of extraction progression (lateral versus vertical), and rehabilitation area availability (e.g. within developing quarry).

Former/Abandoned Aggregate Sites

Part of the mandate of TORAC's Management of Abandoned Aggregate Properties (MAAP) program is rehabilitation of former pits and quarries deemed to be abandoned (i.e. former sites that have not had a valid licence issued under the *ARA* since 1990) in the *ARA*-designated areas of the province. This work is funded by the aggregate industry (i.e. through fee payable per tonne of aggregate removed from each *ARA*-licensed site). According to TOARC, these former extraction sites are generally less than 2 ha, were created as a result of small-scale operations, and remain the property of individuals, corporate entities, or other parties. The MAAP's program, which aims to rehabilitate 30 sites annually, typically targets small geographic area (i.e. county or regional jurisdiction). Site prioritisation for rehabilitation under MAAP is based on composite ranking (e.g. safety concerns, visibility, size, susceptibility to erosion, etc.), and requires landowners' approval. No rehabilitation under MAAP has been reported in Halton Region since 2011.

According to TOARC's Online Reporting Tool, Halton has 68 abandoned former aggregate extraction sites. This number includes 15 legacy sites, which had not been previously reported by TOARC (confirmed with TOARC in February 2019). As a result, the previously recorded numbers were incomplete.

TOARC's classification of abandoned former aggregate extraction sites in Halton Region:

Two - classified as LNI (Landowner Not Interested)

39 - designated as "closed" for various reasons:

- five had been developed
- five had been rehabilitated by landowners
- two were rehabilitated by MNR [currently MNRF] in 1994 and 1995
- two were rehabilitated under the MAAP program in 1999 and 2011
- three were classified as other (no historical aggregate extraction was reported in the past)
- 18 had become naturalized
- four became licensed

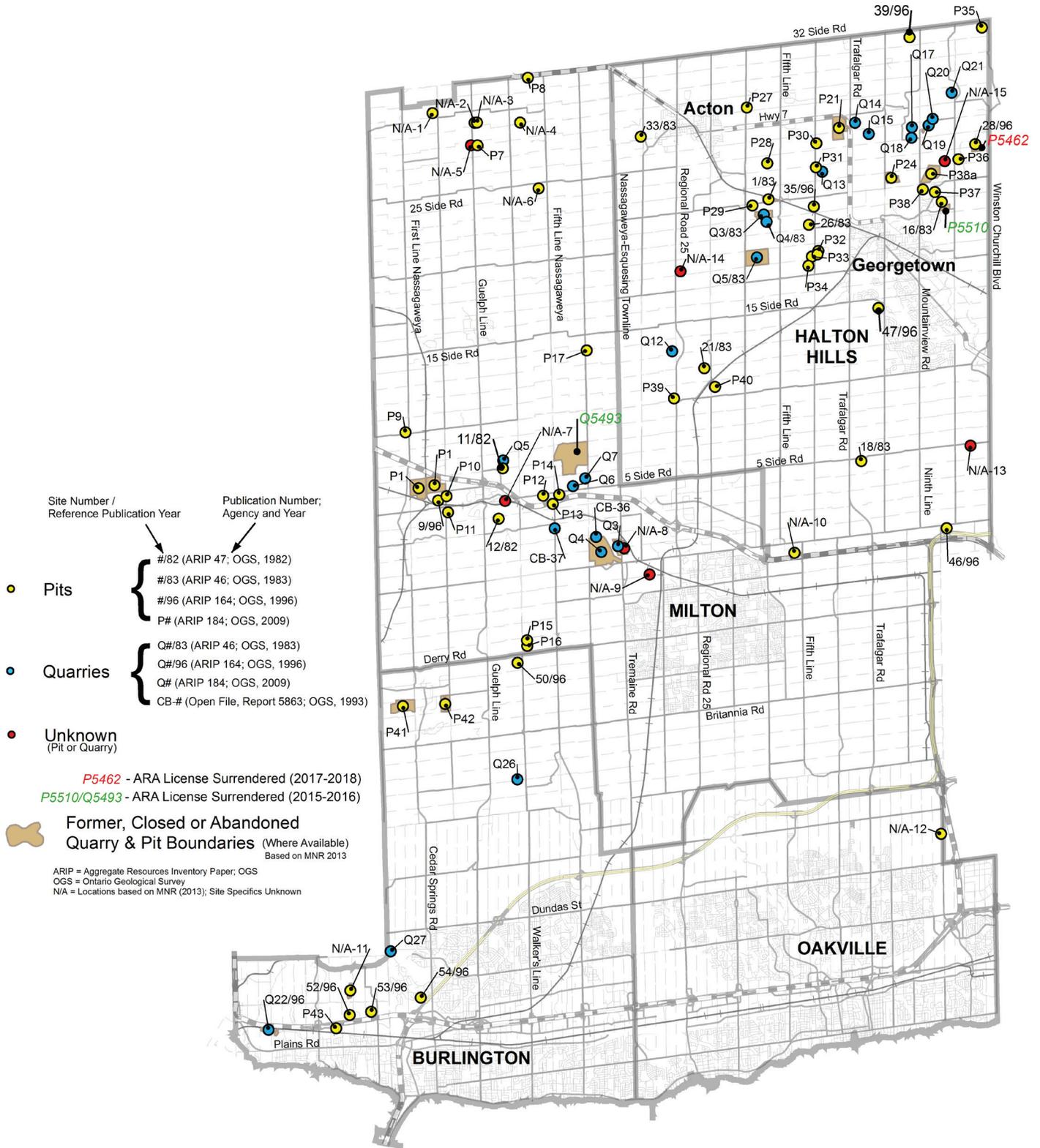
Of the remaining open files, two have been recommended for closure, five will require rehabilitation, and five will require re-assessment. The 15 new files added by TOARC (based on review of MNRF's documented legacy sites since 1985) will require assessment (TOARC, February 2019).

Table 5 summarizes the status of former/abandoned aggregate extraction sites by district in Halton Region. The location of sites is shown in Map 2.

Table 5: Status of Former/Abandoned Aggregate Extraction Sites by District in Halton Region											
Former District	LNI	Closed (Total)	Developed (file closed)	Rehabilitated (file closed)	Naturalized (file closed)	Other (closed)	Licensed (file closed)	To be closed	To be rehabilitated	File open **	New*** File (as of 2018)
Esquessing (31)	2	16	1	3 - Landowner	8	1	3	2	3	5	3
Nassagaweya (16)	0	8	0	1 - MNR [MNRF] 1 - Landowner	4	1	1	0	2	0	6
Nelson (13)	0	8	3	1 - MNR [MNRF] 2 - MAAP	2	0	0	0	0	0	5
Trafalgar (8)	0	7	1	1 - Landowner	4	1	0	0	0	0	1
Halton Region	2	39	5	9	18	3	4	2	5	5	15

Notes: MAAP=Management of Abandoned Aggregate Properties
MNR [MNRF] = Former MNR is currently MNRF
LNI=Landowner Not Interested (as per TOARC's designation); "Other" indicates no historical aggregate extraction had taken place
* Other = no historical aggregate extraction had taken place
** File Open = re-assessment required
*** New = assessment required

Map 2: Former and Abandoned Pits or Quarries in Halton Region



F. Status of the Operation and Implementation of Approved Adaptive Management Plans

The objective of Adaptive Management Plans (AMPs) is to protect water resources and ecological features and functions. There are currently three active Adaptive Management Plans in Halton Region: Dufferin's Milton Extension Quarry (ARA 608621) AMP, Dufferin's Acton Extension Quarry (ARA 625003) AMP, and Meridian Brick's (formerly Forterra's and Hanson Brick's) Tansley Quarry (ARA 613081) AMP.

While the AMPs are part of the operating licences and the associated site plan conditions, the Region has an on-going oversight role as per the AMP (and related) Agreements with the proponents relating to each operation.

Dufferin Aggregates Milton Quarry AMP

The Milton Quarry in the Towns of Milton and Halton Hills consists of the Main Quarry and North Quarry (ARA 5481), and Extension areas (ARA 608621). Dufferin Aggregates, a Division of CRH Canada Group Inc. (Dufferin Aggregates) is the current owner and holder of ARA licenses for the Milton Quarry. The AMP (2003) applies to the Milton Extension Quarry (85 ha), which was licensed in 2007 (ARA 608621).

The Milton Extension Quarry AMP contains implementation requirements for the protection, mitigation and monitoring of water resources and groundwater-dependant ecological features adjacent to the quarry. Under the AMP Agreement (2003), Halton Region and Conservation Halton (CH) are to perform an ongoing role of overseeing the effectiveness of the water management system implemented under the AMP.

In 2017 and 2018, Halton staff conducted the following reviews as part of the AMP-related oversight:

- Regular reviews of online (WebDT) monitoring data to assess performance and effectiveness of the quarry's water management system;
- Review of 2017 and 2018 annual monitoring reports;
- Review of water-targets for the 2018-2019 winter and spring seasons;
- Review of the 2018 deliverables pertaining to the Cox Tract Haul Route; and
- AMP-related administrative reviews (2017 and 2018).

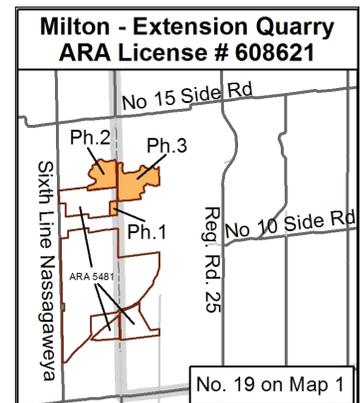
Milton Extension-Quarry Status

According to the 2017 Monitoring Report, Dufferin continued removal of aggregate from the West Cell's quarry floor, which began in 2016. The 2017 activities in the East Cell involved extraction of the upper bench of dolostone in the western and central portion of this cell, and advancement of the sinking cut in the southwestern part of this cell.

According to the 2018 Monitoring Report, Dufferin continued removal of aggregate from the West Cell's quarry floor, and continued extraction along the north wall of the West Cell. The 2018 activities in the East Cell involved extraction of the upper bench in the central portion of this cell, and advancement of the lower bench extraction in the southwestern part of this cell. Floor extraction did not commence in the East Cell in 2018.

Meridian Brick Tansley Quarry AMP

The Tansley Quarry in Burlington (licensed in 2007) is owned by Meridian Brick Canada Ltd. (Meridian Brick) in Burlington. In May 2007, Hanson Brick Ltd. (original licensee) entered into an Adaptive Groundwater Management Plan (AMP) Agreement and a Private Communal Water System (PCWS) Agreement with the Region of Halton.



Adaptive Groundwater Management Plan

The Adaptive Groundwater Management Plan (AMP) for the Tansley Quarry sets out a program to monitor the potential effects of the quarry and ensure that affected property owners have uninterrupted access to potable water. This is further guaranteed by the AMP Agreement and Private Communal Water System (PCWS) Agreement. These Agreements obligate Meridian Brick (previously Forterra Brick and Hanson Brick) to undertake actions set out in the AMP, including construction, operation and maintenance of the PCWS. Halton staff oversees, reviews, and keeps track of deliverables associated with the AMP and PCWS Agreements, including technical, financial, and insurance matters.

Private Communal Water System

Hanson Brick Ltd. (currently Meridian Brick) constructed a PCWS and related infrastructure between December 2011 and February 2013. Since May 2013, the PCWS, classified as Non-municipal Year-round Residential Drinking Water System, provides potable water to 11 private residences and six vacant lots (referred to as Eligible Properties) adjacent to the Tansley Quarry. The System has been fully operational since July 15, 2013 (Hanson Brick Ltd., 2013). As per the PCWS Agreement, Meridian Brick is responsible to own, maintain, repair and replace the PCWS and is required to file annual financial and operating reports with the Commissioner of Legislative and Planning Services by April 30 of each year. The Ontario Clean Water Agency (OCWA) operates, maintains, and monitors the Tansley PCWS facility on behalf of Meridian Brick. Halton Region staff had no issues with the 2017 and 2018 reports that could affect the ongoing PCWS operation.

Between mid-2017 and mid-2018, Halton Region led the first five-year review of the PCWS operational securities, as required under the PCWS Agreement. The review resulted in adjustment to operational securities for the current five-year period (July 2018 to July 2023). The adjustment is the result of increase in annual cost to: operate and maintain the PCWS; truck in water to the PCWS and two eligible properties not serviced by PCWS; electricity, telecommunication, and fire equipment maintenance; upkeep of the PCWS area; and contingency concerning the above-noted items.

AMP Monitoring and Reporting

The AMP requires the quarry operator to submit annual monitoring reports by April 30 of each year, for the proceeding calendar year, to the MNR, MECP and the Region of Halton, and to report on any unusual water level and water quality data within 30 days of detection. Meridian Brick is also required to submit pumping and discharge reports to the MECP by March 31 of each year, in accordance with water taking and discharge permits (PTTW and C of A for Industrial Sewage Works). As per the AMP, the Region also has a role in reviewing and approving Annual Monitoring Reports. In accordance with the AMP, the Region, along with Meridian Brick and the MECP, have a role in reviewing well restoration options if dewatering activities affect properties beyond the PCWS-serviced zone. In their annual monitoring reports, the licensee reported that there were no well interference complaints within or beyond the servicing zone since quarry operation started.

Regional staff reviewed the AMP-related annual monitoring reports submitted by the operator in May 2017 and May 2018, and provided comments on respective reports in August 2017 and August 2018, respectively. No amendments to the AMP or additional contingency actions had been required since commencement of the site operation in 2007.

Some modifications to the off-site private well monitoring were introduced by the operator over the years due to provision of water supply to the eligible properties, and some wells were decommissioned by the operator as requested by the well owners connected to the PCWS. A monitoring location north of the sinking cut was decommissioned in November 2017 to allow for continued stripping and progression of the quarry face to the north. The Region provides comments and recommendation on the adequacy of the groundwater monitoring network through annual monitoring report reviews.

Tansley Quarry Status

Based on the 2017 Monitoring Report, about 100,000 m³ of additional overburden was stripped and stockpiled at the site. Three wet ponds were constructed in late 2017 to remove sediment from water discharged to the tributary of Fourteen Mile Creek and to provide post development peak flow attenuation for the site. Two surface water quality and flow monitoring stations were established in late 2017 to monitor the off-site discharge. The 2018 CAR indicated that stripping work was in progress and that, while the existing overburden stockpile had been seeded, the new stockpiles had not been seeded as further stripping was to be carried out in



foreseeable future. Based on the 2018 CAR, the disturbed area of 17.2 ha included about an 8.55 ha excavated area and an 8.4 ha berm. The rehabilitation area of 8 ha has not changed since 2015 within this relatively new site. Meridian Brick was planning to demolish a wooden barn during winter of 2017/2018 and had registered the activity under *O. Reg. 242/08 of the Endangered Species Act (ESA)* (for Barn Swallows), and had constructed an alternative nesting structure approved by the MNRF.

Dufferin Aggregates Acton Extension Quarry AMP

The Acton Quarry in the Town of Halton Hills consists of an existing Acton Quarry - Phases 1, 2 and 3 (ARA 5492), and an Extension Quarry - Phases 4, 5E, and 5W/6 (ARA 625003). Dufferin Aggregates, a Division of CRH Canada Group Inc. (Dufferin Aggregates) is the current owner and holder of ARA licenses for Acton existing and Extension Quarry. The AMP (2014) applies to the Acton Extension Quarry (65.6 ha), which was licensed in 2017 (ARA 625003). The AMP implementation is a condition in the ARA licence and the ARA Site Plan.

The Acton Extension Quarry AMP is the key document to guide implementation and operation of mitigation and rehabilitation measures for the protection of water resources and related ecological features. The AMP includes requirements for comprehensive monitoring and includes procedures for actions that must be taken in the event that Performance-Based Targets (PBTs) are not met. Comprehensive data collection, system testing, and reporting (annual, on-line, pre-extraction, verification, etc.) are required for Phases 4 and 5/6 West of the Extension Quarry.

Under the AMP Agreement (April 2016), Halton Region, Conservation Halton (CH), and Credit Valley Conservation (CVC) are to oversee the effectiveness of the water management system implemented under the AMP on an ongoing basis. Halton Region has a lead oversight role under the AMP and Ecological Enhancement Plan (EEP) Agreements. The EEP Agreement ensures that Dufferin implements the EEP for ecological restoration and natural feature enhancement, including on-and-off site enhancement, and progressive and final rehabilitation.

In 2017-2018, Halton staff conducted the following reviews as part of the AMP- and EEP-related oversight:

- Review the Phase 4 Planting Prescription for the Acton Extension Quarry as required under the Ecological Enhancement Plan (2018).
- Review of the Proposed Additional Phase 4 Well Installations at the Dufferin Acton Extension Quarry (2018).
- Review of the 2017 Acton Quarry Monitoring Report (2018).
- Reviews concerning Dufferin's proposed plan for adaption of the AMP relative to the conditions at a target well west of Phase 4 (2018).
- Reviews concerning the Extension Quarry's Phase 4 Mitigation Verification Report and the Phase 4 Contingency Verification Report (2018); and
- AMP-related administrative reviews (2017 and 2018).

Acton Quarry Status

Dufferin obtained all required approvals for the Extension Quarry and started installation of the Water Management System (WMS) in Phase 4 in early 2017 with some finishing work continuing into 2018. This included installation of recharge wells and discharge connections, supplementation to the monitoring network, and installation of all connecting infrastructure.

The Phase 4 site preparation started in 2017 and continued in 2018. In 2017 and 2018, excavation setbacks were reduced from 15 m to 0 m along the common boundaries with the existing Licence 5492, and overburden was used to build visual and acoustic berms, which subsequently had been seeded. The Phase 5E of the extension removal started in 2018. Limited extraction above the water table was initiated in Phase 4 in Fall 2018.

Based on the 2018 CAR, some areas outside the approved extraction limits, which were included in the 2017 disturbed areas due to construction of the WMS components, were removed from the total disturbed areas in 2018 as these areas were subsequently re-vegetated. Dufferin reported completion of significant amount of work under the Ecological Enhancement Plan in 2017 and 2018.

The Phase 4 Verification reports demonstrated that the mitigation system was designed and tested in accordance with the AMP requirements. A Pre-Extraction Report is required prior to the initiation of below-water extraction in the Phase 4.



G. Assessment of the Cumulative Impact of Extraction Operations on both the Greenbelt and Regional Natural Heritage System

Active licences require some level of rehabilitation (in accordance with the approved site plans, PPS, and the Greenbelt Plan) to be compatible with the surrounding land.

Policy Context

The Provincial Policy Statement, 2014 (PPS) is consolidated statement on the government's policies on land use planning, including among other things, protecting the natural environment and natural resources. Section 2.5.3.1 of PPS indicates: "Progressive and final rehabilitation shall be required to accommodate subsequent land use compatibility, to recognize the interim nature of extraction, and to mitigate negative impacts to the extent possible. Final rehabilitation shall take surrounding land use and approved land use designations into consideration."

Section 4.3.2.4 in the former provincial Greenbelt Plan (2005), called for the MNRF's determination of the maximum allowable disturbed area of each mineral aggregate operation (i.e. "Any excess disturbed area, above the maximum, will be required to be rehabilitated. Existing operations have 10 years of the approval of the Greenbelt Plan to complete rehabilitation, with 50 per cent requiring completion within six years. For new operations, including expansions, the total disturbed area shall not exceed an established maximum allowable disturbed area").

In the new provincial Greenbelt Plan (effective as of July 1, 2017), Section 4.3.2.5 refers to rehabilitation of new and existing operations:

5. *New and existing mineral aggregate operations and wayside pits and quarries, within the Protected Countryside shall ensure that:*
 - a. *The rehabilitated area will be maximized and disturbed area minimized on an ongoing basis during the life-cycle of an operation;*
 - b. *Progressive and final rehabilitation efforts will contribute to the goals of the Greenbelt Plan;*
 - c. *Any excess disturbed area above the maximum allowable disturbed area, as determined by the Ministry of Natural Resources and Forestry, will be rehabilitated. For new operations, the total disturbed area shall not exceed an established maximum allowable disturbed area; and*
 - d. *The applicant demonstrates that the quantity and quality of groundwater and surface water will be maintained as per Provincial Standards under the Aggregate Resources Act.*
6. *For rehabilitation of new mineral aggregate operation sites in the Protected Countryside, the following policies apply:*
 - a. *The disturbed area of a site shall be rehabilitated to a state of equal or greater ecological value and, for the entire site, long-term ecological integrity shall be maintained or enhanced;*
 - b. *If there are key natural heritage features or key hydrologic features on the site, or if such features existed on the site at the time of an application:*
 - i. *The health, diversity and size of these key natural heritage features and key hydrologic features shall be maintained or enhanced; and*
 - ii. *Any permitted extraction of mineral aggregates that occurs in a feature shall be completed, and the area shall be rehabilitated, as early as possible in the life of the operation;*
 - c. *Aquatic areas remaining after extraction are to be rehabilitated to aquatic enhancement, which shall be representative of the natural ecosystem in that particular setting or ecodistrict, and the combined terrestrial and aquatic rehabilitation shall meet the intent of section 4.3.2.6 (b); and*
 - d. *Outside the Natural Heritage System, and except as provided in sections 4.3.2.6 (a), (b) and (c), final rehabilitation shall appropriately reflect the long-term land use of the general area, taking into account applicable policies of this Plan and, to the extent permitted under this Plan, existing municipal and provincial policies. In prime agricultural areas, the site shall be rehabilitated in accordance with section 2.5.4 of the PPS.*

7. Final rehabilitation for new mineral aggregate operations in the Natural Heritage System shall meet these additional policies:

- a. Where there is no extraction below the water table, an amount of land equal to that under natural vegetated cover prior to extraction, and no less than 35 per cent of the land subject to each license in the Natural Heritage System, is to be rehabilitated to forest cover, which shall be representative of the natural ecosystem in that particular setting or ecodistrict. If the site is also in a prime agricultural area, the remainder of the land subject to the license is to be rehabilitated back to an agricultural condition;
- b. Where there is extraction below the water table, no less than 35 per cent of the non-aquatic portion of the land subject to each license in the Natural Heritage System is to be rehabilitated to forest cover, which shall be representative of the natural ecosystem in that particular setting or ecodistrict. If the site is also in a prime agricultural area, the remainder of the land subject to the license is to be rehabilitated in accordance with section 2.5.4 of the PPS; and
- c. Rehabilitation shall be implemented so that the connectivity of the key natural heritage features and the key hydrologic features on the site and on adjacent lands shall be maintained or enhanced.

On May 10, 2017, Bill 39, An Act to amend the *Aggregate Resources Act* and the *Mining Act*, received Royal Assent, and the rehabilitation reporting requirement has since become law. The amendments have strengthened the requirements for rehabilitation. Section 48 (1.1) of the *ARA* indicates:

- (1.1) Every licensee and every permittee shall submit reports on the progressive rehabilitation and final rehabilitation of the site at the prescribed times and shall prepare and submit the reports in accordance with the regulations. 2017, c.6, Schedule 1, s. 39

Rehabilitation Status of Sites Adjacent to/Intersecting the Regional Natural Heritage System

All *ARA* sites in Halton Region (Table 1) were either within or adjacent to the Regional Natural Heritage System (RNHS), as shown on Map 1 of the 2009 ROP (Office Consolidation, June 19, 2018), and on Map 3 in this document. Historically, rehabilitation progress was reported at most of these sites. Rehabilitation status at all currently licensed *ARA* sites adjacent to or intersecting the RNHS, is provided in Appendices 1 and 2, based on the recent 2017-2018 CARs (or earlier, where no recent CARs were available). The rehabilitation end-use descriptions (Appendix 2) are based on the approved Site Plans.

During the 2017-2018 period, a rehabilitation area increase of 26.6 ha was reported at *ARA* 5492 (Acton Quarry), 15.8 ha at *ARA* 5481 (Milton Quarry), 14.8 ha at *ARA* 5619 (Leaver Pit), 13.5 ha at *ARA* 5507 (Hayward Pit), and 1.4 ha at *ARA* 608621 (Milton Extension Quarry). Final rehabilitation at *ARA* 5462 (David Anderson Pit) was deemed complete by MNRF in May 2018. No other sites in Halton Region reported significant changes to rehabilitation areas during 2017-2018. Rehabilitation of less than 1 ha were reported at Acton Limehouse Pit (*ARA* 5480), Wilroy Brooks Pit (*ARA* 5546), and Acton Extension Quarry (*ARA* 625003, licensed in 2017).

Rehabilitation Status of Sites Adjacent to/Intersecting the Greenbelt Natural Heritage System

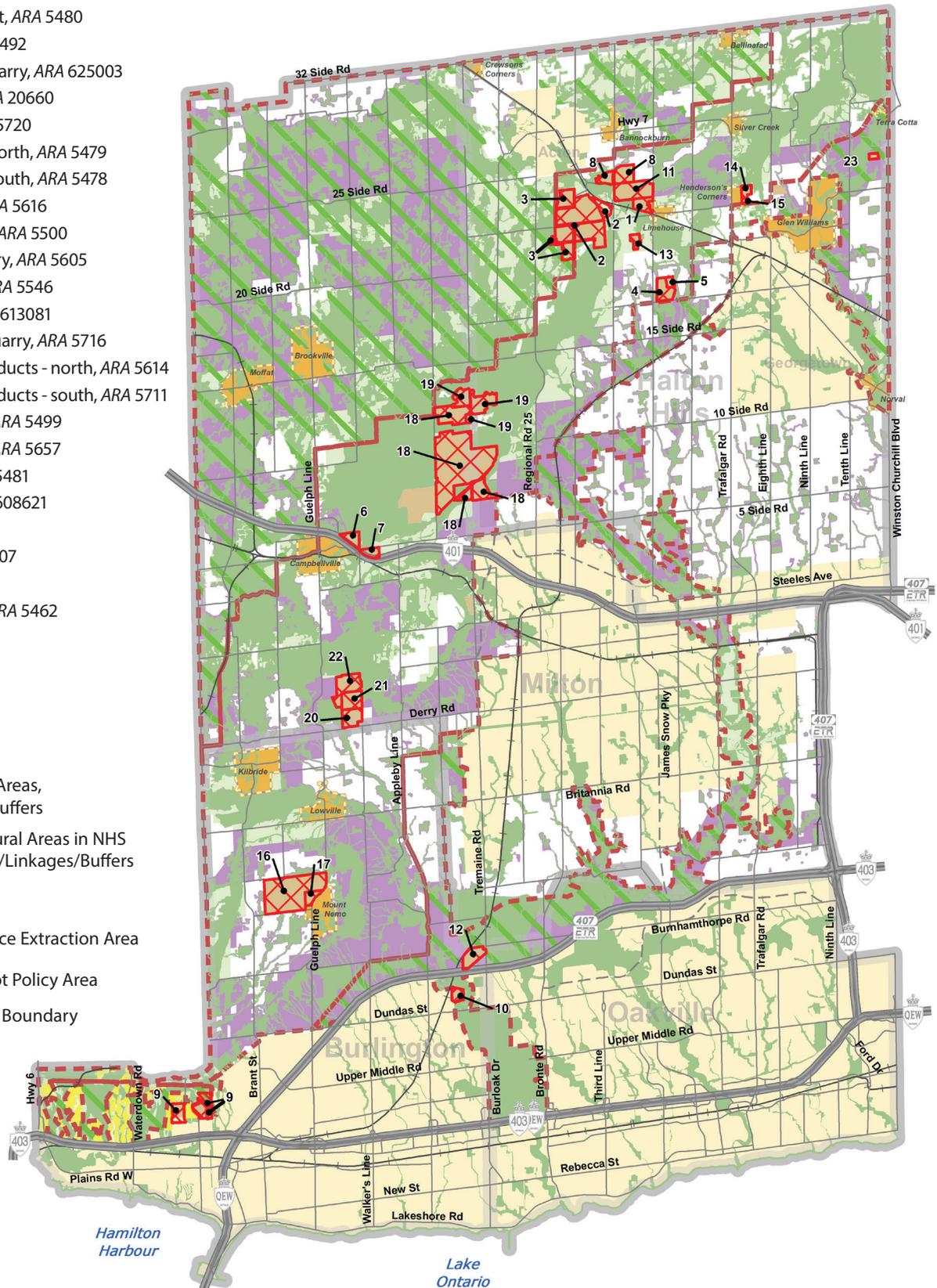
Six *ARA* sites are either within or adjacent to the Greenbelt Plan NHS including Acton Quarry (*ARA* 5492), Acton Extension Quarry (*ARA* 625003) and Brockton Farms (*ARA* 20660) in Halton Hills, and the Aldershot Quarries (*ARA* 5500), Tansley Quarry (*ARA* 613081) and Burlington Quarry (*ARA* 5605) in Burlington. The Anderson Pit in Halton Hills surrendered its license (*ARA* 5462) in May 2018. A total licensed area for these sites is about 442 ha and a total permitted extraction area (as per the approved Site Plans) is about 375 ha. As of 2018, about 109 ha had been rehabilitated and the total disturbed at these sites was approximately 171 ha. The Milton's North Quarry and Extension Quarry were not included in the total areas given the partial adjacency to Greenbelt NHS.

Map 3: ARA Sites Located in the Greenbelt and Regional Natural Heritage System

Licensed Sites

1. Acton Limehouse Pit, ARA 5480
2. Acton Quarry, ARA 5492
3. Acton Extension Quarry, ARA 625003
4. Brockton Farms, ARA 20660
5. Hilltop Quarry, ARA 5720
6. Campbellville Pit - north, ARA 5479
7. Campbellville Pit - south, ARA 5478
8. Bot-Holdings Pit, ARA 5616
9. Aldershot Quarries, ARA 5500
10. Burlington Pit/Quarry, ARA 5605
11. Wilroy Brooks Pit, ARA 5546
12. Tansley Quarry, ARA 613081
13. Rice and McHarg Quarry, ARA 5716
14. Limehouse Clay Products - north, ARA 5614
15. Limehouse Clay Products - south, ARA 5711
16. Burlington Quarry, ARA 5499
17. Burlington Quarry, ARA 5657
18. Milton Quarry, ARA 5481
19. Milton Quarry, ARA 608621
20. Milton Pit, ARA 5484
21. Hayward Pit, ARA 5507
22. Leaver Pit, ARA 5619
23. D. T. Anderson Pit, ARA 5462

-  Urban Area
-  Hamlet
-  Key Features
-  Enhancement Areas, Linkages and Buffers
-  Prime Agricultural Areas in NHS Enhancements/Linkages/Buffers
-  Greenbelt NHS
-  Mineral Resource Extraction Area
-  North Aldershot Policy Area
-  Greenbelt Plan Boundary



Rehabilitation Status at Former & Abandoned Aggregate Sites Within/Adjacent to the NHS Areas in Halton

Former *ARA* sites and abandoned aggregate sites have also been considered in relation to the Greenbelt and Regional NHS Areas. Locations of the former sites, identified through the Ontario Geological Survey's (OGS's) Aggregate Resource Inventory Papers (1982-2009), are shown in Map 2. TOARC's Surrounded Sites Reporting and Mapping (SSR&M) Tool was utilized to verify the locations and land use status of the formerly licensed sites in Halton Region.

As of 2018, there were 11 known former pits and at least six former wayside pits (no former quarries) identified within/adjacent to the Greenbelt NHS in Halton Region. There are at least 27 former pits and at least 16 quarries within/adjacent to the Regional NHS. Most of the formerly licensed pits had been rehabilitated or partially rehabilitated.

The following former *ARA* pits (locations identified as P# on Map 2) are within the Greenbelt NHS:

- Former *ARA* 5462 (6.28 ha)/David Anderson Pit (P5462) - According to TOARC, the licence was surrendered in December 2017. In May 2018, the MNRF deemed final rehabilitation to be acceptable and completed in accordance with the *ARA*, the regulations, conditions of the licence and the site plans.
- Former *ARA* 5464 (30.38 ha)/C.G. Bishop c/o Halton Sand and Gravel Ltd. Pit (P38a) - The licence was surrendered in April 2007. Based on TOARC's on-line SSR&M Tool, the site uses (as of 2017) include residential-single family housing (50 per cent), natural-meadow/grassland/prairie (15 per cent), natural-forest (15 per cent), and multiple (20 per cent).
- Former *ARA* 5477 (17.42 ha)/555816 Ontario Inc. Campbell Pit/Stull Pit (P24) - The licence was revoked in September 2006. The site was reported "rehabilitated" in the ARIP#184 (OGS, 2009). Halton Hills OPA 16, as well as the Niagara Escarpment Plan Amendment 192, apply to this site.
- Former *ARA* 5510 (6.59 ha)/1294142 Ontario Limited Pit (P 5510) - The licence was surrendered in July 2016. The MNRF deemed final rehabilitation completed in accordance with the *ARA*, the approved site plan, and the conditions of the licence. The 2017 site uses identified by TOARC included open-natural (95 per cent) and residential-cottages and trailers (five per cent).
- Former *ARA* 5495 (4.86 ha)/R. Hess Pit (28/96) - The licence was revoked in 1999. The location of this pit (OGS, 1996) is in the vicinity of the former *ARA* 5510.
- Former *ARA* 5574 (83 ha)/Woodlawn Guelph Ltd. Campbellville Pit (P1) - This site was licensed as sand and gravel pit between 1976 and 2008. Sand and gravel was also extracted at this site during the 1960s. The licence was revoked in 2008. The site is currently owned by 2278082 Inc. (a subsidiary of JDCL). In 2018, JDCL filed an application for a new *ARA* licence, known as the Reid Road Reservoir Quarry, to extract the remaining sand and gravel and to extract the underlying rock (dolostone) at this site. The site is located in rural area with a mix of rural residential, agricultural, natural heritage and industrial uses.

The following former *ARA* pits and quarries (locations identified as P# and Q# on Map 2) are within/surrounded by the Regional NHS:

- Former *ARA* 5493 (125 ha)/Halton Crushed Stone Quarry (Q5493) - The licence was surrendered in September 2015. The MNRF deemed final rehabilitation completed in accordance with the *ARA*, the approved site plan and the conditions of the licence. The site uses, as identified by TOARC (2016) include water-pond (80 per cent), open-natural (10 per cent), exposed sand, stone, and gravel (five per cent), and multiple (five per cent).
- Former *ARA* 5687 (42.49 ha)/J.C. Duff Ltd. Silvercreek Gravel Pit (P21) - This site, located south of the Silver Creek Conservation Area, was rehabilitated and the licence was surrendered in October 2008. The site uses as identified by TOARC (2017) include open-natural (75 per cent), woodland (10 per cent), cultural thicket (10 per cent), and multiple (five per cent).
- Former *ARA* 5498 (41 ha)/Nelson Aggregate Burlington (Kilbride) Pit (P41) - The pit was rehabilitated and the licence was surrendered in January 1997. The site uses, as identified by TOARC (2010) included agriculture-livestock (85 per cent), natural (10 per cent), and rural (five per cent). Satellite view (TOARC's SSR&M Tool) shows graded and vegetated slopes, and levelled pit floor (appear to be seeded/cultivated). Residential and farm buildings and several ponds are present at the site.
- Former *ARA* 5496/Conservation Halton Kelso Quarry Park; formerly Lac Properties Inc. Limestone Quarry (Q4) - This site had been rehabilitated, and the licence was surrendered in July 2006 (TOARC). The site uses as identified by TOARC (2016) include recreational/conservation area (100 per cent).
- Former Milton Robertson Quarry - an unlicensed former site identified by TOARC within the current Kelso Conservation Area [CB-36 on Map 2]. The site uses as identified by TOARC (2017) include: woodland (55 per cent), open-exposed sand, stone, gravel (20 per cent), open-exposed bedrock (20 per cent), and multiple (5 per cent).

- Former ARA 5713 (14.77 ha)/2066012 Ontario Inc.; formerly Hanson Brick Milton Quarry (Q3) - This site was rehabilitated and the licence was surrendered in November 2010 (TOARC). The site uses as identified by TOARC (2017) include natural-meadow/grassland/prairie (80 per cent) and water-wetland (20 per cent).
- Former ARA 5495 (4.86 ha)/R. Hess Pit (28/96) - The licence was revoked in 1999. The location of this pit (OGS, 1996) is in the vicinity of the former ARA 5510.
- Former ARA 5506 (20.89 ha)/Selco Construction Sand and Gravel Ltd. Pit (P42) - This pit, located on the southeastern side of Killbride Village, had surrendered its licence in January 1990 (TOARC). The site uses as identified by TOARC (2017) include pond (35 per cent), woodland (20 per cent), meadow/grassland/prairie (15 per cent), and multiple (30 per cent).
- Former ARA 5466 (40.5 ha)/WM. R. Barnes Co. Ltd. Quarry (Q5/83) - The licence was surrendered in November 1994. The site uses as identified by TOARC (2017) include natural-meadow/grassland/prairie (60 per cent), and natural-cultural thicket (40 per cent).
- Former ARA 5505 (3.4 ha)/Rice and McHarg Quarry (Q4/83) - This licence was surrendered in April 2007. The site uses as identified by TOARC (2017) include agriculture-field crops (40 per cent), rural (20 per cent), natural-meadow/grassland/prairie (20 per cent).
- Former ARA 5501 (0 ha)/Old Martin Quarry (Q21) - The licence for this site, located at Tenth Line near the Escarpment edge, was reported as surrendered in January 1990 (TOARC). The site uses as identified by TOARC (2017) include natural (90 per cent) and water-wetland (10 per cent).

Most of the formerly unlicensed (abandoned) aggregate sites had been reported by the OGS as “overgrown.” Nine had been reported as “rehabilitated”, and two quarries were noted to be “water-filled”.

H. Number and Status of Active and Potential Applications for Mineral Resource Extraction Areas

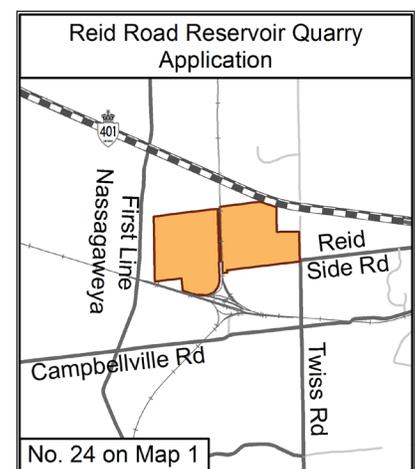
During 2017-2018, Halton staff were involved in reviewing one active application in Halton Region and two active applications adjacent to the Region. The active application in Halton Region pertained to Reid Road Reservoir Quarry ARA application submitted by James Dick Construction Limited (JDCL) to MNRF in July 2018. The active applications adjacent to the Region included the Norval Quarry in Brampton and the Hidden Quarry in Guelph/Eramosa.

Active Applications in Halton Region

Reid Road Reservoir Quarry (Town of Milton), James Dick Construction Limited

In or around July 2018, James Dick Construction Limited applied to the MNRF for a Class A licence (Category 1 and 2 Pit and Quarry Below Water) under the ARA to extract the remaining sand and gravel and to extract dolostone from an area of a former pit, located approximately 1.5 km west of Hamlet of Campbellville in the Town of Milton. The Region received an information package (including technical reports and site plans submitted to by JDCL to MNRF) in August 2018. The applicant did not submit *Planning Act* application, asserting that no such application to the Town of Milton or Halton Region was required. No advance notice or pre-consultation on the application was given to the Region, Town of Milton or Conservation Halton.

The lands subject to this application are located on two properties that are owned by 2278082 Inc. (a subsidiary of JDCL), which are approximately 83 ha in size (combined). The subject property was previously licensed as a gravel pit (former ARA 5574 – Woodlawn Guelph Ltd., and Springbank Sand and Gravel prior to that) from 1976 to 2008. The past pit operations resulted in the creation of two ponds in the northern portion, and a disturbed area (above water) in the southwestern area of the site. Extraction of the remaining sand and gravel and extraction of dolostone (with no dewatering) within the former extraction areas, have been proposed by JDCL.



Based on the application notification documents, JDCL is proposing approximately 29.4 ha for licencing, with approximately 25.7 ha proposed for extraction. The applicant estimates sand and gravel reserves at approximately 500,000 tonnes and dolostone at about 12.5 million tonnes. As per the application's Site Plan and Summary Statement Report (June 2018), the maximum annual tonnage is proposed to be 990,000 tonnes.

Halton Region's review team identified a number of concerns with the planning, operational, and technical aspects of the application. The Region filed a Letter of Objection with the MNRF and the applicant on September 17, 2018 (i.e. within 45 days of receiving a notice), and again on September 24, 2018 in regards to the Environment Bill of Rights (EBR) Registry No. 013-3690. JDCL replied to Halton's comments on December 11, 2018.

Halton staff have indicated in the Region's Letter of Objection and in discussions with JDCL's planning consultant that the proposed land use is not permitted by, and does not conform with, the 2009 Regional Official Plan. The Region indicated that studies provided by JDCL to MNRF did not provide sufficient assessment of the Greenbelt NHS features and potential impacts from the proposal. In late 2018, the Region retained a consulting team to carry out detailed review of JDCL's technical material. In early 2019, the Region, the Town of Milton and Conservation Halton established a Joint Agency Review Team (JART) to review JDCL's ARA-related submissions (2018) in support of the application. The JART team's detailed review comments were submitted to MNRF and the applicant in July 2019. JART recommended that the applicant work with the review team to address JART's concerns. Information pertaining to the Region's and the JART comments can be accessed on the Region's website at halton.ca/The-Region/Regional-Planning/Mineral-Aggregate-Operations.

The Region is fully participating in the MNRF's licence application and consulting with MNRF and JDCL's consulting team to ensure that the objections raised in the Region's Letter of Objection area adequately addressed. No response has been received from JDCL as of the date of writing.

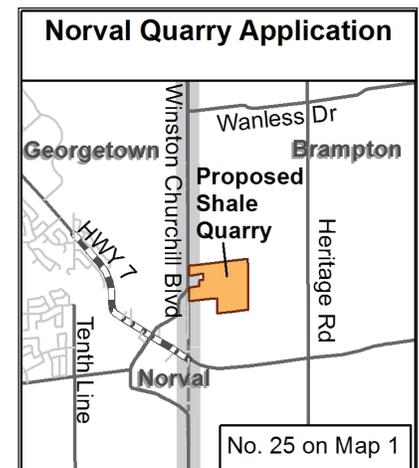
Active Applications outside Halton with Potential to Impact the Region

Active applications outside, but adjacent to the Region, included Brampton Brick's proposal for a new shale quarry in Brampton (referred to as Norval Quarry) and James Dick's Construction proposal for a new dolostone quarry in Guelph-Eramosa (referred to as Hidden Quarry).

Norval Quarry (Brampton), Brampton Brick Ltd. (Brampton Brick)

Brampton Brick Ltd. submitted a Zoning By-law amendment application to the City of Brampton in December 2008 and an ARA licence application to the MNR in August 2010 for a new shale quarry site on the east side of Winston Churchill Boulevard, immediately northeast of the Hamlet of Norval in the City of Brampton. In September 2014, Brampton City Council refused the rezoning application.

In May 2016, Brampton Brick issued final reports in response to comments and concerns raised by the public and commenting agencies regarding the Norval Quarry proposal. The revised materials include: Haul Route Study (January 2016), Site Plan Report (February 2016), Draft Adaptive Management Plan Version 2.0 (April 2016), Level 1/2 Hydrogeological Technical Report (April 2016), Level 1/2 Natural Environment Report (April 2016), and Policy Planning Report (May 2016). Halton Region staff reviewed the relevant material in these reports, and matters of Regional interest were re-examined. The revised material was referred to the Ontario Municipal Board (OMB) in support of the rezoning and licence applications.

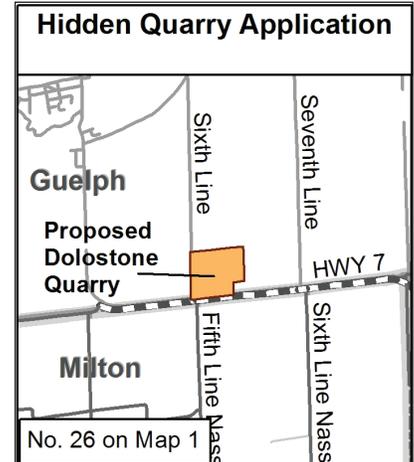


The initial pre-hearing conference was held on June 12, 2017. A number of stakeholders had expressed interest in the applications. Parties to the hearing were to include municipalities that govern or border the site, a Provincial ministry, and neighbouring landowners (private and institutional). The Region of Halton and the Town of Halton Hills received Party status. The second pre-hearing was held on October 20, 2017. Both pre-hearings dealt with procedural matters (OMB/LPAT proceedings pertaining to Case No. PL110063, dated June 29, 2017). A third pre-hearing was scheduled for April 13, 2018, and the hearing was scheduled to commence on September 10, 2018. On April 6, 2018, Brampton Brick withdrew their application to amend the City of Brampton Zoning By-law 270-2004, its application for a licence under ARA, and their related OMB appeals.

Hidden Quarry (Guelph/Eramosa), James Dick Construction Ltd.

In 2012, James Dick Construction Ltd. submitted an application to Guelph/Eramosa Township (County of Wellington) to rezone a 100-acre parcel near Rockwood to permit a quarry immediately north of Highway 7 along the municipal boundary with the Town of Milton. It also submitted a licence application under the *ARA*. Regional staff were involved in reviewing material concerning both the *ARA* application and *Planning Act* application to ensure Regional interests were addressed.

In April 2015, the Region provided comments to the Township of Guelph/Eramosa on the JDCL's 2014-2015 submissions. In May 2015, JDCL appealed the Township Zoning By-law Amendment, citing lack of a decision, to the Ontario Municipal Board (OMB) and in June 2015, Regional Council directed staff to continue working with staff from the Town of Halton Hills and Milton, the Township, Grand River Conservation Authority and the proponent on resolving the Region's issues and, if necessary to participate in the OMB Hearing to defend the Region's interest in this application. The Region was granted Party Status at the first Pre-Hearing Conference (PHC) on November 9, 2015.



In October 2016, the OMB adjourned the hearing sine die (with no appointed date for resumption) to allow JDCL to file new Planning Act applications. In November 2016, JDCL submitted an application for a Zoning By-law amendment to the Township and an Official Plan Amendment (OPA) application to Wellington County, both of which were deemed complete.

Upon circulation in February 2017, the Region and Town of Halton Hills reaffirmed objections to the proposed new quarry and associated new planning applications. The Region and Town believed that JDCL's applications were not in the public interest, did not constitute good planning and should be denied. In April 2017, JDCL appealed to the OMB citing a lack of decision within 180 days of the planning application submissions. The OMB (continued as LPAT) had pre-hearings in November 2017 and April 2018.

In October 2018, the Region and Town, along with the Township, County and local residents' group, CORE, provided an updated Issues List to the LPAT. The 63 issues were grouped into several thematic areas, including: protection of natural heritage and water resources; traffic and haul routes; noise and blast/vibration; cultural heritage, agriculture, air quality and visual impacts; and consistency with the Provincial Policy Statement (PPS), conformity with Wellington County's Official Plan and the Halton Region's Official Plan, as amended by ROPA 38. The hearing commenced on May 21, 2019 and concluded on July 9, 2019. The Region and Town maintained that JDCL's applications are not in the public interest, do not represent good planning, do not meet the requirements of the *ARA* and corresponding standards, and do not represent wise resource management, and that the establishment of a quarry at this site should be denied. The Region called experts in the areas of hydrogeology, karst, ecology and blasting. The Town of Halton Hills called evidence in transportation engineering and safety. The Town and Region shared a planning witness and legal counsel. At the time of writing, no decision has been issued by the LPAT.

Definitions

Active Licence

A licence that has been issued, transferred or under suspension prior to the end of the calendar year. (Definition adopted from TOARC's Aggregate Resource Statistics Reports.)

Adaptive Management Plans (AMP)

The objective of Adaptive Groundwater Management Plans (AMPs) is to protect water resources and ecological features and functions. The AMP provides for local control through a direct Agreement between an Agency (or Agencies) and the Owner- Operator and includes mechanisms for enforcement of the AMP through Dispute Resolution/Arbitration Process, with securities held by an Agency in case of default by the Owner.

Abandoned Sites

Abandoned sites are pits and quarries for which a licence or permit was never in force at any time after December 31, 1989 (as defined by TOARC). Where the landowner has granted permission, these sites can be rehabilitated by the Ontario Aggregate Resources Corporation under the Management of Abandoned Aggregate Properties Program (<https://www.ontario.ca/page/aggregate-resources#section-2>).

Aggregate

In the Region of Halton, the primary aggregate sources include sand, gravel, clay, shale, limestone, dolostone, and sandstone (refer to Mineral Aggregate Resources for expanded definition).

Aggregate Resources Act (ARA)

The *Aggregate Resources Act (ARA)* requires licences for pits and quarries in designated parts of Ontario, wayside permits for extraction involving public construction projects, and permits for pits and quarries on Crown Land. The legislation and policy framework under the ARA comprises The Act itself, General Regulation 244/97; "Aggregate Resources of Ontario: Provincial Standards," MNR (currently MNRF), June 1997; and MNR Policies and Procedures (i.e. MNR Aggregate Resources Policy Manual).

Aggregate Licence

Aggregate licence is required to operate a pit or quarry, in a part of Ontario designated under Section 5 of ARA, on land that is not under water and the surface rights are not the property of the Crown.

Aggregate Permit

Aggregate permit is required to (i) operate a pit or quarry on land the surface rights of which are the property of the Crown, (ii) to excavate aggregate that is the property of the Crown from land under water, and (iii) that is the property of the Crown in a part of Ontario not designated under Section 5 of ARA; or (iv) to excavate aggregate that is not the property of the Crown from land under water.

Agreement between MNR(F) & MOE(CP) Re. Aggregate Matters

This refers to an Agreement to Address the Roles and Responsibilities of the MNR and the MOE [currently MNRF and MECP] Regarding Aggregate Extraction Operations within the Province of Ontario (May 2008). Key principles and steps are outlined in Operational Procedure 1 and 2 of the Agreement.

Bill 39

Aggregate Resources and Mining Modernization Act, 2017 (Royal Assent of May 10, 2017), where Schedule 1 makes various amendments to the *Aggregate Resources Act*, while Schedule 2 amends provisions of the *Mining Act*.

Class A Licence

A licence under the *Aggregate Resources Act* to allow excavation of more than 20,000 tonnes of aggregate annually from a pit or quarry within parts of Ontario that have been designated under the *Aggregate Resources Act*. (Definition adopted from TOARC's Aggregate Resource Statistics Reports.)

Class B Licence

A licence under the *Aggregate Resources Act* to allow excavation of less than 20,000 tonnes of aggregate annually from a pit or quarry within parts of Ontario that have been designated under the *Aggregate Resources Act*. (Definition adopted from TOARC's Aggregate Resource Statistics Reports.)

Clay

Earthy, extremely fine-grained sediment, composed of clay-size or colloidal particles, having high plasticity and a considerable content of clay minerals (i.e. primarily aluminum silicates).

Compliance Assessment Report (CAR)

Under the *ARA* license, aggregate producers are required to submit an annual Compliance Assessment Report (CAR) to the MNRF with copies provided to regional and local municipalities. The reporting period for CARs is between September of the preceding year and September of the reporting year. These standardized reports provide a checklist of general compliance matters, including site access and security, operational activities, disturbed and rehabilitated areas, and any issues requiring attention (i.e. remedial actions) and timing for addressing such issues.

Disturbed Area

The amount of land area (in hectares) that remains excavated as a result of the operation of a pit or quarry. Areas of the site where processing equipment, offices, stockpile areas, or other structures still exist on the site are also considered disturbed. Exceptions may be where an office is shown on the Site Plan as remaining when the rehabilitation is complete (Ref.: Policy A.R. 5.00.04, MNR, March 20, 2006).

Dolostone

A term used for sedimentary rock dolomite in order to distinguish it from the mineral of the same name. Dolomite rock contains more than 90 per cent mineral dolomite [$\text{CaMg}(\text{CO}_3)_2$] and less than 10 per cent mineral calcite [CaCO_3]. The latter (mineral calcite) is the chief constituent of limestone.

Gravel

An unconsolidated natural accumulation of rounded rock fragments, mostly of particles larger than sand, such as boulders, cobbles, pebbles, granules, or any combination of these.

Greenbelt Plan (GBP)

Under Section 4.3.2.4 of the Greenbelt Plan (2005), MNRF is to pursue to minimize disturbed areas and maximize rehabilitated areas on an on-going basis during the life-cycle of an operation. The Greenbelt Plan calls for MNRF's determination of the maximum allowable disturbed area of each mineral aggregate operation indicating that any excess disturbed area, above the maximum, will be required to be rehabilitated. Existing operations had 10 years of the approval of the Greenbelt Plan to complete rehabilitation, with 50 per cent requiring completion within six years. For new operations, including expansions, the total disturbed area shall not exceed an established maximum allowable disturbed area.

Under Section 4.3.2.5 of the new provincial Greenbelt Plan (2017): New and existing mineral aggregate operations and wayside pits and quarries, within the Protected Countryside shall ensure that: a) The rehabilitated area will be maximized and disturbed area minimized on an ongoing basis during the life-cycle of an operation; b) Progressive and final rehabilitation efforts will contribute to the goals of the Greenbelt Plan; c) Any excess disturbed area above the maximum allowable disturbed area as determined by the Ministry of Natural Resources and Forestry will be rehabilitated. For new operations, the total disturbed area shall not exceed an established maximum allowable disturbed area; and d) The applicant demonstrates that the quantity and quality of groundwater and surface water will be maintained as per Provincial Standards under the *Aggregate Resources Act*.

Inactive Licence

A licence that has been revoked or surrendered prior to the end of the calendar year (Definition adopted from TOARC's Aggregate Resource Statistics Reports.)

Inspection Notice

Inspector's notice can be served by MNRF's Aggregate Inspector for remedial work concerning minor violations, with no immediate need to cease activities.

Memorandum of Understanding (MOU): MNR(F) & TOARC

This refers to The Memorandum of Understanding between the MNR [MNRF] and The Ontario Aggregate Resources Corporation (TOARC) Regarding Administration of the *Aggregate Resources Act*. The MOU establishes new functions of the Trust as specified in the *ARA*.

Mineral Aggregate Resources

Gravel, sand, clay, earth, shale, stone, limestone, dolostone, sandstone, marble, granite, or other material prescribed under the *ARA Act*, suitable for construction, industrial, manufacturing purposes, and that does not include materials prescribed under the *Mining Act*.

Mineral Aggregate Operations

1. Lands under licence or permit, other than wayside pits and quarries, issued in accordance with the *ARA*.
2. For lands not designated under the *ARA*: established pits and quarries that are not in contravention of municipal zoning by-law [...] (ROP, 2009).

Ministry of Environment, Conservation and Parks (MECP)

The Ministry of Environment, Conservation and Parks (MECP) administers Permit to Take Water for aggregate washing and dewatering, Environmental Compliance Approval (formerly Certificates of Approval) for water discharges and other emissions, and Fill Protocols for material importation to the sites under the *Ontario Water Resources Act (OWRA)* and the *Environmental Protection Act (EPA)*.

Ministry of Natural Resources and Forestry (MNRF)

The Ministry of Natural Resources and Forestry (MNRF) regulates aggregate operations in Ontario in accordance with the *ARA* and the *Planning Act*. Under the *ARA*, MNRF receives and considers aggregate applications, issues aggregate licenses and permits, monitors and enforces compliance matters, and performs scheduled inspections of pits and quarries.

Ministry of Transportation (MTO)

The Ministry of Transportation (MTO) has delegated authority under the *ARA* to administer wayside permits and aggregate permits.

Ministry of Northern Development and Mines (MNDM)

Through Aggregate Resources Inventory Papers (ARIPs), authored by Staff of Ontario Geological Survey (OGS), the MNDM provides geological information and an assessment of aggregate resources in selected Regions of Ontario. ARIPs also identify former and existing pits and quarries.

Pit

Pit refers to land/land under water from which unconsolidated aggregate material (e.g. sand, gravel, clay, earth) is being/has been excavated, and that has not been rehabilitated.

Pits and Quarries Control Act

An Act applicable between 1971 and 1990 to manage and regulate aggregate extraction in Ontario before it was replaced by *Aggregate Resources Act* as of January 1, 1990.

Public Complaints

Ministry of Natural Resources and Forestry (MNRF) is the first responder in accordance with an Agreement to Address the Roles and Responsibilities of the MNR [MNRF] and the MOE [MECP] Regarding Aggregate Extraction Operations within the Province of Ontario (May 2008). If the complaint relates to air quality or noise under the *Environmental Protection Act (EPA)*, or water under the *Ontario Water Resources Act (OWRA)*, then the Aggregate Inspector passes the information to the MECP to carry out an investigation.

Quarry

Quarry is land/land under water from which consolidated aggregate (e.g. sandstone, dolostone, limestone, shale) is being/has been excavated, and that has not been rehabilitated.

Rehabilitation (General)

Rehabilitation means restoring the land from which aggregate has been excavated to its former use or condition, or to change to another use or condition compatible with adjacent land.

Rehabilitation (Progressive and Final)

Under the *ARA*, aggregate operators are required to complete progressive rehabilitation of the site to the satisfaction of the Minister of Natural Resources and Forestry and his authority is delegated to the Aggregate Inspectors. A sketch of progressive rehabilitation is required to be provided with the CAR. Final rehabilitation is to be performed in accordance with *ARA* and Site Plan conditions after the excavation of aggregate and the progressive rehabilitation are completed. Section 48 (1.1) of Bill 39 (2017) - Schedule 1 requires reports on progressive and final rehabilitation at prescribed times and in accordance with the regulations. The rehabilitation reporting requirement has since become law (Ref.: Section 48 (1.1) of the *ARA*). The Greenbelt Plan (2017) includes rehabilitation policies concerning new and existing mineral aggregate operation sites in the Protected Countryside (Section 4.3.2, items #5, 6 and 7).

Rehabilitation Order

Rehabilitation order can be served by MNRF's Aggregate Inspector where progressive rehabilitation is not being undertaken in accordance with the plan. It provides for progressive rehabilitation of a licence or permit within specified timeframe.

Revocation (of Licence)

Revocation can be served by MNRF in regards to *ARA* licences and permits in cases involving bankruptcy, site abandonment, infraction where past charges and suspensions had no effects/situations where previous enforcement tools were not effective, and sites where rehabilitation was not the primary concern.

Sandstone

Sedimentary rock composed of grains of sand set in a matrix of silt or clay and firmly united by a cementing material (commonly silica, iron oxide, or calcium carbonate) - the consolidated equivalent of sand.

Shale

Fine-grained sedimentary rock formed by the compaction of clay, silt or mud. It has a finely-laminated structure.

Surrender (of Licence)

The MNRF may accept the surrender of a licence if the Ministry is satisfied that all applicable fees (e.g. annual licence, rehabilitation security, etc.) have been paid and the rehabilitation was completed in accordance with the *ARA*, the Site Plan and licence conditions.

Suspension (of Licence)

Suspension can be served by MNRF's Aggregate Inspector in regards to violations of active licences, waysides and aggregate permits to obtain immediate compliance (i.e. to correct infraction) where there is no immediate need to stop site activity.

The Ontario Aggregate Resources Corporation (TOARC)

The Ontario Aggregate Resources Corporation (TOARC) was established by MNR (currently MNRF) in 1997 to administer the Aggregate Resources Trust and manage rehabilitation of abandoned pits and quarries. TOARC is responsible for, among other things, collection and disbursement of aggregate resource charges, collection and publishing of production statistics, production auditing, research, and training of persons engaged/interested in management of aggregate resources in Ontario.

TOARC's Management of Abandoned Aggregate Properties (MAAP)

TOARC's MAAP program is dedicated to rehabilitation of abandoned pits and quarries (i.e. former sites that have not had a valid licence issued under the *ARA* since 1990) in the *ARA*-designated areas of the province and is funded by the aggregate industry. Where the landowner has granted permission, these sites can be rehabilitated under the MAAP Program (http://www.toarc.com/pdfs/MAAP_RehabYourLand_Brochure.pdf).

Wayside Permit

Wayside permit refers to a permit issued to any person who has a contract with a public authority that required aggregate for a temporary project (road construction or road maintenance) from a source in a part of Ontario designated under Section 5 of *ARA*.

Appendix 1: Summary and Status of ARA Licences in the Region of Halton (2017-2018)*

ID # on Map 1	ARA Licence No; Site Name (owner, where not part of site name)	Licensed area and Extraction area (hectares)	Licence Class, Type (below/above water) and Material Extracted	Extraction limit/annum (tonnes) [extraction status]	Total Disturbed Area* (hectares)	Total Rehabilitated* Area (hectares)	Operational Status/Recent Activities (as per Compliance Assessment Reports [CARs], MNRF notices and/or other available information [2017-2018])*
1	5480; Acton Limehouse Pit (Fountain Green South Inc., since May 31, 2018; formerly St. Marys Cement Inc. (Canada))	L - 26.33 E - 22.6	Class A, sand and gravel pit (below water ▼)	unlimited [minor below-water extraction occurred in 2017/2018]	6.9 (2018) 15.1 (2017)	6.75 land and 2.48 pond (2018) 10.4 (2017)	Based on the 2017 CAR: the above-water material was exhausted; below-water extraction was ongoing in Area 2 to remove the remaining sources; below-water material was remaining in the easterly portion; and the on-site pond expanded slightly. ARA 5480 was transferred to Fountain Green South Inc. as of May 31, 2018. The 2018 CAR had limited information on the site activities. Aerial view shows disturbed areas and stockpiles adjacent to the southern and eastern pond limits.
2	5492; Acton Quarry - Phases: 1, 2, 3 (Dufferin Aggregates, a Division of CRH Canada Group Inc.)	L - 222.28 E - 193.25	Class A, dolostone quarry (below water ▼)	4,000,000 together with ARA 625003 [extraction at ARA 5492 near depletion]	112.5 (2018) 110.6 (2017)	85.8 (2018) 72.9 (2017)	Quarrying operations were on-going in the existing quarry and were approved but did not commence in the Extension Quarry in 2017. Phase 3 buttress was under construction. Extraction setbacks along common boundaries with the Extension areas (ARA licence 625003) were reduced from 15 m to 0 m. Construction of some elements of Extension-WMS was taking place in Phase 1 of ARA 5492, as per the approved amended Site Plan.
3	625003; Acton Extension Quarry – Phases: 4, 5E, 5W/6 (Dufferin Aggregates, a Division of CRH Canada Group Inc.)	L – 65.6 E – 49.3	Class A, dolostone quarry (below water ▼)	4,000,000 together with ARA 5492	8.04 (2018) 9.49 (2017)	0.25 (2018) 0 (2017)	Site preparation for the Extension Quarry commenced in 2017, including construction of the Phase 4 components of the Water Management System (WMS). WMS disturbed areas vegetated. Visual and acoustic berms constructed. Extraction in Phase 5E and limited above-water extraction in Phase 4 in 2018. CAR refers to significant works carried under “Ecological Enhancement Plan”. Region involved in AMP- and EPP-related reviews (refer to extended summary in Section F).
4	20660; Brockton Farms Quarry (Brockton Farms)	L - 36.8 E - 25.7	Class B, sandstone quarry (above water)	20,000 [low extraction]	1 (2018) 1 (2017)	0.6 (2018) 0.6 (2017)	Small operation with limited extraction (disturbed area has not changed since 2007). Cut and blasted sandstone hauled to the processing area in the adjacent Hilltop Quarry (ARA 5720). Most of the worked areas had been backfilled with waste rock and overburden. Formerly rehabilitated and vegetated areas were reported as “maintained”.

Appendix 1: Summary and Status of ARA Licences in the Region of Halton (2017-2018)*

ID # on Map 1	ARA Licence No; Site Name (owner, where not part of site name)	Licensed area and Extraction area (hectares)	Licence Class, Type (below/above water) and Material Extracted	Extraction limit/annum (tonnes) [extraction status]	Total Disturbed Area* (hectares)	Total Rehabilitated* Area (hectares)	Operational Status/Recent Activities (as per Compliance Assessment Reports [CARs], MNRF notices and/or other available information [2017-2018])*
5	5720; Hilltop Quarry (Hilltop Stone and Supply Inc.)	L - 9.36 E - 1.5	Class B, sandstone quarry (below water ▼)	20,000 [active sandstone quarry]	5.0 (2018) 5.0 (2017)	0.7 (2018) 0.7 (2017)	CARs indicate: extraction of stone as per site plan; stone processed and temporarily stockpiled or moved to processing area; stone processing equipment (saws, drills, etc.) used on-site. Disturbed areas have not changed since 2007.
6	5479; Campbellville Pit - north (555816 Ontario Inc.)	L - 22.19 E - 8.3	Class A, sand and gravel pit (above water)	unlimited [extraction completed; site filled]	N/A (2018) N/A (2017)	N/A (2018) N/A (2017)	ARA Licence remained suspended (original suspension of 2012 was in regards to placing material/topsoil outside of approved area and above the approved final rehabilitation grades). No CARs submitted since 2013.
7	5478; Campbellville Pit - south (4000 Campbellville Road Inc.)	L - 15.88 E - 12.8	Class A, sand and gravel pit (below water ▼)	unlimited [no extraction; rehabilitation in progress]	14 (2018) N/A (2017)	15.9 (2018) NA (2017)	The infilling activities have been ongoing for a number of years. MNRF's Inspection Reports (August 2017 and September 2018) required remedial actions in terms of infilling and progressive rehabilitation activities (e.g. grades/final elevation survey, fill acceptance documentation, etc.).
8	5616; Bot-Holdings Pit (Bot Holdings Ltd.; Formerly Bot-Duff Pit; Bot-Duff Resources Inc.)	L - 58.6 E - 49.2	Class A, sand and gravel pit (above water)	750,000 [no extraction since 2006]	38.1 (2018) 38.3 (2017)	23.5 (2018) 23.2 (2017)	No extraction activities. Rehabilitation activities put on hold upon issuance of Notice of Suspension (MNRF; July 20, 2018). On June 6, 2019, MNRF granted consent, under Section 16(2) of ARA for Minor Site Plan Amendment in relation to Bot Holdings' Rehabilitation Master Plan of May 2019.
9	5500; Aldershot Quarries (Meridian Brick Canada Ltd.; Formerly Forterra Brick Ltd. and Hanson Brick Ltd.)	L - 62.4 E - 62.1	Class A, shale quarry (above water)	unlimited [active extraction]	20.3 (2018) 20.3 (2017)	8 (2018) 8 (2017)	West and Centre Quarries being mined with the East Quarry held in reserve. Licensee was planning to initiate site preparation for the East Quarry in 2017/2018. On January 18, 2018, the Region submitted comments re. EBR 013-2024 concerning the Aldershot - Centre Quarry ECA. The MECP issued ECA on February 28, 2019. On March 25, 2019, Meridian Brick advised of the planned commencement of tree-cutting in Stage 1 of the East Quarry. Halton Region's Tree By-law does not apply to ARA licensed sites.

Appendix 1: Summary and Status of ARA Licences in the Region of Halton (2017-2018)*

ID # on Map 1	ARA Licence No; Site Name (owner, where not part of site name)	Licensed area and Extraction area (hectares)	Licence Class, Type (below/above water) and Material Extracted	Extraction limit/annum (tonnes) [extraction status]	Total Disturbed Area* (hectares)	Total Rehabilitated* Area (hectares)	Operational Status/Recent Activities (as per Compliance Assessment Reports [CARs], MNRF notices and/or other available information [2017-2018])*
10	5605; Burlington Pit (Meridian Brick Canada Ltd.; Formerly Forterra Brick Ltd. and Hanson Brick Ltd.)	L - 17.1 E - 16.0	Class A, shale quarry (below water ▼)	195,000 [extraction ceased before 2009]	12.3 (2018) 12.3 (2017)	12.3 (2018) 12.3 (2017)	Mining operation had ceased at this site. Licensee maintains that the quarry has been rehabilitated to MNRF's requirements, including reforestation of 1 ha adjacent to Bronte Creek, and that Meridian Brick is in discussions with MNRF and the City of Burlington to surrender the ARA licence.
11	5546; Wilroy Brooks Pit (St. Marys Cement Inc. (Canada))	L - 79.18 E - 28.3	Class A, sand and gravel pit (above water)	363,000 [no extraction since 2005]	1.1 (2018) 1.8 (2017)	21.4 (2018) 20.8 (2017)	Pit inactive; no stockpiles, equipment, or buildings on-site; and inactive faces are overgrown. Several remedial actions were required in 2017. About 0.65 ha on both sides of haul road were graded/seeded in 2018. Reseeding part of slope reported for 2018.
12	613081; Tansley Quarry (Meridian Brick Canada Ltd.; Formerly Forterra Brick Ltd. and Hanson Brick Ltd.)	L - 37.8 E - 28.9	Class A, shale quarry (below water ▼)	300,000 [1/2 limit permitted until Tremaine Road widening is completed]	17.2 (2018) 17.2 (2017) [includes 8.6 ha of excavated area and 8.4 ha berm]	8 (2018) 8 (2017)	Stripping of overburden outside of the "Sinking Cut" and building of overburden stockpiles continued. Stockpile seeding commenced with plans to complete seeding in 2018. Three wet ponds were constructed in late 2017 to provide removal of total suspended solids (TSS). Private Communal Water System (PCWS) has been in operation since 2013 with no incidents reported. Region involved in AMP- and PCWS-related reviews (refer to extended summary in Section F).
13	5716; Rice and McHarg Quarry (Rice and McHarg Quarries Ltd.)	L - 12.85 E - 1.9	Class B, sandstone quarry (below water ▼)	20,000 [resource almost depleted]	3.25 (2018) 3.25 (2017)	6.25 (2018) 6.25 (2017)	The north-east quarry face was being "worked" [per CAR] intermittently. Small area was stripped of overburden in 2017 to expose more sandstone. Extraction depth varies according to quality and direction of stone. Quarry faces are "worked" using hand tools, forklifts, compressor drills, etc. No processing on-site. Sandstone is temporarily stored on wood pallets on the quarry floor prior to shipping. Licensee submitted a request to MNRF to extract a portion of the easterly 15 m setback.

Appendix 1: Summary and Status of ARA Licences in the Region of Halton (2017-2018)*

ID # on Map 1	ARA Licence No; Site Name (owner, where not part of site name)	Licensed area and Extraction area (hectares)	Licence Class, Type (below/above water) and Material Extracted	Extraction limit/annum (tonnes) [extraction status]	Total Disturbed Area* (hectares)	Total Rehabilitated* Area (hectares)	Operational Status/Recent Activities (as per Compliance Assessment Reports [CARs], MNRF notices and/or other available information [2017-2018])*
14	5614; Limehouse Clay Products Ltd. Pit – north (Limehouse Clay Products Ltd. is a subsidiary of Jazbrick)	L - 12.8 E - 10.6	Class B, shale quarry (above water)	20,000 [active shale quarry]	2.7 (2018) 2.7 (2017)	0.3 (2018) 0.3 (2017)	Limited information in annual CARs. Stripped/ disturbed areas have not changed since 2012. Extraction was close to setbacks in southeast area of the site. New settling pond was reported to be functioning as designed. The 2016 proposal (by Jazbrick) to amalgamate ARA 5614 with ARA 5711 and plans to deepen both quarries to extract deeper shale from below water did not proceed.
15	5711; Limehouse Clay Products Ltd. Pit - south (Limehouse Clay Products Ltd. is a subsidiary of Jazbrick)	L - 3.24 E - 3.2	Class B, shale quarry (above water - original Site Plan); amended Site Plan (2013) permits quarry deepening by 5m on 1ha ▼	20,000 [no apparent active extraction in 2017/2018]	1.7 (2018) 1.7 (2017)	0.8 (2018) 0.8 (2017)	No activity notes provided in annual CARs; all items were denoted “in compliance.” Below-water extraction within 1 ha (as per 2013 amended and approved Site Plan) not started as of 2017/18. Disturbed area has not changed since 2001. The 2016 proposal (by Jazbrick) to amalgamate ARAs 5711 with ARA 5614 and plans to deepen both quarries to extract deeper shale from below water did not proceed.
16	5499; Burlington Quarry – The Majority (Nelson Aggregate Co.)	L - 202.5 E - 193.8	Class A, dolostone quarry (below water ▼)	unlimited [extraction completed-stockpiles and some reserves]	122 (2018) 122 (2017)	112 (2017) 112 (2018)	Limited information in annual CARs. Permanent [processing] plants and material storage magazines reported “removed” from the site. CARs indicated that excavation was not at final limits and that progressive rehabilitation continued (mostly at south west corner and along south wall). Minor Site Plan Amendment request of August 7, 2018 (re. removal or relocation of some on-site structures) was approved by MNRF on April 16, 2019.
17	5657; Burlington Quarry – The Minority (Nelson Aggregate Co.)	L - 16.2 E - 16.2	Class A, dolostone (quarry below water ▼)	up to 2,722,000 [operation completed; site fully rehabilitated]	16.2 (2018) 16.2 (2017)	16.2 (2018) 16.2 (2017)	The site was previously operated as one quarry with ARA 5499. Site fully rehabilitated; total rehabilitated area of 16.2 ha (reported since 2002) corresponds to the licensed and permitted extraction area. Aside from fence maintenance, no additional activities reported at this site since early 2000. The licensee has retained the ARA licence post-rehabilitation.

Appendix 1: Summary and Status of ARA Licences in the Region of Halton (2017-2018)*

ID # on Map 1	ARA Licence No; Site Name (owner, where not part of site name)	Licensed area and Extraction area (hectares)	Licence Class, Type (below/above water) and Material Extracted	Extraction limit/annum (tonnes) [extraction status]	Total Disturbed Area* (hectares)	Total Rehabilitated* Area (hectares)	Operational Status/Recent Activities (as per Compliance Assessment Reports [CARs], MNRF notices and/or other available information [2017-2018])*
18	5481; Milton Quarry - Main and North (Dufferin Aggregates, a Division of CRH Canada Group Inc.)	L - 467.7 E - 382	Class A, dolostone quarry (below water ▼)	Unlimited [extraction in North Quarry (since early 2000s) was near completion]	194.4 (2018) 201.4 (2017)	187.0 (2018) 180.1 (2017)	Extraction continued at the northwest corner of the North Quarry (NQ) in an area that was under the former noise berm, and from the NQ floor. Excavation setback reduced to 0m along common boundary with licence #608621 as per O.S. 5.10.1. Overburden was used for progressive rehabilitation in the NQ. In the Main Quarry, stockpiles, asphalt and recycled concrete were being stored as per the site plan. Disturbed/rehabilitated areas were revised based on review of survey/AutoCAD files. The 2017 and 2018 monitoring reports submitted to agencies were reviewed by Halton Region staff.
19	608621; Milton Quarry Extension: Phases 1, 2, 3 (Dufferin Aggregates, a Division of CRH Canada Group Inc.)	L - 84.5 E - 70.6	Class A, dolostone quarry (below water ▼)	unlimited [extraction: completed in Phase 1; carried in Phase 2 and 3]	56.6 (2018) 55.8 (2017)	1.4 (2018) 0 (2017)	Excavation setback reduced to 0 m along common boundary with ARA 5481. Extraction continued in Phase 2 (West Cell) and Phase 3 (East Cell). At the West Cell, extraction carried towards the northeast and included removal of the quarry floor. At the East Cell, a sinking cut and lower bench were advanced to the southwest. The upper bench extraction continued in the western portion and expanded towards the central portion. Stripped material was used for the east-west pillar in the West Cell. Halton Region continued oversight of agreements and reviews of the AMP-related technical submissions/monitoring data (refer to extended summary in Section F).
20	5484; Milton Pit (368574 Ontario Ltd. and 579813 Ontario Inc.; formerly The Warren Paving and Materials Inc.)	L - 40.74 E - 25.5	Class A, sand and gravel pit (above water)	unlimited [extraction completed]	5 (2018) 5 (2017)	N/A (2018) N/A (2017) [2.5 ha reported in total for 2009-2012]	Limited information in annual CARs. An aerial photo attached with the 2017 CAR refers to "New Internal Road" (off Derry Rd.) and to "area graded" further to the north. In late December 2017, new activity (i.e. winter parking of fuel tracks) was determined to be unapproved and defined as minor violation by NEC (i.e. any new activity at this site would require MNRF's and NEC's approvals/permits). No new activities or remedial actions were reported for 2018. CAR notes referred to a "new gate" and "fence repairs" in the same general area.

Appendix 1: Summary and Status of ARA Licences in the Region of Halton (2017-2018)*

ID # on Map 1	ARA Licence No; Site Name (owner, where not part of site name)	Licensed area and Extraction area (hectares)	Licence Class, Type (below/above water) and Material Extracted	Extraction limit/annum (tonnes) [extraction status]	Total Disturbed Area* (hectares)	Total Rehabilitated* Area (hectares)	Operational Status/Recent Activities (as per Compliance Assessment Reports [CARs], MNRF notices and/or other available information [2017-2018])*
21	5507 Hayward Pit (Springbank Sand and Gravel Ltd.)	L - 52.0 (in ARA Licence) L- 42.3 E - 19.5 (in Site Plan)	Class A, sand and gravel pit (above water)	unlimited [operations completed]	20.9 (2018) 20.9 (2017)	17.2 (2018) 17.2 (2017)	Limited information in annual CARs. CAR-related notes indicate: depleted, and rehabilitation in progress (the latter in the southwest part of the pit). The total disturbed area at this site was reduced by 0.7 ha (to 20.9 ha) from the area reported between 1997 and 2016.
22	5619 Leaver Pit (Springbank Sand and Gravel Ltd.)	L - 54.27 (in ARA Licence) L - 61.8 E - 52.6 (in Site Plan)	Class A, sand and gravel pit (above water)	1,500,000 [operations completed; pit depleted]	52.6 (2018) 52.6 (2017)	52.6 (2018) 52.6 (2017)	Limited information in annual CARs. CAR-related sketch-notes indicate: depleted, and rehabilitation in progress. CAR-related sketches also show hand-drawn slopes around the limits of the pit area.
23	5462 David Anderson Pit (David. T. Anderson)	L - 6.28 E - 2.75 (SW area)	Class A, gravel pit (above water). Licence surrendered (MNRF, May 2, 2018)	unlimited [extraction ceased; site rehabilitated; licence surrendered]	NA (2018) NA (2017)	5 (2018) 5 (2017)	Limited information in the 2017 CAR. The May 2, 2018 letter from MNRF to the operator indicated that MNRF carried out final inspection of the site and deemed final rehabilitation to be acceptable and completed, in accordance with the ARA, the regulations, conditions of licence and the site plans.

Notes: CAR – Compliance Assessment Report; L- licensed area; E – permitted extraction area; NA – information not available; n/a – not applicable;

*Refer to LPS69-17, LPS96-15 and LPS06-12 for earlier information on State of Aggregate Resources in Halton Region; ▼ – extraction permitted below water.

Appendix 2: Status of Implementation of Approved Rehabilitation Plans. ARA Sites in Halton Region (2017-2018)

ID # on Map 1	ARA Licence No.; Site Name (owner, where not part of site name)	Rehabilitation/End-use Description	Status of Implementation of Approved Rehabilitation Plans based on 2017-2018 CARs
1	5480; Acton Limehouse Pit (Fountain Green South Inc., since May 31, 2018; formerly St. Marys Cement Inc. (Canada))	Seven features including ponds, protected dabbling area, meadow and deep water aquatic habitat etc.	According to the 2017 CAR, 1.4 ha were graded/seeded in the southeast area. The final rehabilitation pond expanded further in 2017. According to the 2018 CAR, total rehabilitated area included 6.75 ha - land and 2.45 ha - pond. No other rehabilitation-related comments were provided. Based on the historical CARs, most of the pit faces above water had been sloped and rehabilitated and had self-sustaining vegetation growth.
2	5492; Acton Quarry - Phases 1, 2, 3 (Dufferin Aggregates, a Division of CRH Canada Group Inc.)	Conservation and/or Recreation	Total rehabilitated area (as of 2018) was reported at 85.8 ha (increase of about 13 ha relative to 2017). According to the 2018 CAR, as a result of the implementation of the new licence (ARA 625003), some areas that were rehabilitated in the past have been disturbed. No importation of soil occurred in 2017/2018. Rehabilitation specifics were not provided in the annual monitoring reports or CARs.
3	625003; Acton Extension Quarry - Phases 4, 5E, and 5/6W (Dufferin Aggregates, a Division of CRH Canada Group Inc.)	Lakes, shoreline wetlands, cliffs, and terrestrial (i.e. wooded slopes)	Extension Quarry (Phases 4, 5E, 5/6W) was approved for licensing on October 11, 2016. The ARA licence was issued by MNRF on March 9, 2017. The 2018 rehabilitation of 0.25 ha applies to areas disturbed during construction of the Phase 4 WMS components; these areas were later re-vegetated. CAR refers to significant works carried under "Ecological Enhancement Plan".
4	20660; Brockton Farms Quarry (Brockton Farms)	Agricultural	Total rehabilitated area of 0.6 ha [relative to 1 ha disturbed] has not changed since 2004. Annual CAR notes indicate that most of the worked areas of the quarry had been backfilled with waste rock and overburden; grades, contours/elevations are generally established as part of the excavation operations; rehabilitated areas have been vegetated and maintained by the licensee; importation of material is not proposed; and that previously rehabilitated areas meet final rehabilitation conditions.
5	5720; Hilltop Quarry (Hilltop Stone and Supply Inc.)	Agricultural	Total rehabilitated area of 0.7 ha has not changed since 2007 [disturbed area remained at 5 ha since 2011]. Based on the historical CARs, quarry faces were backfilled with waste rock and overburden; grades, contours and quarry elevations were established during excavation; no importation of material for rehabilitation purposes was proposed; and that rehabilitated areas had been seeded and were self-sustaining. Based on the 2018 CAR: final rehabilitation - according to site plans; and, where rehabilitation had been completed, area was disturbed by waste rock storage.

Appendix 2: Status of Implementation of Approved Rehabilitation Plans. ARA Sites in Halton Region (2017-2018)

ID # on Map 1	ARA Licence No.; Site Name (owner, where not part of site name)	Rehabilitation/End-use Description	Status of Implementation of Approved Rehabilitation Plans based on 2017-2018 CARs
6	5479; Campbellville Pit – north (555816 Ontario Inc.)	Agricultural; Reforestation/ Recreation; Estate Residential; or Recreational/Commercial in conjunction with Reforestation/ Recreation	Licence remained under suspension in 2017 and 2018; no CARs have been submitted since 2012. The 2012 CAR notes indicated that application to surrender the licence had been submitted to MNRF. During that year, the MNRF indicated that “absolutely no additional importation of fill material or topsoil to the site would occur without prior written approval from MNRF.” No new information is available for this site since 2012. Based on aerial photography, the site appears to have been graded and seeded.
7	5478; Campbellville Pit - south (4000 Campbellville Road Inc.)	Agricultural; Reforestation/ Recreation; Estate Residential; or Recreational/Commercial in conjunction with Reforestation/ Recreation	Based on the 2018 CAR, 13.5 ha was under rehabilitation with a total rehabilitated area reported at 15.88 ha. The MNRF’s Inspection Reports (August 2017 and September 2018) required remedial actions in terms of infilling and progressive rehabilitation activities at this site. Rehabilitation to be carried in accordance with Site Plan (2011), the OMB decision (2006), and the Provincial Officer Order (June 2011).
8	5616; Bot-Holdings Pit (Bot Holdings Ltd.; Formerly Bot-Duff Pit; Bot-Duff Resources Inc.)	Agricultural	According to the 2017/2018 CARs, about 0.05 ha was under rehabilitation; however, the total rehabilitated area of 23.5 ha has not changed since 2016. Rehabilitation activities were put on hold upon issuance of MNRF’s Notice of Suspension on July 20, 2018. On June 6, 2019, MNRF granted consent, under Section 16(2) of ARA, for Minor Site Plan Amendment in relation to Bot Holdings’ Rehabilitation Master Plan of May 2019.
9	5500; Aldershot Quarries (Meridian Brick Canada Ltd.; Formerly Forterra Brick Ltd. and Hanson Brick Ltd.)	Final after use to be determined upon completion of the extraction operation. Interim use will be open space. The Greenbelt Plan area (4.7 ha) is to be rehabilitated to 100 per cent forest cover; all watercourse diversions and remaining SWM ponds to be rehabilitated to aquatic enhancement representative of the local natural ecosystem.	<p>ARA 5500 consists of West, Centre, and East Quarry cells. West and Centre Quarries currently being mined; East Quarry held in reserve. Activity registered under Regulation 242/08 ESA (ID#M-102-711363826). Ramp built to west section of the East Quarry. Area fenced and salamander screens installed.</p> <p>Total rehabilitated area of 8 ha (West and Centre Quarry cells) has not changed since 2008 [total disturbed has been reported at 20.3 ha, since 2014].</p> <p>The 2017 - 2018 CARs had all rehabilitation items denoted “in compliance.” No rehabilitation specifics were provided; CAR notes indicate “as per rehabilitation plans.”</p>
10	5605; Burlington Pit/Quarry (Meridian Brick Canada Ltd.; Formerly Forterra Brick Ltd. and Hanson Brick Ltd.)	Originally: Pond; however, the site had been largely filled with waste brick and soil, sloped and grassed, and 1 ha of the Greenbelt area adjacent to the Bronte Creek had been reforested.	Mining operation had ceased. Licensee maintains that the quarry had been rehabilitated to MNRF requirements, including reforestation of 1 ha adjacent to Bronte Creek, and that Meridian Brick was in discussions with MNRF and the City of Burlington to surrender the ARA licence.

Appendix 2: Status of Implementation of Approved Rehabilitation Plans. ARA Sites in Halton Region (2017-2018)

ID # on Map 1	ARA Licence No.; Site Name (owner, where not part of site name)	Rehabilitation/End-use Description	Status of Implementation of Approved Rehabilitation Plans based on 2017-2018 CARs
11	5546; Wilroy Brooks Pit (St. Marys Cement Inc. (Canada))	Rural Residential and Agricultural	According to CAR, [formerly extracted/disturbed] Area 7, had been rehabilitated to an agricultural and natural environment use, and an amendment has been submitted to MNRF to remove 15.5 ha from licence. Final rehabilitation was on-going in 2017/2018 (reference was made to MNRF's Inspection Report dated August 28, 2014). Rehabilitated area increased by about 0.65 ha between 2016 and 2018, to a total area of 21.4 ha. Final rehabilitation plan submitted by CBM to MNRF on September 21, 2018.
12	613081; Tansley Quarry (Meridian Brick Canada Ltd.; Formerly Forterra Brick Ltd. and Hanson Brick Ltd.)	The site is to be rehabilitated to upland habitat with future lake of 18.2 ha.	Total rehabilitated area of 8 ha has not changed since 2015 [this site (licensed in 2007) is under active development]. The 2017/2018 CARs indicated: grades/contours/elevations - as per rehabilitation plan. Based on the prior CARs, operator completed landscaping campaign as part of "Progressive Vegetation Management Plan [...] Phase 3" (2011) and tree-planting along boundary berm" (2012-2014).
13	5716; Rice and McHarg Quarry (Rice and McHarg Quarries Ltd.)	To be seeded.	Total rehabilitated area of 6.2 ha has not changed since 2009. All rehabilitation items were denoted "in compliance." Based on historical CARs, previously rehabilitated areas are vegetated and have self-sustaining growth; some areas previously rehabilitated are in final rehabilitation conditions; natural regeneration of vegetation occurring in unworked areas of the quarry; importation of inert fill from off-site is allowed (did not occur in 2017/2018).
14	5614; Limehouse Clay Products Pit - north (Limehouse Clay Products Ltd., a subsidiary of Jazbrick)	Estate Residential, Agricultural (Pasture Land)	Total rehabilitated area of 0.3 ha has not changed since 2003 [the total disturbed area has been 2.7 ha since 2012]. No rehabilitation specifics provided (CAR denoted all rehabilitation items "in compliance"). This site is under extractive development; most activities have occurred in the southern areas adjacent to ARA 5711. A settling pond has been constructed in the southeast portion of the site.
15	5711; Limehouse Clay Products Pit - south (Limehouse Clay Products Ltd., a subsidiary of Jazbrick)	Estate Residential, Agricultural (Pasture Land) [note: amended Site Plan (approved on August 28, 2013) permits below-water extraction on 1 ha of this licence; after uses remain same]	Total rehabilitated area of 0.8 ha has not changed since 2003 [the total disturbed area has been 1.7 ha since 2001]. Below-water extraction within 1 ha (as per the 2013 amended and MNRF - approved Site Plan) has not started (as of 2017/2018). No rehabilitation specifics provided (CAR denoted all rehabilitation items "in compliance"). Based on aerial photography, the slopes appear to be seeded.

Appendix 2: Status of Implementation of Approved Rehabilitation Plans. ARA Sites in Halton Region (2017-2018)

ID # on Map 1	ARA Licence No.; Site Name (owner, where not part of site name)	Rehabilitation/End-use Description	Status of Implementation of Approved Rehabilitation Plans based on 2017-2018 CARs
16	5499; Burlington Quarry - The Majority (Nelson Aggregates Co.)	Lake with vegetated slopes, residential, public and / or private recreational uses (i.e. sports fishing, swimming and boating).	General comment in the 2017/2018 CARs indicates: progressive rehabilitation continues in southwest corner and along the south wall. The total rehabilitated area of 112 ha has not changed since 2008; however, rehabilitation activities have been reported as 3 ha in 2017 and 2018. Inert fill, in accordance with the MOE's (now MECP's) Table 1 standards and Nelson Aggregate Co. procedures, may be brought in for rehabilitation.
17	5657; Burlington Quarry - The Minority (Nelson Aggregates Co.)	Lake with vegetated slopes, residential, public and/or private recreational uses (i.e. sports fishing, swimming and boating).	Site fully rehabilitated; total rehabilitated area of 16.2 ha has been reported since 2002 [this area corresponds to the licensed and permitted extraction area].
18	5481; Milton Quarry - Main and North (Dufferin Aggregates, a Division of CRH Canada Group Inc.)	In 2000, Dufferin developed Final Rehabilitation Plan (FRP) superseding prior alternatives. Dufferin received MNR's approval for the FRP (and related approvals under LIRA, OWRA and EPA). The key components of the FRP for the Main Quarry are reservoir, lake and wetland on the west side and dry land after-uses on the east side.	Based on the 2017/2018 CARs, about 8.9 ha were rehabilitated in 2017 (total 180.13 ha) and 6.92 ha in 2018 (total 187.05 ha). Overburden material was used for progressive rehabilitation in the North Quarry. Importation of clean fill occurred in July 2018 - MNRF notified as per the site plans. Sloping of faces reported "as per rehabilitation plans." Lower Yard, old Silt Pond and Main Shop berms were seeded. Annual planting (pollinator plots) occurred in June 2018. The Main Quarry rehabilitated areas include 69.81 ha of Reservoir and 90.48 ha of Lake and Wetlands. General Comments indicated: disturbed and rehabilitated areas changed [from previous reporting] based on review of survey and AutoCAD files. Based on the 2018 Monitoring Report (GHD, March 2019), the west side of the Main Quarry had been essentially in its final rehabilitation form (e.g. Reservoir, Lake and Wetlands) since around 2008 and no significant changes to the rehabilitation plan were planned.
19	608621; Milton Quarry – Extension: Phases 1, 2, 3 (Dufferin Aggregates, a Division of CRH Canada Group Inc.)	Two lakes in the two extension areas as an after-use, and 5 ha of wetlands.(It was originally estimated that it would take between 15 and 48 years to fill the lakes depending on a number of factors including climate conditions and the approach in water management.)	Based on the 2017 CAR, development of the north side of the east-west pillar buttress continued (West Cell). As of 2017, the total rehabilitated area was reported as "0." Based on the 2018 CAR, 1.41 ha were rehabilitated that year, including continued development of the east-west pillar (buttress) and Townline pillar. No importation of soil reported for 2017 and 2018. Based on the 2018 CAR figures, total disturbed area within the Milton Extension Quarry was 56.64 ha, including: 30.08 ha in Phase 2 (West Cell) and 26.56 ha in Phase 3 (East Cell). The 1.41 ha of the West Cell buttress was viewed as rehabilitation area.

Appendix 2: Status of Implementation of Approved Rehabilitation Plans. ARA Sites in Halton Region (2017-2018)

ID # on Map 1	ARA Licence No.; Site Name (owner, where not part of site name)	Rehabilitation/End-use Description	Status of Implementation of Approved Rehabilitation Plans based on 2017-2018 CARs
20	5484; Milton Pit (368574 Ontario Ltd. and 5798813 Ontario Inc. ; formerly The Warren Paving and Materials Group Ltd.)	Agricultural, Reforestation or Recreation	In the 2017/2018 CARs, all rehabilitation items were denoted "in compliance," including final rehabilitation; however, total rehabilitated hectares were given as "NIL." The 2009-2012 CARs referred to total rehabilitated area of 2.5 ha. An aerial photograph attached with the 2017 CAR referred to "new internal road" (off Derry Rd.) and to "area graded" [further to the north]. The 2018 aerial photography of the site [July 19, 2018], attached with the 2018 CAR, showed internal roads and an elongated area of the former extraction, surrounded by vegetation and trees.
21	5507; Hayward Pit (Springbank Sand and Gravel Ltd.)	Potential after uses include recreation/conservation. The pit floor grading to incorporate "mounds" and "depressions" that will increase the sites' potential for wildlife habitat.	In the 2017/2018 CARs, all rehabilitation items were denoted "in compliance" and both the "current year" and "total rehabilitated" areas were given as 17. 2 ha. Prior to 2017, the total rehabilitated area was consistently given as 3.65 ha (1997-2016). A drawing attached to the 2018 CAR indicated rehabilitation along the southeast boundary of the site. Based on aerial photography, sloped and graded areas show vegetation interspersed with patches/areas of remnant material (e.g. boulders).
22	5619; Leaver Pit (Springbank Sand and Gravel Ltd.)	Potential after uses include recreation/conservation	All rehabilitation items denoted "in compliance". The CAR-related sketches indicated: "depleted/rehabilitation in progress" [it appears this note applies to the entire site area]. The 2017/2018 rehabilitation areas were given as 0 ha and the total rehabilitated area was given as 52.6 ha [the total corresponds to total disturbed areas]. The aerial photography shows sloped and somewhat vegetated pit edges.
23	5462; David T. Anderson Gravel Pit (David T. Anderson)	Agriculturally viable landscape.	The 2017 CAR did not provide any rehabilitation-related comments. Progressive rehabilitation was given as "0" for the current year and 5 ha in total. The MNRF's letter to licensee (May 2, 2018) indicated that MNRF had completed a final inspection of the property; deemed rehabilitation acceptable and completed in accordance with the ARA, the regulations, licence conditions, and the site plans; and accepted surrender of the ARA licence in accordance with Section 19 of the ARA.

