
Friends of Rural Communities and the Environment (FORCE)

Summaries of FORCE CART Reports
Re: Lowndes Holdings Corp. Application
City of Hamilton OPA-04-17 and ZAC-04-89

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1. Introduction

This document contains a compilation of the Executive Summaries from submissions made by Friends of Rural Communities and the Environment (FORCE) in regards to the Lowndes Holdings Corp. application OPA-04-17 and ZAC-04-89.

FORCE is a federally incorporated not for profit community based advocacy group with hundreds of supporters in Campbellville, Kilbride, rural Milton, Mountsberg, Freelon, and Carlisle. FORCE was formed in June 2004 to oppose the Lowndes Holdings Corp. application and to protect our natural and built environments in the face of this proposed large-scale, below the established groundwater table, aggregate development in the Northeast Flamborough portion of the amalgamated City of Hamilton.

We reiterate upfront that our organization is not anti-aggregate or anti-road. Indeed, our area is home to some of Ontario and Canada's largest aggregate operations. We do, however, have significant issues with the current application in its proposed location for substantive reasons.

Being a citizens group with limited human and financial resources, in contrast to the staff and funds expended by the proponent, we have delivered our material to the City of Hamilton in electronic format as this is the most cost effective means. For some members of the Combined Aggregate Review Team (CART) we expect that this will be a preferred approach. For others though, a more traditional paper base submission would be preferred.

To satisfy that second audience, this printed compilation was prepared from the executive summaries of the full reports. We have provided the full reports, and associated graphics, on the enclosed companion CD. The CD has been setup with a menu system to allow the reader to easily access the materials that they are interested in. Just place the CD into your personal computer and the menu system should load. After reviewing the reports on screen, readers can then print themselves a copy or contact FORCE and we would be pleased to prepare a printed copy for review.

If for any reason the CD does not load, or the documents are inaccessible, or there are any question about the documents, please contact FORCE at info@stopthequarry.ca or (905) 659-5417.

FORCE appreciates the opportunity to participate in this process. We look forward to the contributions to be made by the CART team members. This matter is one of critical importance to our communities, and with the broad base of interests, experience, and expertise represented on CART, CART is positioned to provide a thorough review of the application.

Respectfully submitted on behalf of FORCE,

A handwritten signature in black ink that reads "G. Flint". The signature is written in a cursive style with a long horizontal line underneath the name.

Graham Flint B.A.Sc., P. Eng, Chair & Spokesperson

2. Hydrogeology

2.1 INTERA March 2005 - Letter Report regarding the Application Documents

The hydrogeologic review report was prepared by Kenneth G. Raven, M.Sc., P. Eng., Principal and Senior Hydrogeologist of INTERA Engineering Ltd. The full report reviews the available hydrogeologic documentation and judges the adequacy of the proponent's hydrogeologic characterization, assessment and predictions. It also provides an assessment of potential adverse hydrologic and hydrogeologic impacts of the proposed quarry operation based on the author's independent analysis of the data and experience at similar sites in Ontario. The material below summarizes the author's key findings.

Conclusions

1. The proposed Quarry may pump an estimated 8,200 to 16,400m³/day of groundwater from the Amabel Formation dolostone aquifer (see analysis below) at full size.
2. Carlisle municipal water supply wells that draw drinking water from the Amabel Formation dolostone aquifer will be affected by the proposed Quarry. Pumping of large volumes of groundwater from the proposed Quarry will change the well capture zones and wellhead protection areas (WHPAs) of the Carlisle wells. The new well capture zones may encounter potential contaminant sources and other groundwater quality and quantity issues not previously identified or considered prior to the proposed Quarry operation.
3. Water supply wells for nearby housing developments on Glenron Road, at Timber Run Court, at Bronte Creek Estates (Stonebrook), at the Lawson Park campground, and at private residences along Mountsberg Road, Milborough Line, and Concession Road 11E are all at risk of being dewatered or adversely affected by the proposed Quarry dewatering. This is because the drawdowns that will occur in response to Quarry dewatering will adversely affect water levels in the nearby residential and communal water supply wells which are typically drilled to only 15m depth.
4. The Provincially Significant Wetlands, Environmentally Significant/Sensitive Areas (Mountsberg East Wetlands) and nearby creeks and streams (some of which have been identified as fish habitat) are also at risk of being dewatered and adversely affected by the proposed Quarry operation. This is because the surface waters appear to be in direct hydraulic connection to the shallow bedrock that provides baseflow to these important wetlands, creeks and streams. Diminished baseflow to local surface waters is likely to occur over an area with a radius of 2500m of the proposed Quarry centre.
5. The proposed measures to mitigate proposed Quarry-induced drawdown (i.e. re-injection of groundwater through infiltration channels excavated to bedrock) will be largely ineffective. This is because the proposed re-injection will not appreciably raise water levels.

Methodology and Analysis

The above noted conclusions are based on the following methodological analysis:

- The proponent's hydrogeologic characterization is preliminary and uses unsealed monitoring wells to estimate hydrogeologic impacts from the proposed Quarry. These monitoring wells are not in accordance with industry standards and this approach underestimates the amount of drawdown that will be created by future Quarry dewatering.
- The preferred model for accurately predicting the magnitude and extent of the water table drawdown that would be created by the proposed Quarry is a calibrated 3-D groundwater flow model that is based on site-specific geologic and hydrogeologic data. No such model has been proposed, developed or used for impact analysis for this proposed Quarry by the proponent.
- The proponent drawdown estimates are not credible for either the first lift or the entire proposed Quarry operation based on the preceding methodology. The proponent estimates that drawdown of the local groundwater levels for the first Quarry excavation lift will be limited to 1m at 250m from the proposed Quarry face with essentially negligible drawdown at 600m.
- The author's independent analysis using the simple Dupuit Forchheimer approximation, in the absence of a site-specific calibrated 3-D groundwater model provided by the proponent, indicates that drawdown for the full Quarry operation will be close to 31m at the proposed Quarry face decreasing to about 13m at a distance of about 1000m. At full size, estimates using this methodology indicate that the proposed Quarry may pump about 8,200 to 16,400m³/day of groundwater from the Amabel Formation dolostone aquifer.
- There are also assessment requirements under the Province's new Watershed-Based Source Protection Planning initiative that must be considered and completed – some specific to proposed new quarries. As an example, under this initiative, because the proposed Quarry is located within the 2 year capture zone or WHPA for the Carlisle wells, the risk posed by the proposed Quarry and final Quarry land use to these wells needs to be assessed and/or the development of the Quarry restricted. Since the Quarry will be allowed to flood following proposed aggregate extraction, the resulting surface water also poses a potential bacteriological/pathogenic threat to the Carlisle municipal wells that would necessitate upgrading of treatment requirements. None of these issues have been discussed or addressed by the proponent.

2.2 INTERA November 2005 - Letter Report regarding the Draft Level 2 Hydrology Report

This report was prepared by Kenneth G. Raven, M.Sc., P.Eng., Principal and Senior Hydrogeologist of INTERA Engineering Ltd. This report reviews the draft *Hydrogeology Level 2 Report* documentation. This review, similar to the earlier review, judges the adequacy of the proponent's hydrogeologic characterization, assessment and modeling predictions, and provides an assessment of potential adverse hydrologic and hydrogeologic impacts of the proposed Quarry operation based on independent analysis of the data and the author's experience at similar sites in Ontario.

Conclusions

The following conclusions are contained within the report:

1. The GLL *Hydrogeology Level 2 Report* estimates the extent of drawdown to be created by unmitigated development of the proposed Lowndes Quarry based primarily on completion of a 7-day pumping test, and development and application of a 3-D groundwater flow model. While the new model-based estimates of the magnitude and extent of drawdown are substantially greater in the *Hydrogeology Level 2 Report* than in the *Preliminary Hydrogeological Assessment Report*, and address some of the earlier concerns, these new drawdowns still underestimate the future drawdowns that the unmitigated Quarry will create.
2. The new bedrock water level drawdowns in the GLL *Hydrogeology Level 2 Report* are underestimated for two principal reasons. Firstly, the 7-day pumping tests did not record any water level responses in sealed monitoring intervals intersecting the permeable water production zone away from the pumping wells, and hence have underestimated the hydraulic properties of this important zone used in the 3-D model to calculate drawdowns. Secondly, the 3-D groundwater flow model uses unreasonable high estimated values of vertical hydraulic conductivity for the shallow bedrock below local surface waters and wetlands allowing unreasonably high volumes of surface water to recharge the bedrock and delimit bedrock water level drawdowns at these locations.
3. The GLL *Hydrogeology Level 2 Report* correctly concludes that the development of the Quarry without mitigation would have an unacceptable impact on local residential water supply wells and the Flamboro and Mounstberg Creek Wetlands.
4. The GLL 3-D groundwater flow model shows that the capture zones and hence well head protection areas for the Carlisle municipal water supply wells will change if the Quarry is developed without mitigation. These new source areas for the Carlisle water supply may have potential or real contaminant sources that may result in the deterioration of Carlisle well water quality. The impact of these new water source areas on Carlisle well water quality and water treatment requirements will need to be investigated if the Quarry is developed without mitigation.
5. The GLL model defines the Quarry as being beyond the 25-year capture zone for the Carlisle municipal wells in contrast to being within the 2-year capture zone defined by the City of Hamilton consultants. That report concludes that the Quarry remains within the 2-year capture zone, as the GLL capture zones are defined using an unrealistic and high value of bedrock porosity. As the Quarry remains within the 2-year capture zone for the Carlisle wells, the risk posed by the Quarry and final Quarry land use to these wells needs to be assessed and/or the development of the Quarry restricted, in accordance with Ontario's new Watershed-Based Source Protection Planning initiatives.
6. Since the proposed Quarry should not be developed without mitigation, the single most important hydrogeologic issue in this review is the engineering feasibility of implementing the proposed mitigation plan of groundwater recirculation (GRS) as described in the *Hydrogeology Level 2 Report*. The GRS has only been conceptually evaluated by GLL using a computer model. It has not been shown or

- proven that this conceptual mitigation measure can be practically implemented at this site.
7. The successful application of the GRS at the proposed Lowndes dolostone Quarry will not be straightforward or simple. There are practical implementation concerns including the source of the additional water (18,505 m³/day) for the GRS, bedrock permeability enhancement due to carbonate dissolution, preferential shallow water flow to the Quarry face, and drawdown in deep permeable bedrock that can render the GRS ineffective in preventing propagation of drawdown away from the Quarry to the surrounding wetlands. Until these concerns have been addressed, the GRS should be considered an unproven mitigation measure for the site.
 8. From a hydrogeologic perspective, planning approval for the proposed Lowndes dolostone Quarry should not be given based on reliance on unproven mitigation measures for the site, especially when the hydrogeologic and hydrologic consequences of unsuccessful mitigation are so widespread, damaging and apparent.

3. Natural Environment

3.1 Preliminary Environmental Features and Potential Impact Report – prior to application

INTRODUCTION AND PURPOSE OF REPORT

Lowndes Holdings owns property that comprises parts of Lots 1 through 5 on Concession 11 East of the former Township of East Flamborough, now a part of the City of Hamilton, and bordering the Region of Halton. The property has been identified as having surficial aggregate resources as well as Amabel dolostone underlying the surficial deposits. The proponent, Lowndes Holdings, intends to develop the property for a limestone aggregate development that would extract aggregate material from below the groundwater table.

The subject property and contiguous lands are rich in natural features and complex in terms of interconnected linkages. It is difficult to contemplate that these features could become subject to industrial extraction activity. Indeed, the significant potential ecological impacts to natural areas on and surrounding the property have been identified as one of two major issues raised by the proposed aggregate development.

The intent of this report is to describe those natural heritage features and functions that exist within the Lowndes Holdings property and to examine how these are ecologically linked to other contiguous natural areas within the landscape. The report also specifically examines the current ecological designations that apply to these natural heritage features and the evidentiary basis upon which these designations have been made. This examination is intended to provide early assessment of the kinds of environmental issues that may arise from the proposed aggregate development. Current and evolving regulatory standards that apply to this aggregate development proposal are described in the main body. The report is intended to serve as one input to review of the proponent's application. It does not, however, constitute a detailed critique or specific consideration of any applications filed under applicable legal regimes, such as the *Planning Act* (submitted by the proponent on 09/20/04), the *Aggregate Resources Act*, the *Ontario Water Resources Act* and the *Conservation Authorities Act*. Such analysis will be submitted under separate cover.

The present report has been prepared through review of existing data sources, including referenced inventories and reports, aerial photographs of the region, the FORCE GIS mapping prepared by Hunter GIS, as well as through field visits to the roadside areas surrounding the site and locally. Information regarding the proposed extraction of aggregate from the property owned by Lowndes Holdings has been limited. Although an application was recently filed with the City of Hamilton to seek required *Planning Act* approvals, the studies supporting this application are preliminary only and, given their limitations, have not been used for the present report in favour of more detailed existing data by third party sources. To date, no application, with more detailed studies, has been filed under the *Aggregate Resources Act*.

This summary and the main body are organized on the basis of common section headings.

MAJOR ENVIRONMENTAL PRINCIPLES

There are three core principles of conservation biology to be considered where human development is proposed to alter the natural landscape:

1. Maintain Biological Diversity;
2. Avoid Habitat Fragmentation; and
3. Promote Corridors and Linkages.

OVERVIEW OF EXISTING SITE-SPECIFIC AND REGIONAL SETTING

The Lowndes Holding property is situated on approximately 220 ha (544 acres). Prime agricultural soils are present on about half of the property and much of this land has been in production as pasture and row crops. Current agricultural facilities include four farm homesteads and an oval horse trotting track.

The remaining half of the site has a diverse natural vegetation cover, including mature upland deciduous and mixed forests and wetland areas dominated by treed swamp communities composed of deciduous, mixed or coniferous tree species. The areas of natural vegetation located within the site are contiguous and/or form good functional terrestrial and aquatic ecological linkages with upland forests and wetlands located off the site. There are a large number of significant natural features [11 Environmentally Significant Areas (ESA), 5 Provincially Significant Wetlands (PSW) and 3 Locally Significant Wetlands (LSW), 5 Areas of Natural and Scientific Interest (ANSI), and 1 natural area – see tables below] within and adjacent to the site which must be considered. The main body of the report provides brief descriptions of natural areas, outlining why they are considered significant and how they are linked.

Five creeks are also present on site and form important ecological linkages with wetland and terrestrial features on and off site. These include the headwaters of three tributaries of Mountsberg Creek which is part of the Bronte Creek watershed (two tributaries are described as coldwater streams (Dwyer 2003)). A fourth creek which is also a tributary of Mountsberg Creek, flows in a southwest direction through a wetland located in the northern portion of the site. The fifth creek is a coldwater tributary of Flamboro Creek flowing in a southerly direction as it passes through a wetland located on the west side of the property.

Municipal or Provincial Program	Natural Area Designations within and adjacent to the Lowndes Holdings Site
City of Hamilton Ecologically Sensitive Areas program (Dwyer 2003)	<ul style="list-style-type: none"> • Mountsberg East Wetlands (Hamilton ESA Flam-36) • Carlisle North Forests (Hamilton ESA Flam-38) • Mountsberg Wildlife Area (Flam-29) • Freelon Esker Wetland Complex (Flam-30) • Progreston North Swamp (Flam-40) • Puslinch Southeast Swamp (Flam 27) • Beverly Swamp (Flam 23)

	<ul style="list-style-type: none"> • Strabane North Wetlands (Flam 31) • Bronte Creek Ravine (Flam 43)
City of Hamilton Official Plan (Hamilton 2003)	<ul style="list-style-type: none"> • Natural Heritage System • Linkage and Restoration Areas
Ontario Ministry of Natural Resources Wetland Evaluation Manual for Southern Ontario (OMNR 2002a)	<ul style="list-style-type: none"> • Lower Mountsberg Creek PSW Complex • Crawford Lake and Calcium Pits PSW Complex • Guelph Junction PSW Complex • Beverly Swamp PSW Complex • Mountsberg Reservoir Marsh PSW • Kilbride Swamp LSW Complex • Carlisle LSW Complex • North Progreston Swamp LSW
Ontario Ministry of Natural Resources Big Picture Project (NHIC/NCC 2002)	<ul style="list-style-type: none"> • Core Natural Area and Linkage Area
Ontario Ministry of Natural Resources ANSI program	<ul style="list-style-type: none"> • Calcium Pits Meltwater Channel Earth Science ANSI • Calcium Pits Life Science ANSI • Freelton Esker Earth Science ANSI • Kilbride Swamp Life Science ANSI • Mountsberg Wildlife Area Life Science ANSI
Ontario Ministry of Municipal Affairs and Housing draft Greenbelt Plan (MMAH 2004a, 2004b, 2005)	<ul style="list-style-type: none"> • Protected Countryside and Natural Heritage System
Region of Halton Natural Areas	<ul style="list-style-type: none"> • Twiss Natural Area

INFORMATION GAPS

Existing inventory and designation data for the natural areas located within and contiguous to the proposed quarry site shows rich species and community diversity and complex interconnections. **Sufficient information has been gathered to determine significant natural areas are present within and around the proposed quarry site.** Additional field work will, however, serve three goals. First, it will further our understanding of the significant woodland, wetland and other critical terrestrial and aquatic habitat areas as more is learned about the plant and animal species inhabiting these areas, the variety of plant communities present, the surface and groundwater hydrology and ecological linkages, and the functioning and inter-relationships of all of the features present. Second, it will likely increase the designation significance of the features present. These two advancements will then inform the third goal which is the long term protection needs for a resilient natural heritage system of high ecological integrity.

ENVIRONMENTAL IMPACT ANALYSIS ISSUES

Documenting the impacts that may be associated with the development of the proposed Lowndes Holdings quarry will require a significant amount of research to provide a complete understanding of the natural environment and of the impacts that may result

from the development of aggregate resources, particularly hard rock mining below the water table.

Impacts to natural features in aggregate development applications are most often considered in relation to the *structural change* that results within the environment; for example a forest is removed and the species diversity associated with the forest is lost. What must also be considered is the “ecological system” and how a structural impact results in *functional changes* both within the immediate environment where the structure change has occurred and to adjacent natural features which are seemingly removed from the direct impact, e.g. a maple-beech forest is removed, this may result in functional changes such as the loss of ecological linkage between adjacent natural areas, or changes to the regional water balance due to greater runoff of rainwater, less infiltration of groundwater and less evapotranspiration.

It is clearly also important to consider the effect of each new development in relation to their **interactions and cumulative impacts** of land use change within a region.

Key ecological issues of concern and impact analysis considerations consistent with the preceding principles are outlined in the main body under a series of headings:

- ecological features and functions
- hydrologic features and functions
- biological diversity
- ecological linkages and
- long-term ecological change.

PRELIMINARY CONCLUSIONS

The Lowndes Holdings property contains significant provincially, regionally and municipally designated natural features that contribute to the biological diversity and ecological integrity of the site and the broader region. This conclusion is based on the geographic extent of natural features present, the diversity of communities represented, the quality of the natural areas, the hydrologic attributes of wetlands and creeks, and the interconnectedness of the natural areas. **Few areas of southern Ontario have this combination of natural attributes.** These ecological designations are based upon strong and defensible criteria developed and assessed by technical personnel. Further study of the significant woodlot and critical habitat can only strengthen these designations. Furthermore, Natural Heritage Systems have been adopted and are being implemented as the most effective strategy to protect and restore significant natural features over long periods of time.

The proposed development of a hard rock aggregate development operating below the ground-water table within the Lowndes Holdings property would have serious environmental implications for the existing ecologically designated natural features. **It is critical that evaluations of the proposed land use changes consider both structure and function, at a range of biological scales ranging from genetic, to species, communities and landscape, as well as a range of geographic and temporal scales to fully appreciate the qualities that characterize integral, dynamic ecosystems resilient to internal and external forces. The evaluations must also consider the cumulative impacts.** It is noted further that the proposed aggregate development is contrary to the land use planning documents and designations that have been prepared

to protect these natural heritage features including the current and draft Provincial Policy Statement, the Hamilton-Wentworth Official Plan, the Flamborough Official Plan, and the draft Greenbelt Plan.

3.2 Part I – Natural Environment Report – Review of Preliminary Level 2 Environmental Report

The main body of this report focuses on an assessment of natural heritage in providing a review of the *Preliminary Level 2 Natural Environment Report* prepared by Stantec (September 2004) on behalf of Lowndes Holdings Corp. The review undertakes a review of the quality and accuracy of the proponent's report against *ARA Provincial Standards* requirements in terms of the thoroughness of the review and incorporation of available information; the methods used to acquire new information; the presentation of data; the analyses performed on the available data; the assessment of data quality and data gaps; and the conclusions drawn from the data.

This Executive Summary highlights the general principles underpinning the analysis, lists the concerns identified, and summarizes the conclusions drawn.

GENERAL PRINCIPLES

Open pit mining below the water table constitutes a land use change with one of the most severe of human caused environmental impacts due to the complete removal of the original landscape, including all plants, animals and soil, and the disruption of surficial and groundwater hydrology. The severity of the environmental impact associated with open pit mining below the water table requires all due consideration will be given by both the proponent and the review agencies when considering this type of proposed land use change. **A full and comprehensive evaluation of natural features, functions, impacts, mitigation and monitoring will be required.**

CONCERNS WITH THE OVERALL APPROACH OF THE LEVEL 2 NATURAL ENVIRONMENT REPORT and DETAILED REVIEW

Thirteen broad areas of concern are identified.

1. The level 2 natural environment report is preliminary.

The preliminary nature of the report means:

- there is incomplete knowledge of the natural heritage features present and their functions;
- there will be a need to incorporate all new information into all relevant sections of the report, including methodology, site conditions and all screening, impact and mitigation analyses, such that subsequent revisions of the report will convey all information in a manner that fully integrates the ecological structures and functions of the site;
- **new information should not be provided as a series of discrete “packets of information”. Information provided as a series of discrete “packets of information” will lead to a disjointed understanding of environmental**

features and functions and preclude a careful analysis of environmental impacts;

- the review process undertaken by the City of Hamilton will become more time consuming, more costly and it will be more difficult to maintain a high standard of review given the fact that there will be a need to assess one or more revised editions (or amendments) of the Level 2 Natural Environment Report.
2. Municipal governments have a critical role to ensure that regionally significant features do not become provincially or nationally significant and the report should support that role.
 3. The assessment of spatial aspects of natural heritage features and the proposed open pit mine is unsubstantiated.
 4. A statement of the qualifications and experience of individuals who prepared the report has not been provided.
 5. A clear statement of natural heritage features triggering a Level 2 Study is lacking.
 6. There are numerous issues with methodology, rationale, timing and breadth of field work, analysis and reporting of results.
 7. The methodology used for ELC Vegetation Community Classification is unclear.
 8. The methodology used for determination of rarity status of flora is unclear.
 9. The application of flora and vegetation methodologies cited is unclear.
 10. The total number of plant species recorded is low given the timing and duration of field investigations.
 11. The assessment of locally significant breeding birds is insufficient.
 12. The assessment of amphibians and species at risk is insufficient.

The statement that there is no habitat for endangered or threatened species is premature pending resolution of the identity of salamanders present on site and on contiguous properties. Part II of this report also speaks to critical habitat for reddsidedace. In addition, Stantec lists the pickerel frog as “common” when Dwyer (2003) established it as “rare” in the City of Hamilton.

13. Greenbelt Plan requirements are not addressed.

CONCLUSIONS

The “*Preliminary Level 2 Natural Environment Report*” submitted by Stantec in support of the Lowndes Holdings Corp. application to the City of Hamilton fails to thoroughly document the natural heritage features and functions on the site and contiguous properties. It is insufficient in detail, contains many technical errors within the work

completed to date, lacks comprehensive analysis of environmental impacts, and does not provide meaningful mitigation measures.

3.3 Part II – Aquatic Biology Report – Review of Preliminary Level 2 Environmental Report

Aquafor Beech Limited was retained by Friends of Rural Communities and the Environment (FORCE) in cooperation with its lead Natural Environment consultant, North-South Environmental Inc., to provide a review of the aquatic biology components of the Lowndes Quarry Application, specifically “Appendix 6 Preliminary Level 2 Environmental Report. 2004” as prepared by Stantec Consulting Ltd (Stantec). A number of other supporting documents for this application were also consulted, including the background reports on hydrology / hydrogeology, quarry development and operations, and mitigation of impacts.

APPROACH

The aquatic biology component review was based on a review of background reports prepared in support of the application, as well as the Bronte Creek Watershed Study and consultation with MNR regarding available records for reddsides dace (*Clinostomus elongates*). In addition, a site visit was made in early June 2005 to all watercourses draining the site.

The review provided in the main body, Section 3, and the matching summary conclusions, are organized according to key components of aquatic habitat, as well as impact characterization and mitigation.

CONCLUSIONS

The report concludes that more information is required in order to adequately assess the application. The scope of the field program does not provide for a complete description of baseline conditions nor a full assessment of possible impacts. Based on this, the report cannot adequately make any conclusions with respect to mitigation, nor, in our opinion, conclude in favour of the application. A summary of our review is itemized below.

1. *Study Design*: the selection of aquatic inventory and assessment sites did not include comparable, un-impacted “reference sites” that could be used as benchmarks to provide context for characterizing the sensitivity of watercourses draining the site and to confirm that future impacts do not occur.
2. *Field Investigations*: The timing of field investigations (October, November, January and June) does not reflect the appropriate timing for aquatic field studies, nor does it conform to any particular life cycle stages for various fish species. Certainly a multi-season study is warranted. In fact, a two year study may be appropriate given the unusual weather conditions over the past several years.
3. *Species at Risk*: There is no discussion in the report of potential Redside Dace habitat and the implications of the Species at Risk Act despite the fact that records of Redside Dace exist in the vicinity of the Site. The Bronte Creek Watershed Study makes specific reference to the potential of tributaries of Mountsberg Creek to

- provide cold/cool water refugia to species such as brook and brown trout as well. Greater efforts could have been made to confirm the presence of this species.
4. *Habitat Assessment forms*: A qualitative assessment / description of stream habitats at each site is provided, however this is insufficient to allow for future changes to be measured.
 5. *Water Quality*: Detailed water quality analyses for all receiving streams was not completed in order to assess the impact of any pumped water discharges from the proposed quarry. Without data on nutrients, chloride, suspended and dissolved solids, bacteria, trace metal and organics, as well as an ion balance (including alkalinity, hardness and major ions), no assessment of impacts on receiving waters can be made.
 6. *Stream Morphology*: The Stantec report concludes that pumping tests conducted in support of hydrogeological investigations (Gartner Lee 2004) did not have impacts which extended to Mountsberg Creek, Tributary A or Flamboro Creek, yet it also concludes that these watercourses may be directly in contact with groundwater table elevations. Without further explanation, it cannot be concluded that proposed operations on the Site will not impact these watercourses.
 7. *Stream Morphology*: The majority of the watercourses draining the Site are sensitive headwater (1st Order) streams that flow through wetland or alluvial soils. Such watercourses are generally highly sensitive to changes in the flow or sediment regime. The impact of these changes cannot be assessed without a detailed description of the fluvial geomorphology of downstream reaches of each watercourse.
 8. *Riparian Habitats*: The ecological, water quality and hydrologic function of riparian habitats is not fully discussed in the Stantec report, other than to suggest that standard watercourse setbacks should be sufficient to protect these features. The actual extent of the riparian zone adjacent to each watercourse should be defined based on physical (soils, topography, resistivity to erosion), hydrologic (hydrologic soils group, flood storage, water table elevation) and ecological (vegetation, species, communities) characteristics.
 9. *Mitigation*: The mitigation section of the report is very general in nature. As it currently stands, in our opinion, the mitigation section underestimates the significance of a number of key aquatic features / resources, lacks supporting evidence in terms of effectiveness, and neglects to discuss any negative impacts of the proposed measures themselves.

Based on the review provided above, it is the writer's opinion that there is insufficient documentation of the existing aquatic conditions of the watercourses potentially impacted by the proposed operation to conclude that the quarry will not impact these resources. It would also appear that hydrogeologic and hydrologic investigations have not fully addressed potential impacts on the stream environments in and downstream of the site. There is sufficient information, however, to indicate that sensitive coldwater streams exist on and downstream of the site, that the potential exists for Redside Dace habitat to be present (a Species-At-Risk), and that the potential impacts from the quarry will negatively affect these resources.

4. Community Issues

4.1 Community Issues Review Report, November 2005

Friends of Rural Communities and the Environment (FORCE) is a citizens' based advocacy group with hundreds of supporters in Campbellville, Kilbride, rural Milton, Mountsberg, Freelon, and Carlisle. It was formed as a federally registered not-for-profit corporation, in June 2004, to oppose the Lowndes Holdings Corp. application, and to protect our natural and built environments in the face of this proposed large-scale, below the established groundwater table aggregate development.

Community residents are opposed to the application and have spent the last year developing their significant substantive concerns with the proposal and its location.

In the spirit of balancing the Planning Report and companion technical reports provided by Lowndes Holdings Corp., we have undertaken, through a series of submissions, to document our concerns both quantitatively and qualitatively.

This document, the Community Issues Review Report, is an overview of the balance of issues, concerns, gaps/omissions and inconsistencies that were identified as the FORCE Technical Volunteers Committee examined Lowndes Holdings Corp. application. It complements previously submitted commissioned reports regarding hydrogeology and natural environment.

We find the Lowndes Holdings Corp. application, as submitted in September 2004 to be, at best, extremely preliminary and, in reality, to be incomplete with numerous gaps, omissions and inconsistencies. This Community Issues Review Report raises issues that relate to the social economy and health in a broad-based and inquiring manner. This Executive Summary is organized based on the sections and subsections in the main body and lists the summary findings.

In conclusion, we see no benefit to either the social economy or human \ environmental health to becoming the host communities for the eighth largest aggregate development operation in Canada. Our communities remain opposed to this application. It would be an incompatible land use within the established rural residential and agricultural communities. No responsible person would approve aggregate extraction in this area of Northeast Flamborough - an area which is currently zoned Agriculture and Conservation Management and which contains and is linked to numerous Provincially Significant Wetlands and Regionally Significant Environmentally Sensitive Areas, among other key natural heritage and hydrological features. The application review and the issues that emanate have re-enforced that position.

SOCIO-ECONOMIC ISSUES

Haul Routes and Truck Traffic

- *No existing acceptable Haul Route exists to service the proposed location*
- *The proposed Volume of Truck Traffic would force a change in existing roadway use*

- *The proponent's Haul Route analysis does not consider significant markets southeast and southwest of the proposed location*
- *No mechanisms are provided to ensure Independent Haulers adherence to any recommended Haul Route or Hauling Practices*
- *The Municipal Class EA process is not a suitable vehicle for addressing the needs of a private corporate venture*
- *The Cost of infrastructure maintenance is not discussed*
- *School bus safety is not considered*
- *Impact on Emergency Services is not discussed*

Agriculture

- *Direct immediate loss of over 150 acres of viable, in use, agricultural lands*
- *Significantly more loss when the proposed quarry implements its declared expansion plans*
- *Loss of agricultural land would be permanent as the rehabilitation plans turns the property into a lake*
- *The land is currently being used for garden marketing*
- *Has been used for agriculture since the 1950s*
- *The application's soil analysis is in conflict with the known characteristics of the site*
- *Dewatering, noise, and dust from the proposed quarry with negatively impact surrounding agricultural operations*
- *Quarry Truck traffic will be incompatible with existing Agricultural traffic*
- *The negative impact to Agriculture will extend off the site to surrounding operations*
- *To be viable agricultural activities need a critical mass*
- *Agricultural professionals are responsible land stewards*

Incompatible Land Use, Real Estate Values & Municipal Tax Base Implications

- *While considered an interim or temporary land use, the reality is that quarries in the area have a history of operating over 4 decades*
- *The timeframe is much longer than the Regional Official Plans and is in fact multi-generational*
- *The local real estate market has already been impacted*
- *Prospective purchasers and/or their realtors are contacting FORCE to inform themselves about the situation*
- *Prospective purchasers are leaving the local market upon investigation of the situation.*
- *The net economic impact of depressed real estate values will more than offset the economic gains from the proposed operation*

Infrastructure

- *Infrastructure costs such as roadway construction and maintenance will increase from the heavy demands of aggregate traffic*
- *Most of the burden of those costs will fall on the tax payer and municipalities*
- *The proposed development could endanger the natural environment which provides infrastructure services such as storm water management*
- *Should the natural environment be disturbed the economic impact of having to deal with new infrastructure needs is unknown.*

- *The potential impact on drinking water is a significant threat as current regulations limit and complicate the options in providing an alternative source*
- *The current application is silent on the proponent's approaches for providing alternative sources of drinking water*
- *The City of Hamilton and surrounding municipalities might be forced to become financially responsible should the proponent be unable to provide the essential infrastructure service of clean drinkable water.*

Aggregate Supply & Demand

- *The formation of Amabel Dolostone exists over a wide area not just on the proposed site*
- *The identification of the existence of the resource in Official Plans does not imply approval or an intent to extract them*
- *Land use intent is indicated by the zoning; currently Agriculture and Conservation Management*
- *There are data inconsistencies within the planning report and with the reports assertion of an "aggregate crisis"*
- *There is limited current data on aggregate supply to justify declaring a crisis, the last study was done in 1992*
- *Existing aggregate license optimization and aggregate recycling have not been fully explored as a way to mitigate the need for virgin aggregate materials*

HEALTH ISSUES:

Noise & Vibration

- *The impact of sustained exposure to vibration and noise is a significant health issue, not just a nuisance factor*
- *The area where this proposed development is planned has existing sound levels that are considered 'quiet' in the day time, evening and night time, and are dominated by natural sounds or infrequent human activity*
- *The submissions regarding Noise is incomplete and contains methodological issues*
- *Neither the Planning Report nor the Noise Study includes a blasting report with any details*
- *Assertions indicating how noise will be managed are incomplete and do not address many basic challenges*
- *Traffic noise along haul routes will extend the noise issues to residents far from the quarry site and extend the time of disturbances to beyond the operating times of the site*

Pedestrian, Cyclist & Vehicular Safety

- *Introduction of incompatible commercial truck traffic will become a health and safety issue for existing road users*

Dust (Airborne Particulates) & Emissions

- *Health issues from airborne particulate matter are well documented. The proposed operation could significantly increase the amount of airborne particulates*
- *The proponent's application does not address these issues*