



Indian Paintbrush (*Castilleja coccinea*) An annual plant characteristic of Bruce Peninsula alvars. Its provincial distribution is 50-75% confined to alvars and its conservation status is "restricted".



Paul Richardson sampling a quarry floor. This quarry was used to determine if a stable alvar plant community could be established. Several rare species including Alpland White Goldenrod (*Solidago ptarmicoides*) grew successfully.



Eastern White Cedar (*Thuja occidentalis*) This specimen is very similar to one that Dr. Larson determined to be 30 years old. Dr. Larson suggests that similar forces dictate cedar growth rates on quarry floors as are responsible for the ancient cedar forests found on the Niagara Escarpment.





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### 2008

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Ray Bonenberg





June 18, 2009

**The Honourable Donna Cansfield**

Minister of Natural Resources

Whitney Block

6th Floor, Room 6630

99 Wellesley St. West

Toronto, ON M7A 1W3

Dear Ms. Cansfield:

On behalf of the Board of Directors, I am pleased to submit the 2008 Annual Report of The Ontario Aggregate Resources Corporation.

This annual report includes audited financial statements for the Aggregate Resources Trust and The Ontario Aggregate Resources Corporation for the fiscal year ended December 31, 2008. Included within the financial statements for the Aggregate Resources Trust is a schedule of rehabilitation costs for projects completed by the Management of Abandoned Aggregate Properties (MAAP) program in 2008. The report also reviews a number of the many rehabilitation research and other initiatives being funded, as well as their application to creative rehabilitation solutions.

Yours truly,

**Ken Lucyshyn**

Chairman of the Board



## CHAIRMAN'S MESSAGE



The Ontario Aggregate Resources Corporation (TOARC) disbursed aggregate resource fees in 2008 totaling \$20.4 million dollars. This dramatic increase in fees over previous years results from two things; the extension of the Aggregate Resources Act over private lands in more areas of Ontario "... all of Muskoka and Parry Sound districts and Haliburton County; and parts of Algoma, Nipissing, Sudbury, Manitoulin and Thunder Bay districts as well as parts of Renfrew, Peterborough, Hastings, Frontenac, and Lennox and Addington counties" and a near doubling of most fees. The fees disbursed in 2008 (based on 2007 production) were divided amongst designated recipients as follows:

### (\$ MILLION)

Local municipalities	9.7
Counties & regions	2.4
MAAP program	.8
Province (from licence fees)	5.7
Province (royalties & permit fees)	1.8

The increase in fees is meant to provide more resources to the Ministry of Natural Resources (MNR) for greater oversight of the Aggregate Resources Act and improved service to licensees and permittees.

As reported by the TOARC Chairman in this space last year, the extension of the ARA into more areas of the Province has resulted in an additional 1005 new licences (751 licensees) for TOARC to manage. Fortunately, our redesigned data base platform has allowed us to do so with relative ease. To further ensure the integrity of our data management systems, TOARC is undertaking to secure our existing paper files in a digital format. That work is expected to be completed by year end and provide another layer of security to our information systems against a catastrophic event such as fire.

As a result of the geographical extension of the ARA, many more former aggregate sites (now deemed to be abandoned) are eligible for assistance under the MAAP program. That assistance, namely the rehabilitation of the property, is undertaken by MAAP at no cost to the land owner. Sites are selected on a priority basis and work cannot be undertaken without the consent of the property owner.

The first step in preparing to address abandoned sites in the newly designated areas was the undertaking of an inventory to allow for the establishment of priorities. The Ontario Geological Survey (the OGS), a group very experienced in this type of work, was engaged to complete this undertaking in three phases (2009 being the second phase). As part of the inventory, the OGS collects information on the size of the disturbance, topographic setting and the extent of vegetative cover, potential safety and other concerns as well as environmental conditions. A complete digital, photographic record is made of the site, and its location and extent are recorded with a GPS unit.

It is of interest to note that a preliminary assessment of the 2008 work area revealed 646 possible sites (through aerial photographs and other means). However, after the detailed site visits were completed it was found that 258 of the noted sites were disturbed for some reason other than aggregate extraction. Preliminary work in 2009 is finding that trend to be even more pronounced.

Over this past year MAAP staff have undertaken a comprehensive review and upgrade to existing abandoned pit (abandoned by definition) inventory files. These original inventories were conducted over ten years ago and not always to the same standard consistent with recent inventories. We know (through field experience) that many of the site disturbances were not always the result of





extraction or have simply disappeared for a number of possible reasons; they have reverted to another use, they have been rehabilitated by the property owner, have been licenced as a new pit or have naturalized on their own. Files are now better organized with a new numbering system and are easily available to staff in a digital format. As a corollary, the overhaul of our digital database of abandoned pits and quarries has provided us enough accurate data to proceed with the construction of a G.I.S. database (Geographic Information System). This database will pinpoint the locations of the sites on aerial photos, and will allow us to create maps of abandoned sites in a variety of formats.

In addition to improving underlying information systems, the MAAP program successfully rehabilitated 29 abandoned aggregate properties in 2008, a record number. The work also resulted in one of the broadest spectrums of rehabilitation techniques ever used on MAAP projects including many forms of forest, tallgrass prairie, riparian, wetland, and agricultural rehabilitation. Because planting trees on former aggregate sites is typically more difficult than undisturbed land, the MAAP program has been experimenting with many different species, sizes, and techniques to learn the best methods of establishing native trees and shrubs. In the past 2 years, the MAAP program has successfully planted almost 20,000 trees, many of which were on the Niagara Escarpment.

Tallgrass prairie species continue to be a priority for MAAP due to their potential for slope stabilization as well as their importance to wildlife habitat. The MAAP program continues to experiment with seeding techniques, as well as planting wildflower and grass plugs for many different important species that were once abundant in Ontario. Annual monitoring of these and other rehabilitation sites is ongoing to document which species and techniques are most applicable for aggregate rehabilitation sites.

The release of the document "Best Practice Guidelines for Aggregate Rehabilitation Projects" was a great success. The MAAP program has presented this document at several events, and has recently received funding from the OMNR to continue their work to implement some 'in the ground' restoration projects that will target rare and endangered species associated with tallgrass prairies.

The MAAP program has also started experiments using fungal root colonies (called mycelium) and organic material (i.e. wood chips) to stabilize eroding banks and to rebuild the organic

soil layers on some abandoned sites. If successful, this technique could be used in certain situations as an alternative to importing topsoil.

As our readers know, the work of TOARC is funded from the earnings on the original money provided by the aggregate industry (a portion of security deposits) while the work of the MAAP program is funded by a portion of the annual licence fee paid by aggregate producers (\$0.005 per tonne), and short term earnings thereon. The recent shocks to the world economy have adversely affected earnings in the bond and equity markets and the current low interest rate environment has severely stressed earnings on short term funds. As a result, Trust assets experienced a 15.4 % decline at the end of 2008 over year end 2007. While a drop in asset values is not welcomed news, the portfolio performance was relatively good compared to the performance of many balanced funds and the Trust assets are still in a very positive position relative to the value of the fund at commencement. The Board continues to monitor the fund's performance closely and as a long term investor the Board is confident that Trust funds will return to prior levels.

Finally, I would like to welcome Mr. Bruce Semkowski to our Board (replacing Mr. Dick Pipe) and Ms. Carrie Hayward (replacing Mr. Ray Bonenberg). Both Dick and Ray were great contributors to the work of the Board and their efforts were greatly appreciated.

Respectfully submitted,

**Ken Lucyshyn**

Chairman of the Board



## MAAP 2008: YEAR IN REVIEW

In 2008, the Management of Abandoned Aggregate Properties (MAAP) program completed a number of interesting rehabilitation projects in former pits and quarries across the province of Ontario. The program conducted rehabilitation within the counties of Bruce, Grey, Hastings, Lennox and Addington and Peterborough. A total of 29 projects varying in size, scope and restoration strategies were successfully carried out during the spring and fall construction seasons.

The MAAP view of successful rehabilitation now places a greater emphasis on the importance of ecological function and sustainable rehabilitation. *{Sustainability: "a characteristic of a process or state that can be maintained at a certain level indefinitely"}*. This way of conducting restoration has changed our approach to sites where nature has already taken a strong footing and just needs a little more help. Biomimicry (the science and art of emulating nature's best biological ideas to solve human problems) is essential when developing rehabilitation strategies which require very little future interference. The MAAP program now assists nature by introducing native species (via native seed) that are accustomed to harsh site conditions often found in former pits and quarries. Where earthmoving would be detrimental to existing vegetation and safety concerns are nominal, native trees are planted to improve diversity. Over time, these slight enhancements will complete the missing link to begin the full recovery of these ecosystems.



MAAP project 08-03 (Sorensen Pit - Lennox and Addington County)  
April, 2008 – Before rehabilitation.

Another approach to rehabilitation has been the utilization of pits and mounds in lieu of smooth grading on restored slopes. These pits and mounds mimic the disturbance created by a fallen tree in an old growth forest and provide important function on the slope in terms of site diversity (moisture retention, provision of shade, variable substrate & the capture of organics). The MAAP program's use of pits and mounds on slopes has curbed the amount of erosion that takes place during the establishment period of grassy vegetation. These pits and mounds impart an otherwise smooth slope with small deviations in topography; creating micro topography which is beneficial to seed catch and establishment. This initiative represents the MAAP program's continuing focus on the use of new and innovative rehabilitation techniques for the aggregate industry.



MAAP project 08-03 (Sorensen Pit - Lennox and Addington County)  
July, 2008 – Graded 3:1 with pits and mounds.



MAAP project 08-03 (Sorensen Pit - Lennox and Addington County)  
November, 2008 – Seed beginning to catch.





## LEARN TO LOVE YOUR NATIVE SPECIES!

The evidence is abundantly clear that the use of native species as part of your rehabilitation strategy can pay real dividends and produce results that are lasting. Native species have evolved to survive in their respective local climatic regime, with native wildlife co-adapting along with them. By restoring sites using native plants, we are enhancing local biodiversity and providing both food and habitat for a variety of species. Extensive root systems, which make prairie species drought tolerant, are excellent for erosion control. Through monitoring of MAAP project sites we have found that the typical inhospitable conditions found on old pits (bare, open sandy/gravelly sites without topsoil) are perfect for native prairie species to establish and flourish, whereas most other species would typically perish. With very low water and nutrient requirements for establishment, native prairie species are the clear choice for your rehabilitation project. When it comes to native plant species, a little love goes a long way!



Ash Baron, MAAP Field Technician, shows how!



David Beamer, Manager MAAP Program, shows the healthy root development of Canada Wild Rye (*Elymus canadensis*) after only 6 weeks in the ground.



Little Bluestem (*Schizachyrium scoparium*) flourishing on a sandy site in Grey County. Little Bluestem is a widely successful native prairie species employed by MAAP.



Side Oats Grama (*Bouteloua curtipendula*) is a useful species for controlling erosion on sand or gravel slopes.



**MAAP project 07-13 (Scott Pit – Wellington County)**  
A wet meadow of Redtop Panicgrass (*Panicum rigidulum*) is surrounded by an upland meadow of Black Eyed Susan (*Rudbeckia hirta*). The combination of meadow, forest and wetland will provide habitat for a variety of wildlife species such as frogs, turtles, birds and insects.



The addition of Swamp Milkweed (*Asclepias incarnata*) to your native seed mix will provide a food source (nectar) for many butterfly species. In particular, the Monarch butterfly (*Danaus plexippus*) uses Swamp Milkweed as a host plant. Adult females lay their eggs on the plant and the emerging caterpillars feed on the leaves.



## 2008 MAAP PROJECT SUMMARY

PROJECT NUMBER	LANDOWNER	LOCATION	REHABILITATION END USE	AREA (ha)	TOTAL PROJECT COST
06-17	Wilkinson	Simcoe County	Agriculture	N/A *	\$ 5,425
06-19	Seiling	County of Leeds & Greenville	Alvar/Wetland/Woodland	N/A *	\$ 250
06-23	Osborne	Grey County	Woodland	N/A *	\$ 928
07-05	Toth	Haldimand County	Alvar	N/A *	\$ 103
07-07	Dawkins	Wellington County	Woodland	N/A *	\$ 646
07-13	Scott	Wellington County	Wetland/Prairie/Agriculture	N/A *	\$ 103
07-14	Ross	Huron County	Wetland/Agriculture	N/A *	\$ 40,605
07-16	Hardy	Hastings County	Prairie	N/A *	\$ 62,139
07-17	Morrison	Grey County	Woodland/Prairie	N/A *	\$ 8,402
07-18	Fogels	Grey County	Woodland	N/A *	\$ 646
07-21	Hierons	Grey County	Woodland	N/A *	\$ 5,595
07-23	Thompson	Grey County	Pasture	N/A *	\$ 7,600
08-01	MacFarlane	Lennox and Addington County	Agriculture/Wetland	2.25	\$ 27,000
08-02	Sallans	Peterborough County	Agriculture	2.50	\$ 19,881
08-03	Sorenson	Lennox and Addington County	Woodland	1.20	\$ 15,000
08-04	Robinson	Hastings County	Woodland	1.45	\$ 16,600
08-05	Sexsmith Pit	Hastings County	Agriculture/Wetland	2.55	\$ 21,519
08-06	Sexsmith Quarry	Hastings County	Agriculture	0.55	\$ 27,400
08-07	Holliday	Hastings County	Woodland	0.75	\$ 35,000
08-08	Phillips	Hastings County	Agriculture/Woodland	5.50	\$ 35,246
08-09	Floris	Hastings County	Agriculture	2.25	\$ 49,510
08-10	Horrigan	Hastings County	Agriculture	0.25	\$ 2,190
08-11	Harris	Hastings County	Prairie/Woodland	0.75	\$ 18,885
08-12	Davis	Lennox and Addington County	Wetland/Agriculture	1.30	\$ 39,953
08-13	Brownson	Hastings County	Prairie	0.75	\$ 5,958
08-14	Argyle	Hastings County	Woodland	0.80	\$ 202
08-15	Candiago	Bruce County	Agriculture	0.40	\$ 3,750
08-16	Russell	Grey County	Woodland	0.20	\$ 1,800
08-17	Donaghue	Grey County	Agriculture	1.45	\$ 14,025
08-18	Sweiger	Grey County	Agriculture/Wetland	1.90	\$ 13,350
08-19	Lorentz	Bruce County	Agriculture	1.40	\$ 8,300
08-20	Carey	Wellington County	Agriculture	0.80	\$ 11,455
08-21	Crawford	Grey County	Prairie	0.15	\$ 3,745
08-22	Clements	Grey County	Agriculture	0.40	\$ 6,638
08-23	Brown	Grey County	Wetland/Woodland	8.70	\$ 9,450
08-24	Maree	Grey County	Agriculture	1.40	\$ 9,563
08-25	Colwell	Bruce County	Agriculture	1.25	\$ 9,800
08-26	Brindley	Bruce County	Prairie	3.30	\$ 32,750
08-27	Lemaitre	Grey County	Prairie	0.20	\$ 2,264
08-28	Thorne	Bruce County	Wetland	0.20	\$ 485
08-29	Walker Quarry	Leeds and Grenville County	Fenced	0.50	\$ 13,543
<b>Sub-Total</b>				<b>45.10</b>	<b>\$ 587,704</b>

\*Area reported in summary statistics for year project commenced



## SUMMARY OF MAAP REHABILITATION COSTS

YEAR	NUMBER OF NEW SITES	AREA REHABILITATION (ha)	TOTAL COSTS**	COST (ha)	AVG COST PER SITE	AVG AREA REHABILITATED (ha)
1992-96*	52	77.99	\$ 726,480	\$ 9,315	\$ 13,971	1.50
1997	15	22.40	\$ 497,973	\$ 22,231	\$ 33,198	1.49
1998	10	18.35	\$ 219,199	\$ 11,945	\$ 21,920	1.84
1999	16	30.45	\$ 366,636	\$ 12,041	\$ 22,915	1.90
2000	17	28.50	\$ 411,226	\$ 14,429	\$ 24,190	1.68
2001	21	25.50	\$ 320,337	\$ 12,562	\$ 15,254	1.21
2002	10	14.25	\$ 288,844	\$ 20,270	\$ 28,884	1.43
2003	19	46.39	\$ 342,897	\$ 7,392	\$ 18,047	2.44
2004	15	27.35	\$ 414,986	\$ 15,173	\$ 27,666	1.82
2005	28	75.45	\$ 498,820	\$ 6,611	\$ 17,815	2.69
2006	28	48.50	\$ 506,629	\$ 10,446	\$ 18,094	1.73
2007	23	39.11	\$ 741,491	\$ 18,959	\$ 32,239	1.70
2008	29	45.10	\$ 455,260	\$ 10,094	\$ 15,699	1.56
<b>Total</b>	<b>283</b>	<b>499.34</b>	<b>\$ 5,790,778</b>	<b>\$ 11,597</b>	<b>\$ 20,462</b>	<b>1.76</b>

\* 1992-1996 data is based on information provided by MNR

\*\* Total Costs have been restated (except for MNR contracts) to conform with the Trust's revised financial statement presentation



MAAP project 06-03 (Squirrel Pit – Dufferin County) seeded in 2006 with a prairie mix of wildflowers and grasses that are native to Southern Ontario. Photo (summer of 2008) shows habitat for a wide variety of butterflies, birds and other assorted wildlife. Many of the species of seed used will remain dormant until following years, which will result in a prairie that's ever changing.



## HOW TO PLAN A MORE SUCCESSFUL TREEPLANTING PROJECT

By David Beamer

Returning an aggregate site to forest cover is often a good rehabilitation option after extraction is completed. Trees are found throughout Ontario, a part of almost every ecosystem, in almost every type of soil, above water and occasionally even below for seasonal periods.

Forests are very dynamic and provide many important functions including erosion control, carbon sequestration, air and water purification and help recharge groundwater aquifers. Forests also provide wildlife habitat, timber products, and are likely to make most properties more productive and aesthetically pleasing.

I've been approached by many managers of aggregate properties and asked why they have had such a hard time getting trees to survive. I'd like to address a few of these issues, and make some recommendations on how to make your treeplanting projects more successful.

### The First Steps to a Successful Project

It's worth spending some time assessing your soil. The more you know about your soil, the better you'll be able to select species that can grow in those soils. Some important soil characteristics includes soil texture (sand, clay etc.), how well drained the soil is, and quantity of organic matter (which is often degraded on aggregate sites). Further testing can be done to assess characteristics such as pH level and nutrient availability (i.e. phosphorous, potassium, calcium, etc.). For further information on nutrient assessment and soil testing please visit:

[www.omafra.gov.on.ca/english/crops/pub811/2testing.htm](http://www.omafra.gov.on.ca/english/crops/pub811/2testing.htm)

### Selecting the Right Stock for Your Project

Probably the most important part of your plan is deciding what tree species you are going to plant. Here are a few suggestions.

### Native Species and Local Genetic Stock

The trees that grow in your area have evolved over thousands of years to survive and have optimal growth in that specific climate, and even local soil conditions. As well, the wildlife in the area has evolved during that same timeline to utilize and benefit from native vegetation much more so than non-native (exotic) vegetation. Exotic species have a great advantage in that pests and pathogens from their original ecosystems were not always transplanted with them, giving them the ability to out compete native species and the use of them often results in a significantly less diverse and functional woodlot. The MAAP program does not plant any exotic trees or shrubs.

### The More the Merrier

The greater the variety of trees and shrubs you plant, the better your chances are that some of them are going to be suitable for your site conditions. You should always aim to have as much biodiversity as possible. Increased biodiversity will provide habitat to a wider variety of wildlife species, provide greater resistance to pathogens and climatic extremes and can perform more ecological functions.

Deciduous trees and shrubs are useful for regenerating the organic component of soil because they drop their leaves every fall, adding valuable nutrients. Increasing organic content is important for improving the soil's ability to retain moisture (an important consideration in sandy/gravelly soils).

Coniferous trees are important for cover for wildlife in the winter, act as a windbreak to reduce soil erosion through all seasons, and if required, make a great visible barrier to your site.

Consider adding berry producing shrubs to your mix. Attracting birds will in turn help your rehabilitation project as birds will bring a prolific seed source including many species of ground vegetation that will help your trees grow better. Some species that can grow on pits and quarries include choke cherry, nannyberry, hackberry, and staghorn sumac.

Different parts of Ontario are home to various species of trees, and some species are found throughout the entire province. For local species lists, please contact your local MNR or



Conservation Authority office. Certain species are almost impossible to establish on former aggregate properties, and others will survive but only with a great deal of attention (high maintenance). Some generalist species that the MAAP program has had good luck with include white cedar, white and red pine, trembling and balsam poplar, white spruce, white birch, red oak, and red maple (to name just a few).

### Choose the Right Size of Tree and Shrub Stock

Since organic material is often absent or degraded on aggregate sites, there are a lot of benefits to planting container stock. Containerized stock are trees and shrubs that are grown in soil (often very organic nutrient rich soil). Not only does the soil protect the roots during transportation but it also gives the trees a nice start if they're being planted in less than fertile soil conditions. The larger containers (i.e. 3-7 gallon / 12-27 litres) typically contain older trees with better developed root systems and are more resistant to predation from small mammals. The smallest and youngest container stock are called 'plugs'.



White Cedar Plugs (Photo Credit: Matt Wheeler)

Plugs are cheap and easy to transport but they don't come with very much soil and are quite small. Therefore, they often succumb to drought and/or are out competed by weeds.

### Reducing Stress on Your Trees

Trees of the appropriate species and of local genetic stock should be able to survive (if not thrive) on your site, provided that they do not undergo excessive stress. The following tips will help reduce stress on your trees:

#### Plant in the Spring or Fall for Optimum Success

Do not plant during the summer! Trees become dormant in the winter to protect themselves from the stress of subzero conditions, and to conserve water and energy. Dormancy is an adaptive mechanism that allows trees to meet environmental stresses and thus provides an excellent time for transplantation and moving. The optimal time to plant a tree is therefore, after they become dormant (in the fall) or before they come out of dormancy (in the spring).



White Spruce Plug (Photo Credit: Matt Wheeler)



## HOW TO PLAN A MORE SUCCESSFUL TREEPLANTING PROJECT

(continued)

### Provide Adequate Water.

If trees are planted early enough in the spring, they typically will have most of the wet spring months to develop roots to sustain them through the drier summer months. However, if the trees are planted late in the spring, or the spring is dry, they may not have developed sufficient roots to get them through a dry summer. Late plantings will therefore require careful monitoring and watering during the summer (drier) months following planting. It can mean the difference between whether your trees survive or not.

### Transport Trees with Care

Trees are quite sensitive and inadequate care during storage and/or transportation can cause the death of the tree (potentially weeks later). It is especially important to take care of the roots of the tree. Bare root stock (non-containerized with no soil) is very sensitive. For this reason, bare root stock should be kept refrigerated for as long as possible and kept as cool as possible (i.e. in the shade) until planted.

Branches need to be protected during transportation as well. Trees should be sheltered (i.e. covered by a tarp) from the wind to protect them from windburn. The airflow generated during driving is enough to dry out and/or freeze leaves. Trees that are handled roughly during transport can lose their buds, setting their growth back months or even years.

### Using Volunteers for Planting

Tree planting with volunteers is a great way to get the public involved and for them to learn about the rehabilitation that occurs on aggregate sites. Public planting days require extra planning to ensure mortality rates are kept low. Bare root stock is more susceptible to improper care than other choices of stock, yet bare root stock are the most commonly provided to volunteers.

For young volunteers, acorns and nuts are often a better choice than bare root stock and add a new dimension to the learning experience for them. The use of tree seeds is a good choice in that they are extremely durable, easy to store and transport, and require very little instruction and guidance for young people to plant.

If you want to engage local community groups to plant trees, consider planting container stock. Container stock is available in a variety of sizes and of course come with soil, which not only helps reduce the stress on the roots during transport, but also provides the tree an initial boost of organic material to help get them going once they are planted. A group of volunteers can plant a great deal of trees in 1 gallon pots very quickly, successfully, and cheaply.

For a more complete list of species and additional information, please contact the MAAP program at:

[djbeamer@toarc.com](mailto:djbeamer@toarc.com)

Remember, the most expensive tree is a dead tree!



White Cedar – Bare Root  
(Photo Credit: Matt Wheeler)



Nannyberry – Bare Root  
in Burlap for Protection  
(Photo Credit: Matt Wheeler)





## BIODIVERSITY CONFERS RESISTANCE TO SIMULATED CLIMATE CHANGE

Research by *Paul Richardson & Douglas W. Larson* | Cliff Ecology Research Group, University of Guelph

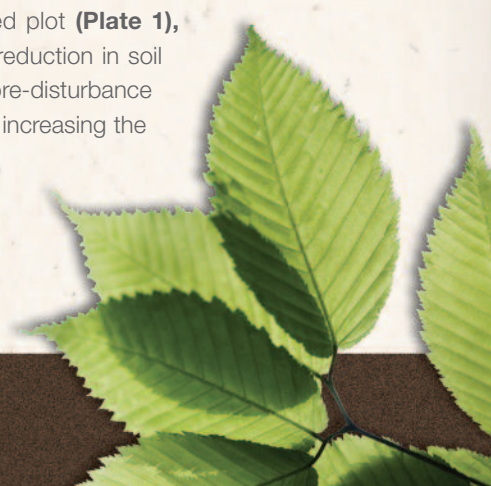
Creating or restoring ecosystems within extreme-stress environments – such as abandoned urban, industrial, or aggregate extraction sites – can be tricky business, not least because “restored” communities often fail to remain as such for long. Intense environmental fluctuations frequently experienced in damaged environments can easily set rehabilitation efforts back catastrophically, pushing fledgling communities into highly degraded states with little or no living vegetation cover. As if establishing functional communities under extreme stress were not difficult enough now, in the near future the prospect of successful rehabilitation may be even more dismal: under climate change scenarios, environmental conditions are predicted to become increasingly variable, producing intensified fluctuations such as severe droughts and heat waves. Managers may be unable to reverse climate change, but restoration ecologists can help managers adapt by discovering and manipulating biological controls of resistance to disturbance in ecosystems undergoing reconstruction.

One of the most widely suspected factors controlling resistance and other stability properties of biological communities is the diversity of species established; communities with a wide variety of species or functional traits may be better able than species-poor communities to maintain a consistent level of productivity or living surface cover in the wake of severe environmental fluctuations. There are several alternate explanations for the positive effects of biodiversity on resistance that have been observed intermittently and with ambiguity in experimental studies. Species diversity may increase the likelihood that in the event of any given disturbance some particularly resistant species will be present to survive and contribute to community processes. Under some conditions resistant species may grow rapidly and fill gaps left by damaged neighbours, compensating for damage at the level of the whole community. Such dynamics may be more likely under conditions where species are competing intensely for resources and inhibiting growth of neighbours: under these circumstances damage to disturbance-sensitive species may indirectly benefit more tolerant competitor species. Alternatively, our growing understanding of ecology in extreme environments suggests that high environmental stress selects for establishment of species that interact positively with one another, such as species that alter their surrounding through shade provision, nutrient enrichment, or substrate stabilization to make the environment more hospitable to other species. Such facilitation may become stronger where

more species are present to interact, but until now no research has addressed whether such interactions can dampen impacts of disturbance on community properties in reconstructed ecosystems.

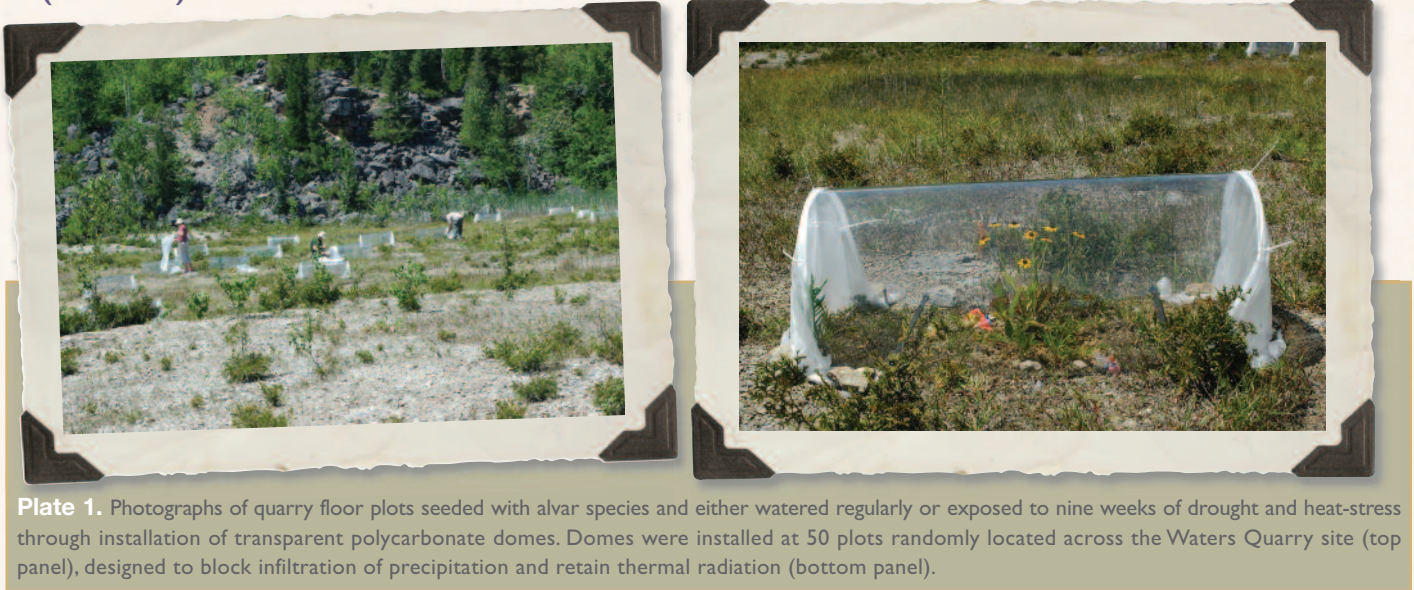
We used an abandoned quarry floor near Georgetown, Ontario to experimentally test the shape of the relationship between species diversity and community resistance to a simulated drought and heat wave. We additionally examined diversity-resistance relationships at the level of individual species populations, to determine which mechanisms contributed to observed community-level relationships. We performed this experiment within the context of replicating natural alvar ecosystems on quarry floors, a novel restoration model recently found to be highly effective for increasing the conservation and functional value of limestone extraction sites. Details of the experimental design employed are published elsewhere; however the crucial point is that we established alvar communities in small plots using a combination of seed and plug addition such that replicate communities were indistinguishable from each other with respect to the total number of plants or proportion of surface covered by vegetation, however communities differed systematically with respect to which and how many species were established. Five levels of a biodiversity treatment varied these factors to create groups of communities with the same list of species overall, but differing in that each group contained exactly 3, 6 or 12 species within each plot.

Introduced communities were allowed to establish naturally throughout the 2006 growth season but in 2007 were subjected to a controlled climate-change treatment whereby plots at each level of biodiversity were either **i)** watered regularly throughout the growth season or **ii)** watered regularly, exposed to nine-weeks of intense drought and heat stress, then watered regularly for the remainder of the season. Extreme microclimate changes were achieved by installing a transparent polycarbonate dome over each non-watered plot (**Plate 1**), producing over time drastic reduction in soil moisture content (from 14% pre-disturbance to 3% post-disturbance) and increasing the average maximum temperature experienced each day (from 34 C in control plots to



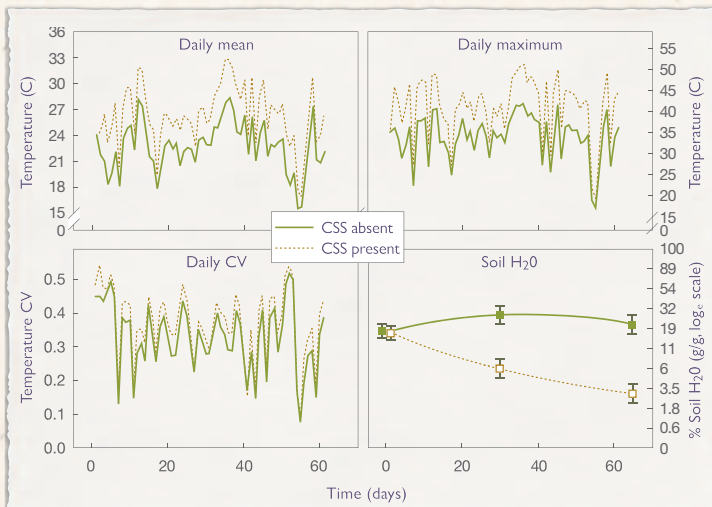


## BIODIVERSITY CONFERS RESISTANCE TO SIMULATED CLIMATE CHANGE (continued)



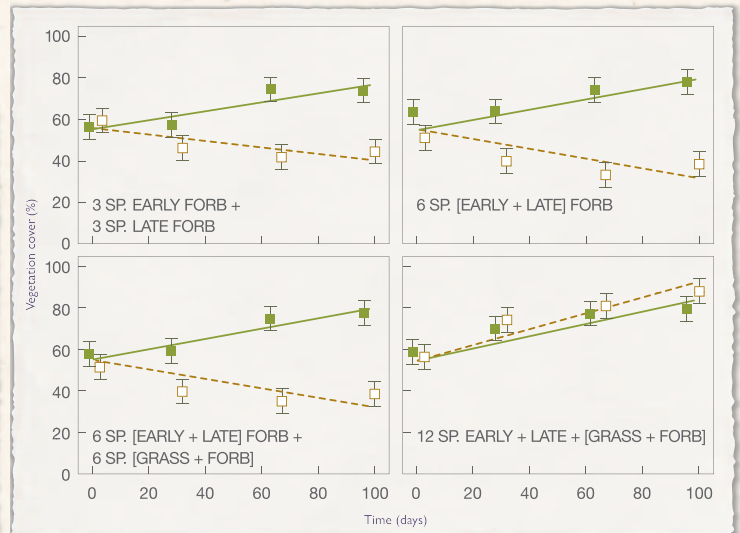
**Plate 1.** Photographs of quarry floor plots seeded with alvar species and either watered regularly or exposed to nine weeks of drought and heat-stress through installation of transparent polycarbonate domes. Domes were installed at 50 plots randomly located across the Waters Quarry site (top panel), designed to block infiltration of precipitation and retain thermal radiation (bottom panel).

41 C under domes) (**Fig. 1**). We monitored vegetation cover in plots before, during and after the 9-week climate-change disturbance and determined whether the rate of change over the growing season behaved as predicted by the hypothesis that diversity drives resistance: steeper declines in cover – measured in disturbed plots relative to controls at the same diversity level – where a single group of species was packaged into plots at low diversity rather than at high diversity.



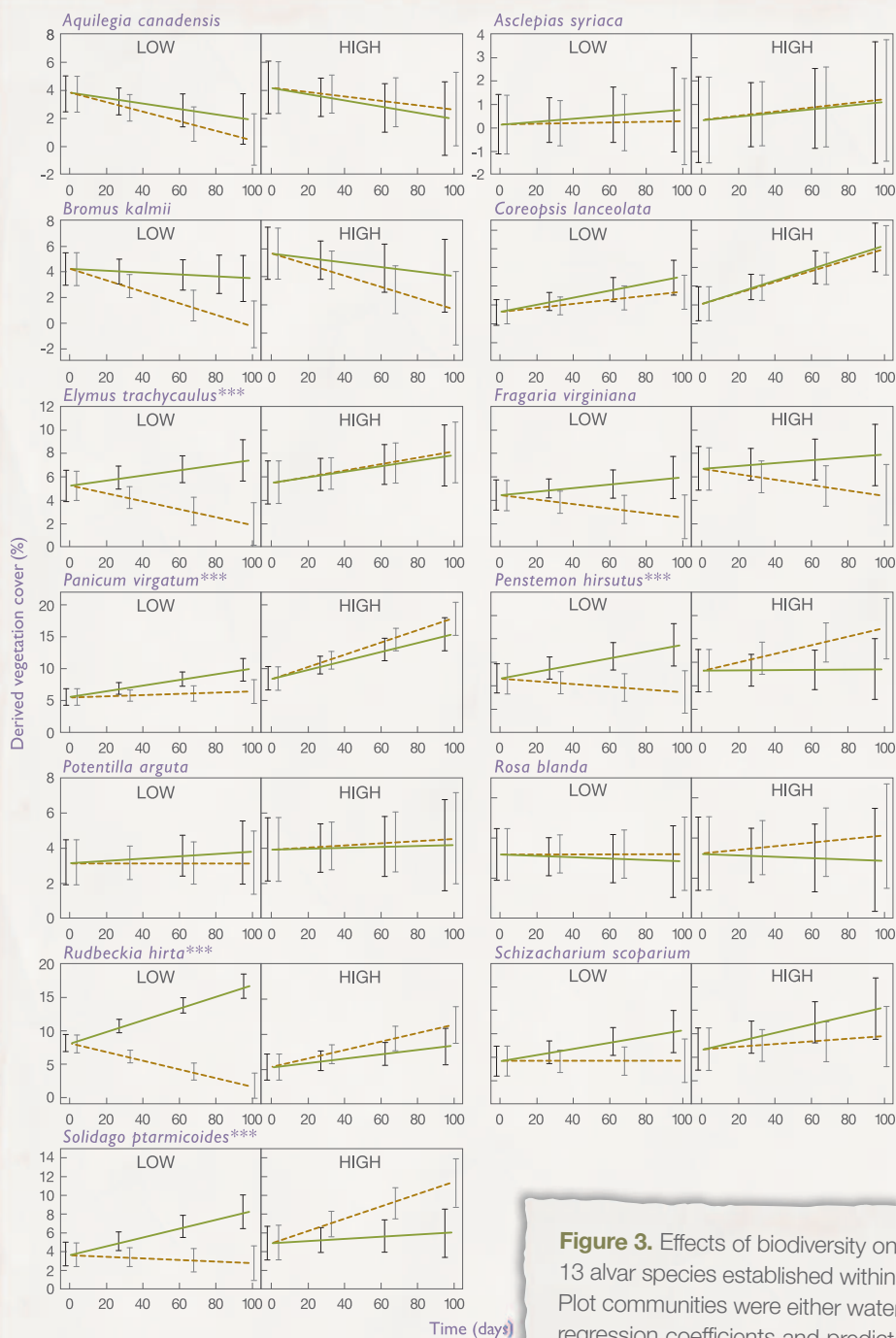
**Figure 1.** Effects of transparent polycarbonate domes on quarry floor microclimate conditions. Air temperature and soil moisture conditions are shown for plots watered regularly (solid lines) and plots receiving domes for 65 days in summer (dotted lines). Temperature was measured every three hours in each plot and effects of domes on least-squared mean daily temperature mean, maximum, and coefficient of variation (CV: the standard deviation divided by the mean) are shown. Gravimetric soil moisture was log-transformed; shown are back-transformed least-squared means and 95% confidence intervals for soil moisture in control (solid squares) and disturbed (empty squares) plots on each day that soil was sampled.

Remarkably, while 3- and 6-species communities exhibited similar patterns of vegetation cover over the 2007 growing season – increasing in watered plots but sharply decreasing over time under polycarbonate domes – cover in 12-species communities increased in both control and disturbed plots equally (**Fig. 2**).



**Figure 2.** Effects of species diversity, climate-change disturbance, and time on vegetation cover in alvar plant communities experimentally established on limestone quarry floors. Plots received either regular watering throughout the 98-day experiment (solid squares and solid lines, indicating least-squared means, 95% confidence intervals, and results of linear regression) or installation of transparent polycarbonate domes for 65 days. Trends in vegetation cover over time in disturbed relative to control plots were compared within groups of plots established using a pool of either 6 species (top panels) or 12 species (bottom panels), but among groups of plots receiving either half of the species pool per plot, with both halves represented equally overall (left-hand panels), or the entire species pool per plot (right-hand panels).





This pattern provides strong, unambiguous evidence that in high-stress environments constructed or restored communities can be made more resistant to drought by incorporating a greater diversity of species into rehabilitation practice. The fact that the same pool of species exhibited greater resistance when planted in groups of 12 than in groups of 6 species indicates that effects of more species not different species in high-diversity communities contributed to this effect.

At the population level, 8 of the 13 native alvar species introduced to quarry floors exhibited resistance patterns unrelated to the number of other species in the community. However, 5 species exhibited enhanced resistance where they occurred in high diversity plots (HIGH) compared to where they occurred in low diversity plots (LOW) (Fig.3). This indicates that increased community resistance with diversity was a product of increased population resistance within several species. Two of these species, the grass *Elymus canadensis* (Slender Wheatgrass) and the wildflower *Rudbeckia hirta* (Black-Eyed Susan), exhibited cover loss in 6-species plots but cover expansion in 12-species plots, consistent with facilitation reducing plant mortality in disturbed high-diversity communities. In contrast the wildflowers *Solidago ptarmicoides* (Upland White Goldenrod) and *Penstemon hirsutus* (Hairy Beardtongue) exhibited increased

**Figure 3.** Effects of biodiversity on change in vegetation cover over time in populations of 13 alvar species established within multi-species communities on a limestone quarry floor. Plot communities were either watered regularly (solid lines + black error bars, representing regression coefficients and predicted confidence limits for vegetation cover at contrasted diversity levels) or exposed to a simulated drought and heat wave via installation of polycarbonate domes over plots (dotted lines + grey error bars). For each species, rates of population cover change over time in disturbed plots relative to control plots were contrasted between 6-species ("LOW") and 12-species ("HIGH") plots of equivalent average species composition. Bold-face print and asterisks denote species in which this contrast resulted in a statistically significant difference (\*\*  $P < 0.01$ ; \*\*\*  $P < 0.0001$ ), indicating enhanced population resistance with neighbour diversity.



## BIODIVERSITY CONFERS RESISTANCE TO SIMULATED CLIMATE CHANGE (continued)

resistance with diversity because cover expansion rates of these drought-tolerant species jumped where competitors suffered damage from the disturbance (**Plate 2**). Interestingly, the fifth species, the grass *Panicum virgatum* (Switchgrass) performed better in high-diversity disturbed plots than under any other treatment combination, suggesting that resources associated with the disturbance such as increased temperature may have benefited this hardy species, while capacity to exploit such resources was enhanced through positive interactions with neighbour species.

Our results indicate strongly that land managers may be able to develop resistance to climate-change disturbances within anthropogenic ecosystems by manipulating the diversity of species established during the rehabilitation process. Specifically, establishing a greater variety of stress-hardy alvar grass and

wildflower species on abandoned limestone quarry floors should yield communities better able to grow and maintain vegetation cover despite extreme drought and heat wave conditions. This increased stability implies reduced expenditures for replacing communities and provides additional incentive for converting quarry floors and other high-stress waste places into refuges for biodiversity: such ecosystems are more likely to remain in a restored or rehabilitated state over the long term. The fact that multiple mechanisms of population resistance simultaneously improved community resistance with diversity suggests that maximizing trait diversity without necessarily targeting specific species interactions may be a robust method for increasing the resistance of rehabilitated communities to both predicted and unpredictable environmental changes.



**Plate 2.** Alvar plant species introduced to quarry floors and found to exhibit enhanced population resistance to drought and heat stress with increased neighbour species. From left to right across the top row: *Solidago ptarmicoides*; *Elymus trachycaulus*; *Panicum virgatum*; *Penstemon hirsutus*; *Rudbeckia hirta*. The bottom photograph depicts these and other introduced alvar species thriving in high-diversity plots shortly after removal of polycarbonate domes.



## ESTABLISHING ALVAR MOSSES ON QUARRY FLOORS

Suzanne Campeau, Bryophyta Technologies Inc.

The objective of the current project is to determine if alvar moss species can be successfully established in depleted limestone quarries. Alvars are flat, open areas of calcareous bedrock with a patchy, thin soil cover and sparse vegetation. The plant communities on these bedrock outcrops are composed of a unique mixture of stunted trees, herbs, forbs, mosses and lichens. Despite the low plant biomass, the flora of Ontario alvars is highly diverse and contains a large proportion of native species. Establishing alvar plant communities in depleted limestone quarries therefore becomes an option that could result in the restoration of degraded land into a highly valuable natural habitat.

Previous research has demonstrated that a number of vascular plants characteristic of alvars are present in old quarries or can be readily established there by seeding. Mosses, on the other hand, were shown to be less successful at establishing on their own. Yet, mosses are an important component of alvar vegetation, both in terms of biodiversity and in terms of the role they play at the ecosystem level.

The study investigates whether targeted species of alvar mosses can successfully establish colonies when introduced to quarry floors. In 2008, two series of small-scale moss introduction experiments were initiated in two quarries located near Kingston and near Brockville in eastern Ontario. The experiments test how the ability of two species of mosses to establish on quarry floors is influenced by **1)** the type of substrate, **2)** the presence of a protective mulch cover, and **3)** the presence of microtopography or "safe sites". The experiments are replicated both within and between quarries. The test species

were selected based on an analysis of existing data on bryophyte abundance and environmental factors in both abandoned quarries and alvars, conducted by Uta Matthes from the University of Guelph.

Early observations (Fall 2008) indicated that the targeted moss species were able to grow once "seeded" on limestone, and that a straw mulch cover greatly improved early establishment. The effect of mulch could be two-fold: the straw mulch likely improved growing conditions for the plants, but also prevented the mosses from being displaced by wind or water during the early stages of establishment.

The very rainy and wet growing season may have favoured moss establishment in our 2008 experiments. For this reason the moss reintroduction experiments will be repeated in 2009 in at least one more quarry. In addition, an experiment investigating the effect of nutrients on moss establishment will be conducted in three quarries. All experiments will be monitored until 2010 to see if the early establishment success observed in 2008 will, in the long run, lead to the establishment of stable moss colonies on the bare limestone quarry floors.

Early results of the project will be presented at the 2009 Canadian Land Reclamation Association (CLRA) Conference in Québec City in August 2009. A poster presentation, co-authored by Uta Matthes and Suzanne Campeau and entitled "The Use of Community Ordination in the Establishment of Restoration Protocols", will describe the approach used to select the species for the experiments. The second presentation, a talk presented by Suzanne Campeau and entitled "Establishing Alvar Mosses on Limestone Quarry Floors in Ontario", will focus on the field experiments.



**Photo 1.** General view of one of the quarries used as experimental sites, showing groups of experimental plots. **Photo: Suzanne Campeau, Bryophyta Technologies Inc.**



**Photo 2.** Close-up view of two experimental plots in Fall 2008, when evaluating first-year establishment success of mosses. The plot located immediately in front of the person had its straw mulch cover removed in order to evaluate moss cover. The plot to the right did not receive any straw mulch. Corners of the plots are marked with orange paint. **Photo: Suzanne Campeau, Bryophyta Technologies Inc.**



## REHABILITATION: CONNECTING OPPORTUNITIES WITH SOLUTIONS

The final year of the funded research project by the team of Robert Corry, Robert Brown (both of University of Guelph), and Raffaele Laforzezza (University of Bari, Italy) has ended. This research explored alternative aggregate site rehabilitations from ecological, microclimatic, and cultural endpoints. Using a combination of real and simulated photographs and map data the researchers measured the effects of different rehabilitation foci on habitat (local, neighbourhood, and species movement) and societal perceptions. In the past several months the researchers have completed the online survey of cultural acceptability of alternative aggregate site rehabilitation, the modeling of microclimatic implications of rehabilitation, and the ecological consequences of alternative rehabilitations.

### Online Survey

The online survey used digital photographic simulations of pit and quarry rehabilitations and the surrounding landscape to gauge the perceptions and preferences of alternative approaches to rehabilitation. Respondents scored how rehabilitated they found scenes, as well as how appropriate the rehabilitation was (given the surroundings) and how attractive the landscape was. For several photographs, including both “baseline” images that showed various southern Ontario scenes as well as simulated rehabilitations of depleted sites, respondents appreciated the apparent health of the landscape and were concerned with images showing loss of forests or denuded soils. With three alternative ways of rehabilitating depleted aggregate sites – emphasizing alternatively economic returns, biodiversity conservation, or a balance of these two – respondents favoured biodiversity conservation or a balance of economics and biodiversity (**Figure 1a**) and disliked landscapes that appeared to be disturbed by sprawl or extraction (**Figure 1b**). The responses showed that people used the surrounding landscape to gauge the appropriateness or attractiveness of any particular site.

Figure 1a.

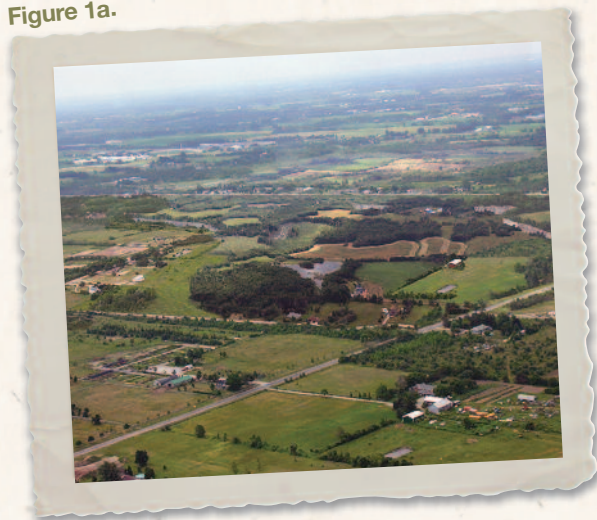


Figure 1b.



### Microclimate Modeling

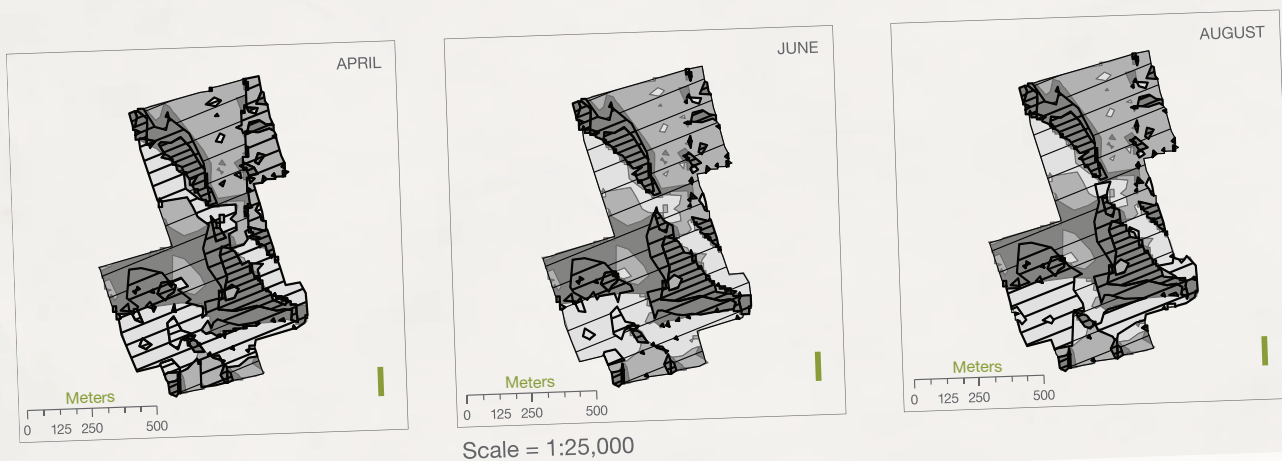
The research included a framework for designed habitat rehabilitation, applying microclimatic models to assess how rehabilitation can yield good habitat outcomes. Using the endangered Karner blue butterfly as a candidate species, habitat requirements and microclimatic modeling was developed to combine atmospheric conditions, terrain, and biological needs of the species. The Karner blue butterfly was used in this research because it has been well-studied and has an interesting life-history, including a relationship with a host plant (wild lupine) which thrives in partly-shaded locations and



benefits from periodic fires, ants that tend butterfly larva, eggs that overwinter best underneath snow cover, and areas with variable thermal characteristics and low wind speeds. Given its microclimatic complexities, the Karner blue butterfly is a useful species to test the parameters of a microclimatic model for habitat. The microclimatic model fits within macro, meso, and local climate measurements and focuses on localized wind and solar radiation to develop particular microclimatic units (areas of similar microclimates). Using three aggregate extraction sites in southern Ontario and three specific dates (corresponding to key Karner blue butterfly life cycle activities), solar radiation and wind were modeled for different degrees and aspects of slope. The model classified pit and quarry landforms for their levels of solar irradiance and wind speeds, such that habitat for species like the Karner blue can be designed to meet microclimatic needs (Figure 2). Designed rehabilitation informed by the microclimatic design framework can help to meet habitat requirements in complex terrain, contributing to the conservation or re-introduction of species of concern.

Figure 2.

Haldimand-Norfolk County Sample Pit



Legend

Solar Irradiance	Wind Impact
GRIDCODE	GRIDCODE
Min Irradiance	Min wind impact
Mod Irradiance	Mod wind impact
Max Irradiance	Max wind impact

Sources:  
SOLRIS Ver. 1.2, Ontario Ministry  
of Natural Resources 2008



## REHABILITATION: CONNECTING OPPORTUNITIES WITH SOLUTIONS (continued)

### Ecological Pattern & Process Measurements

Two ways of testing the ecological implications of alternative rehabilitations were applied. Landscape pattern metrics and resistance models (cost-surfaces) assess the patterns and processes of different landscapes, even beyond a particular site. Several pit and quarry sites in southern Ontario were mapped and assessed. The three alternative rehabilitation approaches (economics, biodiversity conservation, or a balance of both) were applied to the pit and quarry sites and the metrics and model applied to assess outcomes. The surrounding landscape extended beyond pit and quarry boundaries to a 20 km-wide circle (area of 314 km<sup>2</sup>), and the land cover types in the broad landscape affect habitat patterns and resistance. In fact, even though rehabilitation was limited to a small site at the center of the broad landscape, resistance was changed for some sites in a very extensive way: up to 5,900 ha (19%) of a landscape could have lower resistance (easier movement for a species) even though the rehabilitation was a much smaller part of the landscape (**Figure 3**). This is because a rehabilitated site can act to connect habitat patches in a way that promotes easier movement across a landscape. A similar outcome emerged for landscape pattern effects: measuring habitat proportions, patch size, connectivity, and landscape heterogeneity results showed that rehabilitation of the pit or quarry site improved conditions beyond the site boundaries (while habitat proportions varied by 2% among alternatives, connectivity increased patch sizes by 3%). The effects could be site-specific in response to surroundings, and while the biodiversity conservation alternative typically was the best in improving habitat patterns and lowering landscape resistance, variable responses show that careful consideration of the surroundings is required for effective rehabilitation design. For some sites, for example, economically-focused or balanced rehabilitations were not very different in terms of the extent of changes in landscape resistance compared to a biodiversity conservation rehabilitation, while other sites benefited dramatically from biodiversity-focused rehabilitation.

Figure 3.



### Conclusions

Rehabilitation can take myriad forms and appearances and this research limited it to a continuum anchored on priorities for economic or biodiversity consequences. The microclimatic model demonstrates that there are many opportunities in a pit or quarry rehabilitation to improve habitat qualities based on solar radiation and wind. These can apply to any type of rehabilitation that intends to achieve quality habitat for desired species. From the cultural acceptability online survey and the landscape metrics and resistance model, the most-consistent result is that biodiversity-focused rehabilitations improve their ecological consequences and commonly the perceptions of the rehabilitation. That the rehabilitated site can affect the ecology of a broad expanse of the surroundings of the landscape is encouraging. The aggregate industry and rehabilitation designers can use this information to approach rehabilitation in an informed way that achieves multiple objectives and enhances opportunities to connect the industry, the local communities, and the ecology of the post-extraction landscape.



## AUDITORS' REPORT

To the Trustee of  
Aggregate Resources Trust

We have audited the statement of financial position of the Aggregate Resources Trust as at December 31, 2008 and the statements of revenue and expenses and changes in fund balances and cash flows for the year then ended. These financial statements are the responsibility of the Administrator of the Trust. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by the Administrator of the Trust, as well as evaluating the overall financial statement presentation.

In our opinion, these financial statements present fairly, in all material respects, the financial position of the Trust as at December 31, 2008 and the results of its operations and cash flows for the year then ended in accordance with Canadian generally accepted accounting principles.

*BDO Saward LLP*

**Chartered Accountants,  
Licensed Public Accountants**

Burlington, Ontario  
February 6, 2009





Aggregate Resources Trust

## STATEMENT OF FINANCIAL POSITION



As at December 31	2008 \$	2007 \$
<b>ASSETS</b>		
<b>Current</b>		
Cash and cash equivalents	565,850	757,503
Short-term investments	1,307,885	1,109,523
Due from Licensees and Permittees	91,431	119,458
GST recoverable	11,517	25,642
Interest and dividends declared receivable	57,699	48,883
Prepaid expenses	16,492	22,191
<b>Total current assets</b>	<b>2,050,874</b>	<b>2,083,200</b>
Investments [note 3]	13,941,931	16,678,376
Capital assets, net [note 4]	70,003	124,465
	<b>16,062,808</b>	<b>18,886,041</b>
<b>LIABILITIES AND TRUST FUNDS</b>		
<b>Current</b>		
Accounts payable and accrued liabilities	392,867	359,442
Due to Licensees and Permittees [note 1]	6,693	6,693
Due to The Ontario Aggregate Resources Corporation [note 1], [note 5]	10,439	122
Wayside permit deposits	116,895	207,355
Deferred Aggregate Resources Charges	22,327	56,467
Due to Governments	204,282	160,214
<b>Total current liabilities</b>	<b>753,503</b>	<b>790,293</b>
<b>Trust Funds</b>		
Rehabilitation Fund	12,474,334	14,618,937
Abandoned Pits and Quarries Rehabilitation Fund	2,834,971	3,476,811
<b>Total Trust Funds</b>	<b>15,309,305</b>	<b>18,095,748</b>
	<b>16,062,808</b>	<b>18,886,041</b>

\*See accompanying notes

On behalf of the Trust by The Ontario Aggregate Resources Corporation as Trustee:

Director

Director





Aggregate Resources Trust

## STATEMENT OF REVENUE AND EXPENSES AND CHANGES IN FUND BALANCES

For the Year ended December 31

2008

	Aggregate Resources Fund	Rehabilitation Fund	Abandoned Pits and Quarries Rehabilitation Fund	Total
	\$	\$	\$	\$
<b>REVENUE</b>				
Investment income [note 3]	—	1,302,493	194,898	1,497,391
Unrealized changes in fair value	—	(2,661,693)	(522,150)	(3,183,843)
Publications	—	213	2,262	2,475
Gain on disposal of capital assets	—	50	—	50
	—	(1,358,937)	(324,990)	(1,683,927)
<b>EXPENSES</b>				
Reimbursed expenses	—	642,816	337,004	979,820
Depreciation	—	41,241	24,536	65,777
Investment management fees	—	83,822	16,443	100,265
	—	767,879	377,983	1,145,862
<b>Deficiency of revenue over expenses before the following</b>	—	(2,126,816)	(702,973)	(2,829,789)
Aggregate Resources Charges [note 1]	20,431,730	—	—	20,431,730
Allocated to the Governments [note 1]	(19,615,705)	—	—	(19,615,705)
Allocated to the Crown [note 1]	(816,025)	—	—	(816,025)
<b>Deficiency of revenue over expenses for the year</b>	—	(2,126,816)	(702,973)	(2,829,789)
Trust Funds, beginning of year	—	14,618,937	3,476,811	18,095,748
Funds reinvested by the Crown [note 1]	816,025	—	—	816,025
Interfund transfer [note 1]	(816,025)	—	816,025	—
Expenditures incurred in meeting the Trust purposes [schedules and note 1]	—	(17,787)	(754,892)	(772,679)
<b>Trust Funds, end of year</b>	—	12,474,334	2,834,971	15,309,305

\*See accompanying notes





## STATEMENT OF REVENUE AND EXPENSES AND CHANGES IN FUND BALANCES (continued)

For the Year ended December 31

2007

	Aggregate Resources Fund \$	Rehabilitation Fund \$	Abandoned Pits and Quarries Rehabilitation Fund \$	Total \$
<b>REVENUE</b>				
Investment income [note 3]	—	1,571,087	267,411	1,838,498
Unrealized changes in fair value	—	(935,358)	(174,859)	(1,110,217)
Publications	—	97	1,820	1,917
Loss on disposal of capital assets	—	(118)	—	(118)
	—	635,708	94,372	730,080
<b>EXPENSES</b>				
Reimbursed expenses	—	707,627	249,690	957,317
Depreciation	—	38,786	26,626	65,412
Investment management fees	—	96,675	18,073	114,748
	—	843,088	294,389	1,137,477
<b>Deficiency of revenue over expenses before the following</b>	—	(207,380)	(200,017)	(407,397)
Aggregate Resources Charges [note 1]	11,646,879	—	—	11,646,879
Allocated to the Governments [note 1]	(10,871,126)	—	—	(10,871,126)
Allocated to the Crown [note 1]	(775,753)	—	—	(775,753)
<b>Deficiency of revenue over expenses for the year</b>	—	(207,380)	(200,017)	(407,397)
Trust Funds, beginning of year	—	12,991,979	3,265,593	16,257,572
Change in accounting policy	—	1,943,126	363,256	2,306,382
Trust Funds, as restated	—	14,935,105	3,628,849	18,563,954
Funds reinvested by the Crown [note 1]	775,753	—	—	775,753
Interfund transfer [note 1]	(775,753)	—	775,753	—
Expenditures incurred in meeting the Trust purposes [schedules and note 1]	—	(108,788)	(727,774)	(836,562)
<b>Trust Funds, end of year</b>	—	14,618,937	3,476,811	18,095,748

\*See accompanying notes



## Aggregate Resources Trust



## STATEMENT OF CASH FLOWS

	2008	2007
	\$	\$
For the Year ended December 31		
<b>CASH FLOWS FROM OPERATING ACTIVITIES</b>		
Deficiency of revenue over expenses for the year	(2,829,789)	(407,397)
Add (less) items not involving cash		
Depreciation	65,777	65,412
Unrealized changes in fair values	3,183,843	1,110,217
Loss (Gain) on disposal of capital assets	(50)	118
	419,781	768,350
Net change in non-cash working capital balances related to operations	2,245	51,495
<b>Cash provided by operating activities</b>	<b>422,026</b>	<b>819,845</b>
<b>CASH FLOWS FROM INVESTING ACTIVITIES</b>		
Purchase of capital assets	(11,315)	(51,666)
Proceeds on disposal of capital assets	50	1,734
Purchase of short-term investments	(35,299,116)	(4,649,840)
Sale of short-term investments	35,093,615	4,116,809
Purchase of investments	(3,021,611)	(2,513,839)
Sale of investments	2,581,352	1,672,154
<b>Cash used in investing activities</b>	<b>(657,025)</b>	<b>(1,424,648)</b>
<b>CASH FLOWS FROM FINANCING ACTIVITIES</b>		
Funds reinvested by the Crown [note 1]	816,025	775,753
Expenditures incurred in meeting the Trust purposes	(772,679)	(836,562)
<b>Cash provided by (used in) financing activities</b>	<b>43,346</b>	<b>(60,809)</b>
<b>Net decrease in cash and cash equivalents during the year</b>	<b>(191,653)</b>	<b>(665,612)</b>
Cash and cash equivalents, beginning of year	757,503	1,423,115
<b>Cash and cash equivalents, end of year</b>	<b>565,850</b>	<b>757,503</b>

### SUPPLEMENTARY CASH FLOW INFORMATION

	2008	2007
	\$	\$
For the Year ended December 31		
Cash received from interest	748,518	714,423

\*See accompanying notes





## Aggregate Resources Trust

## SCHEDULES OF REHABILITATION COSTS FOR THE REHABILITATION FUND

2008

For the Year ended December 31

\$

PROJECT NUMBER	PROJECT NAME	PAID OR PAYABLE
07-01	G.M.C. Sand and Gravel Ltd. Pit, County of Brant	3,518
08-02	Victoria Graphite Quarry, County of Leeds & Grenville	193
	Education	
	Student Rehabilitation Design Competition	9,942
	Rehabilitation Tour Bowmanville & surrounding area	1,000
	Tendering, consulting and other	3,134
		<b>17,787</b>

\*See accompanying notes

2007

For the Year ended December 31

\$

PROJECT NUMBER	PROJECT NAME	PAID OR PAYABLE
07-01	G.M.C. Sand and Gravel Ltd. Pit, County of Brant	96,701
	Education	
	Rehabilitation Manual	5,973
	Student Rehabilitation Design Competition	4,649
	Rehabilitation Tour Puslinch Township	1,000
	Tendering, consulting and other	465
		<b>108,788</b>

\*See accompanying notes



Aggregate Resources Trust



## SCHEDULES OF REHABILITATION COSTS FOR THE ABANDONED PITS AND QUARRIES REHABILITATION FUND

For the year ended December 31

2008

\$

PROJECT NUMBER	PROJECT NAME	PAID OR PAYABLE (Recovered)
06-17	Wilkinson Pit, Simcoe County	5,425
06-19	Seiling Quarry, County of Leeds&Grenville	250
06-23	Osborne Pit, Grey County	928
07-05	Toth Quarry, Haldimand County	103
07-07	Dawkins Pit, Wellington County	646
07-13	Scott Pit, Wellington County	103
07-14	Ross Pit, Huron County	40,605
07-16	Hardy Pit, Hastings County	62,139
07-17	Morrison Pit, Grey County	8,402
07-18	Fogels Pit, Grey County	646
07-21	Hierons Pit, Grey County	5,595
07-23	Thompson Pit, Grey County	7,600
08-01	MacFarlane Pit, Lennox and Addington County	27,000
08-02	Sallans Pit, Peterborough County	19,880
08-03	Sorenson Pit, Lennox and Addington County	15,000
08-04	Robinson Pit, Hastings County	16,600
08-05	Sexsmith Pit, Hastings County	21,519
08-06	Sexsmith Quarry, Hastings County	27,400
08-07	Holiday Quarry, Hastings County	35,000
08-08	Phillips Pit, Hastings County	35,246
08-09	Floris Pit, Hastings County	49,510
08-10	Horrigan Pit, Hastings County	2,190
08-11	Harris Pit, Hastings County	18,885
08-12	Davis Quarry, Hastings County	39,953
08-13	Brownson Pit, Hastings County	5,958
08-14	Argyle Pit, Hastings County	202
08-15	Candiago Pit, Bruce County	3,750
08-16	Russell Pit, Grey County	1,800
08-17	Donoghue Pit, Grey County	14,025
08-18	Sweiger Pit, Grey County	13,350
08-19	Lorentz Pit, Bruce County	8,300
08-20	Carey Pit, Wellington County	11,455
08-21	Crawford Pit, Grey County	3,745
08-22	Clements Pit, Grey County	6,637
08-23	Brown Pit, Grey County	9,450
08-24	Maree Pit, Grey County	9,562
08-25	Colwell Pit, Grey County	9,800
08-26	Brindley Pit, Bruce County	32,750
08-27	Lemaitre Pit, Grey County	2,264
08-28	Thorne Pit, Bruce County	485
08-29	Walker Quarry, County of Leeds&Grenville	13,543
	Newly Designated Areas – Inventories report	61,490
	Research costs	
	University Guelph – Connecting opportunities & solutions	12,165
	Mineral Aggregate Conservation – Recycling & Reuse Report	12,292
	University Guelph–Biodiversity & Stability-Restoration of Quarries	18,680
	Savanta Inc. – Species at Risk Best Practice Guidelines	21,554
	Species at Risk Best Practice Guidelines Recoveries (MNR)	(5,700)
	Bryophyta Technologies – Establishing Alvar mosses on Quarries floors	39,990
	Tendering, consulting and other	6,720
		<b>754,892</b>

\*See accompanying notes



## Aggregate Resources Trust

## SCHEDULES OF REHABILITATION COSTS FOR THE ABANDONED PITS AND QUARRIES REHABILITATION FUND (continued)

For the year ended December 31		2007 \$
PROJECT NUMBER	PROJECT NAME	PAID OR PAYABLE (Recovered)
05-26	MacKay Pit, County of Leeds&Grenville	10,600
05-27	Tessier Pit, Stormont, Dundas&Glengarry County	995
05-28	Vander Bijl Pit, Stormont, Dundas&Glengarry County	3,953
06-13	Cataraqi Conservation Authority Pit, County of Leeds&Grenville	13,752
06-14	North Dundas Township Quarry, Stormont, Dundas&Glengarry County	9,381
06-15	Clark Pit, Dufferin County	39,490
06-18	Roehner Pit, Simcoe County	425
06-19	Seiling Quarry, County of Leeds&Grenville	360
06-26	Grein Pit, Grey County	3,300
07-01	Pfeffer Pit, Grey County	10,227
07-02	Bentley Pit, Dufferin County	30,800
07-03	Boulter Pit, Grey County	62,560
07-04	Evans Pit, Grey County	45,661
07-05	Toth Quarry, Haldimand County	17,736
07-06	Christensen Quarry, Haldimand County	41,910
07-07	Dawkins Pit, Wellington County	7,180
07-08	Koeslag Pit, Wellington County	24,500
07-09	Martin Pit, Wellington County	18,374
07-11	Stephens Pit, Wellington County	18,660
07-12	Bennett Pit, Wellington County	13,877
07-13	Scott Pit, Wellington County	37,776
07-14	Ross Pit, Huron County	1,077
07-15	MacDonald Pit, Hastings County	15,799
07-16	Hardy Pit, Hastings County	45,260
07-17	Morrison Pit, Grey County	30,240
07-18	Fogels Pit, Grey County	5,400
07-19	Kuhl Pit, Grey County	10,400
07-20	Cook Pit, Grey County	90,585
07-21	Hierons Pit, Grey County	11,530
07-23	Thompson Pit, Grey County	16,870
07-24	Frey Pit, Grey County	19,740
	Research costs	
	Mineral Aggregate Conservation – Recycling & Reuse Report	44,203
	Recycling & Reuse Report Recoveries (MNR)	(27,605)
	University Guelph – Biodiversity & Stability-Restoration of Quarries	21,000
	Savanta Inc. – Species at Risk Best Practice Guidelines	54,278
	Species at Risk Best Practice Guidelines Recoveries (MNR)	(27,000)
	Tendering, consulting and other	4,480
		<b>727,774</b>

\*See accompanying notes





## NOTES TO FINANCIAL STATEMENTS

December 31, 2008

### 1. Formation and Nature of Trust

Aggregate Resources Trust [the "Trust"] was settled by Her Majesty the Queen in Right of the Province of Ontario [the "Crown"] as represented by the Minister of Natural Resources [the "Minister"] for the Province of Ontario pursuant to Section 6.1(1) of the Aggregate Resources Act, R.S.O. 1990, Chap. A.8 as amended [the "Act"]. The Minister entered into a Trust Indenture dated June 27, 1997 [the "Trust Indenture"] with The Ontario Aggregate Resources Corporation ["TOARC"] appointing TOARC as Trustee of the Trust.

The Trust's goals are:

- [a] the rehabilitation of land for which a Licence or Permit has been revoked and for which final rehabilitation has not been completed;
- [b] the rehabilitation of abandoned pits and quarries, including surveys and studies respecting their location and condition;
- [c] research on aggregate resource management, including rehabilitation;
- [d] making payments to the Crown and to regional municipalities, counties and local municipalities in accordance with regulations made pursuant to the Act;
- [e] the management of the Abandoned Pits and Quarries Rehabilitation Fund; and
- [f] such other purposes as may be provided for by or pursuant to Section 6.1(2)5 of the Act.

In 1999 the Trust's purposes were expanded by amendment to the Trust Indenture to include:

- [a] the education and training of persons engaged in or interested in the management of the aggregate resources of Ontario, the operation of pits or quarries, or the rehabilitation of land from which aggregate has been excavated; and
- [b] the gathering, publishing and dissemination of information relating to the management of the aggregate resources of Ontario, the control and regulation of aggregate operations and the rehabilitation of land from which aggregate has been excavated."

In accordance with the Trust Indenture, TOARC administers the Trust which consists of three funds: the Aggregate Resources Fund, the Rehabilitation Fund and the Abandoned Pits and Quarries Rehabilitation Fund. TOARC is a mere custodian of the assets of the Trust and all expenditures made by TOARC are expenditures of the Trust.

Prior to the creation of the Trust, the Trust's goals were pursued by the Minister and, separately, the Ontario Stone, Sand & Gravel Association [the "OSSGA"] formerly The Aggregate Producers' Association of Ontario [the "APAO"]. Upon the creation of the Trust, rehabilitation security deposits held by the Crown, as represented by the Minister, were to be transferred to the Trust. In addition, the Crown directed the OSSGA to transfer, on behalf of the Crown, the Abandoned Pits and Quarries Rehabilitation Fund to the Trust. By December 31, 1999, the Minister and the OSSGA had transferred \$59,793,446 and \$933,485, respectively, to the Trust.

Pursuant to the Trust Indenture, TOARC "shall pay and discharge expenses properly incurred by it in carrying out and fulfilling the Trust purposes and the administration of the Trust . . ." [Section 7.02].

The Aggregate Resources Fund is for the collection of the annual licence and permit fees, royalties, and wayside permit fees [aggregate resources charges] collected on behalf of the Minister. Effective for the 2007 production year the annual licence fee increased from \$0.06 per tonne to \$0.115 per tonne. The licence fees are due by March 15 of the following year, and are disbursed within six months of receipt. The fees are disbursed as follows:

- [a] \$0.06 to the lower tier municipality,
- [b] \$0.015 to the upper tier municipality,
- [c] \$0.035 to the Crown, collectively [the "Governments"] and
- [d] \$0.005 to the Trust.

Minimum annual fees will also increase effective for the 2007 production year:

- a Class A licence from \$200 to \$400 or \$0.115 per tonne whichever is greater;



## NOTES TO FINANCIAL STATEMENTS (continued)

December 31, 2008

- a Class B licence from \$100 to \$200 or \$0.115 per tonne whichever is greater;
- the minimum wayside fee from \$100 to \$400 or \$0.115 per tonne whichever is greater;
- the annual aggregate permit fee from \$100 to \$200; and
- the minimum royalty rate for aggregate extracted on Crown land from \$0.25 to \$0.50 per tonne.

For production prior to 2007 all aggregate resources charges remain at the old fee schedule with the \$0.06 licence fee being disbursed as follows:

- [a] \$0.04 to the lower tier municipality,
- [b] \$0.005 to the upper tier municipality,
- [c] \$0.01 to the Crown, collectively [the "Governments"] and
- [d] \$0.005 to the Trust.

The funds reinvested by the Crown to the Trust from the Aggregate Resources Fund will be transferred within the Trust and used for the Rehabilitation Fund and the Abandoned Pits and Quarries Rehabilitation Fund. In addition, the Trust collects the royalty payments and annual fees related to aggregate permits and also disburses the funds to the Crown within six months of receipt.

The Rehabilitation Fund represents the rehabilitation security deposits, contributed by Licensees and Permittees, held by the Crown and, in accordance with the Trust Indenture, transferred to the Trust. TOARC has been directed by the Minister to refund approximately 3,000 individual licensee and permittee accounts based on the formula of retaining \$500 per hectare disbursed on licenses and 20% of the deposit amount for aggregate

permits. As a result, the Trust has refunded approximately \$48.6 million and an additional \$6,693 will be refunded when the Crown so directs. The balance of funds will be used to ensure the rehabilitation of land where licenses and/or permits have been revoked and final rehabilitation has not been completed.

The Abandoned Pits and Quarries Rehabilitation Fund is for the rehabilitation of abandoned sites and related research. Abandoned sites are pits and quarries for which a licence or permit was never in force at any time after December 31, 1989.

The Trust's expenses [or Trustee's expenses] are the amounts paid pursuant to Article 7.02 of the Trust Indenture.

Pursuant to Section 4.01 of the Trust Indenture, the Trust's assets and the income and gains derived therefrom are property belonging to the Province of Ontario within the meaning of Section 125 of the Constitution Act, 1867 and, by reason of Section 7.01 of the Trust Indenture, the amounts paid by the Trustee pursuant to Article 7 are paid to or for the benefit of the Crown.







## 2. Summary Of Significant Accounting Policies

The financial statements of the Trust have been prepared in accordance with Canadian generally accepted accounting principles and within the framework of the significant accounting policies summarized as follows:

### Use of Estimates

The preparation of financial statements in accordance with Canadian generally accepted accounting principles requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Actual results could differ from management's best estimates as additional information becomes available in the future. The financial statements have, in management's opinion, been properly prepared using careful judgment within reasonable limits of materiality and within the framework of the accounting policies of the Trust.

### Aggregate Resources Charges

Aggregate resources charges collected on behalf of the Minister are recorded upon receipt of a tonnage report from Licensees and Permittees. Aggregate resources charges are based on the tonnage produced in the preceding period by the Licensees and Permittees as reported by the Licensees and Permittees. If there is no production in the preceding period, an annual fee is recognized for Permittees.

Deferred Aggregate Resources Charges represents prepayments and overpayments of fees charged to Licensees and Permittees.

### Capital Assets

Capital assets are recorded at cost less accumulated depreciation. Depreciation is recorded to write off the cost of capital assets over their estimated useful lives on a straight-line basis as follows:

Computer equipment and software	3 to 5 years
Furniture and fixtures	5 years
Leasehold improvements	5 years
Vehicles	3 years

### Financial Instruments

On January 1, 2007, the Trust adopted CICA handbook Section 3855 and Section 3861 which establishes standards for recognizing, measuring and disclosure of financial instruments. Under this standard, all financial assets, including derivatives, must be classified as "held-for-trading", "held-to-maturity", "available-for-sale" or "loans and receivables" and all financial liabilities, including derivatives, must be classified as either "held-for-trading" or "other liabilities". All financial instruments are initially measured at fair value. Those classified as held-to-maturity, loans and receivables or other liabilities are subsequently measured at amortized cost using the effective interest rate method. The Trust does not classify any of its financial assets as held-to-maturity or available-for-sale.

The Trust has classified its financial instruments as follows:

Cash and cash equivalents are designated as held for trading and are considered highly liquid investments purchased with an initial maturity of three months or less. The carrying values of cash and cash equivalents are a reasonable estimate of their fair value due to their short-term maturity. The fair value of these assets is equal to their carrying value plus accrued interest.

Cash equivalents consist of a crown corporation short-term deposit that was issued at a discount in U.S funds with a maturity date of February 2009.

Short-term investments are designated as held for trading and are considered highly liquid investments maturing within 12 months of the financial statement date. The carrying values of short-term investments are a reasonable estimate of their fair value due to their short-term maturity. The fair value of these assets is equal to their carrying value plus accrued interest.

Short-term investments consist of:

- i) Federal and provincial treasury bills that bear interest at 1.43% to 3.27% per annum with maturity dates ranging from February 2009 to September 2009;
- ii) Guaranteed investment certificates that bear interest at 3.00% per annum with a maturity date of July 2009; and
- iii) Crown corporation short-term deposit issued in U.S. funds that bears interest at 1.80% per annum with a maturity date of February 2009.



## NOTES TO FINANCIAL STATEMENTS (continued)

December 31, 2008

Due from Licensees and Permittees and interest and dividends declared receivable are classified as loans and receivables.

Investments are classified as held for trading. Realized gains and losses and unrealized changes in fair values are recorded in the Statement of Revenue and Expenses and Changes in Fund Balances under investment income and unrealized changes in fair value respectively. Fair value is determined based on quoted market prices.

The Trust accounts for its investments on a trade date basis and transaction costs associated with the investments are included in the Statement of Revenue and Expenses and Changes in Fund Balances under investment income.

Accounts payable and accrued liabilities, due to Licensees and Permittees, wayside permit deposits and due to Governments are classified as other financial liabilities.

The Trust utilizes various financial instruments. Unless otherwise noted, it is management's opinion the Trust is not exposed to significant interest, currency or credit risks arising from its financial instruments and the carrying amounts approximate fair values.

### Revenue Recognition

Investment income is recognized in the period in which it is earned.

### Foreign Currency Translation

Foreign currency accounts are translated into Canadian dollars as follows:

Foreign currency assets and liabilities are translated into Canadian dollars by the use of the exchange rate prevailing at the year end date for monetary items and at exchange rates prevailing at the transaction date for non-monetary items. The resulting foreign exchange gains and losses are included in investment income in the current period.

### New Accounting Pronouncements

Recent accounting pronouncements that have been issued but are not yet effective, and have a potential implication for the Trust, are as follows:

#### Financial Statement Concepts

Section 1000, Financial Statement Concepts has been amended to focus on the capitalization of costs that truly meet the definition of an asset and de-emphasizes the matching principle. The revised requirements are effective for annual and interim financial statements relating to fiscal years beginning on or after October 1, 2008. The Trust is currently evaluating the impact of the adoption of this change on the disclosure within its financial statements.

#### Cash Flow Statements

Section 1540 was amended to include not-for-profit organizations, which includes Trusts within its scope. This standard is effective for interim and annual financial statements relating to fiscal years beginning on or after January 1, 2009. The Trust is currently assessing the impact of the new standard.







### 3. Investments

Investments consist of the following:

	2008		2007	
	Fair Value \$	Cost \$	Fair Value \$	Cost \$
<b>BONDS</b>				
Government of Canada & Agencies	<b>2,501,588</b>	<b>2,378,989</b>	2,010,235	1,964,111
Corporate	<b>1,335,478</b>	<b>1,345,051</b>	1,136,540	1,149,258
Non-Convertible Preferred	—	—	40,500	48,620
Canadian Equities	<b>750,353</b>	<b>638,400</b>	1,549,372	750,882
Foreign Equities	<b>2,609,569</b>	<b>3,941,765</b>	3,767,892	3,826,301
Pooled Funds	<b>6,744,943</b>	<b>7,618,265</b>	8,173,837	7,743,039
	<b>13,941,931</b>	<b>15,922,470</b>	16,678,376	15,482,211

The Government of Canada & Agencies bonds bear interest at rates ranging from 3.11% to 5.75% per annum [2007 – 3.75% to 5.25%] with maturity dates ranging from March 15, 2011 to June 27, 2018.

The Corporate bonds bear interest at rates ranging from 3.93% to 6.45% per annum [2007 – 3.93% to 6.45%] with maturity dates ranging from February 10, 2010 to June 22, 2026.

#### Interest Rate Risk

The Trust is exposed to interest rate risk on its bond portfolio and does not currently hold any financial instruments that mitigate this risk. Management does not believe that the impact of interest rate fluctuation will be significant.

Investment income is broken down as follows:

	2008 \$	2007 \$
Interest income	<b>756,323</b>	702,185
Dividends	<b>254,854</b>	216,732
Realized Capital gains [net]	<b>471,505</b>	928,926
Foreign exchange loss [net]	<b>13,246</b>	(10,707)
Other income	<b>1,463</b>	1,362
	<b>1,497,391</b>	1,838,498

Investment income of the Rehabilitation Fund includes interest earned on Aggregate Resources Charges collected on behalf of the Minister of \$347,087 [2007 - \$269,985].





## NOTES TO FINANCIAL STATEMENTS (continued)

December 31, 2008

### 4. Capital Assets

Capital assets consist of the following:

	2008			2007		
	Cost	Accumulated depreciation	Net book value	Cost	Accumulated depreciation	Net book value
	\$	\$	\$	\$	\$	\$
Computer equipment and software	164,363	110,058	54,305	162,549	82,099	80,450
Furniture and fixtures	108,203	98,537	9,666	103,649	89,687	13,962
Leasehold improvements	2,533	464	2,069	—	—	—
Vehicles	88,511	84,548	3,963	88,511	58,458	30,053
	<b>363,610</b>	<b>293,607</b>	<b>70,003</b>	<b>354,709</b>	<b>230,244</b>	<b>124,465</b>

### 5. Due To The Ontario Aggregate Resource Corporation

Amounts due to the Corporation are unsecured and are due on demand.

### 6. Commitments

The Trust has entered into a number of Research Funding Agreements. The future annual payments, in aggregate and over the next three years, are as follows:

	\$
2009	271,329
2010	7,710
2011	7,260
	<b>286,299</b>

### 7. Changes In Presentation of Comparative Financial Statements

Certain comparative figures have been reclassified to conform with the current year's financial statement presentation.

### 8. Capital Disclosures

The Trust considers its capital to be its trust funds invested in the Aggregate Resources Fund, the Rehabilitation Fund and the Abandoned Pits and Quarries Rehabilitation Fund. The Trust's objective when managing its capital is to safeguard its ability to continue as a going concern so that it can fulfill the Trust's purposes. Annual budgets are developed and monitored to ensure that the Trust's capital is maintained at an appropriate level.



## AUDITORS' REPORT

To the Shareholder of  
The Ontario Aggregate Resources Corporation

We have audited the balance sheet of The Ontario Aggregate Resources Corporation as at December 31, 2008 and the statement of operations and retained earnings for the year then ended. These financial statements are the responsibility of the Corporation's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation.

In our opinion, these financial statements present fairly, in all material respects, the financial position of the Corporation as at December 31, 2008 and the results of its operations and cash flows for the year then ended in accordance with Canadian generally accepted accounting principles.

*BDO Saward LLP*

**Chartered Accountants,  
Licensed Public Accountants**

Burlington, Ontario  
February 6, 2009

**MAAP project 06-01 (Thompson Pit – Dufferin County)**  
native species are out competing exotic species to provide  
a productive habitat for butterflies, insects and birds.





## The Ontario Aggregate Resources Corporation

**BALANCE SHEET**

As at December 31	2008 \$	2007 \$
<b>ASSETS</b>		
Cash	1	1
Due from Aggregate Resources Trust [note 3]	10,439	122
	<b>10,440</b>	<b>123</b>
<b>LIABILITIES AND SHAREHOLDER'S EQUITY</b>		
<b>Liabilities</b>		
Due to Ontario Stone, Sand & Gravel Association [note 3]	10,439	122
<b>Total liabilities</b>	<b>10,439</b>	<b>122</b>
<b>Shareholder's equity</b>		
Share capital		
Authorized and issued, 1 common share	1	1
Retained earnings	—	—
<b>Total shareholder's equity</b>	<b>1</b>	<b>1</b>
	<b>10,440</b>	<b>123</b>

\*See accompanying notes

On behalf of the Board:



Director



Director







The Ontario Aggregate Resources Corporation

## STATEMENT OF OPERATIONS AND RETAINED EARNINGS

For the Year ended December 31

	2008		
	Rehabilitation Fund	Abandoned Pits and Quarries Rehabilitation Fund	Total
	\$	\$	\$
<b>EXPENSES</b>			
Salaries and employee benefits	446,702	203,909	650,611
Board expenses	9,347	—	9,347
Professional fees	66,157	13,573	79,730
Data processing	19,050	2,146	21,196
Travel	23,057	61,871	84,928
Communication	16,167	25,880	42,047
Office	17,941	7,987	25,928
Office lease, taxes and maintenance	39,950	19,415	59,365
Insurance	4,445	2,223	6,668
	642,816	337,004	979,820
Recovery of costs	(642,816)	(337,004)	(979,820)
<b>Net income for the year</b>	—	—	—
Retained earnings, beginning of year	—	—	—
<b>Retained earnings, end of year</b>	—	—	—

\*See accompanying notes

For the Year ended December 31

	2007		
	Rehabilitation Fund	Abandoned Pits and Quarries Rehabilitation Fund	Total
	\$	\$	\$
<b>EXPENSES</b>			
Salaries and employee benefits	454,205	150,337	604,542
Board expenses	14,096	—	14,096
Professional fees	88,112	5,810	93,922
Data processing	24,508	5,545	30,053
Travel	27,459	49,857	77,316
Communication	31,214	11,270	42,484
Office	23,177	6,109	29,286
Office lease, taxes and maintenance	40,192	18,402	58,594
Insurance	4,664	2,360	7,024
	707,627	249,690	957,317
Recovery of costs	(707,627)	(249,690)	(957,317)
<b>Net income for the year</b>	—	—	—
Retained earnings, beginning of year	—	—	—
<b>Retained earnings, end of year</b>	—	—	—

\*See accompanying notes



The Ontario Aggregate Resources Corporation

## NOTES TO FINANCIAL STATEMENTS

December 31, 2008

### 1. Formation and Nature of Operations

The Ontario Aggregate Resources Corporation [the "Corporation"] was incorporated on February 20, 1997. The Corporation's sole shareholder is the Ontario Stone, Sand & Gravel Association [the "OSSGA"] (formerly The Aggregate Producers' Association of Ontario [the "APAO"]), a not-for-profit organization. The Corporation's sole purpose is to act as Trustee of the Aggregate Resources Trust [the "Trust"]. On June 27, 1997, the Corporation and Her Majesty the Queen in Right of the Province of Ontario [the "Crown"], as represented by the Minister of Natural Resources [the "Minister"], entered into a Trust Indenture, appointing the Corporation as Trustee of the Trust.

In accordance with the Indenture Agreement, the Corporation incurs administrative expenses as Trustee of the Trust which consists of three funds: the Aggregate Resources Fund, the Rehabilitation Fund and the Abandoned Pits and Quarries Rehabilitation Fund. All costs incurred by the Corporation on behalf of the Trust are reimbursed from the Trust's assets.

The Trust's assets managed by the Corporation, amounting to approximately \$15.3 million, are not included in the accompanying balance sheet. The beneficial owner of the Trust's assets is the Crown.

### 2. Summary of Significant Accounting Policies

#### Financial Instruments

The Corporation utilizes various financial instruments. Unless otherwise noted, it is management's opinion that the Corporation is not exposed to significant interest, currency or credit risks arising from its financial instruments and the carrying amounts approximate fair values.

#### New Accounting Pronouncements

Recent accounting pronouncements that have been issued but are not yet effective, and have a potential implication for the Corporation, are as follows:

#### Financial Statement Concepts

Section 1000, Financial Statement Concepts has been amended to focus on the capitalization of costs that truly meet the definition of an asset and de-emphasizes the matching principle. The revised requirements are effective for annual and interim financial statements relating to fiscal years beginning on or after October 1, 2008. The Corporation is currently evaluating the impact of the adoption of this change on the disclosure within its financial statements.

### 3. Due to (From) Related Parties

Amounts due to / (from) the Corporation are unsecured and are due on demand.

### 4. Lease Commitments

The future minimum annual lease payments in aggregate over the next year are \$43,830.

### 5. Statement of Cash Flows

A separate statement of cash flows has not been presented as cash flows from operating, investing and financing activities are readily apparent from the other financial statements.

### 6. Capital Disclosures

The Corporation has nominal capital. The Corporation's sole purpose is to act as Trustee of the Aggregate Resources Trust. The Corporation's objective when managing the Trust's capital is to safeguard the ability of the Trust to continue as a going concern so that it can fulfill the Trust's purposes.



## PROFESSIONAL ASSISTANCE

### Banking Institution

The Bank of Nova Scotia

### Investment Managers

Burgundy Asset Management Ltd.  
Letko Brosseau & Associates Inc.

### Investment Advisors

T.E. Investment Counsel Inc.

### Auditors

BDO Dunwoody LLP

### Legal Counsel

Blake, Cassels & Graydon LLP

### Shareholder

Ontario Stone, Sand & Gravel Association



### MAAP project 08-26 (Brindley Pit – Bruce County)

Ash Baron assesses growth on a slope reconstructed with pits and mounds; a technique used to reduce erosion, increase slope surface and create microclimates to encourage a variety of species.





## The Ontario Aggregate Resources Corporation

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