

THE REGIONAL MUNICIPALITY OF WATERLOO
ARCHAEOLOGICAL FACILITIES MASTER PLAN

Prepared by

Archaeology Division
Planning and Development Department
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20 Erb Street West, 9th Floor
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N2J 4G7

September 1989

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Prepared with the assistance of
an Ontario Ministry of Culture and Communications
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1.0 INTRODUCTION

The management of archaeological heritage implies the establishment of priorities, a decision making process, management options based on a concise evaluation of known archaeological resources, and an established licensing and review process for work conducted in the Regional Municipality of Waterloo. The archaeological heritage must be evaluated not only on an individual site basis but also as part of the larger cultural and natural heritage that collectively contribute to the significance of any site.

Over 270 archaeological sites have been registered (under the Borden system of site designation) with the Ministry of Culture and Communications, Archaeological Sites Data Base, for the Region of Waterloo. There is a strong likelihood that many more archaeological sites will still be found. Not all of these sites are "equally important" when viewed in isolation. However,

...much of what we know of the [Region's] archaeological past results from an accretion of knowledge of individual sites and artifacts that collectively acquire an importance unheralded by the apparent insignificance of any particular one [site] (Department of Communications 1988:1).

The development of an Archaeological Facilities Master Plan was proposed by the Regional Municipality of Waterloo as a result of the Region's commitment to its cultural, natural and archaeological heritage and the requirement for developers to undertake an archaeological resource assessment on properties which exhibit a moderate to high potential for the recovery of archaeological remains. This requirement occasionally caused increases in costs and scheduling delays to the development industry. The production of an Archaeological Facilities Master Plan was viewed as a means to assist the development industry and to protect the archaeological resources of the Region.

An Archaeological Facilities Master Plan addresses immediate archaeological concerns and provides a comprehensive set of planning policies that deal specifically with archaeological resources. Use of the Archaeological Master Plan allows for the modification of development plans at an early stage of planning (that is, pre-draft plan stage) by allowing developers to arrange for an archaeological assessment of properties which exhibit moderate to high archaeological potential, to arrange for any required site specific mitigation (such as test excavation, intensive background research, avoidance, preservation, incorporation of parts of site into development plans, or full scale excavation), or selecting an alternate area for development, or of incorporating known archaeological sites into greenspace. The Archaeological Facilities Master Plan has produced a detailed inventory of known archaeological sites, a synthesis of the prehistory and history of the Regional Municipality of Waterloo together with a series of maps covering the entire Region identifying areas of high, moderate and low archaeological potential.

1.1 Terms of Reference

The proposal to develop an Archaeological Facilities Master Plan was approved by Regional Council January 30th, 1986. The Terms of Reference for the Archaeological Facilities Master Plan were approved by Regional Council on May 27, 1986. These Terms of Reference are:

PURPOSE

The purpose of the Archaeological Facilities Master Plan to be undertaken for the Regional Municipality of Waterloo is to identify and evaluate the archaeological resources in the Region and to study the feasibility of developing an archaeological facility.

PHASE 1

Preparation of a phasing schedule for development in the entire Region. Involves the delineation of priority areas for development in terms of immediate, short term, medium term and long term development. This work would be undertaken by an archaeologist with Planning Department assistance.

End product - a map showing development areas by priority.

PHASE 2

Extant information search for the entire Region involving:

- a) obtaining the registered sites information from the Ministry of Culture and Communications;
- b) archival information;
- c) information available from volunteer archaeologists;
- d) information from the Universities;
- e) information from the Waterloo Historical Society;
- f) etc.

This work to be undertaken by the archaeologist with the end product being a map showing the cultural affiliation of sites.

PHASE 3

Using the information gathered from Phases 1 and 2, the archaeologist can put together a picture of existing and potential archaeological sites in the Region as they may be affected by development pressures.

End product would be a working map of such sites.

PHASE 4

Development of a work program by the archaeologist for confirming archaeological sites in high priority areas. Undertake assessments in terms of the priority of the site - priority being measured both in archaeological terms and in terms of the timing of development. Some field work would be required to undertake verification and an initial inventory.

PHASE 5

This would be a similar task to that outlined in Phase 4 but would involve areas where the priorities are not so high and where development would take place within the two to ten year period (i.e. Phases 1 to 4 are crisis management, Phase 5 is the longer term program).

PHASE 6

Using the information gathered in the previous phases, an Archaeological Master Plan map can now be prepared identifying existing and potential archaeological sites that could be affected by development within the next five to ten years. In addition, policies would be prepared identifying how the Master Plan would be administered, developing a rating system for what has been found, developing procedures for identifying and rating sites and determine the optimum way to develop those sites. These policies will allow the Archaeological Master Plan process to be an ongoing one and allow it to proceed beyond the five to ten year initial study period. At the same time, the material gathered in the preceding phases will allow the Region to determine the feasibility of setting up a permanent archaeological facility.

The Master Plan document discusses the satisfaction of these Terms of Reference, provides an overview of the synthesis of the prehistory and history of the Region, provides recommendations for the management of the archaeological resources (this includes known sites and the potential for sites), provides proposed implementation of these recommendations and includes a section on the incorporation of these recommendations into the Regional Official Policies Plan.

2.0 DEVELOPMENT OF ARCHAEOLOGICAL FACILITIES MASTER PLAN

2.1 Phase I

Phase I (according to the Terms of Reference) entailed the preparation of staged development maps for the entire Region of Waterloo. There are primarily two types of development: rural settlement and residential/industrial development located in or adjacent to urban centres.

Delineating staging of development areas in the four townships of North Dumfries, Wilmot, Wellesley and Woolwich according to immediate, short, medium and long term development projections is unrealistic as the majority of lands that can be developed (according to the Official Plan land use designations) are likely to be developed as severances as opposed to subdivision.

For lands fronting onto existing roads and too small for subdivision plans, parcels are held by private residential landowners, not developers. Development proceeds by way of land severances requiring no extension of road or municipal services, therefore, timing of severances and development is entirely up to the residential landowner. It is not possible to predict when development will occur (Dave Gosnay, Regional Planner, personal communication, 1989).

Submission of a draft plan does not require registration (registration implies imminent development) of the draft plan within any specific time period, except for plans submitted prior to August 1st 1983. Even for these latter plans, draft plan approval may be extended ad infinitum.

A handicap in projecting staging of development is that some types of development are not reviewed by the Region. For example, building and demolition permits are the responsibility of each individual area municipality. In addition, the high frequency of annual building permit applications (an average of 3500 permits are issued annually) contrasted with two staff available for the review of these permits, makes the identification of stage of development and archaeological potential difficult (Hardacre 1989:2).

The seven staged development maps prepared by the Planning and Development Department of the Regional Municipality of Waterloo (for each City and Township) illustrate six development categories. The first category indicates parcels of land that have a completed archaeological assessment. This completed assessment indicates that the archaeological condition has been satisfied or that archaeological recommendations for site specific mitigation have been scheduled for completion prior to release of the condition. The second category illustrates development plans that have been reviewed by the Archaeology Division of the Region and have an archaeological condition included as part of the draft plan approval process. The third category illustrates properties that have a short term (1 - 2 years) potential for development. The fourth category indicates the potential for medium term (3 - 5 years) development. The fifth category illustrates the potential for long term development (6 - 10 years). The sixth category indicates possible land severances, which are difficult to assign to a specific development stage.

The information for devising these Staged Development maps (Figures 1 - 7) was derived from review of extant Status of Plans of Subdivision and Condominiums for each of the three cities (Kitchener, Waterloo and Cambridge) and the four townships (North Dumfries, Wilmot,

Wellesley and Woolwich), the Regional Official Policies Plan (1984), the City of Waterloo's Official Plan (1988), the justification analysis for the West Side Designation Study (Regional Municipality of Waterloo 1988a), the Land Utilization Study (Regional Municipality of Waterloo 1987), Staging of Development Report for the City of Kitchener (City of Kitchener 1988), archaeological consultant reports, and consultation with the Regional and Area Municipal Planners. Only the City of Kitchener has a detailed report on staging of development. Many of the reasons for staging of development in Kitchener are applicable to the Cities of Waterloo and Cambridge and to the towns and hamlets of the four townships.

The Staging of Development Report is a compilation of firstly, draft plans of subdivision that have received Municipal Draft Approval, secondly, Plans of subdivision that have been formally filed for processing with the Region and the City and thirdly, larger land parcels identified by the department [of Planning and Development] that have development potential or where nearby services would only have to be extended to service their lands. Lands also included are parcels identified by developers and landowners requesting identification within the Staging of Development Report.

The staging or scheduling of various draft plans of subdivision that have formally been filed is based upon a number of various factors. The factors that make up the criteria include the City's Five Year Capital Budget, the lot levy (development charge), revenue available on an annual basis to provide funding for services, recommended regional priorities, staff workload, the prior or imminent approval of Community or Secondary Plans as well as the other programmes of the many agencies and departments responsible for the delivery of essential services (City of Kitchener Staging of Development Report 1988:3).

Staged Development, illustrated in Figures 1 to 7, were developed using the same criteria used by the City of Kitchener Staging of Development report (ibid) as outlined below:

...staff's opinion as to the expected date of actual development of the lands in terms of commencement of grading, installation of services, greenway improvements and road extensions to bring the lands onstream for housing [and other types of development] construction. Staff's opinion is based on a realistic overview of the location of the plan of subdivision with respect to existing services, approval that has been received pertaining to community plans, monies allocated from the lot levy for the extension of services, commitment provided by the developer in "front-end financing" trunk services, the current or imminent development by abutting land owners in a sequential and orderly manner without leapfrogging and Regional commitment for the extension of major water supply and Regional Roads (ibid:15).

The terms identified (that is, short (1 - 2 years), medium (3 - 5 years) and long term (6 - 10 years)) are based on consideration of

...the current economic climate, interest rates, the supply of existing lots on the market through current plans of subdivision that are not fully developed and various development constraints ... [such as servicing and timing] (ibid:15).

These forecasted development stages may change considerably based on policies adopted by the Provincial and Regional governments, the economic climate (e.g. recession) and capacity constraints on existing landfill and sewage treatment plants.

In the City of Kitchener, the planned upgrading of the Schneider Trunk Sanitary Sewer may be delayed for various reasons causing a potential capacity problem. In such a case,

...it may be necessary for the City to restrict draft plan approval...each draft plan of subdivision would be considered on an individual basis as Council receives it (ibid:6).

There are approximately 66% of pending subdivision plans in the City of Kitchener that

...require either an Official Plan Amendment, Secondary Plan revision, face a physical limitation or will be the subject of a revised subdivision submission prior to the plan proceeding to draft approval (Hardacre 1989:3).

The issuance of draft approval for approximately 60% of residential units (21 pending plans of subdivision comprising 2564 residential units) in the City of Waterloo

...is dependent upon a resolution of the deferral of the Regional Official Policies Plan settlement boundary, an amendment to the City of Waterloo Official Plan and/or a modification to the applicable District Implementation Plans (ibid:4).

In the City of Cambridge,

A major limitation on the potential registration of draft plans in the City of Cambridge will be the sewage treatment capacity constraints of the Galt and Hespeler Sewage Treatment Plans. All existing and future pending plans of subdivision in the Galt and Hespeler areas of Cambridge are evaluated under the Sewage Treatment Plan capacity criteria...(ibid:5).

The town of Baden, in the Township of Wilmot, has at least one subdivision (30T-77034) which can be categorized as development because the sewage treatment plant is operating at full capacity. No expansion plans have been submitted to alleviate this capacity problem, therefore, no new serviced residential commitments in subdivision and/or severances can be given (Regional Municipality of Waterloo PD 126/88 1988b).

The towns of Elmira and St. Jacobs in the Township of Woolwich are subject to similar development constraints due to sewage treatment plants operating at full capacity (ibid).

The entire Township of Wellesley has a poor capacity for sewage treatment, especially in terms of septic systems. The Town of Wellesley has development constraints due to its sewage treatment plant operating at full capacity. No proposals for remedying this problem have been submitted (ibid).

It is important to note that staging of development is very much dependent upon a large number

of variables including the present and future economic trends. For example, a recession would halt most development projects. The Staged Development maps (Figures 1 - 7) are, at best, an educated estimate of potential for staged development.

The Staged Development maps can be employed as planning documents to anticipate development pressures and then be related to the archaeological potential of these same areas to develop a management plan. The Staged Development maps do not reflect archaeological priority, only anticipated development impact in terms of timing.

2.2 Phase II

Phase II (according to the Terms of Reference) entailed the accumulation and assimilation of data pertaining directly and indirectly to the extant archaeological resources and archaeological potential for the Region. The end product, according to the Terms of Reference, was to be a map showing categories of sites. This end product has been modified to produce, instead, a set of working archaeological maps and a corresponding set of archaeological potential maps.

Known registered archaeological sites reported to the Ministry of Culture and Communications (Toronto) were initially plotted on a series of base maps. Inconsistencies or inaccuracies with site data were noted and relayed to the Ministry's Data Coordinator. Probable site data information was provided by Jack Redmond of the Ministry of Culture and Communications former Archaeological Conservation Officer Programme. This data was plotted on a series of overlays. Locations of the probable sites were derived from oral history reports, unregistered findspots, literary references and any other applicable source. Soil type, historic and present drainage systems, possible historic site locations, physiographic characteristics and historic vegetation maps were generated during Phase II. Individual site files were created whereby all pertinent site data was accumulated. A Resource Centre was established to house all of the above data and included all available archaeological resource assessment and site specific reports. The assimilation of all of the above noted data was employed to generate low, moderate and high archaeological potential base maps. These archaeological potential maps comprise one aspect of the Archaeological Facilities Master Plan and form the basis for imposing an archaeological condition on development plans.

The development of the Archaeological Facilities Master Plan was active and had the distinct advantage of being continually tested during its development. The programme involved a number of functions such as the review of circulated draft plans, review of archaeological resource assessment and site specific reports, conducting archaeological assessments and site specific work, producing an inventory of archaeological sites, identifying the archaeology of the Region vis-a-vis major temporal and cultural designations, running an archaeological field school, hosting an archaeological workshop for planners, establishing an archaeological collections policy, producing guidelines for developers, conducting public programmes, running a volunteer programme, creating and organizing an Archaeological Resource Centre, preparation of the archaeological background reports on historic vegetation, drainage, physiography, past research and historic overview, the development of archaeological potential maps, project grant applications, and, the inception of an urban archaeological inventory. Activities specifically relevant to the development of the Archaeological Facilities Master Plan are detailed herein.

2.2.1 Circulation of Draft Plans

The archaeological review of draft plans was handled by the Ministry of Culture and Communications (Heritage Branch) London office prior to the inception of the Archaeology Division. Draft Plans were circulated to the London office where plans were reviewed and returned with comment within 45 to 60 days (Bill Fox, Senior Archaeologist for MCC, personal communication 1988). The Ministry's task was assisted by the resident local Archaeological Conservation Officers (avocational archaeologists), who often provided the only on site check for archaeological potential.

The inception of the Archaeology Division permitted the accumulation of data related to archaeological potential such as known registered sites, reported probable sites, soils, historic vegetation, physiography, drainage and historic overview, for the Region of Waterloo. Moreover, visual evaluations, conducted by the Archaeology Division staff, of the properties under review allowed the observation results to be coordinated with archival data providing a clearer evaluation of archaeological potential.

The statistics in Appendix A present the number of draft plans, zone changes, official plan amendments, industrial parks and other development applications reviewed by the Archaeology Division from July 1986 to March 2, 1989. A total of 286 plans have been reviewed of which 82.5% (n=236) have an archaeological condition required as part of the draft plan approval process. A total of 135 of these draft plans have been the subject of a completed assessment (including a final report). Approximately 77% (n=99) of these assessments have produced either findspots (1-5 artifacts, not registered as a site) or registered archaeological sites. Of the 36 non-productive assessments, 52.8% (n=19) of these assessments were conducted with a test pitting methodology (not screened), the least productive methodology for archaeological testing. The use of test-pitting implies that the percentage of productive assessments could be higher if a alternate field methodology were to be employed.

2.2.2 Archaeological Assessments and Site Specific Work

Archaeological assessments and site specific work must be conducted by provincially licenced archaeologists. A list of current licenced archaeological consultants is available from the Ministry of Culture and Communications or the Archaeology Division of the Planning and Development Department. The Archaeology Division also acted as an archaeological consultant to developers within the Region (from 1986 to 1988), operating on a cost recovery basis. The consulting aspect was not considered to be the primary function of the Archaeology Division and was initially conceived as a means to generate matching funds to the Community Improvement Facilities Programme grant awarded to the Regional Municipality of Waterloo.

In 1986, 12 assessments and/or site specific projects were conducted by the Archaeology Division under licence #86-49. A total of 12 new sites were registered with the Ministry of Culture and Communications - Toronto and assigned the following Borden number designations: AhHc-49, AiHb-27, AiHb-28, AiHb-29, AiHb-30, AiHc-51, AiHc-52, AiHc-53, AiHc-54, AiHd-47, AiHd-48, and AiHd-49.

Only one site was recommended for additional mitigation - the Deercrest site, AiHb-30. Site specific work was conducted at the Waterloo County Gaol, AiHc-18, to continue previous archaeological investigation for the location of Reginald White's unmarked grave.

In 1987, 21 assessments and/or site specific projects were conducted by the Archaeology Division under licence #87-25. A total of 14 new sites were registered with the Ministry of Culture and Communications - Toronto and assigned the following Borden number designations: AhHc-51, AiHb-39, AiHb-40, AiHb-41, AiHc-58, AiHc-59, AiHc-60, AiHd-50, AiHd-51, AiHd-66, AiHe-28, AiHe-29, AiHe-30 and AiHe-31.

The Archaeology Division did not act as an active archaeological consultant in 1988 but did complete outstanding assessments and/or site specific work projects from 1987, conducted assessments for Regional projects and conducted site salvage. To date (March 3, 1989), the Archaeology Division has undertaken 13 assessments and/or site specific projects under licence #88-25. Three new sites were registered in 1988: AhHb-36, AiHe-33 and AjHc-3.

All recovered artifacts are currently housed at the Archaeology Division of the Planning and Development Department of the Regional Municipality of Waterloo. Artifacts shall remain in this location to be used for display and research and will subsequently be transferred to Doon Heritage Crossroads, a Regional facility.

Reports of each project and the 1986, 1987 and 1988 licence reports are on file with the Ministry of Culture and Communications - London and Toronto and the Archaeology Division of the Planning and Development Department of the Regional Municipality of Waterloo.

2.2.3 Inventory of Archaeological Sites

A total of 272 registered archaeological sites have been recorded for the Regional Municipality of Waterloo as of March 3, 1989. Many early registered sites were the focus of specific site research. More recently registered archaeological sites (from approximately the 1970's) are the focus of development related assessment requirements. The archaeological record in the Region spans approximately 11,000 years, dating from ca. 9000 B.C. to the present.

Appendix B - Table 1 presents the sites according to cultural affiliation and site type. Appendix B - Table 2 presents the cultural affiliation and frequency of sites within each municipality and township. The cities of Cambridge (n=87, 31.8%), Kitchener (n=61, 22.3%), and Waterloo (n=43, 15.7%) have the highest frequency of sites for the Region. The high percentages of these three cities reflects the higher development pressures and resulting archaeological assessments (if property is deemed to be of moderate to high archaeological potential) for the periphery of the urban centres.

The relatively high site frequency in Wilmot Township (n=44, 16.1%) and North Dumfries (n=26, 9.5%) reflects previous research activity (that is, prior to standardized development/assessment policy) by archaeologists such as W. J. Wintemberg and George MacDonald. The lower site frequency in the townships of Wellesley (n=10, 3.7%) and Woolwich (n=3, 1.1%) reflects a lack of previous research in the area and minimal development in the townships.

2.2.4 Major Temporal and Cultural Affiliations

The following is a discussion of the major temporal and cultural affiliations that are represented in the Region of Waterloo with an overview of actual known sites for these periods (Table 1,

Figure 8). This section is not meant to be a definitive account of these cultural periods. Individuals are encouraged to pursue other references for a detailed discussion of each of these periods.

TABLE 1

CULTURAL CHRONOLOGY FOR SOUTHWESTERN ONTARIO

Period	Group	Time Range	Comment
PALEO-INDIAN	Fluted	9500 - 8500 B.C.	Big Game hunters; small, nomadic groups
	Hi-Lo	8500 - 8000 B.C.	
ARCHAIC	Side-Notched Corner-Notched Bifurcate	8000 - 7700 B.C.	Nomadic hunters and gatherers
		7700 - 6900 B.C.	
		6900 - 6000 B.C.	
Middle	Stemmed Points Notched Points	6000 - 3500 B.C. 3500 - 2500 B.C.	Transition to territorial settlements
Late	Narrow Points Broad Points Small Points Glacial Kame	2500 - 1800 B.C. 2500 - 1500 B.C. 1500 - 700 B.C. 1000 - 800 B.C.	Burial ceremonialism
WOODLAND	Meadowood Adena Saugeen/ Point Peninsula Princess Point	900 - 400 B.C.	Introduction of pottery
		400 B.C. - A.D. 1	
		300 B.C. - A.D. 500	
Middle		A.D. 500 - 900	Incipient horticulture
Late	Glen Mayer	A.D. 900 - 1300	Transition to village life and agriculture Establishment of large palisaded villages Tribal differentiation and warfare
	Middleport	A.D. 1300 - 1400	
	Neutral	A.D. 1400 - 1650	
HISTORIC	Mississauga	A.D. 1700 - 1875	Tribal displacements
Late	Euro-Canadian	A.D. 1800 - present	European settlement

An effort to synthesize data to be utilized in the formatting of the Archaeological Facilities Master Plan resulted in the production of five volumes. These volumes include an overview and interpretation vis-a-vis archaeology of specific topics. These topics are historic vegetation, drainage, physiography, past research and an historic overview. Components of these reports have been incorporated into the following descriptions of cultural and temporal periods to identify archaeology potential.

In addition, the known registered archaeological sites in the Region are briefly discussed. Archaeological sites registered within the Region represent cultures spanning a period of approximately 11,000 years.

2.2.4.1 Paleo-Indian Period (ca. 9500 - 8000 s.c.)

The Paleo-Indian period populations were communal hunting groups who followed the seasonal migrations of the caribou and hunted big game. Research indicates that known Palaeo-Indian sites tend to be located adjacent to glacial spill-ways, along glacial beach ridges or bluffs, and near kettle lakes.

The geographic area open during the time of glacial retreat in the Regional Municipality of Waterloo occurred as early as circa 13,000 B.C.. The area was, however, isolated by the ice front to the north, east and west, and by Lake Maumee III to the south.

While more land was exposed in the next 2,000 years, it was not until circa 10,400 B.C. that access routes into areas of the Region became apparent. By circa 8,600 B.C. the ice front had receded appreciably and lake levels were at their lowest, allowing movement into all of Southwestern Ontario without the physical hindrance of the glaciers.

The role of vegetation in the Paleo-Indian period is limited by current knowledge of the paleo-environment. A sub-tundra-like environment would have prevailed during this period (Janusas 1987). Preference in the location of early campsites would have been partially based on criteria such as adequate water supply and adequate land to support resources, either plant or animal, and to locations which would be least affected by natural disasters such as flooding (Janusas 1988a).

The Paleo-Indian populations consisted of widely scattered, nomadic groups (Mason 1981:82). While classified as big game hunters, the Paleo-Indian people also hunted smaller game and supplemented their diet with wild plant foods, similar to those available in a sub-tundra environment.

Paleo-Indian sites are often characterized by the chert material used for tool manufacture, that is, the presence of Collingwood chert.

There is only one possible Paleo-Indian site registered within the Region;

...the Steckle site [AiHc-36]...was once located near a low, marshy area, the site probably supported a series of temporary campsites where chipped stone tools were either made or re-sharpened, and where limited economic pursuits associated with hunting, butchering and/or hide processing may have taken place...

Except for the one biface fragment which was definitely made from Collingwood chert

and may relate to the early Palaeo-Indian & Gainey type dating ca. 9,000 - 8,700 B.C., none of the artifactual material from the Steckle site can be firmly dated, but it probably relates to a series of sporadic occupations over time (Mayer, Pihl, Poulton and Associates 1988:1).

2.2.4.2 The Archaic Period (8000 B.C. - 800 B.C.)

The following excerpt, from the manuscript on file edited by Dr. C.J. Ellis, tentatively titled Native Archaeology of Southern Ontario (n.d.) provides a description of the Archaic period.

The Archaic period has been defined in many ways by different researchers but the definitions to date have been unsatisfactory. In the above noted manuscript, the authors have determined that there are two basic ways of viewing the Archaic.

First, the Archaic has been defined in terms of assemblage content and the nature of the site record. Defining traits of this nature are listed below. It should be emphasized that most of these characteristics largely serve to distinguish Archaic materials from those of Paleo-Indian assemblages. In sum, many of these traits continue into the succeeding Woodland. Although there are some other minor differences, the major contrast with at least the earliest Woodland assemblages is an absence of ceramics -- a somewhat arbitrary distinction. In essence, from an artifact/site characteristic perspective, the Archaic is used simply to refer to non-Paleo-Indian manifestations pre-dating the introduction of ceramics.

Traits seen as characteristic of the Archaic include:

- 1) a reliance on a wide range of lithic raw materials in order to make stone artifacts. Less flakable materials such as quartz, quartzite, sub-greywacke or "argillite", slate and other materials become more widely used, particularly in the manufacture of more highly "shaped tools such as points. Moreover, there is an increased use of more localized stone sources including secondary deposits in glacial till and river beds and a decrease in the use of more exotic stones derived from distant
- 2) the presence of stone tools shaped or manufactured by grinding and polishing the raw material into shape. This contrasts with the exclusive use of flaking to manufacture stone tools seen in Paleo-Indian assemblages;
- 3) the appearance of certain distinctive stone tool forms lacking in Paleo-Indian contexts. Particularly stressed are the presence of: point forms having notched or markedly stemmed haft elements; notched pebbles used as netsinkers in fishing activities; items used in the processing of plant foods such as grinding stones or manos, mortars and "pitted" stones; and ground stone tool forms to be described in more detail below such as axes, celts (ungrooved axes), chisels, adzes, gouges, bayonets, stone plummets and bannerstones;
- 4) an increase in the use of less portable, massive tools. Stressed here are large wood-working tools such as the axes, gouges, and adzes noted above;

5) a flaked stone tool kit consisting predominantly of briefly used items lacking extensive flaking for purposes of shaping or as a product of resharpening. Indeed, except for the odd hafted tool forms such as points, drills and end scrapers, extensively flaked tools such as the side scrapers found in Paleo-Indian assemblages are rare to non-existent;

6) a decrease in the care and skill lavished in the production of chipped stone tools from Paleo-Indian times;

7) the manufacture and use of a wide range and large number of bone tools. Particularly emphasized are a plethora of tools used in fishing activities such as fish hooks, gorges and harpoons. It should be stressed that the lack of bone items on earlier Paleo-Indian sites is undoubtedly emphasized due to preservation problems. Thus, this contrast may be more apparent than real;

8) an absence, except for a minor use during the very latest dating assemblages, of the smoking pipes found on Woodland sites;

g) more pronounced regional variability on both the nature of assemblages and in site characteristics versus the Paleo-Indian manifestations which are seen as relatively homogenous over large geographic areas;

10) the appearance in Ontario and environs of tools made of Native copper and

11) a marked increase in the number and variety of sites. Archaic sites are more common than those of Paleo-Indian and can yield larger artifact assemblages and include relatively extensive garbage dumps or middens. These changes suggest the general trend was for population increases through time. Moreover certain kinds of sites absent in Paleo-Indian times appear, such as cemeteries.

A second way in which the Archaic has been conceived is in terms of characteristics of subsistence practices and economies inferred from the site/artifact traits enumerated above. In other words, this "definition" is actually an explanation for certain contrasts between Archaic and other assemblages.

The Archaic (8000 - 800 B.C.) and Early and Middle Woodland period (900 B.C. - A.D. 900) campsites, have a high probability of being located near wet lands, marsh, creeks, rivers and lakes where an abundance of varied flora and fauna could be exploited. This probability is based on activities of hunting, fishing and gathering (Janusas 1987).

Nine registered sites represent the Early Archaic period (8000 - 6000 B.C.). Five findspots, one campsite, one chipping station and two functionally undetermined sites are represented by Nettling points, bifurcated base points, serrated projectile points, and corner-notched points.

The Middle Archaic period (6000 - 2500 B.C.) is represented by seven findspots, two campsites, and one chipping station. All of these sites have diagnostic Brewerton projectile points (both corner and side notched) in their respective assemblages. A single Normanskill projectile point is also represented in the Middle Archaic period.

The Late Archaic period (2500 - 800 B.C.) is represented by eight findspots, seven campsites, one cemetery, and one functionally undetermined scatter. Diagnostics recovered from these sites include Genesee, Innes, Lamoka, Steubenville, and Crawford Knoll projectile points. The cemetery has been identified as Glacial Kame.

2.2.4.3 The Woodland Period (900 B.C. - A.D. 1650)

The Woodland Period has been subdivided into three episodes: the Early Woodland Period, circa 900 - 400 B.C., a period marking the introduction of pottery; the Middle Woodland period, circa 300 B.C. - A.D. 900, of which the Late Middle Woodland period is characterized by the introduction of horticulture and a transition to village life; and the Late Woodland period, circa A.D. 900 - 1650, marked by the establishment of palisaded villages, agriculture, and an emphasis on warfare. The date of A.D. 900 has been chosen to represent the initial establishment of villages. These differences between Early, Middle and Late Woodland are also evidenced in the settlement and subsistence patterns of the Woodland populations. Early and Middle Woodland sites have with rapids - a choice location for fishing.

The Early Woodland and the first half of the Middle Woodland periods have similar economic subsistence activities as those of the Archaic period described above. Therefore, sites of this time period tend to be located in areas where exploitation of a specific resource or aggregate of resources could be best utilized during a short period of time.

Hunting, fishing and gathering were still major economic resource activities during the Middle Woodland period dating from 400 B.C. to A.D. 900. The incipient horticulture of corn commenced circa A.D. 900 although existing, very tentative, evidence may suggest earlier experimentation in growing corn. Horticulture was practised generally on the floodplains where the annual spring flooding provided fertile soils. Temporary settlements for this period would be located on the floodplains. The major river floodplains for the Region of Waterloo are the Nith, Speed, Conestogo and Grand Rivers.

Settlements shifted away from rivers ca. A.D. 1000 toward lesser tributaries and higher elevations as agriculture became a factor of sedentary village life. Late Woodland sites are located generally along minor tributaries, near springs, and at, or near, headwaters of small tributaries. Late Woodland site locations in the Region appear to occur predominantly on intermediate to high elevations.

Late Woodland cultures are characterized by a transition to a sedentary lifestyle including the establishment of villages and practice of agriculture. Prehistoric agriculture could have included slash and burn clearing and a digging stick technology. Circa 1300 A.D., large palisaded villages were established implying the need for defense. In the late Late Woodland period, tribal differentiation and warfare are characteristic.

The Early Woodland period (800 - 300 B.C.) is represented by 11 findspots, two campsites, one campsite/cache, and two functionally undetermined sites. These sites are represented by bird amulets, Adena points, seven Meadowood points, cache blades and Vinette I pottery.

The Middle Woodland period (300 B.C. - A.D. 900) is represented by one findspot, one campsite, one burial, and three undetermined sites (collections). The only diagnostic described in reports of these sites is a Jack's Reef Corner Notched projectile point.

The Late Woodland period (A.D. 900 - 1650) is represented by 16 villages, eight campsites including one campsite and associated burial, five findspots, and two functionally undetermined sites. Six of the villages have been identified as Middleport, and six other villages have been identified by researchers as Neutral. Five of the campsites have been identified as Princess Point, employing Stothers (1977) seriation. These sites are, although Princess Point, may date to the Early or Late Woodland period. Recently, archaeological investigations by the Ministry of Transport along Highway 7 in the Township of Wilmot, has tentatively identified a Glen Meyer campsite (personal communication, Mr. Wm. Fox, Ministry of Culture and Communications).

2.2.4.4 Native Historic Period (ca. 1700 - 1875 A.D.)

Little is actually known of native historic settlement and/or activity in the Region of Waterloo. It is highly probable that there are no 17th century Native historic sites. Further, early maps (late 18th to early 19th century) illustrate this area as the Mississauga hunting grounds) with no identified villages. Native historic sites of the 19th century will probably reflect intermittent use as hunting camps (Neal Ferris, personal communication, 1989).

The American Revolution of 1775 - 1783, witnessed a migration of American colonists who had been loyal to Britain during the war to unsettled areas of Canada. Among the British loyalists were people of the Six Nations.

KNOW YE, that whereas the attachment and fidelity of the Chiefs, Warriors, and people of the Six Nations, to Us and Our Government...Do Give and Grant...All that District of Territory of Land, being a Parcel of a certain District lately purchased [in 1782] by Us of the Mississague Nation, lying and being in the Home District of Our Province of Upper Canada, beginning at the Mouth of ...[the] Grand River...and running along the Banks of the same for the space of Six Miles on each side of the said River [to its source] [dated January 14, 1793] (no author 1891 volume 1:9).

From this land grant, it can be inferred that prior to 1782 the area described above belonged to the Mississauga Indians and may have continued to have been used as hunting grounds even thereafter. Some treaties arranged that the Indian tribes were still allowed access to cross the lands identified in the treaty. However, by 1793 (see above recorded date), the Six Nations Indians had access to settlement and resources in the land granted to them. Shortly thereafter, Captain Joseph Brant, acting on behalf of the Six Nations, arranged the sale of a portion of these lands, specifically the majority of the present day Region of Waterloo.

And whereas, by the settling of the lands near to and round about the said [Grand] river by His Majesty's subjects [Six Nations people] the hunting grounds now scarcely afford the said Nation the means of support and are likely to be more contracted by an increase of people, and whereas, the said Mohawks, and others of the Six Nations being well assured of His Majesty's benevolent intentions towards them and their posterity, and having all opportunity of obtaining by way of annuity, a more certain and permanent means of support by a sale of such parts of the said lands as are now as hunting grounds entirely useless (ibid:24).

In total, approximately 352,707 acres were sold in 1796 by Captain Brant of behalf of the Six Nations. Permanent settlement, subdivision of lands, and the establishment of reservations were

activities centred to the south of the Region.

Prior to 1793, the Mississauga or Ojibway Indian had utilized the area of the Region as a hunting ground. It is quite possible that temporary native historic Ojibway campsites may be found in the Region. Sites that date to the 18th century would have most likely have an artifact assemblage containing glass trade beads, silver trinkets, catlinite beads and/or pipes, muskets, balls, French blade gun flints, trade axes, and near the latter part of the 18th century, English spall gun flints (Neal Ferris, personal communication, 1989).

As an example of the artifact assemblage of a late 18th century Native historic site in southwestern Ontario, that might typify similar sites in the Region of Waterloo, (the Bellamy site [a summer camp located in north Kent County),

...indicated an almost exclusive presence of European manufactured items. However, faunal, floral and settlement data reflected a very traditional way of life, characterized by a fairly mobile seasonal round, centred on peak resource exploitation periods (such as spring maple sugaring, fall fish runs and late fall hunts), augmented throughout the year by the exploitation of immediate vicinity resources such as fish, mammals, birds, and wild plant species, as well as some horticultural activity (Ferris 1987:4).

The British military influence introduced trade goods to this period, including provisions for vocations, such as embroidery sized beads (Ferris, personal communication, 1989).

By the 1830's to the mid-19th century, the artifact assemblages and settlement data of Native historic sites tend to lose evidence of their ethnic distinctiveness and appear more like the early pioneer sites. In some cases, evidence of ethnic differences may still be reflected in the ceramics. An Ojibwa site assemblage dating from the late 1830's to 1840's might typically (for southwestern Ontario) contain pearlware, white ware (blue printed), metal buttons, white clay pipes, very few lithics, and an assortment of faunal material such as deer, fresh water shell and small mammals (Ferris 1987:6).

By the mid-19th century, artifacts alone will not identify ethnic differences. For example, the artifact assemblage of the Enniskillen site component (dates to the mid-1860's) contained granite ware, white ware (red and green painted, blue edged), saltglaze stoneware, moulded glass dish, brass thimble, plain agate buttons, a handful of lithic artifacts (primarily waste products) and faunal material representative of domestic species such as cow and pig (Ferris 1987:6).

Evidence of 20th century sites exist through oral history reports of Native historic Indians residing in the Region at temporary campsites. These Native historic sites might be representative of cottage industries, such as embroidery and sugaring.

The Historic Native Period (A.D. 1700 to 1875) is represented in the Region of Waterloo by the presence of two burial sites. The first site is reported to have several burials including one female buried with silver trade items. This site may represent Mississauga or Six Nations people. The other site was a Six Nations male burial.

2.2.4.5 Euro-Canadian Historic Period (ca. 1800's-present)

Waterloo is reported to be the first inland county in Ontario to be settled. It is likely that initial

settlers would have favoured areas that could be easily cleared, were well-drained and close to water. Maple and beech forest, indications of choice agricultural soils, would have provided ideal locations for farms and homesteads. Notably, the historic vegetation of the Township of North Dumfries, Wilmot and Wellesley were primarily beech and maple forests (Janusas 1987). Industries, such as lumbering, sprang up around water sources, good roadways and proximity to various economic resources such as forests and aggregate deposits.

Substantial settlement of the Regional Municipality of Waterloo did not occur until circa 1800, although historic inhabitants of the Region had been present prior to 1800. Records indicate that earlier occupation in the Grand River Valley by fur trappers, traders and Indians (Brodie 1976:12).

Occupation, or use of lands for hunting and trapping, by Indians occupying former Six Nations lands, may be reflected in the archaeological record (this was discussed in the previous section). In 1784, Great Britain awarded land (six miles on either side of the Grand River from its mouth to its source) to the Six Nations Indians for their loyalty during the American War of Independence. In 1798, six blocks of this land were offered for sale by Chief Joseph Brant (Schnare 1977:3). Archaeological evidence of use of these early lands (Blocks 1, 2 and part of 3) may reflect the presence of early squatters, fur traders and temporary campsites of Six Nations Indians.

The construction of the Huron Road in 1828 spurred the settlement of Wilmot Township. Pioneering hamlets were established at sites with water power. The presence of the Huron Road also encouraged the erection of numerous roadside taverns, located near streams or other waterways, to provide fresh water, lodging and subsistence to travellers and their horses (Coleman 1978).

Early settlement generally centred on agricultural pursuits. These pursuits often involved clearing of lands; "...the rate of depletion of the local forests was...rapid...in the span of the first fifty years of urban settlement" (Spriceniaks 1961:8). Deforestation resulted in drastic changes to the hydrological cycle. Increased run-off alters stream flow, increased flooding and caused many small historic water power sites to dry up (Janusas 1988a).

The Historic period (A.D. 1800 to present) is represented archaeologically by 25 domestic sites, one cemetery, two institutions (a jail, and a golf course), three industries (lime kiln, and two potteries), one village (New Aberdeen), two middens, four surface scatters, a reported fur trade site, and a scatter of 188 buttons. The earliest historic site, other than the reported fur trade site, is a domestic site which dates to 1811. Several domestic sites date to the early 19th century, often associated with an implied log cabin or shanty (original homestead). All of the institutions and industries were operating in the 20th century; the Waterloo County Jail was functional as late as 1978.

2.2.5 Archaeological Workshop for Planners

The archaeological review of subdivision plans had been in place in the Regional Municipality of Waterloo long before the inception of the Archaeology Division. The Archaeology Division, however, has been able to communicate on a daily basis with planners and developers regarding archaeological concerns. It soon became apparent that while archaeological conditions were imposed on certain development plans, the concept of archaeology and archaeological potential was foreign to most planners and developers.

The Archaeology Division thus co-ordinated a seminar entitled, **Archaeology and the Planning**

Process, held in January of 1987 to assist planners and surveyors in understanding how archaeology interacts in the planning process, the importance of archaeology, and to provide an explanation of the Archaeological Facilities Master Plan.

This seminar was attended by 18 planners and/or Ontario land surveyors, in addition to staff. Proceedings of the workshop were transcribed and sent to all planners and surveyors in the Region, regardless of attendance.

Topics covered in the seminar included an introduction to archaeology, provincial policies, explanation of the hierarchy for archaeological review, criteria used in the identification of low, moderate and high archaeological potential areas, responsibility of the developer for assessment, the accepted standard for reports and communications, development of the Master Plan and the Archaeological Resource Centre.

A favourable response to the seminar was expressed by several attendees. Since the seminar, individuals who were present have been able to understand the reasons for an archaeological condition and have been generally supportive in the development of the Archaeological Facilities Master Plan.

2.2.5.1 Guidelines for Developers

As part of the Region's continuing efforts to assist the development community, guidelines were provided to all developers for reference if required to conduct an archaeological resource assessment as a condition of draft plan approval (Appendix C).

2.2.6 Archaeological Collections Policy

Concern regarding the deposition of artifacts recovered by archaeological consultants conducting work in the Region prompted investigation into a Regional repository for artifacts. The underlying premise is that Regional artifacts and associated data should remain in the Region for the purpose of public programmes such as interpretive displays, research, education, etc.

A letter was sent to all licenced archaeological consultants and to the Ministry of Culture and Communications, Heritage Branch (Archaeology Section), stating that the Regional Municipality of Waterloo was prepared to accept archaeological site assemblages (this includes findspots and/or collections) that originate specifically from the Region if they are catalogued and packed according to the guidelines of Doon Heritage Crossroads (Appendix D). All artifacts must be catalogued according to the Borden system of site designation. In addition to adhering to the packing and recording guidelines, the following must be supplied prior to the acceptance of the collection gift:

- a) copy of the site/assessment report
- b) a signed release of the collection from the owner
- c) complete artifact catalogue for each collection, and
- d) supporting documentation, e.g. field notes and photographic documentation.

Ownership of the archaeological materials is not addressed in the Ontario Heritage Act. To prevent possible problems related to the acceptance of gifts of archaeological collections, the Heritage Resources Department has a legal agreement regarding the transference of title of the gift to the

Region (Appendix E).

2.2.7 Archaeological Resource Centre

The office of the Regional Archaeologist has established a Resource Centre. The Regional Municipality of Waterloo offers the use of its archaeological resource material to consultants and researchers on a need-to-know basis. The reason for selective access to material is to protect archaeological resources from possible looting.

Data available in the Resource Centre includes base maps of registered archaeological sites, acetate overlays of reported probable sites, drainage patterns, historic vegetation pattern maps in relief, registered site files, draft plans with rationale for archaeological potential evaluations, a select bibliography, archaeological potential maps, aerial maps, archaeological reports on the Region by previous and current researchers, historic site data and archival maps, urban potential maps, Regional reports and additional source materials.

The Resource Centre was established primarily to assist staff in the development of the Archaeological Facilities Master Plan and to assist archaeological consultants conducting assessments or site specific work in the Region, thereby ensuring the development community receives a quality product. The Resource Centre has been used frequently, not only by archaeology consultants, but by public school, high school and university students, landowners, environmental firms, individual researchers, film companies and by Regional staff. Due to limited staff in the Archaeological Division, it is recommended that appointments be made to access the Resource Centre.

2.3 Phase III

Phase III employed the data compiled in Phases I and II to create a series (n=72) of 1:10 000 scale Archaeological Potential maps.

2.3.1 Development of Archaeological Potential Maps

Several data groups were examined, assimilated, evaluated and transferred to the Ontario Base working maps. The first data group consists of known registered archaeological sites. As of March 2, 1989, 272 archaeological sites (assigned a Borden designation) have been plotted on the maps. A small number of these sites have a questionable provenance and are indicated on the working base maps by the assigned Borden designation followed by a question mark(?). Readers are referred to the volume Past Archaeological Research in the Regional Municipality of Waterloo (MacDonald 1988a) for a discussion on the evaluation of the existing data base for the Region. The following is a summary of the same.

The existing archaeological data base can be attributed to three different field recovery schemes: grab-sampling, stratified sampling and right-of-way sampling (the archaeological term for development pressure related surveys). Early recorded archaeological sites were often reported to the Ministry of Culture and Communications if their existence was suspected, through word-of-mouth reportings, or as site artifact collections. Locations of sites actually visited were often only

noted in general terms (such as lot and concession) and therefore exact locations are currently unknown. Over time and through repeated reportings of the same sites by subsequent researchers, these sites were registered with the Ministry of Culture and Communications. A review of archaeological reports and site records reveals that 59 registered archaeological sites located within the Regional Municipality of Waterloo have questionable location data. These sites have never been field visited by an archaeologist. These unverified sites include prehistoric findspots, campsites and villages.

Twenty-eight verified sites include sites found by academic, avocational, or provincial archaeologists, in response to emergency situations of site destruction, independent research, or efforts to relocate sites of questionable existence or location.

A reliable but biased data base is provided through right-of-way surveys. The areas examined are determined by urban development pressures, not archaeological research paradigms. A majority of the sites reported by consultants are findspots, consisting of one to five artifacts. Findspots often do not provide sufficient data to identify the culture of the deposits. There have been no previously unknown villages or burials located, to date, by archaeological consultants.

Although the archaeological resource recovery scheme conducted by consultants is reliable (in terms of methodology and reporting standards), the areas of archaeological investigation are focused, by and large, on the peripheries of the three cities of Cambridge, Kitchener and Waterloo (areas where development is most likely to occur). Doubtless, many archaeological sites have already been destroyed within city boundaries due to past development.

A less reliable source of archaeological data are the sites reported from the townships of North Dumfries, Wellesley, Wilmot, and Woolwich. The majority of these sites were reported through secondary sources and most of the data is suspect. These sites tend to be large campsites or villages, burials, or locations where exotic artifacts were recovered. Avocational archaeologists have been engaged in locating and verifying the existence of these sites. As well, avocational archaeologists have located and are aware of numerous unregistered sites throughout the Region of Waterloo.

The second data group resulted from an examination of water sources as an archaeological potential indicator. Readers are referred to the volume The Cultural Implications of Drainage in the Regional Municipality of Waterloo (Janusas 1988a) for a discussion of archaeological potential of each cultural affiliation vis-a-vis the water potential variable.

Water plays a role in shaping cultural, economic, spatial and behavioural dimensions. The archaeological record does not easily lend itself to the interpretation of man's psychological needs such as "goodness, beauty, truth... (Hengeveld and DeVocht 1982: 58)" and so on, but can lend itself to the interpretation of more basic needs such as those involved in satisfying the physiological requirements for sustaining human life. It can also provide clues as to the utilization of resources related to a water resource, such as fishing, transport, and so on. The possible use of water resources as a potential site model is of primary importance to archaeology.

Water played a major role in the selection of early settlement locales and in the development of early communities. Preference in the location of early settlements, both prehistoric and historic, would have been based on criteria such as adequate water supply to support resources, either animal or plant, and locations which would be least affected by natural disasters such as flooding.

Water power was one of the catalysts of early settlement. However, the importance of water as a power source diminished in the 1840's with the advent of steam-powered industries. Water, however, remained important in the satisfaction of domestic, municipal and industrial needs.

Good water quality and adequate quantity may also influence an increase in population growth. Health hazards such as cholera, typhoid, infectious hepatitis and bacillary dysentery will be reduced or rendered completely dormant in a society with good water quality. Clearly, quantity and quality of water resources are major determinants in prehistoric and historic settlement patterns, lifestyles, economic systems, religious beliefs, and so on, and must be accounted for in archaeological interpretation of data.

Examination of the drainage of the Regional Municipality of Waterloo has resulted in the following observations:

1. historic drainage has been altered by infilling, flood control measures, clearing of agricultural land and urbanization;
2. regular flooding occurs in the Region and will continue to impact cultural resources - the level of impact is unknown and will vary for each site;
3. the majority of prehistoric sites and early historic lied on water as an important resource; and,
4. 83.2% of registered archaeological sites (campsites, fishing stations, chipping stations, burials and villages) are located within 150 metres of a water source (ibid).

All water sources including wetlands, marsh, intermittent streams, creeks, streams, rivers, ponds, lakes and springs, were employed as a focal point for depicting a distance of 150 metres from the edge of the water source. This distance, verified by plotting sites against drainage, was originally determined by a study conducted for Ontario Hydro to determine archaeological resources and potential for additional resources (Mayer, Pihl, Poulton and Associates 1985). The 150 metre distance to water variable is depicted on the working base maps as a blue line and indicates an area of high archaeological potential.

A third variable of 150 metres (arbitrarily determined) from the distance to water variable is depicted as a yellow line on the working base maps. This area, evaluated as exhibiting moderate archaeological potential, ensures that the approximate 20% of known registered sites unrelated to drainage (or apparent drainage) can be accounted for to some degree. The two variables of reliance on water and the buffer zone do not guarantee that 100% of all sites in the Region will be located within 300 metres of a water source as many sites have no reliance on water (for example, ossuaries, quarries, kill sites, and so forth).

The fourth variable of historic vegetation was evaluated to determine possible archaeological potential indicators. Readers are referred to the volume An Analysis of the Historic Vegetation of the Regional Municipality of Waterloo (Janusas 1987) for a detailed discussion of historic vegetation.

Limitations in the historic vegetation include the lack of data of the Tri-City areas (Cities of

Waterloo, Kitchener, and Cambridge) and the Township of Woolwich, and observations taken from concession lines for the Townships of Wilmot, Wellesley and North Dumfries. Nonetheless, available historic vegetation data was transferred to the working base maps.

Examination of the natural, historic vegetation will assist in revealing relationships of vegetation vis-a-vis the physical environment, former wild-life capability, aboriginal agricultural fields, choice locations for various economic industries, and possible prehistoric and historic settlement patterns.

Historic white pine stands are indicated as green bar graphs running along concession lines on the working base maps. Late Woodland period populations (ca. A.D. 800 - 1650) often practised horticulture (cultivation of gardens) and agriculture. Settlements were generally located within three kilometres of their corn fields (indicated by a three kilometre concentric circle around the historic white pine stand on the working base maps). White pine stands appear to be correlated as the successive growth in areas of former aboriginal corn fields (Bowman 1974).

Clearings, plains, meadows, burnt timber, windfalls and improvements (historic structures) are depicted as bar graphs outlined in pencil and identified by the specific group on the working base maps. These areas, which would have been more easily cleared than heavily forested areas, represent possible settlement or economic venture locations and are depicted as graphs 100 metres wide, centred on the concession lines, and are evaluated as exhibiting moderate archaeological potential. The fifth variable, physiography, was evaluated to determine possible archaeological potential indicators. Readers are referred to the volume The Cultural Implications of Physiography in the Regional Municipality of Waterloo (MacDonald 1988b). The physiographic features of a region were influential in site location preferences and activities of exploiting particular resources such as hunting big game, fishing, extraction of raw materials, collecting and harvesting plants as well as historic period exploitation of forest and aggregate deposits.

The drainage characteristics of soils is a variable which influenced site location. The majority of registered sites in the Region (69.9%) are situated on well-drained soils and 90.7% of all site cultural affiliations are located on well-drained and/or imperfectly drained soils. Well- to imperfectly-drained soils make up approximately 82% of the Region's soils, indicating a high potential for the location of archaeological remains based on extant data. This information has not been transferred to the working base maps.

Eskers and drumlins are depicted on the working base maps, respectively, as a directional arrow and a defined area of diagonal lines. These physiographic features are evaluated as moderate archaeological potential. Although no sites have been found on these features in the Region to date, Archaic sites have been located on top of drumlins and Glacial Kame burials have been located in eskers just outside the Region.

Abandoned glacial shorelines are depicted as a heavy red line and represent an area of high archaeological potential for the presence of Palaeo-Indian occupations.

Historic settlement was addressed differently than the more environmentally associated variables previously discussed. Readers are referred to the volume An Archaeological Perspective of an Historic Overview of the Regional Municipality of Waterloo (Janusas 1988b). The areas delineated by a heavy black line on the working base maps are pre-1900 historic centres (data derived from

archival maps). No attempt has yet been made to delineate individual historic sites within these areas. These areas have not been assigned an archaeological potential evaluation, except in specific incidences where determination can be made, but have been held "in reserve" until the urban archaeological research required can be conducted for such a determination.

The 1861 Tremaine brothers maps and the 1881 Parsell map structural information was transferred to the working base maps. The Tremaine historic structures are depicted as rectangular boxes with dashed lines and a "T" followed by a sequential identifying number. Parsell's historic structures are depicted as circular dashed lines with an identifying sequential number. It should be understood that this historic data is incomplete and based solely on archival maps which may be biased or inaccurate.

Historic roads pre-dating 1856 are depicted on the working base maps as areas of moderate potential defined by a 100 metre boundary on either side of the road. Early historic sites were often located close to an established travel route, and the inclusion of this variable may account for early historic homesteads, inns, and coachstops.

Another feature illustrated on the working base maps are those properties with a completed archaeological resource assessment or assessments that have recommended additional site specific mitigation. The properties with continuing site specific work will have to be satisfactorily completed prior to archaeological clearance of the condition. Assessed areas are outlined in red and illustrate the draft plan or registered site plan number, the archaeological consultant and the year a report was submitted. Although these areas were originally evaluated as exhibiting moderate to high archaeological potential, they are not included in the potential model (other than as described above).

Areas of low archaeological potential include areas of landfill, development disturbance which has destroyed even deeply buried sites, pits and quarries, stockpiles, dredging activities, and so on.

The variables described in this section, that is, registered extant archaeological sites - high archaeological potential; distance to water - high archaeological potential; distance to water buffer zone - moderate archaeological potential; historic white pine stand three kilometre concentric circles - moderate archaeological potential; plains, historic improvements, burnt timber, windfalls and clearings - moderate archaeological potential; glacial beach/shore lines - high archaeological potential; drumlins and eskers - moderate archaeological potential; historic (pre-1900) urban centers - undetermined archaeological potential; 1861 and 1881 historic structures moderate to high archaeological potential; historic roadways moderate archaeological potential; and areas of development disturbance - low archaeological potential; form the raw data for the refined archaeological potential maps. Areas that did not fall within any of these variables were deemed to have low archaeological potential. Figures 9 to 11 illustrate examples of the working base maps.

KEY:

- Historic Road
- - - 150m Moderate Buffer Zone
- - - 150m Distance to Water
- (#) Parsell 1881
- [7-#] Tremaine 1861

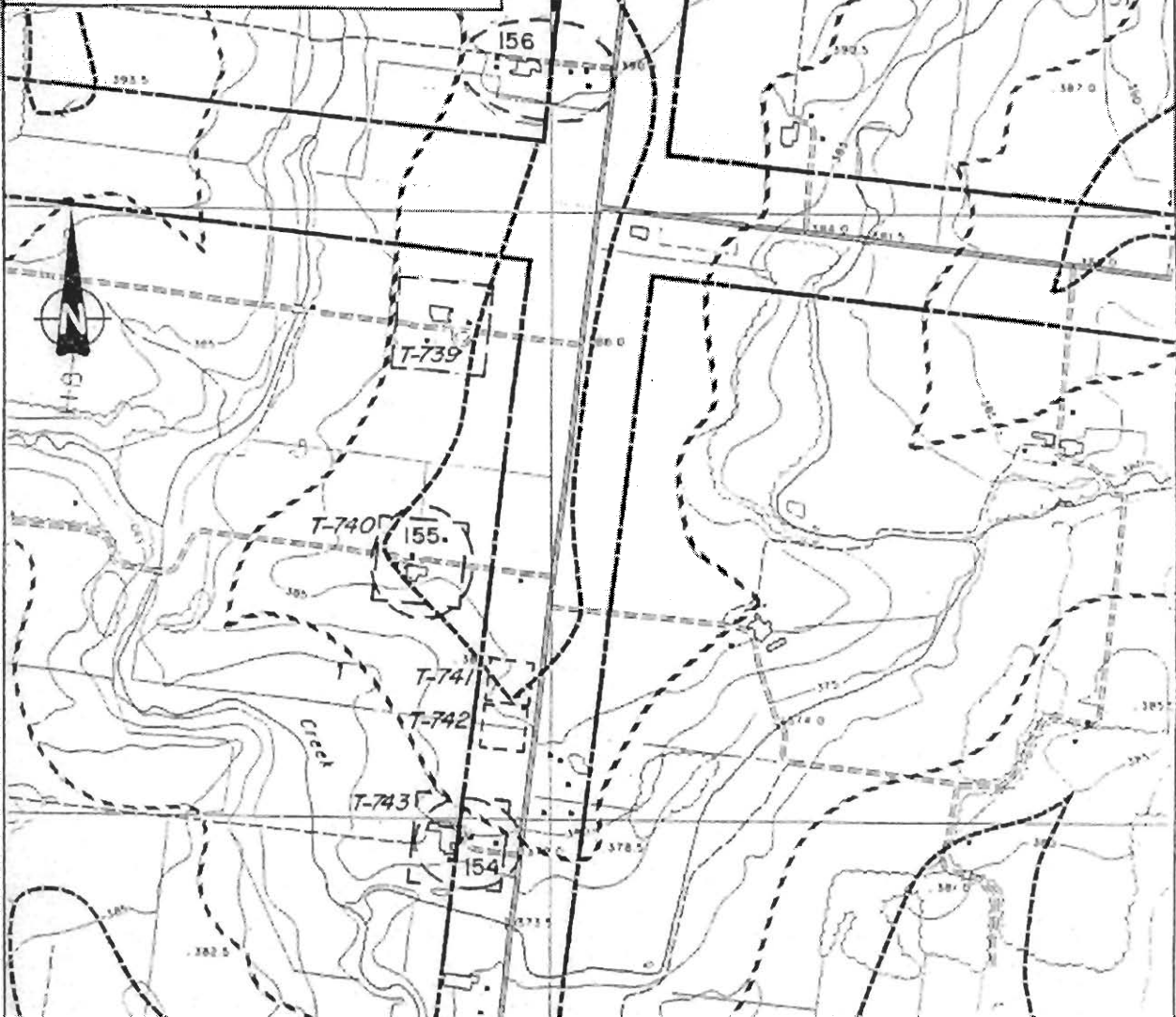
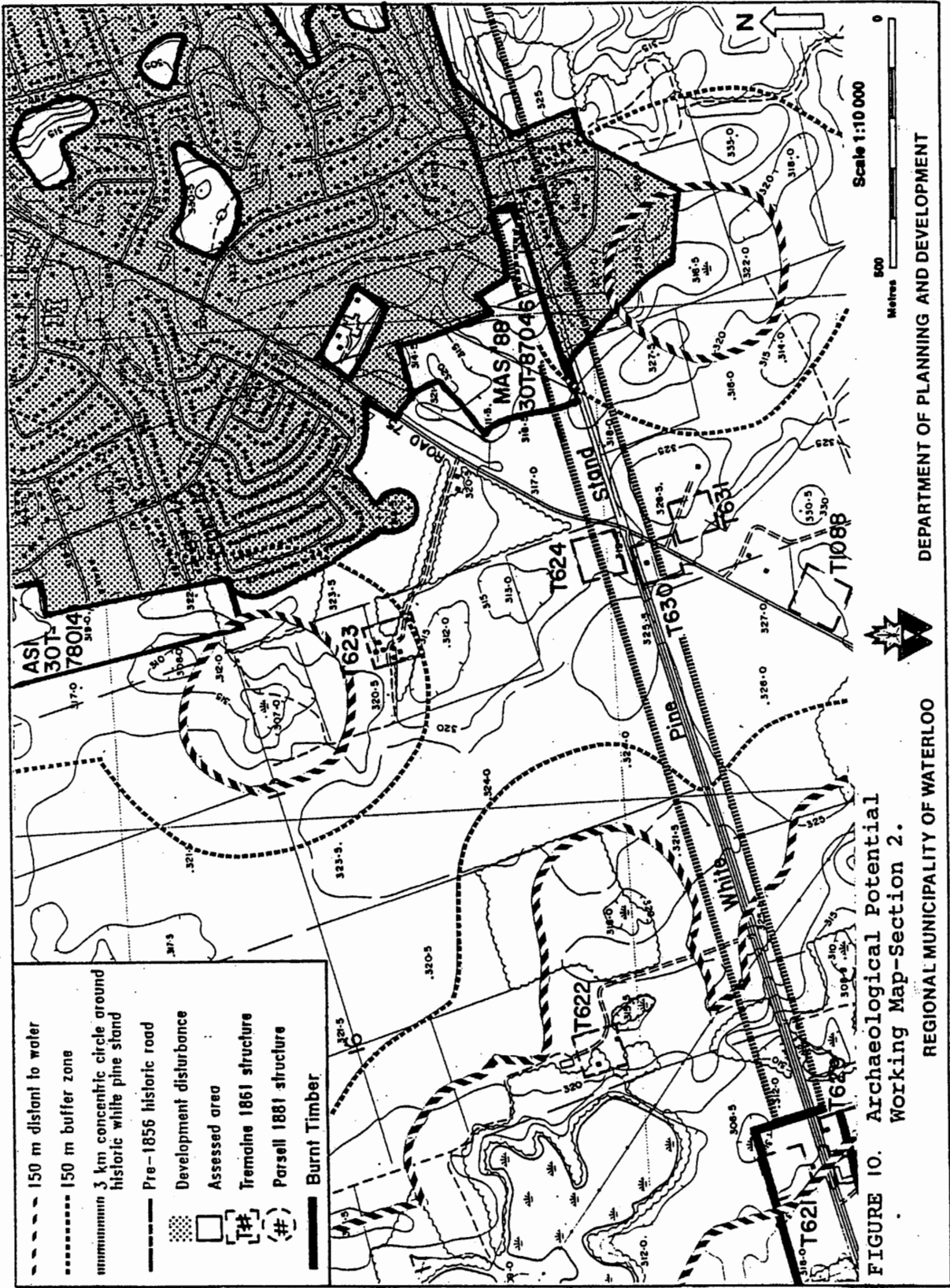


FIGURE 9. ARCHAEOLOGICAL POTENTIAL WORKING MAP
-SECTION 1





Scale 1:10 000

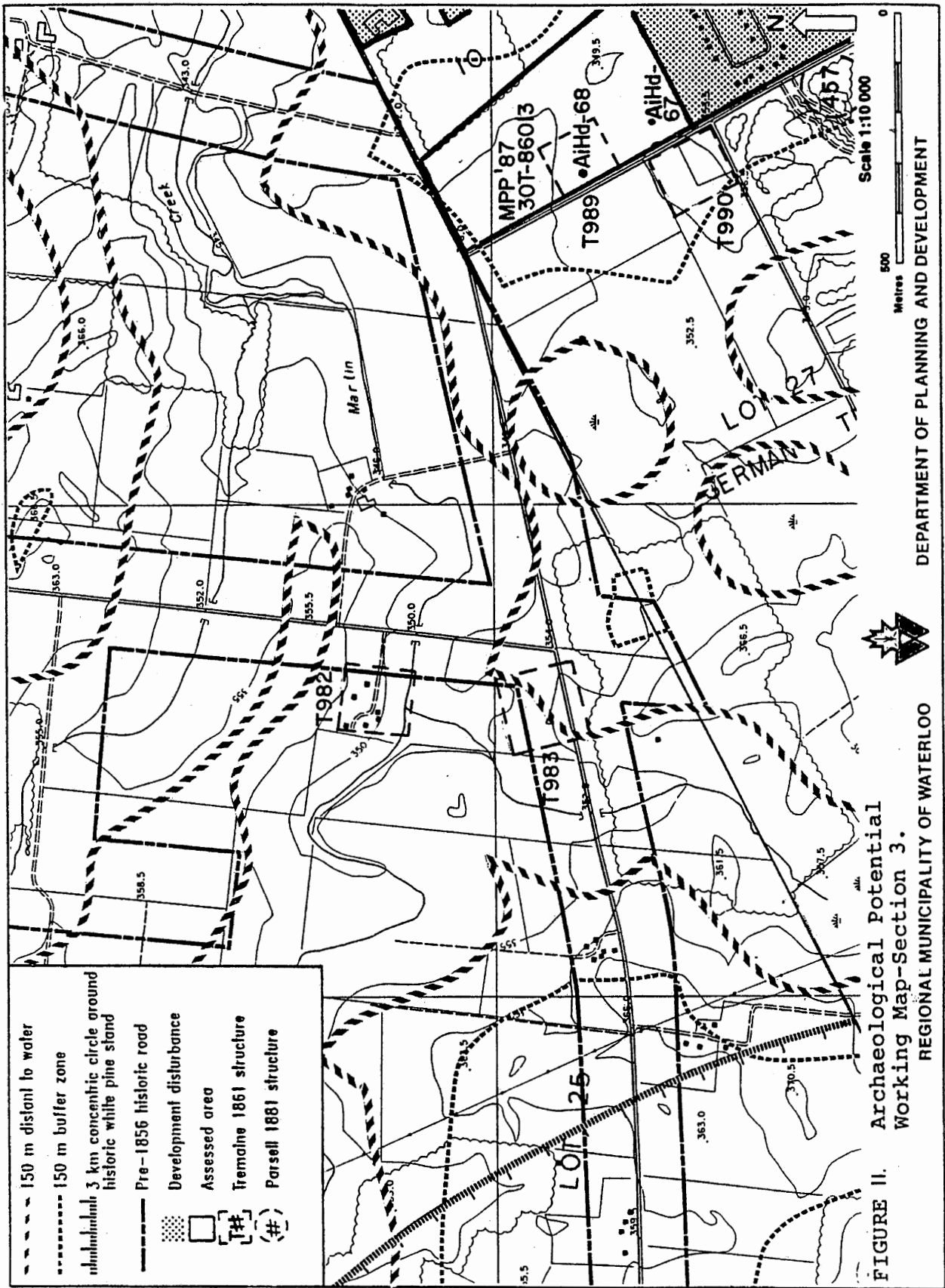
0 500 Metres



DEPARTMENT OF PLANNING AND DEVELOPMENT

REGIONAL MUNICIPALITY OF WATERLOO

FIGURE 10. Archaeological Potential Working Map-Section 2.



Scale 1:10 000

500 Metres

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FIGURE II. Archaeological Potential Working Map-Section 3.

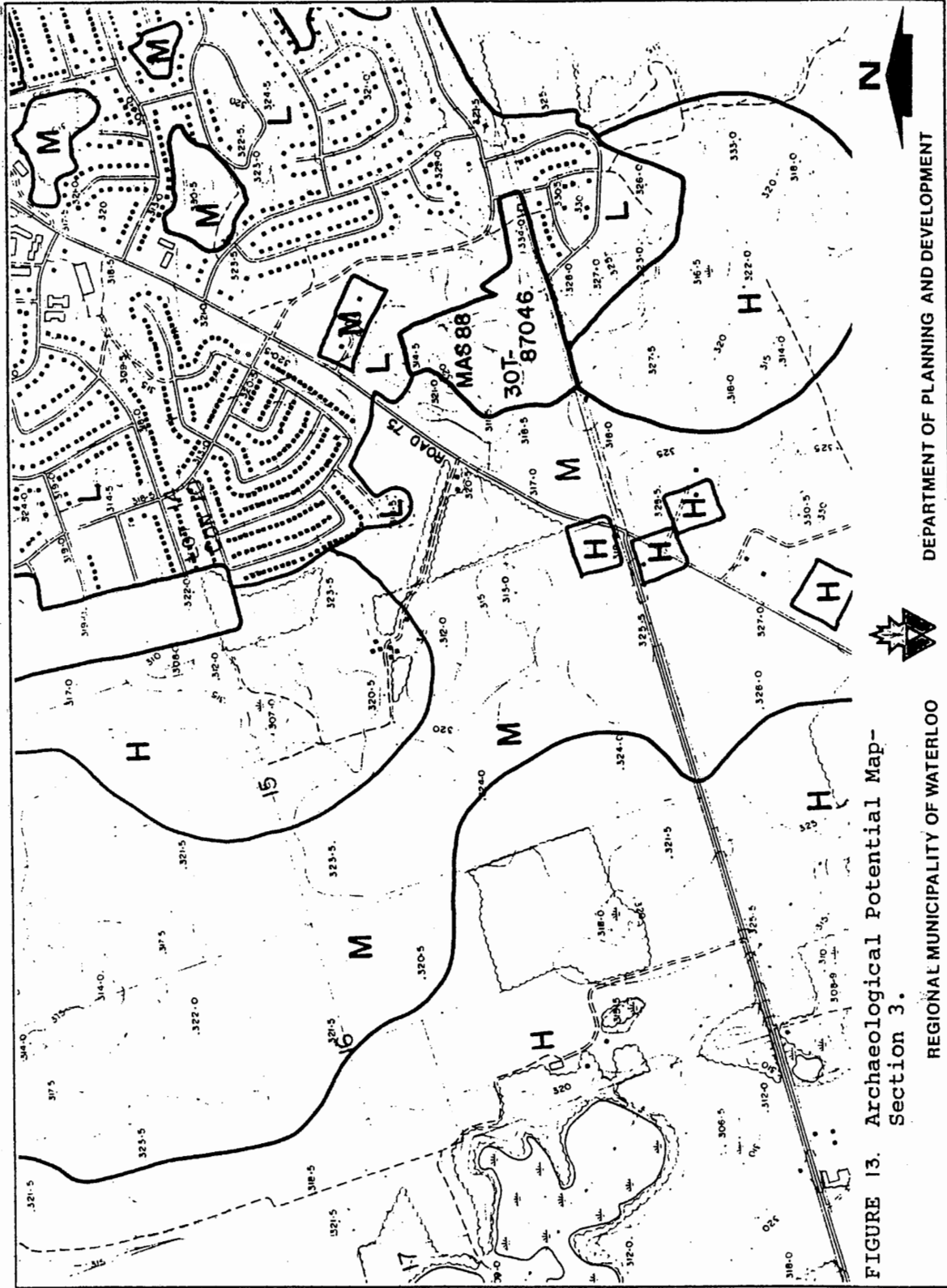


FIGURE 13. Archaeological Potential Map - Section 3.

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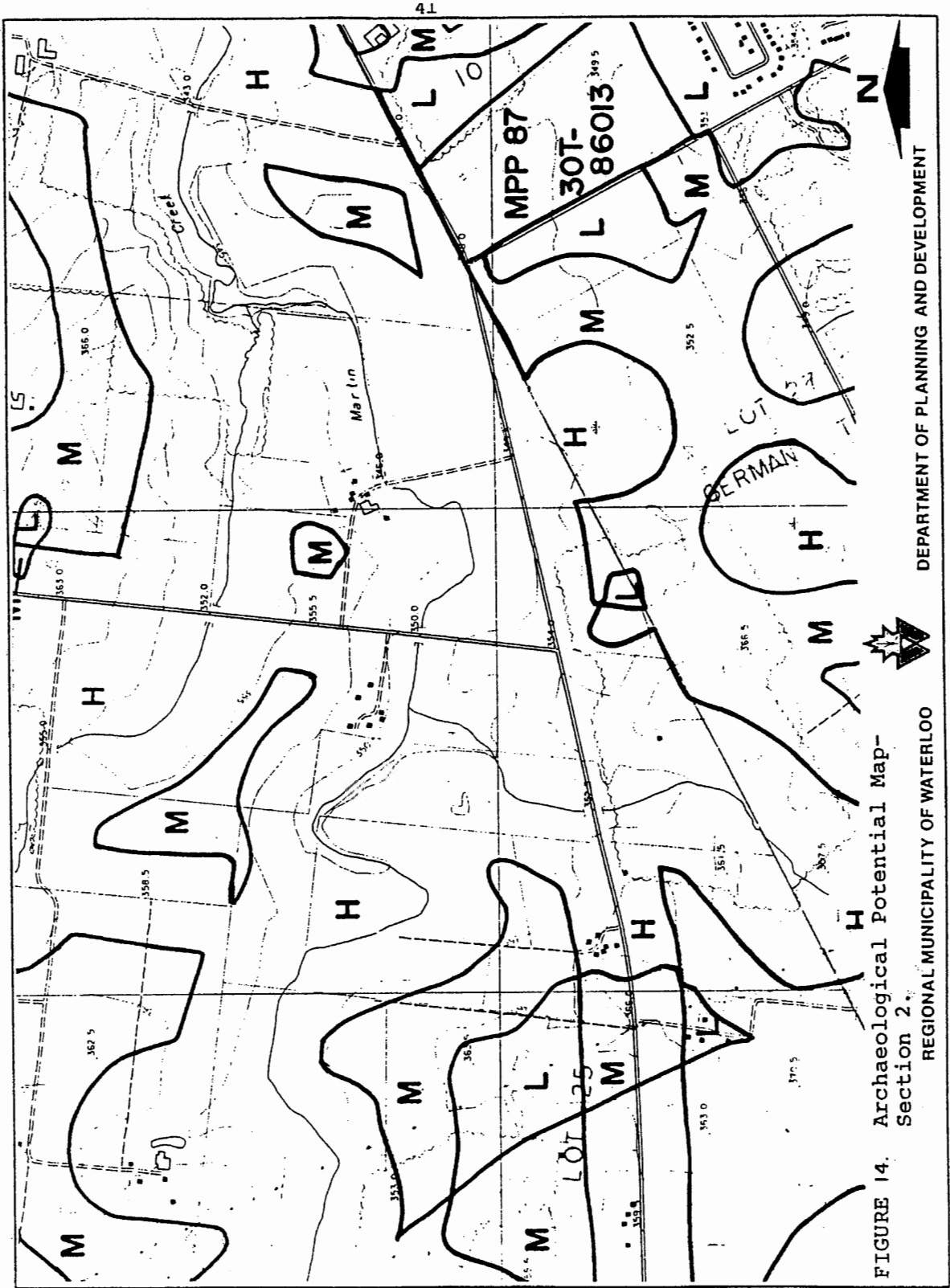


FIGURE 14. Archaeological Potential Map-
Section 2.
REGIONAL MUNICIPALITY OF WATERLOO

DEPARTMENT OF PLANNING AND DEVELOPMENT

2.4 Phase IV

Phase IV entailed identifying sites in high priority areas (that is, immediate development status). While it was originally intended that archaeological assessments of these high priority areas be conducted by the Archaeology Division, the task of providing a comprehensive archaeological overview and for providing archaeological potential maps for the entire Region of Waterloo, made such a work programme an impracticality. Instead, developers were referred to the list of licenced archaeological consultants to conduct archaeological resource assessments on these high priority areas in order to satisfy the extant archaeological draft plan approval condition of these properties.

2.4.1 Archaeological Potential

Maps delineating archaeological potential were developed to assist planners, developers and archaeological consultants to quickly and easily determine areas of moderate to high archaeological potential. Circulated subdivision, condominium and zone change applications are subject to satisfaction of an archaeological condition prior to draft plan approval.

The final set of archaeological potential maps simply define three types of potential: low, moderate and high. These maps (examples in Figures 12 to 14) were derived from the working base maps. The variables described in Section 2.3.1 were combined to arrive at the archaeological potential maps. For example, if two moderate variables occurred at the same location, the area became high potential.

It is anticipated that these archaeological potential maps will be utilized primarily by Regional and Area Municipal planners to determine potential of specific areas and the need for archaeological assessment. Both Area Municipal planners and Regional planners have been provided with pertinent archaeological potential maps for their areas of jurisdiction and have been briefed as to the development of the maps and the interpretation of the maps.

Planning consultants, environmental consultants, engineering consultants, public service industries, and developers will be able to consult with Regional and Area Municipal planners at an early stage in development projects to determine archaeological potential and to anticipate cost and time schedules if an archaeological assessment/specific site mitigation is required.

A determination of low archaeological potential does not negate the possibility of the presence of archaeological remains. The potential rating is based on present known trends of archaeological site location and existing land use. In the event of discovery of a significant archaeological site, human remains or unusual subsurface structural features, it is the responsibility of the developer to report such findings immediately to the Regional Archaeologist [and/or Staff Archaeologist of the Ministry of Culture and Communications].

Conversely, an evaluation of moderate to high archaeological potential does not guarantee the presence of archaeological resources. These maps indicate archaeological potential and not actual site presence.

The potential maps are depicted on 1:10 000 scale Ontario Base maps generated from air photographs by the Ministry of Natural Resources. The transference of data from air photographs to base maps has not proven to be wholly accurate. Often woodlots or intermittent streams are not

recorded on the base maps, and as a result, have caused error in delineating areas of archaeological potential based on the archaeological potential maps alone. As a safeguard, individual properties slated for development, should be subject to a visual survey to determine the presence of new, unrecorded development disturbance and/or the presence of unrecorded water sources (such as intermittent streams).

Specific data regarding each property can be garnered from the working archaeological potential maps, that is, the base maps from which the final determination of archaeological potential was evaluated and transferred to the Master Plan archaeological potential maps. The working base maps will be utilized primarily by the Archaeology Division, archaeological consultants and researchers. The Archaeology Division can be consulted well in advance of the draft plan stage or even prior to land purchase to determine archaeological potential and whether known registered archaeological sites are located on a given property. This feature of the Master Plan allows developers, real estate agents, planning consultants, architects and land surveyors to anticipate, modify and/or incorporate certain archaeological features into a development plan or to anticipate additional time and costs to a development project.

Archaeological assessments can be conducted far in advance of the draft plan stage, thereby avoiding unnecessary delays in processing development applications.

2.4.2 Updating Archaeological Potential Maps

All primary data has been entered on the working Archaeological Potential Base maps. However, this data must be periodically updated to reflect new recorded archaeological sites, areas with completed archaeological assessments, urban archaeological data, and development disturbance. These new data will be entered on an Ontario Base Map update binder (housed in the Resource Centre) where the Base Map reference number and the information that has been added or deleted from the map is recorded. This binder must be referenced when utilizing the base maps for archaeological evaluation of a property.

The new data should be incorporated onto the Archaeological Potential Base maps periodically to ensure maintenance of current archaeological potential evaluation. A copy of the added data and relevant map sections must be sent to individuals/ institutions/firms who retain copies of the Archaeological Potential maps. It is recommended that the original mylars of the Archaeological Potential maps be updated periodically and that new copies of these same maps become available to purchasers.

2.4.3 Archaeological Potential of Immediate and Short Term Project Development

Circulated draft plans (considered to have immediate development status although this is not always true) were evaluated as to archaeological potential. If properties exhibit a moderate or high archaeological potential, an archaeological condition is placed on the plan, thereby ensuring that an archaeological resource assessment and/or site specific mitigation will be conducted prior to development. The Archaeology Division participated in the assessment of some of these properties while acting as a consultant for the Region. These assessments and site specific work are detailed earlier in Section 2.2.2.

In addition, Figures 1 to 7, were combined with data from the archaeological potential maps to determine potential of the immediate (existing archaeological condition) and short term development. Figures 15 to 21 illustrate the archaeological potential for the staged development of the three cities and four townships. Regional planners and Area Municipal planners have been alerted to the archaeological potential of short to long term development.

2.5 Phase V

Phase V (according to the Terms of Reference) was to identify archaeological potential for medium to long term development. Figures 15 to 21 detail the potential of these staged development areas.

In addition, archaeological potential coverage has been evaluated for the entire Region of Waterloo (based upon the best available data) ensuring that future development will be considered in terms of potential for the location of archaeological resources.

2.6 Phase VI

Phase VI (according to the Terms of Reference) was to address a) preparation of a map identifying existing and potential archaeological sites that could be affected by development within the next five to ten years, b) develop policies for the administration of the Master Plan, c) develop a rating system for extant sites, d) develop a rating system for all sites, e) determine options for the development of sites, and f) determine the feasibility of establishing a permanent archaeological facility.

The first of these objectives, that is, preparation of a map identifying existing and potential sites that could be affected by development (long term staging) is addressed in this section. The development of policies is addressed separately in Section 3.0. The development of a rating system of extant sites and all possible other sites is addressed in Section 4.0. Items (e) and (f), options for development of sites and determining feasibility of a permanent archaeological facility are addressed in Section 4.0, the proposed implementation of recommendations.

2.6.1 Archaeological Sites Threatened by Development

Figures 15 to 21 illustrate not only archaeological potential for short, medium and long term development but also illustrate known registered archaeological sites.

The following known archaeological sites in the City of Kitchener are threatened by development: AiHc-14, AiHc-20 and AiHc-21. Two of these sites are located within an area that is currently being assessed by Archaeological Services Inc. The proposed recommendations for the two sites AiHc-14 (New Aberdeen); a 19th century historic village, and AiHc-20 (Van Oordt); a Late Woodland cemetery, are:

1. The results of the excavations conducted by Chitwood and Woolfrey and Hill indicate the presence of two major areas of concern which warrant further archaeological investigation at the historic village of New Aberdeen (AiHc-14). While previous excavations have failed to yield any significant evidence of structures in addition to those recorded on the 1856 map, the frontage adjacent to Huron Road and the area surrounding Structure L have not been fully investigated. Indeed, the research programme was not designed to identify associated outbuildings, although Hill may

have documented a privy associated with Structure L and a blacksmith function for Structure D. Moreover, according to Matthew Hill, "the potential at New Aberdeen for studies at a community level is great. Although there have been a number of archaeological studies of rural sites in Ontario...and of individual structures or lots in urban or semi-urban settings..., the opportunity to study a number of neighboring and penecontemporary households is an unusual one. The resulting data could materially advance understanding of the cultural variability among settlers in Upper Canada; in particular among the non-agricultural working class, the majority of New Aberdeens population...In addition to providing site specific data relating to local and provincial history, this project has potential to provide information of relevance to both humanistic and social science studies..." (Matthew Hill, personal communication).

However, in the absence of any formal heritage designation of the site or the adoption of other protective measures by ...the Province..., it is recommended that the areas illustrated... be carefully stripped of topsoil by Gradall, under the supervision of an archaeologist. Should any archaeological features be identified, they must be carefully delineated, by hand, and protected from development until such time that they have been adequately investigated.

2. It is recommended that the perimeter of the Van Oordt Cemetery be established at a radius of fifteen metres from the established datum. ...It is also recommended that additional protective measures be taken including the addition of topsoil and possible fencing of the areas.

As other native artifacts were reportedly collected to the east of the ridge along the fenceline, it is recommended that the area be ploughed and surface collected (Archaeological Services Inc. 1989).

The Doon Village Estates Cemetery (AiHc-21) is a Middle Woodland site. A surface survey of a 20 x 40' eroded area of hillside was conducted by Jack Redmond and Bill Tilt in 1981. Material recovered includes a human mandible, bone fragments and a shell necklace (Redmond 1981). This area has been tentatively scheduled for development within the next three to five years.

There are no known archaeological sites endangered by development in the cities of Waterloo or Cambridge, nor in the Townships of Wellesley, Woolwich and Wilmot.

There are two endangered sites in the Township of North Dumfries: AhHb-2 and AhHb-3. Both of these areas are likely to be developed as severances and no known time schedule is available for their future development.

The site, AhHb-2, is a Late Woodland site. Unfortunately no other information is available for this site.

The site, AhHb-3, is reportedly a native historic site, although this site has not been field checked by an archaeologist.

3.0 RECOMMENDATIONS AND RATIONALE FOR RECOMMENDATIONS

The following are recommendations for the effective management of the Regional Municipality of Waterloo's archaeological resources presented in progressive sequence. The recommendations have been subdivided into three categories: 1) recommendations for inclusion in or amendment to the Regional Official Policies Plan 2) recommendations for amendments to provincial legislation and 3) general recommendations. The fulfilment of the general recommendations will be sought through education, good will and daily administrative functions.

3.1 Recommendations for Inclusion in the Regional Official Policies Plan

3.1.1 Definitions

Archaeology is defined as the study of prehistoric and historic cultures through material culture remains.

An **archaeological resource assessment** is the combined background research and field study of a property evaluated as moderate to high on the Archaeological Potential Maps that identifies the presence of, and interprets, the archaeological resources on the property and makes recommendations for the mitigation of the property.

Significance is a measure of an archaeological site's potential to contribute to the understanding of prehistoric and/or historic technologies, lifestyles and lifeways.

Significance criteria includes, but is not limited to, a) findspots with diagnostic (artifacts that assist in the identification of cultural affiliation) artifacts and tools b) sites with an artifact frequency of 6 - 20, c) sites with an artifact frequency of 21 or more, d) rarity, e) potential for data recovery, f) site integrity, g) context, h) association with an historical event or personage, i) change in construction/technology, j) public programming/interpretation, and k) marketing value.

Archaeological Condition is a condition of draft approval. The archaeological condition reads as follows: Prior to soil disturbance (grading and/or servicing) of a property evaluated as moderate to high archaeological potential, a licenced archaeologist shall conduct an archaeological resource assessment and site specific mitigation of any significant archaeological remains found on a property at the expense of the owner.

Mitigation includes the preservation, conservation and/or archaeological excavation of an archaeological site.

Mitigation options include, but are not limited to: a) allow construction development to proceed b) archival research, c) record surface features, d) deep site testing, e) test excavations, f) strip topsoil and shovel shine, g) monitor during construction, h) full site excavation, i) greenspace allocation, j) Ontario Heritage Act site designation, k) purchase of site, l) expropriation, and m) reconstruct.

3.1.2 General Policy

A general policy regarding the preservation and management of archaeological resources is a

statement of recognition and intent. The following recommendations for inclusion to the Regional Official Policies Plan states the Region's intent to first, recognize the presence and potential presence of archaeological resources; second, to provide for the preservation and management of these resources; and third, to encourage public awareness of the Region's archaeological resources.

The Regional Municipality of Waterloo recognizes the principle that the archaeological heritage (prehistoric, historic, industrial and underwater archaeological resources) of the Region is an important resource worthy of protection and management.

The Regional Municipality of Waterloo will administer the Archaeological Facilities Master Plan and direct the preservation and/or conservation of the archaeological resources that retain the potential to provide data which can benefit or add to the understanding of the prehistory and/or history of a Regional locale and be related to the larger municipal, provincial or national overview.

The Regional Municipality of Waterloo will provide for the preservation and/or conservation, where possible, of archaeological resources located on Region owned properties and regulate the use of such lands by the public.

The Regional Municipality of Waterloo will promote awareness for the value and non-renewable status of archaeological resources through public programming.

3.1.3 Archaeological Resource Inventory

The evaluation of archaeological resources, including an appraisal of their individual significance, must be based on knowledge derived from a comprehensive inventory of known and probable archaeological resources. In addition, a synthesis of the prehistory and history of the Region of Waterloo is required to provide adequate background research for determination of archaeological potential.

The Region encourages and may participate with the Waterloo Heritage Foundation, Area Municipalities, the Province of Ontario and other agencies in the preparation of a comprehensive inventory or registry of sites or areas of archaeological significance (extant in ROPP 13.11).

The Region recognizes that general distribution of information on archaeological resources may result in vandalism and intentional destruction or disturbance. In order to protect archaeological resources, the Regional Municipality will not publish or release information from archaeological inventories or registries except to Area Municipalities, agencies and property owners on a need-to-know basis (extant in ROPP 13.12).

The Regional Municipality will establish and maintain an inventory of potential urban archaeological sites for each village, town and city in the Region.

3.1.4 Site Designation

Archaeological sites may merit protection if evaluated as significant and provision for protection, notably in the form of preservation or avoidance, is addressed herein.

The Regional Municipality of Waterloo will recommend to Area Municipalities to include, where appropriate, archaeological resource identification as a component of existing Ontario Heritage Act legislation, Part V, in the establishment of heritage conservation districts for the management and, preferably, preservation of significant archaeological resources.

3.1.5 Archaeological Review

The Region of Waterloo has been active in the review of circulated plans of condominiums and subdivisions, first, through the Ministry of Culture and Communication's request that development plans be circulated to their office, and later, through its own Regional Archaeology Division. The strength of such review exists in the Planning Act of 1983 which states that the Minister shall have regard to, among other matters of provincial interest, the protection of features of significant archaeological interest.

The Regional Municipality of Waterloo authorizes the Regional Archaeologist to review all public works to determine their archaeological potential is determined, the Municipality will be requested to undertake an archaeological assessment.

The Regional Municipality of Waterloo requires that where the potential presence of an archaeological resource has been identified on the Archaeological Potential Maps of the Region involving subdivisions, condominiums, zone changes, official plan amendments and, where feasible, severances, an archaeological study be undertaken by a licenced archaeologist (amendment to ROPP 13.13).

The Regional Municipality of Waterloo requires that lands or sites identified by archaeological studies as containing significant archaeological resources be protected from destruction or alteration wherever possible; and where not possible or feasible require that a reasonable opportunity be afforded by the developer to allow appropriate agencies or groups to salvage or catalogue such archaeological resources under supervision of the Regional Archaeologist prior to the commencement of construction or site grading on such lands (amendment to ROPP 13.15).

The Regional Municipality of Waterloo will seek the cooperation of the Area Municipalities, where feasible, to ensure that significant archaeological resources be retained and incorporated into the lands dedicated for park land or landscaped areas.

The Regional Municipality of Waterloo encourages property owners to donate archaeological remains to a Regional heritage facility to ensure proper conservation and storage of materials and for use in interpretative and education programmes.

The Regional Municipality of Waterloo encourages property owners and developers to contact the Archaeology Division if archaeological remains are discovered on the property.

The Regional Municipality of Waterloo recommends that public utilities, statutory corporations and similar agencies utilize the Archaeological Facilities Master Plan and Archaeological Potential maps to develop planning strategies.

The Regional Municipality of Waterloo, in cases where the standard archaeological condition

has been imposed, recommends that an archaeological survey and site specific mitigation be conducted on the entire draft plan regardless of stage development negotiated with the local municipality.

The Regional Municipality of Waterloo encourages Local Architectural Conservancy Advisory Committees to include an evaluation of archaeological potential in review of structures proposed for designation under the Ontario Heritage Act.

3.2 Recommendations to Provincial Ministries

Municipalities have been encouraged to demonstrate a stronger and more responsible role towards the protection and management of archaeological resources. Inclusion of amendments and recommendations in the Regional Official Policies Plan is a strong indication of this responsibility. However, municipalities cannot be responsible for all of the many facets of archaeological heritage resource management. Inter-ministerial cooperation and direction is still a requirement for the effective management of archaeological resources. The following recommendations are made to three provincial ministries in an effort to seek stronger and more effective provincial legislation.

3.2.1 Ministry of Culture and Communications

Existing legislation to designate archaeological sites lies directly with the Minister of Culture and Communications. It would be ideal for Municipalities with an Archaeological Master Plan and qualified staff archaeologist to act as the Minister's delegate for the designation of sites of significance within their own political boundaries.

The Regional Municipality of Waterloo recommends to the Minister of Culture and Communications that the following be considered for amendment to the Ontario Heritage Act, Part VI (all new sections, the letter headings are for reference only to the text):

- A. In the Part,**
- (a)"archaeological master plan" means a document, prepared by a licensed archaeologist or archaeological consultant and adopted by a by-law of a municipality, which contains an evaluation of the archaeological potential of areas within the municipality;**
 - (b)"designated property" means property in respect of which a by-law under this Part is in effect designating such property;**
 - (c)"municipality" means a county and a regional, metropolitan or district municipality;**
 - (d)"sensitive property" means property which is evaluated as being of moderate to high archaeological potential in an archaeological master plan.**
- B. 1. The Minister, on the request of the council of any municipality which has adopted an archaeological master plan, may, by order, delegate to the council any of the Minister's authority with regard to properties of archaeological**

significance under sections 52 to 60 and 62 to 64, all inclusive, and where the Minister has delegated any such authority, the council has, in lieu of the Minister, all the powers and rights of the Minister in respect thereof and the council shall be responsible for all matters pertaining thereto.

2. The Minister may by order, accompanied by a written explanation thereof, withdraw any delegation made under subsection 1, and without limiting the generality of the foregoing, such withdrawal may be either in respect of one or more designations specified in the order or in respect of any or all designations made subsequent to the withdrawal of the delegation, and immediately following any such withdrawal the council shall forward to the Minister all papers, plans, documents and other material in the possession of the municipal corporation that relate to any matter in respect of which the authority was withdrawn and of which a final disposition was not made by the council prior to such withdrawal.

3. Where the Minister has delegated any authority to a council under subsection 1, the council shall not be required to consult with the Foundation on any such matter and any act which would have been carried out by Foundation prior the Ministers delegation shall be carried out by the council.

C. Where the Minister has delegated any authority to a council under section B (1), no person shall disturb any sensitive property within the geographic boundaries of the municipality in furtherance of any commercial, industrial, agricultural, residential or other development until the owner of the sensitive property has

(a) carried out an archaeological survey and rescue excavation of any significant archaeological remains found on the land, and

(b) submitted a report regarding the results of the excavation to the council.

3.2.2 Ministry of Natural Resources

Bill 170, an Act to revise several Acts related to Aggregate Resources, has been to first reading (June 27th, 1988) and is ready to go to second reading. Bill 170 does not have any regard for the cultural or archaeological heritage. The following recommendations for changes to Bill 170 have been submitted to the local Member of Provincial Parliament for presentation (as the submission date for comments and recommendations has already lapsed).

The Regional Municipality of Waterloo recommends to the Minister of Natural Resources through the local Member of Provincial Parliament that the following be considered for changes to Bill 170 (new changes are underlined):

that the definition of environment include i) the social, economic and cultural conditions that influence the life of man or a community, ii) any building, structure machine or other device or thing made by man, and iii) any part or combination of the foregoing and the interrelationships between any two of them,

Part II. Licences. 8(1). The site plan accompanying an application for a Class A

licence must show (j) any significant natural and man made features including archaeological resources

8(6) The site plan accompanying an application for a Class B licence must show, (j) any significant natural and man made features including archaeological resources.

Part III. Wayside Pits. 25(2). The site plan accompanying an application for a wayside permit must show (j) any significant natural and man made features including archaeological resources.

Part V. Aggregate Permits. 36(4). The site plan accompanying an application for an aggregate permit in respect of a pit or quarry that is entirely on dry land must show, (m) any significant natural or man made features including archaeological resources.

36(5). The site plan accompanying an application for an aggregate permit in respect of a pit or quarry located entirely on land covered by water must show, (e) any significant natural or man made features including archaeological resources.

3.2.3 Ministry of Consumer and Commercial Relations

Bill 31, an Act to revise the Cemeteries Act, received second reading on June 21, 1989 and is on the agenda of the Standing Committee on Social Development. Bill 31 does not have any regard for the cultural or archaeological heritage represented by burial sites or cemeteries. The following recommendations for changes to Bill 31 have been submitted to the local Member of Provincial Parliament for presentation, and copies of the subject report have been provided to the Honourable Gregory Sorbara, Minister of Consumer and Commercial Relations, the Honourable John Sweeney, Minister of Housing and Municipal Affairs and to the Secretary of the Standing Committee reviewing the legislation, along with a request that Bill 31 be amended as per the following recommendations.

The Regional Municipality of Waterloo recommends to the Minister of Consumer and Commercial Relations through the local Member of Provincial Parliament that the following be considered for changes to Bill 31 (new changes are underlined).

Section 1. that the definition of "human remains" be changed to read; means a dead body and any part thereof and includes a cremated body;

Section 9 (1) In order to close a cemetery, the Registrar may (e) consult with the Minister of Culture and Communications regarding i) the heritage value of the cemetery and ii) the archaeological value of the cemetery;

Section 51 (1) Subject to subsection (2), no person shall disinter any human remains without, (c) mitigation conducted by or under the supervision of an archaeologist licenced under the Ontario Heritage Act if the cemetery or burial site has been evaluated as exhibiting significant archaeological potential;

Section 87. This Act prevails over the Ontario Heritage Act, except in cases of

significant Prehistoric or historic burial sites and/or cemeteries,

"New Section (a)". The Minister of Culture and Communications shall be consulted in all cases where the historical or archaeological integrity of a Prehistoric or historic burial site or cemetery is endangered as a result of any proposed disinterment conducted Pursuant to this Act .

"New Section (b)". Where the Minister of Culture and Communications has determined that the burial site or cemetery is endangered Provision shall be made to allow for the archaeological investigation of the site following established procedures.

"New Section (c)". The disposition of grave goods, both aboriginal and historic, that have been recovered during an archaeological investigation of a burial site or cemetery shall be in accordance with the Registrar's order as provided under this Act.

3.3 General Recommendations

The following recommendations must be sought through education, good will and daily administrative functions.

Assessment and site specific mitigation are not always the most appropriate response to the preservation of an archaeological resource. As provincial legislation now exists, only a handful of archaeological resources have been designated under the Ontario Heritage Act, and such designation requires direct sanction from the Minister of Culture and Communications. In an effort to make the individual Municipalities responsible for their own archaeological resources, the following have been recommended.

The Regional Municipality of Waterloo authorizes the Regional Archaeologist to review archaeological resource assessments and site specific mitigation reports to determine if the archaeological condition has been satisfied. In cases where the office of the Regional Archaeologist has undertaken the work, reports will be reviewed and cleared by a Ministry of Culture and Communications representative.

The Regional Municipality of Waterloo will consider increasing funding for non-profit organizations, such as the Waterloo Regional Heritage Foundation, for the purposes of purchase, preservation and conservation of significant archaeological resources.

The Regional Municipality of Waterloo encourages the Waterloo Regional Heritage Foundation to organize fund raising activities for the purpose of the purchase, preservation and conservation of significant archaeological resources.

The Regional Municipality of Waterloo recommends to Area Municipalities to include the Archaeology Division in the circulation of building, alteration and demolition permits at such time that the urban archaeological potential flagging system is in place.

The Regional Municipality of Waterloo encourages the donation of archaeological collections

that originate within the Regional Municipality of Waterloo to ensure that archaeological resources are retained for the use of the people of the Region.

The Regional Municipality of Waterloo will provide a legal agreement between the landowner and Region for permanent transference of ownership of archaeological collections.

The Regional Municipality of Waterloo will accept archaeological collections that originate specifically from the Region if they are catalogued and packed according to guidelines of Doon Heritage Crossroads and are accompanied with specified documentation.

4.0 PROPOSED IMPLEMENTATION OF RECOMMENDATIONS

4.1 Categories of Registered Sites

There are 272 registered archaeological sites located within the Regional Municipality of Waterloo as of March 1989. There are nine categories of site status that are evaluated for potential of recovery of additional field data. Appendix C lists these categories detailing the site border number, whether the site is extant, the status of the site (unverified location therefore unknown, developed, archaeologically investigated, scheduled for development and not threatened by development), the cultural affiliation and if the site has been field verified (an archaeologist has visited the site). The nine categories of sites are: Category A - Unverified Sites: Unknown if Extant; Category B - Developed, Unverified Sites: No Longer Extant; Category C - Developed Sites: No Longer Extant; Category D Extant but Location Data is Suspect; Category E - Excavated Sites: No longer Extant; Category F - Located Through Assessment: Scheduled for Development; Category G - Assessed Sites that Remain Extant; Category H - Extant Sites Not Threatened by Development; and, Category J - Extant Sites: Archaeologically Investigated or Recommended for Mitigation.

Category A sites (n = 66) are unverified (that is, they have not been field checked by an archaeologist. Readers should refer to MacDonald's (1988a) Past Archaeological Research in the Regional Municipality of Waterloo for a detailed discussion of unverified versus verified sites.

The two anomalies in Category A are AiHe-7 and AiHd-19. An archaeological resource assessment of the subdivision property, where a suspect location of AiHe-7 was reported, failed to relocate this site. The suspect location data combined with the floodplain location (possibly deeply buried as a result of silting) suggest that this site may still be extant. The Boyle Earthworks, AiHd-19, has also not been relocated. According to archival maps of the City of Kitchener, the site may still be extant (due to its large site proportions), despite urban development, in residential backyards.

The existence, and subsequently the significance, of Category A sites cannot be ascertained until a field check is conducted by an archaeologist.

There are an additional three unverified archaeological sites (AiHb-2, AiHb-7 and AiHc-3) that have been subject to extensive urban development and no longer exist. These Category B sites have no potential for the field recovery of archaeological data.

Category C sites (n = 27) no longer exist as a result of development activities. These sites have no potential for the field recovery of archaeological data.

Category D sites (n = 2) were registered by archaeologists who conducted site visits within the last 15 years but nonetheless are considered unverified attributable to poor location records.

The significance of these sites, therefore, cannot be ascertained until such time that the sites are relocated.

Category E sites (n = 16) have been archaeologically investigated in entirety or partially investigated and developed. These sites no longer exist and have no potential for the field recovery of archaeological data.

Category F sites (n = 111) were located by archaeological consultants through archaeological resource assessments conducted as a condition of draft plan approval. Determination of negligible site significance was, in all cases, made by the archaeological consultant (see section 4.2 for discussion of significance). The majority of these sites were surface collected prior to archaeological clearance (clearance of the archaeological condition included in draft plan approval). These sites are considered to no longer exist.

Category G sites (n = 11) were located through archaeological resource assessments and remain, either in part or in entirety, extant. Sites have been subject to partial development impact, remain undisturbed due to unsuitable topographic features for development, are located outside the draft plan area, have been subject to partial archaeological investigation, or, will not be impacted by development, that is, these sites are located in park land.

Category H sites (n = 26) are extant and not threatened by development impact.

Category J sites (n = 10) are extant and have been archaeologically investigated or have been recommended by the archaeological consultant for site specific mitigation.

4.2 Rating System of Determining Site Significance

Assigning "significance" to an archaeological resource is a task avoided by many, ventured by few, and accomplished to everyone's satisfaction, by none. Significance will always be subjective based on personal interpretation and the existing cultural climate or attitude.

Through education and practical experience, archaeologists often rely on intuitive, rather than a qualitative or quantitative, determination of site significance. Dr. Bruce Welsh defines intuition as "the immediate and inspired apprehension of the truth without reasoning or analysis" (Welsh 1989:18). Welsh goes on to state that the

Unrecognized or unacknowledged use of intuition can produce circular, non sequitur, invalid and/or unsound arguments filled with hidden, unexplained and/or false assumptions (ibid).

Therefore, although quantifying and qualifying the significance of archaeological resources is difficult, a list of criteria for significance (see section 4.2.2) will provide a focus for arriving at a determination of significance. **It is not acceptable to state that an archaeological resource is significant or, conversely, not significant without providing justification for the determination.**

At the outset, it must be stated that all archaeological sites are significant when viewed as a segment of the entire cultural prehistory and history.

As presented in the introduction,

...much of what we know of the [Region's] archaeological past results from an accretion of individual sites and artifacts that collectively acquire an importance unheralded by the apparent insignificance of any particular one [site] (Department of Communications 1988:1).

Deceptive in the determination of a site's significance is the very nature of archaeological sites and the difficulty of obtaining a representative site sample. Only a fraction of the material culture may exist that was originally located on the site. As an example, many organic materials do not survive unless special environmental and burial conditions exist. This remaining, fragmentary evidence may wrongly suggest that a site is less significant than might actually be the case.

A second problem in determining site significance is the issue of site looting. Artifact collectors generally select diagnostic artifacts (those employed in determination of cultural affiliation) leaving behind the debitage (the waste products of tool or other artifact manufacture) or other less "pretty" artifacts. The absence of these materials may suggest two interpretations to the archaeologist. The first is that the site has a different function than might actually be the case. The second is that the site is significant due to the absence of key material culture (presenting an anomaly in existing data) or that the site is not significant (in terms of management).

The third problem in determining site significance, closely allied with problems one and two, is the archaeological resource assessment strategy. The use of pedestrian transects over ploughed fields attempts to locate, type, and delineate sites on the basis of a surface scatter. Rarely is settlement pattern, such as storage pits and hearths, indicated at this level. Test pitting carries with it its own limitations of surface area tested in relation to the testing methodology.

A fourth problem is concealed archaeological sites, underwater or on land. In the case of the latter, even deep ploughing may not bring artifacts into the plough zone. These sites include those located on a flood plain. Use of coring and augers, and possibly trenching, in assessment survey should assist in a) locating these sites and b) determining level of site significance. Historic sites, also may have deeply buried structural remains. The use of resistivity testing or other remote sensing will assist in determining points a and b noted above. In underwater sites, the use of remote sensing, video, visual and coring will assist in determining points a and b noted above.

At present, there are few suggestions for accounting for problems one and three, that is, the disappearance of organic artifacts and limitations of survey strategy. However, the problem of looting of sites may be alleviated, to some degree, by reviewing extant site files, probable site files, and conducting inquiries of property owners and local collectors.

Regardless of level of significance (to be discussed in section 4.2.2), all archaeological and heritage elements located during an archaeological resource assessment or research oriented study must be recorded. Recording of these elements is especially true in cases where development will alter the entire property, including standing structures and/or buried resources.

Development impact, changes to the environmental setting, looting and/or vandalism and cultural climate/attitude, do not determine site significance. These variables do, however, act as a trigger mechanism for responding to the significance of a site.

Ultimately, significance will be determined if the resource has the potential to contribute to the preservation, enhancement and understanding of the past.

4.2.1 Significance Determined by Archaeological Consultants

Archaeologists indicate site significance through recommendations presented in their assessment and

site specific mitigation reports. These reports often state that a site is significant and requires some form of site mitigation. Rarely, if ever, do consultants define why the site is significant.

Archaeological consultants determine recommendations for additional assessment and/or specific site mitigation based, primarily, on field data. Few prehistoric villages are encountered (to date, for the Region of Waterloo), instead the archaeological resource generally consists of limited material cultural data thereby limiting determination of site type and/or cultural affiliation. Consultants tend to rely on the quantity and type of recovered data on which to base additional recommendations for archaeological investigation.

An examination of assessment reports for the Region of Waterloo indicates the variability between consultants and of variability for the individual consultants in the basis for determination of site significance and recommendations. The basis for these recommendations is rarely clearly stated by the consultant and has been interpreted by staff of the Archaeology Division from the results of the assessment.

As an example, Consultant A recommended additional archaeological investigation for four different sites consisting of: 1) three diagnostics and 40 flakes, 2) 13 flakes and no diagnostics, 3) six diagnostics and two flakes and 4) a scraper and five flakes. Consultant A, however, did not recommend additional investigation for a site that produced a biface and 11 flakes. Consultant A recommended full site excavation of a known village site following several controlled surface collections and test excavations.

Consultant B recommended additional archaeological investigation for two sites which produced 1) three diagnostics, one scraper and 23 flakes (test excavation) and 2) three utilized flakes and four flakes (reassess under optimal conditions). This latter site assessment resulted in the discovery of another site component. The site consisted of a biface and four flakes, and the recovery of additional artifacts: a projectile point and three flakes. Despite the additional complement of artifacts, no recommendations were made for further investigation of the site.

Consultant C recommended that test excavations, followed by topsoil stripping, be conducted on a site that produced 25 lithic artifacts from a surface collection. The same recommendations were made by Consultant C for two sites which produced, respectively, 14 lithic artifacts and 37 lithic artifacts. Consultant C did not recommend additional investigation for findspots (one to five artifacts), a site which produced 23 flakes, three other sites which, respectively, produced five, seven and eight lithic artifacts.

Consultant D conducted additional field work following advice from the Archaeology Division for four sites which produced, on initial assessment: 1) 110 lithic artifacts 2) 37 lithic artifacts 3) 30 lithic artifacts and 4) 15 lithic artifacts. Additional surface collection was recommended for all four sites. Sites 1 and 2 were subject to test excavation and site 1 was also monitored during topsoil stripping. Consultant D recommended three other sites for additional assessment, but the recommendations were never completed (these lands are now developed).

Consultant E recommended additional assessment (under optimal conditions) and/or site specific investigation for sites that ranged in the recovery of one to 44 lithic artifacts. Two of these sites were isolated findspots that were reassessed after a second ploughing and subsequent weathering. Two sites which produced 18 and 4 artifacts, respectively, during the initial assessment were

recommended for additional assessment and later additional site specific mitigation (test excavations and topsoil stripping, respectively). A relatively undisturbed site was 90% excavated. However, another site, comprised of a diagnostic and five lithic artifacts was not recommended for additional assessment/mitigation.

Prehistoric sites have been archaeologically investigated since the 19th century, however, historic sites have only been recognized as potentially "significant" within the past 20 years by consultants. The variability in evaluation of significance remains very apparent today among archaeological consultants. As an example, two consultants have never recommended additional mitigation of historic sites in the Region of Waterloo.

The "significance" criteria used for recommending mitigation of historic sites by other consultants are: 1) date of site 2) material culture 3) known relationships to extant or previous structures, and 4) uniqueness of the site. Historic scatters are rarely recommended for additional mitigation, as the wide dispersal of material has been interpreted as disposal of the material in compost or manure that is later redistributed as field fertilizer, and is therefore out of context.

Recommendations for additional investigation for historic sites include: controlled surface collection, topsoil stripping and excavation of subsurface features, such as cellars and wells. Only one consultant has recorded extant foundations/structures which date from the mid-19th century to the early 20th century.

In summary, consultants make recommendations for additional assessment and/or site specific work for both prehistoric and historic sites (not true for all consultants). Rarely, if ever, do the consultants justify the recommendations by identifying the criteria for site significance.

Recommendations for archaeological investigation of prehistoric and historic sites is variable between consultants and inconsistent for the consultants themselves. A review of the assessment reports suggest that recommendations for additional work on prehistoric sites is based on frequency of artifacts. That is, a site is "significant" if a large number of tools (as opposed to chipping detritus) are recovered. These tools suggest a longer site occupancy and therefore increase the probability of detecting subsurface features. "Significance", based on an **interpretation** of consultants reports (exclusively for the Region of Waterloo) appears to be a factor of the probability of subsurface features. According to this interpretation, a village will be more significant than a hamlet, a hamlet will be more significant than a campsite and so on.

Recommendations for additional work on historic sites appears to be based on a high probability of revealing subsurface features related to early to mid-19th century log homesteads. "Significance" based on an **interpretation** of consultants reports appears to be a factor of chronological age and type of structure. According to this interpretation, an 1830's site will be more significant than an 1870's site, and 1870's site will be more significant than a 1910 site, and so on.

4.2.2 Criteria for Determination of Site Significance

A list of criteria for the determination of site significance is presented in Table 2 and Figure 23. These criteria are not absolute, but act as a guide for determining level of significance and for suggesting options in the management of the archaeological resources.

The following is a discussion of these criteria and the reasons for assigning the criteria a significance level. Throughout, it should be noted that the significance of a site is determined at a field level.

Significance of a site will change with accumulation of data, additional field work and detailed determination of the site (in terms of site type, cultural affiliation, and so on).

1. Registered Archaeological Site - No Longer Extant. If a registered archaeological site is no longer extant it has a level 0 significance. Development can proceed without further archaeological investigation.

2. Fill Sites. Fill sites have been deposited as fill from another geographic location. These sites may still retain a general location but will invariably lack specific intra-site provenience data (that is, cultural deposits will be subject to mixing and displacement). Source of the fill should be identified wherever possible.

Fill sites are assigned a level 1 significance for three reasons. First, the material culture of the deposit may provide a reference collection, supplement material culture collections, and provide general data interpretation for different artifact classes. Secondly, the recovered materials are less sensitive due to lack of provenience and can be used for educational hands on programs. Thirdly, fill sites can provide a non-sensitive site for hosting archaeological field schools (basic level introduction for young age groups) or public short term (half day or day) programs.

Fill sites will not be recommended for additional site assessment and/or mitigation to the developer. If the fill site is favoured for site development presented in options 1, 2 or 3 or combinations of the same, permission for such use must be sought from the property owner and costs incurred for secondary work (that is, not related to the archaeological condition) must be absorbed by the party requesting access and use of the site. In addition, these activities must not interfere with development schedules.

It is recommended that fill sites be assigned a Borden number.

3. Findspot - A. Findspots are defined as locations of artifact recovery with one to five artifacts and no evidence of settlement data. Findspots should be subject to a controlled surface collection during the archaeological resource assessment stage. Location of the findspot must be recorded in the findspot report utilizing the military grid coordinate system (UTM). An artifact description must also be included in the report.

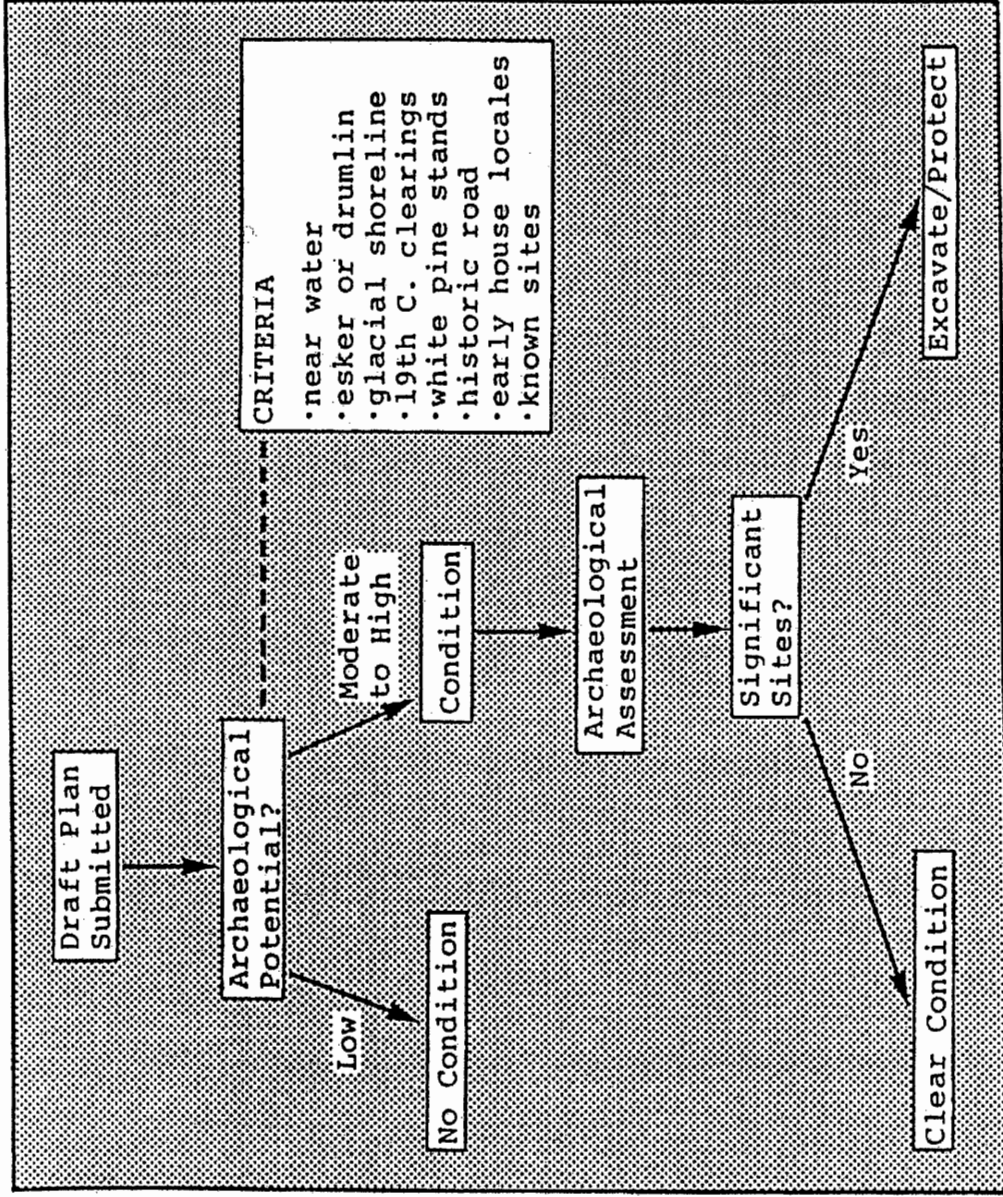


FIGURE 22. Flow Chart of Archaeological Review of Draft Plan



CRITERIA FOR DETERMINATION OF SITE SIGNIFICANCE

CRITERIA LEVEL	SIGNIFICANCE
Registered Archaeological Site - No Longer Extant	0
Fill Site	1
Findspot - A (no diagnostic material)	1
Findspot - B (diagnostic material)	1 or 2
Field Observation Conditions	review all criteria
Sites with Artifact Frequency of 6 - 20	1 or 2
Sites with Artifact Frequency of 21 or more	2 or 3
Site Integrity	review all criteria
Rarity	3
Context	review all criteria
Potential for Data	3
Associated with Historical Event	review all criteria
Associated with Important Personage	review all criteria
Change in Construction/Technology	review all criteria
Public Programming/Interpretation	review all criteria
Marketing Significance	review all criteria

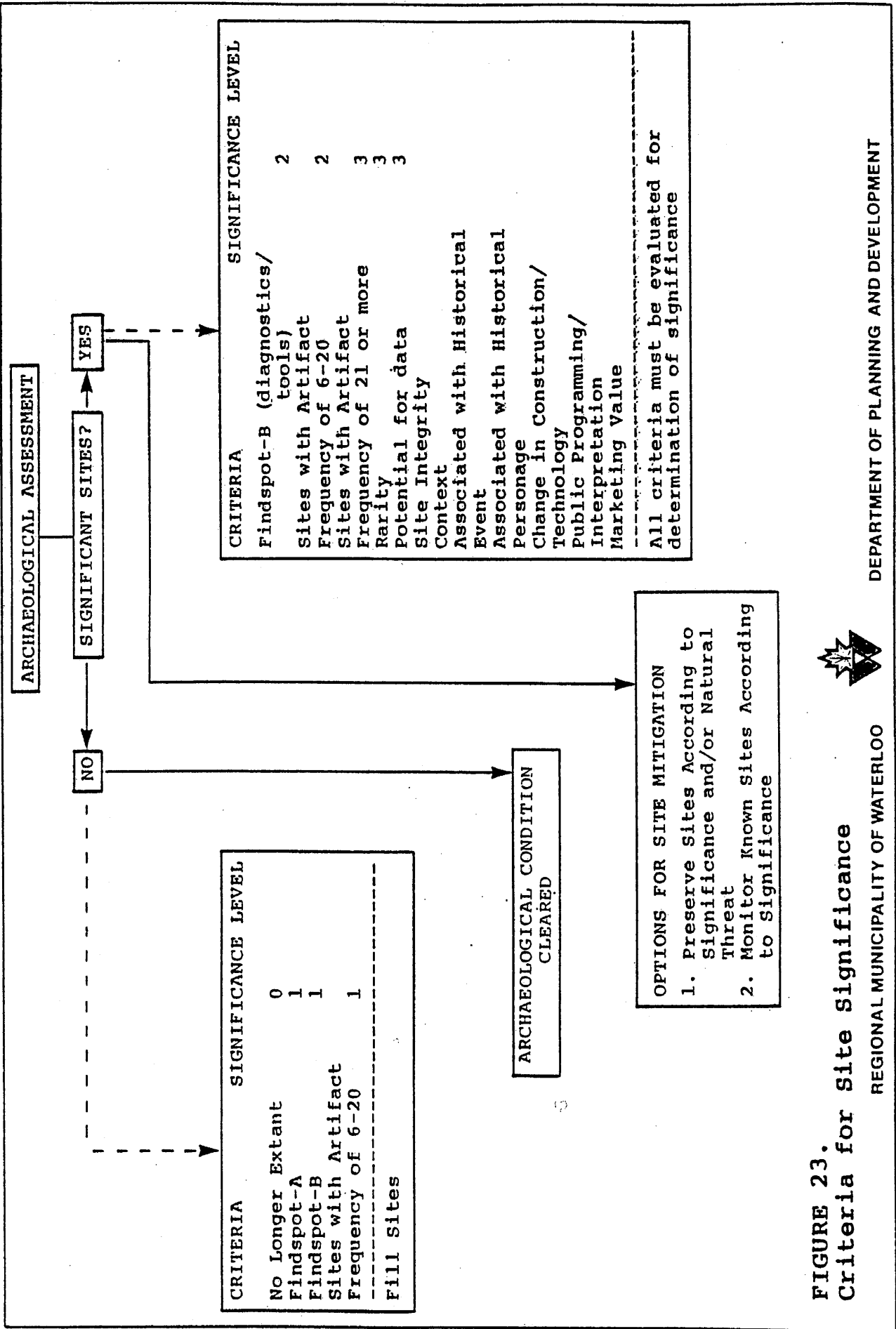


FIGURE 23.
Criteria for Site Significance



Findspots - A do not require additional site assessment and/or site mitigation and are assigned a level 1 significance.

4. Findspots - B. This category of findspots is defined as for Findspots - A, in terms of artifact frequency. However, findspots - B include diagnostic material (artifacts that aid in the identification of cultural affiliation) and/or an assemblage of tools (for example, two bifaces, two scrapers and a drill tip). These sites must be assigned a Borden number. Findspots B are assigned a level 1 or 2 significance.

Further investigation of these sites should include I) probability of looting, II) probable burial depth of site, III) ratio of diagnostic to non-diagnostic artifacts, and IV) field observation conditions.

I. Probability of Looting. If the site is known to have been actively looted, surface material will not be representative of the actual site and may appear to be a findspot. Recommendations may include a) locating and analysis of material removed from site (if possible) and b) additional surface collection, including reploughing and weathering of lands for optimal viewing conditions, and c) stripping of topsoil under supervision of an archaeologist and shovel shining of subsoil to delineate possible settlement and subsistence data. Level 2 significance.

II. Probable Burial Depth of Site. If the site lies on a flood plain it may be deeply buried. Any assessment of a flood plain area must include a) an examination of exposed banks and animal burrows and b) deep testing methodology. Deep testing should be conducted on ploughed fields (ploughing of floodplains may not penetrate deeply enough to expose cultural material) if findspots with diagnostic materials are recovered. Test pitting of floodplains must be conducted into the level of subsoil, [subsoil, defined as soil immediately below the surface soil, is most often identified by a distinct colour, hue or texture change. In cases of floodplains, organic soils may not permit concise subsoil level identification. Therefore, archaeologists must set reasonable depths, with justification, for testing purposes.] by use of either shovel or auger. In addition, controlled trenching by heavy machinery may be considered an alternative or complement to auguring. If the artifacts indicate an historic site, the assessment must include a) research of archival data and b) if research indicates the presence of a structure, deep site testing methodology or topsoil stripping under supervision of an archaeologist. If the site is underwater, the assessment must include a) research into dredging and dumping activities b) archival research and c) deep site testing methodology. Level 2 significance.

III. Ratio of Diagnostic/Tool to Non-Diagnostic/Non-Tool Artifacts (diagnostic artifacts aid in the identification of cultural affiliation). A ratio of four diagnostic artifacts or tools to one non-diagnostic/non-tool artifact indicates that additional assessment or site mitigation should be recommended (similar historic ratios are the exception). This category does not necessarily apply to historic sites, as a small scatter of historic artifacts may reflect a redistribution of historic materials through activities such as spreading of fertilizer. Historic site scatters must be evaluated case by case, and as a minimum, artifacts must be described and recorded (not necessarily Bordenized). The ratio of 4:1 is applicable only for those sites located within the Regional Municipality of Waterloo (based on registered site assemblages). The high ratio of diagnostic/tool materials suggests an activity at the site location which may be correlated with subsurface archaeological data such as a temporary campsite. Assessment should include a review of points 1 and 2. Level 2 significance.

IV. Field Observation Conditions. If field observation conditions were less than satisfactory, the assessment should resurvey the findspot area in order to obtain the best field data possible under

optimal conditions.

5. Sites with Artifact Frequency of 6 - 20. Sites that have an artifact frequency of 6 - 20 have a level 1 or 2 significance. These sites must be evaluated on a) type of recovered material, b) quality and quantity of recovered material, and c) identification of site type. These sites must be assigned a Borden number.

A. Type of Material Recovered. As an example, the presence of Collingwood chert in a Region of Waterloo site assemblage may indicate a possible Paleo-Indian cultural affiliation. Only one site with a Paleo-Indian component has, to date, been located within the Region. The poor data base and rarity of Paleo-Indian sites (within the Region) determines the significance of such a site. In addition, if the site does not have a Paleo-Indian cultural affiliation, it remains significant because the presence of Collingwood chert on a non-Paleo site is in itself a rarity. These sites must be recommended for additional site assessment and/or site mitigation.

If material recovered from a site has been poorly documented in material culture history, further assessment and/or site mitigation may be worthwhile. Identification of these specifics (i.e. type of material and rarity of material) must be made in the determination of significance and in the recommendations for additional archaeological investigation.

B. Quality and Quantity of Recovered Material. If the site contains only certain types of material, the following questions should be addressed: is the absence of other types of material a) preservation conditions b) looting, or c) specific site function. The state of preservation of material culture will determine if additional assessment and/or mitigation is warranted. If the material assemblage is a function of looting, location and analysis of the collection should be attempted and the site should be the subject of test excavations and/or stripping of topsoil while monitored by an archaeologist and shovel shined to investigate possible settlement and subsistence patterns. If a particular site function can be identified, for example, a chipping station, a kill site, a temporary campsite, a fishing encampment, and so on, additional assessment and/or mitigation may be warranted if a) the site type is rare or poorly documented b) the environmental setting of the site type is unusual and/or atypical c) further investigation will contribute to the understanding of prehistoric or historic technologies, lifestyles and lifeways.

Archaeological artifacts are often subject to extreme wear and tear attributed to burial deposition, leaching, root and rodent disturbance and damage of material through agricultural activities. A high frequency of artifacts must be evaluated not on numbers but by a vessel count or specific individual artifact type count. A single pot could be represented by dozens of sherds. A minimum artifact vessel count will determine if the site requires additional assessment/mitigation. For example, a vessel count of one represented by a frequency of 15 artifacts must be re-evaluated under the category of findspots A or B and under type of material recovered.

C. Identification of Site Type. Despite a relatively low frequency of artifacts (6 - 20), the assemblage may indicate a site type. Site type must be identified whenever possible and if the identified cultural affiliation and/or site type is rare (in terms of extant knowledge in the cultural prehistory and/or history, or within a specific geographic area) the site can be assigned a level 2 significance, requiring additional assessment and/or mitigation.

Human burials are always considered significant but must still be evaluated in conjunction with other

significance criteria.

6. Sites with Artifact Frequency of 21 or More. Prehistoric sites that have frequency of 21 or more generally have significance in the Region of Waterloo. An evaluation of all of the significance criteria must be made to ascertain degree of significance. Historic sites that have an artifact frequency of 21 or more must be evaluated specifically on a) type and quality of artifacts b) rarity c) context d) historical association e) and potential for recovery of substantial data.

7. Site Integrity. The significance of a site should be determined employing other criteria listed herein. The question of site integrity will assist in determination of mitigative recommendations. For example, a "significant" site (evaluated in terms of rarity and potential of data) may only be a fraction of its former size due to factors such as erosion, looting or development disturbance. An evaluation must be made to determine if the site retains the potential to extract a sufficient amount of data to warrant economic expenditures. Undisturbed sites will have a higher significance than a disturbed site. Site type should also be considered when determining the potential for site integrity. For example, landscaping activities will probably not impact (to any serious degree) deeply buried archaeological resources such as burials and/or foundations (possible exception to impact of landscaping may be the development of golf courses where major grading can accompany landscape activities).

Justification of additional assessment and/or site specific mitigation must take into account a) site integrity (describe the impact and estimated portion of the remaining resource), b) potential for additional data recovery, c) type of data that remains recoverable, d) rarity of the site (this is based not only on site type and/or cultural affiliation but also on factors such as geographic location, atypical features, and so on), e) will the assessment and/or mitigation of the site appreciably expand our knowledge of the past, and f) does the proposed recovery of data justify economic expenditures. Site integrity must be evaluated in conjunction with the other criteria for significance.

NOTE: economic expenditure alone is not sufficient in the justification for, or lack of, additional site investigation.

8. Rarity. Rare sites have a level 3 significance. Rare sites in the Regional Municipality of Waterloo include Paleo-Indian sites, transition sites (sites that combine elements of the preceding and following cultural periods), Archaic sites, Woodland sites, Native Historic and Historic sites. Sites are represented in most of these cultural affiliations, however, few have been totally excavated, and the deficiency in qualitative, quantitative, and comparable data give the archaeological investigation of these sites significance. Assessment and/or mitigation of the site should be evaluated on whether investigation of the site a) can be evaluated on the basis of other criteria and b) if investigation of the site will expand our knowledge of the past.

9. Context. The location of a site in relation to other extant features may be considered a criteria for significance and also a factor for recommendations for mitigation. For example, if a prehistoric site is located in a context that reflects, as much as possible, original setting, the site may become more significant than if found isolated in an urban setting. Context of a site may be evaluated with other criteria for significance such as a) site integrity, b) rarity, c) association with historical event or important personage, d) historical change in construction/technology, d) use for public programming and interpretation, and e) marketing significance.

10. Potential for Data. All sites have the potential for obtaining additional data. However, the type, quality and quantity of potential data must be evaluated on the basis of the other criteria and not on its own.

11. Associated with Historical Event. All sites are associated with a prehistoric or historic event or events. Evaluation of the event to determine significance must be based on a) the nature of the prehistoric or historic event (e.g. battle, burial, catastrophic event, introduction of a new technology or innovation, and so on), b) existing documentation of the event (this includes an evaluation of authenticity and accuracy of archival information), c) relevance of site in a social and historical perspective to special interest groups (e.g. industrial technologist, military historian, ethnic groups, etc.) and d) an evaluation of all other listed criteria.

12. Associated with Important Personage. Important personage must be evaluated in an historical and social perspective. Important personage may include a notable historic figure such as a politician, an industrialist, a scientist, or an immigrant or laborer. Significance will be determined on all of the criteria including, but not limited to, a) potential for data, b) use for public education/interpretation, and c) marketing potential.

13. Change in Construction/Technology. Change alone is not the trigger for significance. Other criteria must be reviewed such as a) rarity, b) potential for data, c) site integrity, d) use for public education/interpretation, and d) marketing potential.

14. Public Programming/Interpretation. Sites may achieve a significance independent of the other criteria if the site is determined to be useful to the Region or special interest groups and educational institutions for public programming and/or interpretation. Evaluation of significance for this criteria will be achieved by communication with these groups in conjunction with a review of all of the significance criteria.

15. Marketing Significance. Sites may achieve significance for marketing, not only for heritage, but also for special interest, groups. For example, a pottery site may be useful as a marketing tool for the Ontario Potters Guild, or a corduroy road may be useful as a marketing tool for the Ministry of Transportation.

4.3 Options for Site Mitigation

Development and growth need not necessarily occur at the expense of the archaeological resources. The archaeological options for site mitigation are closely tied with site significance (Section 4.2). Each site must be evaluated for significance and if significance is determined, options for site mitigation appropriately selected with justification.

Prehistoric and historic sites should be reviewed for significance and the appropriate option for site mitigation chosen regardless of site setting (for example, underwater, urban, industrial, deeply buried, and so on).

There are essentially two options that are available for the effective management of archaeological resources. The first of these options is to preserve sites according to significance and development and/or natural threat (Figure 24). The selections of this option are a) allow development b) development preceded by mitigation c) limited development and d) no development.

The second option is to monitor known sites according to significance.

This option includes the selection of one or more of the following: a) circulation and review of development plans b) review of archaeological assessment and site specific mitigation reports c) cooperation with public utility industries d) cooperation with satellite organizations and volunteers and e) use of all of the alternatives.

4.3.1 Option 1: Preserve Sites According to Significance and Development/Natural Threats

Figure 24 schematically presents the options for archaeological site development which follow the completion of an archaeological resource assessment as a condition of development plan approval. The significance of a site will determine if the archaeological condition will be cleared (level 0 - 1 significance) or whether additional site specific archaeological mitigation will be required prior to clearance.

IA. Site No Longer Extant. The option of allowing development to proceed is determined if the registered or reported probable site no longer exists and/or if the site conforms to Findspot A, Findspot - B (level 1 significance) or are fill sites. All of these significance criteria permit clearance of the archaeological condition.

There are, however, three sub-options for fill sites (see Section 4.2.2 for detailed discussion). These are 1) use of the material culture for a reference collection 2) use of the material culture for educational hands-on programs and 3) use of the site for public participation programs.

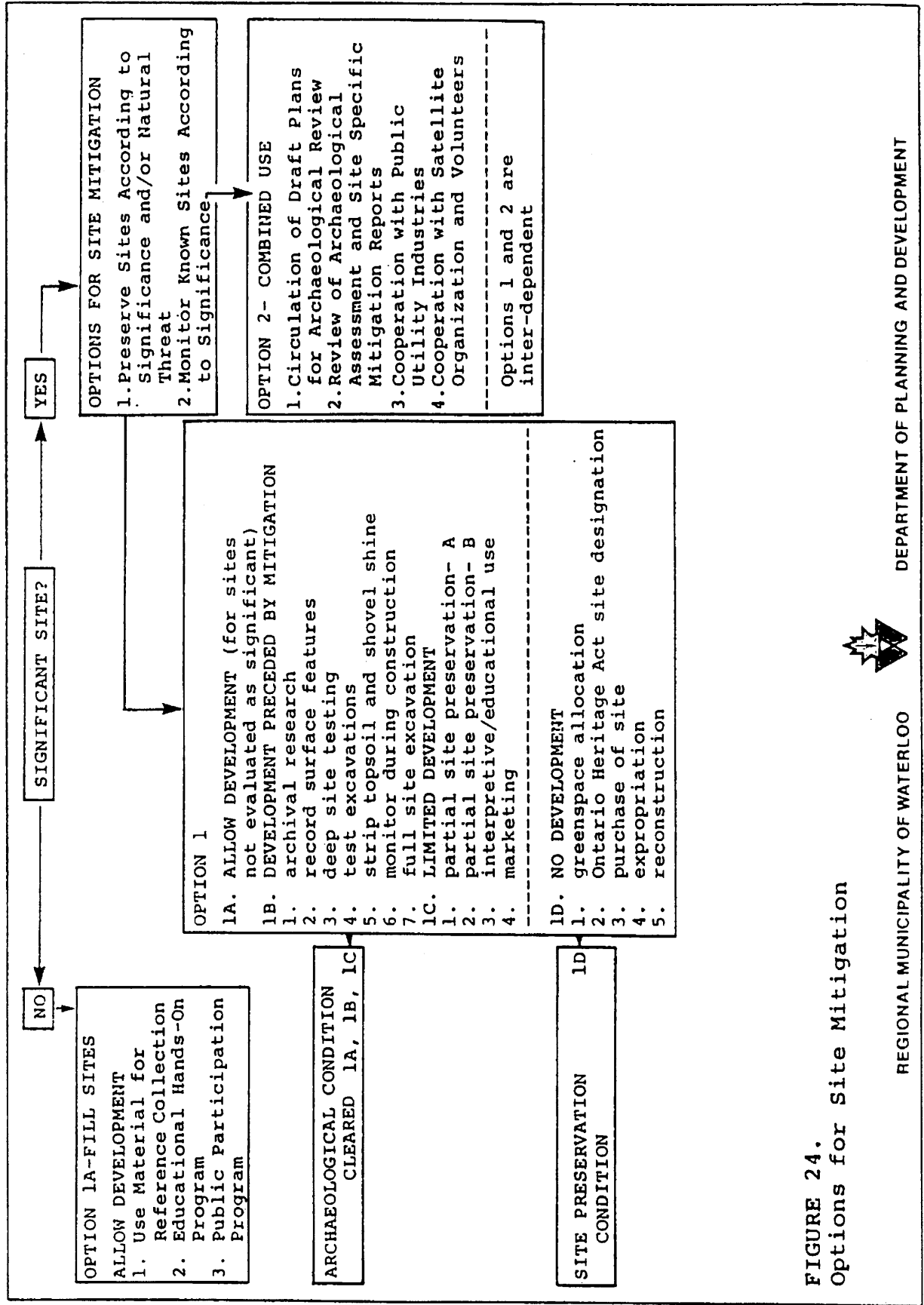


FIGURE 24.
Options for Site Mitigation

1B. Allow Development Preceded by Mitigation. The option of allowing development of the property preceded by mitigation is again determined by site significance. The choice of sub-options or combination of sub-options must be accompanied by a justification. The sub-options for allowing development are described below.

Sub-Option 1 - Archival Research. All sites will require archival and background research. As a minimum, this study should include: description of the existing environmental setting (soils, drainage, vegetation, topography and physiographic features), a description of cultural features (structures including cisterns, wells and so on, fences, gardens, ruins, roadways, hydro corridors, and so on), type and degree of development disturbance (topsoil stripping, servicing, standing structures, roadways, and so on), historic vegetation (where possible), and a cultural history.

Historic sites require additional research, such as a review of archival maps, photographs, assessment rolls, census records, land title records, municipal directories, newspapers, business and trade directories, and land petitions.

The evaluation of site significance may suggest the use of only sub-option 1. As an example, site integrity may be poor and the development of the site, prior to archaeological clearance, may only require archival research to answer specific question. This research must include an interpretation of the data. Justification for the choice of only this sub-option must be stated.

Sub-Option 2 - Record Surface Features. Industrial sites and standing historic structures may be scheduled for demolition. The Local Architectural Conservation Advisory Committee must be contacted to determine a) if the structure is designated or listed and b) if the LACAC has an interest in the structure. If a), the description of the property should be obtained for inclusion into the report (LACAC should be able to provide this description). If b), unless the LACAC has stated that it will undertake documentation of the standing structure, it is the responsibility of the archaeologist to provide photographic, dimensional and structural documentation (completion of the Canadian Inventory of Historic Building form -- available from the National Historic Sites Services, Ottawa) of the structure.

Sub-Option 3 - Deep Site Testing. Sub-option three is closely tied to the type of site and depth of burial.

Wet sites should be tested employing remote sensing as well as direct testing such as coring and auguring. Wet sites are very sensitive especially in urban areas and mitigation of these sites should be coordinated with surrounding development activities.

If development in the general area [of the site] progresses, the water table may be reduced by drainage systems and wells to the point that the site...is ultimately affected...Once the water table has been located the site is doomed to destruction in a relatively short period (MacDonald 1982:126).

Underwater sites may lie directly on the river or lake bottom but are probably buried to some degree by sediment, fill or other materials. Underwater sites can be investigated employing core samplers, magnetometers, side-scan sonar, sub-bottom profilers, interpretation of video footage and/or visual observation of bottom irregularities.

Historic sites may consist of deeply buried structural features which can be investigated employing ground penetrating radar devices combined with other sub-options. Other historic features can be tested by, but not limited to, chemical analysis of core samples to detect the presence of graves buried in lime, and for detection of specific industrial uses, land fill sites, and so on.

Sub-Option 4 - Test Excavations. Test units, size and extent to be determined by site type, size, significance and research design, may be chosen to recover additional site data prior to release of the archaeological condition. Data to be recorded with both photographic and written documentation, include, but are not limited to, stratigraphy, cultural features, cultural deposits, spatial distribution, and subsurface settlement and subsistence features. Test excavations may sometimes indicate a higher site significance than initial data suggested and result in a recommendation of other sub-options and/or options (i.e. protect in greenspace, partial incorporation of site feature, and so on).

Sub-Option 5 - Strip Topsoil and Shovel Shine. Disturbed sites, that is, sites that are located in agricultural fields and/or have been subject to limited development and/or natural disturbance may, based on significance, be recommended for sub option 5. The topsoil, generally the layer of disturbance, can be mechanically stripped under the supervision of an archaeologist, to expose the subsoil layer. The subsoil layer, which can evidence settlement and subsistence pattern data, should be subject to shovel shining (cleans the subsoil layer and provides favourable observation conditions) in areas determined (with justification) by the archaeologist to exhibit potential of subsurface data recovery.

Sub-Option 6 - Monitor During Construction. Sub-option 6 may be recommended based on the significance criteria of a) site integrity and b) context; in combination with other significance criteria. An archaeologist must be on site during construction to ensure that subsurface features are not destroyed prior to recording.

Sub-Option 7 - Full Site Excavation. Full site excavation means excavation of all above and below grade cultural features defined by site boundaries. Significance of the site coupled with available funding and an evaluation of all other options should be carefully examined prior to choosing this option.

Completion of any or a combination of these sub-options will result in the satisfaction of the archaeological condition and clearance of the same.

IC. Limited Construction Development. Limited construction development of the site will be coordinated with option 1B.

Sub-Option 1 - Partial Site Preservation - A. Certain elements of a site may warrant **in situ** preservation.

Sub-Option 2 - Partial Site Preservation - B. Structural features may be incorporated into proposed new structures, such as a facade, a courtyard, and so on. Use of structural features may also include incorporation into a parkette setting, such as the integration of the historic ruins along the Grand River in Cambridge (Galt).

Sub-Option 3 - Interpretive/Educational Use. Preservation of may be used for interpretive/educational use. An example of a site favoured for such a use is the lime kiln located in

Cambridge (Hespeler), registered as the Ellis Kiln Complex, AiHb-10.

Sub-Option 4 - Marketing. Preservation of part of the site can be used as an effective marketing tool in promoting good will, receiving positive media promotion, and appealing to the interests of the tourist industry.

ID. No Development. A site must have a very high significance level prior to selection of this option. Often, the option IB-7, full site excavation, is not desired for reasons such as, but not limited to, a) uneconomical b) poor timing and c) archaeological investigation techniques insufficient. The latter point stresses that **not all sites should, nor need be, excavated.**

Sub-Option 1 - Greenspace Allocation. If sites are deemed significant (Section 4.2), it may be in the interests of the resource and the Region of Waterloo to ensure that no development or archaeological excavation be conducted. The Region should negotiate with the developer to reach a satisfactory agreement. The role of Area Municipalities in securing the park land designation may assist in the preservation of significant small scale sites.

If a site is larger than the current five percent greenspace designation allotted to Area Municipalities, additional lands that encompass and buffer the site, may have to be purchased or donated. The designated greenspace area is the responsibility of the Area Municipality. Therefore, if an archaeological site is located in a greenspace area, the Area Municipality must ensure that the latter development/service/landscaping proposal does not impact the archaeological resource or that such impact be minimized and be subject to prior archaeological mitigation.

While draft plans can be revised up to the date of registration (allowing reallocation of greenspace) the early recognition of archaeological potential and the completion of any necessary archaeological condition, can prevent the necessity for revisions to a development plan.

Sub-Option 2 - Ontario Heritage Act Designation. Significant archaeological sites can be designated under the Ontario Heritage Act.

Designation provides a measure of site protection. The designation of archaeological sites, as currently presented in the Ontario Heritage Act (Part VI), can only be given by the Minister of Culture and Communications. Provision for the designation of significant archaeological sites, such as those provided for the designation of heritage structures in the Ontario Heritage Act by Municipalities would greatly assist in the protection and preservation of significant archaeological resources.

Sub-Option 3 - Purchase of Site. Significant archaeological resources could be purchased, in situ, by a public body to be held in perpetuity for the people of the Region and Canada. Purchase of such sites and an encompassing buffer zone could, however, be costly. The severance of properties for the purposes of site preservation will also be costly. In addition, developers may have concerns regarding the marketability of the remainder to the development property and may wish to sell the entire property at current or forecasted market values or be given an alternate parcel of land of equal or greater value.

Sub-Option 4 - Expropriation. This is the least desired sub option, however, the significance of a site may warrant expropriation of the site and an encompassing buffer zone if all other options have unsuccessfully been attempted.

Sub-Option 5 - Reconstruct. This sub-option is closely affiliated with options 1B and 1C. A significant site may dictate no construction development. Instead, the acquisition of the site could be coupled with full site excavation and reconstruction of the site. Partial reconstruction of sites has occurred in other Municipalities, for example, the Crawford Lake site in the Regional Municipality of Halton and the Lawson site in the City of London, Middlesex County.

4.3.2 Option 2: Monitor Known Sites According to Significance

Monitoring known, significant archaeological sites must be coordinated with development, natural and looting threats. Potential impact of significant sites will be the trigger for monitoring of sites. The effectiveness of this option must be the coordinated use of all of the alternatives presented below.

In order to achieve this option, significant sites must be a) identified and b) flagged. Identification of existing registered sites has already been conducted through the site inventory process. This remains to be completed for the urban environment.

Sub-Option 1 - Circulation and Review of Development Plans. The Archaeology Division presently reviews all subdivision draft plans, occasional condominium, severance/zone change and official plan amendments. Review of these plans is a method of monitoring known, significant archaeological sites prior to development.

The review of all development plans, including severances and building and demolition applications is, at present, unrealistic with the limited staff and contract positions of the Archaeology Division but would be beneficial in monitoring of known significant sites.

The use of the Archaeological Potential maps provides the basis for locating significant archaeological resources which can be assessed under Option 1. Still required (and planned) is the creation of an inventory of potential urban archaeological sites for each village, town and city in the Region of Waterloo. It is intended that this inventory be computerized and that significant sites be flagged on a Land Related Information System for purposes of monitoring and circulation. This again will require the use of additional staff.

Sub-Option 2 - Review of Archaeological Assessment and Site Specific Mitigation Reports. Review of archaeological reports by the Archaeology Division will ensure that a) the property has been adequately assessed/mitigated b) that the consultant recommendations have examined all the options for site development and have provided justification for the same and c) that significant sites can be placed in the site inventory and flagged.

Sub-Option 3 - Cooperation with Public Utility Industries. Letters can be sent to public utility industries requesting that they contact the Archaeology Division prior to a project so that significant resources can be identified and appropriate responses negotiated.

Sub-Option 4 - Cooperation with Satellite Organizations and Volunteers. The establishment or utilization of satellite organizations, such as L.A.C.A.C. or other historic or archaeological societies, can be useful as watchguards of significant sites. Concerned citizens are often helpful in bringing a particular threatened site to the attention of the Archaeology Division.

4.4 Feasibility of a Permanent Archaeological Facility

The establishment of a permanent Archaeological Facility should be the logical continuation of the extant Archaeology Division of the Planning and Development Department. The mandate of a permanent Archaeology Division would be to maintain and update the Archaeological Facilities Master Plan, to act as a consultant for the Region, to research and establish an urban archaeological resource inventory, to maintain and update the extant archaeological resource inventory, and to undertake public and education programmes.

The functions of the Archaeology Division will include, but not be limited to,:

1. Periodic review and updating of the Archaeological Facilities Master Plan;
2. Review of circulated draft plans of subdivision, condominium, zone changes, official plan amendments, severances (where feasible), public works and other pertinent development plans;
3. Review archaeological resource assessments and site specific mitigation reports;
4. On a fee for service basis, to generate revenues for the Region of Waterloo;
5. a) conduct a comprehensive inventory of potential urban archaeological sites,
b) compile a series of urban archaeological potential maps,
c) develop a system of flagging potential urban archaeological sites that may be subject to development;
6. Review of building and demolition permits at such time as the urban archaeological potential flagging system has been established by the Division;
7. a) undertake, as required, revisions to the archaeological policies in the Regional Official Policies Plan as may be directed by Regional Council,
b) provide technical and policy comment on archaeological issues to the Planning and Development Divisions on applications or special projects;
8. Work with Area Municipalities and Provincial Ministry staffs in reviewing emerging government policies, guidelines and in assessing their implications for archaeology within the Regional Municipality;
9. Act as an expert witness in matters of archaeological condition appeals or other concerns;
10. Continue to develop and maintain a reliable data management system to support overall archaeological planning needs and to meet the needs of municipalities, special agencies and committees, and the user community;
11. Undertake special studies either on an independent basis or in concert with other municipalities or agencies in order to resolve common concerns or to recommend findings to Regional Council;
12. a) field check reported probable sites and dubious registered site locations,
b) testing of archaeological potential model;
13. a) seek and apply for other sources of funding,

- b) statistics generation,
- c) service to public, etc.

Points 1 - 13, inclusive, are the functions of the present Archaeology Division which is a contract ending March 31st, 1990.

In addition to the above noted functions, a permanent Archaeology Division, with an associated complement of staff, should undertake the following functions:

- 14. a) produce a series of "popular" archaeology publications on specific sites in the Region,
- b) present public lectures to schools, heritage organizations and other interested parties,
- c) develop a volunteer programme;

15. Assess current quarry and pit licenced operations; if appropriate amendments are included in the Pits and Quarries Aggregate Act as recommended in Section 3.2.2, and;

16. Host workshop for pits and quarries operators and Regional Engineering Department.

If sufficient staff were available, the following programs could be included in the Archaeology Division mandate: education oriented field schools, trips, public lectures, etc. Special research projects could be undertaken for the Region regarding settlement and subsistence patterns, socio-economic patterning in the past, excavation of special sites, publication of newsletters, etc.

A volunteer programme could be undertaken providing the Region with trained volunteers and provide experience to the volunteers in assisting in assessment, excavation, and analysis of sites. A permanent Division would provide effective monitoring of significant archaeological resources. An immediate response system could be established for emergency situations. Private calls regarding archaeological sites or concerns, not normally the subject of an archaeological condition, could be investigated by the Archaeology Division. Testing areas of special interest for the Region could provide prehistoric and historic patterning unavailable from development related assessments alone.

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APPENDIX A

Regional Municipality of Waterloo Archaeological Development Statistics (as of March 2, 1989)

Draft Plans with Archaeological Condition	236	82.5
Draft Plans without Archaeological Condition	<u>50</u>	<u>17.5</u>
Total Number of Draft Plans	28	100.0
Acreage (ha) of Plans with Condition	4397.5226	86.64
Acreage (ha) of Plans without Condition	<u>678.1737</u>	<u>13.36</u>
Total Acreage of Draft Plans	5075.6963	100.00
Assessments with Finds (1 assessment not included, not recommended for assessment)	99	73.33
Assessments without Finds	36	26.67
Assessments without Finds (test-pitting)	<u> </u>	19
Total No. of Completed Assessments	135	100.00
Assessments with Sites/Sites and Findspots	68	68.69
Assessments with Findspots only	<u>31</u>	<u>31.31</u>
	99	100.00
Assessments Conducted By	RMW	38
	ARA	19
	ASI	41
	MPP	25
	MIA	6
	MAS	4
	MCC	1
	MOT	<u>3</u>
	137	99.99
Area (ha) Assessed by Consultant	RMW	572.0651
	ARA	234.9786
	ASI	1026.8809
	MPP	652.8355
	MIA	152.53
	MAS	13.85
	MCC	162.00
	MOT	<u>14.17</u>
	2829.3101	100.00

APPENDIX A

North Dumfries Township Archaeological Development Statistics (as of March 2, 1989)

Draft Plans with Archaeological Condition	17		100.00
Draft Plans without Archaeological Condition			
Total Number of Draft Plans	17		100.00
Acreage (ha) of Plans with Condition	264.1566		93.91
Acreage (ha) of Plans without Condition	<u>17.128</u>		<u>6.09</u>
Total Acreage (ha) of Draft Plans	281.2846		100.00
Assessments with Finds	7		77.78
Assessments without Finds	2		22.22
Assessments without Finds (test-pitting)			
Total No. of Completed Assessments	9		100.00
Assessments with Sites/Sites and Findspots	5		55.56
Assessments with Findspots Only	<u>2</u>		<u>28.57</u>
	9		100.00
Assessments Conducted by	RMW	5	55.56
	ARA	3	33.33
	ASI	<u>1</u>	<u>11.11</u>
		9	100.00
Area (ha) assessed by Consultant	RMW	85.705	54.40
	ARA	67.6536	42.94
	ASI	<u>4.18</u>	<u>2.65</u>
		157.5386	99.99

DRAFT PLAN AREA (ha) CONDITION POTENTIAL CONSULTANT FINDS

*not included in statistics

<u>DRAFT PLAN</u>	<u>AREA (ha)</u>	<u>CONDITION</u>	<u>POTENTIAL</u>	<u>CONSULTANT</u>	<u>FINDS</u>
*OPA 7		Y			
*OPA 8		Y			
Severance	9.32	Y	H	RMW	1 FS, 1 site
30T-76019	9.84	Y	M-H	RMW	nothing, surv
30T-76026	32.43	60% Y/N	M-H/L		
30T-77012	9.13	Y	M		
30T-77026/ 87062	4.18	Y	H	ASI	nothing, surv
30T-80011	7.082	Y	H		
30T-81012	10.39	60% Y/N	M-H/L		
30T-86014	8.0	Y	M-H		
30T-86020	20.6	Y	M-H	RMW	1 site
30T-87010	0.8586	Y	M	ARA	1 FS
30T-87019	18.0	Y	M-H	RMW	1 FS
30T-87037	16.795	Y	H	ARA	3 FS, 1 site
30T-87043	27.945	Y	H	RMW	1 extant site
30T-87062	see 77026				
30T-88002	39.38	Y	H		
30T-88038	17.334	Y	M-H		
Katmos	50.0	Y	M-H	ARA	1 site

APPENDIX A

**Township of Wellesley
Archaeological Development Statistics
(as of March 2, 1989)**

Draft Plans with Archaeological Condition		5	83.33
Draft Plans without Archaeological Condition		<u>1</u>	<u>16.67</u>
Total Number of Draft Plans		6	100.00
Acreage (ha) of Plans with Condition		50.508	87.22
Acreage (ha) of Plans without Condition		<u>7.4</u>	<u>12.78</u>
Total Acreage of Draft Plans		57.908	100.00
Assessments with Finds		1	100.00
Assessments without Finds			
Assessments without Finds (test-pitting)			
Total Number of Completed Assessments		1	100.00
Assessments with Sites/Sites and Findspots			
Assessments with Findspots Only		<u>1</u>	<u>100.00</u>
		1	100.00
Assessments Conducted by	ARA	<u>1</u>	<u>100.00</u>
		1	100.00
Area (ha) by Consultant	ARA	<u>14.175</u>	<u>100.00</u>
		14.175	100.00

<u>DRAFT PLAN</u>	<u>AREA (ha)</u>	<u>CONDITION</u>	<u>POTENTIAL</u>	<u>CONSULTANT</u>	<u>FIND</u>
30T-76027	11.138	Y	M-H		
30T-77009	7.695	Y	M-H		
30T-78025	7.29	Y	H		
30T-80001	7.4	N	L		
30T-86033	10.21	Y	H		
30T-87011	14.175	Y	M	ARA	1 FS

APPENDIX A

**Township of Woolwich
Archaeological Development Statistics
(as of March 2, 1989)**

Draft Plans with Archaeological Condition	14	93.33
Draft Plans without Archaeological Condition	<u>1</u>	<u>6.67</u>
Total Number of Draft Plans	15	100.00

Acreage (ha) of Plans with Condition	160.435	83.71
Acreage (ha) of Plans without Condition	<u>31.212</u>	<u>16.29</u>
Total Acreage of Draft Plans	191.647	100.00

Assessments with Finds	2	66.7
Assessments without Finds	<u>1</u>	<u>33.3</u>
Total Number of Completed Assessments	3	100.00

Assessments with Sites/Sites and Findspots	1	50.00
Assessments with Findspots Only	<u>1</u>	<u>50.00</u>
	2	100.00

Assessments Conducted by	RMW	2	66.7
	ARA	<u>1</u>	<u>33.3</u>
		3	100.00

Area (ha) by Consultant	RMW	29.16	94.52
	ARA	<u>1.68</u>	<u>5.48</u>
		30.84	100.00

DRAFT PLAN AREA (ha) CONDITION POTENTIAL CONSULTANT FINDS

*not included in statistics

*Conestoga

Sett. Area	11.421	Y	H		
OPA 8	1.62	Y	M	RMW	faunal
30T-77062	6.642	Y	M		
30T-78037	11.138	Y	M-H		
30T-87024	11.118	Y	M-H		
30T-87027	19.44	Y	M		
30T-87034	20.25	Y	M		
30T-87035	1.689	Y	H	ARA	nothing, TP
30T-87039	20.25	Y	H		
30T-88021	27.54	N	L	RMW	1 site
30T-88022	11.489	Y	M-H		
30T-88032	5.03	Y	H		
30T-88037	36.72	90% Y/N	H/L		
30T-89005	4.3	Y	H		
30T-89006	3.0	Y	M		

APPENDIX A

**Township of Wilmot
Archaeological Development Statistics
(as of March 2, 1989)**

Draft Plans with Archaeological Condition		17	85.00
Draft Plans without Archaeological Condition		<u>3</u>	<u>15.00</u>
Total Number of Draft Plans		20	100.00
Acreage (ha) of Plans with Condition		182.19809	77.51
Acreage (ha) of Plans without Condition		<u>52.880406</u>	<u>22.49</u>
Total Acreage of Draft Plans		235.078496	100.00
Assessments with Finds		7	70.00
(1 assessment not included - not recommended)			
Assessments without Finds		3	30.00
Assessments without Finds (test-pitting)		<u> </u>	<u> </u>
Total Number of Completed Assessments		10	100.00
Assessments with Sites/Sites and Findspots		2	28.57
Assessments with Findspots Only		<u>5</u>	<u>71.43</u>
		7	100.00
Assessments Conducted By	RMW	3	27.30
	ARA	3	27.30
	MPP	3	27.30
	ASI	<u> </u>	<u>18.10</u>
		11	100.00
Area (ha) Assessed by Consultant	RMW	38.865	37.63
	ARA	33.345	32.29
	MPP	14.9325	14.463
	ASI	<u>16.13</u>	<u>15.62</u>
		103.2725	100.00

<u>DRAFT PLAN</u>	<u>AREA (ha)</u>	<u>CONDITION</u>	<u>POTENTIAL</u>	<u>CONSULTANT</u>	<u>FINDS</u>
30T-76024	25.515	Y	M	RMW	5 FS, 4 sites
30T-76030	41.715	50% Y/N	H/L		
30T-77033	4.5765	Y	H	MPP	1 site
30T-82013	3.532	66.7% Y/N	H/L		
30T-83003	10.32	Y	M	ARA	nothing, TP
30T-86021	11.33	75% Y/N	M-H/L	RMW	3 FS
30T-86026	16.13	Y	H	ASI	1 FS
30T-86027	included with 86026				
30T-87001	21.35	Y	M-H		
30T-87005	27.30	Y	M		
30T-87020	0.81	Y	M		
30T-87038	5.265	Y	M-H		
30T-87047	17.2	75% Y/N	M-H/L	ARA	3 FS
30T-87057	10.125	Y	H	ARA	nothing, surv
30T-88005	1.7	Y	H	MPP	nothing, TP
30T-88019	1.214	N	L		
30T-88049	8.656	N	L	MPP	nothing, surv
(this assessment was not recommended by the Region)					
30T-88055	17.121	75% Y/N	M-H/L		
30T-89001	9.57	N	L		
Philipsburg Patrol Yard	2.02	Y	H	RMW	1 FS

APPENDIX A

Township of Cambridge Archaeological Development Statistics (as of March 2, 1989)

Draft Plans with Archaeological Condition	65		78.31
Draft Plans without Archaeological Condition	<u>18</u>		<u>21.69</u>
Total Number of Draft Plans	83		100.00
Acreage (ha) of Plans with Condition	1604.8049		80.71
Acreage (ha) of Plans without Condition	<u>381.0676</u>		<u>19.19</u>
Total Acreage of Draft Plans	1985.8725		100.00
Assessments with Finds	30		78.95
Assessments without Finds	8		21.05
Assessments without Finds (test-pitting)	<u> </u>	4	<u> </u>
Total Number of Completed Assessments	38		100.00
Assessments with Sites/Sites and Findspots	24		80.00
Assessments with Findspots Only	<u>6</u>		<u>20.00</u>
	30		100.00
Assessments Conducted By	ASI	16	41.03
	RMW	8	20.51
	MPP	2	7.69
	MIA	2	5.13
	ARA	6	15.38
	MAS	2	5.13
	MCC	1	2.56
	MOT	<u>1</u>	<u>2.56</u>
		39	99.99
Area (ha) Assessed by Consultant	ASI	525.39	46.75
	RMW	167.251	14.88
	MPP	118.291	10.53
	MIA	68.43	6.09
	ARA	70.371	6.26
	MAS	5.95	0.53
	MCC	162.00	14.42
	MOT	<u>6.07</u>	<u>0.54</u>
		1123.75	100.00

DRAFT PLAN AREA (ha) CONDITION POTENTIAL CONSULTANT FINDS

*not included in statistics

**original Y condition changed to N due to grading

<u>DRAFT PLAN</u>	<u>AREA (ha)</u>	<u>CONDITION</u>	<u>POTENTIAL</u>	<u>CONSULTANT</u>	<u>FINDS</u>
*OPA R56/88	0.9	Y	H		
Cowan Bus.	68.85	Y	M	RMW	20 FS, 3 site
Toyota Road	6.07	Y	H	ARA	9 FS, 7 sites
Union Gas	6.07	Y	H	ARA	1 site
MNR Office	0.405	Y	H	ASI	1 site
Toyota	162.0	Y	H	MCC	14 FS, 2 site
Hwy 24 pass	6.07	Y	H	MOT	3 sites
67R727	54.7	Y	H	MIA	4 sites
Galt Waste					
Water	0.81	N	L	RMW	no report
Operations	9.72	Y	M-H	RMW	nothing, TP
67R2325	2.34	Y	M		
30CDM-86012	1.215	N	L		
30T-75509	7.72	Y	H	RMW	16 FS
30T-76031	1.15	Y	H	see 87046	
30T-76034	7.5006	N	L		
30T-76039	6.4314	Y	M-H		
30T-76040/ 87052	41.725	Y	H	ASI	2 FS, 5 sites
30T-76042	3.36	Y	H	ARA	nothing, surv
30T-77013	8.991	N	L		
30T-77016	1.0125	Y	M-H		
**30T-77017	26.85	N	L	grading	
30T-77037	see 81024				
30T-77053/ 30CDM-87011	16.6	Y	H	MPP	1 FS, 5 sites
30T-77055	see 86023				
30T-77060	22.458	Y	H	RMW	6 FS, 1 site
30T-78004	5.245	N	L		
**30T-78014	92.06	50 % Y/N	H/L	ASI	4 sites, 50% graded
30T-78028/ 88048/88047	22.6	Y	H	ASI	2 sites
30T-78035	5.04	N	L		
30T-79023	0.81	N	L		
30T-79033	43.35	N	L		
30T-80002	2.23	N	L		
30T-80005	1.049	N	L		
30T-81004	31.6	Y	H	RMW	4 sites
30T-81021	7.63	Y	M-H		
30T-81024/ 77037	30.0	Y	M-H	ASI	1 FS, 2 sites
30T-81027	30.0	Y	H	ASI	2 sites
30T-85008	176.0	5% Y/N	H/L	RMW/MPP MPP (95 ha)	1 FS
30T-85016	see 87022				

30T-86011	5.97	N	L-M		
30T-86017	34.0	Y	M	ASI	nothing, TP
30T-86019	7.633	Y	H	ARA	nothing, TP
30T-86023	2.81	Y	M	RMW	5 FS
30T-86032	33.5	Y	H	ASI	3 FS
30T-86034/ 77055	14.48	Y	H	RMW	5 FS
30T-86038	6.26	Y	M	ASI	nothing, TP
30T-87002	35.75	Y	M-H		
30T-87008	88.73	Y	H		
30T-87012	2.31	N	L		
30T-87013	66.0	Y	H	ASI	2 FS, 4 sites
30T-87015	44.155	Y	H	ARA	10 FS, 4 site
30T-87022/ 85016	23.876	Y	H	ASI	6 sites
30T-87023	13.73	Y	M-H	MIA	2 sites
30T-87044	3.70	Y	H		
30T-87046	4.45	Y	L-M	MAS	nothing, surv
30T-87048	7.86	Y	M		
30T-87050	12.0	Y	H	ASI	2 sites
30T-87051/ 87052/76042	119.594	Y	H	ASI	4 FS, 8 sites
30T-87054/ 88014	3.08	Y	H	ARA	1 FS
30T-87058	12.4	Y	H	ASI	2 FS, 2 sites
30T-88006/ 88007	81.0	Y	H	ASI	3 sites
30T-88008	29.49	Y	M-H		
30T-88011	12.94	Y	M-H		
30T-88014	see 87054				
30T-88017	0.67	N	L		
30T-88026	18.89	Y	M-H		
30T-88031	26.17	Y	H		
30T-88036	0.92	N	L		
30T-88039	13.34	Y	M-H		
30T-88040	13.77	50% Y/N	H/L	MPP	nothing,surv
30T-88044	44.3	Y	H		
30T-88047	see 78028				
30T-88048	see 78028				
30T-88050	12.16	Y	H		
30T-88051	80.61	Y	H		
30T-88052	68.75	Y	H		
30T-88053	55.42	Y	H		
30T-88056	43.39	N	L		
30T-88058	26.9	Y	M		
30T-89002	1.03	N	L		
30T-89004	3.772	N	L		

APPENDIX A

Township of Waterloo Archaeological Development Statistics (as of March 2, 1989)

Draft Plans with Archaeological Condition	45		76.27
Draft Plans without Archaeological Condition	<u>14</u>		<u>23.73</u>
Total Number of Draft Plans	59		100.00
Acreage (ha) of Plans with Condition	790.0826		94.17
Acreage (ha) of Plans without Condition	<u>48.9531</u>		<u>5.83</u>
Total Acreage of Draft Plans	839.0357		100.00
Assessments with Finds	25		78.13
Assessments without Finds	7		21.87
Assessments without Finds (test-pitting)	<u> </u>	3	<u> </u>
Total Number of Completed Assessments	32		100.00
Assessments with Sites/Sites and Findspots	18		72.00
Assessments with Findspots Only	<u>7</u>		<u>28.00</u>
	25		100.00
Assessments Conducted By	MPP	12	37.50
	RMW	7	21.88
	ASI	9	28.12
	ARA	2	6.25
	MIA	1	3.13
	MAS	<u>1</u>	<u>3.12</u>
		32	100.00
Area (ha) Assessed by Consultant	MPP	310.985	48.51
	RMW	84.155	13.13
	ASI	181.793	28.36
	ARA	25.69	4.01
	MIA	34.45	5.37
	MAS	<u>3.99</u>	<u>0.62</u>
		641.0639	100.00

DRAFT PLAN AREA (ha) CONDITION POTENTIAL CONSULTANT FINDS

*not included in statistics

***Parks and Rec**

Master Plan		Y	H		
*OPA Woolwich/					
Country Squire		Y	H		
*OPA 84					
		Y	H		
*Laurel Ck. Flood Plain					
		N	L		
Bridge and					
Woolwich	23.09	Y	M-H		
Westmount					
Road Ext.	3.1	Y	M-H	RMW	2 FS
Reg Plan 1616	2.0	Y	M	MPP	nothing, TP
Water M.P.	5.0	Y	M	MPP	2 sites
Eastbridge/					
Kedam	23.09	Y	M	ASI	nothing, surv
Waterloo Hydro	2.025	Y	M-H	RMW	1 FS
Landfill	17.82	Y	M-H	RMW	1 FS
30CDM-86006	0.653	N	L		
30CDM-86008	0.278	N	L		
30CDM-86009	0.875	N	L		
30CDM-86011	0.405	N	L		
30CDM-87003	1.149	N	L		
30T-79013	2.025	N	L		
30T-80019	15.0	Y	H		
30T-82003	1.605	N	L		
30T-82007	3.2456	Y	H		
30T-83002	105.7	Y	H	MPP	1 site
30T-83002 (2nd)	9.3	Y	M-H	ASI	2 sites
30T-84011(R)	22.0	Y	M-H	RMW	6 FS
30T-85009	34.45	Y	H	MIA	1 site
30T-85017	86.645	Y	H	MPP	6 sites
30T-85022	4.204	Y	M		
30T-85025	30.0	Y	H	ASI	1 FS, 2 sites
30T-86001	27.0	Y	H	ASI	1 FS, 3 sites
30T-86008	see 83002				
30T-86013	12.65	Y	M-H	MPP	2 sites
30T-86024	67.58	Y	H		
30T-86029	14.5	50% Y/N	M-H/L	RMW	3 sites
30T-86030	9.5	Y	M-H	ARA	1 FS
30T-86031	2.8	Y	M-H	RMW	nothing, TP
30T-87003	22.0	Y	M-H	ASI	1 FS
30T-87004	29.13	Y	H	ASI	nothing, surv
30T-87006	23.0	Y	M	ASI	1 site
30T-87007	2.6379	N	L		
30T-87014	8.56	N	L		
30T-87016	29.16	Y	M	RMW	3 FS, 2 sites
30T-87018	1.492	N	L		
30T-87026	5.49	Y	M-H		

30T-87028/87029/87030/87031

87032	78.94	Y	H	MPP	9 sites
30T-87040/ 87041	12.04	75% Y/N	M-H/L		
30T-87042	22.05	Y	H	MPP	nothing, surv
30T-87045	3.99	Y	H	MAS	1 FS
30T-87049 (R)	16.19	Y	H	ARA	2 FS
30T-87056	5.257	Y	H		
30T-87059	18.22	Y	H	ASI	nothing, surv
30T-88010	2.35	N	L		
30T-88012	see 83002				
30T-88013	2.4289	Y	M		
30T-88016	1.198	45% Y/N	M/L	ASI	nothing, TP
30T-88023	2.315	N	L		
30T-88025	7.5191	N	L		
30T-88034	4.0482	Y	M		
30T-88035	4.95	N	L		
30T-88043	1.47	50% Y/N	H/L		
30T-88046	3.61	Y	H		

APPENDIX A

Township of Kitchener Archaeological Development Statistics (as of March 2, 1989)

Draft Plans with Archaeological Condition	73	84.88
Draft Plans without Archaeological Condition	<u>13</u>	<u>15.12</u>
Total Number of Draft Plans	86	100.00

Acreage (ha) of Plans with Condition	1345.3375	89.75
Acreage (ha) of Plans without Condition	<u>156.6606</u>	<u>10.43</u>
Total Acreage of Draft Plans	1501.9981	100.00

Assessments with Finds	27	64.29
Assessments without Finds	15	35.71
Assessments without Finds (test-pitting)	<u> </u>	10 <u> </u>
Total Number of Completed Assessments	42	100.00

Assessments with Sites/Sites and Findspots	18	66.67
Assessments with Findspots Only	<u>9</u>	<u>33.33</u>
	27	100.00

Assessments Conducted By			
	RMW	13	30.95
	ASI	13	30.95
	MPP	7	16.67
	ARA	3	7.14
	MIA	3	7.14
	MOT	2	4.76
	MAS	<u>1</u>	<u>2.38</u>
		42	99.99

Area (ha) Assessed by Consultant			
	RMW	166.9291	22.00
	ASI	299.387	39.46
	MPP	208.627	27.50
	ARA	22.055	2.91
	MIA	49.65	6.54
	MOT	8.1	1.07
	MAS	<u>3.91</u>	<u>0.52</u>
		758.6581	100.00

DRAFT PLAN AREA (ha) CONDITION POTENTIAL CONSULTANT FINDS

*included in statistics

** original Y condition changed to N due to grading

*OPA 86/19	4.1229	Y	M-H		
*South Plains	900.0	Y	H		
*OPA 87/16		Y	H		
*OPA 84	21.95	Y	M-H		
*OPA 56		Y	H		
Block Line Rd. Ext.	4.05	Y	M-H		
7/86/Z/Z/J	79.0	Y	H	RMW	1 FS, 3 sites
Pioneer Tower West Collector	1.15	Y	H		
Lancaster Business Park	28.35	Y	M	RMW	1 FS, 2 sites
Pioneer Tower Road	1.62	Y	M	RMW	nothing, surv
Huron Business Park	103.7	Y	H	MPP	9 FS, 11 site
Sludge Transfer	12.96	75% Y/N	H/L		
Storm Sewer	0.85	Y	H	ARA	nothing, TP
CNR detour	4.05	Y	H	MOT	nothing, TP
New Hwy 8	4.05	Y	H	MOT	9 FS
Huron Road Alignment	4.05	Y	H	MIA	1 FS
Freeport	2.2	Y	L-M	RMW	nothing, TP
Biehn's Tract	74.115	Y	H		
48" Watermain	8.1	N	L		
Gravel Lot 141	2.75	Y	H		
Hidden Valley Sludge Transfer	6.48	Y	H	RMW	4 FS
No. 2	6.48	Y	L-M	RMW	4 FS
Westmount, no T # yet	30.6	Y	H		
30CDM-86003	0.12	N	L		
30CDM-86005	1.2	N	L		
30CDM-86010	2.23	N	L		
30CDM-86013	0.25	Y	H	ASI	1 site
30CDM-87015	0.95	N	L		
30CDM-86002	1.26	N	L		
30CDM-86014	0.25	N	L		
30CDM-86015	0.3	N	L		
30CDM-87016	2.7554	N	M	MPP	nothing, TP
30T-77030	21.708	Y	M-H	ASI	3 FS, 3 sites
30T-77048	23.032	Y	H	ASI	2 sites
30T-77064	5.265	Y	M	RMW	1 site
30T-77066	1.215	Y	M		
30T-78023	54.28	Y	H	MPP	1 site
30T-79001	7.0551	Y	M-H	RMW	1 site
30T-79003/86034	14.98	Y	H	RMW	1 FS, 1 site
30T-79006	32.67	20% Y/N	M/L	MPP	nothing, surv

30T-80009	3.91	Y	M	MAS	1 FS
30T-80022	see 86028				
30T-81023	18.428	50 % Y/N	M-H/L		
30T-81025	46.81	10% Y/N	M/L	RMW	nothing, TP
30T-83006	18.94	Y	H	ARA	1 FS
30T-85001	2.23	Y	M	RMW	1 FS
30T-85015	4.4	Y	M	ASI	1 FS
30T-86002	0.03	Y	H	ASI	1 site
30T-86004	11.34	Y	H	MPP	3 sites
30T-86005/86008	110.2	Y	H	MPP	15 sites
30T-86016	22.71	Y	M-H		
30T-86022	2.0	15% Y/N	M/L	RMW	1 FS
30T-86025	11.84	70 % Y/N	M/L	RMW	1 FS
30T-86028	45.6	Y	H	MIA	nothing, surv
30T-86034	see 79003				
30T-86035/ 86036	41.969	Y	M-H	ASI	nothing, TP
30T-87009	47.0	Y	H	ASI	nothing, surv
30T-87017	1.95	Y	M		
30T-87021	2.87	N	L		
30T-87025	8.3068	Y	M		
30T-87033	54.4	Y	H	ASI	1 FS
30T-87036	22.81	Y	M-H		
30T-87053	53.725	Y	H		
30T-87055	10.72	Y	M-H		
30T-87060	4.64	Y	H		
30T-87061	9.6872	Y	M		
30T-87063	42.31	Y	H		
30T-88001	1.7	75% Y/N	M/L		
30T-88003 (R)	15.87	90% Y/N	M-H/L		
30T-88004	3.02	75% Y/N	M-H/L	ARA	nothing, surv
30T-88006	40.308	Y	H	ASI	2 sites
30T-88007	10.25	Y	H	ASI	1 site
30T-88009	3.779	N	L		
30T-88012	18.999	Y	M-H	see 86008	
30T-88015	1.83	Y	H		
30T-88018	8.484	N	L		
30T-88020	18.89	Y	M-H		
30T-88024	51.4	Y	M-H	ASI	nothing, TP
30T-88027	10.115	50 % Y/N	H/L		
30T-88028	7.451	Y	M-H		
30T-88029	5.713	Y	M-H		
30T-88030	6.48	78 % Y/N	H/L		
30T-88033	20.488	Y	H		
30T-88041	38.862	Y	M-H		
30T-88042	4.46	Y	H		
30T-88045	45.53	75% Y/N	H/L		
30T-88054	30.36	50% Y/N	M-H/L		
30T-88057	2.58	N	L		
30T-89003	12.259	Y	H		

APPENDIX B - TABLE 1

**CULTURAL AFFILIATION BY SITE TYPE
(as of March 1989)**

CULTURAL AFFILIATION	SITE TYPE	FREQUENCY
Paleo/Late Archaic	findspot/campsites	1
Archaic	campsite	12
Archaic	chipping station	4
Archaic	findspot	12
Archaic	undetermined	5
Early Archaic	findspot	4
Early Archaic	chipping station	1
Early Archaic	undetermined scatter	1
Middle Archaic	campsite	1
Middle Archaic	chipping station	1
Middle Archaic	findspot	5
Late Archaic	campsite	5
Late Archaic	findspot	9
Late Archaic	undetermined scatter	1
Late Archaic	cemetery	1
Early, Late Archaic	campsite	1
Early, Middle Archaic/Early Woodland	campsite/findspot	1
Early, Middle Archaic/Woodland	campsite/findspot	1
Middle Archaic/Late Woodland	campsite	1
Archaic/Middle Woodland	campsite	1
Archaic/Late Woodland	campsite	1
Early Woodland	campsite	1
Early Woodland	findspot	12
Early Woodland	campsite/cache	1
Early Woodland	undetermined	2
Middle Woodland	campsite	1
Middle Woodland	campsite/burial	1
Middle Woodland	no data available	1
Late Woodland	burial	1
Late Woodland	campsite/village	4
Late Woodland	campsite	9
Late Woodland	campsite/cemetery	1
Late Woodland	findspot	4
Late Woodland	undetermined	2
Late Woodland	village	13
Late Woodland	village/burial	1
Late, Middle Woodland/fur-trade	village/undertermined	1
Late Woodland/Middle Woodland	campsite/chipping stn	1
Undetermined	campsite	15
Undetermined	chipping station	4
Undetermined	findspot	63
Undetermined	undetermined	3

No information available	burial	2
No information available	campsite	1
No information available	findspot	6
No information available	no data available	12
Historic	village	1
Historic	burials	1
Historic	domestic	25
Historic	refuse	4
Historic	industrial	3
Historic	institution/jail	2
Historic	midden	1
Native Historic	burial	2
Historic/Middle Archaic	buttons/findspot	1
Historic/Late Woodland	homestead/findspot	<u>1</u>
		272

APPENDIX B - TABLE 2

FREQUENCY OF SITES BY CITY AND TOWNSHIP

A - CITY OF CAMBRIDGE

CULTURAL AFFILIATION	SITE TYPE	FREQUENCY
Archaic	campsite	3
Archaic	findspot	6
Archaic	undetermined	1
Archaic	chipping station	1
Early Archaic	findspot	2
Early Archaic	chipping station	1
Early Archaic	undetermined scatter	1
Middle Archaic	findspot	2
Middle Archaic	chipping station	1
Late Archaic	findspot	3
Late Archaic	campsite	2
Late Archaic	undetermined scatter	1
Early, Late Archaic	campsite	1
Early, Middle Archaic/Middle Woodland	campsite/findspot	1
Early, Middle Archaic, Woodland	campsite/findspot	1
Middle Archaic/Late Woodland	campsite	1
Archaic/Middle Woodland	campsite	1
Early Woodland	findspot	4
Middle Woodland	campsite	1
Late Woodland	village	1
Late Woodland	findspot	3
Late Woodland	campsite/village	1
Late Woodland	campsite	5
Late Woodland	undetermined	1
Middle and Late Woodland	chipping stn/campsite	1
Historic	industrial	1
Historic	domestic	8
Historic/Middle Archaic	buttons/findspot	1
Undetermined	findspot	18
Undetermined	campsite	5
Undetermined	chipping station	<u>2</u>
TOTAL		(30.88%) 84

B - CITY OF KITCHENER

CULTURAL AFFILIATION	SITE TYPE	FREQUENCY
Archaic/Paleo	campsite/chipping stn.	1
Archaic	chipping station	1

Early Archaic	findspot	1
Middle Archaic	findspot	2
Late Archaic	cemetery	1
Late Archaic	campsite	1
Late Archaic	findspot	2
Early Woodland	findspot	1
Middle Woodland	campsite/burial	1
Late Woodland	village	4
Late Woodland	cemetery/campsite	1
Late Woodland	findspot	1
Historic	villagel	1
Historic	domestic	9
Historic	institution	2
Historic	industrial	1
Undetermined	findspot	30
Undetermined	campsite	<u>2</u>
TOTAL		(22.79%) 62

C - CITY OF WATERLOO

CULTURAL AFFILIATION	SITE TYPE	FREQUENCY
Archaic	campsite	1
Archaic	findspot	2
Early Archaic	findspot	1
Middle Archaic	findspot	1
Late Archaic	campsite	1
Late Archaic	findspot	3
Early Woodland	findspot	2
Early Woodland	campsite	1
Early Woodland	campsite/cache	1
Early Woodland	undetermined	1
Middle, Late Woodland/fur-trade	village/undet.	1
Historic	domestic	3
Historic	refuse scatter	2
Historic/Late Woodland	homestead/findspot	1
Undetermined	campsite	4
Undetermined	findspot	13
Undetermined	chipping station	2
Undetermined	undetermined	<u>1</u>
TOTAL		(15.07%) 41

D - TOWNSHIP OF WOOLWICH

CULTURAL AFFILIATION	SITE TYPE	FREQUENCY
Archaic/Late Woodland	campsite	1
Late Archaic/Early Woodland	findspot	3
Historic	refuse scatter	<u>2</u>
TOTAL		(1.1%) 3

E - TOWNSHIP OF WILMOT

CULTURAL AFFILIATION	SITE TYPE	FREQUENCY
Archaic	campsite	8
Archaic	findspot	3
Archaic	undetermined	4
Early Woodland	undetermined	1
Late Woodland	campsite	2
Late Woodland	village	5
Late Woodland	campsite/village	1
Late Woodland	village/burial	1
Historic	domestic scatter	2
Historic	domestic	2
Historic	industrial	1
Undetermined	findspot	1
Undetermined	undetermined	1
No data available	burials	2
No data available	findspot	3
No data available	no data available	<u>7</u>
TOTAL		(16.18%) 44

F - TOWNSHIP OF WELLESLEY

CULTURAL AFFILIATION	SITE TYPE	FREQUENCY
Archaic	findspot	1
Early Woodland	findspot	2
Undetermined	findspot	1
No data available	findspot	3
No data available	no data available	<u>4</u>
TOTAL		(4.04%) 11

G - TOWNSHIP OF NORTH DUMFRIES

CULTURAL AFFILIATION	SITE TYPE	FREQUENCY
Middle Archaic	campsite	1
Late Archaic	findspot	1
Late Archaic	campsite	1
Early Woodland	findspot	3
Middle Woodland	no data available	1
Late Woodland	campsite	2
Late Woodland	village	3
Late Woodland	campsite/village	2
Late Woodland	undetermined	1
Native Historic	burials	2
Historic	burials	1
Historic	domestic	2
Undetermined	campsite	4
Undetermined	undetermined	1
No data available	campsite	1
No data available	no data available	<u>1</u>
TOTAL		(9.93%) 27

APPENDIX C

GUIDELINES FOR DEVELOPERS REGARDING ARCHAEOLOGICAL RESOURCE ASSESSMENTS

WHAT A DEVELOPER SHOULD DO:

1. If a condition of an archaeological resource assessment has been required for a property it is the responsibility of the developer to arrange for the assessment.
2. The Ministry of Culture and Communications, Heritage Branch, provides a list of licensed archaeological consultants. This list is continually up-dated and is available, upon request, from the Ministry of Culture and Communications office (416) 965-4490 or from the Archaeology Division of the Regional Municipality of Waterloo (519) 885-9592.
3. The developer is responsible for financing the archeological resource assessment and any site specific mitigation.
4. The developer should contact one or more consulting firms to tender a bid on the project. The following should be provided to the consultant to permit a knowledgeable bid:
 - a copy of draft plan with contours
 - a current T-number
 - size of the property
 - record of previous development disturbance on property
 - field condition of property (e.g. ploughed, crop, coverage, fallow, woodlot, scrub, etc.)
 - expectant retention of existing structural features
 - anticipated construction schedule
5. All formerly cultivated lands that can be ploughed, must be ploughed and allowed a suitable period of weathering prior to assessment (weathering generally includes on to two heavy rainfalls). Developers can prepare the property in advance to reduce the time element involved in an assessment.
6. No soil disturbance (excepting ploughing of fields) of the assessment property shall be undertaken until a letter of clearance has been issued by either the Ministry of Culture and Communications or the Archaeology Division of the Regional Municipality of Waterloo and received by the Director of Development of the Region. **A verbal or written release from the consultant is unacceptable.**

WHAT A DEVELOPER SHOULD BE AWARE OF:

1. Prohibitive factors for conducting an archaeological resource assessment and/or site mitigation include snow cover and frozen ground. Plan ahead!
2. If an archaeological study cannot be completed prior to registration, there is provision for the developer to enter into an agreement with the Regional Municipality of Waterloo that the archaeological resource assessment will be completed prior to any soil disturbance. This development agreement is subject to any charge.

3. The consultant is under obligation to conduct the archaeological assessment and report in accordance with the Ministry of Culture and Communications guidelines (in draft form as of April 1988) and to the satisfaction of the Archaeology Division of the Regional Municipality of Waterloo.
4. An unsatisfactory report can cause delays in clearance of a condition. Such reports will be sent back to the consultant with comments. The Region of Waterloo has the right to review all archaeological reports produced for areas within the Region.
5. Archaeologists must hold a current license to conduct archaeological assessments and/or site specific mitigation in the Province of Ontario.
6. Archaeologists conduct field assessments in either of two ways. The first method requires a pedestrian transect of ploughed fields at intervals of 5 - 10 metres depending on the archaeological potential and survey conditions of an area. Weathering allows clumps of earth to break up and soil to be washed off artifacts during periods of rain. The second method requires archaeologists to excavate approximately 30 cm square test pits into subsoil and to screen pit contents.
7. Costs of a Stage 1 and 2 assessment (background research and the location and identification of archaeological sites) will vary according to size of property, presence of known registered sites, and required methodology (test pitting is less time efficient than surveying ploughed fields and therefore more expensive). As an example, assessment of a 30 acre ploughed parcel of land may cost between \$1000 - \$1800 (subject to variation between consultants and inflation), while the same area, if test pitting is required, may cost more than double the figure presented for ploughed fields. Please note that the lowest bid on a project does not always reflect the best product. Determine the type of end product each consulting firm offers and any further work your firm may wish to have undertaken by the archaeological consulting firm.
8. The length of time an assessment may take varies according to size of property, presence of known registered sites, required methodology and the location of archaeological material during the assessment. For example, a 30 acre ploughed field assessment, background research and report. A 30 acre parcel of land requiring test pitting may require 8 to 9 man days, including field assessment, background research and report production.
9. Recommendations will be made by the consultant following field assessment and data interpretation. If no archaeological material has been recovered, no further recommendations will be made. If a findspot is located (on to five artifacts), generally, no further recommendation will be made. If a site is located, the consultant may recommend one or more of the following: additional archival research, controlled surface collection, record surface structures, deep site testing, test excavations, stripping of topsoil to expose subsurface features, on-site monitoring during construction activities, full site excavation, inclusion of the site into greenspace, inclusion of the parts of the site into a building or landscape features, no development or that development can proceed without further assessment and/or mitigation.

WHAT A DEVELOPER SHOULD EXPECT:

1. The archaeological resource assessment shall, as a minimum, be conducted under the

archaeological draft technical guidelines of the Ministry of Culture and Communications and be acceptable to the Archaeology Division of the Regional Municipality of Waterloo.

2. The consultant should inform the developer by telephone if a significant archaeological site has been located.
3. The archaeological consultant shall produce a report according to the Ontario Heritage Foundation licensing requirements.
4. A report should be prepared within a reasonable time following conclusion of the project.
5. The consultant shall forward a copy of the report to:
 - the client
 - the Ministry of Culture and Communications, London office
 - the Ontario Heritage Foundation
 - the Archaeology Division of the Region Municipality of Waterloo
6. Archaeological consultants conducting test pit methodology will backfill the test pit unless otherwise advised by the developer.
7. Artifacts recovered during an assessment or mitigation stage can be donated by the property owner to the Regional Municipality of Waterloo, Doon Heritage Crossroads, under the Region's collection policy guidelines (available upon request).
8. Review of the assessment/mitigation report will be conducted by the Archaeology Division of the Regional Municipality of Waterloo, except in cases where the Archaeology Division is conducting the assessment/mitigation. In this case, the report will be reviewed by Ministry of Culture and Communications staff.
9. A letter of clearance will be sent to the Director of Development of the Regional Municipality of Waterloo if the report is satisfactory. Developers can receive notification of clearance by contacting the Regional Planner of the specific Area Municipality in which the property is located or through the Archaeology Division (519) 885-9592.

APPENDIX D

GUIDELINES FOR PACKING AND RECEIVING OF ARCHAEOLOGICAL COLLECTIONS

BASIC STANDARDS:

Any hope of long term preservation is directly dependent upon the proper packing and storage of all artifacts. Basic standards for correct packing and storage not only guarantees the physical and chemical survival of the collection but also aim to assure its accessibility. Thus, the following standards for long term preservation address three areas of concern: packing, storage, and environment.

The collection must be packed properly to ensure some preservation in long-term storage. Guidelines for packing aim to provide physical protection from breakage and crushing and come buffering protection for the harmful effects of the environment. Organized packing of artifacts will also facilitate easy accessibility to the collection. Proper packing can only be assured through the use of the correct packing materials and methods.

a) Materials

Material used in the packing of the collection must not be harmful to the artifacts. Recommended packing materials include:

i) Sturdy lidded cardboard boxes of various sizes.

All collections should be stored in new cardboard boxes, with inside dimensions of 10 " H x 12" W x 15" L.

NOTE: Acid-free boxes are ideal for the storage of collections, however, their high cost is prohibitive and unrealistic. An exception should be made for paper, zinc, lead and pewter objects which benefit from an acid-free environment. Artifacts of other materials can be stored safely in sturdy cardboard containers. Precautionary measures for the protection of objects from acids can be taken by lining the containers with polyethylene sheeting or sealing their surface with two coats of varathane (polyurethane varnish). These precautionary measures are not recommended if fluctuations in the temperature and relative humidity in the storage environment are extreme and if the container does not contain silica gel (a drying agent) as condensation may occur.

ii) Polystyrene boxes with self-seal hinged snap-on lids for small fragile objects.

NOTE: Storage of metal artifacts in these sealed containers is not recommended if extremes of temperature and relative humidity are the norm and also if silica gel (a drying agent) has not been inserted in the container. Condensation may occur and stimulate corrosion.

iii) Bags.

- strong brown paper bags - various sizes.
- perforated zip lock polyethylene bags preferable with opaque bands for ease of labeling

iv) Padding materials.

Any inert packing materials can be used to pad artifacts. Some examples are: acid-free tissue paper, acid-free paper towels, microfoam or cellu-foam, bubble pack (double polyethylene sheeting with air pockets), polyethylene or polyether foam, or expanded polystyrene, or cotton wood (which can be used for cushioning but must never be in direct contact with the object). The use of newspaper and toilet paper is to be strongly avoided.

b) Methods

i) The size of the box, or bag must be commensurate with the size of the objects inside, being neither too large nor too small.

ii) The size and weight of the containers and its contents should be such that it can be lifted and moved by one person of normal strength.

iii) All bags must be closed securely to avoid loss of any artifact and/or accompanying labels.

iv) Bags and boxes must enclose their contents to provide protection from dirt and dust pollution, and some buffering from fluctuating environmental conditions outside the containers.

v) Artifacts of different materials should be stored in separate containers.

vi) Pack all artifacts dry.

NOTE: An exception is the packing of wet organic materials. To ensure preservation, such artifact must be kept in an environment which closely resembles their burial conditions (i.e. if wet, kept wet) until conservation treatment can be carried out. Uncontrolled drying will result in irreversible damage through collapse, shrinkage, warping and cracking.

vii) Pack stable glass and ceramics clean.

viii) Pack all metal artifacts, well padded, in paper bags or individual cardboard boxes (particularly important if the storage room is not environmentally appropriate and controlled) Sealed polyethylene bags or polystyrene boxes should only be used in conjunction with silica gel (a drying agent) and/or where appropriate, environmental standards for the preservation of metal artifacts are maintained.

NOTE: Silica gel must be checked regularly and regenerated as required.

NOTE: Acid-free containers must be used for paper, lead, zinc and pewter artifacts.

ix) Robust dry finds, e.g. stable glass and ceramics can be placed in perforated polyethylene bags. Delicate small dry finds can be padded and placed in small clear polystyrene boxes with snap-shut lids, or cylindrical vials.

x) Bags of artifacts must be placed in large storage boxes or drawers in such a way as to avoid crushing and breaking. Do not pile bags of artifacts on top of each other. Place them in individual sturdy lidded cardboard boxes; then stack these up in larger containers. Heavier artifacts should be placed on the bottom and lighter ones on top.

xi) All artifacts require padding. Aim for firm but gentle support in padding and packing objects. The object should not be packed so loosely that they can rattle about, nor so tightly that any part is under pressure.

Objects, particularly small and fragile ones, should be placed in a nest of padding and not wrapped in a cocoon. Damage will result with the latter method when unwrapping. Only use inert materials for padding.

xii) All containers must be labeled with a list of their contents and appropriate archaeological data. Each cardboard storage container should include a packing list for all contents.

c) Accompanying Materials

The following must accompany the collection:

- a) a copy of the site/assessment report
- b) complete artifact catalogue for each collection
- c) supporting documentation, e.g. field notes and photographs

APPENDIX E

TRANSFERENCE OF TITLE

**THE REGIONAL MUNICIPALITY OF WATERLOO
(DOON HERITAGE CROSSROADS)**

CERTIFICATE OF GIFT

NO.

ACCESSION NO.

I hereby give, donate and release to THE REGIONAL MUNICIPALITY OF WATERLOO the objects listed herein. In so doing, I understand and agree that the said objects will be exclusive and absolute property of the REGION and may be utilized, lent, disposed of, displayed, or placed elsewhere in such manner as the REGION deems advisable.

DESCRIPTION AND HISTORY

Signed at _____ this _____ day of _____ 19 _____.

Name of Donor (in full): _____

Address: _____

Telephone: _____

Donor's Signature: _____

ACKNOWLEDGEMENT

THE REGIONAL MUNICIPALITY OF WATERLOO hereby gratefully acknowledges the receipt of the object(s) listed above, being the gift of to the said REGION.

ACCEPTANCE OF GIFT

KITCHENER, ONTARIO this _____ day of _____ 19 _____

REGIONAL MUNICIPALITY OF WATERLOO

Copy 1 to permanent file; Copy 2 to registrar; Copy 3 to donor. This is not a tax receipt.

APPENDIX F

STATUS OF REGISTERED SITES

CATEGORY A - UNVERIFIED SITES: UNKNOWN IF EXTANT

BORDEN NO.	EXTANT	CULTURAL AFFILIATION	STATUS	FIELD VERIFIED
AhHb-2	unknown	Late Woodland	unknown	N
AhHb-3	unknown	Native Historic	unknown	N
AhHb-4	unknown	Late Woodland	unknown	N
AhHc-1	unknown	Middle Woodland	unknown	N
AhHc-4	unknown	Late Woodland	unknown	N
AhHc-5	unknown	Late Woodland	unknown	N
AhHc-6	unknown	Late Woodland	unknown	N
AhHc-10	unknown	Early Woodland	unknown	N
AhHc-11	unknown	Undetermined	unknown	N
AhHc-12	unknown	No data available	unknown	N
AhHc-16	unknown	Early Woodland	unknown	N
AhHe-1	unknown	No data available	unknown	N
AhHe-2	unknown	Late Woodland	unknown	N
AiHb-1	unknown	Archaic	partly developed	N
AiHb-3	unknown	Middle Woodland	unknown	N
AiHb-8	unknown	Late Woodland	unknown	N
AiHb-9	unknown	Late Woodland	unknown	N
AiHc-4	unknown	Archaic	unknown	N
AiHc-6	unknown	Late Woodland	unknown	N
AiHc-7	unknown	Late Woodland	unknown	N
AiHc-8	unknown	Late Woodland	unknown	N
AiHc-9	unknown	Archaic	unknown	N
AiHc-11	unknown	No data available	unknown	N
AiHc-12	unknown	Late Woodland	unknown	N
AiHc-13	unknown	Undetermined	unknown	N
AiHd-2	unknown	No data available	unknown	N
AiHd-4	unknown	Archaic	unknown	N
AiHd-5	unknown	Archaic	unknown	N
AiHd-6	unknown	Undetermined	unknown	N
AiHd-7	unknown	Late Woodland	unknown	N
AiHd-9	unknown	No data available	unknown	N
AiHd-10	unknown	No data available	unknown	N
AiHd-11	unknown	No data available	unknown	N
AiHd-12	unknown	No data available	unknown	N
AiHd-13	unknown	Early Woodland	unknown	N
AiHd-14	unknown	No data available	unknown	N
AiHd-16	unknown	No data available	unknown	N
AiHd-17	unknown	Late Woodland	unknown	N
AiHd-19	unknown	Late Woodland	not located	N
AiHd-23	unknown	Late Woodland	unknown	N
AiHe-1	unknown	Archaic	unknown	N

AiHe-2	unknown	No data available	unknown	N
AiHe-3	unknown	Archaic	unknown	N
AiHe-4	unknown	Archaic	unknown	N
AiHe-5	unknown	Archaic	unknown	N
AiHe-6	unknown	Archaic	unknown	N
AiHe-7	unknown	Late Woodland	not relocated	N
AiHe-8	unknown	Archaic/Middle Archaic	unknown	N
AiHe-9	unknown	Archaic	unknown	N
AiHe-10	unknown	No data available	unknown	N
AiHe-11	unknown	No data available	unknown	N
AiHe-12	unknown	No data available	unknown	N
AiHe-13	unknown	Archaic	unknown	N
AiHe-14	unknown	Archaic	unknown	N
AiHe-15	unknown	Archaic	unknown	N
AiHe-16	unknown	No data available	unknown	N
AiHe-17	unknown	No data available	unknown	N
AiHe-18	unknown	No data available	unknown	N
AjHe-1	unknown	Undetermined	unknown	N
AjHe-2	unknown	No data available	unknown	N
AjHe-3	unknown	Early Woodland	unknown	N
AjHe-4	unknown	Archaic	unknown	N
AjHe-5	unknown	No data available	unknown	N
AjHe-6	unknown	No data available	unknown	N
AjHf-2	unknown	No data available	unknown	N
AjHf-3	unknown	Early Woodland	unknown	N

CATEGORY B - DEVELOPED, UNVERIFIED SITES: NO LONGER EXTANT

AiHb-2	N	Archaic	developed	N
AiHb-7	N	Late Woodland	developed	N
AiHc-3	N	Archaic	developed	N

CATEGORY C - DEVELOPED SITES: NO LONGER EXTANT

AhHc-49	N	Historic	developed	Y
AhHc-51	N	Early Woodland	developed	Y
AiHb-36	N	Undetermined	developed	Y
AiHb-37	N	Undetermined	developed	Y
AiHb-42	N	Undetermined	developed	Y
AiHb-43	N	Undetermined	developed	Y
AiHb-68	N	Late Archaic	developed	Y
AiHb-69	N	Early Archaic	developed	Y
AiHc-5	N	Late Woodland	developed	Y
AiHc-30	N	Late Archaic	developed	Y
AiHc-31	N	Undetermined	developed	Y
AiHc-32	N	Middle Archaic/Historic	developed	Y
AiHc-33	N	Early Archaic	developed	Y
AiHc-34	N	Undetermined	developed	Y
AiHc-35	N	Undetermined	developed	Y
AiHc-37	N	Undetermined	developed	Y

AiHc-38	N	Undetermined	developed	Y
AiHc-39	N	Undetermined	developed	Y
AiHc-40	N	Undetermined	developed	Y
AiHc-41	N	Undetermined	developed	Y
AiHc-42	N	Undetermined	developed	Y
AiHc-79	N	Archaic	developed	Y
AiHc-80	N	Archaic	developed	Y
AiHc-81	N	Early Archaic	developed	Y
AiHc-82	N	Late Woodland	developed	Y
AiHd-1	N	Middle, Late Woodland		
		Historic	developed	Y
AiHd-67	N	Early Archaic	developed	Y

CATEGORY D - EXTANT BUT LOCATION DATA SUSPECT

Aihc-10	Y	No data available	unknown	N
AiHc-23	Y	Undetermined	proposed develop	N

CATEGORY E - EXCAVATED SITES: NO LONGER EXTANT

AhHb-36	N	Historic	excavated	Y
AiHb-13	N	Late Woodland	excavated	Y
AiHb-30	N	Late Archaic	excavated/develop	Y
AiHb-39	N	Early, Middle Archaic, Early Woodland	collected/develop	Y
AiHb-40	N	Historic	test excavated	Y
AiHb-41	N	Historic	excavated/develop	Y
AiHb-59	N	Historic	excavated	Y
AiHb-62	N	Middle Archaic	excavated	Y
AiHc-16	N	Late Archaic	excavated	Y
AiHc-36	N	Paleo/Archaic	excavated/develop	Y
AiHc-47	N	Late Archaic	excavated/develop	Y
AiHc-68	N	Early, Middle Archaic, Middle Woodland	excavated/develop	Y
AiHd-42	N	Early Woodland	excavated/develop	Y
AiHd-66	N	Undetermined	stripped/developed	Y
AiHd-68	N	Historic	excavated/develop	Y
AiHe-20	N	Historic	excavated/develop	Y

CATEGORY F - LOCATED THROUGH ASSESSMENT, SCHEDULED FOR DEVELOPMENT

AiHb-17	N	Historic	development	Y
AiHb-18	N	Archaic	development	Y
AiHb-19	N	Early Woodland	development	Y
AiHb-20	N	Late Woodland	development	Y
AiHb-21	N	Late Archaic	development	Y
AiHb-22	N	Middle Archaic	development	Y
AiHb-23	N	Late Archaic	development	Y
AiHb-24	N	Early Woodland	development	Y

AiHb-25	N	Late Woodland	development	Y
AiHb-26	N	Undetermined	development	Y
AiHb-27	N	Undetermined	development	Y
AiHb-28	N	Undetermined	development	Y
AiHb-29	N	Historic	development	Y
AiHb-31	N	Archaic	development	Y
AiHb-32	N	Late Archaic	development	Y
AiHb-33	N	Early Woodland	development	Y
AiHb-34	N	Early Woodland	development	Y
AiHb-35	N	Undetermined	development	Y
AiHb-38	N	Undetermined	development	Y
AiHb-46	N	Undetermined	development	Y
AiHb-47	N	Undetermined	development	Y
AiHb-48	N	Undetermined	development	Y
AiHb-49	N	Undetermined	development	Y
AiHb-50	N	Archaic	development	Y
AiHb-51	N	Early Archaic	development	Y
AiHb-52	N	Undetermined	development	Y
AiHb-53	N	Undetermined	development	Y
AiHb-54	N	Undetermined	development	Y
AiHb-55	N	Middle Archaic	development	Y
AiHb-56	N	Undetermined	development	Y
AiHb-57	N	Historic	development	Y
AiHb-63	N	Undetermined	development	Y
AiHb-64	N	Early Archaic	development	Y
AiHb-65	N	Archaic	development	Y
AiHb-66	N	Archaic	development	Y
AiHb-67	N	Archaic	development	Y
AiHc-43	N	Middle Archaic	development	Y
AiHc-44	N	Undetermined	development	Y
AiHc-45	N	Undetermined	development	Y
AiHc-46	N	Undetermined	development	Y
AiHc-48	N	Undetermined	development	Y
AiHc-49	N	Undetermined	development	Y
AiHc-50	N	Undetermined	development	Y
AiHc-51	N	Undetermined	development	Y
AiHc-52	N	Historic	development	Y
AiHc-53	N	Middle Archaic	development	Y
AiHc-54	N	Undetermined	development	Y
AiHc-55	N	Historic	development	Y
AiHc-57	N	Undetermined	development	Y
AiHc-61	N	Early Woodland	development	Y
AiHc-62	N	Undetermined	development	Y
AiHc-63	N	Late Woodland	development	Y
AiHc-66	N	Historic	development	Y
AiHc-67	N	Historic	development	Y
AiHc-71	N	Late Archaic	development	Y
AiHc-73	N	Undetermined	development	Y
AiHc-74	N	Undetermined	development	Y
AiHc-77	N	Undetermined	development	Y

AiHc-24	N	Late Archaic	development	Y
AiHd-25	N	Undetermined	development	Y
AiHd-26	N	Archaic	development	Y
AiHd-27	N	Undetermined	development	Y
AiHd-28	N	Undetermined	development	Y
AiHd-30	N	Undetermined	development	Y
AiHd-31	N	Undetermined	development	Y
AiHd-32	N	Middle Archaic	development	Y
AiHd-33	N	Undetermined	development	Y
AiHd-34	N	Undetermined	development	Y
AiHd-35	N	Late Archaic	development	Y
AiHd-36	N	Undetermined	development	Y
AiHd-37	N	Undetermined	development	Y
AiHd-38	N	Undetermined	development	Y
AiHd-39	N	Undetermined	development	Y
AiHd-40	N	Historic	development	Y
AiHd-41	N	Undetermined	development	Y
AiHd-43	N	Late Archaic	development	Y
AiHd-44	N	Late Archaic	development	Y
AiHd-45	N	Undetermined	development	Y
AiHd-47	N	Undetermined	development	Y
AiHd-48	N	Historic	development	Y
AiHd-49	N	Undetermined	development	Y
AiHd-50	N	Early Woodland	development	Y
AiHd-51	N	Historic	development	Y
AiHd-52	N	Early Woodland	development	Y
AiHd-53	N	Undetermined	development	Y
AiHd-54	N	Undetermined	development	Y
AiHd-55	N	Undetermined	development	Y
AiHd-56	N	Historic	development	Y
AiHd-57	N	Undetermined	development	Y
AiHd-58	N	Undetermined	development	Y
AiHd-59	N	Undetermined	development	Y
AiHd-60	N	Undetermined	development	Y
AiHd-61	N	Undetermined	development	Y
AiHd-62	N	Undetermined	development	Y
AiHd-63	N	Undetermined	development	Y
AiHd-64	N	Late Archaic	development	Y
AiHd-65	N	Undetermined	development	Y
AiHd-69	N	Undetermined	development	Y
AiHe-28	N	Historic	development	Y
AiHe-29	N	Historic	development	Y
AiHe-30	N	Historic	development	Y
AiHe-31	N	Undetermined	development	Y
AjHd-2	N	Undetermined	development	Y
AjHd-3	N	Historic	development	Y
AjHd-5	N	Archaic	development	Y
AjHd-6	N	Undetermined	development	Y
AjHd-7	N	Early Woodland	development	Y
AjHd-8	N	Undetermined	development	Y

AjHd-9	N	Historic	development	Y
AjHd-10	N	Historic	development	Y

CATEGORY G - ASSESSED SITES THAT REMAIN EXTANT

AiHb-9	Y	Middle Woodland	park land	Y
AiHb-15	Y	Early, Late Archaic	test excavated	Y
AiHc-17	Part	Historic	test excavated	Y
AiHc-18	Part	Historic	excavated	Y
AiHc-20	Y	Late Woodland	excavated/park	Y
AiHc-58	Part	Historic	part developed	Y
AiHc-59	Y	Historic	park land	Y
AiHc-60	Y	Historic	park land	Y
AiHc-75	Part	Undetermined	part developed	Y
AiHc-78	Y	Undetermined	park land	Y
AiHe-33	Part	Historic	test excavated	Y

CATEGORY H - EXTANT SITES NOT THREATENED BY DEVELOPMENT

AhHc-23	Y	Undetermined	not threatened	Y
AhHc-26	Y	Late Archaic	not threatened	Y
AhHc-56	Y	Historic	not threatened	Y
AiHb-11	Y	Middle Archaic/ Late Woodland	not threatened	Y
AiHc-1	Y	Late Woodland	not threatened	Y
AiHc-2	Y	Late Woodland	not threatened	Y
AiHc-15	Y	Undetermined	not threatened	Y
AiHc-19	Y	Late Woodland	not threatened	Y
AiHc-22	Y	Undetermined	not threatened	Y
AiHc-24	Y	Late Woodland	not threatened	Y
AiHc-25	Y	Late Woodland	not threatened	Y
AiHc-26	Y	Late Woodland	not threatened	Y
AiHc-28	Y	Archaic/Late Woodland	not threatened	Y
AiHc-29	Y	Historic	not threatened	Y
AiHc-56	Y	Historic	not threatened	Y
AiHc-69	Y	Archaic	not threatened	Y
AhHc-72	Y	Undetermined	not threatened	Y
AiHc-76	Y	Undetermined	not threatened	Y
AiHd-3	Y	Archaic/Historic	not threatened	Y
AiHd-8	Y	Late Woodland	not threatened	Y
AiHd-15	Y	Late Woodland	not threatened	Y
AiHd-18	Y	Late Woodland	not threatened	Y
AiHd-20	Y	Late Woodland	not threatened	Y
AiHd-22	Y	Archaic	not threatened	Y
AiHd-29	Y	Archaic	not threatened	Y
AjHc-2	Y	Late Archaic/ Early Woodland	not threatened	Y

**CATEGORY J - EXTANT, ARCHAEOLOGICALLY INVESTIGATED OR
RECOMMENDED FOR MITIGATION**

AhHc-17	Y	Middle Archaic	collected	Y
AhHc-18	Y	Late Archaic	surface collected	Y
AhHc-19	Y	Undetermined	no data available	Y
AhHc-42	Y	Native Historic	part excavated	Y
AiHb-10	Y	Historic	part excavated	Y
AiHb-12	Y	Historic	test excavated	Y
AiHc-14	Y	Historic	test excavated	Y
AiHc-21	Y	Middle Woodland	collected	Y
AiHd-21	Y	Early Woodland	excavated	Y
AjHc-3	Y	Historic	test excavated	Y