

LOWNDES HOLDINGS

**PROPOSED DOLOSTONE QUARRY
PLANNING REPORT**
August 2004

CON 12

CON 11

CON 10

GLENRORN ROAD

TIMBERRUN COURT

3RD SIDEROAD

BRONTE LANE

TOWN OF MILTON

CITY OF HAMILTON
REGION OF HALTON

MILBROUGH LINE

STEELES AVENUE

11TH CONCESSION ROAD

CITY OF HAMILTON

REGION OF HALTON



LONG ENVIRONMENTAL CONSULTANTS INC.
Environmental Engineers and Planners
Orangeville, Ontario

LOT 4

LOT 3

LOT 2

LOT 1

Lowndes Holdings Corp.
PROPOSED DOLOSTONE QUARRY

PLANNING REPORT

August 25, 2004

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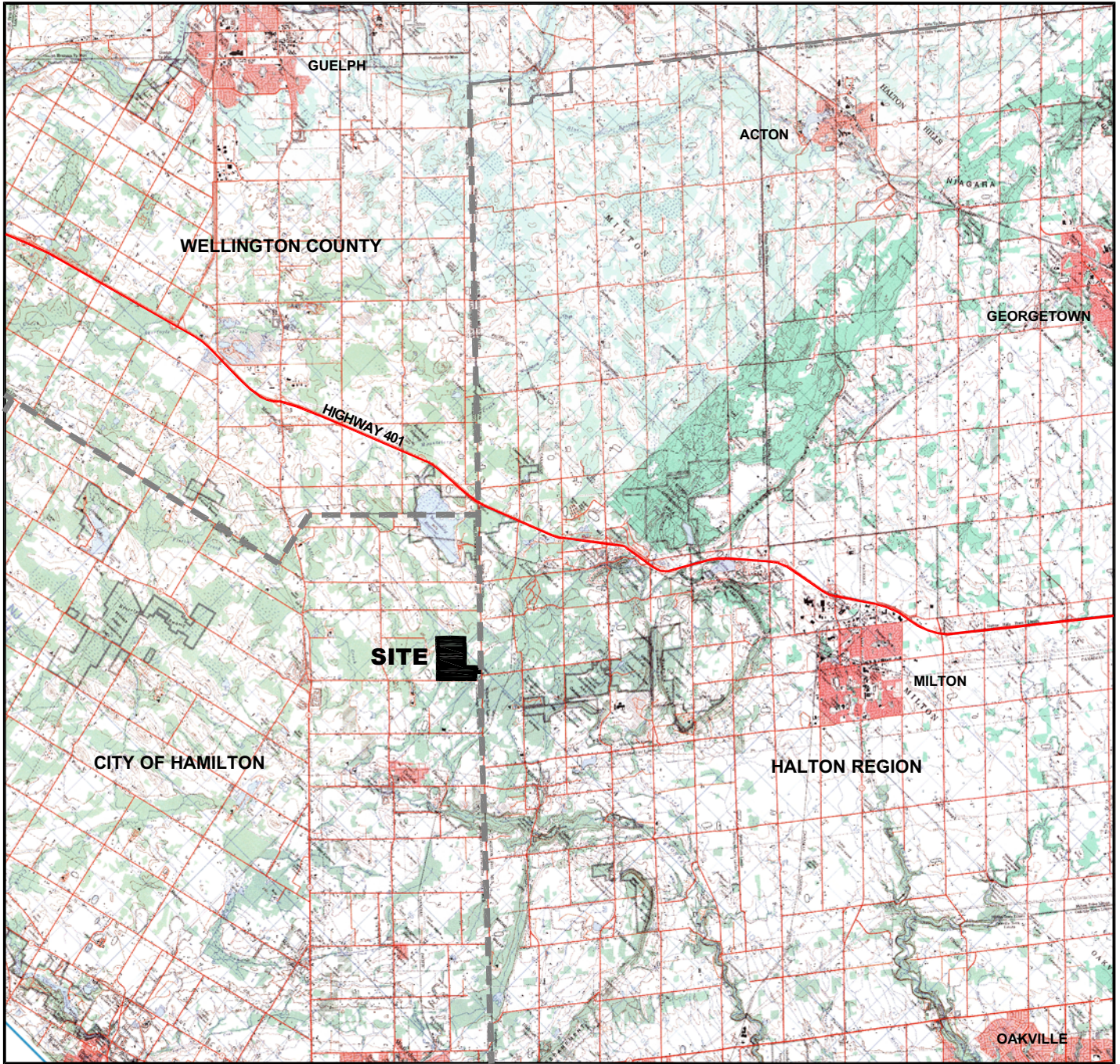


Figure 1
REGIONAL SETTING



Scale: 1 : 200,000

1. EXECUTIVE SUMMARY

Lowndes Holdings Corp. has acquired 154 ha (380 ac), described as Part of Lot 1 and Lots 2 and 3, Concession 11, geographic Township of East Flamborough, now the City of Hamilton. The proposed excavation area is about 62%, an estimated 96 ha (238 ac). The site comprises several large properties, in an area of high lot fragmentation and contains a Provincially significant Amabel dolostone deposit, up to 40 m thick. It has been designated a mineral aggregate area, in the Regional Official Plan, since 1980. Dolostone quarries, in the Greater Golden Horseshoe Area are essential to the continued supply of crushed stone. The Amabel Formation provides the most durable aggregate material in Southern Ontario, for road construction, structural concrete, concrete and asphalt paving aggregates.

Aggregate consumption in the GTA increased substantially, during the 1990s. Halton and Hamilton are the primary sources of the Amabel dolomitic limestone. However, their combined production has declined, with the near depletion of Halton Crushed Stone and Milton Limestone; and licensed reserves are being rapidly depleted. Industry forecasts indicate that the demand for high quality crushed stone will increase approximately **32%**, during 2003 to 2014. Existing licensed Amabel formation reserves, within the Greater Golden Horseshoe Area, will likely be depleted by 2010.

Ontario's new Government has reinforced its commitment, initiated with the *Aggregate Resources Act*, 1989 to protecting essential mineral aggregate resources and controlling the introduction of conflicting, urban-type land uses in rural areas. *The Greenbelt Protection Act*, June 2004 imposes a moratorium on rural residential development and facilitates the licensing of new quarries, as interim uses; while recognizing the need for environmental tradeoffs; and higher standards of quarry operation, progressive rehabilitation and long term environmental enhancement. Proposals to update the *Provincial Policy Statement* confirm this commitment. Aggregate protection and control of urban sprawl are also addressed in the summer 2004 Discussion Paper - *Growth Plan for the Greater Golden Horseshoe Area*.

The Proposed Dolostone Quarry is situated west of the protected Niagara Escarpment Plan Area (NEPA), in close proximity to established truck routes and Highway 401. Lowndes Holdings Corp. has acknowledged the need to support local road improvements, to deliver its aggregate products to the Greater Golden Horseshoe Area.





Figure 2
OPERATIONAL PLAN



Scale: 1:8,000



Figure 2 is the August 2004 Operational Plan for the Proposed Dolostone Quarry. This plan has evolved from inter-related studies, initiated during the fall of 2003:

Acoustical analysis of alternative quarry configurations, within this natural and rural environment, provides the basis for controlled, sequential operation with staged shielding for the production of 3 million tonnes annually.

Agricultural resources are insignificant, comprising approximately 9% prime-Class 2 to 3 soil capability for agriculture. There are no Class 1 lands.

Archaeological studies included careful research and site excavations, to identify archaic, historic and Aboriginal culture. Artifacts were recovered, where necessary, confirmed by the Ministry of Culture, in July 2004.

Blasting will be electronically controlled and sequential, to minimize vibrations, in the vicinity of the quarry, in accordance with Ministry of the Environment standards.

Dust control can be achieved through the use of enclosures, suppressants and vegetation screens, in accordance with the conditions prescribed by the Ministry of Natural Resources and standards of the Ministry of the Environment.

Geology studies, based upon Provincial aggregate mapping, overburden test pitting and boreholes penetrating the rock formations, confirm that the site contains the high quality Amabel dolostone of about 33 m in average thickness.

Natural Environment features have been inventoried and monitored, through the fall, winter and spring seasons. The 21 ha of Provincially Significant Wetland will be protected and, during progressive rehabilitation, enhanced through the addition of approximately 16 ha of new habitat and a large lake feature.

Traffic can be safely routed via the existing entrance to an improved Milborough Line, to Campbellville Road. Four alternative haul routes, assessed in this report, will be the subject of a Class Environmental Assessment, integrated with the *Planning Act* process.

Water resources will be affected by the proposed excavation and dewatering. The Client's Hydrogeologists have confirmed that potentially adverse effects on ground and surface water can be mitigated and surface water quality, with respect to temperature, should be enhanced.

It is concluded, based upon these preliminary studies, that this application is consistent with the Provincial Policy Statement; regional and local official plans; Provincial Standards; and that it represents good planning, in this context.



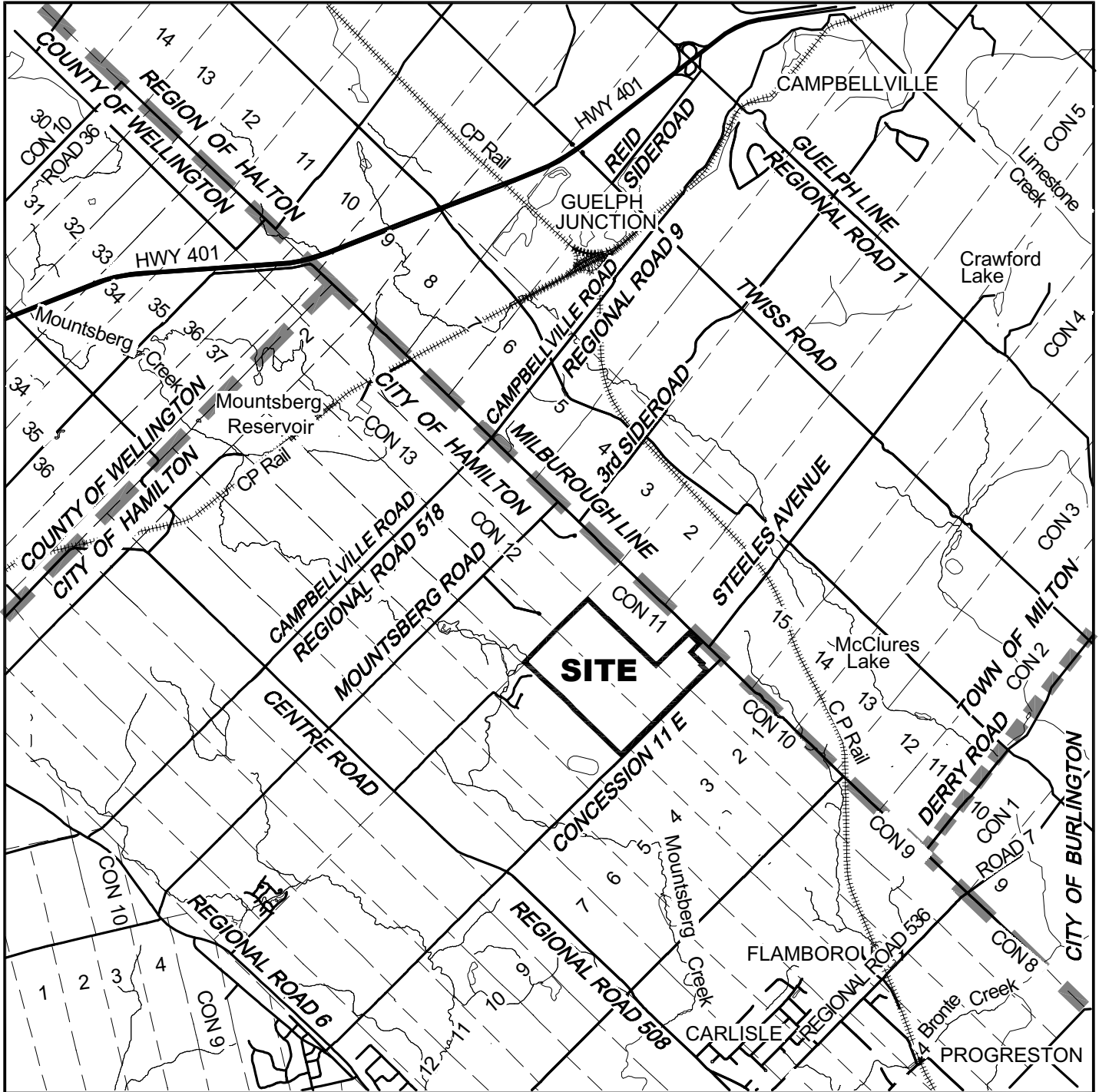


Figure 3
KEY MAP

Scale: 1 : 60,000



2. INTRODUCTION

Lowndes Holdings Corp.'s business objective is to establish an Amabel dolostone quarry, in close proximity to Ontario's rapidly growing urban centers. The Company's research identified a significant dolostone deposit, in rural Hamilton. The Company's site selection criteria were to avoid the Niagara Escarpment Plan Area (NEPA); locate the thickest section of the Amabel Formation, with minimum drift thickness, between the NEPA and Highway 6; confirm Official Plan aggregate designations; conduct preliminary environmental and planning studies; and identify large parcels of relatively open land, near established truck routes. As Figure 3 indicates, the site is located on the north side of Concession Road 11, west of Milborough Line.

Consulting specialists were retained during mid 2003, to begin the necessary studies of the proposed dolostone quarry, its environs and alternative truck routes. These studies include acoustics, aggregate quality, agriculture, archaeology and cultural heritage, geology, hydrogeology, hydrology, natural environment, planning, site plan and traffic. Up to one year is required, to monitor the area, to enable prediction of the effects of the proposed quarry and to formulate an appropriate site design, for four-season operation.

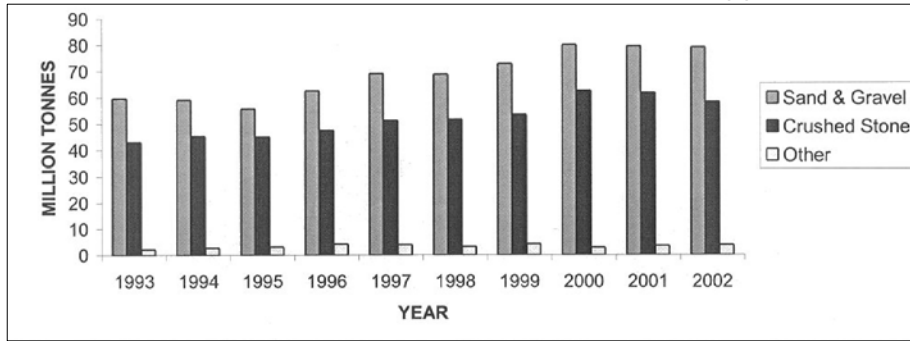
The planning and approvals process also takes time to complete, in a considered and responsive manner. Applications are required for official plan and zoning by-law amendments, in accordance with the *Planning Act*; and an *Aggregate Resources Act* Licence.

Ontario's planning system is policy-led. Provincial policies and aggregate resource studies, by the Ontario Geological Survey, provide the basis for long range development of official plans. Hamilton's Official Plan is intended to guide and shape physical community development, over a 20 to 30 year time frame. The Region recognized the need to designate mineral aggregate resources, to protect them for future extraction, during the late 1970s. Specific resource areas are also identified, in local official plans, which include detailed policies for establishing new pits and quarries. Therefore, this Planning Report is intended to provide the basis for ensuring that the proposed dolostone quarry conforms to the official plans; and to initiate discussions with the City, Provincial agencies and the public, particularly those within close proximity to the site.

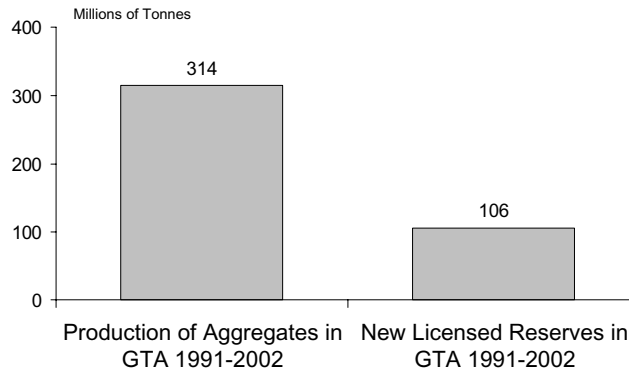
When the principles of physical development of the Lowndes Holdings properties have been substantially resolved, more detailed plans and policies can be considered, in the context of the implementing zoning by-law and a licence application, under the *Aggregate Resources Act*.



1. LICENSED PRODUCTION BY COMMODITY TYPE 1993-2002 (1)

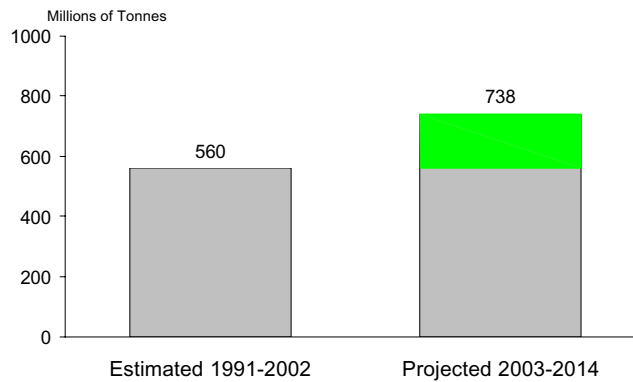


2. GTA AGGREGATE PRODUCTION VS LICENSING (2)



Source: MNR, TOARC and estimates by MHBC

3. TOTAL CONSUMPTION OF AGGREGATES (DEMAND) (2)



Source: MNR, TOARC and estimates/projections by Clayton Research

Figure 4

ONTARIO'S AGGREGATE STATISTICS, 2004



3. ONTARIO'S AGGREGATE INDUSTRY

3.1 Products & Production

Ontario's aggregate industry produces the fundamental building block of the Provincial economy - crushed stone, sand, gravel and industrial minerals, from which asphalt, concrete and structural foundations are created. Annual licensed production currently exceeds 140 million tonnes, comprising, in 2002:

Crushed Stone	58.2
Sand & Gravel	79.1
Clay & Shale	1.7
Other Stone	<u>2.2</u>
TOTAL	141.2 million

The industry employs approximately 7,000 directly; some 34,000 people indirectly; and contributes about \$8.5 million in annual licence fees.

During the 1991-2002 period, about 314 million tonnes of aggregate were produced in the GTA. However, over the same period, approximately 106 million tonnes of new reserves were licensed - 1 tonne of replacement for every 3 tonnes produced. This rapid level of reserve depletion is not sustainable. 560 million tonnes were consumed in the GTA, indicating net imports of 246 million (560 - 314).

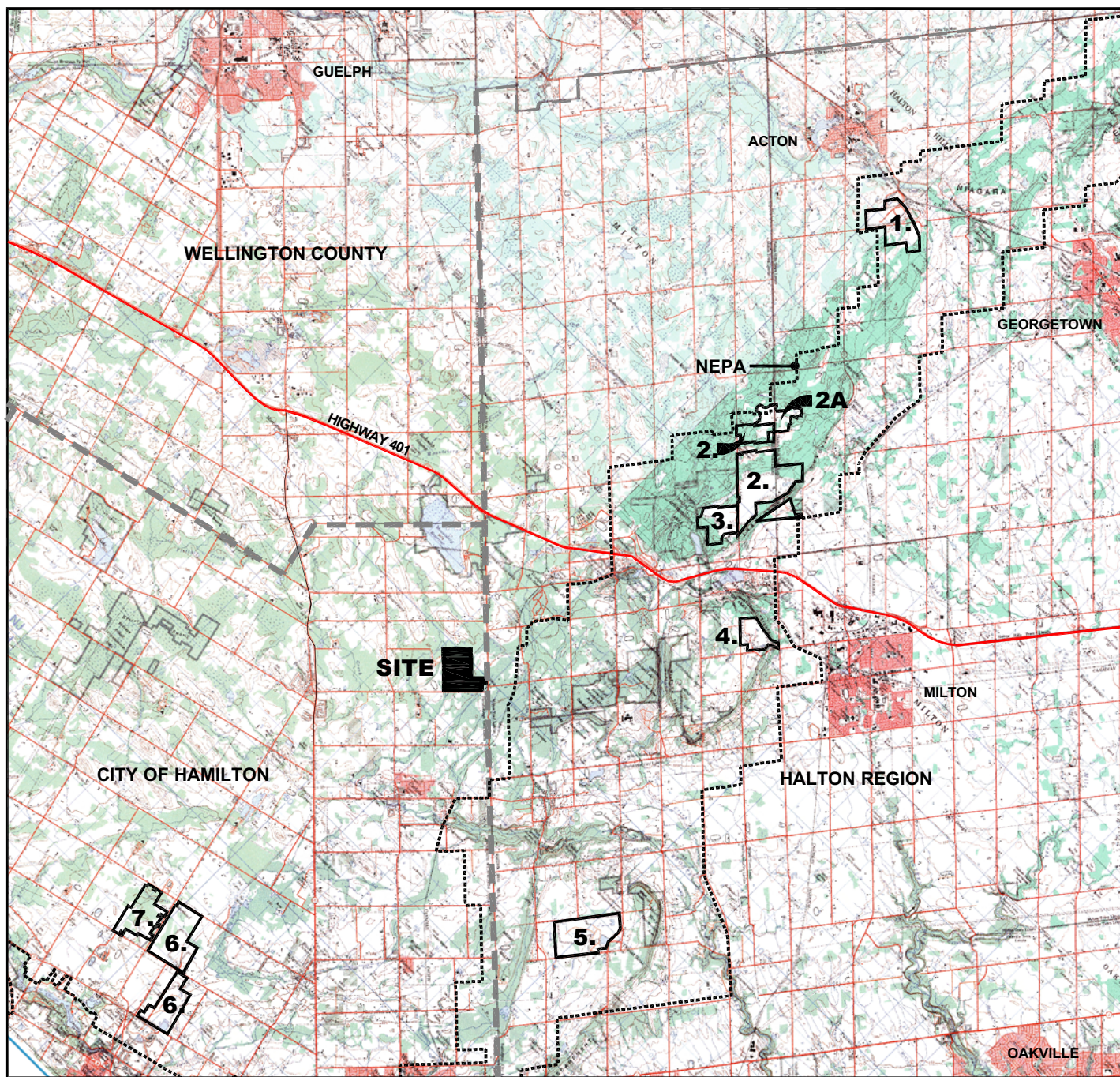
The supply problem will be compounded by increasing demand for aggregates in the future. Projected consumption, for the 2003-2014 period, is 738 million tonnes, a 32% increase.

Millions of tonnes of aggregate are consumed in our daily lives. Each brick home requires 440 tonnes; an average school consumes 13,000 tonnes; and 1 kilometer of six-lane road utilizes 52,000 tonnes - much of it the high quality dolostone. More than 50% of aggregates are purchased for public sector projects. Availability and competitive pricing are critical.

Need for, and production of mineral aggregates goes beyond regional and municipal boundaries. Mapping, from the Ministry of Northern Development and Mines (MNDM) shows that aggregate resources are not distributed evenly, throughout the Province. The onus should not be placed on the applicant to forecast local, regional and Provincial demand. With the publication of: Aggregate Resources of Southern Ontario - A State of the Resource Study, published by MNR in 1993, the Province established the need for mineral aggregates. ⁽³⁾

-
- (1) The Ontario Aggregate Resources Corporation: *Mineral Aggregates in Ontario, Production Statistics, 2002*, February 2004
 - (2) Clayton Research and MHBC: *The Implications of Restricting Aggregate Supply in the GTA*, April 2004
 - (3) Ministry of Municipal Affairs & Housing: *Halton Region Draft Official Plan Amendment No. 25 Comments*, April 2004





NIAGARA ESCARPMENT
PLAN AREA



- 1. DUFFERIN - ACTON
- 2. DUFFERIN - MILTON
- 2A. DUFFERIN - MILTON EXPANSION
- 3. HALTON CRUSHED STONE
- 4. MILTON LIMESTONE
- 5. NELSON - BURLINGTON
- 6. LAFARGE - DUNDAS
- 7. DUFFERIN - FLAMBORO

Figure 5

GREATER GOLDEN HORSESHOE WEST QUARRIES

Scale: 1 : 150,000



3.2 Central Ontario Dolostone

The dolostone caprock of the Niagara Escarpment and its westerly extension, within Halton and Hamilton, supplies the majority of crushed stone for the GTA. While several quarry expansions have been approved, or are in the approval process, no new sites have been licensed. Several quarries, illustrated on Figure 5 are now depleted, reducing the annual production from this resource area by approximately 2.7 million tonnes. The status of regional quarries is summarized in Table 1.⁽⁴⁾⁽⁵⁾⁽⁶⁾

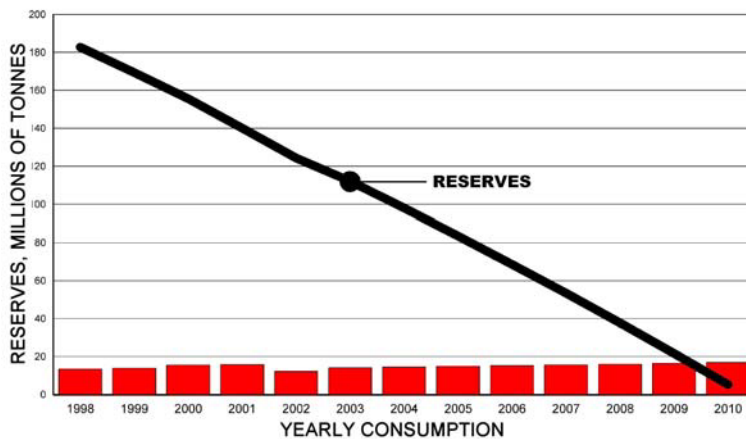
Table 1
Golden Horseshoe Amabel Quarries

QUARRY	LICENSED AREA, HA	ANNUAL PRODUCTION	REPORTED RESERVES MILLION TONNES
1. DUFFERIN - ACTON	233	3.0	37
2. DUFFERIN - MILTON	467	5.7	34
3. HALTON CRUSHED STONE	122	1.7	5
4. MILTON LIMESTONE	95	1.0	0
5. NELSON - BURLINGTON	219	2.0	22
TOTAL	824	13.4	98

Dufferin Aggregates has applied for an 83 ha expansion of its Milton Quarry, Figure 5, No. 2A.

The estimates in Table 1 are provided to characterize the approximate production capacity and licensed reserves, within Ontario's primary source of Amabel dolostone. They are based upon published reports, industry knowledge and approved site plans. With no new licences issued, at the present rate of consumption, the Amabel Formation reserves in the Greater Golden Horseshoe will be depleted in 2010, as shown on Graph 1:⁽¹⁾⁽²⁾⁽⁷⁾

Graph 1
CONSUMPTION vs RESERVES⁽⁷⁾



- (4) Beck Associates GeoConsultants Inc.: *Greater Toronto Area Dolostone Aggregate Reserve Estimates*, December 2002
- (5) Aggregates & Roadbuilding, *Canada's Top 20 Quarries*, 2002, July/August 2003
- (6) Aggregate Resources Inventory Papers, Site Plans and Licences
- (7) S. E. Yundt Limited





Figure 6

BEDROCK RESOURCES

Scale: 1 : 50,000

Source: M.N.R., Aggregate Resources Inventory Paper 50, 1984



4. FLAMBOROUGH'S AMABEL DOLOSTONE

The geographic Township of Flamborough East contains significant areas of the dolostone bedrock of the Guelph, Lockport and Amabel Formations. The distribution of these deposits is mapped in Provincial ARIPs (Aggregate Resources Inventory Papers). Quarries south of the Lowndes property: *".....make use of the Guelph Formation and the underlying Lockport or Amabel Formations....."*. The northern part of Selected Bedrock Resource Area 1, illustrated on Figure 6, consists only of the: *".....well developed massive reefal facies of the Amabel Formation."* Selected Bedrock Resource Areas, mapped by the Ontario Geological Survey exhibit an overburden thickness of 8 m or less, generally considered the economic limit for removal by the Ontario industry. The 1984 ARIP indicates that: *".....approximately 14,900 acres (6,000 ha) are presently available for extraction in the entire Resource Area.....total resources of crushed stone are estimated to be 3,200 million tons (2,900 million tonnes).....**a potential aggregate source of provincial significance**"*.⁽⁸⁾ However, access to much of the resource area has been adversely affected by fragmentation, environmental sensitivity and rural residential development, including proximity to the Settlement of Carlisle.

The search for a viable deposit of Amabel dolostone, by Lowndes Holdings Corp., indicated that the subject property was of sufficient size to support a state-of-the-art quarry; well within the economic limit for overburden removal; and in close proximity to paved roads. The Amabel is the preferred bedrock resource. The Guelph Formation is generally unsuitable for high specification use.

The site is within the Golden Horseshoe Greenbelt. Site selection is consistent with the recommendations of the Greenbelt Task Force: *".....transportation.....alternatives that maximize conservation.....optimize the capacity of existing infrastructure.....high-potential mineral aggregate sites should be included in the greenbelt.....the availability of aggregates close to market is important.....building and development land uses that prevent or restrict the possibility of future mineral aggregate extraction in high-potential areas should be precluded.....facilitate new supply, as well as to ensure the integrity of hydrogeological and ecological systems, and natural features and functions, taking into account the requirement to rehabilitate."*

Aggregate production, within the City of Hamilton, is recently reported as 5.4 to 6 million tonnes per year. This extractive industrial activity provides the City with up to \$270,000 annual licence fees, property taxes and substantial employment and associated economic benefits.

(8) Ontario Geological Survey: *Aggregate Resources Inventory of the Regional Municipality of Hamilton-Wentworth*, 1984

(9) Greenbelt Task Force: *Toward a Golden Horseshoe Greenbelt - Advice and Recommendations to the Minister of Municipal Affairs and Housing*, August 2004



5. PLANNING AND LAND USE

5.1 Provincial Policy

The PPS (Provincial Policy Statement) is the foundation of Ontario's policy-led system of planning. These policies protect mineral aggregate resources, while maintaining important agricultural areas and conserving archaeological, cultural and natural heritage resources:⁽¹⁰⁾

1.1.1(b) Rural areas will generally be the focus of resource activity, resource based recreational activity and other rural land uses.

1.1.3 Long Term economic prosperity will be supported by:

f) optimizing the long-term availability and the use of agricultural and other resources; and

g) planning so that major facilities (such as industries and aggregate activities) and sensitive land uses are appropriately designed, buffered and/or separated from each other to prevent adverse effects from odour, noise and other contaminants.

2.2.3.1 As much of the mineral aggregate resources as is realistically possible will be made available to supply mineral resource needs, as close to markets as possible

2.2.3.6 In prime agricultural areas, on prime agricultural land, extraction of mineral aggregates is permitted as an interim use provided that rehabilitation of the site will be carried out whereby substantially the same areas and same average soil quality for agriculture are restored.

On these prime agricultural lands, complete agricultural rehabilitation is not required if:

1. there is a substantial quantity of mineral aggregates below the water table warranting extraction; or

2. the depth of planned extraction.....makes restoration.....unfeasible;

2.3.1 Natural heritage features and areas will be protected from incompatible development:

(a) Development and site alteration will not be permitted in:

significant wetlands south and east of the Canadian Shield; and

significant portions of the habitat of endangered and threatened species.

(10) Ministry of Municipal Affairs and Housing: Provincial Policy Statement, 1997



(b) *Development and site alteration may be permitted in:*

*fish habitat;
significant wetlands in the Canadian Shield;
significant woodlands south and east of the Canadian Shield;
significant valleylands south and east of the Canadian Shield;
significant wildlife habitat; and
significant areas of natural and scientific interest*

if it has been demonstrated that there will be no negative impacts on the natural features or the ecological functions for which the area is identified.

2.3.2 *Development and site alteration may be permitted on adjacent lands to a) and b) if it has been demonstrated that there will be no negative impacts on the natural features or on the ecological functions for which the area is identified;*

2.3.3 *The diversity of natural features in an area, and the natural connections between them should be maintained, and improved where possible.*

2.3.4 *Nothing in policy 2.3 is intended to limit the ability of agricultural uses to continue.*

2.4.1 *The quality and quantity of ground water and surface water and the function of sensitive ground water recharge/discharge areas, aquifers and headwaters will be protected or enhanced.*

Provincial policy governing mineral aggregate resources has been established, since the *10 Point Mineral Aggregate Policy for Official Plans* was approved by Cabinet in September 1979. It was succeeded by the 1982 MARPP (Mineral Aggregate Resource Planning Policy); the 1986 MARPS (Mineral Aggregate Resource Policy Statement), under Section 3 of the *Planning Act*; and the 1994 CSPS (Comprehensive Set of Policy Statements). The PPS is the latest iteration of government policy to ensure long term protection of the resource and to provide a clear and reasonable mechanism, for licensing close to market sites, consistent with accepted environmental criteria. Aggregate extraction is an interim land use which is to be focused in rural areas. The PPS also contains definitions, to enable interpretation of its key terms, including “*significant*”:

Significant means:

- *in regard to wetlands and areas of natural and scientific interest, an area identified as provincially significant by the Ministry of Natural Resources using evaluation procedures established by the province, as amended from time to time.*
- *in regard to other features and areas in policy 2.3, ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system. Criteria for determining significance may be recommended by the Province, but municipal approaches that achieve the same objective may also be used.*
- *in regard to other matters, important in terms of amount, content, representation or effect.*



The Provincial Policy Statement Training Manuals were introduced to implement the PPS, in 1997. These manuals currently apply to Natural Heritage; Natural Hazards; and Non-Renewable Mineral Aggregate Resources.

Part A, Section 2.0, of the *Mineral Aggregate Training Manual* provides an explanation of Provincial Policy 2.2.3:

As much as possible means that a substantial portion of a municipality's mineral resources should be protected and available, while still providing for other planning objectives, to balance the need for aggregate with needs for environmental protection and housing, for example.

As close to market as possible recognizes that truck transportation is the dominant mode of shipping and that the resource should be accessed as close as possible to where the materials are needed. Rail transport is seldom practical, due to the extra costs and delays of re-handling.

Associated facilities, such as onsite transportation and crushing, are critically important to the production and maintenance of supplies.

Rehabilitation for agriculture is often impractical in quarry applications. Criteria to be considered include the slope and depth of the quarry and the extent to which the excavation will fill with water.

Section 1 of the *Natural Heritage Reference Manual, For Policy 2.3 of the Provincial Policy Statement*, outlines the relative significance of natural heritage features:

Provincially significant resources, whose significance has been defined by the Province, are matters of Provincial interest; and

Municipal planning authorities may develop official plan policies for regionally or locally significant or sensitive areas, identified by local conservation authorities or the planning authority itself.

Regionally and locally significant natural heritage features are not matters of Provincial interest and their relative position, in the policy hierarchy must be considered in the context of the significance of competing natural resources and Provincial interests. For example, the Provincially significant, non renewable Amabel Formation would represent a matter of Provincial interest and its utilization, as much as is realistically possible, would take precedence over locally and regionally significant, renewable natural heritage features.



5.2 Greenbelt Protection Act, 2004

In December 2003, the Government of Ontario introduced *Bill 27*, the proposed *Greenbelt Protection Act*, as:⁽¹¹⁾

.....the first step toward establishing a permanent greenbelt in Southern Ontario. The greenbelt would protect environmentally sensitive lands and farmlands, and help manage and contain urban growth.....Inside the study area, a moratorium on changes from rural to urban uses would allow time for consultation with stakeholders and the public on what the greenbelt should entail, while protecting rural uses from further urbanization. The moratorium will expire in December 2004.

In the context of a Central Ontario population increase, from 7.5 million to a forecast 11 million, in 2031, the goals of the proposed greenbelt include:

- *conserving and making available natural resources critical for a thriving economy; and*
- *ensuring that infrastructure investment achieves the environmental, social and economic aims of the greenbelt.*

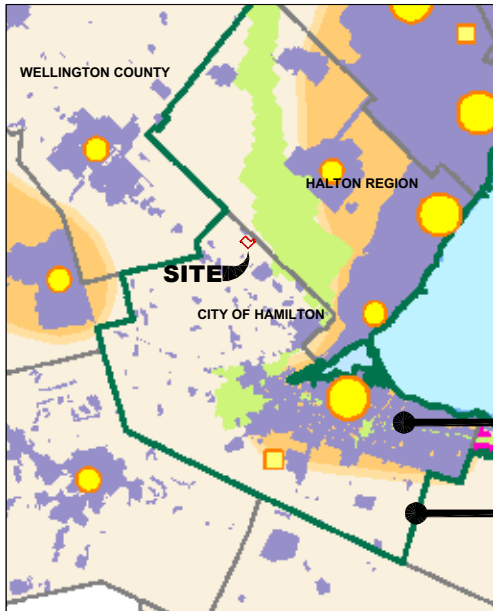
The task force concentrated its natural resource discussions on mineral resources, recognizing that:

The most significant non-renewable resource in the proposed Greenbelt Study Area is aggregates, including limestone, sand, gravel, clay, shale and sandstone.....Mineral aggregates provide essential building materials for growth.....there are significant aggregate resources in the Golden Horseshoe region that directly supply the housing and manufacturing industries.....the regulatory environment for aggregate extraction has become increasingly sophisticated, resulting in fewer new licenses for quarries. Most existing quarries were established in the 1950s, and are reaching the end of their deposits.....As proposals for a permanent greenbelt are developed from the layering of the environmental, agricultural, cultural, recreation and heritage functions described in this paper, aggregate operations can be considered a “temporary use”. These key non-renewable resources may be identified and protected for future use, and sites can ultimately be returned to natural, agricultural or recreational purposes - the use that best suits the greenbelt area in which they are situated.....high potential aggregate areas should be a consideration for inclusion in the greenbelt and should (be) protected from incompatible land use. Aggregate extraction in the green belt should be subjected to a more rigorous approach to rehabilitation.....The Province should review the licensing process to facilitate new supply and ensure the integrity of hydrogeological and ecological systems, features and functions, taking into account the requirement to rehabilitate.

The Greenbelt Protection Act received Third Reading and Royal Assent on June 24, 2004. The Minister’s Zoning Order, Regulation 432/03 was revoked on July 20th.

(11) Ministry of Municipal Affairs and Housing, Greenbelt Task Force: *Toward a Golden Horseshoe Greenbelt, Discussion Paper*, May 2004



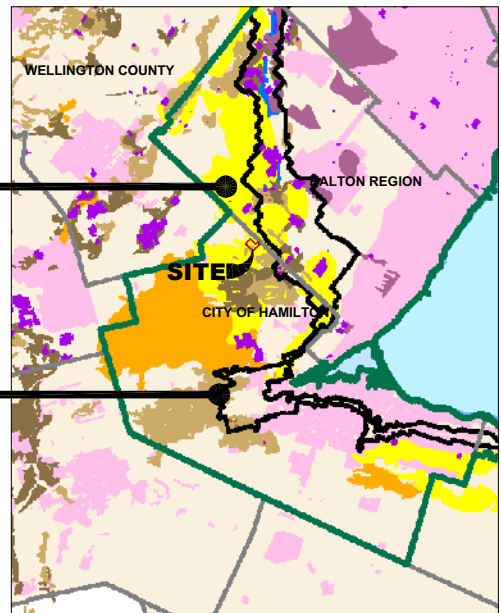


MAP 4 - FUTURE GROWTH AREAS - CONCEPTUAL

DESIGNATED SETTLEMENT AREA

GREATER GOLDEN HORSESHOE AREA

MAP 9 - MINERAL AND AGGREGATE RESOURCES



AMABEL DOLOSTONE

NIAGARA ESCARPMENT PLAN AREA

Figure 7

FUTURE GROWTH & AGGREGATES



5.3 Provincial Policy Statement Review, 2004

The Minister of Municipal Affairs and Housing released a proposed new PPS (Provincial Policy Statement), part of its planning reform initiative, in June 2004. This initiative includes a review of the *Planning Act* and reform of the Ontario Municipal Board. The Minister, the Honourable John Gerretsen advises that: “*Natural resources, including mineral resources, are an important part of greenbelt protection and are recognized as such in the Greenbelt Task Force’s discussion paper*”. Under the *Planning Act*, the Minister may identify planning applications of “*Provincial Interest*” to be applied to the outcome of planning decisions, including cross boundary issues. Applications must be “*consistent with*” the PPS. Objectives are to prevent rural residential development and protect mineral aggregate resources and natural systems. The demonstration of need will not be required:

2.4.2.1 *Demonstration of need for mineral aggregate resources, including any type of supply/demand analysis, will not be required, notwithstanding the availability, designation, or licensing for extraction, of mineral aggregate resources locally or elsewhere.*

5.4 A Growth Plan for the Greater Golden Horseshoe Area, Summer 2004

Hamilton is recognized as a significant growth area, within the Greater Golden Horseshoe. The proposed Growth Plan, distributed by the Minister of Public Infrastructure Renewal, in July 2004, is directed toward integrating land use planning, serviced residential growth areas and infrastructure investment, while reducing automobile emissions. The ten year infrastructure plan is expected to generate increased demand for high quality construction aggregates. Proposed strategies include:⁽¹²⁾

- *protecting high potential aggregate areas that have been identified as high priority due to their quality, accessibility, and availability of the resource; and*
- *working with municipalities and the industry to explore more effective and innovative ways to make aggregate available to the marketplace while at the same time minimizing impacts on the local community.*

Map 4 illustrates future growth areas, including the City of Hamilton. None of these growth areas is in the vicinity of the proposed dolostone quarry.

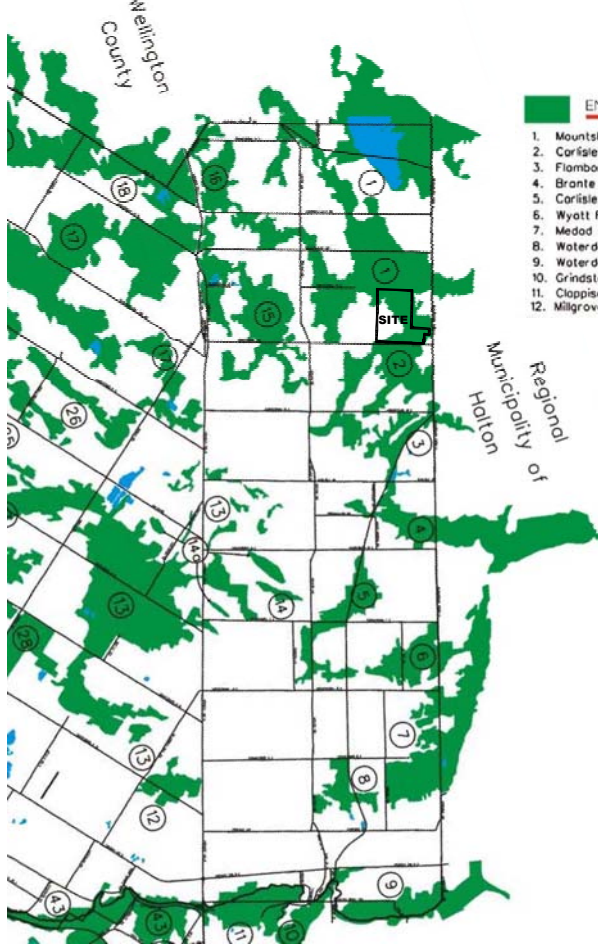
Map 9 identifies mineral and aggregate resources, including the Provincially significant Amabel dolostone. The proposed dolostone quarry is centrally located, within this Formation.

These recent initiatives confirm that the Government, which created the *Aggregate Resources Act*, 1989, is committed to protecting aggregate resources and enabling their utilization in rural areas.

(12) Ministry of Public Infrastructure Renewal: *A Growth Plan For the Greater Golden Horseshoe, Discussion Paper*, Summer 2004



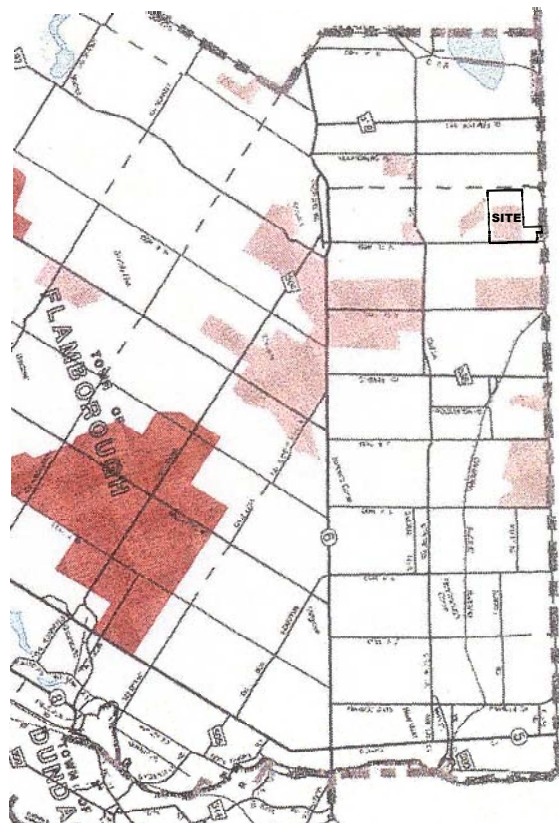
ENVIRONMENTALLY SIGNIFICANT AREAS, MAP 4



- ENVIRONMENTALLY SIGNIFICANT AREAS**
- | | |
|--|--|
| 1. Mountsberg Wetlands and Wildlife Centre | 13. Hayesland Swamp |
| 2. Carlsie North Forests | 14. Harper Corners East Wetland |
| 3. Flamboro Swamp | 14a. Harper Corners Drumlins |
| 4. Bronte Creek Ravine | 15. Freelon Esker - Wetland Complex |
| 5. Carlsie Swamp | 16. Puslinch Southeast Swamp |
| 6. Wyatt Road Wetland | 17. Beverly Swamp |
| 7. Medad Valley | 18. Fletcher Creek Swamp Forest |
| 8. Waterdown North Wetlands | 19. Valens Conservation Area and Drumlin Field |
| 9. Waterdown Woods | 20. Sheffield Complex |
| 10. Grindstone Valley | 21. Rockton Northeast Woodlot |
| 11. Clappison Woods | 22. Hyde/Rockton/Beverly Complex |
| 12. Millgrove South Woodlot | 23. Patterson Tract |

LEGEND

- GRAVEL & SAND
- STONE AGGREGATES



MINERAL AGGREGATE AREAS, MAP 5



Figure 8

HAMILTON OFFICIAL PLAN

Scale: ±1 : 200,000

Source: Hamilton - Wentworth Official Plan, Consolidated July 2003



5.5 Hamilton Official Plan

The Regional Official Plan is the *Official Plan for the Regional Municipality of Hamilton-Wentworth*, approved in January 1995, December 2000 Consolidation. The Official Plan comprises a series of maps with policies, to guide physical development of the Region over a 20 to 30 year period. Part C sets out the City's land use strategy, including resource protection, resource utilization, regional development pattern and infrastructure.

Map 1 - Regional Development Pattern includes the subject property in the *Rural Area* designation.

Map 2 - Agricultural Lands & Niagara Escarpment Plan Area excludes the site from *Prime Agricultural Lands; Specialty Crop Areas*; and the special policy areas of *The Parkway Belt West* and the *Niagara Escarpment Plan*.

Map 4 - Environmentally Significant Areas (ESAs) designates portions of the property as ESA No. 1 - Mountsberg Wetlands and Wildlife Centre; and part as ESA No. 2 - Carlisle North Forests. An excerpt is illustrated on Figure 8. **Much of the surrounding residential development is with these ESAs.**

Map 5 - Mineral Aggregate Areas include a *Mineral Aggregate Area* designation, over parts of Lots 2 to 5, also included on Figure 8. This designation is consistent with the same designation in the predecessor Regional Official Plan, approved in June 1980. The Official Plan includes a *Stone Aggregates* designation. However, none of Selected Bedrock Resource Area No. 1 has been designated. The Selected Sand and Gravel Resource Areas, north and west of Carlisle, are recognized in the *Gravel & Sand* designation. Evidently Map 5 has not been updated, in accordance with the *Provincial Policy Statement*, since the 1984 ARIP was published.

Map 6 - Transportation designates Centre Road and Campbellville Road as *Existing Arterial Roads*. No specific designations are assigned to the 11th Concession Road or to the Milbrough Line, near the site.



In the context of the *Regional Development Pattern*, agriculture will continue to be the predominant use, in the *Rural Area* policy designation. The Plan recognizes that there are limited uses, which may be considered in the *Rural Area*, that would not interfere with agriculture, including uses made of natural resources. In Part C of the Regional Plan, natural environmental features are addressed in the context of Subsection 1 - Resource Protection; and mineral aggregates, groundwater and agriculture are referred to in Subsection 2 - Resource Utilization.

Part C - 1. Resource Protection

Core Natural Areas, of the Regional natural heritage or greenlands system, are described as Environmentally Significant Areas (ESAs). The general intent of the Plan is to designate and protect these areas (C.1.2.1).

The boundaries of ESAs, identified on the Plan, are somewhat general. More precise boundaries may be defined, in site-specific environmental studies, without plan amendments (C.1.2.2h). The Plan provides that land use changes, within and adjacent to ESAs, will be referred to ESAIEG (Environmentally Significant Area Impact Evaluation Group), for review (C.1.2.2b). It is intended that land use changes will only be permitted where, in addition to meeting other Plan Policies, the changes:

- will not adversely affect, degrade or destroy the area qualities which are the basis of the designation;
- will not cause any significant water quality or quantity impacts; and
- will not adversely affect resource protection policies or plan implementation (C.1.2.2a)

In assessing the appropriateness of land use change, relatively to these criteria, a proponent may be required to prepare an environmental impact study (C.1.2.2c).

The Regional Plan is consistent with Provincial policy, with respect to Provincially Significant Wetlands (PSWs). Land use changes are not permitted within a PSW; and development of adjacent lands will not be permitted, unless it can be demonstrated, by an impact study, prepared in accordance with Provincial guidelines, that the change will not result in:

- loss of wetland functions;
- subsequent demand for future development which will adversely affect existing wetland function;
- loss of contiguous wetland area; and
- conflict with existing site-specific wetland management practices (C.1.2.2d).
-

Adjacent lands are those within 120 m of a PSW or lands connecting wetland areas, within a complex. Where there is overlap, between a PSW and an ESA, the most restrictive policies apply (C.1.2.2e).



Part C - 2. Resource Utilization

2.2 Mineral Aggregates

The Plan recognizes mineral aggregates as essential, non-renewable resources that should be available, with minimal environmental and social disruption. Consistent with Provincial policy, the intent is to protect and ensure proper management of aggregate resources, including progressive rehabilitation, in conjunction with environmental and agricultural land preservation, where appropriate.

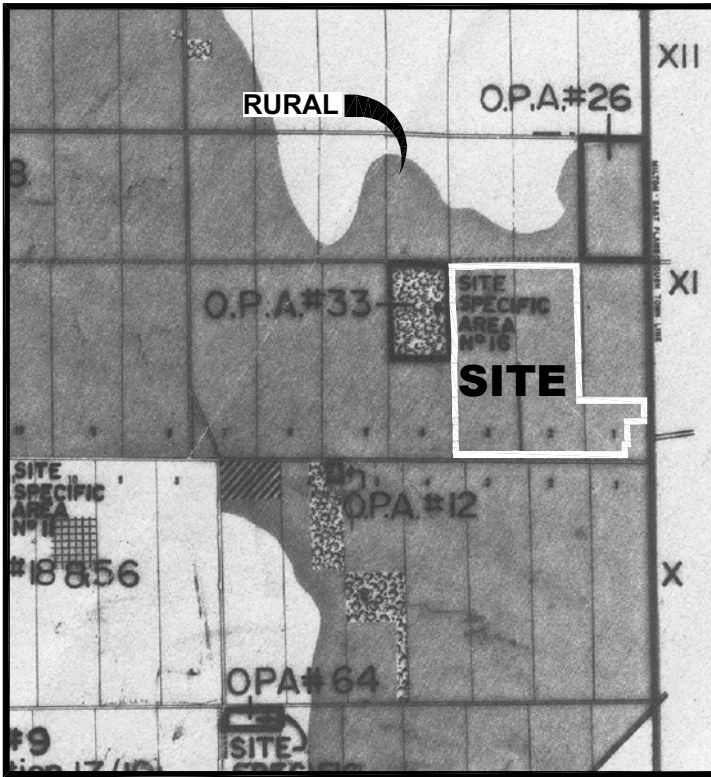
Lands designated *Mineral Aggregate Areas*, on Map 5, are to be protected for future extraction (C.2.2.1). Lower tier municipal Official Plans must conform with these designations and include policies to protect these areas, from uses incompatible with future extraction (C.2.2.2). Other uses permitted, within extraction operations, must also be detailed, at this level. Lower tier Official Plans must set out policies for the establishment of new quarries (C.2.2.3); and new quarries must include provisions to minimize impact on surrounding uses (C.2.2.9). Where a new quarry is within or adjacent to an ESA, the application may be referred to the City's ESAIEG (C.2.2.9).

The Regional Plan indicates that the City will seek progressive rehabilitation of quarries (C.2.2.5); and will monitor operations, within the Region, to determine the effects on environment, transportation, roads and rehabilitation activities (C.2.2.8). Finally, the Region will require lower tier municipalities to regulate the operation of extraction operations, to the extent permitted under the *Aggregate Resources Act* (C.2.2.5).

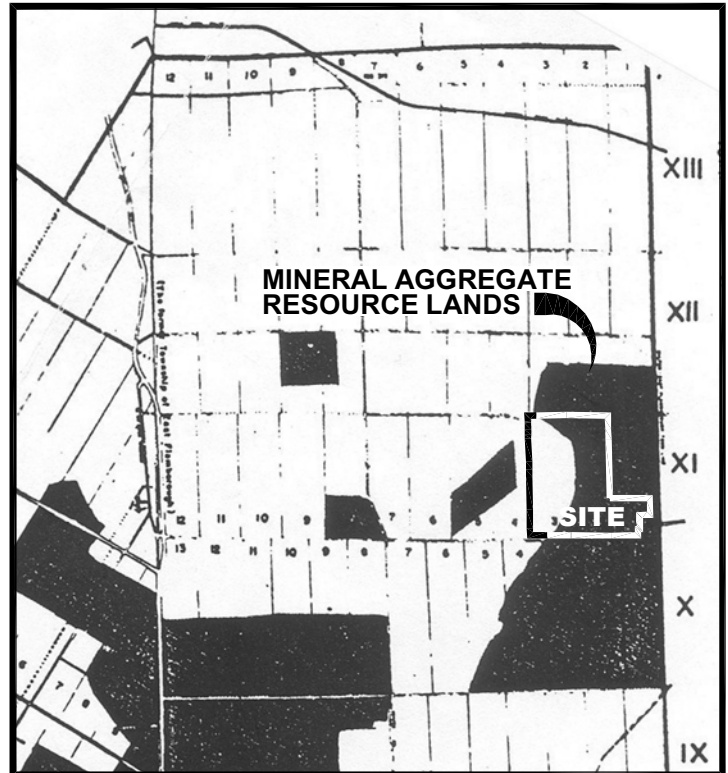
2.3 Groundwater

The general intent of the Regional Plan, with respect to groundwater resources, is to maintain and improve groundwater quality and its role in the water cycle. Policy C.2.3.1b) permits development in Rural Areas, only where the cumulative impact of development, including landscape alterations and/or septic systems, will not threaten the quantity or quality of groundwater resources.





Schedule B, RURAL LAND USE PLAN



Schedule J, MINERAL AGGREGATE AREAS



Figure 9

FLAMBOROUGH OFFICAL PLAN



5.6 Flamborough Official Plan

The *Town of Flamborough Official Plan* was approved in September 1988. An Office Consolidation is dated December 2000. It is divided into six sections. The sections pertinent to this application are:

- B The Rural Area
- C Provincial Plans and Resource Management; and
- D Servicing Program

Relevant Schedules include:

- A Rural Land Use Plan;
- D Environmentally Sensitive Areas;
- E Hazard Lands;
- F Transportation; and
- J Mineral Aggregate Areas

The closest Rural Settlement Area is Carlisle, approximately 4 km to the southwest.

Figure 9 includes excerpts from Schedules B and J. Schedule B indicates the site and adjacent lands are designated *Rural*, except:

OPA 26 lands in Lot 1, fronting on Mountsberg Road, developed as a Rural Residential Estate Development, on Timberrun Road; and

OPA 33, Bronte Creek Estates in the North Half of Lot 4, Concession 11, approved by the OMB in April 1994, as Site Specific Area #15. The approved plan permits up to 130 mobile and manufactured dwellings, subject to a 76 unit first phase, with private communal water and wastewater systems.

Schedule D does not designate any of the site as an ESA;

Schedule E includes the southeast part of Lot 1 and the northerly sector of Lots 2 and 3 in the *Hazard Land* designation. This designation is similar to the Provincially significant wetland area on site. *Hazard Lands* are also indicated in association with the watercourses, north of Concession 11.

Schedule F designates Campbellville and Centre Roads as *Arterial & Regional Roads*. Milborough Line is identified as “*part of the Flamborough Road System*”; and

Schedule J includes Lots 1 and 2; parts of Lots 3 to 5 in *Mineral Aggregate Resource Lands*. This designation extends north and south of the site, in Concessions 11 and 12, in Lots 1 to 3.



B.7.4 When considering amendments to the Plan for the establishment of new pits and quarries or the expansion of existing operations, the following matters will be evaluated by Council:

- (I) compatibility with adjacent existing and planned land uses;
- (ii) demonstration of the need for, and benefit of additional aggregate resource extraction;
- (iii) potential impacts on the environment, including measures required to minimize any adverse impacts;
- (iv) potential impacts on the transportation system;
- (v) the capability of the land for agricultural uses and for the rehabilitation to a use which conforms to this Official Plan or back to an agricultural use where Soil Classes 1 to 4 have been defined. Such lands shall be rehabilitated back to substantially the same acreage and average soil capability for agriculture; and
- (vi) other such matters as Council deems necessary.

B.7.5 All applications for amendments to the Plan shall include the following:

- (I) the location, dimensions, topography, size and description of the site proposed for a Mineral Resource Extraction Area;
- (ii) the location, height, dimensions and use of all buildings or structures existing or proposed to be erected on the site;
- (iii) the location, quality and estimated quantity of the mineral resource;
- (iv) the use of all land, and the location and use of all buildings and structures lying within a distance of 150 metres (500 feet) of the boundaries of the site;
- (v) existing and anticipated final grades of all lands and excavation and the limits of excavation within the site;
- (vi) surface water diversion, storage and drainage provisions;
- (vii) all entrances, exits and proposed routes to be used by associated transport;
- (viii) locations of stockpiles for overburden stripping and mineral resources;
- (ix) proposed tree screening and berming;
- (x) sequential and final rehabilitation plans;
- (xi) extent of adjacent property holdings which may be intended for future mineral resource extraction operations, where appropriate;
- (xii) hydrology, soil, wildlife or vegetation studies which may be required by Council due to specific site concerns; and
- (xiii) other information as Council deems necessary.



Where lands in the RURAL designation are not suited to agriculture, non-farm related, residential development may be considered. In addition, other land uses may be considered subject to the policies of this Plan.

Policies to recognize mineral aggregate resources and to protect them from incompatible land uses are set out in Section B.7 - Extractive Industrial:

OBJECTIVE: *To ensure that aggregate extraction occurs with minimal social and environmental effects and that extraction sites are rehabilitated to an after-use which conforms to this Plan.*

It is the intent of Council to recognize the local, regional and provincial significance of MINERAL AGGREGATE RESOURCES within the Town and to provide for the establishment of extractive operations and their long term protection from incompatible land uses. In this regard, the establishment or expansion of pits and quarries shall require amendment to this Plan and the Town's Zoning By-law. Further, Council shall encourage the rehabilitation of pits and quarries to an after-use which conforms to this Official Plan.

Two subsections are reproduced on Page 23. Subsection B.7.4 is a list of criteria to be evaluated by Council; and B.7.5 outlines the application requirements.

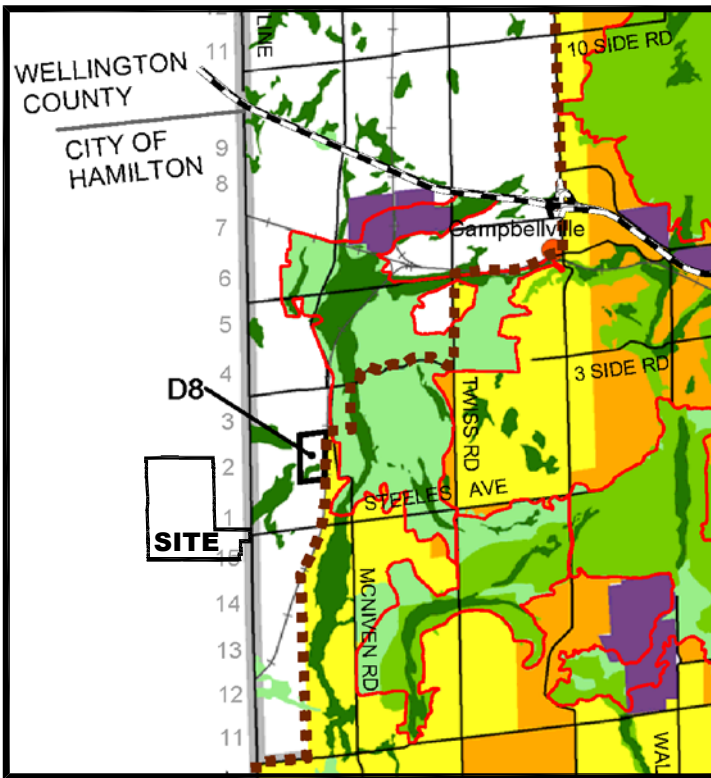
Section C - *Provincial Plans and Resource Management* includes policies for Provincial consultation and prevention of conflicting land uses in prime aggregate areas:

C.5.1 Council recognizes that there are significant MINERAL AGGREGATE RESOURCE lands existing in the Town as indicated on Schedule "J". In this regard, when considering an application to amend the Plan, for a use other than mineral extraction. Council shall consult with the Ministry of Natural Resources with regard to:

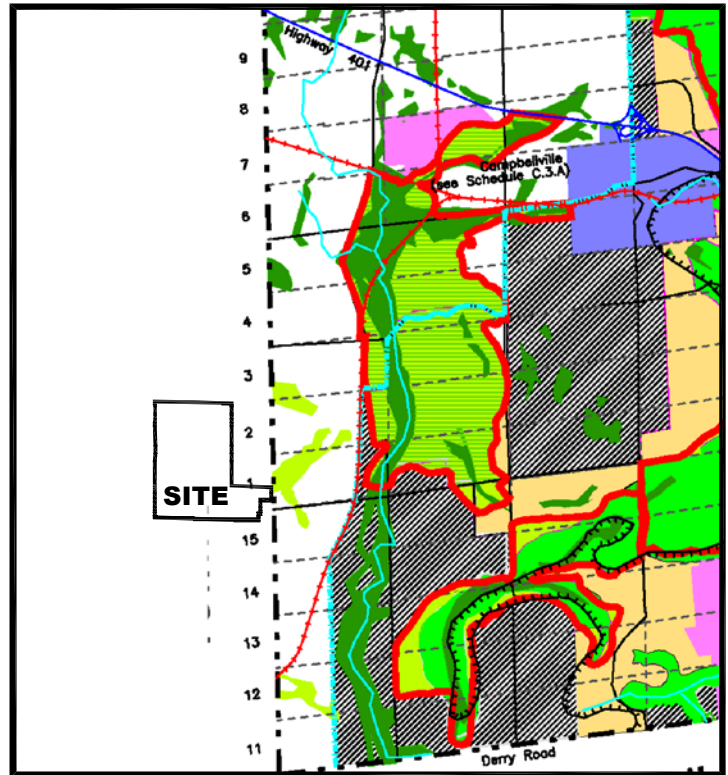
- (I) the feasibility of extraction in the area;*
- (ii) whether the proposed development or use serves a greater long term public interest than does the mineral aggregate extraction; and*
- (iii) the anticipated impact of the proposed development or use on the future availability of the aggregate resource.*

C.5.2 Uses permitted with the MINERAL AGGREGATE RESOURCE AREAS will be restricted to existing uses plus agricultural, open space and conservation and forestry uses which do not involve significant new buildings or structures. Council shall not permit the establishment of uses or activities whose presence would either prevent or conflict with the possible development of a pit or quarry extraction operation.





MAP 1 - THE REGIONAL STRUCTURE
 Source: The Region of Halton, Official Plan Amendment No. 25, June 2004



SCHEDULE A - LAND USE PLAN
 Source: Town of Milton Official Plan, Consolidated January 2001



Figure 10
REGION OF HALTON AND
TOWN OF MILTON OFFICIAL PLANS

5.7 Halton & Milton Official Plans

The Town of Milton, in the Region of Halton, is adjacent to the east of the site. Those planning policies are relevant because there are potential cross boundary and transportation considerations, given that the proposed haul route extends, at least in part, through Milton.

The Region of Halton Official Plan was approved by the Minister in November 1995. On June 23, 2004, Council adopted OPA No. 25: “*An Amendment to Incorporate Official Plan Review Documents and Related Matters*”. This Plan is based upon the planning concepts of land stewardship and healthy communities. OPA 25 has been referred to the OMB. As our Figure 5 - Greater Golden Horseshoe West Quarries indicates, Halton has a significant number of dolostone quarries, within Burlington and Milton, in addition to four active licensed areas of Queenston shale: the Hanson Brick Ltd. quarries in Aldershot, Burlington and Milton; and the Century Brick - Halton Hills shale quarry.

Lands east of Milborough Line are generally within Halton’s *Agricultural Rural Area*. There is a large *Mineral Resource Extraction Area*, west of Twiss Road and north of Reid Side Road. Campbellville is a designated *Hamlet*.

Town of Milton Official Plan designations, east of the site, between Steeles Avenue and Campbellville Road, are primarily *Rural*, with *Greenlands A* and *Greenlands B*, consistent with the Regional Plan.

Campbellville is a Hamlet, with boundaries more precisely defined on Schedule C.3.A, *Hamlet of Campbellville Secondary Plan*; and

A *Mineral Resource Extraction Area* designation applies west of Twiss Road, north of Reid Side Road, coloured pink on Schedule A.

Schedule E - Transportation Plan, designates Campbellville Regional Road 9 as an “*Arterial*”; and Milborough Line is a “*Collector*”.

Much of Milton, east of Milborough Line, is within the Niagara Escarpment Plan area.



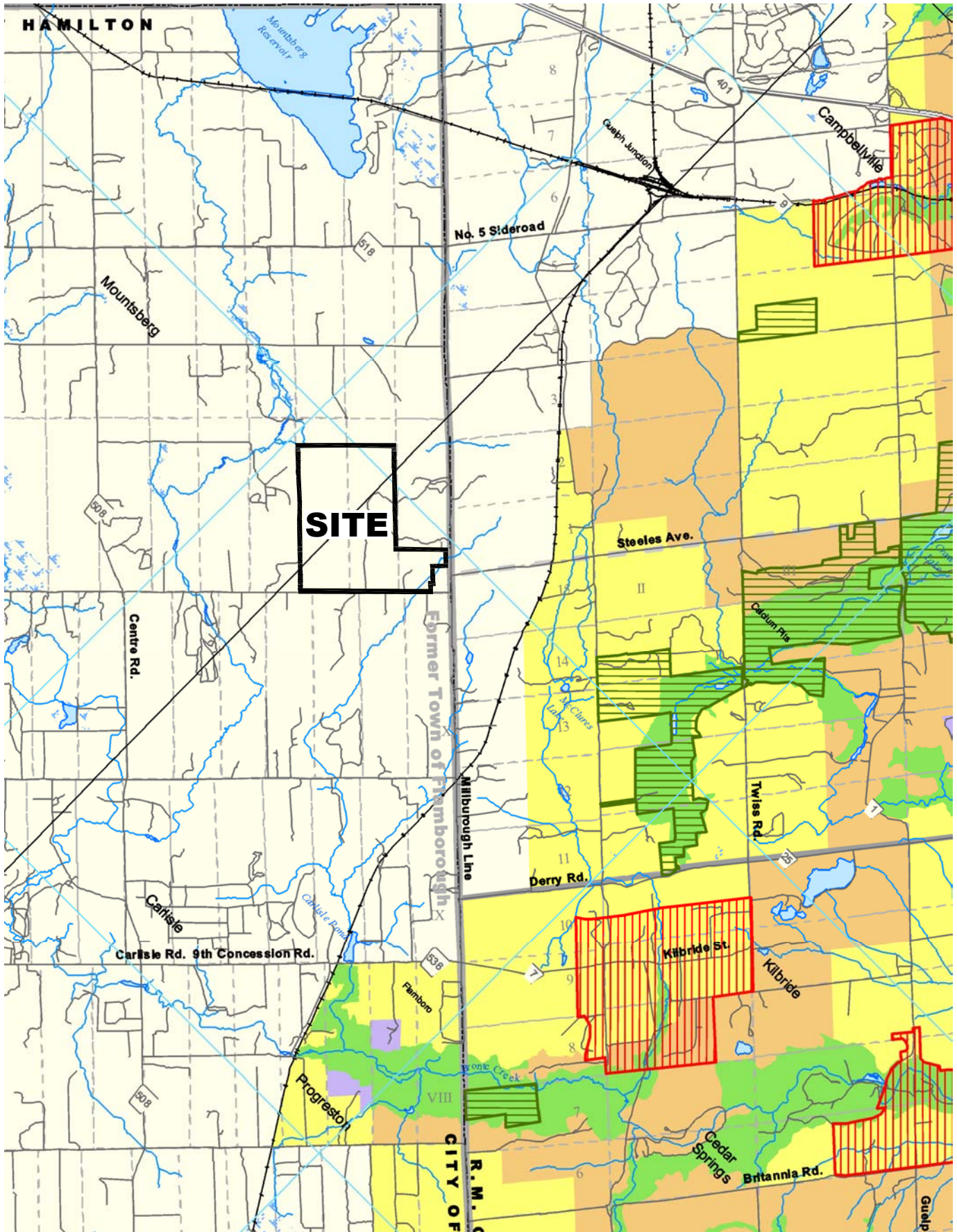


Figure 11
 NIAGARA ESCARPMENT PLAN

Scale: 1:50,000

Source: Niagara Escarpment Plan, Map 3, November 2001



5.8 Niagara Escarpment Plan

The Niagara Escarpment is recognized as a World Biosphere Reserve and a major source of Amabel dolostone. The Amabel forms the caprock of the Escarpment. The Plan area extends westerly to the CPR line, which crosses Steeles Avenue, approximately 1 km east of Milborough Line.

Campbellville is a *Minor Urban Centre*, within the Niagara Escarpment Plan. It does not appear that any of the roads, within the Plan south of Campbellville Road, a designated truck route, will be affected by traffic from the site.

Tributary areas of Mountsberg and Flamboro Creeks, located east of Milborough Line, drain southwesterly toward the proposed dolostone quarry. There does not appear to be any direct inter-relationship, between the site and the natural resources of the Niagara Escarpment Plan area.

The Niagara Escarpment Commission and its staff have consistently advocated the establishment of new pits and quarries outside of the Plan area. This proposal by Lowndes Holdings Corp. achieves that goal.



5.9 Zoning By-Law 90-145-Z

Former Town of Flamborough Zoning By-Law 90-145-Z was approved by the OMB on December 21, 1992. Figure 12 is an excerpt from Schedule A-2 to the August 2002 Office Consolidation, which incorporates more than 200 amendments, to By-Law 200-64-Z. In 1994, the Ontario Municipal Board approved a Zoning By-Law to establish a Residential zone, for manufactured and mobile homes, on the former campground, labeled By-Law 93-65-Z on Figure 12.

The proposed dolostone quarry site is currently included in the *Agricultural (A)* and *Conservation Management (CM)* zones. The former does not permit a pit or quarry; and the latter appears to reflect flood prone areas, mapped by the Conservation Authority. Development of a quarry would require a change to the *Extractive Industrial (EI)* zone.

Extractive Industrial zone provisions are included in By-Law Section 32. Permitted uses include:

Accessory Business, Professional or Administrative Offices

Accessory Open Storage

Aggregate Storage

Agriculture, but does not include any dwelling unit

Concrete and Asphalt Mix Manufacturing

Processing of materials extracted from a pit or quarry, including screening, sorting, washing, crushing, blending, the manufacture of lime and other operations allied to the extractive industrial use

Yard requirements are consistent with the *Ontario Provincial Standards*, with some exceptions. These exceptions do not apply to the proposed quarry, as provided in Section 66 of the *Aggregate Resources Act*.

Subsection 32.2(j) Fencing requires a continuous perimeter fence of 1.2 m minimum height; and

Subsection 32.2(k) Planting Strip specifies a 15 m wide perimeter buffer, with a berm of 1 m minimum height; and with trees and shrubs of 1 m minimum height on planting.



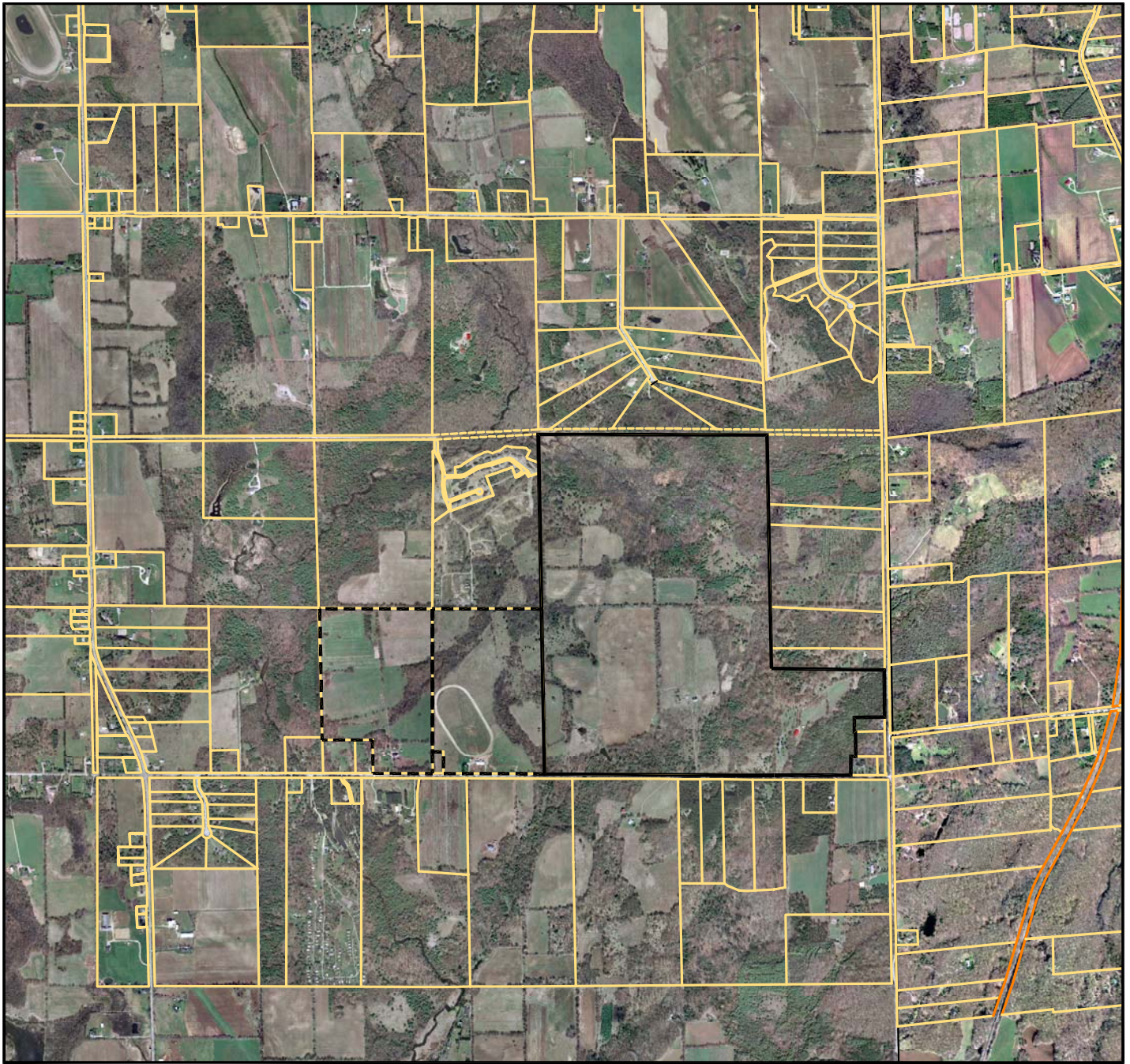
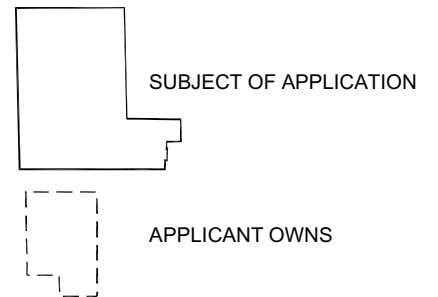


Figure 13
SITE ENVIRONS



Scale: 1 : 25,000

Source: First Base Solutions

6. EXISTING LAND USE

6.1 Site Environs

The rural area of the former Town of Flamborough exhibits a relatively high degree of land fragmentation, within the area mapped as *Selected Bedrock Resource Area No. 1*. The same is true in the adjacent part of the Town of Milton, as indicated by the lot fabric overlay on Figure 13.

Surrounding land uses comprise a mix of rural residential, natural areas and agricultural. The limited agricultural activity reflects soil and drainage conditions. The rural residential uses occur as severed lots, of varying size, fronting on the Concession and Sideroads; and as lots in planned developments, at three adjacent locations:

Glenron Road, 14 Lots ~ pre 1980
Timberrun Road, 18 Lots ~ 1994
Bronte Creek Estates, ("*Sierra Lane*") 31 Lots ~ 1994

The Bronte Creek Estates subdivision is currently being developed as a condominium, with private communal sewage and water services, by Sierra Lane (2000) Developments Inc. Lot sizes are approximately 1,000 sq. m. (10,800 sq. ft).

Abutting land uses are summarized as follows:

East -	Rural residential on severed lots;
North -	Rural residential on large subdivision lots and agricultural;
West -	Rural residential small lots and an equestrian farm; and
South -	Rural residential and agricultural

A number of the rural residential uses support home businesses, including a kennel and canoe builder.

Access to the site is via the 11th Concession Road East or from Milborough Line. The existing road system in the area takes a conventional rural grid pattern of concession and side roads, with local roads serving the interior portions of the subdivisions noted above.

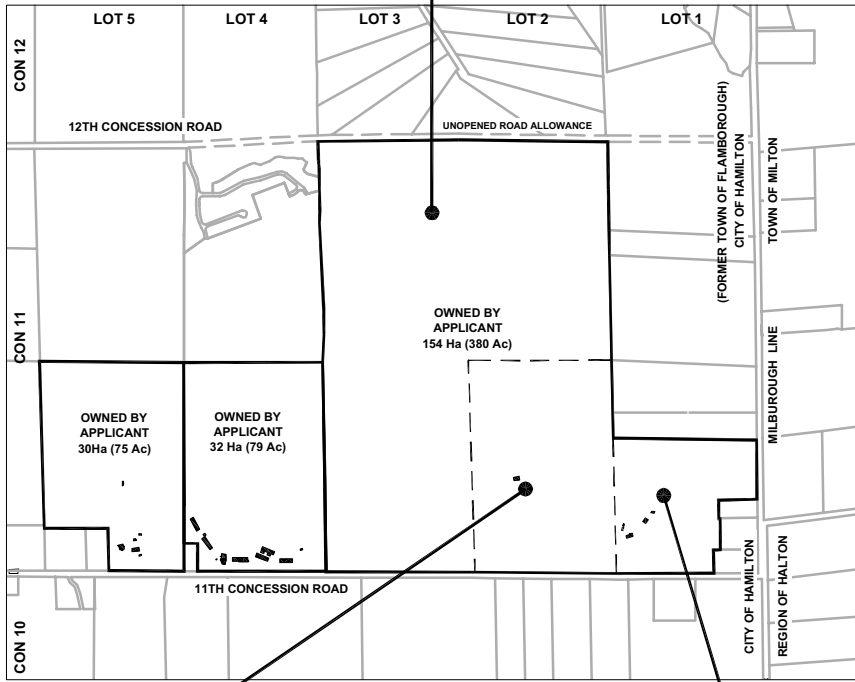
Overall, a rural character prevails, with residential, natural and agricultural uses. Many areas, previously cleared for farming, have reverted back to a more natural condition. In proximity to Campbellville, this rural character gives way to a semi-urban environment, influenced by proximity to major transportation corridors.



LOT 3 & PART LOT 2, CONC 11

P.I.N 17525-0157 (LT)
"LAURENSSEN & PITTENS"

AGRO BROTHERS LIMITED, 1958
HUNTER, URSULA, 1968
WILSON, ALLAN, IN TRUST 1969
TASHAN LIMITED, 1970
226025 FARMS LIMITED (FREELTON FARMS), 1970
ZAINOZ, CHARLES, UNDIVIDED 1/2 INTEREST, 1970
CITY OF HAMILTON BY TAX SALE TO
LAURENSSEN, JOHN AND PITTENS, JOHN, 1996
2030607 ONTARIO LIMITED, AUGUST 2003
NOW LOWNDES HOLDINGS CORP., MARCH 2004



PART LOT 2, CONC 11

P.I.N. 17525-0158 (LT)
"SZYDLOWSKI"

BAKER, PERCY AND DAPHNE, 1961
VAN DEN BREENMEN, JOHN AND GERTRUDA, 1966
VAN HOEVE, MARTINA, 1968
NEWTONBROOK PLAZA LIMITED, 1969
ZAINOZ BERNARD, INTRUST 1/2 INTERSET, 1969
CITY OF HAMILTON BY TAX SALE TO
SZYDLOWSKI, JACK AND JOHANNA, 1997
2030607 ONTARIO LIMITED, AUGUST 2003
NOW LOWNDES HOLDINGS CORP., MARCH 2004

PART LOT 1, CONC 11

P.I.N. 17525-0164 (LT)
"LISSON"

MCCARTNEY, FRED, 1946
LISSON, ALLEN AND LORETTA, 1971
2030607 ONTARIO LIMITED, FEBRUARY 2004
NOW LOWNDES HOLDINGS CORP., MARCH 2004

Figure 14
CHAIN OF TITLE



Scale: 1 : 25,000



6.2 Onsite Use

The site was formerly three parcels: the Lisson property, comprising 16 ha (40 ac) in Lot 1; and two original Township Lots 2 and 3, each of about 69 ha (170 ac). Historically, Lots 2 and 3 were divided into north and south halves. Concession Road 12 was never opened, in this area. Figure 14 illustrates the chain of title for the three component parts of the site. Lowndes Holdings Corp., formerly 2030607 Ontario Limited, purchased lands from:

Szydlowski, the South Half of Lot 2, Concession 11, in August 2004, which comprised about 32.7 ha (80.9 ac) and currently contains a small barn, with access to Concession 11;

Laurensen & Pittens, Lot 3 and Part of Lot 2, Concession 11, also in August 2004. This 103.2 ha (254.9 ac) property is vacant. It once contained a small gravel pit, north and west of its Concession 11 entrance.

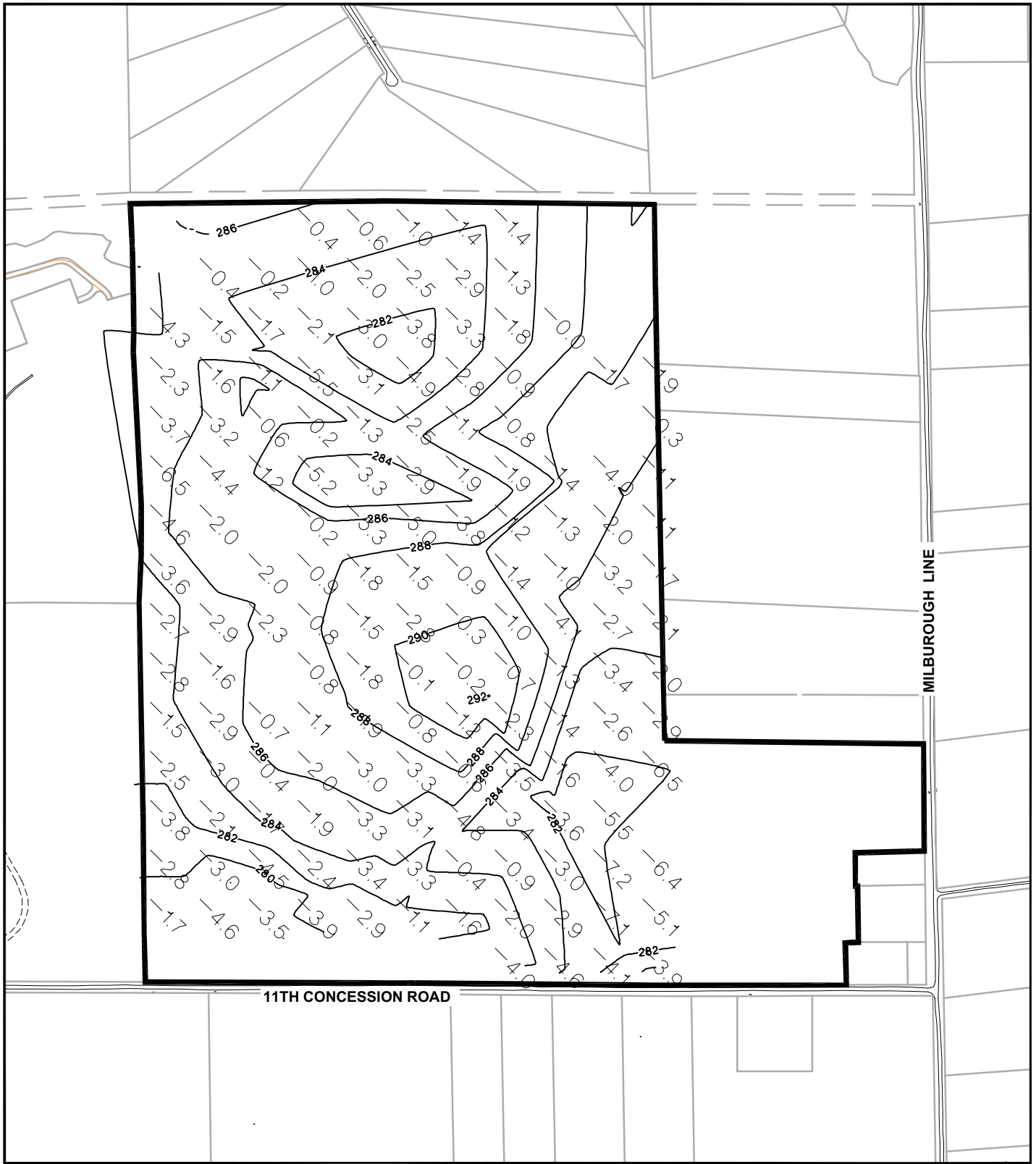
Lisson was purchased in March 2004. Still occupied by Mr. and Mrs. Lisson, who have developed a home, coach house, sheds and a barn, with access to Concession 11 and Milborough Line.

Appendix 2 includes Previous Use Inventory documentation and historical airphotos.

In the course of its pre-purchase due diligence, Lowndes Holdings Corp. was advised, by the MOE Freedom of Information & Protection of Privacy office, in July 2003, that there were no records related to environmental compliance, in that Ministry's Hamilton District Office; Spills Action Centre; Investigations and Enforcement Branch; or Environmental SWAT Team. However, as a result of further investigations, during May 2004, evidence of previous environmental impairment was disclosed. Evidently, during the 1990s, the site was used by Flamborough Iron & Metal to recycle metal and wire products. Plastic coated wire was burned on site, to recover its metal cores, leaving an ash residue. Soil quality investigations were performed in July 1996. In March 1998, the MOE issued a Cleanup Order, under the *Environmental Protection Act*. Decommissioning, including the removal and disposal of soil, ash and shingles was completed during September 1998. We are advised, by Mr. Brad Farnand, the MOE Hamilton District Office Abatement Officer, that the decommissioning was considered complete.

Minor quantities of waste, including building demolition materials and scrap tires, were removed by Lowndes Holdings Corp., during its general site cleanup in the fall of 2003.





— 0.9 DRIFT (OVERBURDEN) THICKNESS
 — 290 — INFERRED BEDROCK 2m CONTOURS

Figure 15

DRIFT THICKNESS



Scale: 1 : 10,000

7. GEOLOGY

JEGEL (John Emery Geotechnical Engineering Limited) was retained to investigate the physical characteristics of the site. This investigation included overburden materials and an assessment of the quality and quantity of the underlying bedrock, for construction aggregates. Its *Geological Investigation*, July 2004, is included in Appendix 4.

7.1 Regional Geology

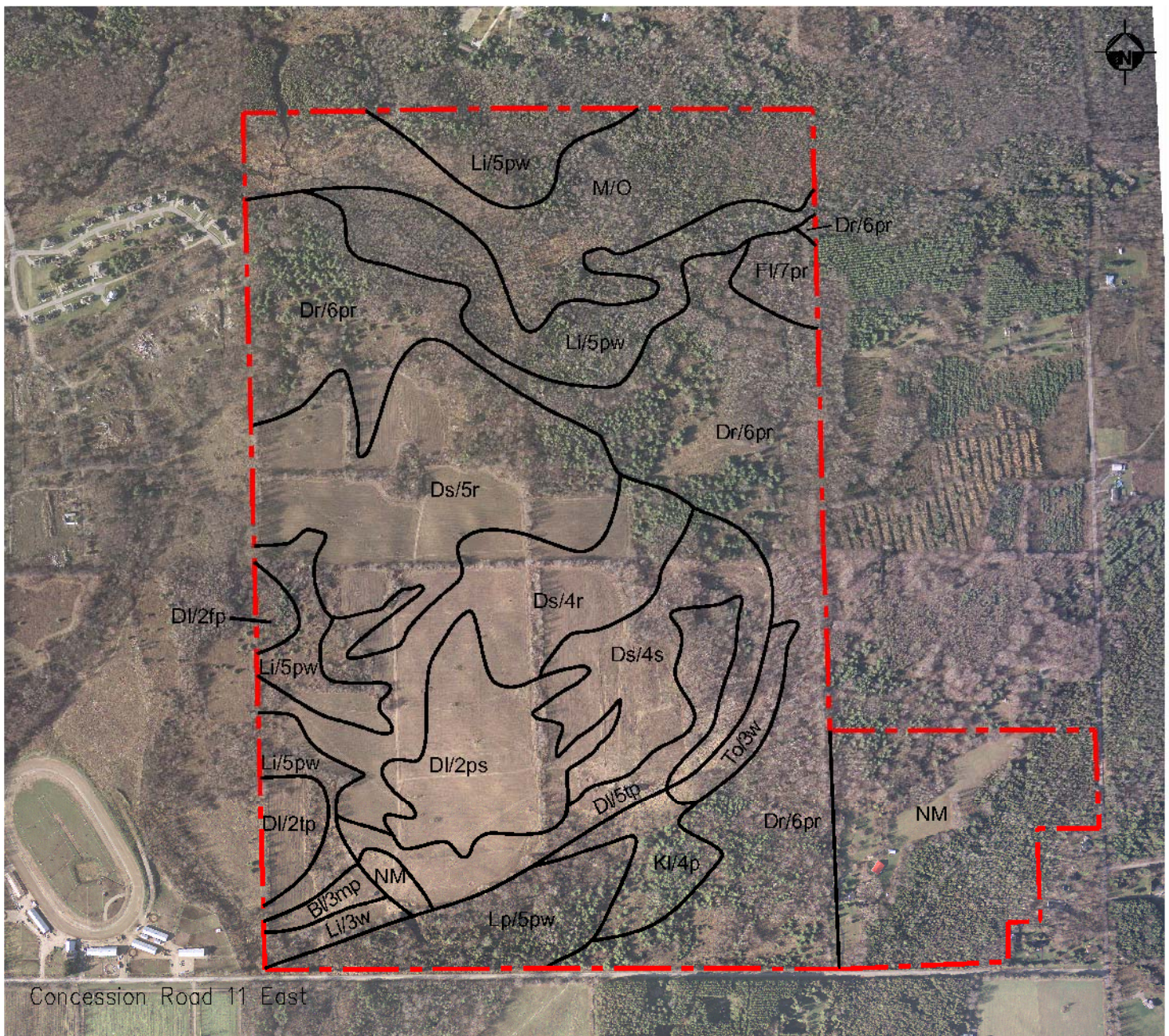
The site is close to the eastern edge of a major geological structure, known as the Michigan Basin. This shallow Paleozoic basin is centered in the State of Michigan. Its erosional edge in Ontario is the Niagara Escarpment. The Escarpment is caused by the presence of hard, weather resistant, 420 million year old dolostones, of the Middle Silurian Amabel and Lockport Formations, north and east of Burlington, respectively. The Amabel Formation is part of a series of barrier reefs along the edge of the Michigan Basin, while the Lockport Formation was formed in a lateral facies, from lime mud precipitation and fossil debris. Both rock formations can produce high quality construction aggregates.

7.2 Surficial Geology

The proposed dolostone quarry is within the Flamborough Plain Physiographic Region. This region is characterized by shallow glacial drift over dolostone bedrock, with numerous east-west and southeast-northwest aligned drumlins and occasional low-lying swampy areas. The land surface was strongly influenced by the Lake Ontario ice lobe of the Laurentide Ice sheet, about 13,000 years ago. This lobe scraped some of the bedrock surface clean, during its advance; and left deposits of ground moraine tills and melt-out tills, in the form of till sheets and drumlins, during its melting period. These deposits are referred to as the Wentworth till. The hilly terrain is attributed to bedrock knobs with thin overburden; a deposit of gravel and silty sand, in the southwest; and a lacustrine sand and silt, overlain by recent peat and saturated organic silt, in the northern part.

Figure 15 illustrates drift thickness contours, based upon 39 test pits, excavated during October and November 2003. Overburden thickness varies from less than 0.5 m to more than 5 m, an average of 2.4 m. This is considered to be an ideal depth for quarry development. The volume of overburden, comprising topsoil, sand, gravel and till, available for quarry berms and rehabilitation, is estimated at 2.4 million cubic metres.





Soil Series \swarrow CLI Rating
 Lp/5pw

Symbol	Soil Series	Drainage	Parent Material	CLI Rating
DI	Dumfries loam	Good	Gravelly, sandy loam till	2ps, 4s, 5tp
Ds	Dumfries - shallow phase	Good	Gravelly, sandy loam till	5r
Dr	Dumfries - rocky phase	Good	Gravelly, sandy loam till	6pr
KI	Killean loam	Imperfect	Loam till	4p
LI	Lily loam	Poor	Loam till	5pw
Lp	Lily - peaty phase	Very Poor	Loam till	5pw
BI	Burford loam	Good	Outwash sand & gravel	3mp
To	Toledo silt loam	Poor	Lacustrine silty clay loam	3w
FI	Farmington loam	Excessive	Excessive Bedrock	7pr
M	Muck	Very Poor	Organic	O
NM	Area Not Mapped	(Disturbed or Not Part of Study Area)		

Descriptions of CLI - Soil Capability for Agriculture Subclasses

Subclass	Description
w	excessive wetness
f	low fertility
t	topography
m	droughty
e	erosion
p	excessive stoniness
s	combination of d, f, or m
r	depth to bedrock
i	soils subjected to inundation by streams or lakes

0 100m

Scale = 10,000



Figure 16

AGRICULTURAL SOILS

Scale: ±1 : 10,000

Source: Stovel and Associates Inc., June 2004



8. AGRICULTURAL SOILS

Stovel & Associates Inc., consulting agrolologists, was retained to examine and identify the environmental characteristics of the surficial soils; and to provide a site specific interpretation of soil capability for agriculture, in accordance with the CLI (Canada Land Inventory) soil classification system. Figure 16 - Agricultural Soils is derived from Stovel's June 2004 *Agricultural Report*, bound in Appendix 3.

As indicated in Section 7.2, surficial soils have developed from a stoney, morainal till deposit. Outwash deposits, lacustrine deposition and organic soils are also present. Seven soil series were identified on the site. The Dumfries soil series predominates, with a muck area in the north and relatively small zones of Burford, Farmington, Killlean, Lily and Toledo series, mapped on Figure 16.

Dumfries soils are a gray brown luvisol, developed from well drained, coarse textured till. Three phases were identified on this property:

Dumfries Loam (DI) occurs in the south central portion on slopes of 1.5% to 12%. Removal of surface stones is required, for cultivation. Agricultural limitations include droughtiness, low inherent fertility and topography. They are rated as CLI Class 2 to 5, depending on the slope.

Dumfries - Shallow Phase (Ds) occurs where bedrock is within 1 m of the surface. Limitations including rockiness, stoniness, droughtiness and low inherent fertility lead to a CLI Class 5r.

Dumfries - Rocky Phase (Dr) exhibits more than 30 cm of loamy soil overlying dolostone bedrock, with frequent outcrops and large boulders. Bedrock outcrops and large boulders limit cultivation, making these soils suitable for pasture, with a CLI rating of 6pr.

Muck (M/O) soils occur in the northern portion of the site. They consist of a minimum of 40 cm of organic material, underlain by mineral soil or bedrock. The majority of Muck soils, in this area, are not suited nor utilized for agricultural purposes.

The site comprises Class 2 to 7 agricultural capability. Classes 2 to 3 soils represent about 9%; with the remaining 91% made up of Class 4 to 7 soils and organics. Therefore, the site is not "*prime agricultural land*" in the context of the *Provincial Policy Statement*. Class 1 to 4 soil capability, referred to in Flamborough Official Plan Section B.7.4(v) represents approximately 24% of surficial soils.



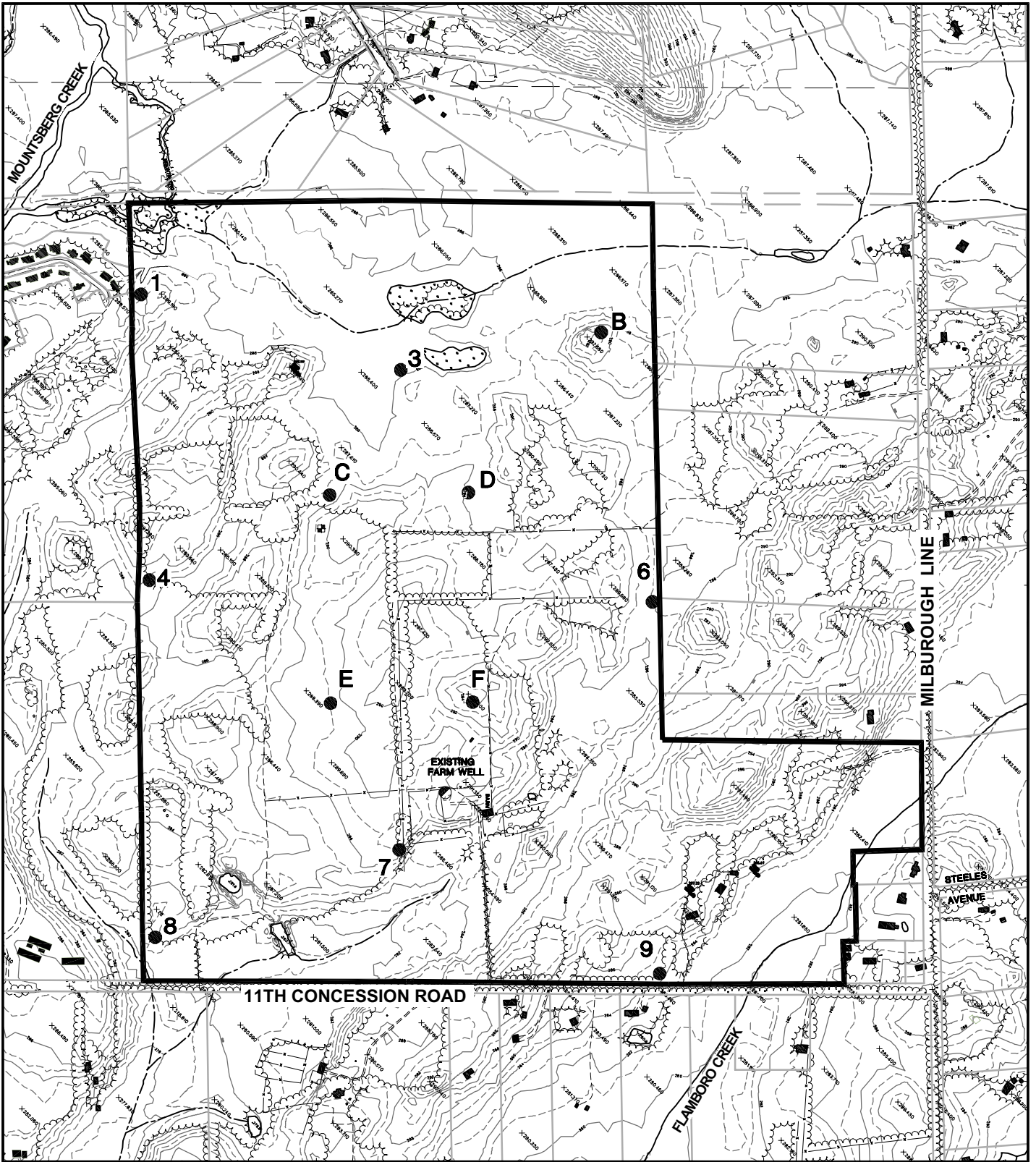


Figure 17
BOREHOLES

Scale: 1 : 10,000



9. AGGREGATE RESOURCES

9.1 Quantity

Twelve boreholes were drilled within the area of the proposed quarry, to establish rock types, suitability and quantity of the bedrock, during February, March and April 2004. These boreholes were drilled to depths of 35 to 45 m, through the dolomitic limestone into the underlying shale. Cores were recovered, for the full length of each borehole, and stored in core boxes, under the supervision of Mr. Zoltan Katona, P. Eng., Senior Geological Engineer. The core boxes were transported to the JEGEL (John Emery Geotechnical Engineering Limited) laboratory in Toronto, where they were inspected and logged.

Five representative sets were selected, from the twelve cores, for quality testing. These cores were vertically sawn in half, longitudinally. One half was retained for crushing and testing; the other vertical halves of the cores are stored in a portable, onsite building.

Three rock formations were identified:

Amabel Formation Dolostone forms the top layer, ranging from 27 to 40 m thickness, with an average depth over the site of 32.6 m. Recovery from the cores averaged 95.4%;

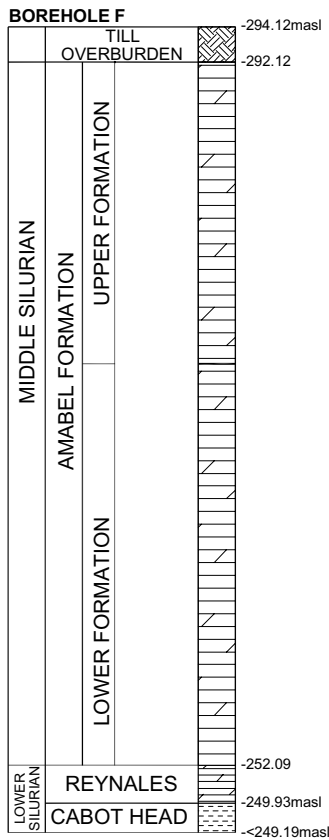
Reynales Formation Dolostone underlies the Amabel, an average 2 m thick greenish to dark gray, thin bedded with thin shale partings; and

Cabot Head Formation, the lowest rock type penetrated, is a dark green to maroon calcareous shale, with thin layers of sandstone, drilled for about 2 m, to confirm that the full depth of the dolostones had been penetrated.

The drilled area covers approximately 100 ha (247 ac). Based upon the 32.6 metre average depth, this area is estimated to contain approximately 32.6 million m³ of Amabel dolostone, which could produce approximately 84 million tonnes of high quality aggregate, assuming 95% recovery.

The low overburden depth described in Section 7.2, plus unusually deep Amabel dolostone at this site, combine to provide a very high yield of quality aggregate per hectare of extraction area.





**MAXIMUM AMABEL THICKNESS
AT PROPOSED QUARRY**

**BOREHOLE F
STRATIGRAPHIC SECTION**

**TABLE 2 PHYSICAL TEST RESULTS OF LOWER AMABEL PART OF CORES
PART OF LOT 1 AND ALL OF LOTS 2 AND 3, CONCESSION 11, FLAMBOROUGH TOWNSHIP, CITY OF HAMILTON**

Physical Tests	BHB2	BHF2	HYDRO 1-2	HYDRO 8-2	HYDRO-9-2	AV'GS	RANGES	Spec. Requirements	
Sample No.	2.0-38.0	23.2-42.0	19.0-35.0	16.7-32.5	17.1-32.5			HL4&8	Str.Conc.
Tested Interval (m)									
Petrographic Number									
Granular	100.0	100.0	100.0	101.2	100.0	100.24	100.0-101.2	N/A	N/A
H.L.& Concrete.	100.0	102.1	104.5	102.9	106.2	103.14	100.0-106.2	N/A	140(max)
L.A. Abrasion Loss (%)									
LS-603	31.1	32.2	31.4	33.9	31.2	31.98	31.1-33.9	N/A	N/A
Relative Density LS-604	2.691	2.651	2.654	2.634	2.670	2.660	2.651-2.691	N/A	N/A
Absorption (%) LS-604	1.360	1.651	1.430	1.770	1.326	1.507	1.326-1.770	2(max)	2(max)
Unconfined Freeze-Thaw Loss (%)									
LS-614	2.6	2.9	1.7	1.0	1.0	1.84	1.0-2.9	15(max)	6(max)
Magnesium Sulphate									
Soundness Loss (%) LS-606	2.6	2.6	2.6	3.2	3.6	2.92	2.6-3.6	12*&15(max)	12(max)
Micro-Deval Abrasion Loss									
Coarse Agg.(%) LS-618	8.8	10.1	9.3	9.7	9.0	9.38	8.8-10.1	21(max)	17(max)
Micro-Deval Abrasion Loss									
Fine Agg.(%) LS-619	17.8	18.1	15.8	15.1	16.1	16.58	15.1-18.1	25(max)	20(max)
	*surface course only		N/A not applicable						
Petrographic Composition									
Carbonate (hard) (%)	100.0	96.5	84.5	98.9	86.7	93.32	84.5-100.0		
Carbonate (medium hard) (%)	0.0	1.8	0.0	0.0	7.2	1.80	0.0-7.2		
Gypsum (<10% gypsum) (%)	0.0	0.6	13.3	0.0	3.1	3.40	0.0-13.3		
Total Good Agg (%)	100.0	99.0	97.8	98.9	96.9	98.52	96.9-100		
Carbonate (soft, sl'tly shaley)(%)	0.0	1.0	2.2	0.9	3.1	1.44	0.9-2.2		
Total Fair Agg. (%)	0.0	1.0	2.2	0.9	3.1	1.44	0.9-2.2		
Carbonate (shaley) (%)	0.0	0.0	0.0	0.2	0.0	0.04	0.0-0.2		
Total Poor Agg. (%)	0.0	0.0	0.0	0.2	0.0	0.04	0.0-0.2		
Shale	0.0	0.0	0.0	0.0	0.0	0.0	0.0-0.0		
Total Deleterious Agg. (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0-0.0		

**Table 2
PHYSICAL TEST RESULTS OF LOWER AMABEL CORES**



9.2 Quality

The Stratigraphic Section, on page 43 illustrates the maximum Amabel thickness, which was proven at Borehole F. A whole rock chemical analysis confirms that the chemical composition of the main rock type is the Provincially significant Amabel dolostone, considered to be the highest quality dolostone in Ontario. The Amabel formation is one of the most consistent sources of high quality aggregates due to its superior hardness, toughness, crushability, workability and durability.

The Amabel dolostone has been separated into two units:

The upper, average 14 m thick unit appears to be of bioherm reef origin - a light brownish gray fine crystalline, fossiliferous dolostone, having some brittle sections. This dolostone can be used to produce a higher fraction of fine aggregate.

The lower, average 18.6 m thick unit is light to dark, blueish gray, fine crystalline, fossiliferous dolostone, likely part of a biostrome reef, which was deposited in calmer waters.

Table 2, from the JEGEL Report, bound in Appendix 4, summarizes the test results from 5 boreholes, with the averages, ranges and Ontario specification requirements.

Based upon the logging of the cores and the physical test results, the full depth of the Amabel dolostone is considered suitable for hot mix asphalt paving, concrete paving and structural concrete for both coarse and fine aggregates. All petrographic numbers, unconfined freeze-thaw, magnesium sulphate soundness and micro-Deval abrasion coarse and fine aggregate losses are within the specification requirements for these uses. The upper 14 m exhibits slightly higher absorption, attributed to its somewhat more porous and brittle nature. Specification conformity can be assured by selective processing methods. No chert or quartz were observed, in any of the Amabel cores. No karst topography or features were detected in the rock assemblage.

The approximate 2 m thick layer of the Reynales Formation meets the requirements for Granular A and Granular B Type II.



Table 3
ENVIRONMENT CANADA WATER BUDGET

Milton Kelso, ON. WATER BUDGET MEANS FOR THE PERIOD 1971-1986 DC20492											
LAT.... 43.50		WATER HOLDING CAPACITY...130 MM					HEAT INDEX... 35.90				
LONG... 79.95		LOWER ZONE..... 78 MM					A..... 1.068				
DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-7.4	65	13	17	1	1	0	29	61	126	322
28- 2	-6.1	62	25	39	2	2	0	61	60	127	388
31- 3	- .9	79	53	70	8	8	0	115	16	127	473
30- 4	6.0	74	70	20	33	33	0	59	0	125	552
31- 5	12.6	79	79	0	77	75	-2	17	0	111	636
30- 6	17.0	82	82	0	107	100	-7	6	0	86	723
31- 7	20.4	67	67	0	131	118	-13	1	0	34	794
31- 8	19.4	94	94	0	115	92	-23	0	0	36	895
30- 9	14.9	94	94	0	76	65	-11	12	0	53	995
31-10	8.7	70	70	0	39	37	-2	9	0	77	72
30-11	2.8	86	77	5	13	13	0	35	4	111	161
31-12	-3.3	94	43	27	2	2	0	51	27	128	253
AVE	7.1 TTL	946	767	178	604	546	-58	395			
Milton Kelso, ON. STANDARD DEVIATIONS FOR THE PERIOD 1971-1986 DC20492											
DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	2.4	33	14	18	1	1	0	28	55	13	66
28- 2	2.9	32	21	44	2	2	0	56	54	13	54
31- 3	2.3	33	32	51	6	6	0	63	37	14	49
30- 4	1.7	31	31	37	8	8	0	48	0	21	55
31- 5	1.8	35	35	0	12	14	8	28	0	34	78
30- 6	1.2	37	37	0	8	28	26	13	0	37	90
31- 7	.7	40	40	0	5	33	33	5	0	35	80
31- 8	1.1	50	50	0	7	34	36	0	0	46	65
30- 9	.9	55	55	0	5	20	20	37	0	53	87
31-10	1.8	35	35	0	8	7	4	22	0	48	36
30-11	1.5	43	42	7	5	5	0	51	8	29	57
31-12	2.4	23	24	16	3	3	0	41	23	4	62



10. WATER RESOURCES

10.1 Climate

Seasonal and annual variations in climate result in considerable differences in storm water runoff and ground water recharge, by infiltration. Significant variability in precipitation patterns has been recorded. Differences in runoff and recharge are also influenced by surficial soils, topography, plant communities, soil freezing and thawing. The loss of soil water to surface evaporation and plant transpiration - combined as evapotranspiration - can exceed 50% of annual precipitation.

Table 3 is the mean monthly climate-based water budget for the site, based upon the Milton Kelso climate station, for the period of record from 1972 to 1986. It was derived by Environment Canada's Meteorological Service, from daily inputs, from the Johnstone and Louie model.

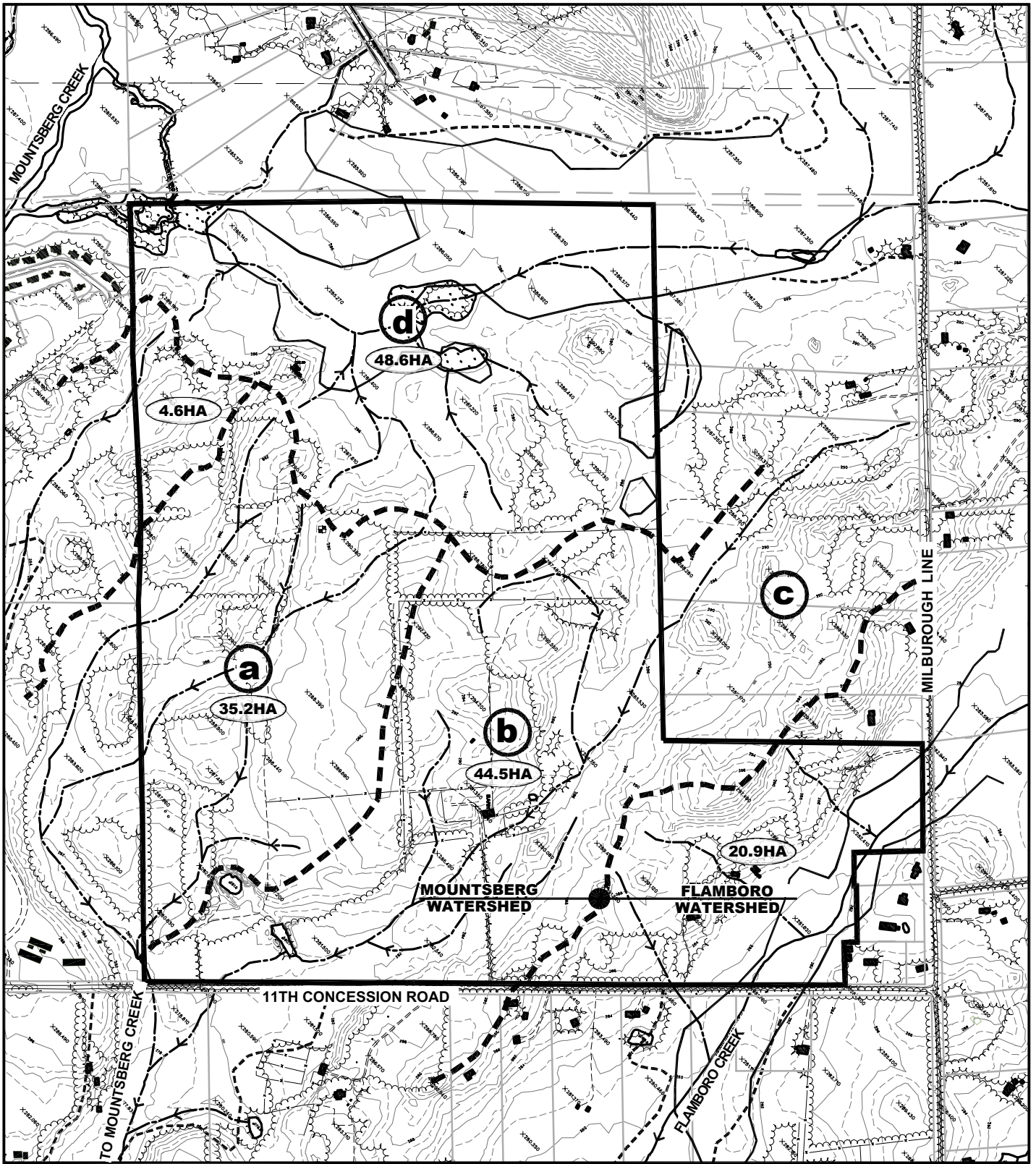
In Table 2, the quantities except temperature are in mm:

TEMP	the mean daily air temperature, °C;
PCPN	mean daily precipitation;
RAIN	precipitation depth, at temperatures above -1°C;
MELT	water equivalent of snowmelt above 0°C;
PE	potential daily evapotranspiration when the vegetation has sufficient soil moisture;
AE	actual daily evapotranspiration, adjusted for available free water and soil moisture;
DEF	moisture deficit, equal to PE-AE;
SURP	excess water after evaporation is met and soil is at its water holding capacity;
SNOW	the water equivalent of accumulated snow, after deducting the melt;
SOIL	represents the 150 mm water holding capacity of the soil capillaries for plant use; and
ACC P	accumulated precipitation during the current "Water Year" - October 1 to September 30.

Conservation Halton considers the site to be within the Huron Slopes climate region, above the Escarpment. It reports average annual precipitation as 762 mm, whereas the Milton Kelso gauge mean is 946 m.⁽¹³⁾

(13) Conservation Halton: *The Bronte Creek Watershed Study*, March 2002





- 44.5HA** DRAINAGE AREA
- DRAINAGE DIVIDE
- - - INTERMITTENT MICRODRAINAGE
- WATERCOURSE
- d** SUBCATCHMENTS

Figure 18

MICRODRAINAGE



Scale: 1 : 10,000

10.2 Surface Drainage

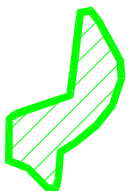
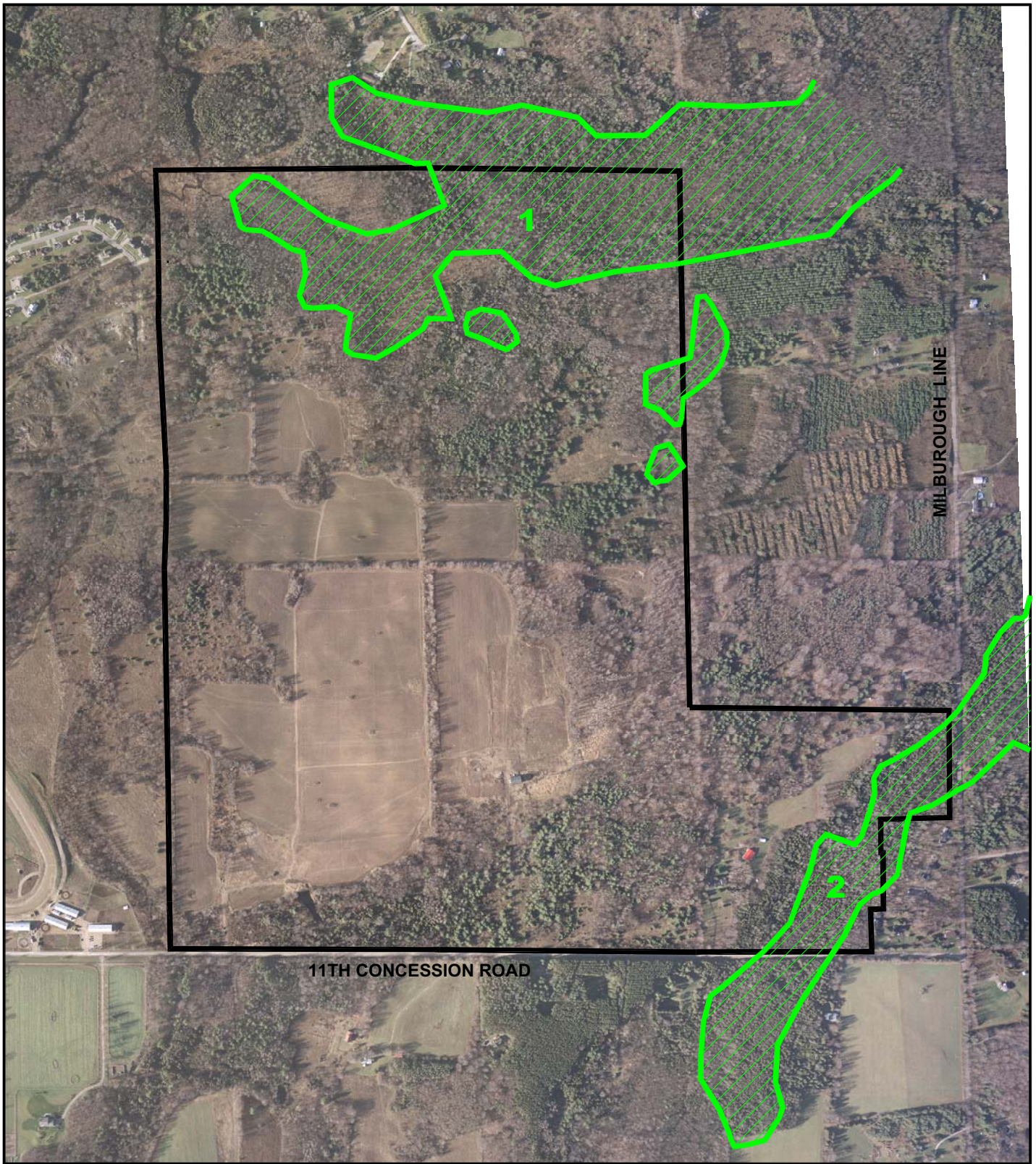
Figure 18 - Microdrainage is derived from an analysis by Stovel & Associates Inc., based upon surficial soils, topographic mapping and airphoto analysis. Virtually all of Lots 2 and 3 are within the Mountsberg Creek watershed. Approximately 49 ha, or 43% of the site, drains to the northwest, to the perennial, main branch of Mountsberg Creek.

As Figure 18 indicates, there are four subcatchments which may be affected by the excavation of up to 100 ha:

- a** comprising 35.2 ha, flows in three microdrainage channels to the adjacent farm, to the west;
- b** approximately 44.5 ha, drains the southerly sector of the site to the dugout pond, in the wooded area; and receives offsite runoff from Subcatchment c;
- c** is an external area of approximately 30 ha, which flows through the site to the Mountsberg Creek tributary, to the southwest.
- d** drains to the northwest and receives offsite runoff from the northeast. The primary, intermittent watercourse should not be disturbed, to enable maintenance of its natural environment attributes. However, part of the 48.6 ha onsite area may be located within the proposed quarry excavation.

Gartner Lee Limited has established piezometer nests, temperature dataloggers and staff gauges, within the intermittent watercourses, in the northwest and southeast portions of the site, to monitor streamflow and surface water quality. This surface water assessment is conducted in conjunction with the natural environment studies, including fisheries, by Stantec Consulting Ltd.





PROVINCIALY SIGNIFICANT WETLAND



Figure 19

SURFACE WATER FEATURES

Scale: 1 : 10,000

Source: Stantec, 2004 & Northway-Photomap Inc.



10.3 Surface Water Features

Stantec Consulting Ltd. has completed an inventory of the natural environment, including surface water features. Figure 19 is derived from Figure 2 of Stantec's *Preliminary Natural Environment Report*, August 2004, in Appendix 6.

There is one Provincially significant natural feature on or within 120 m of the site. The Lower Mountsberg Creek Provincially Significant Wetland Complex (PSW) includes 32 wetlands, that cover almost 285 ha. A portion of this PSW, comprising 16.5 ha and labeled "1", is located within the northern sector of the site. The extent of red maple, elm and mixed swamps, identified during Stantec's vegetation survey, generally coincides with the PSW boundaries established by the MNR (Ministry of Natural Resources). This wetland extends along the length of the existing, unopened road allowance to the Mountsberg Creek subwatershed boundary.

Another part of this Class 2 PSW Complex is located in the southeast sector of the site, labeled Component 2, on Figure 19. This onsite portion, of about 4.3 ha, contains a tributary of Flamboro Creek, which enters Bronte Creek south of Concession 9.

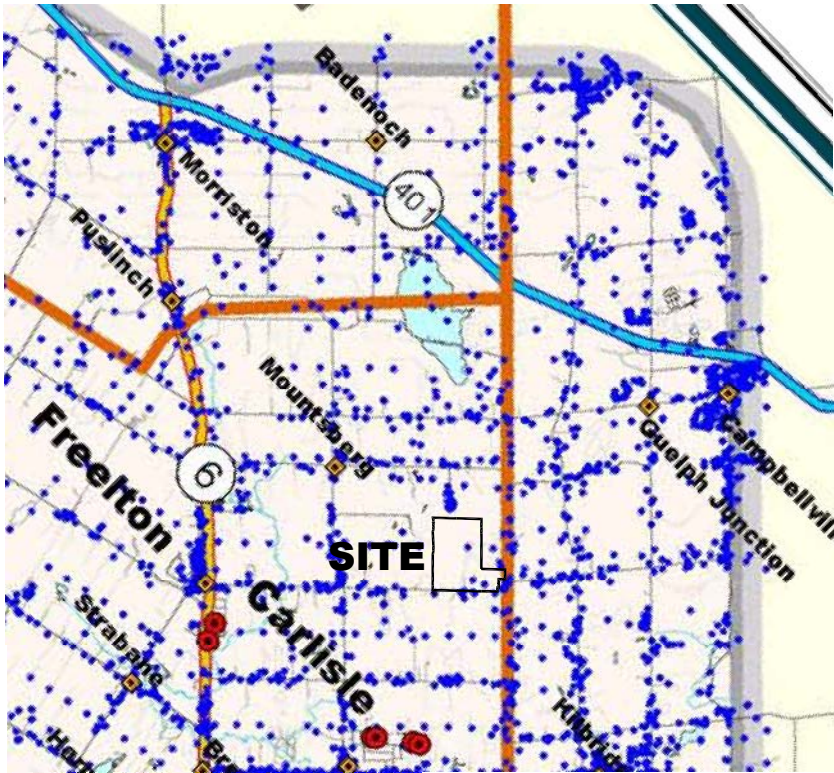
The Lower Mountsberg Creek Wetland Complex was most recently evaluated in 1998, using the third edition of the *Wetland Evaluation Manual for Southern Ontario*. A review of the evaluation documents suggest that the scoring and complexing has been fairly completed and updated, as new data became available. Redside Dace were reported, within the complex, according to historical records. However, this species has been removed from the final score in the evaluation. There does not appear to be any suitable habitat.

Section 2.3.1(a) of the *Provincial Policy Statement* provides that development and site alteration will not be permitted in significant wetlands. The Lower Mountsberg Creek Wetland Complex is Provincially significant. Section 2.2.3.6 explicitly permits aggregate extraction within prime agricultural lands. No such provision applies to PSWs. Therefore, the limits of the Lower Mountsberg Creek PSW should be confirmed on site, during application processing; and the proposed extraction should not extend into those areas. It is intended that PSW limits will be staked, in consultation with the City and Conservation Halton.

Section 2.3 of the PPS provides for the development and site alteration within other significant areas, including ESAs, provided that their natural features and ecological functions can be protected from negative impacts. Parts of the neighbouring subdivisions are located within the PSW and ESAs. However, Glenron Road predates Provincial policy and wetland mapping.



STUDY AREA WELLS



RECHARGE AREAS



Figure 20

REGIONAL GROUNDWATER

Scale: ±1 : 150,000

Source: Hamilton Groundwater Study, May 2004



10.4 Groundwater Resources

The City of Hamilton is currently completing an extensive regional study: *Groundwater Resources and Wellhead Protection Partnership Study*. This project, based upon approximately 18,000 Water Well Records, enables improved assessment of rural development proposals within the City and provides the Regional context for our more detailed, localized study. Excerpts from two of the study maps are illustrated on Figure 20.⁽¹⁴⁾ We understand, from the City's Study Project Manager, Mr. Mark Bainbridge, that the report on this study should be submitted to the Ministry of the Environment, in September 2004, for its review and approval.

Study Area Wells, on Figure 20 illustrates the locations of private water wells, within the northeast sector of the City's study area. Clusters of dots indicate areas of high, non-farm residential density and settlement areas. Larger, red-coloured circles represent municipal wells. The proposed dolostone quarry appears to be in an area of low private well density, with good separation from municipal sources.

In **Recharge Areas**, groundwater resources tend to be more susceptible to adverse effects, from new development. The site is mapped as a low recharge and discharge area:

Light brown represents zones of lowest recharge potential; and

Blue coloured areas are locations of groundwater discharge

Gartner Lee Limited, the water resources consultant for Lowndes Holdings Corp., will review the implications of the City's report, when it becomes available, late in 2004.

(14) City of Hamilton website: *Public Information Centre*, May 2004



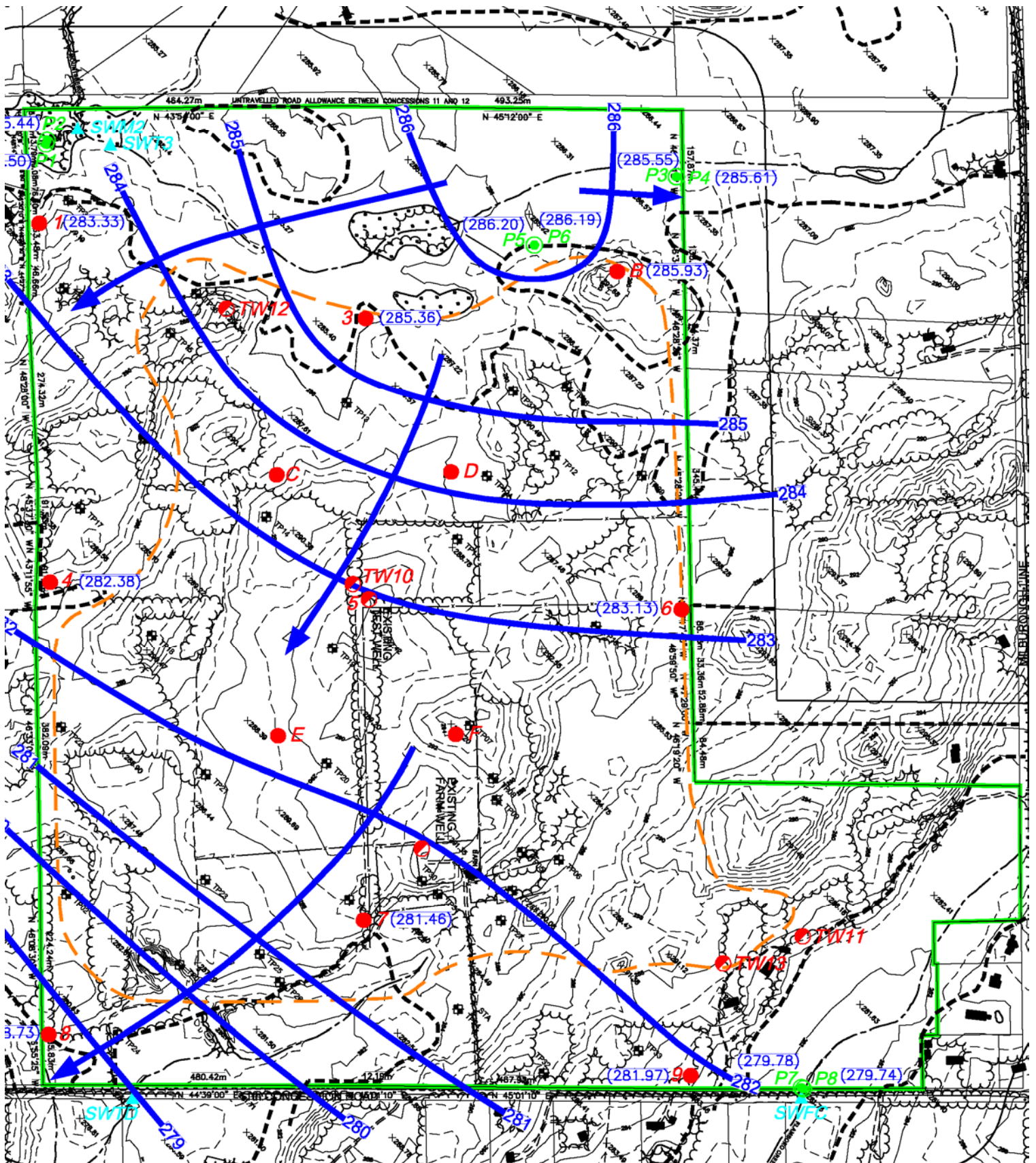


Figure 21

WATER TABLE CONTOURS

Scale: ±1 : 10,000

Source: Gartner Lee, August 2004

Gartner Lee Limited was retained to inventory and characterize groundwater conditions; and to report on the predictable effects of the proposed quarry on this key resource. Its *Preliminary Hydrogeological Assessment*, August 2004, is embodied in Appendix 7.

Twelve boreholes were drilled through the Amabel dolostone and completed in the Cabot Head shale, in February 2004. Groundwater monitors were installed, in each borehole, with adjacent, shallow monitors established at 8 of the 12 locations. 102 Water Well Records, received from the MOE (Ministry of Environment) were plotted within 1 km of the site.

Figure 21 is from Gartner Lee's Figure 4 - Shallow Aquifer Water Contours, July 2004. These groundwater contours, based upon onsite monitoring, confirm that flow is from north to south. The direction of groundwater movement is similar, in the shallow and deep portions of the bedrock. This indicates that the Amabel Formation essentially comprises one hydrogeologic unit, that is connected throughout.

Lowndes Holdings Corp. has continued its monthly onsite groundwater monitoring, to confirm seasonal variations. Also, a survey of neighbouring wells within 1 km will be conducted, subject to obtaining permission. This survey should be coordinated with the City, during its hydrogeological peer review.

Offsite, groundwater levels interpreted from Water Well Records are consistent with these contours. Static water levels average 289 m, to the north and 279 m, south of Concession 11. Local well depths vary from 6.4 to 44.2 m. They are generally deeper, an average of 18.4 m north of the site compared to 13.7 m to the south.

Groundwater temperatures were recorded, during pump testing, April 19 to 26, 2004. Average temperatures ranged from 3.4 to 8.7° C. These temperatures are not expected to exhibit significant seasonal variations. During the same period, surface water temperatures averaged 8.6°C, in Mountsberg Creek and 9.4°C at Flamboro Creek. Streamflow monitoring, from March to July 2004 indicates that Mountsberg Creek may be perennial. However, no base flow was evident in Flamboro Creek, in late July and/or August.



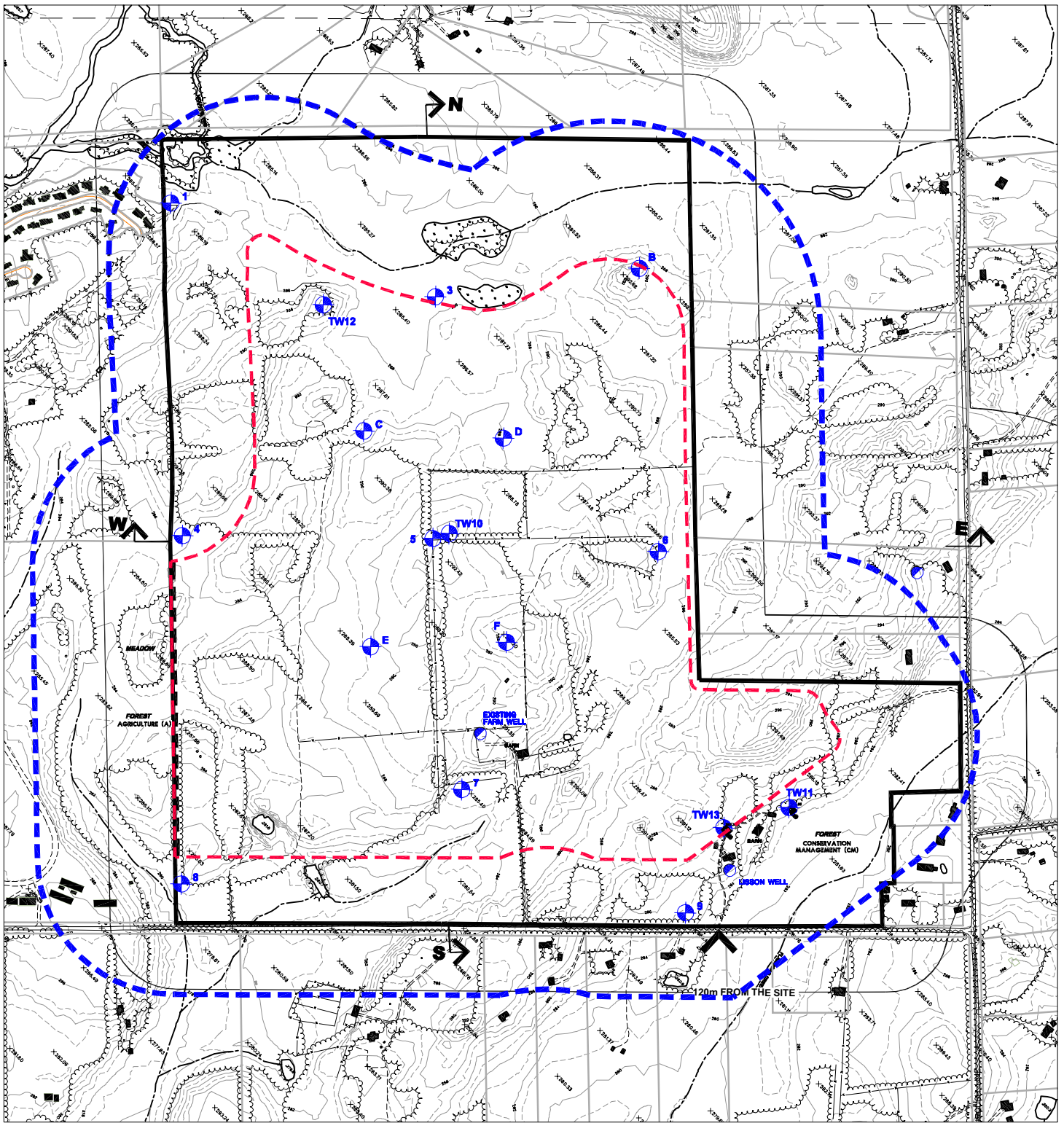


Figure 22

ESTIMATED DRAWDOWN



Scale: 1:10,000

Source: Gartner Lee, August 2004

10.5 Aquifer Testing

A larger diameter pumping well was completed approximately 2.5 m from Well No. 5, for aquifer pump testing. The 72 hour pump test was conducted from April 20 to April 23, 2004, at a rate of 1,309 m³/day (200 l/gpm). Prior to the pump test, 25 groundwater pressure transducers were installed in the on-site groundwater monitors and wetland piezometers, to provide continuous measurement of the effect of pumping on ground and surface water levels.

During the test the pump was set at about 41 m below ground surface. The level in the pumping well was lowered to about 25 m below ground. This is about the same depth as the most conductive zone in the bedrock, where most of the local water wells draw their water supplies, and below the proposed depth of the first lift of the quarry. The field data from that test were analyzed, with computer programs, to establish the aquifer properties. The drawdown is greatest closest to the well and lessens with distance.

The pumping test drawdown can be used as a preliminary estimate of the dewatering impacts from the first lift of the quarry. This is shown on Figure 22. About 10 m of drawdown is estimated, within 40 m of the quarry; reducing to approximately 5 m, at a 100 m distance; about 1 m at a distance of 250 m; and negligible drawdown at 600 m from the quarry. This range of drawdown would be similar to other operating quarries, within the Amabel formation. Given the depths and good yields, of most wells in the Amabel aquifer, some drawdown can usually be sustained without any significant impact. The characteristics of neighbouring wells will be confirmed through a well survey and a more detailed analysis of the drawdown effects.

The initial stage of the quarry should be centrally located on the site. This will maximize the distance from offsite water wells and surface water features, during the early years of the operation. Drawdown effects will can be monitored and confirmed, prior to the quarry reaching its full depth and size, as illustrated on Figure 22.

It is concluded that quarry excavation and dewatering could affect some nearby water wells, and also groundwater input to adjacent streams and wetlands. If so, there is a range of mitigation measures available to offset these impacts, including: direct stream flow augmentation; groundwater recharge galleries or wells; distributing quarry discharge amongst two or more receiving streams; and holding ponds, to balance pumping from the quarry sump, normalize discharge temperatures and/or settle particulate.



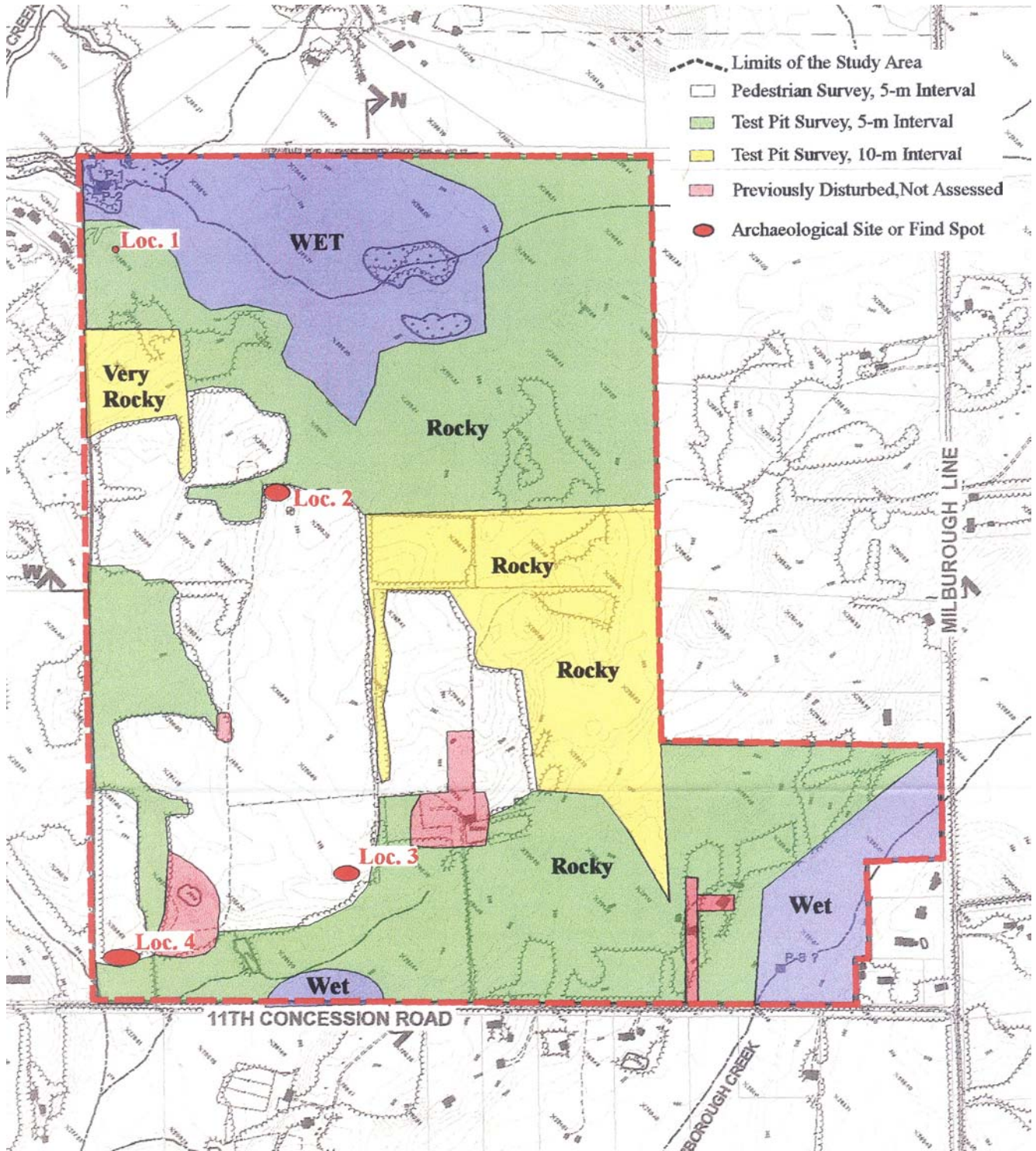


Figure 23

ARCHAEOLOGICAL



Scale: ±1 : 10,000

Source: Archaeologix Inc., July 2004



11. CULTURAL & NATURAL HERITAGE

11.1 Cultural Heritage

Mr. Jim Wilson, M.A., Principal of Archaeologix Inc. was retained to conduct a three stage cultural heritage assessment of the site, under Archaeological Licence No. P001. He was assisted by a team of qualified investigators and Mr. Robert Von Bitter, Archaeological Data Coordinator, Archaeology Unit, Heritage Branch, Ontario Ministry of Culture. The scope for this assessment is set out in the Provincial Standards, under the *Aggregate Resources Act*. The final report of Archaeologix Inc. is bound in Appendix 8.

Stage 1 comprised an assessment of the site to contain heritage resources. Based upon the rated potential, derived from literature review, a field survey was required.

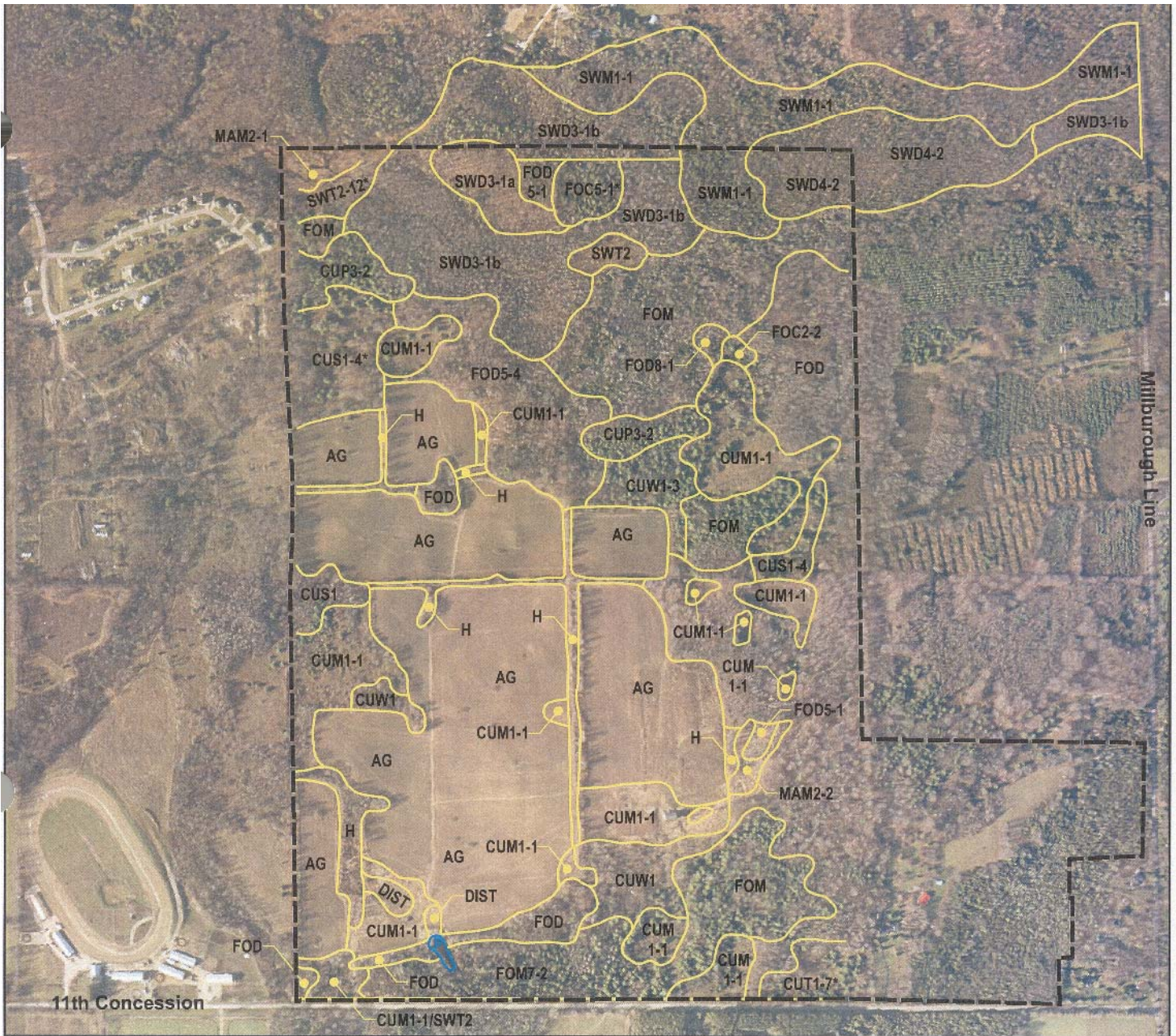
Stage 2 field assessment resulted in the identification of four previously unregistered sites including: one find spot of an isolated, pre-contract Aboriginal artifact, Location 1 on Figure 23; and three 19th century Euro-Canadian artifact scatters, Locations 2 to 4.

Stage 3 assessments were conducted for Locations 2 and 3, in order to further evaluate their significance and information potential. The artifacts were recovered, catalogued and delivered to the Ministry of Culture. This procedure is referred to as mitigation through excavation.

The Ministry of Culture, in a letter dated July 15, 2004, accepted the Archaeologix report and concurred with its recommendations. Clearance for the property will be granted when a site plan is submitted.

If deeply buried archaeological materials or human remains are disclosed, during site operations, the appropriate Provincial authorities will be contacted.





Source:

VEGETATION COMMUNITIES		
TERRESTRIAL		
Coniferous Forest (FOC)		
FOC2-2	Dry Fresh White Cedar Coniferous Forest	
FOC5-1*	Fresh Moist White Pine Coniferous Forest	
Mixed Forest (FOM)		
FOM	Mixed Forest	
FOM7-2	Fresh Moist White Cedar Hardwood Mixed Forest	
Deciduous Forest (FOD)		
FOD	Deciduous Forest	
FOD5-1	Dry Fresh Sugar Maple Deciduous Forest	
FOD5-4	Dry Fresh Sugar Maple Ironwood Deciduous Forest	
FOD8-1	Fresh Moist Poplar Deciduous Forest	
CULTURAL		
Cultural Plantation (CUP)		
CUP3-2	White Pine Coniferous Plantation	
Cultural Meadow (CUM)		
CUM1-1	Dry Moist Old Field Meadow	
Cultural Thicket (CUT)		
CUT1-7*	White Ash White Elm Cultural Thicket	
Cultural Savanna (CUS)		
CUS1	Mineral Cultural Savanna	
CUS1-4*	White Pine Cultural Savanna	
Cultural Woodland (CUW)		
CUW1	Mineral Cultural Woodland	
CUW1-3*	White Pine Cultural Woodland	
WETLANDS		
Mixed Swamp(SWM)		
SWM1-1	White Cedar Hardwood Mineral Mixed Swamp	
Deciduous Swamp (SWD)		
SWD3-1a	Red Maple Mineral Deciduous Swamp (Graminoid Variant)	
SWD3-1b	Red Maple Mineral Deciduous Swamp (Forb Variant)	
SWD4-2	White Elm Mineral Deciduous Swamp	
Thicket Swamp (SWT)		
SWT2	Mineral Thicket Swamp	
SWT2-12*	White Elm Mineral Thicket Swamp	
Meadow Marsh (MAM)		
MAM2-1	Bluejoint Mineral Meadow Marsh	
MAM2-2	Reed-canary Grass Mineral Meadow Marsh	
Other		
AG	Agricultural	
H	Hedgerow	
P	Pond	
DIST	Disturbed	

*not listed in Southern Ontario ELC

Scale: 1:10,000

Figure 24
VEGETATION COMMUNITIES

Scale: ±1 : 10,000

Source: Stantec, August 2004

11.2 Natural Heritage

Stantec Consulting Ltd. was retained to conduct a natural heritage assessment; and to engage in the design of a rehabilitation plan, which will maintain or enhance environmental features. As indicated in Section 10.3, Stantec's report is included in Appendix 6.

An initial literature review and site reconnaissance confirmed the presence of one Provincially significant natural feature, on or within 120 m of the site - the Lower Mountsberg Creek Wetland Complex.

The initial site visit was conducted on October 2, 2003. Since then, Stantec's biologists have completed detailed, multi-season inventories, monthly excluding March, of aquatic, amphibian, deer, frog, owl and hawk habitat; and documented surveys of surface water quality and vascular plants. None of the plant species was "significant". Four are considered "uncommon to locally common": black maple, leatherwood, herbaceous carrion flower and wood reed grass. Figure 24 - Vegetation Communities, is Stantec's analysis of the site, in accordance with the: *Ecological Land Classification For Southern Ontario* (ELC), 1998. A variety of natural heritage information sources was consulted, including the Conservation Halton: *Bronte Creek Watershed Study*, 2002.

Stantec's appended report provides the basis for development of the proposed Site Plan and this planning report. Seasonal inventories of natural features continue, during the summer of 2004. It is intended that this application will be reviewed with Hamilton's ESAIEG (Environmentally Sensitive Area Impact Evaluation Group), MNR's Guelph District Office and Conservation Halton. This review will enable completion of a Scoped EIS (Environmental Impact Study) and Level 2 Natural Environment Report; progressive rehabilitation and final rehabilitation plans; and adaptive management plans, governing quarry operations.

As recently confirmed by the Greenbelt Task Force, some temporary loss of ecological and hydrogeological integrity and natural features and functions can be accepted, provided that they are restored, replaced and enhanced during final rehabilitation.⁽⁹⁾



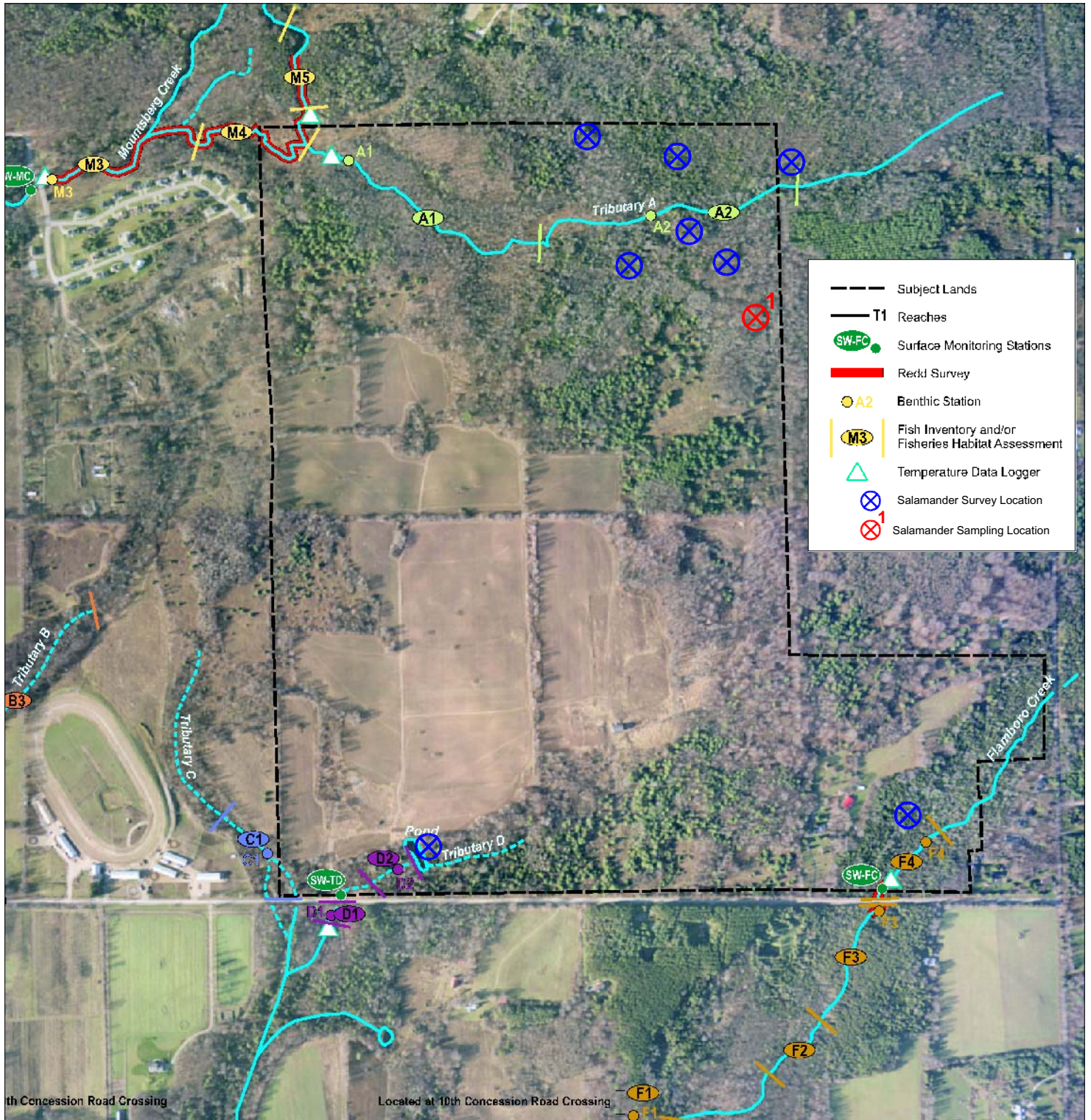


Figure 25

AQUATIC FEATURES



Scale: ±1 : 10,000

Source: Stantec, August 2004

11.3 Fisheries

Stantec Consulting Ltd. has identified fisheries on the site and vicinity, highlighted on Figure 25. Stream flows, water quality and temperature have been monitored, to establish fishery potential and seasonal variations. Habitat assessments and benthic invertebrate sampling, for each tributary, are described in Stantec's appended report.

Tributary A is perennial, with minor fish species;

Tributaries B, C and D are intermittent. One species was captured in the dug pond.

Mountsberg Creek supports a diverse, warm water sports fishery. Fourteen species were captured at Stations M1, M2 and M3. Flow is perennial, with a diffuse contribution from Tributary A. Stream temperature increased, from 4°C in April to the 18 to 29°C range, in mid June 2004.

Flamboro Creek on site is a warm water forage fish habitat, with good aquatic ecosystem health. However, water temperature increased, from 2°C in mid April to 14° to 16°C in mid June, 2004. Only two species were reported.

A total of 26 fish species were identified, during Stantec's fisheries inventories. No redds were observed, during November 2003 surveys, in Flamboro and Mountsberg Creeks.

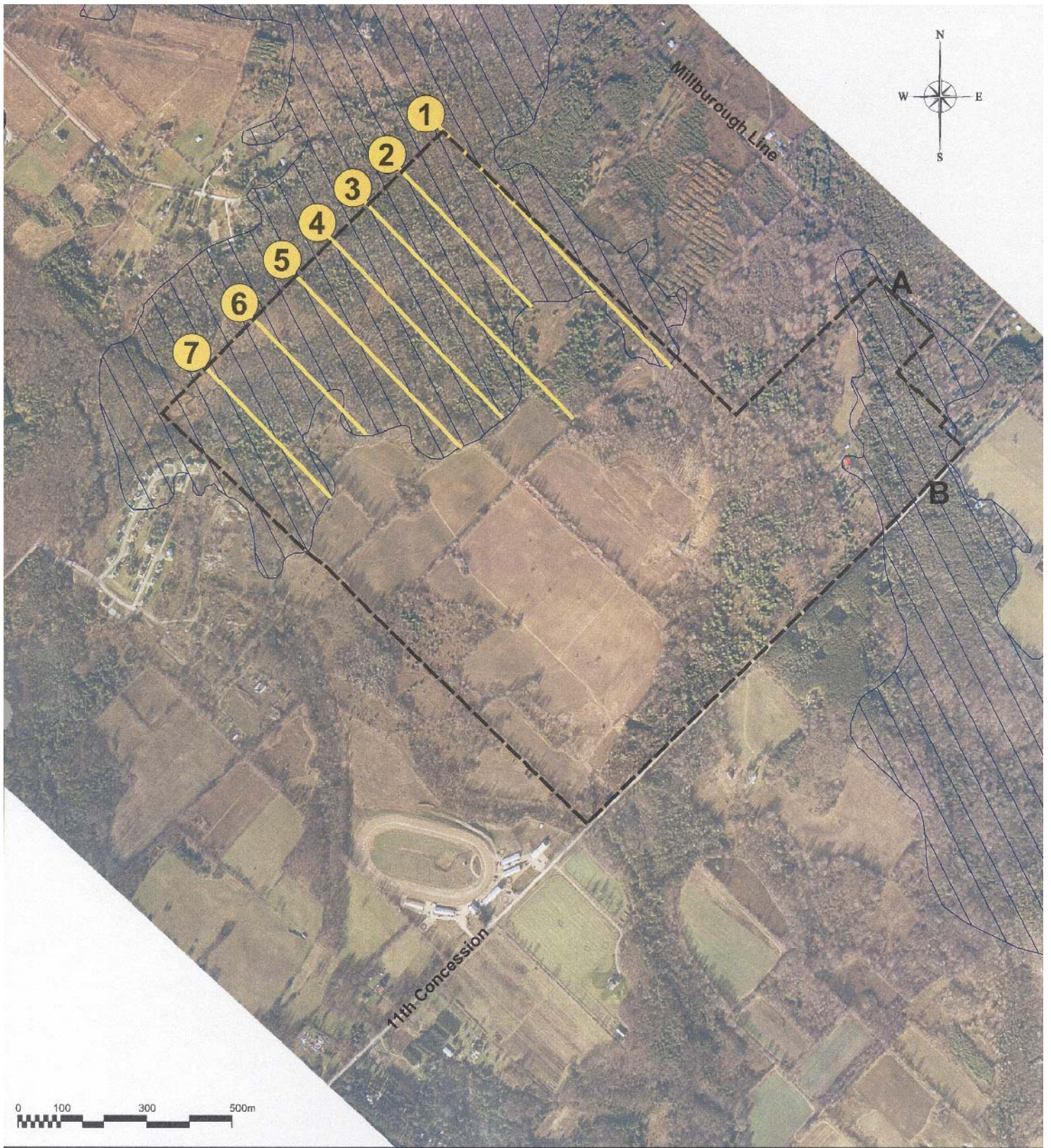
11.4 Amphibians

Stantec also completed a spring 2004 amphibian survey, in consultation with the Ministry of Natural Resources. The frog surveys recorded six frogs, one toad and one salamander species. One reptile and a snapping turtle were documented.

8 locations which represented high potential for salamander habitat were surveyed. No evidence of salamanders was encountered.

1 salamander sampling location, on Figure 25, enabled the collection of one egg mass. No viable larvae were produced, when the eggs were raised at the University of Guelph.





- Subject Lands
- ① Approximate Transect Location
- ▨ Deer Wintering Area
- A Observation Locations

Figure 26

DEER YARD SURVEY



Scale: ±1 : 10,000

Source: Stantec, August 2004

11.5 Mammals

Stantec identified eleven common mammals on site: coyote, eastern chipmunk, eastern cottontail, ermine, grey squirrel, little brown bat, mink, porcupine, raccoon, red fox, and white-tailed deer. All of these species are rated as very common and demonstrably secure. The white-tailed deer habitat was the subject of further study.

Southern Ontario farmland provides excellent habitat for white tailed deer. Recent MNR (Ministry of Natural Resources) announcements confirm: *“During the past decade, deer numbers have increased across Ontario due to relatively mild winters and abundant food supplies”*.⁽¹⁵⁾ The Provincially significant Guelph Junction Deer Yard extends into the northern sector of the property. Surveys were completed, during early 2004, to assess the potential of the site for deer yards, wintering areas and travel corridors.

Figure 26 illustrates the locations of Stantec’s surveyed transects on the site. The local deer yard evidently supports a herd of approximately 10 to 20, primarily within the PSW and extending northeasterly, across Milborough Line. Coniferous species, including Eastern hemlock and Eastern white cedar, provide between 40% and 50% canopy cover. Deer beds, trails and/or scat were noted along Transects 2 to 7. The site provides a good mix of deciduous and coniferous forage.

Deer evidence was also identified in the southeast sector, within the PSW associated with Flamboro Creek, at Observation Points A and B. A deer trail extended southerly, from Point A and browse was noted at Point B. There was no evidence of deer yards or wintering areas.

Milborough Line has several deer crossing areas. Development of the Proposed Dolostone Quarry is expected to include improvements to this road, including vertical alignment, visibility and signage. Through increased awareness, these improvements should enhance the safety of deer crossings and reduce the potential hazards associated with deer collisions with automobiles.

(15) Ministry of Natural Resources Website: *Backgrounder - Expanded Hunting Opportunities*, August 2004



12. ACOUSTIC ENVIRONMENT

Aercoustics Engineering Limited was retained to document the acoustic environment of the site and vicinity and to provide recommendations to enable future quarry operations to meet Ministry of the Environment noise control standards. Appendix 9 comprises Aercoustics' Preliminary Noise Control Study.

Figure 27 illustrates the site and representative surrounding residential dwellings, referred to as "Receptors", R1 to R16. Sound level limits for the quarry noise on these nearby residential receptors was established by Aercoustics, based upon the noise guidelines of the Ministry of the Environment.

Observations conducted by Aercoustics confirm that the background sounds in the vicinity of this quarry, at all of the residential receptors, is considered to be quiet in the daytime, evening and nighttime, dominated by natural sounds and infrequent human activity.

The appropriate acoustical classification for these residences is MOE Class 3. Recommended sound level limits are:

Day Time	07:00 - 19:00	45 dBA
Night Time	19:00 - 07:00	40 dBA

Lowndes Holdings Corp. established relatively conservative operating criteria for this preliminary assessment:

Portable plant operation is assumed, with a noise emission of 88 dBA at 30 m. A future, permanent plant will be quieter.

First lift operation will be located about 20 m below grade. Later, the plant can be established on the quarry floor, at 35 m, providing increased shielding.

Early morning restrictions limit operations to loading and shipping, from 6:00 to 7:00. Drilling and processing will be delayed until 7:00 A.M.

Perimeter buffers are increased to 120 m minimum, along the 11th Concession and 150 m at the common boundary with Bronte Creek Estates.

Noise barriers will include a combination of berms and acoustic fences.

Rock drill shielding will be required in perimeter areas.



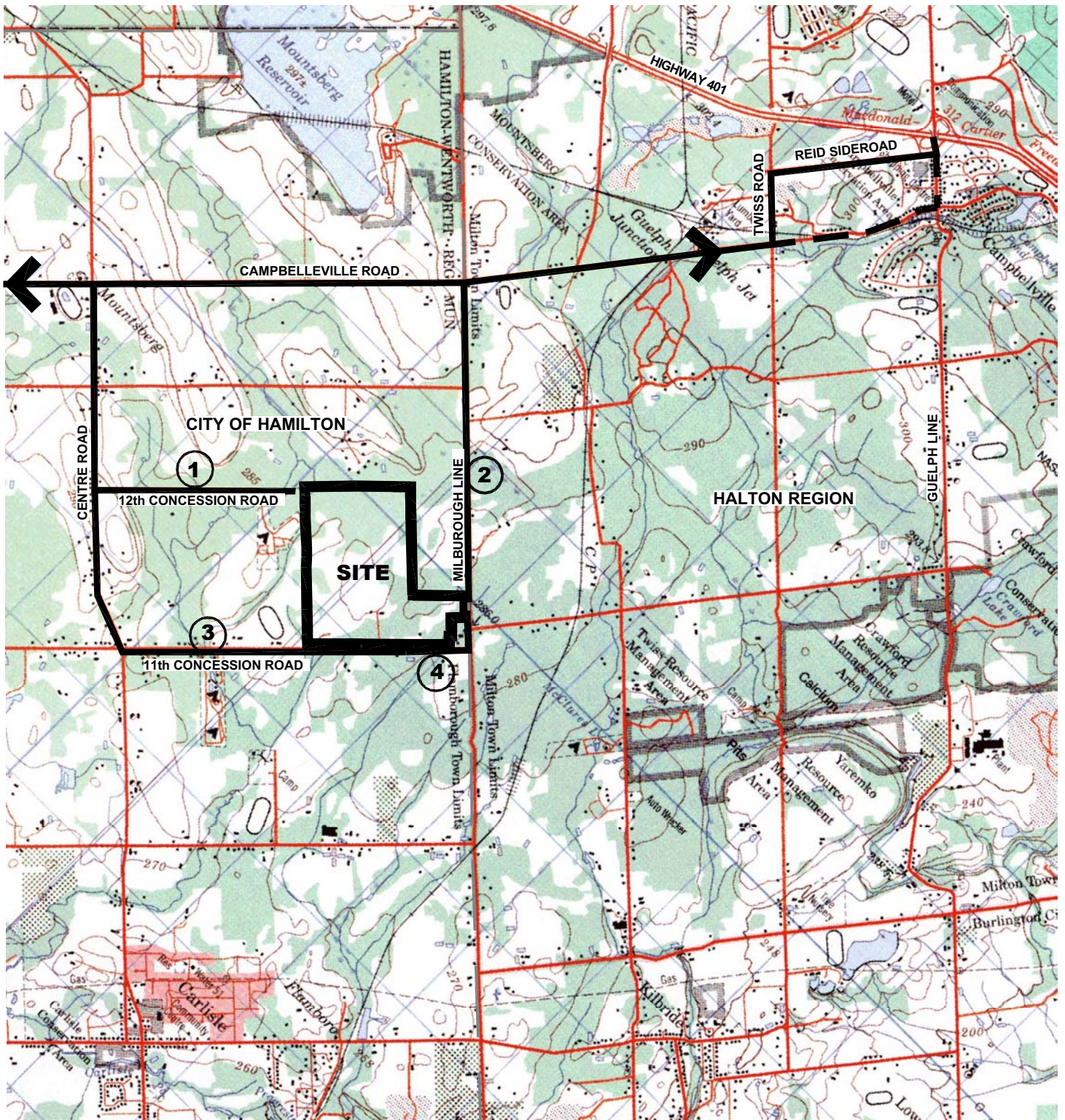


Figure 28

ALTERNATIVE HAUL ROUTES

Scale: 1 : 50,000



13. TRANSPORTATION NETWORK

13.1 Traffic Assessment

Stantec Consulting Ltd., Hamilton was retained in 2003, to undertake a traffic study to:

- review the existing transportation network in the vicinity of the site;
- develop traffic forecasts for the aggregate operation;
- examine potential accesses and haul routes to the Provincial highway system; and
- assess the effect of the traffic generated by the quarry and associated road improvements.

Several roadways in the vicinity provide potential truck routes, to Highway 401 at the Guelph Line interchange, to the east; and to Highway 6, to the west:

Guelph Line - classed as a major arterial;

Campbellville Road - a designated truck route, from Highway 6 to Guelph Line;

Reid Sideroad and Twiss Road - an alternative route, from Campbellville Road to the Guelph Line/401 interchange; and

Centre Road - a designated truck route, south from Campbellville Road

Based upon an annual production of 3 million tonnes, or 15,000 tonnes/day and truck loads of about 33 tonnes, approximately 450 one-way and 900 two-way trips are required, on average. This increases to 570 truck loads on the average maximum day.

The existing road system can be accessed via the 12th Concession or the 11th Concession, to Centre Road; or via the 11th Concession and Milborough, or directly to Milborough Line to Campbellville Road. Stantec has assessed each potential access route. All of the key, unsignalized intersections, along these routes, will operate at an acceptable Level of Service C, during the A.M. and P.M. peak hours, for the next 10 years. However, road improvements will be required, including pavement and shoulder widening and upgrading, with some regrading to ensure adequate site distances.



Table 4
Preliminary Haul Route Comparison

	1 CON. 12 CENTRE	2 MILBROUGH	3 CON. 11 CENTRE	4 CON. 11 MILBROUGH
ROUTING	CON. 12 WEST CENTRE NORTH	MILBROUGH NORTH	CON. 11 WEST CENTRE NORTH	CON. 11 EAST MILBROUGH NORTH
ROAD AUTHORITY	HAMILTON	HAMILTON & MILTON	HAMILTON	HAMILTON & MILTON
SURFACE	PART UNOPENED PAVED	PAVED	PAVED	PAVED
MAXIMUM GRADE	13.5%	9%	9%	9%
WIDTH PAVEMENT, M SHOULDERS, M	<2.5 <0.6	<3.2 <0.6	3.0 <1.0	3.0 <1.0
LOAD RESTRICTIONS	YES	YES	YES	YES
DISTANCE TO 401, KM	12	7.7	15.6	9.5
STRUCTURES	YES	NO	BRIDGE	NO
INTERSECTIONS TO 401	13	11	14	13
RAILWAY CROSSINGS	3	3	3	3
SCHOOLS	NO	NO	NO	NO
DRIVEWAYS	80	43	120	52
STREAM	YES	NO	YES	YES
EXISTING HOURLY: CARS TRUCKS	<10 0	72 3	49 5	49 5
MORNING PEAK HOUR NOISE INCREASE, DBA	<15	15	20	20
RANKING	3	1	4	2



13.2 Alternative Haul Routes

Stantec's July 2004: *Traffic Impact Study*, in Appendix 10 provides a comparison of alternative haul routes and Aercoustics, in its appended: *Off-Site Trucking Haul Route Noise* report, has predicted forecast increases in traffic noise. Also, in Appendix 6, Stantec's *Preliminary Natural Environment Technical Report*, identifies the PSWs (Provincially Significant Wetlands) and other important natural resource systems, within and adjacent to the property. Table 3 summarizes our subjective, preliminary planning assessment of alternative routes, from the proposed quarry to the existing Campbellville Road and Guelph Line truck route.

Concession 12 to Centre Road, Alternative 1, is a partly unopened road. The portion to be constructed would pass through the PSW and require a structural crossing of Mountsberg Creek. The existing road is narrow, with an extreme grade. The advantage of this route is the comparatively low noise impact, because the Bronte Creek Estates dwellings are set back some distance from the 12th Concession. However, it is rated third, because of structural deficiencies and the effects on the natural environment.

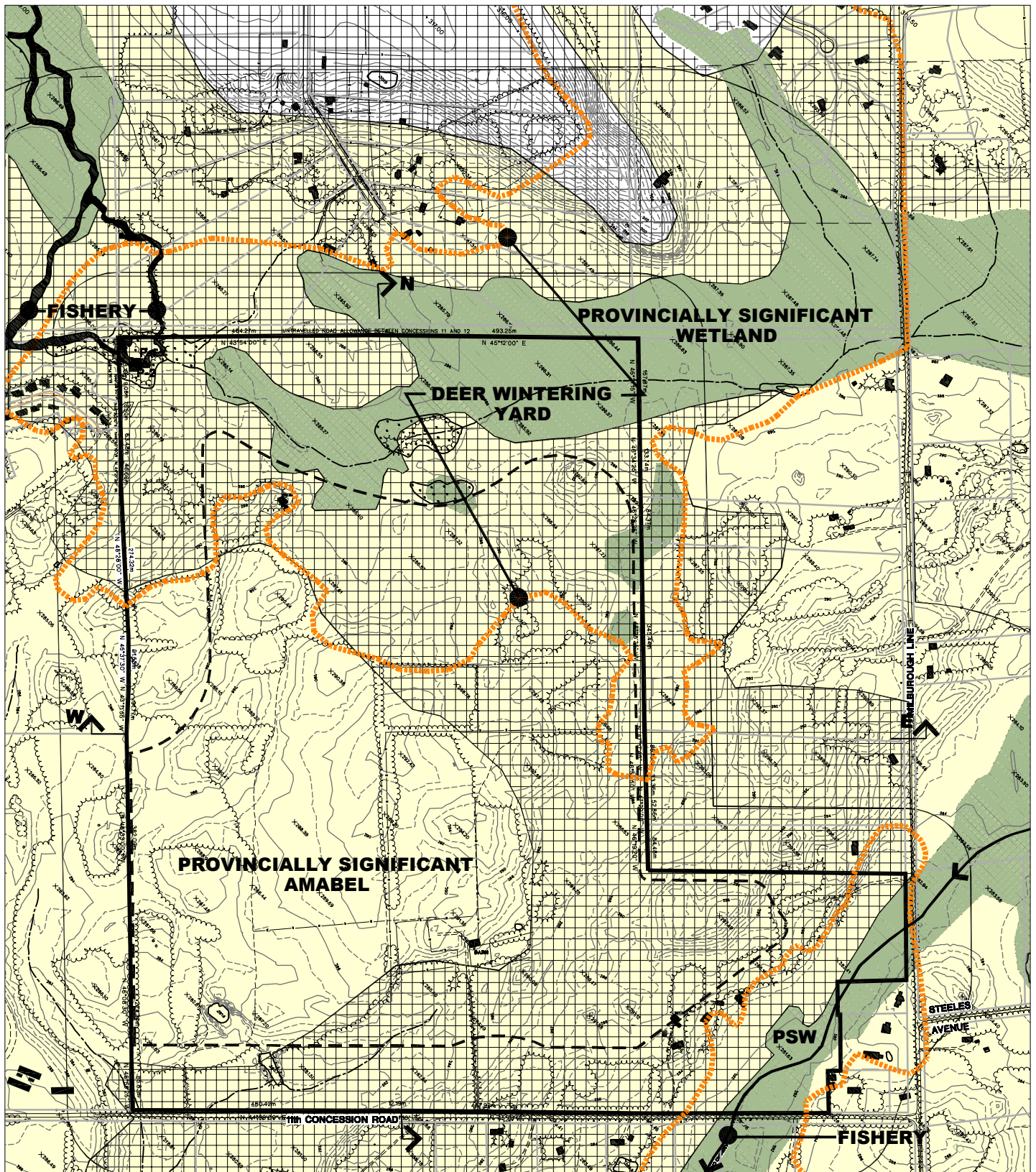
Milborough Line, Alternative 2, is considered the preferred route, because it provides the shortest distance to Highway 401 and involves the least numbers of intersection and private driveway conflicts. It is designated a collector, in the Milton Official Plan and carries the highest volume of existing car and truck traffic. While the existing road appears to be structurally deficient, the width is adequate and improvements will primarily consist of thicker pavement and grade changes to improve visibility. Forecast noise increase is greater than Alternative 1, but less than Alternatives 3 and 4.



Concession 11 West to Centre, Alternative 3, is ranked as the least preferred. Pavement width and strength are deficient and the Mountsberg Creek bridge would require reconstruction. There is a significant increase in the numbers of driveway and intersection conflicts - 120 driveways, compared to the 43 on Alternative Route 2. Dwellings are situated closer to the road; with concentrations of activity at the campground and estate subdivision, corresponding to a high relative noise increase.

Concession 11 East to Milborough, Alternative 4, is preferable to Alternative 3, due to the limited use of Concession 11 and the more efficient routing, along Milborough Line, with a substantial reduction in the number of driveways. However, noise increase is relatively high. The distance to Highway 401 is almost 2 km longer than the direct Milborough route via Alternative 2. The Concession 11 pavement and its intersection with Milborough Line are seriously deficient. This alternative would cross Flamboro Creek.

Two options are available from Campbellville Road at Twiss to 401: Twiss Road and Reid Sideroad; or the existing truck route, east on Campbellville Road to the Guelph Line traffic signals. This preliminary haul route comparison provides the basis for the selection of the Milborough Line entrance and exit for the proposed quarry. Final routing will be determined through a Class Environmental Assessment, integrated with the *Planning Act* processing of the Lowndes quarry application.





-  PROVINCIAL SIGNIFICANT AMABEL
-  PROVINCIAL SIGNIFICANT WETLAND



-  REGIONAL ENVIRONMENTALLY SIGNIFICANT AREA
-  PROPOSED EXCAVATION LIMIT

Figure 29

ENVIRONMENTAL FEATURES

Scale: 1:10,000



14. SITE PLANNING

14.1 Natural Resource Hierarchy

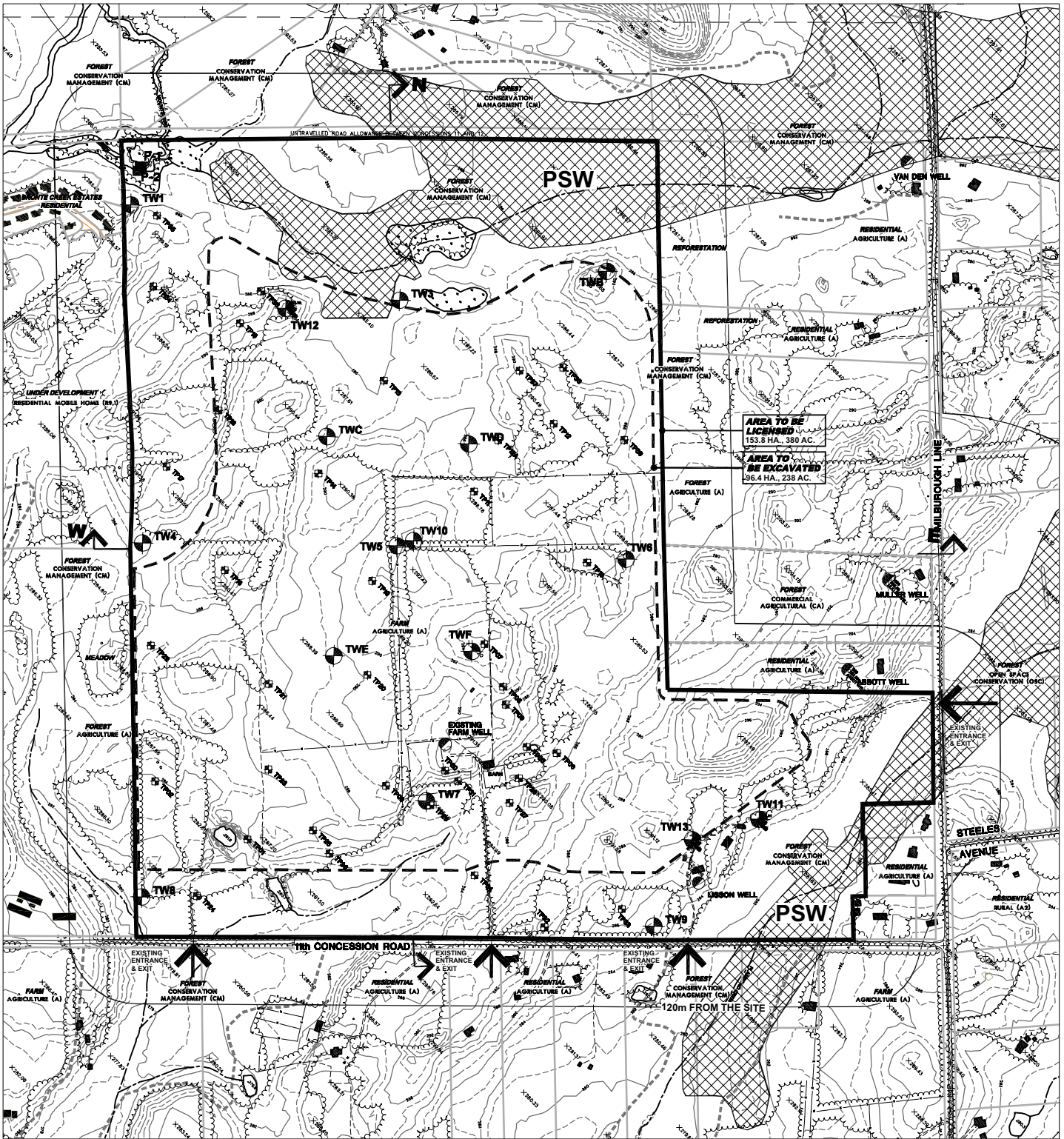
Ontario's policy-led planning system was developed to provide a basis for resolving the competing demands upon natural resources. The lands acquired by Lowndes Holdings Corp. are underlain by the Provincially significant Amabel dolostone, with PSWs (Provincially Significant Wetlands), ESAs (Environmentally Significant Areas), fisheries, flood plains, wildlife habitat and woodlands. There are no ANSIs (Areas of Natural and Scientific Interest) habitat for endangered or threatened species, or valley lands.

Resource management decisions are based upon the hierarchy prescribed in PPS Section 2.3.1, outlined on pages 13 and 14 of this report. Provincially significant resources: aggregates, habitats of endangered/threatened species and wetlands are equivalent. One does not supercede the other. Aggregates take precedence over prime agricultural areas, as set out in PPS Section 2.2.3.6. Also, Provincially significant aggregate deposits are superior to local and regional ESAs, habitats and woodlands.

In 1995, the ESA coverage of the site comprised about 46 ha. This increased to the current 86 ha, due to reduced agricultural activity and natural regeneration of field areas. However, ESAs which are not Provincially significant can be removed, to enable recovery of the Provincially significant aggregate resource. Indeed, as Figure 29 illustrates, ESAs, fisheries, flood plains and PSWs are now mapped where residential development exists. The Amabel deposit is highly significant, because it reaches maximum thickness, on the Lowndes Holdings property, with minimum drift (overburden) cover. The former Township and Region recognized, in processing the Flamboro Quarries expansion application, that locally or regionally significant ESAs can be developed for limestone quarry purposes.

It is concluded that the proposed limits of quarry excavation can include ESAs and locally or regionally significant amphibian, bird and deer habitat. Fish habitat, if the proposed operation will result in "*harmful alteration, disruption or destruction*" (HADD) under the *Fisheries Act*, requires mitigation or compensation. The quality and quantity of ground and surface waters should be protected or enhanced, in accordance with PPS Section 2.4. The Lower Mountsberg Creek PSW, when mapped on a site specific basis, is off limits. The decision is one of balancing the Provincial need for non-renewable aggregate resources, particularly the limited occurrence of Amabel dolostone, against renewable, natural resources of regional and local importance, which can be renewed and/or enhanced, during quarry rehabilitation.





↑ EXISTING ENTRANCE

Figure 30

EXISTING FEATURES



Scale: 1:10,000

The proposed dolostone quarry is a Category 2, Application For a Class A Licence, to be excavated below the established groundwater table. Provincial Standards, 1997, under the *Aggregate Resources Act*, prescribe the requirements for a Site Plan, comprising a series of drawings. The first of these drawings is an Existing Features plan. However, because of the size of the property and the Client's objective for an extended inventory, of properties within 500 m, Drawing 1, included in Appendix 12, is a Site Environs Plan, which extends 500 m from the limits of the area to be licensed.

14.2 Existing Features

Site Plan Drawing 2 - Existing Features is illustrated on Figure 30. It indicates the boundary of the area to be licensed, from a Plan of Survey, in this application comprising 154 ha (380 ac). The area to be excavated is approximately 63%, or 96 ha (238 ac). 27% of the site is reserved for buffers, excavation setbacks and the maintenance and enhancement of natural features, including the Provincially Significant Wetlands (PSWs). Natural and man-made features, buildings, structures and zoning, on and within 120 m of the site are included, in accordance with the Provincial Standards.

The site extends easterly, to Milborough Line, north of Steeles Avenue and has extensive frontage on Concession 11, to the south. The northerly boundary coincides with the unopened, Concession 12 road allowance. Adjacent lands include: 9 rural residential lots, on the west side of Milborough Line; 7 residential lots, on the south side of Concession 11; the Bronte Creek Estates development, to the northwest; and the Glenron and Timberrun Road estate residential subdivisions, to the north. A substantial buffer, for Glenron and Timberrun, is provided by the protected PSW (Provincially Significant Wetland).

There are no existing aggregate activities, berms, equipment, haul roads or stockpiles on the site. There are four existing entrances: 3 on Concession 11 and 1 on Milborough Line, as shown on Figure 30.





Figure 31

TYPICAL LIMESTONE QUARRY OPERATION

14.3 Quarry Operations

Proposed quarry operations will be conducted on three levels:

The **First Level** is created by stripping the topsoil and till overburden, to an average depth of 2.4 m, to expose the dolostone bedrock. This soil material is used to create perimeter berms, for noise and visual control. Where existing dwellings are located in close proximity, undisturbed, wooded buffers, of 120 m (400 ft) minimum width, will be reserved on the perimeter. Berm heights vary from 5 to 10 m, depending upon the nature of the adjacent land uses and buffer widths.

The **Second Level** is the first lift of rock excavation. Given the 34 m average dolostone thickness, the depth to the second level should be approximately 50% or 17 m. Therefore, the first lift will be about 20 m (66 ft) below grade.

A processing plant will be centrally located, at the first lift level, at least 25 m below the berm tops. Approximately 15 ha (37 ac) of first lift area will be required, to accommodate the plant, stockpiles, drainage and truck routing.

The **Third Level** is the ultimate quarry floor, an average of 34 m below the bedrock surface.

The upper photograph in Figure 31 is a two-lift excavation, within a dolostone quarry, in the Collingwood area. As proposed by Lowndes Holdings Corp., a reasonably dense, wooded buffer has been maintained, beyond the excavation area. The processing plant and stockpiles are situated on the floor of the first lift, where the tour buses are parked. Rock excavated from the second lift is hauled, via ramps, to the plant on the first lift.

The lower photograph illustrates a recent blast, of a first lift. The height of the rock face is approximately 18 m; and the pile of fragmented rock is less than 8 m deep. This is a limestone quarry, in the Carden Township area. Again, a wooded buffer has been maintained around the perimeter.



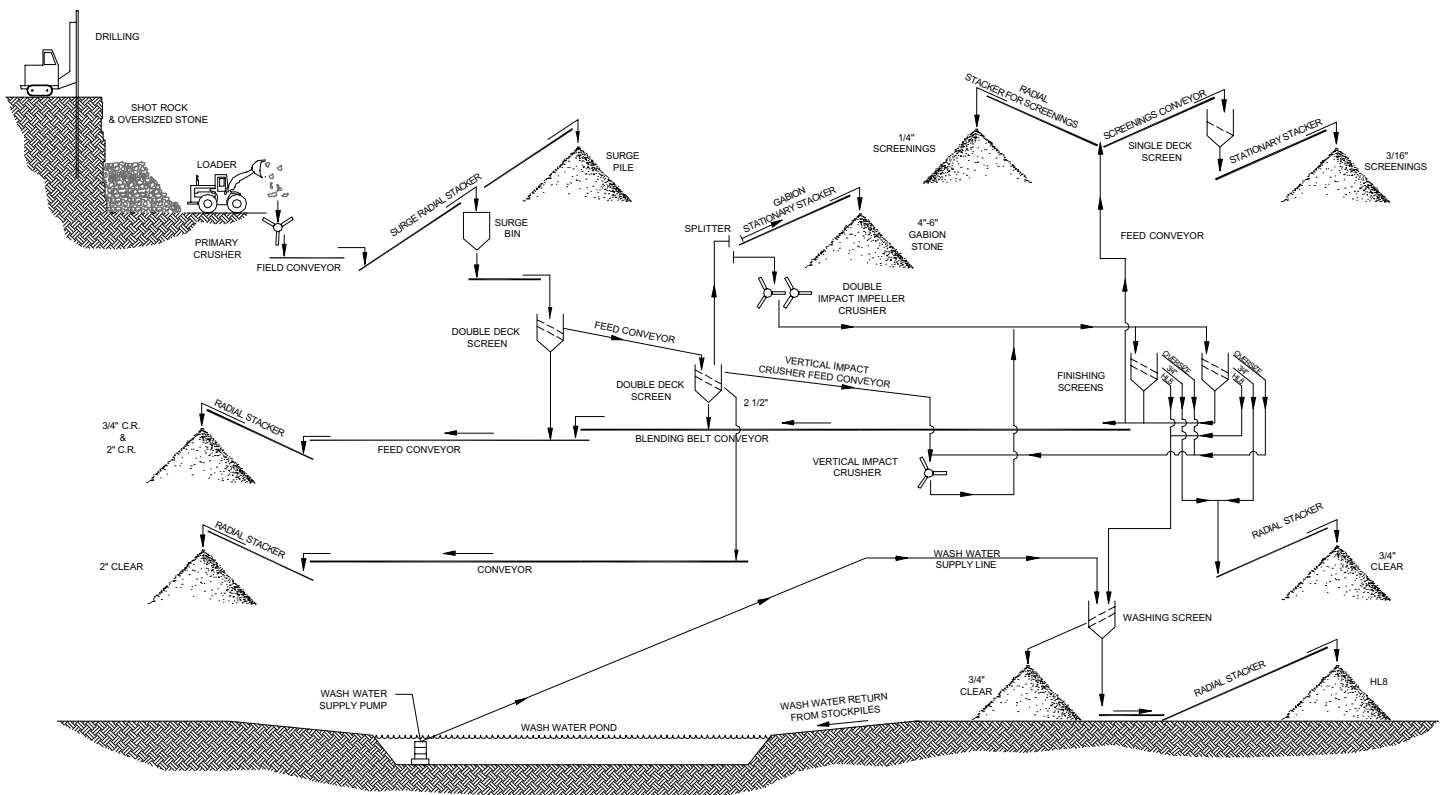


Figure 32

PROCESS DIAGRAM



A conceptual process diagram, for the proposed aggregate production plant, is included on Figure 32. The object of processing is to reduce the size of shot rock, fragmented by blasting, to market grade limestone products, including the following:

Armour & Gabion Stone	100 - 200 mm (4 - 8")
Clear Crushed Stone	10 - 50 mm (3/8" to 2")
Concrete Aggregate	10 - 22 mm (3/8" - 7/8")
Crusher Run	20 - 50 mm (3/4" - 2")
Construction Aggregate	10 - 15 mm (3/8" - 5/8")
Asphalt Aggregate	6 - 22 mm (1/4" - 7/8")
Screenings	2 - 5 mm (1/16" - 3/16")

Product specifications are achieved by successive size reduction, by crushing and screening, with recycling and re-crushing oversized particles. The processing sequence includes:

Primary Crushing reduces fragmented rock to 150 mm (6") minus;

Surge Pile receives and stores the crushed rock after armour/gabion stone has been screened out and stockpiled;

Secondary Crushing reduces stone size to about 50 mm (2") minus; 50 mm clear and crusher run stone is screened and stockpiled;

Tertiary Crushing provides final reduction to approximately 6 mm (1/4") minus;

Conveying and Screening follows each crushing stage, using double and triple deck screens, to separate products by size range, with oversize particles returned by conveyor.

Blending from a series of storage bins enables creation of products for which a range of particle sizes or gradations is specified;

Washing is used to clean the crushed stone and manufactured sand, to remove fine particles, by scrubbing, water jets or sprays; with recycling and settling the wash water, in a closed system, prior to re-use; and

Stockpiles are created by telescoping or radial stacking conveyors, depending on the required configuration and volume for each product.



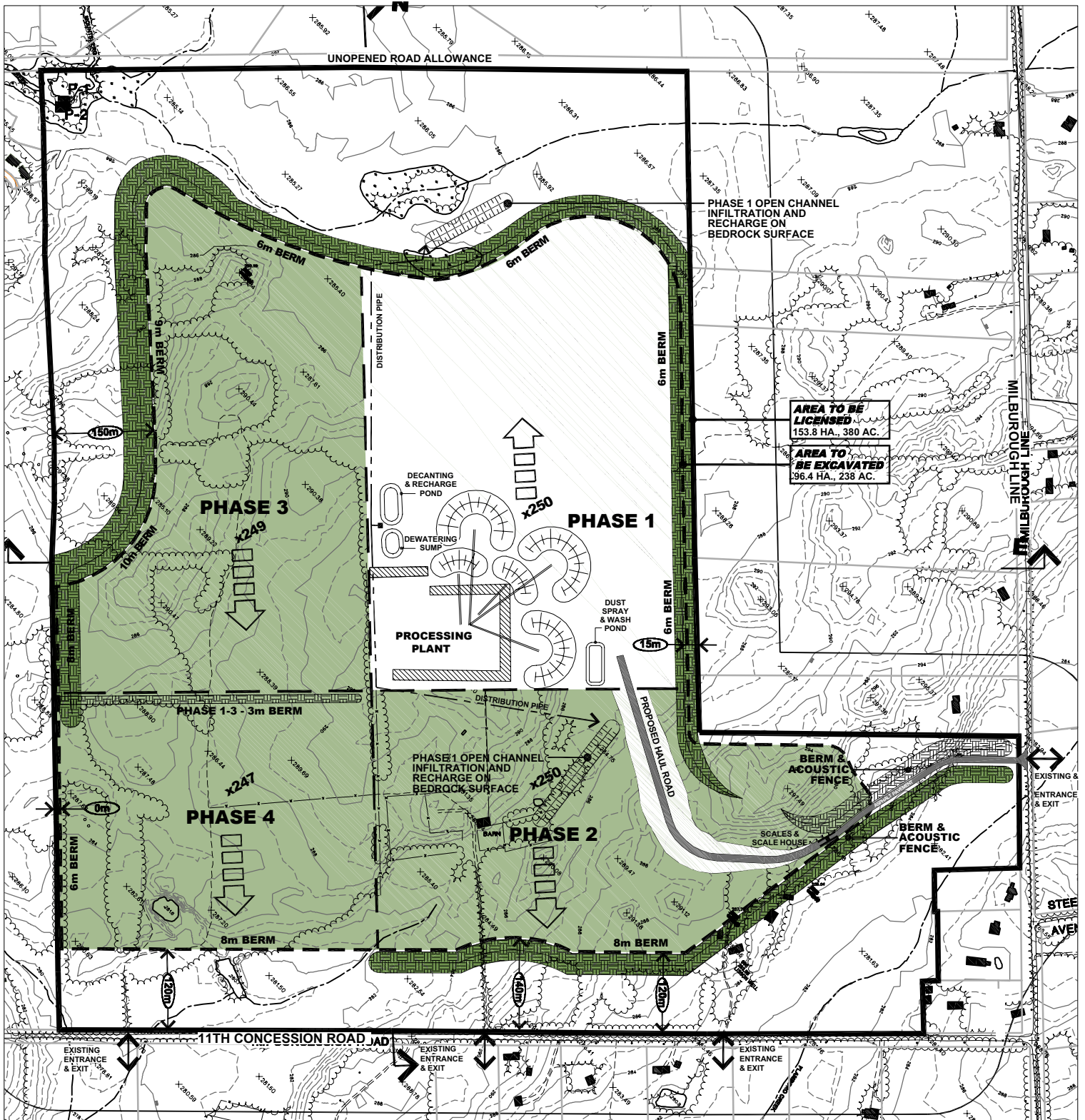


Figure 33

OPERATIONAL PLAN



Scale: 1:8,000



14.4 Operational Plan

The proposed dolostone quarry will be developed in four phases. Figure 33 illustrates Phase 1 operations. Site Plan Drawing 4, Staging and Progressive Rehabilitation includes diagrams for Phases 2 to 4:

Phase 1 is centrally located, comprising about 31 ha or 20% of the area to be excavated. This provides the maximum separation from neighbouring residences. The processing plant is situated near the mid-point of the property, surrounded by a rock wall enclosure. Stripped soil and topsoil are used to build perimeter, vegetated berms.

Highway trucks will enter and exit via a bermed, paved haul road, which slopes down to the first lift level, where they are loaded from product stockpiles.

Dewatering, monitoring, recharge and water management facilities are established at the beginning of Phase 1. These include a storage pond, for recycling dust spray and aggregate wash water; a separate decanting and recharge pond, to collect stormwater; and a sump to maintain the groundwater below the quarry floor. Water pumped from the quarry can be recharged via infiltration trenches, excavated through the shallow overburden, to the bedrock surface.

Phase 2 involves excavation of the southeast sector, advancing toward Concession 11. The processing plant and stockpiles will remain in Phase 1. Water management features will be modified and relocated, as the quarry excavation area increases, based upon operating experience, monitoring and feedback, set out in the Adaptive Management Plan.

Phase 3 is the northwest sector and includes initial, progressive rehabilitation. This phase will be excavated to the full depth, second lift. Overburden, stripped to expose the bedrock for Phase 3, will be placed in the dry, in the northeast corner of Phase 1, to create shallow water and wetland areas.

Phase 4 completes the excavation and progressive rehabilitation sequence. Soil material stripped from Phase 4 will be utilized to rehabilitate the northwesterly corner of Phase 3.





Dufferin Aggregates, Milton Quarry



Kerncliff Park, Burlington, Pre 1960's Quarry



St. Marys Swimming Quarry, Pre 1930's Limestone Quarry

Figure 34

REHABILITATION

Scale: 1 : 10,000

Source: S.E. Yundt Ltd.



14.5 Progressive Rehabilitation

Progressive rehabilitation, as required in the Provincial Standards, is accepted industry practice. Surficial soils and subsoil, or overburden, are stripped to prepare each excavation phase. These materials are first used to construct the required perimeter berms. Then, as available, they are utilized to backfill the excavation, during progressive rehabilitation. It is currently estimated that approximately 2 million m³ (cubic metres) of soil material will be stripped; 600,000 m³ is required for berms; and 1.4 million m³ will be available for progressive rehabilitation.

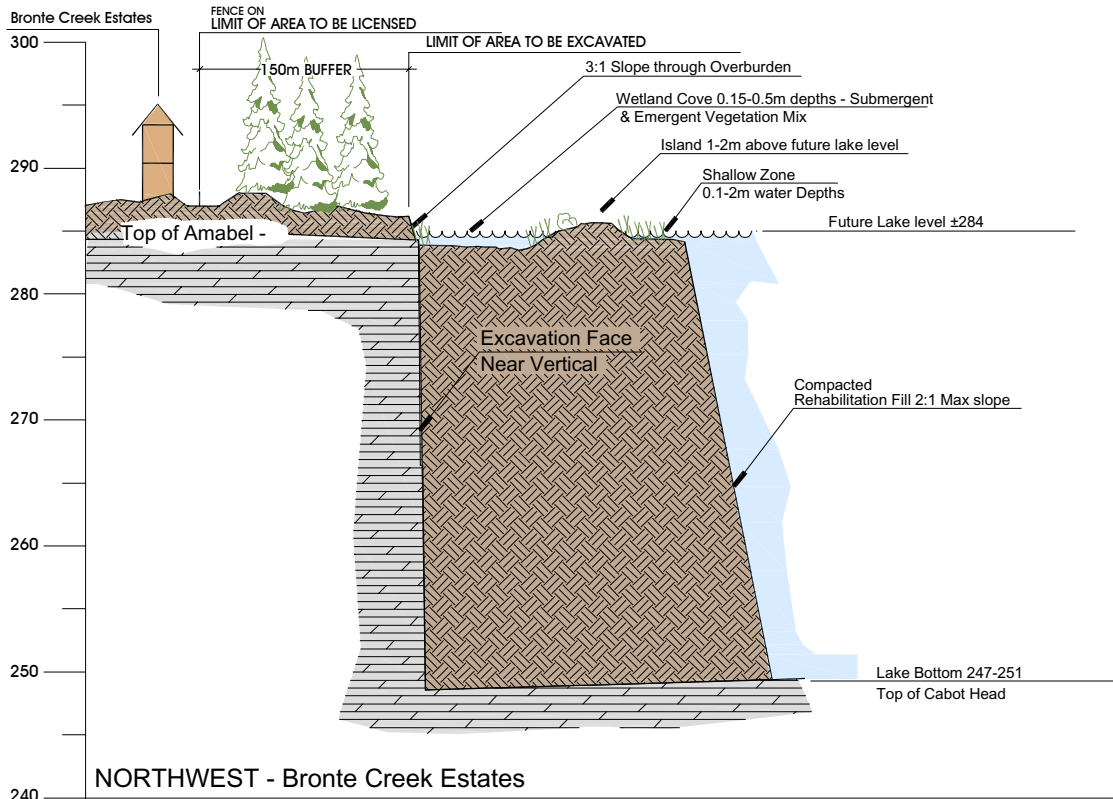
Aggregate washing is required, to remove silt particles and crushing dust from the washed stone and manufactured sand, produced for high strength concrete and asphalt applications. These particles, removed in settling ponds, together with unrecovered bedrock, should contribute about 3% of the dolostone volume, another 1 million m³. The estimated 2.4 million m³ will provide backfill, to a 35 m depth, for about 6.9 ha of rehabilitation area.

Figure 34 illustrates three examples of limestone quarry rehabilitation. A variety of options is available, from the precedent-setting, naturalized escarpment formations and habitat, being created by Dufferin Aggregates, in its Milton quarry; to active and passive recreation areas, at St. Mary's and Burlington, respectively. Other examples, recently reported by the Greenbelt Task Force, include agricultural uses and botanical gardens.

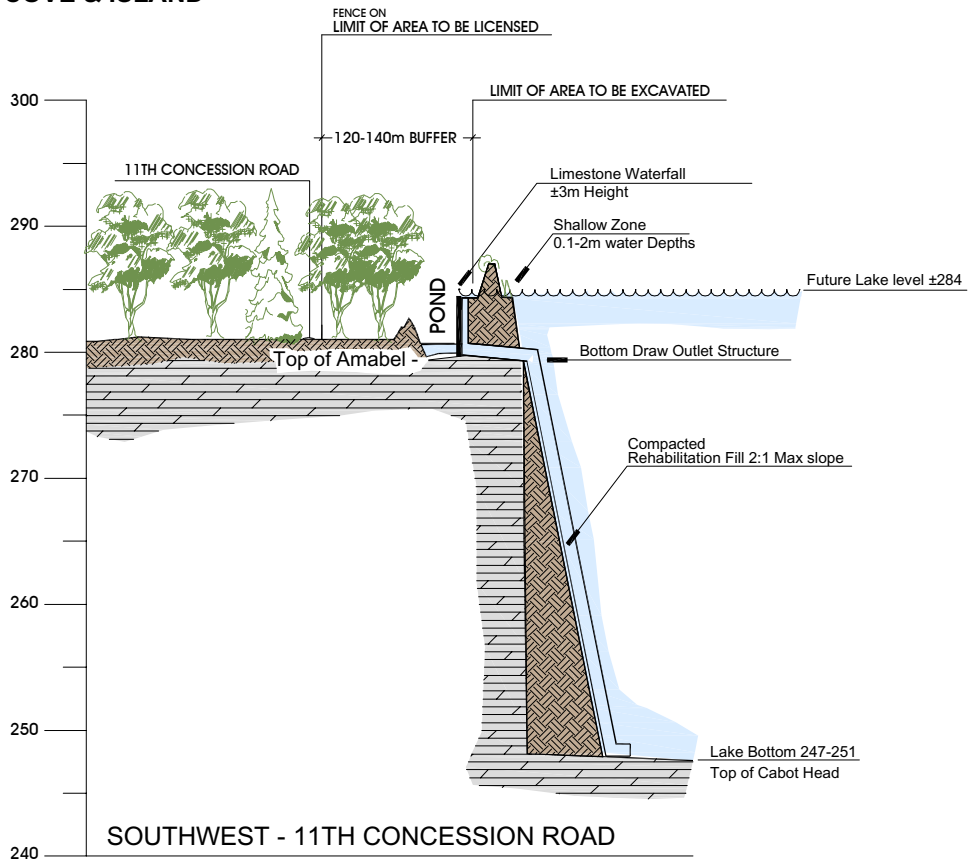
Conservation Halton recognizes the need for high quality aggregates, produced within a comprehensive resource management context. The Authority's primary objective is protection of the natural environment, particularly the integrity of water features. It encourages comprehensive rehabilitation plans, that are: *".....compatible with the surrounding landscape as well as create additional environmental lands"*.⁽¹⁶⁾

(16) Conservation Halton: *Watershed Viewpoints, Quarry Expansion and Rehabilitation*, 2004





PROTECTED WETLAND COVE & ISLAND



LIMESTONE WATERFALL

Figure 35

REHABILITATION SECTIONS

Scale: 1:6,000



Figure 35 provides two examples of the alternative quarry edge sections, achievable during progressive rehabilitation.

Northwest, more than 4 ha can be backfilled to create a wetland expansion, with 0.15 to 1.0 m water depths and a small island. This concept will be refined, in consultation with the City, MNR and Conservation Halton, to develop specific environmental criteria, to be met during rehabilitation. The protected wetland cove concept will provide an addition to the Provincially significant wetland; a linkage, between the forested area and the proposed lake; and will improve the maintenance of water levels, within the existing wetland.

Southwest, in the vicinity of the existing pond, the future lake level will be higher than the existing ground elevation. The perimeter berm can be maintained as a dam, in this area, creating a 3 m height of land, above the Concession 11 pond. Our concept is for a bottom draw lake outlet structure, to release cold water over a 3 m limestone waterfall. This cold, aerated flow will enhance downstream water quality. Similar, controlled lake flows can be established, for Flamboro and Mountsberg Creeks.

The proposed dolostone quarry site does not exhibit the elevation extremes, associated with the Niagara Escarpment, to the east. In general, it is expected that the future lake level will be within 1 to 3 m of the bedrock surface. Exposed rock cliffs, pictured on Figure 34, will be limited. Instead, the shoreline and rehabilitation areas can be enhanced as extensions of the surrounding, natural environment.



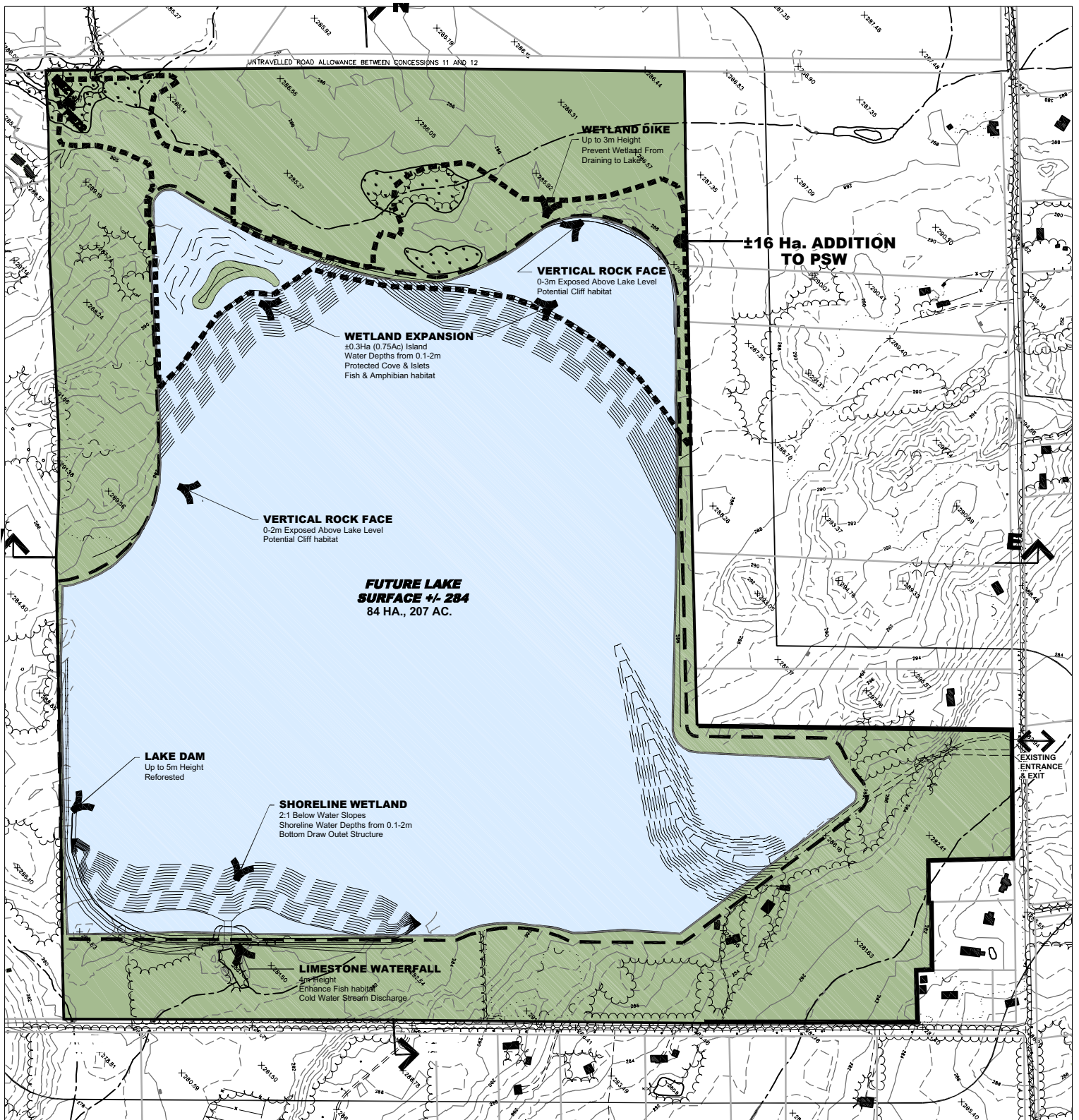


Figure 36

FINAL REHABILITATION PLAN



Scale: 1:8,000



14.6 Final Rehabilitation Plan

The Final Rehabilitation Plan has been developed to an after use concept that should be compatible with the area; conform to the Flamborough Official Plan, Section B.7, by including *Rural* uses; and enhance the wetland and surface water resources in the vicinity.

The future lake will comprise about 84 ha (207 ac), based upon a water surface elevation of 284 m. As Figure 36 indicates, the lake shoreline has returned a natural, pre-development form. Special rehabilitation areas are created in the southwest, northwest and northeast:

Southwest waterfall, illustrated on Figure 36 includes retention of the earth berm as a dam, to maintain the lake level, with a shallow water zone/shoreline wetland. A bottom draw control structure and 3 m height waterfall will enable level control and the release of cold, aerated water.

Northwest wetland is created by backfilling the shoreline cove to enlarge the wetland area; increase diversity; and provide a connection for amphibians and water fowl. A second bottom draw outlet could be provided, to enhance Mountsberg Creek.

Northeast wetland is similar to the northwest. However, it is separated from the existing wetland by a 2 to 3 m height rock face. This is one of the preferred areas, where a low level cliff-type habitat could be created.

The northerly unexcavated and backfilled areas will provide a 16 ha addition to the existing, 16.5 ha PSW, as noted on Figure 36.

A fourth feature area could be developed in the southeast, utilizing the former truck access ramp. This could include recreational opportunities or a natural enhancement of the Flamboro Creek wetland component and streamflow.



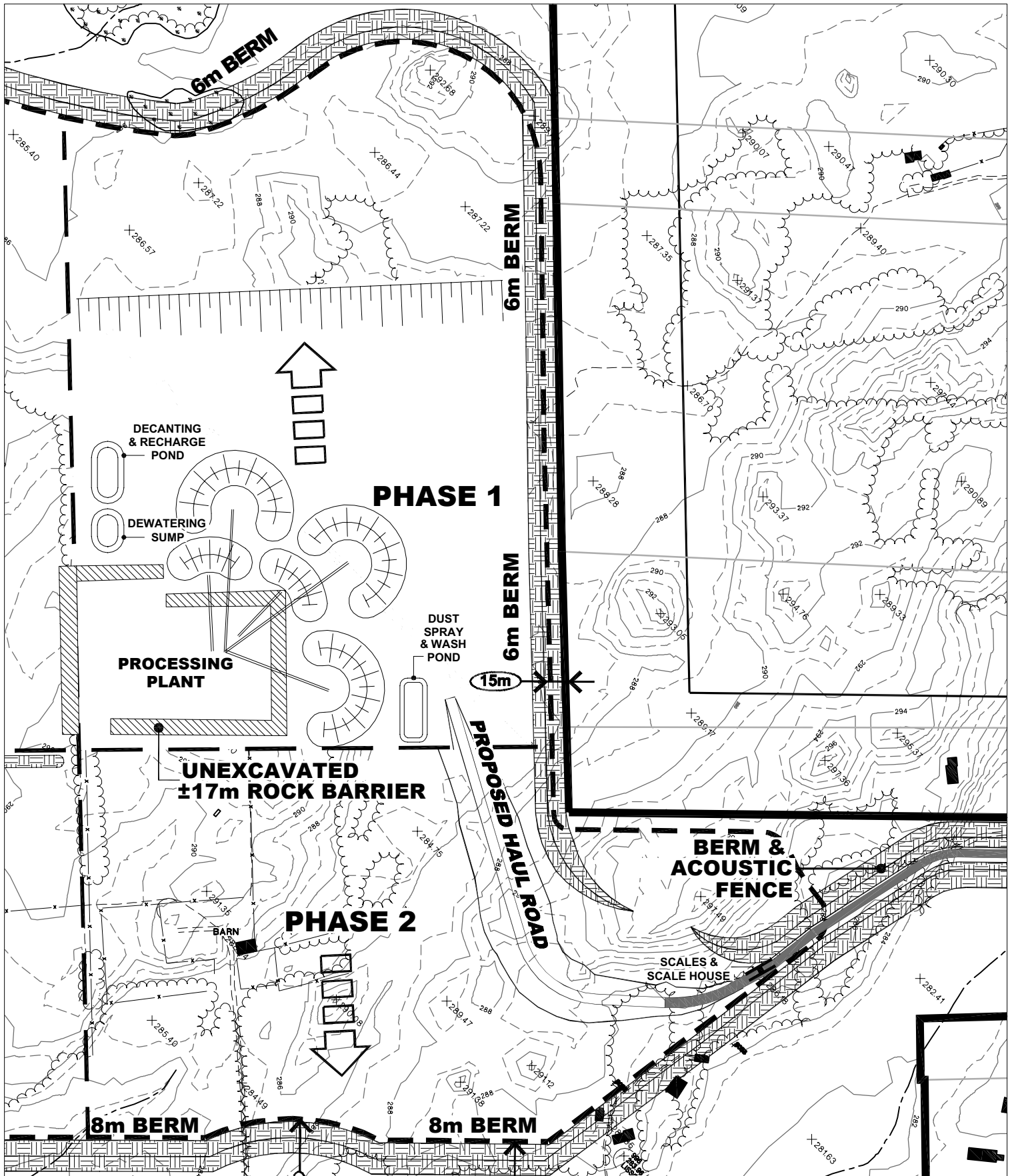


Figure 37
NOISE CONTROL

Scale: 1:5,000

15. ENVIRONMENTAL MANAGEMENT

15.1 Acoustic Controls

Aercoustics' *Preliminary Noise Control Study* describes the measures necessary to meet the established sound level limits, based upon a portable processing plant, operating on the first lift. Figure 37 illustrates the Phase 1 controls, haul road and plant shielding. Specific recommendations are included, for Phases 2, 3 and 4, in the appended report. As indicated in Section 12, the focus is upon meeting the specified sound level limits for surrounding dwellings in a Class 3, rural noise environment:

Concession 11 dwellings are built, in several cases, in close proximity to the road. Aercoustics has specified a buffer, of 120 to 140 m, south of the quarry, with a 6 m easterly berm height, for Phase 1; increasing to 8 m, for Phase 2; and extended to the westerly boundary for Phase 4. During Phases 1 to 3, an interim berm of 3 m height is recommended, along the north boundary of Phase 4, approximately 500 m north of Concession 11. The Concession 11 berm will likely be of 6 m height, with a 2 m acoustic barrier added later. Based upon a berm width of up to 40 m, the undisturbed, wooded buffer, between Concession 11 and the vegetated berm, will vary from 80 to 100 m (260 to 330 ft) in width.

Milborough Line residents are located from 360 to 450 m east of the site. A 6 m sound barrier, along the east boundary, will provide the required level of control.

Glenron/Timberrun dwellings are more than 450 m from the proposed excavation. The onsite, PSW buffer will remain undisturbed. Aercoustics has recommended a 6 m berm height, along the north limit of the active quarry area.

Bronte Creek Estates dwellings are much closer to the quarry boundary. Consequently, Aercoustics specifies a 150 m excavation setback, maintained as a vegetated buffer and berm heights of 9 to 10 m.

The processing plant will be enclosed within an unexcavated rock wall, of 17 m height, during all phases. This provides a second sound barrier, in addition to the perimeter rock faces and earth berms.





Figure 38
VIBRATION CONTROL

15.2 Vibration Control

Dolostone and limestone quarry operations require blasting, to separate sections of bedrock from the deposit. “Controlled” blasting means that the charges are designed to minimize their effects at offsite receptors while ensuring suitable fragmentation and movement of the bedrock for subsequent handling. Blasting is the most efficient means of fragmenting the bedrock into smaller more manageable pieces. This material can then be crushed and screened in a conventional aggregate processing plant.

The production of shot rock fragments for the quarry processing plant is achieved by drilling a pattern of holes, parallel to the existing face. Explosive charges are loaded into the holes, at specified intervals. Blast design is based upon computer simulation and monitoring of the initiation sequence and timing. Typically, the sequence includes short period delays between electronically-controlled detonations, separated by milliseconds. In other words, instead of one large explosion, there are many detonations. The result separates a slice of rock from the deposit. The upper photo in Figure 39 illustrates the separation of shot rock from a dolostone face, in a quarry in the Niagara Escarpment, in the Collingwood area.

Blast monitoring ensures control of ground vibrations at off-site receptors. This provides feedback for changes in the sequence and timing, to reduce or shift peak particle velocities.

Quarries typically schedule their blasting to occur at the same time of day, coordinated with the local community. Experience indicates that nearby agricultural operations are not affected. The lower photo, in Figure 39 is Glengate Farms, Milton, situated on the north side of Campbellville Road, adjacent to the Dufferin Aggregates Quarry. The quarry entrance and processing plant are indicated by a red arrow. Blasting has not affected this farm. Pat and Maria Cippoli, operators of the adjacent race horse farm, to the west, confirmed that their farm and the proposed dolostone quarry: “can co-exist”. Mid day blasting coincides with the period of minimum deer travel and residential activity.

All blasting operations will conform to Ministry of the Environment Standard NPC 119, with respect to ground vibrations and air concussion.



15.3 Dust Control

Prescribed Conditions 3.1 to 3.3, for Category 3 Licences under the *Aggregate Resources Act*, set absolute standards for dust control:

- 3.1 *Dust will be mitigated on site.*
- 3.2 *Water or another Provincially approved dust suppressant will be applied to internal haul roads and processing areas as often as required to mitigate dust.*
- 3.3 *Processing equipment will be equipped with dust suppressing or collection devices, where the equipment creates dust and is being operated within 300 metres of a sensitive receptor.*

Limits for dustfall and airborne particulate are also prescribed in regulations under the *Environmental Protection Act*.

Water can provide effective dust control, within dolostone quarries. An onsite water truck can be utilized, to spray gravel and rock surfaced roads and ramps. Spray systems and enclosures can be incorporated into the processing plant and at conveyor transfer points. Highway truck dust and tracking, from the quarry floor to Milborough Line, can be mitigated by wheel washing, road paving and wet sweeping.

A Dust Control Log Book will be maintained on site, to record weather and dust conditions and to document dust control activities. The Log Book will be available for review, by City and Provincial inspectors.

15.4 Fuel & Contingency Plan

As above, prescribed conditions also apply to fuel and contingency planning:

- 3.5 *A Spill Contingency Program will be developed prior to site preparation.*
- 3.6 *Fuel storage tanks will be installed and maintained in accordance with the Gasoline Handling Act.*

Fuels, refueling facilities and other vehicle fluids will be stored in a secure area of the site. A refueling and spills contingency program will be developed in consultation with the City and the MOE. The program will include protocols for fuel handling, vehicle maintenance and spill management. Spills will be immediately identified and contained; and notification will be provided to Hamilton Spill Management and the MOE Spills Action Centre.



15.5 Environmental Monitoring

The proposed dolostone quarry will be managed in the context of an Adaptive Management Plan (AMP). The AMP will be developed during application processing, in consultation with the City; other agencies having jurisdiction; and the consulting team retained by Lowndes Holdings Corp. Most of the monitoring will be continuation of programs established during the past 6 to 9 months of baseline studies and standard permitting protocols for regular compliance testing and annual reporting.

The primary objective of the AMP is to proactively anticipate environmental changes and trends, to enable effective and timely response and mitigation. The monitoring focus will be on water management, including:

Groundwater levels on the site and in private, neighbouring wells, where permission is granted, using manual or digital recording devices at a frequency to be determined;

Groundwater quality on and offsite, on an annual basis, for a selected set of parameters;

Groundwater seepage and precipitation, within the quarry, to develop a pattern of the quantities of water to be managed; and for water budget updating;

Streamflow at selected locations within the established zone of quarry influence, to document the natural flow regime and provide the basis for flow augmentation, if necessary; and

Stream quality and temperature at the streamflow monitoring stations.

Monitoring other onsite environmental features, including vegetation and wildlife may be required. Also, as indicated in this report, blasting, consumptive water use and stormwater releases will be recorded.

An annual assessment report will be prepared, to document and interpret monitoring results; and to provide the basis for updating the Adaptive Management Plan and other operating protocols. Also, Lowndes Holdings Corp. is prepared to establish an “*Arms Length Trust Fund*”, to guarantee private well restoration, as set out in Official Plan Amendment No. 62 - Flamboro Quarry Expansion.



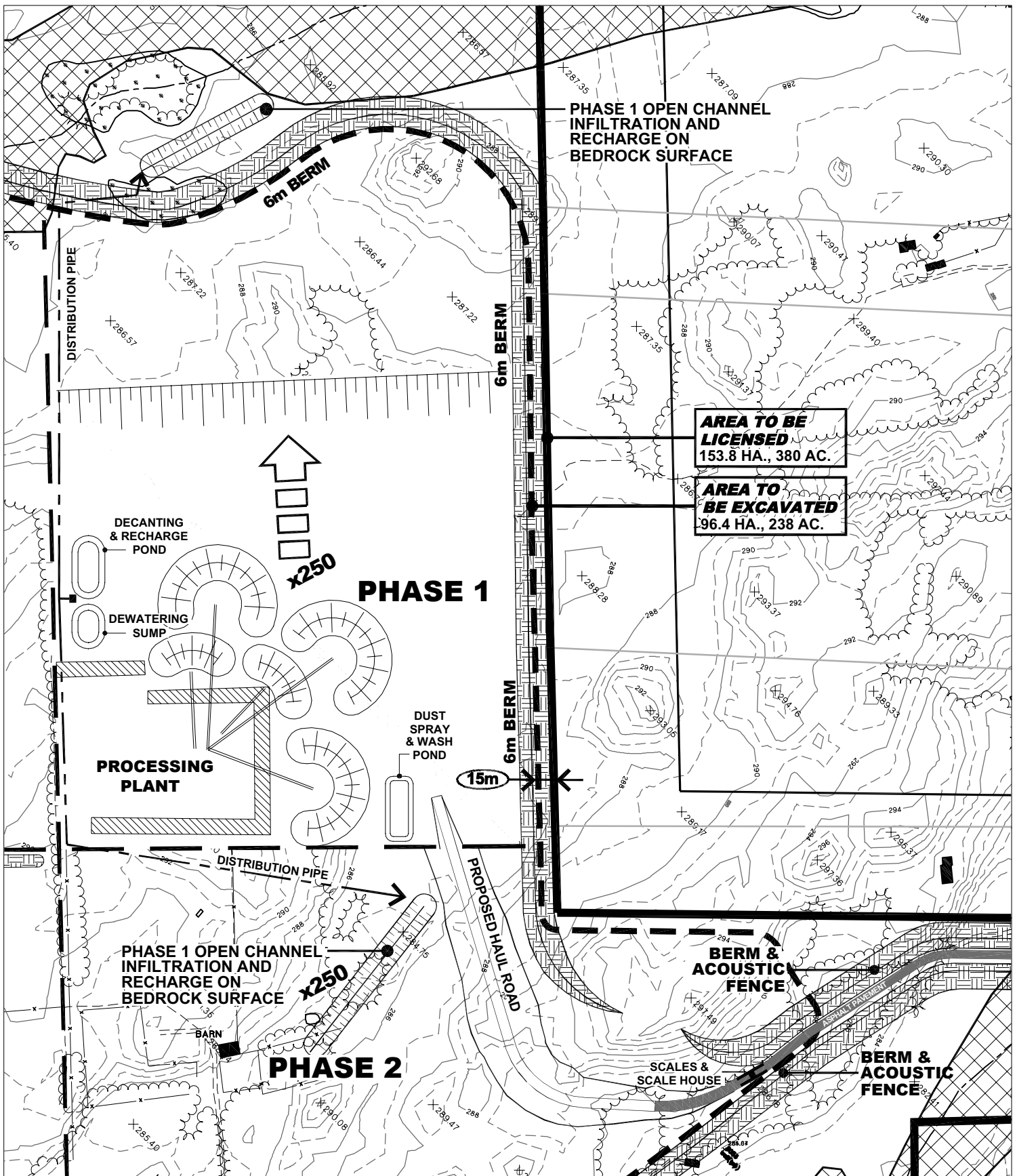


Figure 39

WATER MANAGEMENT PLAN

Scale: 1:8,000



15.6 Water Management

Ground and surface water management for dolostone quarries includes three separate systems: dewatering, to pump the groundwater to a level below the quarry floor; collection of seepage and accumulated stormwater for treatment; and pond storage, to provide water for dust suppression and crushed aggregate washing.

Pumped Discharge from quarry floor dewatering seepage is normally clear and cold. However, a decanting pond system will be required, to enable settling of rock particles from quarry floor runoff. Water is collected in sumps and treated by settling, in one or more ponds.

Ontario's MISA (Municipal/Industrial Strategy for Abatement) program was announced, in a June 1986 White Paper, by the Honourable James Bradley, Minister of the Environment. The program continued over a 7 year period:



The ultimate goal of the MISA program is the virtual elimination of persistent toxic contaminants from all discharges to Ontario's receiving waters.....the monitoring requirements for each sector are specified in two Regulations - The General Effluent Monitoring Regulation 695/88; and the relevant specific Sector Regulation.⁽¹⁷⁾

The dolostone quarry settling pond systems of Dufferin Aggregates and Milton Limestone were recognized as producing effluents which met Ontario's surface water standards, with: ".....aquatic life evident.....in effluent".⁽¹⁸⁾ Future monitoring of dolostone/limestone quarries was not required.

The photo above illustrates the clear water effluent from the Dufferin Quarry. Similar results can be achieved in the proposed dolostone quarry. Effluent can be used for recharge, to maintain and enhance ground and surface water systems.

Wash water recirculates within a closed system. Water is pumped from the quarry floor pond to the wash plant and recycled to the wash pond. Most of the water retained in the aggregate drains from stockpile material to the quarry floor. Some makeup water is required, to balance evaporation, dust suppression and product losses. No discharge to surface water is required.

(17) Ministry of the Environment: *The Development Document for the Effluent Monitoring Regulation for the Industrial Minerals Sector*, April 1990

(18) Ministry of the Environment: *Best Available Pollution Control technology, Pits and Quarries*, October 1993



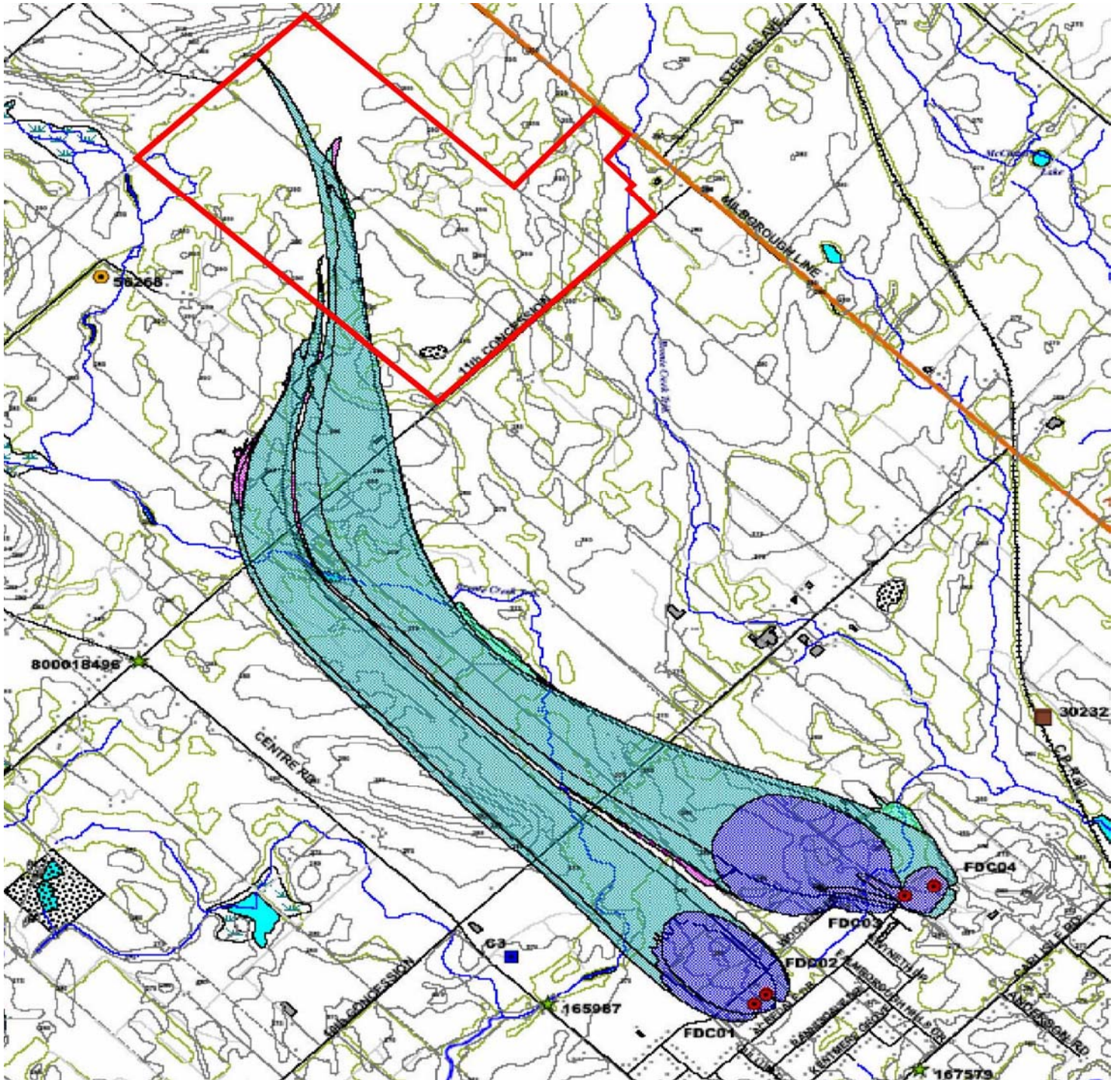


Figure 40
CARLISLE WELLHEAD PROTECTION ZONES

Scale: nts

Source: Hamilton Groundwater Study, May 2004



Quarry dewatering is expected to affect adjacent water wells, streamflows and the onsite wetlands. However, consumptive water use will be relatively small. The water to be pumped from the excavation can be proportionally directed to mitigate these effects. The water management system may include direct discharge to the streams and wetlands; recharge, to maintain ground water levels, with sentinel and monitor wells and stream gauges, to measure effects and mitigation. *“These mitigation components are all proven technology that, when combined together, will provide environmental protection”*.⁽¹⁹⁾

Gartner Lee, as indicated in Section 10.4, reports groundwater temperatures of 3.4 to 8.7°C, in April. Most of the groundwater flows from a conductive zone, at depth exceeding 15 m. At this depth, water temperature should not be subject to seasonal variation. Surface water temperatures, summarized in Section 11.3, increase substantially, during summer months. Mountsberg Creek, at 18 to 29°C and Flamboro Creek at 14 to 16°C provide limited fish habitat. Therefore, flow augmentation by pumping 8°C groundwater should improve stream temperature and fish habitat. When a lake is created, during rehabilitation, cold bottom water, discharged over an aeration device, should provide long term surface water quality enhancement.

Figure 40 indicates that the proposed quarry falls within the northerly sector of the capture zone predicted for the Carlisle well field. Groundwater flow direction is consistent with onsite predictions, by Gartner Lee Limited, illustrated on Figure 21. The quarry should not constitute a high risk for ground water impairment, however, dewatering has some potential to affect ground water flow. It is anticipated, during the City’s review of the Lowndes Holdings application, that its regional groundwater study and Gartner Lee’s onsite quarry modeling can be integrated, to enable identification of potential effects.

The effects of the quarry, when the first lift in Phase 1 is being excavated, will be minimal. The influence of dewatering is expected to increase with the area and depth of development. This staged development will provide the lead time to forecast and monitor the effects on ground and surface water resources; the effectiveness of mitigation measures; and ensure the maintenance of hydrogeological and hydrological integrity.

(19) Region of Halton: *Staff report No. PPW49-03 Re: Dufferin Aggregates Quarry*, June 2003

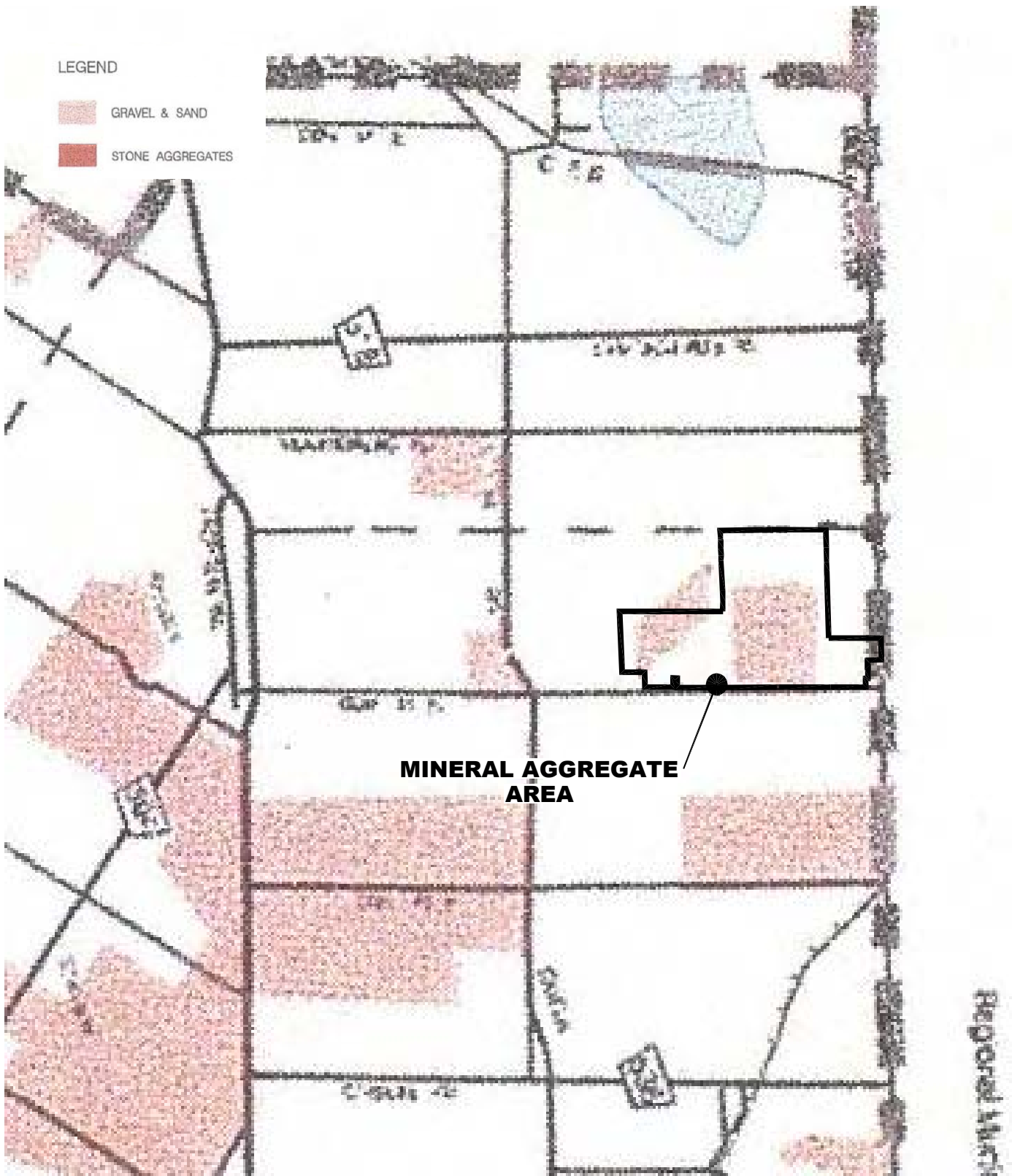


Figure 41
PROPOSED MAP 5

Scale: ±1 : 50,000

Source: Hamilton-Wentworth Official Plan, Consolidated 2003



16. PROPOSED PLANNING AMENDMENTS

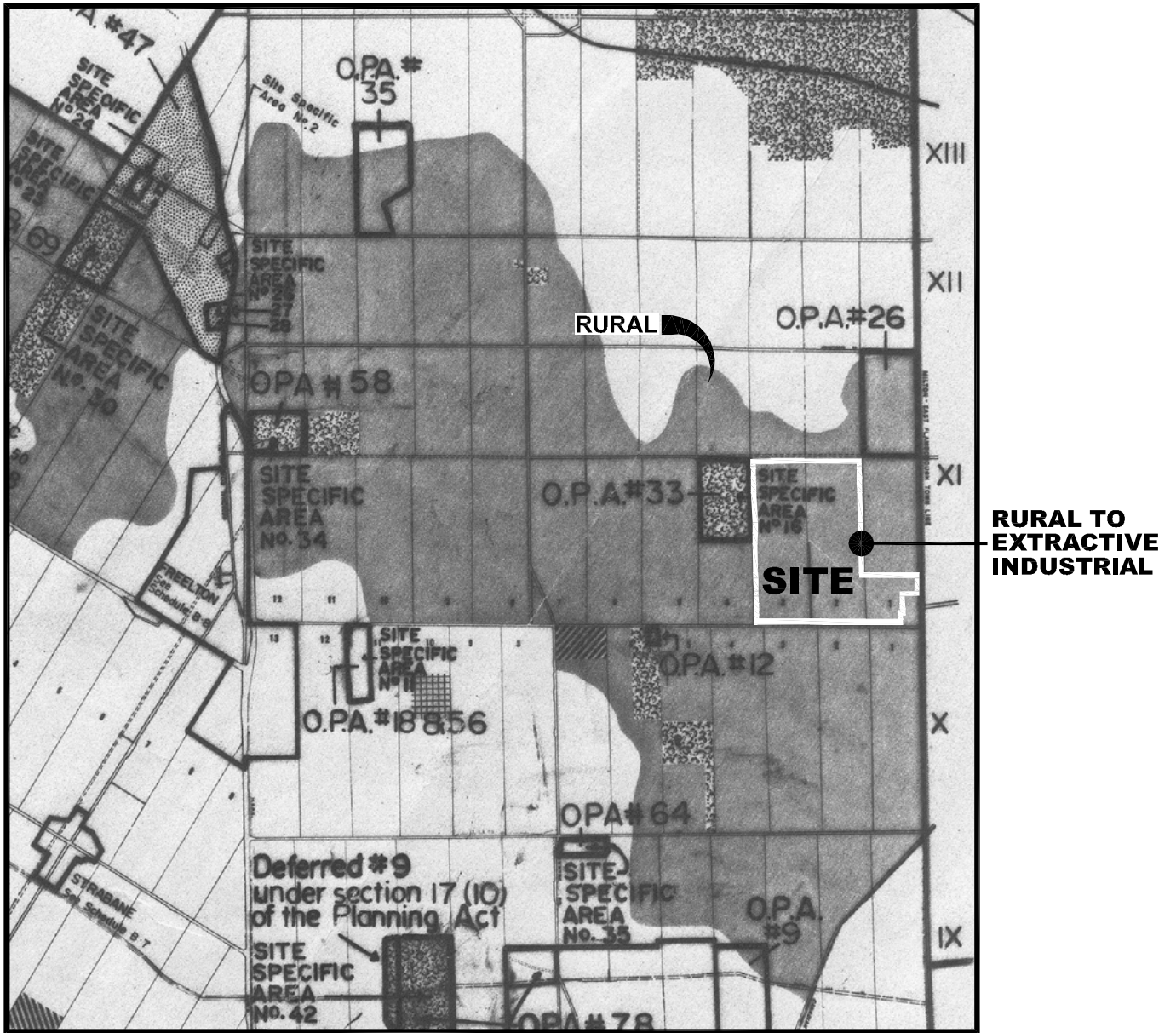
16.1 Hamilton-Wentworth Official Plan

Map 5 identifies the subject lands, in Lots 1 to 3 and adjacent properties, in Lots 4 and 5, in which Lowndes Holdings Corp. has an interest, as a *Mineral Aggregate Area* and identifies a “*Gravel and Sand*” deposit. The proposal is to establish and operate a Category 2 dolostone quarry for the production of mineral aggregate, from the Provincially significant Amabel Formation.

Notwithstanding the identified sand and gravel deposit, an amendment to the Regional Plan is not required, for the proposal. The Plan treats licensed areas as part of the “*Rural Area*” designation and indicates that the locations of mineral aggregate areas may be refined, without an amendment. New pits and quarries are required to proceed by amendment to the local Official Plan and Zoning Bylaw.

Correspondence was exchanged with the City’s Planning and Development Department, in late July and early August 2004. The City concurs with our opinion, that a Regional Official Plan Amendment is not required.





Schedule B, RURAL LAND USE PLAN



Figure 42

PROPOSED SCHEDULE B



16.2 Town of Flamborough Official Plan

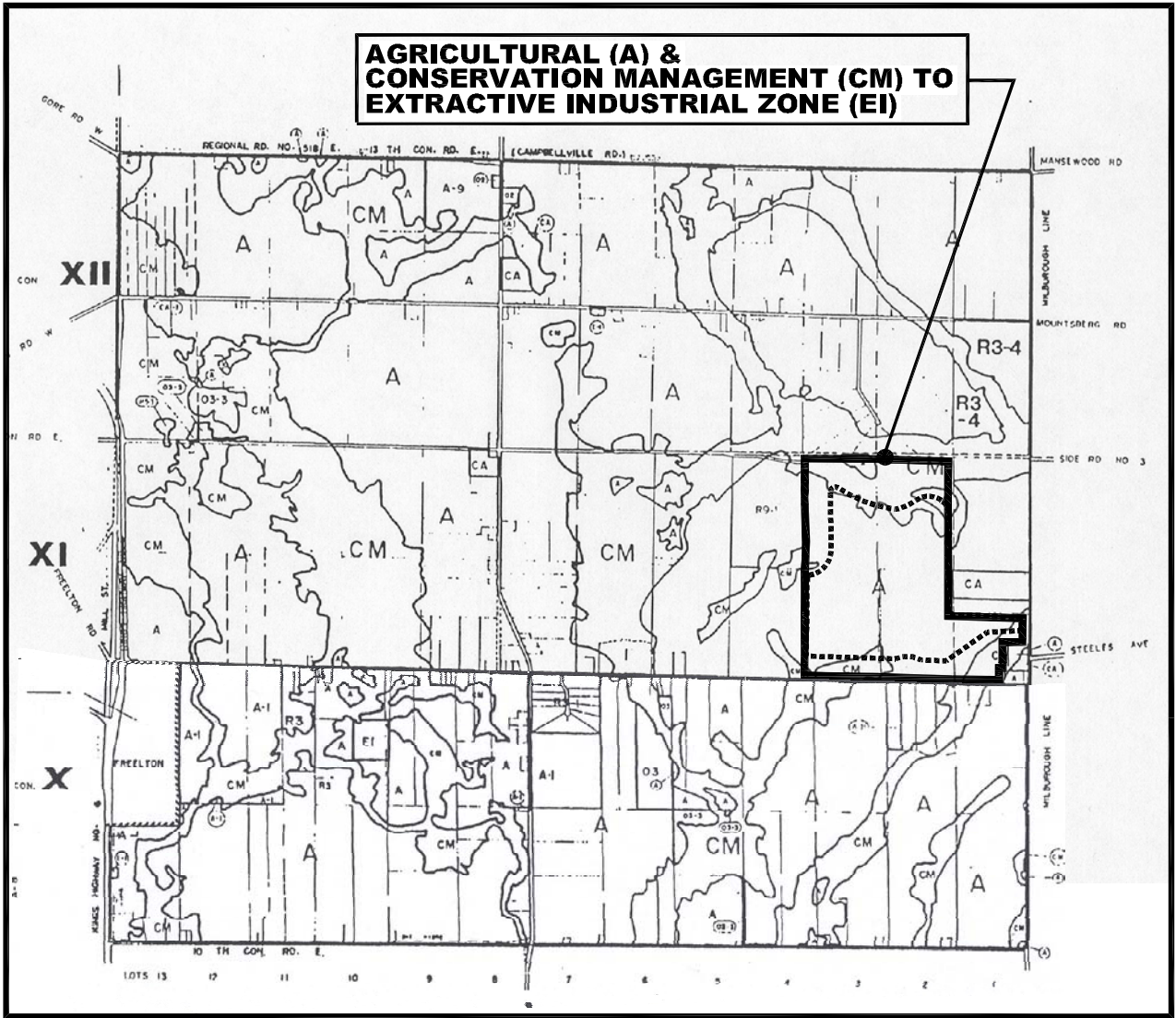
Schedule B to the Official Plan is to be amended, to change the designation of the proposed dolostone quarry, from *Rural* to *Extractive Industrial*, as shown on Figure 42. This designation is required to enable the implementing zone change.

West of the proposed quarry, Lowndes Holdings Corp. has purchased a 32 ha horse farm, in Lot 4 and 30 ha, in Lot 5. These lands are not proposed as part of the licensed area, but are reserved for future expansion. They are identified, on Schedule J, as “*Mineral Aggregate Resource Lands*”. No amendment to Schedule J is required. When the proposed quarry is expanded, in the future, these lands would proceed by amendment to Flamborough Official Plan Schedule B; the Zoning By-law and an application for a Licence under the *Aggregate Resources Act*. Our key concern, in this report, is to clearly signal the intent to expand the quarry, in the future.

The City has confirmed that the Application to Amend Schedule B, to the local Official Plan, should include only the site for which all prescribed studies have been completed; and that an amendment to Schedule J is not required.

The Town of Flamborough Official Plan, Schedule F, Transportation identifies Milborough Line, by notation, as part of the Flamborough road system. Although Milborough Line functions as a collector road, the former Town of Flamborough Official Plan makes no distinction, between collector roads and local roads, within the Flamborough road system. Policy D.5.3 specifies a maximum right-of-way width of 20 m, for Milborough Line, between the 5th Concession Road East and Campbellville Road. The City has agreed that the determination, as to whether a local Official Plan Amendment is needed, to use Milborough Line as a haul route, should be made during processing, to reflect the improvements as set out in the concurrent Class E.A.





Schedule A-2& A-3, TO BY-LAW No. 90-145-Z

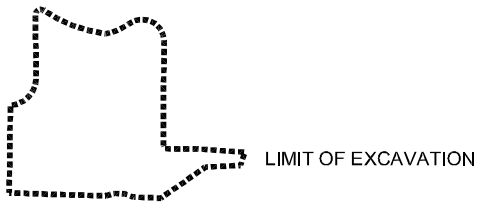


Figure 43

PROPOSED SCHEDULE A-2



N.T.S.

16.3 Zoning By-Law 90-145 Z

Figure 43 illustrates the proposed zone change, to enable licensing of the proposed quarry, under the *Aggregate Resources Act*.

It is proposed that the whole site will be designated *Extractive Industrial* and re-zoned, from *Agricultural (A)* and *Conservation Management (CM)* to *Extractive Industrial (EI)*, so that quarry operations and environmental protection will be under the jurisdiction of the Ministry of Natural Resources. This approach is consistent with the Official Plan Amendment and re-zoning for the Flamboro Quarry expansion:

Official Plan Amendment No. 62 was adopted by Council in February 1998; and approved by the Ontario Municipal Board in October 1999, to designate the area to be licensed *Extractive Industrial - Site Specific Area No. 43*, notwithstanding its designation, on Map 4 to the *Regional Plan*, as Environmentally Sensitive Area No. 28, the Hayesland Alvar Complex; and

Zoning By-Law No. 94-08-Z, which was passed in February 1998 and approved by the OMB in October 1999.

As indicated on Figure 43, the limit of excavation could be included on the zone map.



17. PLANNING OPINION

The following planning opinion is based upon a careful examination of relevant planning and environmental policies, particularly the Provincial Policy Statement and Official Plans. Lowndes Holdings Corp. has retained a team of recognized consultants, representing the issues associated with this application. These consultants were instructed to conduct thorough studies, many of which require monitoring and consultation, with the City and a variety of agencies having jurisdiction. In each case, they have prepared preliminary reports on their findings, as of August 2004.

Quarries are interim land uses, which substantially modify the physical environment. Mitigation is required, to ensure that these physical changes do not result in undue adverse impacts. However, the planning context for the quarry continues over an extended period of time, including final rehabilitation. It is appropriate to accept some loss of the rural environment, during site development and operation, to enable public enjoyment of the economic benefits and satisfy the need for aggregates, provided that progressive and final rehabilitation enable restoration and potential net gains to the natural environment.

The appended, preliminary reports by consulting experts retained by Lowndes Holdings Corp. confirm that recognized environmental criteria and standards can be met, by the proposed quarry. Examples include: Gartner Lee Limited, whose *Preliminary Hydrogeological Assessment*, in Appendix 7, confirms that the required mitigation, of the effects on water resources, represents proven technology. This premise was accepted by the Region of Halton and Conservation Halton, during their processing of the Dufferin Aggregates Milton Quarry expansion. Similarly, Aercoustics Engineering Limited, in its Appendix 9 *Preliminary Noise Control Study*, confirms that, while quarries and trucking introduce higher levels of noise, in rural environments, the proposed dolostone quarry, with its recommended controls, will meet established Provincial standards.

This report is intended to satisfy the requirements of the Town of Flamborough Official Plan, constituting a “*Complete Application*”. However, many of the technical studies will continue, for several months, during the City of Hamilton’s review process. For example, the City’s ESAIEG and Conservation Halton will meet with the Applicant to resolve the scope of an Environmental Impact Study and enable completion of Stantec’s *Preliminary Natural Environmental Technical Report*, in Appendix 6. The City will retain one or more peer reviewers, to participate in the completion of the technical reports, including hydrogeology. We have recommended a haul route, for the quarry trucks to access the Provincial highway system. However, the City will initiate a Class Environmental Assessment, of alternative haul routes, in association with the Town of Milton.

The following planning opinion is respectfully submitted, within this context.



17. 1 Provincial Policy Statement

The *Provincial Policy Statement* focuses on matters of Provincial interest. Decision makers: “.....shall have regard to.....” the Policy Statement when making *Planning Act* decisions. The policies applicable to the Proposed Dolostone Quarry address the following general subject areas:

- general economic, environmental and social principles;
- resource activities in rural areas;
- specific policies addressing the development of efficient and cost-effective land use patterns; and
- specific policies addressing mineral resources, agriculture, natural heritage and water resources.

The preamble to the Provincial Policy Statement confirms:

“Ontario’s long term economic prosperity, environmental health and social well-being depend on:

- 1. Managing change and promoting efficient, cost-effective development and land use patterns which stimulate economic growth and protect the environment and public health;*
- 2. Protecting resources for their economic use and/or environmental benefits; and*
- 3. Reducing the potential for public cost or risk to Ontario’s residents by directing development away from areas where there is a risk to public health or safety or of property damage”.*

The Hamilton/Halton road infrastructure was developed and is maintained, at the expense of the general public, to provide economic development opportunities. The Greenbelt Task Force recommends that the capacity of existing infrastructure should be optimized. Aggregates are essential to the Provincial economy. Proposed measures to protect the environment and the public should meet recognized Provincial standards.



1.1.1(b) *Rural areas will generally be the focus of resource activity, resource based recreational activity and other rural land uses.*

Quarries are rural land uses. This was confirmed in the recently enacted *Greenbelt Protection Act*, formerly **Bill 27. These interim uses enable restoration and enhancement of the environment as an integral part of rehabilitation.**

1.1.3 *Long Term economic prosperity will be supported by:*

- f) optimizing the long-term availability and the use of agricultural and other resources; and*
- g) planning so that major facilities (such as industries and aggregate activities) and sensitive land uses are appropriately designed, buffered and/or separated from each other to prevent adverse effects from odour, noise and other contaminants.*

Development of an Amabel dolostone quarry within Selected Bedrock Resource Area No. 1, mapped by the Ontario Geological Survey and designated as an aggregate resource area, in the regional and local official plans, implements the intent of the local, regional and Provincial governments to ensure its availability. Resource use is optimized where the deposit covers a relatively large area; is at its maximum depth; and where the drift (overburden) thickness is minimal.

While the proposed quarry can be considered as a “*major facility*”, the Site Plan and related technical reports confirm that it can be buffered from nearby sensitive land uses, to the extent that Provincial standards can be satisfied.

2.2.3.1 *As much of the mineral aggregate resources as is realistically possible will be made available to supply mineral resource needs, as close to markets as possible*

The Ontario Geological Survey has identified an extensive, Provincially significant deposit of Amabel dolostone in this area. The Regional and local official plans contain maps and policies to protect mineral aggregates in this area. Much of this deposit has been lost due to Provincially significant wetlands and non-farm residential lot fragmentation. The proposed amendments will provide access to as much of this deposit as is realistically possible, in the context of the geographic Township of Flamborough and nearby areas under special jurisdiction, including the Niagara Escarpment Plan Area.



2.2.3.6 *in prime agricultural areas, on prime agricultural land, extraction of mineral aggregates is permitted as an interim use provided that rehabilitation of the site will be carried out whereby substantially the same areas and same average soil quality for agriculture are restored.*

On these prime agricultural lands, complete agricultural rehabilitation is not required if:

(a) there is a substantial quantity of mineral aggregates below the water table warranting extraction; or

(b) the depth of planned extraction.....makes restoration.....unfeasible;

The area proposed for amendment is not prime agricultural land. Class 2 and 3 soils comprise approximately 9% of the property. Also, since the Provincially significant Amabel dolostone is very deep and situated below the water table, the exemption provided in Section 2.2.3.6 applies. This Section recognizes that the need for high quality aggregate supercedes the objective to preserve agricultural land.

2.3.1 *Natural heritage features and areas will be protected from incompatible development:*

*(a) Development and site alteration will not be permitted in:
significant wetlands south and east of the Canadian Shield; and
significant portions of the habitat of endangered and threatened species.*

The Provincially Significant Wetland on site has been identified, subject to more detailed mapping of the limits. The wetland can be expanded, during quarry rehabilitation. No quarry development will be proposed within the wetland and appropriate buffers will be provided. There is no habitat for endangered or threatened species on the property.

(b) Development and site alteration may be permitted in:

*fish habitat;
significant wetlands in the Canadian Shield;
significant woodlands south and east of the Canadian Shield;
significant valleylands south and east of the Canadian Shield;
significant wildlife habitat; and
significant areas of natural and scientific interest*

if it has been demonstrated that there will be no negative impacts on the natural features or the ecological functions for which the area is identified.



The proposed development is required to utilize a Provincially significant mineral aggregate resource. In the context of the PPS resource management hierarchy, this takes precedence over regional and local natural resources, in most cases.

No development is proposed within fish habitat, wetlands or ANSIs.

None of the woodlands, valley lands nor wildlife habitat, which may be affected by the proposed, interim quarry operations, is “significant” to the extent that it should preclude quarry development.

Through progressive rehabilitation, the applicant intends to re-create a different, but diverse natural environment which, in the long term, can enhance the environment.

2.3.2 *Development and site alteration may be permitted on adjacent lands to a) and b) if it has been demonstrated that there will be no negative impacts on the natural features or on the ecological functions for which the area is identified;*

2.3.3 *The diversity of natural features in an area, and the natural connections between them should be maintained, and improved where possible.*

The proposed quarry is situated on adjacent lands. Studies, which have been completed to date and will continue, as this application is processed, are directed toward ensuring that negative impacts are mitigated and ecological functions can be maintained. Ecological diversity and natural linkages can be maintained and enhanced, during the life of this interim quarry and progressive rehabilitation program.

2.4.1 *The quality and quantity of ground water and surface water and the function of sensitive ground water recharge/discharge areas, aquifers and headwaters will be protected or enhanced.*

The proposed water management program, formulated in cooperation with the City and other agencies is intended to protect and maintain the quality and quantity of ground and surface water resources. Final rehabilitation and lake creation should enhance and diversify the existing water resource regime. Surface water temperatures may be reduced, during final quarry development and following final rehabilitation, through cold water discharge.



In our opinion, the Proposed Dolostone Quarry application has regard to and is consistent with the *Provincial Policy Statement*.

17.2 Hamilton-Wentworth Official Plan

The Proposed Dolostone Quarry is within the *Rural Area*. It is designated, in part, a *Mineral Aggregate Area* and an *Environmentally Significant Area*. The former designation identifies the Provincially significant, Amabel dolostone resource.

Part C-1 Resource Protection

The boundaries of ESAs, identified on the Plan, are somewhat general. More precise boundaries will be defined, in site-specific environmental studies, without amendment. Consistent with the PPS. Land use changes will only be permitted where, they:

- will not adversely affect, degrade or destroy the area qualities which are the basis of the designation;
- will not cause any significant water quality or quantity impacts; and
- will not adversely affect resource protection policies or plan implementation (C.1.2.2a)

As summarized, in the preceding discussion of the PPS policies, it should be feasible to meet these tests so that the proposed land use change can be permitted.

Land use changes are not permitted within a PSW; and development of adjacent lands will not be permitted, unless it can be demonstrated, by environmental impact study, that the change will not result in:

- loss of wetland functions;
- subsequent demand for future development which will adversely affect existing wetland function;
- loss of contiguous wetland area; and
- conflict with existing site-specific wetland management practices (C.1.2.2d).

Studies completed to date indicate that the proposed quarry will not adversely affect the PSWs on site. This will be confirmed in a scoped EIS, completed in association with Hamilton's ESAEIG and Conservation Halton, during the coming months.



Part C-2 Resource Utilization

2.2 Mineral Aggregates

Lands designated *Mineral Aggregate Areas*, on Map 5, are to be protected for future extraction (C.2.2.1). Lower tier municipal Official Plans must conform with these designations and include policies to protect these areas, from uses incompatible with future extraction (C.2.2.2). Other uses permitted, within extraction operations, must also be detailed, at this level. Lower tier Official Plans must set out policies for the establishment of new quarries (C.2.2.3); and new quarries must include provisions to minimize impact on surrounding uses (C.2.2.9). Where a new quarry is within or adjacent to an ESA, the application may be referred to the City's ESAIEG (C.2.2.9).

The subject lands, designated Mineral Aggregate Areas, have been protected to the extent contemplated in the Regional Plan. It is believed that the proposed Site Plan, when fully processed in accordance with the City's policies, will enable protection of adjacent, existing sensitive uses, in accordance with Provincial standards.

The Regional Plan indicates that the City will seek progressive rehabilitation of quarries (C.2.2.5); and will monitor operations, within the Region, to determine the effects on environment, transportation, roads and rehabilitation activities (C.2.2.8). Finally, the Region will require lower tier municipalities to regulate the operation of extraction operations, to the extent permitted under the *Aggregate Resources Act* (C.2.2.5).

The City will conduct a Class Environmental Assessment, for the haul route; and it will participate in the completion and implementation of rehabilitation plans and will monitor operations through annual Compliance Assessment Reports, provided in accordance with the *Aggregate Resources Act*.

2.3 Groundwater

The general intent of the Regional Plan, with respect to groundwater resources, is to maintain and improve groundwater quality and its role in the water cycle. Policy C.2.3.1b) permits development in Rural Areas, only where the cumulative impact of development will not threaten the quantity or quality of groundwater resources.

It is intended that the proposed water management plan, implemented via an AMP (Adaptive Management Plan) Agreement with the City will satisfy this policy.

In our opinion, the Proposed Dolostone Quarry meets the policy requirements of the Regional Official Plan.



17.3 Town of Flamborough Official Plan

The Proposed Dolostone Quarry and surrounding lands are designated *Rural*, with *Hazard Lands* in the north and southeast sectors. A substantial portion of the site and lands to the north, east, south and west are designated *Mineral Aggregate Resource Lands* on Schedule J. The Plan indicates, in Sections B.7 and C.5, that these resource areas will be protected from incompatible land uses. A set of matters, to be evaluated by Council, is set out in Subsection B.7.4:

- (i) compatibility with adjacent existing and planned land uses;

The proposed quarry, as described in this report, is expected to meet Provincial standards. Provided that these standards are satisfied, the proposal can be considered “compatible”.

- (ii) demonstration of the need for, and benefit of additional aggregate resource extraction;

Need is documented in report Sections 3.1, 3.2 and 4. The Greater Golden Horseshoe Area is facing a shortage of dolostone aggregate products, in the short term, and depletion within 10 years. The proposed quarry will provide substantial economic benefits and employment opportunities.

- (iii) potential impacts on the environment, including measures required to minimize any adverse impacts;

Quarry development and operation will result in substantial physical changes to the site. The effects of development on water resources is described in Section 10; with detailed descriptions of cultural and natural heritage features in Section 11. Measures proposed to mitigate potential effects, on the environment, are described in Section 14, Site Planning and Section 15, Environmental Protection.

- (iv) potential impacts on the transportation system;

A Class Environmental Assessment will be conducted by the City, to evaluate the truck route alternatives considered by Lowndes Holdings Corp. Potential transportation impacts can be minimized, through this process. Road improvements can be implemented via agreements with the applicant.



- (v) the capability of the land for agricultural uses and for the rehabilitation to a use which conforms to this Official Plan or back to an agricultural use where Soil Classes 1 to 4 have been defined. Such lands shall be rehabilitated back to substantially the same acreage and average soil capability for agriculture; and

Agricultural capability is addressed in Report Section 8. Less than 9% of the soils are “prime” - Class 1 to 3; and approximately 15% are Class 4. Rehabilitation back to agriculture is not feasible nor proposed, in accordance with PPS Section 2.2.3.6.

- (vi) other such matters as Council deems necessary.

Other matters of concern to Council will be addressed during application processing.

Applications for amendments to establish a new quarry must include the information listed in Subsection B.7.5:

- (i) the location, dimensions, topography, size and description of the site proposed for a Mineral Resource Extraction Area;

The site is described in detail in this Planning Report. Appendix 1 includes a Survey Sketch and the Site Plan based upon new topographic mapping. All of the relevant site descriptions, including geology, soils and natural resources are summarized in this report and documented in the Appendix.

- (ii) the location, height, dimensions and use of all buildings or structures existing or proposed to be erected on the site;

Existing buildings and structures are shown on the Existing Features Plan and documented on the Survey Sketch, attached to the application. Proposed buildings and structures are shown on the Existing Features and Operational Plans and listed in Application Table 20, in Appendix 1.

- (iii) the location, quality and estimated quantity of the mineral resource;

The Provincially significant Amabel dolostone underlies the entire property, as proven by 39 test pits and 25 boreholes. Aggregate quality and quantity are described in Section 9 and Appendix 4.



- (iv) the use of all land, and the location and use of all buildings and structures lying within a distance of 150 metres (500 feet) of the boundaries of the site;

Surrounding land uses, buildings and structures are shown on the accompanying airphotos and on Site Plan Drawing 2 - Existing Features, in Figure 30 and Appendix 12.

- (v) existing and anticipated final grades of all lands and excavation and the limits of excavation within the site;

The topographic base plan illustrates existing elevations. Limits of excavation and anticipated final grades are included on the Operation and Rehabilitation Plans.

- (vi) surface water diversion, storage and drainage provisions;

Report Section 15.6 - Water Management, describes proposed water diversions, storage and drainage.

- (vii) all entrances, exits and proposed routes to be used by associated transport;

Site Plan Drawing 3 - Operational Plan, identifies the proposed Milborough Line entrance and exit. The proposed haul route is described in Section 13, subject to completion of the City's Class Environmental Assessment.

- (viii) locations of stockpiles for overburden stripping and mineral resources;

Site Plan Drawing 3 - Operational Plan shows the proposed locations of overburden stripping berms and product stockpiles.

- (ix) proposed tree screening and berming;

Site Plan Drawing 3 - Operational Plan indicates the PSW and perimeter setbacks, where tree screening will be maintained; and the proposed berms and acoustic barriers.

- (x) sequential and final rehabilitation plans;

Site Plan Drawing 4 describes staging and progressive rehabilitation, to achieve the conditions shown on Drawing 5 - Rehabilitation Plan.

- (xi) extent of adjacent property holdings which may be intended for future mineral resource extraction operations, where appropriate;



The Survey Sketch, attached to the application in Appendix 1; and Figure 13 - Site Environs, identify the lands in Lots 4 and 5, Concession 11, which the Applicant also owns.

- (xii) hydrology, soil, wildlife or vegetation studies which may be required by Council due to specific site concerns; and

Hydrology, hydrogeology, soil, wildlife and vegetation studies are summarized in this report and bound in the Appendix.

- (xiii) other information as Council deems necessary.

Other information, deemed necessary by Council, will be addressed during application processing.

In our opinion, an amendment is required to:

Schedule B - Rural Land Use Plan, to designate the site ***Extractive Industrial***

A copy of proposed Schedule B is attached to the appended application as Figure 42.

17.4 Zoning By-Law

An amendment is required to licence the Provincially significant dolostone resource by replacing the *Agricultural (A) and Conservation Management (CM)* zones with

Extractive Industrial (EI) zoning for the area to be licensed for the proposed dolostone quarry, for administration by the Ministry of *Natural Resources, under the Aggregate Resources Act.*

A copy of Proposed Schedule A-2 included as Figure 43 is attached to the appended Application For Planning Document Amendment.



18. CONCLUSIONS

1. Lowndes Holdings Corp. has identified and purchased a 154 ha (380 ac) site, where the Provincially significant Amabel dolostone is accessible, with thin drift cover; reaches its maximum thickness; and is of the highest quality for the production of scarce and essential mineral aggregates for the Greater Golden Horseshoe Area.
2. The Applicant has retained a team of qualified consultants, to conduct the prescribed studies, including acoustics, agriculture, archaeology, geology, natural environment, planning, topographic mapping, traffic, water resources and others.
3. These consultants, based upon their appended reports, have concluded that Provincial standards can be met, through the development and operation of the proposed quarry, subject to implementation of the recommended mitigation measures and adaptive management.
4. It is concluded, as described in detail in Section 17, that this application is complete, in the context of the *Town of Flamborough Official Plan*, and that the proposed amendments, to the Official Plan and Zoning By-Law, can be conditionally approved, following completion of the consultation and review process, to be initiated by the City of Hamilton.

Yours very truly,

LONG ENVIRONMENTAL CONSULTANTS INC.



RJL.al

R. J. Long, P. Eng., RPP



19. REFERENCES

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