7-8-2020 1:30 PM

Cellar Dwellers: Historic Feature Sampling Strategies in Ontario Commercial Archaeology

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A thesis submitted in partial fulfillment of the requirements for the Master of Arts degree in Anthropology

Abstract & Keywords

This study will explore the logics of a particular practice in the commercial archaeology industry in Ontario. This practice is embodied within the standards and guidelines the provincial governing body released in 2011 for commercial archaeology in Ontario. One specific standard directs excavation methodologies for larger cellar features found on nineteenth century domestic sites. This standard stipulates that consultant archaeologists are only required to excavate a minimum of two opposing quadrants of the feature, or 50% of the contents. A best practice guideline, alternatively, gives the consultant the option to excavate the feature wholly. As a document governing cultural resource management across Ontario, the *Standards and Guidelines for Consultant Archaeologists* (2011) effectively codifies excavating fifty-percent of a cellar feature as sufficient for analysis and retention for future research. This study examined a sample of consultant reports detailing the full excavation of cellar features to counterfactually test the assumptions behind the notion that 50% recovery is sufficient for conservation and future research purposes. The findings of this study demonstrated that the excavation of opposing quadrants does not accurately sample cellar contents or depositional history. Instead, this standard reflects stereotypes about cellar feature uniformity, assumptions about commercial expediencies realized when only recovering half of such features, and the legacy of a lesser value held for this part of the record in Ontario archaeology.

Key Words: Ontario CRM, cellar, nineteenth century, historic archaeology, standards and guidelines, commercial archaeology

Summary for Lay Audience

This study explores how and why commercial archaeologists in Ontario excavate the specific type of cultural feature on nineteenth century archaeological sites known as a cellar feature. Ontario archaeologists are required to follow a set of rules released by the province back in 2011, called *Standards and Guidelines for Consultant Archaeologists*. These rules describe how to excavate larger cellar features found on nineteenth century

sites and determine that archaeologists are required to divide the cellar into four quadrants, excavating a minimum of 50 percent of the contents through opposing quadrants (i.e., Northwest and Southeast quadrants). Archaeologists are allowed to excavate the whole cellar, but this is optional. Since *Standards and Guidelines* determines that excavating half of a cellar is enough, this study explores whether this 50 percent minimum excavation strategy is adequate to satisfy both the present and future purposes of research. This study explores a sample of five reports provided by commercial archaeology companies that have examples of fully excavated cellar features to test whether 50 percent represents sufficient data for conservation and future research. By comparing the different ways 50 percent of the cellar can be excavated, this study found that excavating only half of a cellar feature presents neither an accurate sample of the contents nor of the history that can be learned from the different layers within. Instead, the requirements for excavating cellars in *Standards and Guidelines* was found to reflect incorrect assumptions about cellar characteristics and contents, and arguably furthers the legacy that considers archaeological data from this period in Ontario's historical record at a lesser value than other periods.

Acknowledgments

I would like to thank the anthropology department at Western University for their support and encouragement, and especially Dr. Neal Ferris, for his invaluable industry insight and dedicated guidance. Thank you also to Archaeological Services Inc. (ASI), Timmins Martelle Heritage Consultants (TMHC), Archaeological Research Associates Ltd. (ARA), and New Directions Archaeology Ltd. (NDA), who provided completed reports with cellar data that were critical to this research project. And finally, thank you to my family and my wife, Katelin, for your unwavering support in my academic quest.

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List of Abbreviations, Symbols, Nomenclature

AATG/AATGs – Archaeological Assessment Technical Guidelines

ARA – Archaeological Research Associates Ltd.

ARHF – Archaeology of Rural Historic Farmsteads

ASI – Archaeological Services Inc.

CHVI – Cultural Heritage Value and/or Interest

CNHA – Council for Northeast Historical Archaeology

CRM – Cultural Resource Management

MOC – Ministry of Culture

MTCS – Ministry of Tourism, Culture and Sport

NDA – New Directions Archaeology Ltd.

OAS – Ontario Archaeological Society

OHA – Ontario Heritage Act

S&G/S&Gs – Standard and Guidelines for Consultant Archaeologis

SD – standard deviation

SHA – Society for Historical Archaeology

TAG – Technical Advisory Group

TMHC – Timmins Martelle Heritage Consultants Inc.

Chapter 1: Introduction

Cellars are a distinctive cultural feature mostly found on domestic sites and, in Ontario, largely dating after 1800 AD. This thesis examines a practice within Ontario's commercial archaeology industry (Cultural Resource Management, or CRM), that has been shaped by a regulated standard for the excavation of these cellars. That standard is articulated in the *Standards and Guidelines for Consultant Archaeologists* (S&Gs), a comprehensive set of CRM industry standards established by the Ontario Ministry of Tourism, Culture and Sport (MTCS), in 2011. To conduct commercial archaeology in Ontario, licensed CRM archaeologists must adhere to these defined standards and guidelines. Examining the logics of one of these standards in the context of CRM practice, against the information potential of cellars, as cultural features, will allow for the exploration of both the specific and general intent behind CRM practices as a distinct form of archaeological practice; notably, the need in CRM to balance information recovery and archaeological value with cost and time expediencies within development contexts.

1.1 Historical Archaeology in Ontario

Generally, prior to the 1980s researching and managing historical archaeological sites in Ontario tended to be directed towards sites that addressed thematic historic period topics like military, industrial, fur trade, marine and urban history (Doroszenko 2009; Ferris 2007b). A stronger interest on preserving information from nineteenth century archaeological sites in Ontario began during the 1980's (Ferris 1998, 2007a), adapting to the emerging new practice in archaeology of addressing development pressures on the archaeological record (Ferris 1998).

The rise of CRM work in southern Ontario emerged in the decade after the passage of the Ontario Heritage Act (1975), and the emergence of an archaeological bureaucracy within the provincial ministry responsible for administering the OHA. Alongside the expansion of the Ontario Archaeological Society disseminating information about archaeology,

during that time there emerged a thread of applied research focused on historical archaeology (e.g., Kenyon et al. 1984; Kenyon 1984a, 1984b, 1985, 1986; see also Ferris and Kenyon 1983; Kenyon and Ferris, 1984; Kenyon and Kenyon 1991, 1993, as well as Thomas Kenyon Nineteenth Century Notes Published in the London Chapter of the OAS newsletter *KEWA*, beginning in 1979). Ferris notes (2007b:5) that Ian Kenyon was among those working within the provincial bureaucracy and serviced the archaeological provisions of the OHA. It was Kenyon's innate sense of curiosity for historical archaeology and his and his father Thomas's publications on findings from historical archaeological sites that would prove instrumental in advocating for historical domestic sites, which had generally been ignored previously, to be considered a legitimate part of the archaeological record to be conserved within CRM practice.

Kenyon (1986:41) critiqued what he perceived to be a negative attitude towards this part of the archaeological record by CRM practitioners, saying they invoked a sense of "antiquarianism," where "somehow the oldest and most primitive are what really are of relevance [to archaeologists]" and thus why historical material may not always be perceived to "fit within the theoretical perspective of 'anthropological archaeology.'" Kenyon posited (1986:41) that historical archaeology fell more in line with both social and cultural anthropology, where research foci should reside in "understanding the people themselves, regardless of who they are, where they live, or when they existed."

Interestingly, Kenyon noted that the "lack of guidelines concerning the special requirements of historical archaeology" resulted in the variability of the information provided in CRM reports (Kenyon 1986:42). Concerning best practices for innovative and research driven data collection, Kenyon's ideas developed upon CRM industry needs and shortfalls at an opportune time. As well, Kenyon's interest and advocacy for historical archaeology within CRM, particularly for the research potential of nineteenth century domestic sites, anticipated the later advancement of this field in North America (Agbe-Davies 1999; Baugher 2001; Baugher and Klein 2001; Beaudry 1996; Beaudry 2001; Boudreaux, Davis and Riggs 2004; Catts 2001; De Cunzo 2001; Groover 2001, 2004, 2008, 2013, 2014; King 2001; Klein and Baugher 2001; McCann and Eqing 2001; Metheny 2013; Miller and Klein 2001; Miller et al. 2000; O'Donovan and Wurst 2001;

Orser 2017; Scharfenberger and Veit 2001), especially the study of Ontario's eighteenth and nineteenth century settlers (Doroszenko 2001; Ferris 1998, 2007b; Kenyon 1997; MacDonald 1997, 2004; MacDonald and Needs-Howarth 2013; Triggs 1998, 2005).

1.2 Nineteenth century domestic sites in Ontario

There are a wide range of archaeological site types associated with the nineteenth century, found in past urban and rural settings. However, the most common types of sites from that century located during CRM surveys are various locales understood to have been domestic sites. These domestic sites are often thought of as homesteads, farmsteads, pioneer sites, crofts or other such residence locales tied to rural, typically agricultural living. These archaeological sites are generally assumed to encompass the material remains of a single nuclear or extended family residing at the locale to clear, farm or otherwise participate in the agricultural economy (see Ferris 2007a; Kenyon 1997; MacDonald 1997 for further discussion).

Generally, archaeologists can demarcate the approximate location of these domestic sites by discovering remnant sub-surface structure supports like stone walls or post-molds (Lee Decker 1994). Typically, nineteenth century domestic sites such as farmsteads, are notable for large quantities of durable archaeological material, and are relatively straight forward to locate during an archaeological survey. In Ontario this process tends to consist of walking freshly ploughed fields to look for concentrations of Industrial era artifacts (Ontario Ministry of Tourism and Culture 2011). MacDonald (1997) notes that these concentrations of artifacts will generally encompass the location of the domestic residence, as well as outbuildings and deposits that made up the locus of the farmstead during occupation.

The nineteenth century is synonymous with the industrialisation of material culture represented archaeologically by a wide array of mass produced objects that, as artifacts found on domestic sites, help portray the material choices, cultural lifeways and socioeconomic status of the people who lived at those sites (Groover 2014; Lee Decker 1994; Kenyon 1986; Kenyon and Kenyon 1993; Miller et al. 2001; Triggs 1998, 2005).

On domestic sites many artifacts are found in refuse deposits present in cultural features such as middens, cellars, and privies. Refuse patterns reflect both accidental and purposeful deposition (Groover 2004; MacDonald 2004; Morrison 1991; Kenyon 1987; LeeDecker 1994). These refuse patterns include use of surface or sheet middens where material is generally tossed outside, and then occasionally redeposited into either deeper or multiple smaller sub-surface middens in the backyard (McCann and Eqing 2001; Poulton and Dodd 2007; see South 1977: "Brunswick Pattern"). Objects deposited inside the residence include accidental discards that are discerned by the discovery of small personal items— like smoking pipe fragments and buttons— presumed to have slipped between the floorboards (Kimmel 1993). Cellars in particular are important to our understanding of these sites because they can represent a combination of use-history and discard patterns, providing intact contextual data pertaining to the full depositional history of the site's occupants, and post-site infill of this depression (MacDonald 1997).

1.3 Sub-Surface Features: The Cellar

Below the surface, nineteenth century domestic site excavations can reveal several cultural features unique to this era, including privy pits, wells, and features that generally are assumed to have been below ground cellars. Indeed "cellar" is a broadly applied term that encompasses many different types of cold storage features used by early settler populations. Some common nomenclature for cellar features are: root cellars (MacDonald 1997), sub-floor pits (Kimmel 1993), dairies (MacDonald 1997), ice pits/houses (Graham 1912; Mayer 1995), barn cellars/pits (MacDonald 1997), and even "coolers" in Northern Ontario contexts (Mayer 1995). The common trait between all these cellar-types is that they were holes below-ground or in the floors of structures that provided storage for perishable goods at a reliably consistent temperature to keep them chilled during the summer and protected from the harsh winter temperatures (American Farmer's Magazine 1859).

Cellar features documented on nineteenth century domestic sites can take on various shapes (Kimmel 1993; MacDonald 1997) and sizes (Nicholson 1922), though there is

seemingly no standard typology to adequately define the functional range of each type (Lee Decker 1994; MacDonald 1997; Mayer 1995). However, it is fair to say that large and deep features discovered within the defined perimeter of a residential house are understood to have been "root cellars:" pits placed under a portion of the floor and floorboards of the residence to provide cold storage and accessed from inside the house by means of a trap-door in the floor of the house (MacDonald 1997; Rempel 1967:46). These features are not ubiquitous on nineteenth century sites, but when found are considered important because they add to a comprehensive interpretation of the archaeological site through occupation and subsequent abandonment. They provide archaeologists with intact contextual data pertaining to the complex depositional history of the site's occupants and post-site abandonment (MacDonald 1997). According to Poulton and Dodd (2007), cellars also comprise a surprising majority of the entire site's artifact assemblage— sometimes as much as 50 percent.

1.4 Cellar Excavation Practices

Cellar features are typically deep and large, because of the nature of their functional use. Moreover, these features will often encompass deposits built up during use, events altering the feature such as widening the size of feature or adding or repairing an entrance way into the cellar, as well as post use infilling. All contribute to ensure these features generally exhibit stratigraphic history. As such, there are several ways historical archaeologists have chosen to excavate cellar features in the past, including use of a predetermined or arbitrary stratigraphic allotment— e.g., 10cm levels— to determine the use-history of the cultural feature (Archer and Bartoy 2006; Groover 2001). According to Cary and Last (2007:70), archaeologists in Ontario can approach feature excavation using various methods, where some excavate stratigraphically in "reverse order of deposition" (i.e., using natural stratigraphy rather than arbitrary levels), while others use a combination of techniques solely based on field conditions.

It is not the purpose of the thesis to critique the various research excavation methods used to document cellars, but to note here that a common research method is to use

stratigraphy, as Cary and Last succinctly describe (2007:70), “to answer questions about what humans did on a site, how they lived, and when it all transpired.”

The stratigraphy of these features explains a story of the cellar’s use-life (Archer and Bartoy 2006), often understood as in-use and post-use periods. The in-use period can refer to when the cellar was used for food storage by the occupants of the house, or perhaps when the cellar was disregarded as a storage option and began accumulating layers of refuse during house occupation (MacDonald 1997). The post-use period refers to the time after the cellar was no longer used and the cellar hole was leveled with the landscape. This transitional deposit can refer to the demolition/removal of the residential structure over the top of the cellar. Often, post depositional deposits are denoted by a mottled stratum with large amounts of architectural remains— e.g., nails, window glass, and brick (Lee Decker 1994; MacDonald 1997:60-61; Wightman 1974). Post-use periods of deposition can also include secondary deposits or waste brought in to be placed in the still intact depression of the cellar, referred to as “post-occupation re-deposition of artifacts lost or discarded” (Mayer 1995:11-12).

When excavating cellars, or any aspect of an archaeological site, Orser (2017:131) describes the harsh reality that not everything can be collected due to time and funding restraints. To have a valid set of data that archaeologists can apply to their research goals, either specific to one project or for broader regional trends, it is important to collect a comprehensive dataset during fieldwork. An important aspect of data collection defined by Groover (2008:25) is that the “careful dating of architectural features and archaeological deposits… can be linked chronologically to specific households” and helps determine the “standard of living and material conditions experienced by a farm household.” Conventionally, the archaeological feature types that show up on Ontario nineteenth century domestic sites, are oriented around dimensions of daily life such as “sanitation, production of food for immediate consumption, and trash disposal,” (Doroszenko 2007:64). Conventionally, this range of features is expected to be excavated wholly for proper dataset analysis, as generally expected for most cultural feature types in

Ontario's Standards and Guidelines, and had been the original intent for guidance on features large and small on nineteenth century sites.

1.5 Discussion of Research

As per Doroszenko (2007), Ferris (2007a), Hull (2007), Kenyon (1986), MacDonald (1997), Poulton and Dodd (2007), the concomitant rise of CRM and historical archaeology have been intricately linked. Excavation of archaeological sites considered within the historic period follows a set of standards and guidelines for archaeological practice set and enforced by the province of Ontario, which will be detailed in the next chapter. As CRM practice follows these guided principles, excavation practices have seemingly resulted in rote behaviour (Ferris 2007a), potentially constraining the research potential of the dataset extracted during excavation. The implications of proscribed methods of documentation for cellar features, and the implications they may or may not have for interpreting findings from this iconic feature type, are explored in this thesis.

Chapter 2 will provide a review of the development of the Ontario *Standards and Guidelines for Consultant Archaeologists* (2011; hereafter referred to as the "S&Gs"), and specifically pertaining to the documentation and excavation of nineteenth century domestic sites. This review will frame a general, informal sense of the process that led to the development of practices related to nineteenth century sites, as well as the general attitudes in Ontario CRM towards this type of feature.

This background context will serve as a basis for data presentation in Chapter 3. After considering the S&Gs mindset for setting a standard whereby only 50% excavation of opposing cellar quadrants is acceptable for cellars, an analysis of the excavation records provided for this study by several Ontario-based CRM firms are reviewed. These reports provided information about gross amounts of artifact data recovered from seven fully excavated cellars. Using that data in Chapter 4, consideration will be given to hypothetical scenarios of cellar feature excavation methodologies that adhere to the S&Gs Standard 3 in Section 4.2.7 for excavating a minimum of two opposing quadrants.

This will allow for the exploration of in-feature spatial and artifact class frequency variations that will enable an evaluation of whether minimum sampling proscribed for by the province affects the nature and quality of the findings, and if so, whether these would have potentially impacted understandings of the cellars and their contents used in this study.

Chapter 5 will consider the broader implications of these findings for approaching research on sampled versus fully excavated cellars, and whether the findings of this thesis suggest a revision or reinforcement of the current S&Gs practice.

Chapter 2: The Events Leading to the Formation of *Standards and Guidelines for Consultant Archaeologists* (2011) – Considerations for Nineteenth Century Archaeology

Since 2011, Ontario's CRM practice has been guided by the S&Gs, which were established through collaborative efforts of all industry stakeholders (MTCS 2011:ii).

Prior to these S&Gs, Ontario CRM practice was guided by the *Archaeological Assessment Technical Guidelines* (AATGs; MOC 1993), which represented Ontario's first effort to articulate specific standards of practice for the management of archaeological resources within the context of land development activities. Since the release of the 2011 S&Gs, there have been a range of official letters of clarification from the Province, and "technical bulletins" to clarify and expand on required work parameters not addressed within the S&Gs, including a notable technical bulletin (still identified as a draft) entitled *The Archaeology of Rural Historic Farmsteads* (MTCS 2014).

This chapter reviews the rise of CRM practice in Ontario and specifically the role this practice has in articulating guiding principles concerning historic period archaeological sites.

2.1 Ontario Archaeological Regulation

Although Canada has the "dubious distinction" of being the only G8 country "lacking comprehensive federal cultural resource management legislation" (Pokotylo and Mason 2010:53), each of Canada's provinces and territories has developed specific heritage legislation of their own (Dent 2016). In Ontario, the introduction of the Ontario Heritage Act (OHA) in 1974 was touted at the time as having the potential to "assist resource management considerably," providing for the regulatory accreditation and legitimization of the practice of archaeology in the province (Russel 1975:109; see also Ferris 1998). Russel advocated that the OHA's implementation of archaeological licensing would "ensure that damage and vandalism caused by excavation carried out under specious

pretexts will be mitigated to the fuller enhancement of sites' potential, scientific or otherwise" (1975:109).

The crystallization of the OHA led to the formal emergence of a provincial jurisdiction[1] managing the Act, along with knowledgeable government employees with expertise in archaeology, or what Ferris coins the "archaeological bureaucracy" (1998:227, 2007b).

The OHA ensured archaeology was a provincial interest and conservation of this heritage resource was enabled through land development legislation in Ontario, notably the Environmental Assessment and Planning Acts (e.g., Lennox 1986). While initially conservation of archaeological sites impacted by development projects was addressed by government employees (either MOC archaeologists or those employed directly by development-driven Ministries like Transportation), Ferris comments (1998:228) that the amount of archaeological salvage work tied to development activities in Ontario outweighed the available bureaucratic manpower, setting-off "alarm bells" about the limitations of provincial efforts. The emergence of CRM efforts during the latter half of the 1970s and early 1980s provided ample evidence that efforts to conserve archaeological resources would need some fine tuning (Ferris 2007b).

Further pressures on meeting conservation demands emerged in the 1980s, as William Fox (1986:18) described how the government's provincial archaeology unit started to become involved in reviewing development plans for townships, towns, and cities. Notably, the version of the Planning Act adopted by Ontario in 1983 required municipal development approval authorities to ensure private housing and commercial development projects also addressed archaeological concerns. Initially, MOC archaeological bureaucrats supported this effort through the identification of proposed housing developments that appeared to impact potential archaeological areas (Fox 1986:19; see also Ferris 1998:229).

The reality that archaeologists employed in government were not capable of directly documenting and mitigating all development impacts faced by the archaeological record

[1] Though this provincial unit was initially known as the Ministry of Culture and Recreation, its name has changed repeatedly over the last 40 years. It will be henceforth referenced as simply "MOC"—an acronym for Ministry of Culture, for the rest of this research.

meant that private, for hire archaeologists were increasingly employed as archaeological consultants focused on "inventory, evaluation, mitigation and monitoring projects associated with impact assessments" (Callum, quoted in Burley 1994:115) for clients. The "business" of commercial archaeology was beginning to take shape, where competitive prices for archaeological services were being offered by home-grown Ontario archaeological consultants.

By the mid-1980s, the CRM industry in Ontario had been active for about ten years in various capacities, undertaking around 150 projects per annum (Tyyska 1986). A large amount of their workload was contracted by proponents seeking to fulfill the archaeological assessment requirements found in the *Environmental Assessment Act*. The major selling point, as noted by Ferris (2007b:81), was that while typically 60-80% of properties assessed had archaeological potential, cultural material could be simply documented and removed to allow development to proceed. Archaeological work in Ontario was deemed as "something quite new to most people's experience," so understandings about funding from both private- and public-sectors were often fraught with the conflicting values of archaeological conservation costs versus the project's "bottom line" (Tyyska 1986:5).

2.2 Moving Towards a Better-Defined Practice: The *Archaeological Assessment Technical Guidelines* (1993)

In response to the emerging criticisms about the varying levels of consistency of archaeological work, the government sponsored a workshop in 1987 to discuss the need for a set of technical standards of practice (Ferris 2007b; Poulton and Dodd 2007). What followed over the next six years was the development by the MOC of the Ontario *Archaeological Assessment Technical Guidelines* (AATGs), which were released in 1993 (MOC 1993). The AATGs were the culmination of efforts in Ontario to articulate commonly accepted "professional standards," and were part of a broader effort that emerged across Canada in the late 1980s and early 1990s to ensure "good CRM equals

good archaeology" (Mitchel 1996:2), as well as to articulate a vision of self-regulation in practice (e.g., Latta quoted in Burley 1994:125).

Ontario now had a formal set of CRM procedures for licensed archaeologists to follow that stipulated the typical considerations of work within the first three stages of CRM investigations.[2] Ferris underlined (2007:87b) that these guidelines represented expectations for CRM archaeologists to achieve a common practice, defining only what was "considered important at that point in the history of the discipline." The AATGs were as much a standardization for the benefit of practice itself, as they were for the bureaucrats managing the process and for the practitioners of the practice (Ferris 1998).

Only a few years after their implementation, the influence of the AATGs was markedly noticeable. Ferris's research (1998:237-238, 2007b) conveys a stark contrast between pre- and post-AATGs. Following their introduction, the amount of CRM consultant work grossly outnumbered the sites excavated by both academic and avocational archaeologists combined.[3] As this CRM practice continued to grow and transform archaeology in Ontario, the AATGs were seen as beneficial because CRM work now produced a standard form of practice for identifying and documenting site data that previously may have been lost to development processes. However, Ferris (2002) also noted that although the original framework of CRM in Ontario was never focused on recovering every piece of archaeological evidence, the AATGs inadvertently entrenched rote practices and standardized assumptions about the archaeological record.

Ingrained in the process of CRM is a balance between conserving the archaeological record and charging a price for the expediency of the work conducted. The plurality of voices that defined the decision-making process of Ontario's archaeological heritage endowed CRM archaeologists with a primary role in the process, and set a level of professional accountability to further define and manage archaeology in Ontario (Ferris

[2] These first three stages consisted of Stage 1 - background research conducted for a development project; Stage 2 – property assessment through survey; and Stage 3 – site assessment through surface artifact collection and limited test excavation of sites to determine their cultural heritage value or interest. Stage 4 – full protection or mitigation of development impacts through excavations, was not addressed in the Technical guidelines.

[3] Although that increase in CRM work was not directly a result of the adoption of the AATGs. It was more the result of broader conservation requirements being met within Ontario development process.

1998:241-242). Although the CRM industry could not predict the increasing number of archaeological sites excavated each year, Ferris notes that precious "time and effort" were tied up with the day-to-day demands of developer-led business and saw the neglect of altruistic matters of "encouraging research" and "developing education programmes" (Ferris 1998: 226, 241, 2000:76-79). Ferris (1998) suggests implicit in commercial archaeological practices was a kind of mercenary business, echoing warnings voiced during the period of CRM's inception in the 1970s (McLeod 1975; Russel 1975; Tyyska 1976).

Between 1995 and 1997, an "important snapshot of attitudes" of industry members was taken about CRM practice by the MOC through a questionnaire. The results were then released in a series of reports through 1999 (Ferris 2007b:19). This inquiry sought insight on "property and site-specific assessment methodologies, valuations of heritage value, extraction and preservation strategies, and analysis and report writing" (Ferris 2007b:19) and was intended to help build the particulars for an enhanced guideline that would fully represent all four stages of consultant work and reporting.

2.3 The 2000s: Continuing Evolution of CRM in Ontario

Throughout the last two decades, the CRM industry has continued to negotiate problems and challenges created by its growth. The role of the CRM archaeologist evolved from a "largely uncharted dimension of practice" (Ferris 2007b:85) in the 1980s, to the overwhelmingly predominant form of practice in the province by the end of the 1990s. Ferris (2007b:85-86) described the tensions that stemmed from this evolving role, noting that the CRM archaeologist must negotiate a set of demands and expectations from community expectations of "professional practice" found in the AATGs, while also having to interpret and meet legislated requirements of archaeological practice related to land-use development, as well as managing expectations from clients— all the while maintaining the personal desire to perform "good" archaeology.

As the role of the CRM practitioner evolved, so too did the MOC. As archaeological bureaucrats grappled with an ever-increasing workload and increasing diversity of contexts, development approval authorities and development proponent types encountered the practice of CRM and practitioners doing that work. This diversity led to an array of "ghost standards" of practice that were peripheral or counter to the AATGs. This began a slippery slope of "variable practices" that were perceived to be inconsistent from case to case scenarios, amounting in some extreme cases to "complaints and threats of legal action" from consultants and the political sphere (Ferris 2007b:88). Most of these issues stemmed from the lack of guidelines concerning the final stage of CRM archaeological excavation, known as Stage 4, and furthered the need for a more comprehensive set of standards to be developed.

By the early 2000's, the data collected from questionnaire responses through the late 1990s fueled the MOC towards overhauling the 1993 AATGs, with special attention directed towards creating standards focused on Stage 4 excavations. MOC staff, and various government consultations with archaeological practitioners worked to determine an industry consensus on what defined best practices (see Ferris 2007b for a detailed description of this process). Ferris (2007b:96-97) noted that the S&Gs were supposed to be "operationalized by the start of the 2007 field season," with an anticipated re-visitation only a couple years after their formal implementation to sort out any inconsistencies of practice. Although the creation of a complete formal set of standards and guidelines was interpreted as the "maturing of the discipline" (Ferris 2007b:97), this maturation process was not without growing pains.

Along with the internal exercise of defining Ontario CRM standards of practice, the provincial government was also busy defining how to further incorporate the CRM process into the provincial OHA statute. As of 2005, the OHA was amended and gave the MOC the responsibility to "determine policies, priorities and programs for the conservation, protection and preservation of the heritage of Ontario," fulfilling the "government role in terms of direct conservation and protection of cultural resources" (Williamson 2010:11). The *Ontario Planning Act* (2005) considered cultural heritage conservation as a "legitimate objective of planning activity" alongside the *Provincial*

Policy Statement (2005), coalescing into a systemic "review and approvals process" for the land-use planning and conservation of archaeological resources (Williamson 2010), a process that had previously only been variably followed by municipalities across the province. This system also continued efforts under the *Ontario Environmental Assessment Act* (1997), which determined environmental impacts on both private- and public-sector projects. Along with changes in other regulated land development activities such as aggregate and forestry harvest, Ontario had effectively inserted archaeological conservation requirements into most regulated provincial land use activity (Williamson 2010).

As the systemic framework developed for Ontario CRM, the introduction of a new comprehensive set of standards and guidelines was imminent. Ferris (2007b:96) proposed that the new document would provide the means for CRM archaeologists to exercise the "professional judgment" they desired but would ultimately "constrain past personal and informal preferences of practice," transitioning CRM practice towards a formal set of procedural requirements.

2.4 *Standards and Guidelines for Consultant Archaeologists* (2011)

A period of almost two decades of experience, discussions and deliberation between all archaeological stakeholders resulted in the completion of a document that encompassed all stages of CRM work. The current era of CRM practice in Ontario is now guided by the *Standards and Guidelines for Consultant Archaeologists* (MTCS 2011), which eliminated many of the previous ghost protocols and implemented standard practices of documentation and recovery for both precontact and historic periods of archaeology. According to Williamson (2010:12-13), the new set of standards and guidelines, along with the enhanced archaeological licensing platform adopted in 2002, "provide[s] a clear expression of expectations while allowing consultants to respond to special circumstances" to make the review process "more transparent and efficient." As Ferris noted (2007a:22), "predominant approaches will adjust until they level off and become

rote again," signifying change to practice is both inevitable and necessary to address evolving concerns.

2.5 The Rise of Nineteenth Century Domestic Site Archaeology in CRM

As Ferris states, "the coming together of individual interests, development pressures and provincial regulations in the 1980s changed nineteenth century domestic sites from being dismissed by archaeologists as irrelevant to research… to being a legitimate part of the Ontario archaeological record" (Ferris 2007a:3). As such, closely aligned to the rise of CRM archaeology in Ontario is the rise in a focus on the nineteenth century archaeological record as a legitimate part of the research and resource management purview of archaeologists (e.g., Ferris 2007a; Kenyon 1986). As Ferris (2007a:12) notes, the 1980s witnessed an explosion of work conducted on nineteenth century domestic sites, contrasting with the small number of historic sites documented in the previous decades. He notes that between 1950-1979, a total of 151 "non-Aboriginal" sites were documented in Ontario, only four of which were defined as domestic sites from the nineteenth century. In contrast, from 1980 to 1989, the total of non-Aboriginal sites documented increased to 542, including 197 nineteenth century domestic sites. The stark contrast portrays the change in CRM mindsets specifically, and Ontario practitioners generally, about historic site considerations during the rise of archaeological consulting work.

While the rise in nineteenth century domestic site documentation emerged with the initial rise of CRM practice in Ontario, there was little acknowledgement of this part of the archaeological record in the 1993 AATGs. Direction was limited to Stage 1 requirements to consider relevant historic data sources for the property in question. Attitudes to this part of the archaeological record revealed in a later questionnaire from the 1990s showed "variability and ambivalence" towards the domestic site type, but also an "acceptance" and a "depth of understanding" of the need to create a better methodology (Ferris 2007a:20). One of the most surprising insights collected from this process was the acceptance of excavating archaeological sites that correlated to an occupation period after

circa 1850 AD, a date which had previously been espoused by CRM practitioners as the industry consensus cut-off date (Ferris 2007a:20-21). Ferris (2007a) and Kenyon (1986) have both noted that early CRM practitioners were not trained in historical archaeology and brought a prehistorian's bias against the more recent archaeological record. However, the changes in attitude towards this part of the archaeological record reflected in the early 2000s suggest that the continued CRM harvest of the record was encouraging at least some members of the CRM community to develop a specific interest in historic period archaeology. Some individuals were identifying themselves as historic archaeologists and not just "generalists or self-taught experts on all parts of the archaeological record" (Ferris 2007a:21).

As CRM continued to grow in scale of practice and breadth of application across Ontario in the twenty-first century, archaeologists were increasingly encountering nineteenth century archaeological sites across Ontario. By 2004, there were over 17,000 sites recorded in the Ministry's database (Ferris 2007a). Of the total, 934 sites, 5.4 percent were identified as nineteenth century domestic sites (Ferris 2007a:11). In 2006, Ferris assessed (2007a:12) 25 Borden Blocks[4] in the Toronto-London corridor, discovering that about 13 percent of all sites in these units were classified as "non-Aboriginal." Strikingly, 96% of these non-Aboriginal sites were excavated by CRM archaeology, and 91% of those were classified as nineteenth century domestic sites (Ferris 2007a).

In place of formal standards of practice, Ferris (2007a:17) suggests that much of the CRM documentation that consultants were producing for nineteenth century domestic sites was a mix of banal processes focused on "material description, determination of age, and perhaps associating the location with documented occupants" (Ferris 2007a:17). By the early twenty-first century, CRM largely adhered to rote practices consisting of collecting surface scatters of historic artifacts, stripping the ploughzone, and then, if present, excavating sub-surface features, including the tendency to only partially excavate large features such as cellars, privies or wells due to size and quantity of material typically found in those features. The rote practice of stripping topsoil whenever

[4] Arbitrary blocks of space defined for the purpose of generating distinct inventories of all archaeological sites documented within each bounded unit.

nineteenth century surface scatters of artifacts were encountered was challenged by Eva MacDonald (1997), where she was able to demonstrate that ploughzone materials included distinct site formation processes and depositions routinely lost during excavation. In effect, Ferris (2007a:18) argued that there is a "line" in CRM archaeology that divides rote practices as the "necessary documentation" of nineteenth century domestic sites for the sake of artifact harvest, from practices considered to be "extra-curricular research." Given that the set of practices developed for nineteenth century sites was largely developed by trial and error and personal preferences during the rise in CRM, rather than from informed research, practices such as pro forma background historical research, soil stripping, partial feature excavation and dismissal of sites dating later into the nineteenth century all represent the assumptions and biases of practitioners, rather than inherent heritage or research value of the record (Ferris 2007a).

Ultimately, the S&Gs adopted in 2011, which describe common expectations for fieldwork and documentation conducted by archaeologists in Ontario, included a significant increase in nineteenth century archaeology-related standards and guidelines. These include explicit expectations around background historical research and the evaluation of heritage value for such site investigations during Stage 2 and 3 assessment work. Additionally, in the new section on Stage 4, the S&Gs include a specific Section (4.2.7), entitled *Site-specific requirements: 19th century domestic archaeological sites*. This section outlines five standards and three guidelines when undertaking Stage 4 excavations and documentation for this specific site type (MTCS 2011:82). It should be noted that, under the S&Gs, "Standards" are defined as the "basic technical, process and reporting requirements for conducting archaeological fieldwork" to which the archaeological consultant is expected to adhere as per their license with the MTCS (MTCS 2011:1); "Guidelines" are defined as the "advice on good practice beyond the requirements of the standards" and are considered as a "matter of professional judgement" exercised on the part of the licensee (MTCS 2011:1).

Many of the standards in this section effectively codify the practices and assumptions the archaeological community generally held for the nineteenth century part of the archaeological record at the time of the MOC questionnaire survey (Ferris 2007a).

Notably, cellar and sub-floor features are afforded a distinct standard of excavation, since they may be "larger" in size than most other cultural features (MTCS 2011:82). There are two specific directives that deal with cellar features in Section 4.2.7 (MTCS 2011:82): Standard #3 states that the consultant archaeologist must "hand excavate a minimum of two opposing quadrants (e.g., northeast and southwest quadrants) in larger cellar features and record all exposed profiles," and Guideline #1 says that "based on professional judgement, when conducting excavation of larger cellar features, the consultant archaeologist may excavate all four quadrants and may use mechanical means to remove heavy post-use fill above living strata."

As previously noted, the standard for cellars on nineteenth century domestic sites effectively replicates the conventional practice that emerged among some CRM practitioners during the late twentieth century. The implications are clear: cellars are assumed to be big and artifact-filled deposits that, at about 50% recovered, become redundant in the data they can provide, so long as full profiles are documented for the feature. Moreover, while acknowledging that archaeologists may choose to embrace the higher standard of fully excavating the feature, the S&G still also allows for the intentional removal and non-documentation of post-use fill in the cellar, as non-critical to documentation and analysis (MTCS 2011:82). This intentional reduction in the standard of documentation for this cultural feature largely distinct to nineteenth century domestic sites thus assumes the logics that emerged from early CRM practice for this feature and site type. These logics informing the S&G standard have never been substantiated using archaeological evidence to validate their assumptions of sampling, redundancy and limited interpretive value. This research uses completely excavated cellar features to test those assumptions.

2.6 *The Archaeology of Rural Historic Farmsteads* (2014)

It should be noted that, in addition to the S&Gs, *The Archaeology of Rural Historic Farmsteads* (ARHF) Technical Bulletin was made publicly available in 2014 on the

MOC's website[5] to "aid consultant archaeologists in meeting the [requirements] as they relate to fieldwork and reporting for archaeological sites that can be classified as rural historical farmsteads" (MTCS 2014:1). This bulletin adds further detail to assessment and mitigation strategies for nineteenth century farmsteads. The ARHF defines "farmsteads" dating within a temporal period beginning with the arrival of the earliest Europeans in "Ontario" until the late nineteenth century as a "complex of structures" that can potentially contain a "house, outbuildings and land" (MTCS 2014:1). This document indicates that "all farmstead sites have some degree of cultural heritage value or interest" and may be able to "fill a gap in the land use history of the property" (MTCS 2014:1-4). Interestingly, this document speaks more to earlier Stages of the CRM assessment process and evaluating the heritage value of a site. This emphasis suggests that at that time, this document was specially created to elucidate some of the inherent shortfalls of the S&Gs, which did not include the perceived need to revise or update S&G Section 4.2.7 on excavating nineteenth century domestic sites.

2.7 Conclusion

The next chapter will present an analysis of some recent excavations of these type sites found in southern Ontario, exploring gross artifact yields from each cellar feature fully excavated at these sites. A breakdown of each cellar's contents as documented from the CRM Stage 4 reports will provide the base dataset for research and discussion in Chapter 4.

[5] www.mtc.gov.on.ca/en/archaeology/RuralHF Bulletin-(2015-09-10).pdf

Chapter 3: Case Studies, Raw Data Presentation, and Preliminary Cellar Analysis

The focus of this research is to assess the current excavation strategy for nineteenth century domestic cellar features in CRM archaeology in Ontario, as per the S&Gs adopted in 2011. As discussed in Chapter 2, CRM archaeology in Ontario has since been expected to adhere to these standards and guidelines in all field and reporting activities in the province. This includes adhering to a range of standards governing "Stage 4: Mitigation of developmental impacts," since the previous 1993 AATGs were notably lacking explicit standards and guidelines for this last field stage in the CRM process in Ontario.

Stage 4 in the S&Gs includes general standards of practice for excavating sites, followed by site specific standards of practice for excavating sites and site-specific standards for particular type sites and excavation contexts. A general requirement for site excavation (Section 4.2.1, MTCS 2011:74-76) includes a single standard for excavating cultural features (#7), which states "Excavate all cultural features by hand (by shovel or trowel)." While not explicit, the working assumption of this standard, then, is that all cultural features are expected to be fully excavated. But as noted in Chapter 2, Section 4.2.7 Standard #3 (MTCS 2011:82) allows CRM archaeologists to employ a 50% sampling strategy (i.e., only excavate opposing quadrants) for "larger cellar features" found on nineteenth century domestic sites (though there is no definition of what constitutes "larger"). The first guideline offered in Section 4.2.7 allows for an alternative strategy of excavating the entirety of the cellar, as well as the use of mechanical means to remove upper strata identified as "post-use fill."

"Larger" cellars are the only cultural feature type found on nineteenth century sites to be singled out specifically to allow partial excavation as the expected minimal standard of field practice. Deep stone lined wells can be partially excavated for health and safety reasons; however, this is only a guideline (#2).

Interestingly, while there are six other "site-specific" subsections in the Stage 4 part of the S&Gs that also received unique considerations, only Section 4.2.4 "Site-specific

requirements: Woodland archaeological sites" (MTCS 2011:79-80) singles out particular cultural features with unique standards. In Section 4.2.4, Standard #5 notes that "intact midden deposits and complex stratified features (e.g., semi-subterranean sweat lodges)" (MTCS 2011:80) are required to be excavated by strata or lens and any artifacts found are to be retained according to strata. Standard #6 also singles out post moulds, requiring that 10% of these cultural features, by structure, need to be sectioned for recording depth and angle.

Only nineteenth century domestic site cellars are signalled out as a cultural feature (i.e., intact and sealed archaeological deposit directly associated with the use and formation of the archaeological site) requiring a reduced standard of field excavation and documentation. This is an interesting distinction considering that, to be undertaking Stage 4 excavation, the site this cultural feature is associated with will have already been found to have "cultural heritage value or interest" (CHVI; see MTCS 2011:60-61; MTCS 2015:1) as a result of Stage 3 investigations (MTCS 2011: Section 3.4). In that part of the S&Gs, the site will have been deemed to require excavation either because it fits Standard #1.f: "post-contact archaeological sites dating before 1830" (MTCS 2011:57); or fits Standard #1.g: "late 19th and 20th century archaeological sites where background research (from any stage) or archaeological features clearly document cultural heritage value or interest" (MTCS 2011:57). For domestic sites where "…neither the background documentation (from any stage) nor the archaeological features clearly indicate cultural heritage value or interest" (MTCS 2011:59), then Standard #3.4.2, "Site-specific criteria: Domestic archaeological sites dating after 1830" applies. Under that site-specific standard, CHVI is determined for nineteenth century domestic sites under the following conditions:

a. In southern Ontario: most (80% or more) of the time span of occupation of the archaeological site dates to before 1870;
b. throughout Ontario (especially northern Ontario): the archaeological site is associated with the first generation of settlement of a pioneer or cultural group, even when the settlement was after 1870 (MTCS 2011:59).

In short, nineteenth century sites mostly predating 1870, and some portion of sites dating after that cut-off, are deemed to have CHVI under the S&Gs.

It is worth pointing out that the differences in the age of these sites leading to a determination of CHVI, pre and post 1830, appears to create differing and contradictory direction under the Stage 4 site specific requirements in Section 4.2.7 (MTCS 2011: 82). Specifically, Standard #1 states that, for sites mostly dating before 1830 "Excavate the entire extent of all cultural features (e.g., cellars, privies) by hand." Standard #2, for sites that mostly date after 1830, only requires hand excavation of middens, mechanical topsoil stripping, and cleaning "…the exposed subsoil surface by shovel ("shovel shine") or trowel" (MTCS 2011: 82). There is no mention of excavating cultural features. While in practice cultural features from sites mostly post dating the 1830s are excavated, the differing language of these two standards, and reliance on topsoil stripping for younger sites, might suggest these standards capture an assumed differing level of CHVI; one that allows for a reduced scale of recovery for more recent sites.

This variable valuation to the CHVI for nineteenth century domestic sites might suggest that the logic behind Standard #3's allowance for partial excavations of cellars arises from a perceived lesser value of more recent materials. However, despite Standard #1 stating that the entire extent of cultural features, including cellars, needs to be hand excavated for sites pre-1830, that intent appears contradicted by the absence of a temporal constraint for Standard #3, which suggests Standard #3 applies to all cellars from nineteenth century domestic sites, or at least allows for a contradiction that CRM practitioners could use to only partially excavate early nineteenth century cellars.

It is also worth considering that since Standard #3 emphasizes "larger" examples of this cultural feature, this qualification perhaps hints that another implicit assumption of a lesser CHVI is that these features are too large and/or contain too much material or data. This appears to be the case in at least some of the responses to the Ministry's questionnaire on standards of CRM practice reported on by Ferris, where one respondent is quoted as stating "…full excavation, processing and analysis of certain large features such as root cellars may not be practical or warranted" (Ferris 1999:16). This would imply size is a constraint to CRM time, labour and cost efficiencies that has

consequences during and after excavation. Ferris goes on to note that 32% of respondents felt that it was alright to sample all or some large historic features, though 35% of respondents specifically objected to that practice for cellars (Ferris 1999:17).

Yet "large" as a qualification of value or efficiency is not evident as an assumption informing the S&Gs generally (beyond topsoil stripping allowed for certain sites), given that middens and large cultural features such as semi-subterranean sweat lodges require increased levels of documentation (MTCS 2011:79 Standard 4.2.4, Number 1). Even plough disturbed portions of middens on Woodland and pre-1830 domestic sites must be hand excavated (MTCS 2011:82 Standard 3.4.2 Number 1), representing an obligation for more intensive fieldwork, and recovery of large quantities of smaller objects and remains to be processed in the lab. Indeed, generally speaking, higher artifact yields are a key indicator across the Stage 4 section of the S&Gs that excavations need to continue, especially in plough disturbed contexts.

It might be assumed that the unstated reason for the reduced documentation of cellars is more a questioning of the value of large quantities of specifically nineteenth century materials, and a conviction that such quantities of sealed and culturally intact materials are either redundant or of limited additional research value, and thus not worth the cost to proponents and CRM companies to recover and document. But such an assumption also appears contrary to Ferris' (1999:17) reported low number of archaeologists wanting to only sample cellars, and an overall majority of respondents (68%) who felt all cultural features should be fully excavated and profiled. So how did this standard come to be codified in the S&Gs?

Ferris (2007:18-20; see also Kenyon 1986) points out that attitudes towards the nineteenth century record in Ontario archaeology and captured in the S&G questionnaires by participating CRM archaeologists appeared to him to reflect a bifurcation between a more senior part of the archaeological community - primarily trained as prehistorians - who might have been ambivalent towards the archaeological value for this part of the record, and a more junior portion of the community that were either trained in or more open to the research value arising from historical archaeology. Ferris also notes (personal communication 2019) that the original draft of this Standard that the Province adopted

based on the questionnaire results reflected the majority opinion articulated by respondents. So, up until April of 2004, the standard drafted for nineteenth century domestic site cultural features actually read: "Excavate and record cultural features following the requirements for large Woodland sites. *Partial excavation of cultural features (e.g., quarter or half, ether vertically or horizontally) is not acceptable*."[6]

However, the Province chose to vet a draft of the S&Gs before wide consultation by means of a focus group (Technical Advisory Group), consisting primarily of CRM practitioners. According to Ferris' notes taken during TAG meetings and subsequent revisions to working drafts accessed for this research, in April of 2004 this focus group vetted the Stage 4 S&Gs, and at that time adjusted the draft Standard to specifically allow for the excavation of two opposing quadrants of nineteenth century cellars. That change in intent also likely created the contradiction present in these site-specific standards between Standards #1, #2, and #3 (i.e., not specifically mentioning excavating post 1830 cultural features and the full excavation of cellars in Standard #1). Despite these contradictions, and despite the fact this standard was not favoured by most respondents, in the seven years of Provincial consultation on the S&Gs after that revision, no reaction or call to change the standard emerged.

Given the history of how this standard came to be, the end statement clearly encompasses both unexamined assumptions about the variable value of nineteenth century domestic sites, larger cellar features and their contents, and a perceived need to account for efficiencies in CRM practice. It also suggests that it was the experiential knowledge and priorities of some practitioners who helped shape the standard, rather than pointing to data and evidence that could validate either the logic that any two quadrants of an excavated cellar will, for CRM purposes, offer the same findings as the other two quadrants, or that the data to be recovered in those two other quadrants would only be redundant.

[6] Taken from the Draft prepared for the Technical Advisory Group Discussion, Part 3: Stage 4 Fieldwork, April 2004, Toronto; emphasis added.

In the next section of this Chapter, a number of fully excavated cellars in CRM contexts will be reviewed and data presented to explore whether these assumptions and experiential understandings that underlie the Standard can be validated.

3.1 Study Dataset

In order to obtain examples of cellars fully excavated in an Ontario CRM context, I solicited several Ontario based CRM companies directly by email, and also in person with OAS members at the 2017 Annual Symposium. I conveyed through conversation my interest in finding field reports with fully excavated cellars (i.e., all four quadrants excavated); that included sub-contexts (i.e., strata differentiation); that contained detailed descriptions of full-artifact yields; and that were was classified inside the nineteenth century.

It is important to note that the reports obtained for this research are all license reports completed by Ontario CRM companies, and these reports have been accepted in the Ontario report registry by the Ministry of Culture. As these are license reports, the information enclosed is supposed to represent documentation about how the CRM firm and archaeological licensee met the S&Gs. In other words, I am analysing the presented results of Stage 4 work on cellars that have been deemed to have satisfied Provincial reporting expectations—that is my dataset. I did not, as a part of this study, re-analyze the feature artifact assemblages, or review original fieldnotes, or interview excavators. For data presentation purposes, I have standardized various artifact groups and classes into a common nomenclature in order to aid in comparative analyses. That nomenclature is derived from a combination of analytical frameworks in historical archaeology (Ferris 2006; MacDonald 2002; Canadian Parks Service 1992; South 1977).

My efforts garnered six different site reports, from which I chose to analyse five. The one report that was not selected for this research did contain a larger cellar feature, but it only had three of the four quadrants excavated due to a portion of the feature falling outside the project's specified research area (ARA 2015:39). The report itself discloses that "specifically, Feature 12 was divided into quadrants, and a minimum of two opposing

quadrants (northeast and southwest) were hand excavated (all exposed profiles were also recorded)," and "in order to document more of this unique feature, the southeastern quadrant was also excavated" (ARA 2015:32). Although this particular cellar context did not meet the requirements for consideration in my research, it is worth noting that this feature was excavated precisely following the S&Gs directives and ARA excavated a third quadrant in an effort to learn more about its unique composition of six identified strata and artifacts within. Interestingly, this "root cellar" was a rectangular shape measuring nine-metres by six-meters, contained a stone wall measuring an average of 0.5-meters thick, and comprised of 40 one-by-one metre excavation units (ARA 2015:39-41). While not a focus of my subsequent analysis, where I can draw additional insight into the trends identified from the five reports analysed for this research from this partially excavated cellar, I will make note of that insight.

Within the other five CRM reports reviewed for this study, seven features were identified as cellars and were wholly excavated. There were several different shapes and sizes of nineteenth century cellars in this sample group, each reflecting previously documented shapes found in Ontario and detailed in Chapter 1 of this thesis.

Each report provided detailed descriptions of the artifacts found within each cellar, summarized in the artifact catalogues found in the appendices of the CRM reports. Each report's catalogue was organized as per the S&Gs requirements for documenting artifacts, which made the raw datasets easy to compare.

Only three of the seven cellars analysed were noted as containing strata differentiation, and only one detailed different strata from all four quadrants. One cellar identified multiple strata in the profile drawing, but the catalogue did not differentiate the artifacts accordingly; and one cellar only recorded different strata in two of the four quadrants. Also, one site contained two fully excavated cellar features that were excavated in halves rather than quadrants, seemingly because the initial excavation preceded the implementation of the 2011 S&Gs. Nonetheless, these cellars were included in my research sample because they offer comparable gross artifact yields and exemplify a spatial understanding of the spread of artifacts inside this feature type.

Due to the limited number of CRM reports available from CRM companies, the seven cellars analysed here did not all meet the initial parameters for this study. Furthermore, as noted above, my dataset derives from CRM reports that span both before and after the official implementation of the S&Gs. A wider diversity of company practices represented in the reports analysed would have provided more breadth to encompass the different ways companies interpret this particular Standard for excavating nineteenth century domestic site cellar features.

Nonetheless, these reports still allow me to explore comparable patterns across the seven cellars documented and lead to statistically significant findings.

In the discussion below, I will first summarize the five case studies used in this research. Figure 3.1 (see Appendix B) illustrates the locations of these sites. Each case study will present a summary of the basic description of the site, methods used to excavate, cultural features identified as cellars, and any idiosyncrasies unique to each example.

3.2 Case Studies

3.2.1 O'Connor Site, AkGw-292

The O'Connor site was discovered and excavated by Archaeological Services Inc. (ASI), who conducted this work for a private proponent planning to develop agricultural land into an urban subdivision. The O'Connor site was located on a 200-acre parcel of land in the Township of Toronto Gore originally granted to the Canada Company in 1829. In 1836, 100 acres of land was sold to Nicolas O'Connor and over the course of the next 30 years the land was redistributed to members of the O'Connor family until James O'Connor sold the property in 1869. In 1851, 85 acres of the original 100 were under cultivation, while the remaining 15 acres were associated with the domestic homelot of a one storey log house (ASI 2008: 37), which aligns with the location of the O'Connor Site.

ASI's Stage 2 pedestrian survey of the O'Connor site yielded 996 artifacts. The extent of artifacts defined the site boundaries and indicated the chronological association of the site as matching the historically documented duration of the O'Connor family occupation of the property.

ASI's Stage 3 investigations revealed 14 potential cultural features that were further investigated in the proceeding Stage 4 excavations. As ASI describes (2008:4), Stage 4 investigations began with the mechanical removal of 850 square metres of topsoil using a Gradall excavator; after which the "14 potential features were defined more precisely with shovel and trowel, and recorded within the established grid." All features were mapped in plan view and then cross-sectioned to "examine soil profiles and contents" (ASI 2008:4). Each feature is noted to have had an indeterminate amount of "fill" removed; screened through 6-millimetre mesh, with all artifacts bagged by feature (ASI 2008:4). Five of the 14 cultural features are documented within a 20 by 20 metre area that defines the O'Connor family's settlement pattern, and included a well, a dairy, a refuse pit, and a cellar pit (see Appendix B: Figure 3.2). Once site excavations were completed, an artifact analysis was conducted using the Canadian Parks Service (1992) "Classification System for Historical Collections."

The analysis conducted by ASI identified a range of artifact groups, found in Table 3.1 (see Appendix A). The "kitchen/food-related class" artifacts— ceramics, beverage and food consumption, food preparation, utensils— makes up a majority of the O'Connor site's entire artifact assemblage (ASI 2008:20-26). The rest of the analysis discusses artifacts under classifications of: architectural (window glass, nails, brick/mortar, hinge, latch hook), furnishings (chimney lamp, coat hook, clock fragment), personal (clothing and accessories, smoking pipes, medicine, toiletry/hygiene, coins/tokens); tools and equipment (animal husbandry, recreation, agriculture, armament, writing, sewing); organic (faunal and floral); and Aboriginal (lithic). The number of artifacts found in Feature 12— identified by ASI as a "stone-lined cellar pit" (2008:11)— amounted to over half of the O'Connor site's total assemblage (Table 3.1). ASI determined that there were 7984 artifacts found in Feature 12 (2008:11).

The catalogue system used in this report provided some challenges when trying to match up artifact group and class totals found in the main body of the report (ASI 2008:21). ASI divided their catalogue into three separate appendices detailing the ceramic, non-ceramic, and faunal/floral artifact inventories. The ceramic artifact inventory outlines six columns in the catalogue: catalogue number, quantity, ware, motif, form, and comments. The non-ceramic artifact inventory outlines five main categories; catalogue number, quantity, type, material-other, and comments. These column categories proved challenging when determining what artifacts in each catalogue were associated with their respective artifact groups and classes. Although the report states that there are a total of 7984 artifacts in Feature 12 (ASI 2008:11), my analysis determined that there were actually 7987 artifacts in the report's catalogue and this calculated total will be used for the rest of this thesis.

Concerning ASI's kitchen/food-related class, there is no explicit definition of what ceramic sherds and non-ceramic artifacts make-up the artifact classes like "kitchenware," "tableware," and "teaware;" apart from inferring what each artifact class is comprised of from the minimum number of vessels found in the artifact analysis (ASI 2008:20-26). My thesis considers artifacts under these artifact classes if there is an explicit definition of what vessel form it is (see Appendix A: Table 3.2): kitchenware as "hollowware," "crock" and "milkpan;" tableware as "bowl, general," "plate, general," "plate, supper," "plate, table," "plate, twiffler," and "flatware;" and teaware as "saucer," "teacup," and "teas." To assess whether this strategy was successful, I compared the artifact group totals for artifacts found in "Features" in Table 2 of the CRM report (column three; ASI 2008:21) with the estimated artifact class totals detailed above. According to this stop-check, the estimated totals were found to have effectively accounted for the artifact group and classes found inside the cellar feature's context.

I was unable to discern what kinds of artifacts were noted as "unidentified" under the kitchen/food-related and indeterminate categories in ASI's artifact catalogue (see Table 3.2 for the artifact counts for these specific groups). The designation "unidentified" in the kitchen/food related group seem to refer to solely unidentified ceramics classified as simply "RWE" (i.e., refined white earthenware), and the indeterminate group refers to unidentified non-ceramic artifacts classified by artifact material (e.g., bone, brass, glass,

lead, metal-composite, metal-cuprous, metal-ferrous, metal-white, and slate). Artifacts identified as "container, unidentified" in the non-ceramic catalogue are seemingly from glass containers and bottles. ASI's comments for these shards are based on identifiable colours, finishes, form types, and mould seams, but beyond these base determinations, they are determined not to have other diagnostic attributes to provide further analysis in the report, and as such, have also been designated under my indeterminate group for Table 3.1. In my subsequent analyses comparing group totals between other cellars in this study, anything classified as "unidentified," "unclassifiable" or "indeterminate" will be grouped under a general "Indeterminate/Unclassifiable" category due to these uncertainties.

Other challenges to understanding ASI's artifact groups in relation to their catalogue arose from the "personal" and "tools and equipment" groups. To try and align catalogue and artifact group tables, I had the "personal" group encompass artifacts associated with jewellery and personal adornment, health and hygiene, medicine, and writing. The "clothing" group encompasses clothing and shoes. The "tobacco pipe" group tallies the total amount of pipe stems and pipe bowls. The "activities" group incorporates many kinds of actions that are attributed to these types of artifacts like games, agriculture, animal livery, fishing, hardware, and sewing.

A few errors were noticed in the artifact catalogue concerning the faunal analysis for Feature 12. The report states that there are 1770 faunal artifacts, but when the faunal artifacts are added up in the catalogue there are actually 1772. The faunal analysis is described to be a focused analytical summary of "what species and body portions were present in the bone refuse of Feature 12" (ASI 2008:31), where the faunal catalogue grouped all material together without reference to the original quadrant provenience. Consequently, I am unable to perform a quadrant analysis for this specific artifact group, so the declared amount of 1770 faunal artifacts will be used in this research.

Other issues were also found in the ceramic and non-ceramic catalogues. One error concerns the strata breakdown for Feature 12. The report discerns multiple strata (ASI 2008:11), reproduced here in Figure 3.3 (see Appendix B). But instead of presenting artifact data by quadrant in the catalogue, it is presented as lump-sum totals, not sorted by

strata. In effect, this research is only able to consider Feature 12 as having a single stratum. Second, the ceramic and non-ceramic catalogues begin to list their associated artifacts under the provenience of "Unit: 490 190; Feature: 12; Quadrant:1" (ASI 2008: Ceramic Artifact Inventory, pg10; Non-ceramic Artifact Inventory, pg11), but the other quadrants are not explicitly listed with any heading and are left blank. After reviewing the matter with Eva MacDonald from ASI (Personal Communication, October 13, 2017), this was found to be an error pertaining to their internal database software that did not generate a new heading for the new quadrant numbers. Luckily, the quadrants were listed in sequence, so this problem was mitigated easily.

An interesting cultural feature that was not included in this thesis research will be briefly discussed. ASI employed a unique excavation technique on "Feature 11," determined to be a "dairy or other farm outbuilding" (ASI 2008:6). ASI determined (2008:6-11) that this "pit would have provided a cool and relatively dry storage place for perishable foodstuffs," ascribing this particular feature with cellar-like definitions as I described in Chapter 1. This feature was described by ASI (2008:6; see Table 1 in the report) to be the largest feature on the site, measuring 796 cm long by 380 cm wide and 122 cm deep, with the plan and profile shape defined as "rectangular, flat basin." This feature also had two "wings" on the south-east and south-west corners that added to the overall length of the feature, as seen on the surface plan view drawing (see Appendix B: Figure 3.4). Due to this feature's size, ASI opened (ASI 2008:6) a "preliminary 50 cm wide trench… across the middle of the feature to determine its depth and the nature of the fill." Interestingly, this feature was divided into quadrants and only two opposing quadrants were excavated stratigraphically to subsoil to "document the construction technique and obtain a sample of 50% of the feature's artifacts" (ASI 2008:6; see Appendix B: Figure 3.5 for post-excavation photograph of Feature 11). Effectively, then, ASI applied the S&G standard for large cellars to this feature. As ASI did not identify this feature as a cellar, and because only two quadrants were excavated, this cultural feature was not selected for further analysis here.

3.2.2 Dennison Site, AkGw-334

The Dennison site was discovered and excavated by ASI, who conducted this work for a private proponent planning to develop agricultural land into an urban subdivision. The site is located on a 100-acre parcel of land in Chinguacousy Township originally granted to the Canada Company in 1832 (2014:5). ASI determined that by 1837, Robert Dennison was likely residing on the property before official records listed him as the property owner (ASI 2014:5). This was found in the "1838 Assessment Roll," noting that 15 acres of land were cultivated, suggesting to ASI that the process of "clearing the property of timber and bringing it into agricultural production had probably started within the last five years" (ASI 2014:5). In 1841, Robert Dennison was officially deeded the west half of the original 100-acre parcel, and he in turn sold the south half of that parcel to his brother-in-law John Wiggins in 1842 (ASI 2014:7).

The Dennison family residence was reported to be a one-storey log house in the 1851 census, and the 1861 census noted the original log house had been upgraded to a one-and-a-half storey frame-house (ASI 2013:7). Interestingly, the 1877 *Historical Atlas of Peel County* did not register the Dennison family's domestic structure in the same location on the northwest quarter of the lot. ASI infers "that the house had not been removed" but census data simply "overlooked the modest frame structure" (ASI 2013:7). Up until Robert's death in 1883, 45 acres of land had been improved upon for agricultural production and domestic living.

ASI's Stage 2 pedestrian survey of the Dennison Site yielded 97 artifacts from a concentrated area. The extent of artifacts defined the potential site boundaries and indicated the chronological association of the site as matching the historically documented duration of the Dennison family occupation of the property. One year later, ASI began a comprehensive combined Stage 3 and 4 salvage excavation of the Dennison site. The Stage 3 investigations began with a second controlled surface collection to locate the "precise extent" of the archaeological site, discovering a "diffuse" scatter of 1335 artifacts covering an area of 75 by 75 metres (ASI 2014:2). ASI notes that the size of the artifact scatter was "nearly three-times that of a typical mid-nineteenth century

rural domestic site in southern Ontario" (ASI 2014:2; see also MacDonald 1997: Table 1). The site was then further explored using a five-metre square recording grid and 28 one-metre square test units. The presence of higher artifact yields located east of the central datum point provided evidence to focus further investigations for the original location of the Dennison's home lot. Fieldwork decisions were notably informed by "statements made in the 1993 Stage 1-3 *Technical Guidelines*" (ASI 2014:2, original emphasis).

ASI's Stage 4 investigations revealed 72 features, of which 61 were identified as being cultural in origin (see Appendix B: Figure 3.8). As ASI describes (2014:5), 3475 square-metres of plough zone were removed from the site using a Gradall excavator. Further work confirmed the 61 cultural features corresponded to the Dennison's settlement pattern, described by ASI as (2014:24), "remarkable for the detail it provides to the layout of the domestic homelot." Of the 61 cultural features, 42 of them were determined to be fence posts that delineated the working farmyard from the domestic lot. All features were also recorded using the same methodology as the O'Connor site, with the only exception, noted by ASI (2014:5), being animal burials "which were left within a pedestal of soil and excavated using fine hand tools in order to prepare detailed drawings of the articulated remains." The features that comprised the Dennison homelot were animal burials, post holes, refuse pits, two cellars, refuse-filled depressions, a drain, and a barn footing (ASI 2014:7-8, see "Table 1: Historical Feature Summary, Dennison Site (AkGw-334)"). All were excavated 100% except for the drain (ASI 2014:5). Once site excavations were completed, an artifact analysis was conducted using the Canadian Parks Service (1992) "Classification System for Historical Collections."

The analysis conducted by ASI used the same artifact groupings the company used in analysing the O'Connor site— see Appendix A: Table 3.3 for the Dennison site results. Two of the cultural features were identified as cellars, relating to the two houses built by the Dennison family (Feature 38 and Feature 45; ASI 2014). These features were identified as cellars "based on a comparison of their morphology and contents with other reported cellars in southern Ontario" (ASI 2014:10; see Appendix B: Figures 3.7 & 3.8 for plan and profile drawings and pictures; See MacDonald 1997: Table 5). Both features

were excavated in halves rather than quadrants due to their "relatively small size[s]" (ASI 2014:10). Feature 38 is noted to have a "small outshot of foundation stones" (ASI 2014:10; see Figures 3.5 & 3.6), relating to an access point into the cellar itself. According to ASI's catalogues, the combined total number of artifacts found in each cellar features amounts to 4088; 507 artifacts from Feature 38, and 3581 from Feature 45. This number comprises of 57.33% of the entire Dennison site artifact assemblage.

The Stage 3 and 4 excavations resulted in the total recovery of 7,130 historic-era artifacts. ASI determined that the kitchen/food related class of artifacts contained 55 unique ceramic vessels relating to the mid-nineteenth century. A total of 16 vessels were identified in Feature 38; most being refined white earthenware vessels exclusively found under the original log cabin (ASI 2014:34). In contrast, 19 vessels were found in Feature 45, with most being ironstone vessels, which were believed to be attributed to the "frame home enumerated in the 1861 census" (ASI 2014:34).

Much like my efforts with the O'Connor site catalogue, the Dennison site catalogue proved challenging. The Dennison site catalogue employed a new typology of unidentified artifacts, namely the "other" class. ASI does comment on what kind of potential types of artifacts these consisted of, but the catalogue does not explicitly say what artifact group unidentified artifacts belong to in "Table 2: Artifacts from the Dennison (AkGw-334) Site by Functional Class and Provenience" (2014:24-25). Although this table includes only three artifacts under the "other" classification, my breakdown of the catalogue yielded 379 artifacts (see Table 3.3), comprised of either metal, glass, or clay. Since I am unable to discern to what artifact group they were assigned by ASI, I have grouped them within an Indeterminate/Unidentifiable Group.

One noticeable formatting error was found in the catalogue concerning artifacts found in Feature 38. In both the ceramic and non-ceramic inventories, there is repetition of catalogue numbers 1760, 1761, and 1762 in the east-half fill layer. The ceramic catalogue lists the ware, motif, and form to be types of ceramic, but the comments describe three scythes, one fireplace grate, and one axe head (ASI 2014: Appendix A, pg4). The non-ceramic catalogue lists the same catalogue numbers and object identifications (ASI 2014: Appendix B, pg3). This was interpreted as another error with the internal database

programme, and the artifacts were only counted once in my analysis under the non-ceramic heading.

3.2.3 Peter Edwards Site, BaGv-79

The Peter Edwards site was excavated by New Directions Archaeology Ltd. (NDA), who conducted this work for the Ministry of Transportation Ontario as part of a project to widen Highway 400 in York County. This site was considered to have cultural heritage value or interest through Stage 1 and 2 assessments completed by URS in 2009 and 2013, respectively (NDA 2016:i). NDA (2016:4) "completed additional archival research to supplement the information provided by URS." NDA reaffirmed the one-storey log cabin had many residents since the site's first recorded information dating back to 1846, with the Edwards family maintaining possession from 1856 AD to 1880 AD.

The land was first allotted to Hugh Howard in 1803, and the Edwards family bought the west half of the original 200-acre lot in 1856 from Clarkson Hughes (NDA 2016:5). The Edwards family cultivated their land, harvested crops, pastured animals, and tended to an orchard and garden. The eventual demise of the one-storey log cabin, the Edwards family residence, was gleaned from mortgage records and the rise in property value, evidencing the construction of a new home during the mid-1870s. The property was kept in family hands until the eventual death of Peter Edwards 1885 (NDA 2016:6).

URS's Stage 2 test pitting of the Peter Edwards site yielded 66 "Euro-Canadian" artifacts and three faunal artifacts, as well as identified an intact stone-lined well on the property (NDA 2016:7). The artifact assemblage was dated between circa 1840 and 1860.

URS's Stage 3 investigations of the Peter Edwards site employed the hand excavation of "[23] one-metre square topsoil units" on a five-metre grid, yielding "nearly 3000 Euro-Canadian artifacts" and identification of several cultural features including a "large oval depression" thought to be a "root cellar or a sub-floor pit" (NDA 2016:8). This particular oval depression is noted to be "devoid of surface vegetation and that the surrounding surface area was covered in field stone" (NDA 2016:8). According to NDA (2016:8), the

Stage 3 artifact assemblage now tentatively dated the Peter Edward's site to the mid-nineteenth century, notably "1830s to 1860s."

NDA began Stage 4 work by excavating five trenches one metre in width "to establish the site stratigraphy and identify changes in artifact concentrations across the site" (NDA 2016:9). These trenches were "strategically placed to allow for comparisons to be made between the possible midden context and the remainder of the site;" two placed along the north-south grid lines and three along the east-west. NDA further utilized URS's Stage 3 5-metre grid and began hand excavating one-metre square units in areas of high artifact concentration, resulting in the total excavation of 73 one-metre units that yielded 9,140 artifacts (NDA 2016:10). After confirming that "no midden was present at the site" (NDA 2016:9), a Gradall excavator mechanically removed 970 square metres of remaining topsoil to reveal seven cultural features and three post moulds. Features included a drainage trench, an agricultural cairn, a stone-lined artesian well, a sub-floor pit/cellar (Feature 8; see plan view drawing and photograph in Appendix B: Figure 3.9 & 3.12), and three refuse-filled pits and depressions (see Peter Edwards site cultural feature map in Appendix B: Figure 3.11). The total number of artifacts found in these features amounted to 8,157, with Feature 8 comprising 97.39% of this total.

NDA discovered a total of 17,304 artifacts from the Peter Edwards site, and the types of artifacts that comprised site assemblage are: foodways (glass storage container, utensil, tableware, flatware, ceramic storage container); architectural (construction material, hardware, window glass); activities (agriculture, barn equipment, tools, writing); arms and military; organics (faunal and floral); domestic activities (sewing); personal (apparel, currency, grooming and hygiene, smoking); recreational (leisure and toys); precontact (formal lithic, informal lithic, lithic debitage); and unclassifiable (ceramic storage container, glass storage container, hardware, miscellaneous) (see Table 3.5). Although Feature 8 is initially interpreted as a "large refuse pit/midden" with an "oval to rectangular" shape (2016:24; see Table 14), the artifacts recovered from it helped determine that this feature was "likely a cellar or sub-floor pit" (2016:27). NDA (2016:12) modelled their artifact classifications after the Canada Parks Classification system for Historical Collections (Parks Canada Service 1992) and determined that Peter

Edwards artifact assemblage aligns with “rural farmstead” occupations between “1830 and 1870” (NDA 2016:i).

The artifact catalogue for the Peter Edwards site was provided as an extra file in Microsoft Excel format, differing from ASI’s all-inclusive final report in Adobe PDF format. The catalogue itself was very informative, using 23 different columns to help record and describe each artifact. Unfortunately, there were some notable discrepancies. First, the report declares (NDA 2016:13) that there are 12 lithic artifacts found in Feature 8; six in the SW quadrant, five in the NW, and one in the “east.” For this research, I am unable to place the one lithic artifact noted in the east half of Feature 8 under my quadrant breakdown, so only 11 lithic artifacts are considered here.

One noticeable difference between NDA’s catalogue systems and those used by other companies in this research is that NDA determines most ceramic “foodways” class artifacts as “tableware (unidentifiable).” While the “foodways” class artifacts are almost all determined to be unidentifiable in terms of “object type” and “object name,” these artifacts are differentiated by their “material” and datable attributes,” like “pearlware; annular banded” and “whiteware; painted sprig.” This focus on datable attributes is mirrored in NDA’s report, where section 3.1.2.5 “Foodways” discusses the frequency of “dominant ware types” as a deductive means to determine an approximate date range for the Peter Edward’s site occupation (also see Table 8; 2016:15-19,28). Other foodways “object types” are ceramic storage containers, flatware, glass storage containers, glass tableware, and utensils (NDA 2016:15-19).

Feature 8 was determined by NDA to “…most likely” be a cellar or sub-floor pit and was fully excavated by quadrant to record profiles and stratigraphy (2016:27). The concentration of artifacts was found to be in the middle of the cellar, with “very few artifacts noted near the bottom of the feature,” which NDA determines are “suggestive of infilling practices following the dismantling of the structure” (2016:27). This feature was noted to have “highly mottled soils” containing charcoal, rust staining, and brick fragments (NDA 2016:27), along with an artifact assemblage comprised of mostly foodways and architecture classes. The presence of artifacts related to domestic activities,

furnishings, personal and recreational classes of objects is also noted to support the domestic use of this feature (NDA 2016:27).

According to the catalogue, two of the four quadrants were excavated in two "lots"— or strata— while the other two were excavated in lumped lots. NDA provided two profile drawings of Feature 8 along the east-west and north-south lines, which portray only one stratum throughout (see Appendix B: Figure 3.12). One profile photograph is included in the report, which confirms the two strata defined in the catalogues (see Appendix B: Appendix B: Figure 3.10). The report only discusses artifacts using a lumped artifact yield for all quadrants, determining that Feature 8 contained "a single layer of highly mottled clay suggesting a single filling episode following the demolition of the structure" (NDA 2016:31).

3.2.4 Location 1, AkHj-17 - "Durst Pit" Site

The Durst Pit Site was discovered and excavated by Timmins Martelle Heritage Consultants Inc. (TMHC) in the township of Colborne— now known as the Township of Ashfield-Colborne-Wawanosh— Huron County. TMHC conducted Stages 1 through 4 for a proponent planning to develop the land as an aggregate pit. Historical research conducted by TMHC discovered that the original 100-acre lot was issued to the Canada Company in 1832 and was purchased in the same year by Michael Fisher (TMHC 2017:7). The land remained farmland over the course of the 19th and 20th centuries, with the property being resold every few years (TMHC 2017:7-8). The analysis of artifacts and site features from this site are interpreted as providing a rare glimpse into a short-term occupation of a young family's life during the mid-nineteenth century.

TMCS's Stage 2 field survey discovered artifacts dating to a pre-1900 period (TMHC 2017:1). Preliminary analyses of Stage 2 findings determined a period of occupation between 1840 and 1865, correlating best with one of the six families registered to have been living on the land— namely that of William G. Lamprey. Historic records state that Mr. Lamprey resided on the land with his wife Anne, and their two Canadian born

children between 1859 and 1864, fitting well within the proposed cultural period of the Stage 2 field collection of artifacts.

TMHC's Stage 3 investigations started in 2015, consisting of a controlled surface pickup (CSP) of artifacts. A five-metre square recording grid was employed to excavate 39 one-metre test units across the site area systematically. These investigations confirmed the presence of a mid-nineteenth century archaeological site, revealing three potential cultural features (TMHC 2017:17).

Stage 4 investigations expanded upon the four highest artifact-yielding Stage 3 units, excavating 24 more one-metre units by hand. TMHC employed mechanical topsoil stripping to further reveal "15 soil stains," resulting in the identification of 10 cultural features, namely refuse pits, indeterminate pits, a stone-lined well, an ash dump, a ditch, and a "possible cellar" (TMHC 2017:17; see Table 6 in the report; see also Appendix B: Figure 3.14). The cultural features were excavated by halves and quarters to "record the feature profiles," and soil samples were collected from each feature, especially the cellar (THMC 2017:13). The total artifact yield from the Durst Pit site was 1161 artifacts, with a total of 502 artifacts recovered from unit excavation and 659 artifacts from cultural features. The highest grossing artifact classes were comprised of "Food & Beverage" (562 artifacts), "Architectural" (219), and "Floral and Faunal" (136), making up about 79% of the total assemblage (TMHC 2017:14; see Appendix A: Table 3.7). The Native Group is used to categorize lithic artifacts, none of which were found in the cellar feature.

Feature 15 was identified as a possible cellar (see Appendix B: Figure 3.15 for plan view photograph and drawing) and was hand-excavated in opposing quadrants to expose two profiles. Interestingly, the profiles of the first two quadrants revealed the presence of one shallow basin along its length, whereas the width was comprised of two deeper basins (TMHC 2017:22). Feature 15 was noted as being "the most productive" with 256 artifacts, consisting of architectural (70 artifacts), faunal and floral (68), food and beverage (45), clothing (19), and smoking pipes (16).

According to the artifact catalogue, this feature was initially bisected into east and west halves along a "surface" stratum and was then separated and further excavated into quadrants. Only the east half of the surface stratum is reported in the catalogue, at a depth of 0cm and yielded 31 artifacts. The rest of the cellar, reported in quadrants, is indicated at a depth range of 0-15cm, and the corresponding artifact yield is reported to be only 221 artifacts. The following research will consider the 221 artifacts reported since they were excavated using the quadrant methodology suggested in section 4.2.7 of the S&Gs. TMHC notes that this feature resulted in many "small finds artifacts" indicative of "their indoor use" and having fallen between the cracks in the floorboards; like sewing needles, buttons and fasteners, and smoking pipes (TMHC 2017:23).

Also, according to the report and catalogue (TMHC 2017:115-118), Feature 15 was excavated to a depth of 75cm but the artifacts were noted to be primarily in the "upper 20cm of feature fill" (TMHC 2017:22), although the catalogue records "0-15cm" as the "level 1" depth. TMHC also indicates that the "high quantity of architectural (n=70) and faunal remains (n=66) [are] characteristic of a cellar assemblage, a type of sub-floor pit" (TMHC 2017:23). This feature's shape differs from the other cellar types because it has two "deeper basins" grouped together as a single cellar context (TMHC 2017:22). The artifact catalogue uses much of the same terminology as other CRM reports used in this research, except for kitchen class artifacts under a column defined as "object" (TMHC 2017:105-119). This column refers to the artifact's form, sometimes distinguishing ceramic artifacts as either saucers or plates, or sometimes as flatware or tableware. TMHC provides a summary of the identified tableware vessels in Table 8 in the report (2017:25).

3.2.5 Location 3, AfHh-421 - "Topping Farm" Site

Location 3, or the "Topping Farm" site, was one of four sites discovered by TMHC on a single property in the Township of Westminster, Middlesex County— which is now considered inside the municipal boundaries of the city of London, Ontario. TMHC conducted this work for a private proponent planning a new subdivision development.

Historical research conducted by TMHC found that this original 200-acre plot of land was initially sold to Peter Swartz in 1835, who then severed it into two 50-acre plots and sold them to two other land owners the following year (THMC 2016:8-9). According to the region's land registry database, TMHC found that David Dale purchased both 50-acre plots in the early to mid-1840's, but the census data did not corroborate this information (THMC 2016:9). Further research by TMHC found that John Dale, David's son, is reported to have lived in a structure on the property in 1878, but was also found to have worked on the property while it was owned by his father, so the site was hypothesized by TMHC to be attributed to John Dale's residency, or maybe another tenant farmer living on the property in the 1860s (TMHC 2016:6-7).

TMHC's Stage 2 field survey found that the Topping Farm site's artifact concentration consisted of "over 350 19th century artifacts dispersed over a 30 metre by 30 metre area," with a collected sample of 213 of those artifacts establishing a chronological period between c. 1840 to 1865 (TMHC 2016:7).

TMHC's Stage 3 testing consisted of a "controlled mapping of surface artifacts and hand excavation of 39 one-metre units" (TMHC 2016:7). TMHC notes that the 3394 artifacts collected on the surface during the controlled mapping process was a larger amount than noted in Stage 2 (TMHC 2016:7). The one-metre unit excavations yielded two potential cultural features in a single unit, and taken with the Stage 3 artifact assemblage, tightened the hypothesized date range of the site from c. 1840 to 1860 (TMHC 2016:7).

TMHC's Stage 4 investigations were guided by advice from the MTCS since the site post-dated 1830 and "no intact middens were identified during the Stage 3 testing" (TMHC 2016:11-12). The MTCS recommended that the site be machine-stripped of topsoil to determine if other sub-surface cultural features were present and to map the extent of the site (TMHC 2016:7-8, 11-12). This process led to the discovery of 54 "soil stains," resulting in a total of 17 identified cultural features (TMHC 2016:12; see also Appendix B: Figure 3.16). TMHC excavated these cultural features stratigraphically by

halves or quarters to record the feature profiles, and all soils were screened using 6mm mesh (TMHC 2016:11).

The analysis conducted by TMHC identified a range of artifact groups, found in Table 3.9 (see Appendix A), and focused on discussing each cultural feature's contents. TMHC's Stage 4 report does not explicitly define different artifact groups used in the report, but this information was gleaned from the artifact catalogue. Concerning the entire site assemblage, 88.64% of the artifacts were comprised of "Faunal and Floral," "Architectural," and "Food and Beverage" groups. Food and Beverage Group artifacts are determined as either ceramic tableware, ceramic utility ware, utensils, glass tableware, or glass beverage containers; and are further broken down into different types of objects, which are used in Table 3.10 (see Appendix A).

The other 11.36% of the artifact assemblage belongs to group classifications like "Activities," "Clothing," "Dental," "Fuel," "Health and Hygiene," "Lighting," "Native," "Personal," "Smoking," "Unassigned Material," "Modified," and "Unknown." The Dental classification was used to categorize the finding of a human tooth in Feature 34. Artifacts interpreted under the Modified Group consist of glass artifacts with notable edge reworking (TMHC 2016:124,127). The Personal Group included artifacts like slate pencils and tablets, lice combs, as well as drug and pharmaceutical bottles. The other groupings have been previously outlined in previous sections of this chapter, and all groups have been reorganized to fit the comparative needs of this research (see Table 3.10). The only artifact class not previously encountered was the Dental Group, and the single human tooth was placed under the Personal Group.

Two cultural features were identified as "potential cellars" because of their "…large size, shape, and/or artifact assemblage" (TMHC 2016:ii). Both cultural features were excavated using the quadrant methodology, as per the S&Gs, and are noted to be "relatively small and shallow," relating to shorter occupation periods (TMHC 2016:32). Both cultural features are also noted to have had soil samples collected, as per the S&Gs (TMHC 2016:11).

The first cellar was identified as Feature 27, defined as an irregularly shaped soil discoloration on the surface that contained three strata, designated A through C (see Appendix B: Figure 3.17). Feature 27C, the deepest stratum, was identified as an animal burrow, but strata A and B were attributed to the period of use of the original cellar due to the artifacts found in the two levels, including high counts of kitchen, faunal, and architectural artifacts. Stratum 27A yielded 142 artifacts, and 27B yielded 40 artifacts, resulting in a combined total of 182 artifacts. Stratum B was not represented equally in all four quadrants. Stratum B, in this case, is shown to be excavated in halves, with the catalogue recording the two halves as "F 27B NW 1/2" and "F 27B SE 1/2" (THMC 2016:127-128). These two halves are noted here to be opposite quadrants of each other, with no explanation as to the reason. The recorded depths for Strata A and B also show some inconsistencies, where Stratum A NW is measured at 0-20cm, and Stratum B NW are 8-33cm (TMHC 2016:127), overlapping each other by twelve centimeters. "Stratum C" (TMHC 2016:19) is listed in the catalogue as Stratum B, level 3, at a depth of 47-64cm (TMHC 2016:128). All three strata are used in this research since the combined number of artifacts from this cultural feature are all included in the final artifact count for the Topping Farm site.

The next cellar feature was Feature 34 (Appendix B: Figure 3.18), a pear-shaped feature with a basin-like profile. Feature 34 was noted as the "…richest feature" from this site with 1006 artifacts, of which 515 derived from a float sample taken from one of four quadrants, according to both the artifact and faunal catalogues (TMHC 2014:21). Although the S&Gs section "4.4 Collecting soil samples for analysis," Standard 3, dictates that post-contact non-aboriginal domestic sites require soil samples to be collected "from each root cellar quadrant" (MTCS 2011:88), the contents of catalogues fail to confirm this. The types of artifacts found inside Feature 34 were noted as indicative of a sub-surface cellar usually found below the floorboards of a house due to the high number of "small finds" in the assemblage (THMC 2014: 26). One caveat to the artifact assemblage was noted, as the date ranges for artifacts were indicative of "time

lag," where some ceramic vessel dates were found to be from a much earlier time period than previously attributed to the site (TMHC 2016: 26).

3.3 Preliminary Analysis of Cellar Datasets

As the above case studies have shown, cultural features that were interpreted to be a type of cellar were excavated by all consultants as per the S&Gs, except for the Dennison site cellars which were excavated in halves. CRM practitioners in Ontario implement these excavation parameters based on a set of conventional characteristics that differentiate a cellar feature from other types of cultural features. By understanding what kinds of cultural features were assumed by the consultants to be or possibly be cellars, and thus excavated accordingly, we can ascertain how S&Gs Standard 4.2.7 is employed in the field, and how that standard affects the resulting data recovered from those features; especially when the 50% minimum strategy is employed. As a first test of the impact of this standard on nineteenth century domestic sites, I will review the conventional characteristics of cellar features against the cellars identified in this research, using the cellar's dimensions, plan and profile shapes, and the gross totals of artifact groups.

3.3.1 Gross Artifact Totals from Cellar-Designated Features

The conventional characteristics of a cellar suggest that cellar features will contain a large portion of a site's total artifact assemblage. Table 3.11 (see Appendix A) presents the percentages of gross artifact yields pertaining to each site and each cellar context. As seen in this table, cellar features can have a wide variation in the number of artifacts found inside each context relative to the overall site assemblage; the greatest amount coming from the O'Connor site with 53.80% and the lowest amount found in one of two cellars at the Dennison Site with 7.10%. Three out of the five sites in this research contained one cultural feature interpreted as a cellar, with two of those containing more than 50% of the entire site's artifact assemblage, namely the O'Connor and Peter Edwards sites. On sites with two cultural features interpreted as cellars, namely Dennison

and Topping, both exhibit a similar pattern where one site's cellar context contains more artifacts than the other; and, as mentioned in the above case studies, at each site the two cellars represent distinct periods. At a gross yield level, however, it is worth noting that both Dennison and Topping consist of over 50% of the overall artifact yield for each site; and that the earlier dated cellars— Features 27 and 38—yielded fewer artifacts than the latter dated cellars on the same site— Features 34 and 45, respectively.

Table 3.11 helps exemplify the conventional notion that cellar features do contain a large portion of a site's artifact yield. The average percentage of artifacts from a cellar feature against the total site's assemblage is 43.2%, with a standard deviation of about 19.4%. The standard deviation of this magnitude simply underscores the low yields in the earlier cellars from Dennison and Topping Farm sites, and low number of artifacts from the Durst Pit site cellar.

The variable quantity of material found inside each cellar could have been the result of several factors, e.g., the timespan of the site occupation or the use of the cellar, the size of a family group, the type and function of the cellar, post occupation deposits in the cellar; or perhaps the misidentification of the cultural feature as a cellar. In general, the cellars used in this study contain lots of artifacts, though this broad generalization may mask a range of distinct formation and deposition processes.

Notably, the multiple cellars from each of the Topping Farm and Dennison sites show variability in frequencies, with each of the earlier dated cellars yielding less artifacts than the later dated ones. The presence of multiple cellars on a site presumably reflects a relocation of residence during the life of the site's occupation, or perhaps the changing needs of the household residents. According to my dataset, the relocation and continued use of a domestic residence space as reflected at Topping Farm and Dennison at least hints at an absence of fill-based infilling of the abandoned cellars. In other words, the earlier cellars are filled in and levelled off, preventing an open pit from interfering with later spatial use of residence space, but that infill does not appear to include a great deal of post-occupation material, contributing to subsequent feature artifact counts. Likewise,

the Durst Pit cellar only reflects a short-term occupation, and has a low representation of kitchen group artifacts. Generally, the time in a cellar's use-life that would accumulate events of kitchen group artifact discard would be during the later in-use phase, best correlating to a time when the cellar is no longer used for cold storage and serves to discard refuse until it reaches ground level. So, the Durst Pit cellar's artifact yield might reflect an absence of this particular in-filling phase of a cellar's use-life because the feature was in-use for such a short term. In effect, the variation in artifact frequencies among these short use-life or "replaced" cellars suggests there are specific depositional processes that shape and need to occur over the life of that cellar in order to manifest a large artifact assemblage. So, the assumption that cellars contain a large quantity of material is more an assumption that all cellars follow a similar use life, than a certainty of archaeological deposition.

While temporal factors may affect assemblage size, it is also worth considering the characteristics of these features that lead the investigating CRM archaeologists to approach these features as cellars. It is not the purpose of my research to reinterpret these archaeological findings, but rather to understand what attributes triggered S&G Standard 4.2.7 for these features. This consideration of attributes will elucidate the set of choices made by CRM companies to excavate what are considered to be "larger cellar features."

3.4 Cultural Feature Comparison

The conventional characteristics of a cellar feature reviewed in Chapter 1 imply that cellars will be larger than other more common types of cultural features found on nineteenth century domestic sites, such as post-molds and refuse pits. This difference indicates that cellars are typically understood as deep and large sized cultural features because of the nature of their use, designed to provide in-ground cold storage used by early settler populations. Importantly, however, because the final version of Standard 3 adopted in Standard 4.2.7 is exclusively to be applied to "…larger cellar features…" by implication the standard should not be applied to any other large features that do not specifically conform to the concept of "cellar."

For this study, I compiled artifact yields by feature type for each designated feature type across each site (Appendix A: Table 3.12) and compiled the variable measurements and shapes of each cellar's plan and profile views (Appendix A: Table 3.13), as reported in each CRM report.

Table 3.12 readily illustrates that cellars are the highest artifact-yielding cultural features on nineteenth century domestic sites. Table 3.12 conveys the different types of features and their artifact yields from each site using terminology from each CRM report. Only three features that were not designated a "cellar" contain artifact counts comparable to or in excess of cellar yields. This includes a "…dairy/other farm outbuilding" from O'Connor, a "…drain" from Dennison, and a "…refuse/ash pit" from Topping Farm.

The O'Connor site dairy feature was also found to exhibit cellar-like qualities, notably a rectangular shape plan view and flat basin shape in profile view. Like the cellar on the same site, the dairy contains both a stone-lining and flat flooring stones and yields the second highest number of artifacts on the O'Connor site (see Table 3.12). ASI's crew felt the dairy feature was too large to excavate fully, so they adopted an alternative excavation plan using an exploratory 50 cm trench down the middle, followed by excavation of two opposing quadrants (ASI 2014:6). Of the 1882 artifacts recovered from all three strata of this feature, 632 (33.6%) of the feature's total assemblage are related to an architectural class (ASI 2014:6). The large size of the dairy feature clearly limited the amount of archaeological excavation conducted, even though the feature was not designated a cellar.

Topping Farm's Feature 29, a "refuse/ash pit," was excavated fully but by halves. The CRM report details that the feature "…had a circular [plan] shape with an ashy concentration of soil within a larger circle of dark brown clay soils," and the profile shape was a "…layer[ed] basin" that contained two strata (TMHC 2014:20). The CRM report also details that "…based on the shape, layering, and abundance of faunal and floral remains…[it] is likely a refuse and ash pit…" (TMHC 2014:20). This feature is noted to

contain the second highest number of faunal artifacts on the site, with only the cellar yielding more. The measurements of this feature are found in Table 3.14, determining its plan dimensions are comparatively larger than the cellar, though not as deep. According to the report, this feature's determination as "not a cellar" seems to correlate to the circular plan shape and ashy concentration of soil inside a larger circle of dark brown clay soils (TMHC 2016:20).

Finally, a 21.6-metre-long drain from the Dennison site extends from the southwest corner of Feature 38, one of two cellars on the site. The presence of a drain indicates an improvement to Feature 38, whether it was part of the initial construction of the cellar or added later. The drain was only partially excavated— 20% of the feature, consisting of five sections about five metres apart and the results yielded the third-most artifacts found in a cultural feature on the site, mostly consisting of "…organic remains or kitchen/food items..." (see Table 3.12; ASI 2014:10). The combination of this feature's long length, shallow profile, and apparent connection to a cellar indicate its determination as "not a cellar," but this brings an important notion to mind, notably, should an adjoining drain be considered as part of the cellar or not? The contexts are fundamentally linked, so should one context merit a different excavation strategy than the other?

More generally, for the sample of sites examined for this study, consultants imposed a series of cultural feature shape characteristics and assumptions of function in order to determine whether a "large" cultural feature was or was not a cellar. For large features with robust artifact yields not assumed to be a cellar, the CRM crew felt alternate excavation strategies could be employed, whether the feature was similar in shape to a cellar (e.g., O'Connor), or clearly functionally a part of the depositional history of an adjoining cellar (Dennison).

3.4.1 Rectangular shaped plan view cellars

Turning to feature shape detailed in Table 3.13, the largest plan view measurements of a cellar feature are from the Peter Edwards site measuring 352cm long by 286cm wide, and

the smallest from the Topping Farm site, notably Feature 34, measuring 137cm long by 114cm wide. The deepest cellar is the Durst Pit cellar at 75cm deep, and the shallowest cellar is Topping Farm's Feature 34 at 22cm deep. The most commonly described feature shape is rectangular in plan view and basin in profile view, with four of seven features described generally in this manner.
The following discussion explores some common characteristics exhibited between cellars sharing the same plan and profile views, as per the characteristics listed in Table 3.13.

The O'Connor, Peter Edwards, Durst Pit, and Dennison site's cellars were all identified as rectangular-shaped plan views and basin-shaped profile views. Comparatively, the Peter Edwards and O'Connor site cellars have the two highest artifact yields in this sample versus the Durst Pit and Dennison 1 cellars having some of the lowest yields. Though all identified as having roughly the same kind of shape, these four cellars also exhibited distinct feature characteristics summarized below.

3.4.1.1 Stone-lined cellars

Of the four cellars with rectangular shaped plan views, only the Dennison and O'Connor site examples share the characteristic of a stone-lining (see Appendix B: Figures 3.5 and 3.6). This characteristic refers to the presence of stacked stones along the sides of the length and width of the cellar. The presence of a stone-lining relates to a set of choices made by the site's occupants either prior to or after the initial excavation of a cellar hole. The presence of a stone-lining in a cellar indicates a sense of what I would refer to as planned permanence, referring to any decisions to improve on the basic function of underground storage. Since both sites span longer occupations, the idea that these cellars were originally built or improved upon to maintain their long use is viable; opposed to other types of sub-surface storage choices that may afford less formal planning and construction, like sub-floor pits.

Along with a stone-lining, the O'Connor site cellar also contains other indicators of planned permanence, namely a stone floor and a box-drain. The slate-stone floor was uncovered in each of the four quadrants of the cellar, while the southeast quadrant yielded a box-drain that runs between the cellar and Feature 11, the dairy. The box-drain itself was noted to slope downwards from the cellar into the dairy, and then presumably down the hill to the creek (ASI 2014:11). The O'Connor cellar exhibits the most complex architectural characteristics documented for all the cellar features examined in this research.

The second stone-lined cellar is attributed to the earlier-dated Dennison site cellar, Feature 38 (or Dennison 1). Like the O'Connor site cellar, Dennison 1 contains other complex characteristics, notably a drain and an access-point in the cellar's stone-lined foundation wall. An access point in the side of the cellar, as opposed to the conventional characteristic that understands top-down access under the floorboards of a house or cabin, is evident due to an out-shot of stones in the foundation wall. It is unclear if the cellar was either originally built with a side-access in mind, if it was altered later, or was not under the house at all and had an earthen ceiling. However, its presence indicates a new cellar characteristic not found in other cellars in this research.

Apart from similarities in the stone-lined characteristics of these two cellar features, the artifact yield from the O'Connor site differed from Dennison's Feature 38. The former had over 50% of the entire site's artifact assemblage whereas the latter only contained 7.1% of the entire site assemblage, though the latter still represented the second most artifact rich cultural feature on the Dennison site (see Appendix A: Table 3.4 for Dennison Feature 38 artifact breakdown).

3.4.1.2 Non-stone-lined cellars

On the surface, the Peter Edwards site cellar is similar to the O'Connor and Dennison 1 cellars, though it differs in that it lacks characteristics of planned permanence like stone walls, stone floor, or a connecting drain. Although the Peter Edwards family is noted to

have lived in the area for a long period of time, indicators of planned permanence are seemingly not present. This aligns with the site's interpretation as an interim-site used by the Edwards family until they moved into a larger house-structure between 1875-1876 (NDA 2016:5-6).

The Peter Edwards site cellar artifact assemblage was dominated by kitchen, architectural, and faunal artifact groups, amounting to about 88.5% of the total, with the architectural group amounting to 32.4%, and small finds amounting to 3.1% (see Table 3.6). Based on this cultural feature's large dimensions and the composition of artifacts, it represents the conventional physical and content characteristics of a cellar but without the planned permanence features of the O'Connor and Dennison 1 cellars.

The last rectangular shaped plan view is from the Durst Pit site. Notably, this cultural feature does not exhibit characteristics of planned permanence, which could correspond to the shorter-occupation span of the site. This cellar's profile shape is only discernable along the length of the profile view (see Appendix B: Figures 3.15 and 3.19) and exhibits its own unique profile shape: a double pit—one shallow and one deep, around 35cm and 75cm, respectively. The Durst Pit site cellar is defined as a shallow basin with artifacts found closer to the surface (see Table 3.13), but interestingly, it represents the deepest cellar context in this research sample.

Counter to the conventions of cellars containing large portions of the total site artifact assemblage, the Durst Pit cellar only contains 22.1% of the total artifacts recovered from the site (see Table 3.11). Compared to other cultural features on this site, the Durst Pit cellar still represents the highest yielding cultural feature on the site (see Table 3.12). Architectural, faunal and floral, and kitchen artifacts make up 71.5% of this cultural feature's artifact assemblage. Architectural artifacts represent about 27.3%, and small finds artifact groups amount to about 16.4%, the latter amounting to the smallest finds from a cellar context identified for this research. Although the Durst Pit site is determined to be an example of a short-term occupation, this cellar contains some of the conventional physical and content characteristics anticipated for cellars; it was the largest sized and

highest artifact-yielding cultural feature on the site and yielded the largest concentration of architectural group artifacts in a single feature (See Appendix A: Table 3.8 for Durst site cellar artifact breakdown).

3.4.2 – Cellars with non-rectangular plan shapes

The remaining cellar features examined for this study exhibit shapes referred to as round, pear, and irregular; and all share the same basin profile shape (see Table 3.13). None of these features were noted to contain characteristics of planned permanence like the O'Connor site and Dennison 1 cellars, and each of these cellars exhibited unique attributes. All these cultural features were designated cellars in the CRM reports.

3.4.2.1 – Cellars with a round plan shape

The plan shape of the second cellar from the Dennison site, Feature 45 (or Dennison 2), was described as round (see Table 3.13). Although the Dennison 2 and the Peter Edwards cellars share the same descriptive physical characteristic—i.e. round/oval— both were determined to be cellars because of their similarities to anticipated conventions around size and content yields. The CRM report proposes that the Dennison 2 cellar was excavated during the construction of a newer frame house but considering the additions of planned permanence to the Dennison 1 cellar, it is interesting that the second cellar was not afforded the same design.

The Dennison 2 cellar contains just over 50% of the site's total artifact assemblage (see Table 3.11), dominated by kitchen, architectural, and clothing artifact groups. The kitchen artifact group—i.e. tableware ceramics, beverage containers, and cutlery—comprises 67.6% of this cultural feature's artifact assemblage. The architectural group was the second highest grossing artifact group and only amounted to about 3.4%, which is less than artifacts considered as small finds, amounting to about 5.1%.

3.4.2.2 – Cellars with an irregular plan shape

The last two non-rectangular plan shaped cellars are both from the Topping Farm site. Feature 27, or Topping 1 cellar, has an irregular plan shape and an adjoining "refuse-filled depression" that only contained one artifact, a machine-cut nail. According to the profile view drawings and the CRM report, it has a basin shape profile and is stratified, with each stratum yielding different artifact group percentages. Chapter 4 will discuss stratigraphy within defined cellar contexts, but it is important to note that this stratigraphic composition does not follow conventional cellar characteristics beyond cellar dimensions; even its maximum depth of 33 cm is well below the average (see Table 3.13).

Before the feature excavation began, Topping 1 was noted to have concentrations of brick and mortar on the surface (see Appendix B: Figure 3.20), an early indicator that would have presumably enforced assumptions that the feature would exhibit typically high amounts of architectural artifacts. Surprisingly, the architectural artifact group only amounted to 30 artifacts for the entire feature, or about 14.9% of the cellar's artifact assemblage (see Table 3.10, and Table 3.14: Feature 27). The only artifacts considered as small finds were three smoking pipe fragments, amounting to about 1.5%.

3.4.2.3 – Cellars with a pear plan shape

The second cellar on this site is Feature 34, or Topping 2, and has a pear-shaped plan view and was relatively smaller than Topping 1 (see Figure 3.20). It also measured much smaller than the average cellar dimensions for the sample used in this study (see Table 3.13 and Table 3.14). According to the CRM report (TMHC 2016:26), this feature was designated as a sub-floor cellar based on the "…types of artifacts found in Feature 34...," even though it was already not a "larger" cellar feature. Interestingly, other cultural features with larger dimensions than Feature 34 were not afforded the same classification based on their plan shapes and dimensions. This difference may indicate that the pear-

shaped plan may have led the field crew to assume it was a cellar based on professional judgement, although this is not specifically mentioned in the CRM report.

Although this cultural feature is comparatively smaller, it was still the highest artifact yielding cultural feature on the Topping Farm site, comprising 44.1% of the entire site's assemblage (see Table 3.11). Floral and faunal artifacts comprise 65% of the entire feature assemblage, with architectural artifacts consisting of 6.6%. Small finds artifacts amount to about 10.7%, which is the second highest yield seen among the cellar sample used in this research. The large number of floral and faunal artifacts was due to recoveries from a float sample but are subject to this analysis because they are noted to come from a single quadrant of Topping 2. Interestingly, there are more clothing buttons than all architectural artifacts put together.

3.5 Discussion, based on conventional cellar characteristics

Larger cellars are the only defined form of nineteenth century cultural feature that receives special direction within the S&Gs to reduce the level of documentation and recovery during CRM fieldwork. Conventional understandings are that cellars are large cultural features that contain a large—and potentially redundant— majority of a site's artifacts. The assumption also is that these features typically indicate the precise or close location of the original house or cabin residence that gave rise to this archaeological site.

Based on my review of the cellars sampled for this research, the conventional characteristics of a larger cellar feature are often represented by a rectangular-shaped plan that measures on average 293 cm long by 217 cm wide. Additionally, larger cellar features are ubiquitously represented by basin shaped profiles that measure on average 48 cm deep. Also, cellar feature artifact yield is determined to be, on average, 3069 objects, comprising on average 43% of the entire site's artifact assemblage. At this general level, some of the characteristics of the cellars examined for this study tend to conform to the implied assumptions for larger cellars shaping the S&G standard.

As noted in this chapter, some of the cellars examined exhibited differences in architectural design, notably the presence of stone-lined walls, stone floors, drainage, and side-access points— or what I have determined as indicators of planned permanence that may or may not also suggest these cellars were adjacent to, rather than underneath, a domestic residence. Along with the analyses from CRM reports reviewed, these features suggest some cellars exhibit a degree of planned permanence, presumably tied with longer periods of site occupation, whereas cellars from sites with shorter temporal spans are afforded less elaborate design (i.e. pit-like or basin-like holes).

Although a cellar feature may appear large on the surface— i.e., plan shape and measurements— this research has shown that this does not necessarily correlate to larger artifact yields. The Topping 2 cellar represents the smallest plan dimensions in my sample, yet it was the most productive cultural feature on the entire Topping Farm site. The S&Gs cellar excavation directives were applied to Topping 2 (i.e., excavation in quadrants), seemingly because of professional judgment based on the plan shape, since there is no indication in the CRM report that this cultural feature was considered larger. As well, deeper cellar contexts do not necessarily correspond to larger artifact yields. For example, the Durst Pit site cellar was the deepest cellar context documented in this sample, and yet yielded the second smallest number of artifacts.

The conventional understanding is that cellars, as a particular type of nineteenth century domestic feature, have large numbers of artifacts, and this can be corroborated through this research (Table 3.11). The cellar features account for more than 50% of a site's total artifact yield in my study sample except at the Durst Pit site. According to Table 3.12, cellars are the highest artifact grossing cultural feature(s) on a site, except for the earlier cellar at the Topping Farm site.

Considering the conventional expectations around architectural artifacts in a cellar assemblage, a larger quantity of this artifact group in a cellar-hole tends to suggest that the structure above the cellar was dismantled or destroyed and filled into the cellar, representing the final depositional event in the cellar's use-life. The Peter Edwards,

O'Connor, and Durst Pit site cellar assemblages all contain around 30% architectural artifacts. In comparison, the rest of the cellars in this research have a relatively lower representation of architectural artifacts, which may indicate these contexts had a different set of events that led to the final episode of their use-life, or perhaps that these cellars were not located underneath a residence, or otherwise not used as a disposal receptacle for architectural debris. In other words, there is a clear variation in the formation processes that led to the infill of cellars.

The cellars examined in this research sample exhibit a mix of the conventions mentioned previously and help underscore the variability in this feature type, notably between physical characteristics of cellar features, artifact yields and group assemblages, and the interpreted functions of this feature type during their use-life. The current application of the S&Gs standard for larger cellar features on nineteenth century domestic sites is ultimately determined during the Stage 4 process; and since all sites in this study were found in ploughzone contexts and date to after 1830, consultants followed the S&G direction in Section 4.2.3 (2011:78-79) to strip topsoil in order to expose any cultural features. It is once this point in the process has been reached that, generally, consultant archaeologists then assess potential cultural features in plan view before feature excavations start to decide whether to employ the cellar excavation standard.

According to the CRM reports examined in this research, there is no common assessment strategy during this phase, other than; macroscopically identifying features with lots of artifacts and taking soil samples for "…potential cellars…" to be assessed during post-excavation analysis (TMHC 2016:13' see also TMHC 2017:12); macroscopically identifying large stones thought to represent structural remnants (NDA 2016:11); or comparing "…their morphology and contents with other reported cellars in southern Ontario" (ASI 2014:10; see also ASI 2008:37). According to these strategies, it seems CRM consultant company field crews decide to employ the cellar excavation standard for any large feature thought to be one, or large feature not considered to be a cellar. In the samples for this research, all features deemed to be cellars were fully excavated, almost entirely by quadrant. In other words, these features could have been sampled by opposing

quadrants only, on the basis of in the field judgement that the features were cellars, which was based principally by plan shape and size. It is also worth noting that within this study sample, other large features that were not considered cellars were not fully excavated. Rather, they were sampled, whether they were related to adjoining cellars or not, because of the size of the feature.

Even the preliminary review of the sample of cellars used in this study demonstrates that the conventional focus on physical characteristics and inner contents as defining a cellar feature are nebulous; since not all large features are cellars, and not all cellars are necessarily large. Also, overall, the cellars considered in this research exhibited variability in their physical characteristics, yet the S&Gs cellar excavation standard was invoked to apply a methodology that divides the cultural feature into quadrants as a means of systematic excavation. While any large feature can be excavated in quadrants, the assumption embedded in the S&G standard for nineteenth century domestic site cellars is that only opposing quadrants need to be excavated to provide a comprehensive reflection of their content, physical characteristics and use-life. The review in this thesis so far suggests that assumption may be unfounded due to their variability. According to the CRM reports, the designation of cultural feature as a "cellar" is more often determined during post-excavation analysis. In reality, the application of this standard can be applied to any large nineteenth century thought to be a cellar based on a feature's surface plan shape, size, and, in at least one example from the Topping Farm site, evidence of architectural artifacts on the surface of the feature.

Interestingly, one aspect of excavating cellar features not defined in the S&Gs, is how to approach cellar stratigraphy. As noted earlier, stratigraphy is identified for large Woodland features, and would have been an expectation for large nineteenth century features, had the standard not been revised to allow for partial excavations of cellars (Ferris personal communication, 2019). However, each cellar in this research sample exhibits variations in artifact yields, feature characteristics, and shapes and dimensions, which makes it difficult to have one broadly applied standard for larger features that may or may not be considered a cellar by conventional characteristics. Moreover, if we

consider how artifacts are deposited during a cellar's use-life, deposition typically corresponds to multiple periods, i.e. in-use and post-use periods. The in-use period is associated with two different considerations; the cellar as a below-ground storage option to keep food items cold in the summer and to prevent freezing in the winter, and as an open pit feature that accumulates multiple episodes of artifact discard. The post-use period is associated with the cellar hole being filled in as a single episode— either with architectural debris, or soil, or both— to level the cellar hole with the ground surface around it. As such, by not excavating these features by strata raises issues for interpreting findings.

In the next chapter, this thesis research will test the S&Gs cellar excavation parameters by using hypothetical scenarios at the 50% minimum standard. As this research has shown so far, the conventional characteristics of cellars are variable, not uniform. As such, each cellar context will be broken down into quadrant and stratum to describe how the current S&Gs directives would affect a minimum level of excavation. This evidence will convey how excavating at the minimum standard ultimately changes the story that archaeologists can portray in the CRM reports, as well as the quality of information preserved for future study.

Chapter 4: Counterfactual Artifact Frequencies, Hypothetical Excavation Scenarios, and Datasets by Strata

The standard for large nineteenth century cellars in the Ontario Standards and Guidelines (2011) essentially assumes that all such features are the same. As the previous chapter has shown, cellar features come in a variety of shapes and dimensions, and exhibit unique physical characteristics, history of formation, and variations in artifact yields. These considerations call into question whether the cellar standard in the S&Gs effectively accounts for this variation within the standardized approach expected for excavating these features.

This chapter will further examine the S&Gs cellar standard by analysing the implications of the 50% minimum excavation strategy of opposing cellar quadrants as applied to the cellar features examined for this study. My focus here will be on testing the veracity of that standard by considering counter-factual datasets from my cellar sample to explore what that loss of artifacts and contextual information does or does not do to interpretations of those features.

4.1 Chi-Square Test

As the S&Gs imply, the artifact yield from a 50% excavation of a cellar *should* yield 50% of the total number of artifacts contained in that feature; or alternatively 25% per quadrant. Also implied in the standard is that information above 50% of the artifacts from a cellar would be redundant, i.e. more of the same patterning and representation as found in the excavated quadrants.

As a preliminary step to test the validity of the implied expectation set out in the S&G cellar standard, I applied a chi square test for each of the cellars in the sample I analyzed for this research. In effect, the expectation of the S&G standard sets up a null hypothesis to test against the actual cellar data broken down into quadrants or halves that I have access to in my study. The null hypothesis extrapolated from the S&G standard, then,

predicts that the total content of a cellar feature will be equally distributed so that four quadrants or two halves will contain exactly 25% or 50% of that overall content by quantity and qualitative category. If there is any deviation—i.e. quadrants or halves do not meet the 25 or 50% threshold— the null hypothesis can be rejected.

The chi square test explores how observed results fit with expectations. In this case that is how well the actual content of cellars fits with the null hypothesis expectation of an even and redundant cellar content distribution. The type of chi square test used here is known as a goodness of fit test. This test is used to see how well the distribution of a set of actual numbers fit with a hypothetical distribution; in other words, the fittedness of independent variables (degrees of freedom; Freund, Wilson, and Mohr 2010). For this study, independent variables generally reflect 3 degrees of freedom, since most cellar yields were divided into four quadrants (i.e., three independent quadrant totals prior to the final quadrant having to be the number that adds up to the total artifact count for that cellar).

In terms of calculating this test, the expected results (i.e., the gross total from a cellar divided by 4 or 2), and the actual observed values are used to calculate the chi square value (or critical value). This calculation follows the formula: $x^2=\Sigma_{\text{all cells}}$ (observed-expected)^2 /expected; or subtract the expected value from the observed value and square the difference, divided by the expected value for each independent variable, and then add them all together for the final critical value. The final critical value reflects how well the observed or actual data fit within the expected chi square distribution (Freund, Wilson, and Mohr 2010). This probability value, or p-value, reflects a probability measurement that the observed data aligns with expected results. A perfect correlation would yield a result of "1," or 100% probability.

The degree that the independent variables within observed results deviate from expected results allows the p-value to be evaluated for its degree of significance or confidence that the observed results generally align with expected results in a goodness of fit measurement. In this case, the goodness of fit would align with the null hypothesis that cellar yield totals, by quadrant or half and by artifact class, align with an expectation that there is no significant difference across those portions of the cellar.

In a chi square test, then, the p-value is measured against specific significance levels, or what is commonly referred to as confidence intervals (Freund, Wilson, and Mohr 2010). The confidence interval is the range that observed values mostly reside within a certain number of standard deviations, and also determines a value by which the null hypothesis can be rejected. The minimum benchmark to rule out the null hypothesis tends to be set at a 95% confidence level in the social sciences. Therefore, observed findings are not significant above a probability deviation of 5%, or p-value that is <0.05 (Freund, Wilson, and Mohr 2010); in effect, the smaller the p-value, the less fitted the observed results are to the expected results. Notably for this study, the limited degrees of freedom I had to work with could justify a lower confidence level (e.g., 90%) to allow for those limited independent variables (e.g., Hair et al 2009). Nonetheless, while I will consider how close to a 95% confidence level results are, I will adhere to the 0.05 p-value benchmark for assessing whether observed results align with the null hypothesis suggested by the S&G standard for cellars.

4.2. Chi Square Results: Artifact Distributions Across Cellars

The results of the chi square test for this research are presented in Table 4.1 (see Appendix A), comparing the observed cellar findings against the expected values that the S&Gs imply (i.e., even distribution of artifact yields across all quadrants or two halves for the cellar sample used in this study). The data from each cellar, broken down by quadrants or halves, produced unique p-values that reflect the probability that the observed quartered or halved frequencies fit with an expected outcome; i.e., these artifact yields would breakdown into 25% per quarter, or 50% per half. Six of the seven observed results yielded a p-value of less than 0.05, which suggests artifact distributions are not evenly distributed by quarter or half. In the case of the Dennison 1 site, however, the p-value is greater than 0.05, suggesting that, across these two halves at any rate, the variation in total artifact frequency is small enough to fit with expected results as implied in the S&Gs.

Overall, in relation to their goodness of fit, artifact yield across the study sample of cellars represent unique distributions of a cellar's content rather than predictable results. Thus, at this very gross level of analysis, it is reasonable to conclude that total artifact frequency distributions across the study sample of cellars used here appear to be unevenly distributed, reflecting mostly unique depositional scenarios— between cellars and quadrants/halves— regardless of individual cellar histories, design, or shape.

But it needs to be emphasized that the S&Gs minimum standard for Ontario CRM archaeologists conducting Stage 4 excavations of larger cellar features is to excavate one set of opposing quadrants. This is the focus of this thesis, testing whether or not the base assumptions of the standard are sound. So, despite statistically significant variation results in artifact distributions across an entire cellar in my dataset, is it still reasonable to assume that opposing quadrant excavations yield 50% of the feature's actual contents?

To answer this question, I invented hypothetical excavation scenarios for the seven fully excavated cellar features in which results are combined for opposing quadrants (Scenario 1); results are combined to create north/south halves (Scenario 2), and results are combined to create east/west halves (Scenario 3). These hypothetical scenarios imagine the cellars in the study sample to have been excavated to the S&G standard of opposing quadrants, or by halves, given that some cellars, such as the Dennison examples, are approached in this manner. The results of these counterfactual scenarios are detailed below.

4.2.1 Hypothetical Excavation Scenarios for Total Artifact Yields/Distribution

In Table 4.2 (see Appendix A), cellar findings are represented by three possible hypothetical excavation scenarios at a 50% excavation threshold. To determine how closely these scenarios fit the S&G null hypothesis, I also generated p-values for each scenario for each feature based on combined quadrant or half total yields. I acknowledge that these figures are of limited utility, since there is only one degree of freedom for the variables from which to calculate a p-value in each of these scenarios. However, they

provide some insight across scenarios for each cellar, so they are offered here simply as a means to facilitate discussion.

I should note that I was required to make some adjustments to the total artifact yields, as a result of discrepancies in the original CRM reports. The O'Connor cellar scenarios were calculated without faunal artifacts due to these not being recorded by quadrant. The Durst Pit and Dennison cellars' total artifact yields were adjusted to remove artifacts found on the surface. Both Dennison site cellars could only be considered in halved scenarios due to the excavation strategy employed. This meant that only five of the seven cellars could be analyzed across scenario one, while in each of scenario two and three, six cellars' results were analyzed.

Scenario 1 in Table 4.2 represents hypothetical results, had the five cellars in this study been excavated by quadrants and been limited to only two opposing quadrants. Notably the cellar features from O'Connor and Durst yielded p-values that could not disprove the null hypothesis that opposing quadrants would yield close to 50% of the artifact remains from large cellar features, despite overall yields across these cellars being unevenly distributed. These results suggest that, in some scenarios, the experiential intuition of CRM archaeologists that shaped the S&G cellar standard originally has some basis in fact: opposing quadrant excavation does have the potential, some of the time, to provide close to 50% of an overall artifact yield for a cellar. However, in the limited sample used in this study, that only would have occurred in two out of five occasions, or 40% of the time. In other words, prior to complete excavation, a CRM archaeologist can assume that adhering to the S&G standard will more likely *not* provide half of the cellar's contents.

Scenario 2 and 3 envision different strategies than the S&Gs dictate, representing cellar quadrants excavated side-by-side, or by halves, using cardinal directions determined by the CRM archeologist. Scenario 2 refers to north versus south halves (in two quadrants), and Scenario 3 refers to east versus west halves (in two quadrants). In scenarios 2 and 3, if there are more artifacts on one side of the cellar versus the other, then this may lead to a rejection of the null hypothesis. Using these scenarios, all seven cellars can be compared; although only six can be compared with each other for each scenario due to different excavation strategies employed on the Dennison cellars— i.e. north and south

halves (Dennison 2), and east and west halves (Dennison 1). The p-values in Table 4.2 for Scenario 2 (north and south halves) suggest that observed artifact yields by half all deviate markedly from an expected 50% yield, though the Durst cellar result is relatively close to a 0.05 p-value. And in this scenario, Topping 1 also closely fits expected results. Whether this does or does not have anything to do with depositional processes aligning with the short axis spatial layout of cellars, it does suggest that north-south artifact distribution never is equal across the cellar, while it can occur 33% of the time for an east-west deposition of artifacts across a cellar.

I also aggregated observed and expected artifact frequency percentages of all three scenarios for each of the five cellars where more than one scenario could be considered (at five degrees of freedom) to determine the overall fitted-ness of these scenarios combined to the expected 50% frequency result implied in the S&G standard. These results are presented in Table 4.3 (see Appendix A) and evaluate the aggregate of the likelihood that excavating 50% of a cellar will recover 50% of the feature's contents.

Scenarios 1 and 3 cannot fully disprove the S&Gs cellar excavation assumed expectation of a 50% recovery from 50% excavation of a cellar, since Scenario 1 in the dataset generates a 40% possibility of fitting that expectation, and Scenario 3 had a 33% possibility of fitting that expectation. But the individual scenarios do generate their own dataset for each cellar that could be evaluated across all three scenarios. When I aggregated the observed results for each excavation scenario per cellar to generate an overall p-value across all three scenarios, those aggregated p-values for each cellar clearly reject a fitted-ness with the null hypothesis expectations. Indeed, only Dennison 1, by virtue of being evaluated solely by east/west halves, can readily fit the expected outcome. Given the only other cellar to meet that outcome for Scenario 3 was the Topping 1 site, which did not meet the null hypothesis in either Scenario 1 and 2 or overall, it would not be unreasonable to assume that Dennison 2 might not have met S&G expectations, had it been excavated to allow for a consideration of Scenarios 1 or 2.

In short, if it is reasonable to assume that the large cellar standard adopted during S&G deliberation presumes that a half-excavated cellar would generate approximately half of

the artifact assemblage from the feature, this analysis demonstrates that the assumption is flawed. This finding thus has clear implications for the viability of subsequent analysis and research arising from half excavated features. But more practically, if the CRM standard reflects less an assumption of data redundancy, and more a fiscal and labour expediency to avoid the full cost of excavating, analyzing, caring for a complete cellar assemblage, this may also be based on flawed logic. Notably Table 4.2 illustrates that, depending on cellar and excavation scenario adopted, a CRM firm may recover close to 80% of a cellar's contents excavating 50% of a cellar, or as little as 20% of its content (e.g., Topping 2, Scenario 1; or Peter Edwards, Scenario 3). Partial excavation of large cellars as a cost savings strategy reflects a false economy since yields are simply not predictable.

4.3 Stratigraphy

Given that my findings underscore that artifacts are unevenly distributed across a cellar horizontally, it is also worth considering vertical (i.e., stratigraphic) distributions in a cellar. After all, the study of stratigraphy is one of archaeology's best tools to decipher the complex depositional behaviour of cultural features like cellars (e.g., see chapters in Harris et al 1993). In Ontario, CRM archaeologists are required to report on stratigraphy (Standard 2a 7.10.1, MTCS 2011:74,151-152). According to section 4.2.1 *General requirements for the excavation of archaeological sites* (MTCS 2011:74-75), Standard #6 determines that Stage 4 excavations must be excavated by systematic levels, either by stratigraphic or standardized levels. However, as mentioned previously, specific considerations for nineteenth century sites or large features like cellars do not outline the requirement to excavate by stratigraphy.

Further, Section 4.2.8 for deeply buried or complex stratified archaeological sites (MTCS 2011: 82-83) describes site-specific requirements for Stage 4 excavations, including Standard #4, which states that archaeologists are required to "record cultural features encountered in strata profiles, and record recovered material according to its feature context." In Section 4.2.7, Standard #4 for nineteenth century domestic archaeological

sites refers to Section 4.2.8 as the standard to follow for complex stratified historic sites. Although there is a sense of excavating other complex stratified cultural features by identifiable strata, there is no explicit requirement that triggers excavation by strata for larger cellar features from nineteenth century sites that are less complex overall, in terms of stratigraphy. As such, larger cellar features, technically only require stratigraphy to be reported upon and not excavated to internal strata or to ensure findings are recovered to internal strata. If the S&Gs required cellars to be excavated in different strata, then a similar wording would be used as in Standard #5 for Woodland Sites in section 4.2.4 (MTCS 2011:79-80).

The ideal propagated by the S&Gs for cellars also assumes that, by excavating two quadrants, the archaeologist can record all "exposed profiles" (MTCS 2011:82). This recording of all exposed profiles allows for a comprehensive understanding of the stratigraphic layout of the cellar feature. While an understanding of the entire in-use period of a cellar may be difficult to discern due to numerous cleaning episodes, compaction, or minimal accumulation, generally it is reasonable to assume the feature should capture at least two strata; one relating to the in-use years of the cellar's use-life, and another for the post-use infilling of the cellar hole (South 1977; Orser 2017), assuming it was filled in. The absence of explicit wording directing excavations to recover artifacts by strata can be read to suggest the Standard assumes that findings should not be affected differentially across vertical strata, equally recovering in- and post-use deposition events. So, a consideration of gross yields by strata across the four quadrants will be considered here.

To better understand what kind of data represent the various periods of a cellar's use-life, I intended to look at stratigraphic information recovered during excavation for the cellars used in this research. However, of the five sites available for my dataset, only two of the CRM reports detailed strata in their cellars, according to the artifact catalogues, notably the Topping Farm and Peter Edwards sites. While the cellar from the O'Connor site was noted to have multiple strata it was not excavated accordingly.

4.3.1 Peter Edwards Site Cellar

As mentioned in Chapter 2, the Peter Edwards site cellar was excavated wholly by quadrants and was noted to have different strata within. However, only the northeast and southeast quadrants were excavated by strata, after the first two quadrants were excavated as a block to generate profiles. Since the dataset is only partially differentiated by strata, I could only explore limited patterns of vertical distribution of artifacts, and whether these meet the S&G expectation of even distribution (see Appendix A: Table 4.4). To tease out comparisons, I also broke down artifact yields by strata for larger artifact group categories and discuss those below (see Section 4.4 for further discussion of artifact groups for other cellars).

A first obvious observation from Table 4.4 is that horizontal difference in gross artifact yields, as reflected in the frequency differences between the Northwest and Southeast quadrants, affects how far strata comparisons can be advanced, given that all strata in the Northwest quadrant yielded higher artifact quantities of artifacts overall, and by artifact group. Overall, there is a slightly greater artifact frequency (56%) within the lower, presumably in-use stratum. As well, there is an even greater discrepancy between the two strata for artifact categories that fall within a Kitchen Group designation (66% for the in-use stratum) and for the Floral and Faunal Group (60%). However, there is also a lower percentage of Architectural Group artifacts in the lower stratum (42%). This pattern generally concurs with that broad assumption that the upper or post-use stratum in a cellar reflects infilling, which can include a higher quantity of architectural furnishings (e.g., machine cut and wrought nails) lost during the decay or removal of the building above the cellar. On the other hand, when I combine artifacts by strata for Personal, Clothing, Activities and Tobacco Pipe Groups in a personal, Small Finds Group, the vertical pattern is that only 38% of these artifacts were recovered from the in-use stratum. This pattern seems to be contrary to the conventional understanding of in-use strata containing more of the material tied to daily life through the occupation of the residence (see also Appendix A: Table 3.6 for detailed artifact category breakdown by strata for Peter Edwards). Moreover, it is worth pointing out that all artifact groups are represented

in some significant quantity overall in both strata, which suggests cellar stratigraphy may offer a more complex depositional history, and variable artifact yields, that may reflect on periods of both in- and post-use. For example, concentrations of kitchen and faunal group artifacts in the lower stratum of a cellar feature may indicate a period when the open cellar was used as a repository for waste rather than as a storage cellar.

The CRM report does not speak to the vertical differences in artifact group distributions and simply presents this data wholly by tabulating the cellar's artifacts with identifiable diagnostic attributes (see Table 19: NDA 2016:28-29), confirming "the domestic use of this feature" (NDA 2016:27). Overall, the report concludes that the cellar's total artifact yield represents a "common distribution on nineteenth century homestead sites," with an emphasis on establishing the archaeological site's occupation date range using diagnostic artifacts (NDA 2016:27).

In practice, CRM reports tend to focus on a chronological understanding of a site's use-life using diagnostic artifacts, especially ceramic wares, but there is less of a focus on refining those chronologies through the use of specific cultural features with strata differentiation, like that found potentially in a cellar. In the Peter Edwards cellar, for example, there is potentially an interesting relationship between the amounts of reported temporally sensitive artifacts, especially pearlware and whiteware ceramic sherds, and the stratum in which they were found (see Appendix A: Table 4.5).

As per the report's sources for ceramic chronologies (Kenyon 1987; Kenyon and Kenyon 2008), pearlware's use ends by about 1840, while whiteware continues well into the latter half of the nineteenth century. Since the CRM report does not differentiate cellar strata (NDA 2016:28-29; see Table 19), the diagnostic sherd result may simply indicate that there are large amounts of specific ware types like plain pearlware and late palette whiteware from the site, contributing to a mid-nineteenth century age affiliation (1830-1870; NDA 2016:i). But it is worth noting that according to the catalogue, the upper or Stratum 1 in the Northwest quadrant of the cellar contains more Pearlware (194 sherds) than Whiteware (31). In the lower or Stratum 2, there is an inverse pattern, with 127

Pearlware sherds versus 204 Whiteware sherds. In other words, 87% of Whiteware sherds were in the in-use stratum, while 60% of the pearlware sherds are in the post-use stratum. Despite the assumption that artifacts attributed to the earlier period of occupation should be found lower—based on normal laws of superposition— the opposite seems to be true in this case. There are, of course, any number of interpretations for why this is the case (e.g., post-use deposition of waste including older ceramics; mixing of strata, etc.), and the period of occupation suggests whiteware and pearlware were in-use in tandem during part of the life of the site. These data also underscore that the uneven distribution of artifacts in a cellar exists vertically as well as horizontally, and that observed findings provide a more diverse understanding of the cellar's life than assumed expected findings implied in the S&G standards.

Reflecting on the S&Gs cellar standard from the perspective of the Peter Edwards cellar context, the seeming lack of clear direction on how to excavate complex strata leads to incomplete datasets and rudimentary interpretative insights. Though only two of four quadrants were excavated by strata, we can see how a greater interpretive value can result by considering even the most basic strata differentiation while excavating—i.e., in-use and post-use.

4.3.2 Topping Farm Site Cellar (Topping 1)

The Topping Farm site contained two features that were excavated as cellars, but only Topping 1 (Feature 27) was recorded as having discrete strata. This cellar's plan view shape is defined as irregular, and multiple strata were identified and excavated accordingly. Of the three identified strata, only two are noted to be cultural. The other (Stratum 3) is attributed to a rodent burrow.

While there is an inconsistent reporting of the strata in the report's artifact catalogue and plan view drawing, it appears that, as with the Peter Edwards site, artifacts were recovered by strata for only two of the Topping 1 quadrants. Artifact yields in these quadrants were rather limited overall (Table 4.4). Collectively, Stratum 1 contained 141

artifacts (78%) from all four quadrants, and Stratum 2 contained 40 artifacts. Slightly more Kitchen Group and Architectural Group artifacts come from the lower stratum, however with such limited numbers, the distribution, in effect, is about 50%. Though it is worth pointing out that, of the material recovered from the lower in-use stratum, overall, 68% of those are objects that fall within the Kitchen Group category. In comparison, they only make up 18% of the upper post-use stratum. Architectural Group artifacts are simply too limited in number to offer a meaningful distribution analysis. However, I note that the CRM report pointed to the presence of bricks at the surface of the feature to confirm it was a cellar.

Considering the gross artifact yields from each stratum, the variability in the types of artifacts present seemingly corresponds to the irregularly shaped plan and profiles of the feature, since in the CRM report Stratum 2 is noted to be the cellar itself, whereas Stratum 1 was defined as the topsoil above it. Albeit a feature with few artifacts, the plan shape and internal form of Topping 1 cellar, and large percent of Kitchen Group artifacts found in the in-use stratum do conform with general expectations for cellars.

4.3.3 Stratigraphy Discussion

Overall, the general standard for excavating stratigraphic features in the S&Gs, and conventional practice in Ontario, is to either section a feature in opposing quadrants or by halves to record strata, and where cellars are present, to allow for a 50% recovery of material, and either recover or not recover the second half of the cellar fill by internal strata. These conventions are reflected in the two cellars I was able to explore by stratigraphic analysis, limiting interpretive insights that can be offered. Both cellars' data reveal that artifact yields are as unevenly distributed vertically as they tend to appear horizontally across the two features. As well, there is some evidence to suggest that in-use fill will encompass more material remains associated with daily life than in the post-use fill of the cellar feature. Distribution across strata is variable between the two cellars, with Stratum 1 in Topping 1 representing close to 80% of the recovered artifacts sample, while only representing 44% from Peter Edwards. These variations may reflect either

difference between the features caused by the duration of in-use life, or rehabilitation of the cellar depression and post-use infilling, or taphonomic processes affecting the deposit or other possibilities. Nonetheless, these variations speak to unique, rather than predictive use-life histories for each cellar, and the stratigraphic evidence suggests that vertical depositional processes for types of artifacts are also due to the idiosyncratic histories of each feature.

The difference between the Peter Edwards and Topping 1 cellar strata results reflects differences in the variability of stratigraphic contexts. As seen in this study, cellars come in many shapes and sizes, and can be assumed to have been used differently by the people who constructed them. The Peter Edwards cellar has over 4000% more artifacts than the Topping 1 cellar, for example, which helps generally reflect how this cellar was likely used differently and for a different span of time—i.e., use-life. Collectively across the strata documented for parts of the Peter Edwards and Topping 1 cellars, we have four unique cases of strata deposition – strata that in turn were excavated differently based on interpretations of the S&Gs cellar excavation standard. In effect, the S&Gs are guiding fieldwork strategies towards collecting either incomplete, partial, or lumped datasets. If there was a clear indication that cellars were also considered complex cultural features under Section 4.2.8, then excavating all four quadrants with the same strategy of excavating by strata would better define a required minimum level of practice.

4.4 Artifact Group Distributions Across Cellars

As this research has shown, by using chi square tests to calculate p-values as the means to assess the null hypothesis implied in the S&Gs cellar standard—i.e., that recovering 50% of the cellar contents can be achieved through 50% feature excavation— I can conclude from the dataset informing this study that the assumption's logic is not statistically sound. And further, a consideration of cellar stratigraphy suggests this is the case vertically as well as horizontally across such features. For further supplementation of this finding, I want also to investigate how artifact groups are affected as a result of the 50%

excavation, again using p-values to show how archaeological datasets fit, or not, an expected assumption of even distribution across quadrants. As mentioned in Chapter 3, artifacts groups for this study have been standardized into a standard nomenclature based on several analytical frameworks in historical archaeology (Ferris 2006; MacDonald 2002; Parks Canada 1992; South 1977).

Some caveats should be mentioned before discussing the findings. First, as mentioned previously, p-values in this exercise are of limited value. As such, p-values are offered more as a general means to suggest how well or not distributions or particular artifact groups are across a cellar by scenarios. It is only in the aggregated distributions of artifact groups across all three scenarios that five degrees of freedom is achieved. Second, it is also the case that smaller datasets provide less insight into distributions, especially for smaller artifact group datasets. As such, I have chosen to only consider distributions for artifact groups that minimally yielded over 100 artifacts from a cellar. For cellars with small overall yields, this reduces the number of artifact groups that can be considered to one or two, or, in the case of the Durst cellar, eliminates that feature from consideration entirely, given the feature failed to yield any artifact group over 100 objects. The information found in Tables 4.6 to 4.14 (see Appendix A) was collected from each site's artifact catalogue found within the CRM reports, to evaluate each cellar's distribution of artifacts by broad groups. These tables represent the frequencies of objects by artifact group by each of the three excavation scenarios detailed previously in this chapter (see Section 4.2.1). As previously noted, I could only consider one scenario for the Dennison site cellars because their results were only reported in halves.

In general, the results for artifact group distributions across cellars is consistent with earlier findings, in that most artifact groups found in most cellars are variable in distribution by scenario, reinforcing the archaeological notion that depositional processes were not random or predictive. For example, six of the artifact groups from the Peter Edwards cellar (Appendix A: Tables 4.6 and 4.7) were large enough to be considered here. Only the Indeterminate Group, and then only in Scenario 1 (S&G standard), generated results that were a close fit with the assumption of even distribution across quadrants. Notable as well is the fact that differences across all Artifact Groups were

somewhat close to fitting an expectation of even distribution (i.e., p-values above 90% confidence level but less than a 95% confidence level). These values suggest that the use of opposing quadrants at least begins to account for uneven distributions horizontally and vertically across a cellar, at least better than using either a north/south or east/west method, and at least in this instance.

Overall, though, and is clearly depicted in Table 4.7, for the Peter Edwards cellar the aggregated distributions are variable enough across all scenarios to fail in supporting the null hypothesis set up by the assumption underwriting the S&Gs. These results underscore the idiosyncratic nature of cellar deposition, at the individual artifact group level, and that it cannot be predicted or assumed before excavation. As well, looking back at Table 4.5, when I consider diagnostic pearlware and whiteware ceramic sherd distributions based on the S&G standard (i.e., Scenario 1 in this study), neither of those artifact classes achieve a p-value that fits with the S&G assumption (i.e., pearlware p-value: 7.56723E-26; whiteware p-value: 0.019025). In other words, depending on which two quadrants a CRM archaeologist might have chosen for the Peter Edwards cellar to excavate, they would have obtained an over- or under-representation of what is arguably the most heavily relied upon chronological diagnostics consultants used when interpreting results from their excavations. Likewise, it would be hard not to conclude that any research interpretations drawn from the limited findings of that cellar excavated to 50% opposing quadrants or not, would at least be qualified.

Interestingly, results from the O'Connor data (Appendix A: Tables 4.8 and 4.9) reflect a differing limitation to artifact group distributions. In particular, while Architectural and Tobacco Pipe artifact groups are relatively evenly distributed in Scenario 1 to achieve a high p-value, Kitchen and Indeterminate Groups are not. On the other hand, Kitchen and Indeterminate groups are, at least, evenly distributed for Scenario 3 (east/west). These data suggest that those idiosyncratic depositional histories creating uneven distributions of artifacts are themselves uneven between artifact groups, further underscoring the lack of support for the S&G assumption. Not surprisingly, given these results, the aggregated patterns for artifact groups across scenarios all fail to generate p-values that substantiate the S&G null hypothesis (Table 4.9).

Cellar 1 and 2 from the Topping Farm Site (Appendix A: Tables 4.10-4.12) offer more limited insight. Both cellars have small samples of Kitchen Group artifacts, and for this category, there is generally an alignment of expected and observed distributions in all scenarios. Though notably even here, for Topping 2 in Scenario 3, a 95% confidence p-value could not be obtained. Despite that scenario not altering overall the fittedness of results (Appendix A: Table 4.12), this does underscore that even for small sample sizes, artifacts are not evenly distributed across all three dimensions of a cellar fill. As well, for the one artifact category from Topping 2 that has a sizeable sample, the Floral and Faunal Group, none of the three scenarios generate a minimum p-value to confirm even distribution across the feature, so it is not a surprise that their aggregate result also fails to support the implied null hypothesis.

As previously noted, the Dennison 1 and 2 cellars have limited interpretive utility for this exercise because their findings were recorded by halves, and thus only allow me to consider Scenario 3 (for Dennison 1), and Scenario 2(for Dennison 2). From this limited perspective, neither cellar yielded a significant p-value for any artifact group with over 100 artifacts. These results again confirm uneven distribution of material by length and width of the features.

4.5 Discussion

The standard for large nineteenth century cellars in the Ontario Standards and Guidelines essentially assumes that all of these features are the same, and their contents evenly distributed, at least to the extent that the proposed sampling procedure of excavating two quadrants for a 50% recovery does not adversely affect material representation and archaeological interpretation of the feature. I also readily acknowledge that the dataset used for this study— seven cellars from five archaeological sites—is limited, especially for exploring stratigraphic patterns or being able to interpret smaller artifact datasets below gross feature yields. Nonetheless, this dataset consistently suggests at a statistically significant level that the assumption behind the S&G standard appears flawed.

As Chapter 3 has shown, cellar features come in a variety of shapes and dimensions, and exhibit unique physical characteristics, and histories of formation. Moreover, this chapter has also confirmed variations in artifact yields. These considerations call into question whether the cellar Standard in the S&Gs effectively accounts for this variation within its standardized approach to excavation and documentation of these features.

Certainly, based on the p-value results for gross yields by cellar quadrant reflected in Table 4.1, only Dennison 1 achieved a p-value that fit the null hypothesis. In other words, one of seven cellars (14%) could support the S&G assumption. I then broke those numbers down further, combining quadrant yields into counter-factual patterns to reflect the S&G standard of excavating opposing quadrants to achieve a 50% recovery, as well as a north/south or east/west recovery (Table 4.2). Each scenario represented unique excavation results based on cellar specific depositional patterns, and generally appeared to fail to substantiate the S&G's implied null hypothesis. Of the five cellars that could test the S&G-based Scenario 1, two of the five results (40%) reflected p-values that could support the null hypothesis, while one of six results (17%) under Scenario 2 (north/south) supported the null hypothesis, and two of six results (33%) supported the null hypothesis under Scenario 3 (east/west). The results from Scenario 1 suggest that the S&G emphasis on opposing quadrants can ameliorate to some degree the variation in artifact distribution across a cellar.

However, assuming these results can speak to a broader, general pattern for nineteenth century domestic sites in Ontario, an important caveat to this finding is that the CRM archaeologist will not know in advance IF the particular cellar they are about to excavate could effectively be sampled by opposing quadrants. Moreover, that archaeologist, or any other archaeologist seeking to analyse the findings from a cellar CRM excavated to the S&G standard, would reasonably need to assume that there is a 60% chance the assemblage recovered is not representative. Indeed, collectively, Table 4.2 presented 17 p-values across cellars and applicable scenarios, and those results collectively failed to achieve a high enough value to support the null hypothesis 13 times, for an overall 77% failure rate. And that failure rate was only reduced by one (12 failures), achieving a 70% failure rate overall, if I accept a confidence level of 90% for p-values obtained. Thus, for

gross artifact yields, aggregated scenarios by site all failed to support the null hypothesis at either a 95% or 90% confidence level (Table 4.3).

Finally, I reviewed distributions of specific artifact groups for each cellar that generated more than 100 objects under those categories. In all, 48 scenarios by artifact group could be evaluated and p-values generated, which I compiled by artifact group in Table 4.15 (see Appendix A). Across all those scenarios and artifact groups, 73% failed to meet a 95% confidence, and 54% failed to meet a 90% confidence. Interestingly, individual artifact groups varied significantly. For example, all scenarios for the Floral and Faunal Group failed, while only 50% of Kitchen Group scenarios failed, and 64% of those scenarios could meet a 90% confidence. But overall, only an Activities Group category from the O'Connor cellar achieved a majority of scenarios that supported the null hypothesis (two out of three scenarios at 95%, or three out of three at 90%).

These results suggest that individual cellars and individual artifact groups may or may not generate representative results across 50% excavation scenarios. Moreover, while the results may suggest that Kitchen Group artifacts are the most uniformly distributed across cellars, perhaps due to their relative heavy contribution throughout the entire use-life of these features (in- and post-use), I also note that the Floral and Faunal Group had a 100% fail rate. Such variations between artifact groups may suggest the patterns I obtained are more idiosyncratic of this dataset than reflective of general trends across cellar deposition processes.

In summation, the S&Gs cellar excavation standard implies that through 50% feature excavation, a cellar *should* yield 50% of the total number of artifacts contained in that feature: or alternatively 25% per quadrant. Also implied in the standard is that information above 50% of the artifacts from a cellar *should* be redundant, more of the same patterning and representation as found in the excavated quadrants. The variable results obtained through this analysis of each cellar context suggests that cellars are less predictable than commonly assumed, and that human agency and cellar life histories contributed to variable depositional behaviour. The reality of the application of the S&G standard for large cellars would thus seem to better align with fieldwork and post-excavation analysis expediencies. Yet as noted earlier, the variation in yields by

quadrants belies any surety in cost or time savings, depending on quadrants chosen to be excavated.

The next chapter will touch on the present juncture in which the S&Gs cellar excavation standard now stands. It will reflect on the information learned from this research and position practical suggestions that could improve upon the current structure found in the S&Gs.

Chapter 5: Conclusions

5.1 Summary of Findings

Cellars are a distinctive cultural feature mostly found on domestic sites primarily dating after 1800 AD in Ontario. This thesis examined a practice within the CRM industry that has been shaped by a regulated standard for the excavation of these cellars. That standard is articulated in the S&Gs released back in 2011 and has since guided licensed professionals conducting commercial archaeology in Ontario. By examining the logic of the particular standard dealing with nineteenth century domestic site cellar feature excavation, this thesis has allowed for the exploration of both the specific and general intent behind CRM as a distinct form of historical archaeological practice. In particular, exploring the need in CRM to balance information recovery and archaeological value with cost and time expediencies within development contexts.

As explored in this thesis, the S&Gs detail two specific directives that deal with the excavation of nineteenth century domestic site cellar features. Section 4.2.7 Standard #3 (MTCS 2011:82) states that the consultant archaeologist must "hand excavate a minimum of two opposing quadrants (e.g., northeast and southwest quadrants) in larger cellar features and record all exposed profiles." Guideline #1 also states that "based on professional judgement, when excavating larger cellar features, the consultant archaeologist may excavate all four quadrants and may use mechanical means to remove heavy post-use fill above living strata." The implications are clear: cellars are assumed to be big and artifact-filled deposits that, at about 50% context recovery, become redundant in the data they can provide, so long as length and width profiles are documented for the feature. Moreover, while acknowledging that archaeologists may choose to embrace the higher standard of fully excavating the feature, the S&Gs still also allow for the practice of mechanical removal and documentation of post-use fill in the cellar (MTCS 2011:82), which can be interpreted as non-critical to documentation and analysis. This intentional reduction in the standard of recovery for this cultural feature is unique in the S&Gs and

reflects assumptions and logics towards nineteenth century domestic sites that emerged during early CRM practice around this feature and site type.

CRM practice has since followed these guiding principles and excavation practices, and given rise to seemingly rote behaviour, constraining the research potential of the dataset extracted during excavation. As discovered in Chapter 3, the logics informing the S&G standard has never been substantiated from archaeological evidence to validate inherent assumptions of sampling, redundancy and limited interpretive value. The implications of proscribed methods of documentation for cellar features, and the implications that they may or may not have for interpreting findings from this iconic feature type, is the focus of this thesis research.

As I reviewed earlier, the term "cellar" encompasses many different types of cold storage features used by early settlers. Cellar and sub-floor features are afforded a distinct standard of excavation in the S&Gs since they may be "larger" in size than most other cultural features. These features are not ubiquitous on nineteenth century sites, but when found are considered important because they add to a comprehensive interpretation of the archaeological site. This insight has the potential to provide archaeologists with intact contextual data about the depositional history of the site's occupants and post-site abandonment.

Any aspect of an archaeological project— be it CRM or academic— sometimes must face the harsh reality that not every piece of data can be collected due to time and funding constraints (Orser 2017:131). But it is also essential to collect a comprehensive dataset during fieldwork in order to have a valid set of data that can inform research goals, either specific to one project or for broader regional trends. An important aspect of data collection defined by Groover (2008:25) is that the "careful dating of architectural features and archaeological deposits… can be linked chronologically to specific households" and help determine the "standard of living and material conditions experienced by a farm household." Conventionally, the archaeological features found on Ontario nineteenth century domestic sites are oriented around dimensions of daily life such as "sanitation, production of food for immediate consumption, and trash disposal" (Doroszenko 2007:64). Conventionally, this range of features is expected to be excavated

wholly for proper dataset generation, as is generally required for most cultural feature types in Ontario's Standards and Guidelines.

Throughout the last two decades, the CRM industry has continued to negotiate challenges faced by the growth of this industry, weighing Cultural Heritage Value or Interest (CHVI) against time and cost expenditures involved in CRM projects. As Ferris (2007a:17) suggested, much of the CRM documentation in the 1990s for nineteenth century domestic sites was a mix of banal processes focused on "material description, determination of age, and perhaps associating the location with documented occupants." In effect, Ferris (2007a:18) argued that there is a distinction in CRM archaeology between rote practices as the "necessary documentation" of nineteenth century domestic sites for the sake of harvest, and practices considered to be "extra-curricular research." Given that the set of practices developed for nineteenth century sites was largely developed by trial and error and personal preferences during the rise in CRM, these all represent the assumptions and biases of practitioners, rather than the inherent heritage or research value of the record (Ferris 2007a).

Under the S&Gs, "Standards" are defined as the "basic technical, process and reporting requirements for conducting archaeological fieldwork" that the archaeological consultant is expected to adhere to as per their license with the MTCS (MTCS 2011:1). Within these Standards, only nineteenth century domestic site cellars are singled out as a cultural feature requiring a reduced standard of field excavation and recovery. If we consider that by undertaking Stage 4 excavation, the site this cultural feature is associated with has already been found to have sufficient CHVI as a result of Stage 3 investigations (MTCS 2011: Section 3.4). As summarized previously in this thesis, a nineteenth century site will have CHVI if it fits Standard 1.f: "post-contact archaeological sites dating before 1830" (MTCS 2011: 57). Otherwise, a site needs to "…mostly (80%) …" predate 1870 (MTCS 2011: 59), or otherwise have some idiosyncratic CHVI unique to the locale. In short, nineteenth century domestic sites mostly predating 1870, and a few sites dating after that cut-off, are deemed to have CHVI under the S&Gs and thus require excavation to mitigate planned development destruction.

The differences in the age of sites, pre- and post-1830, appear to create differing and contradictory directions under the Stage 4 site-specific requirements in Section 4.2.7 (MTCS 2011: 82). Specifically, Standard #1 states that, for sites mostly dating before 1830, "Excavate the entire extent of all cultural features (e.g., cellars, privies) by hand." Standard #2, for sites that mostly date after 1830, only requires hand excavation of middens, mechanical topsoil stripping, and cleaning "…the exposed subsoil surface by shovel ("shovel shine") or trowel" (MTCS 2011: 82). There is no mention of excavating cultural features. While in practice cultural features from sites mostly post-dating the 1830s are excavated, the differing language of these two standards might suggest a differing level of CHVI valuation; one that allows for a reduced scale of recovery for more recent sites.

However, despite Standard #1 stating that the entire extent of cultural features, including cellars, needs to be hand excavated for sites pre-1830, that intent appears contradicted by the absence of a temporal constraint for the cellar standard (Standard #3), which could easily be read as applying to all cellars from nineteenth century domestic sites. Or, at least the standard is vague enough in application that CRM practitioners could justify partially excavating early nineteenth century cellars.

The cellar standard also states that "larger" examples of this cultural feature can be sampled, perhaps hinting at another implicit assumption of a lesser CHVI— that is, when these features are too large and/or contain too much material, and take too much time, labour and cost to recover fully, data can be sacrificed.

Given the history of how this standard came to be, the end statement in the S&Gs clearly encompasses both unexamined assumptions about the repetitiveness of data in the feature, variable value of nineteenth century domestic sites, larger cellar features and their contents, and a perceived need to account for efficiencies in CRM practice. It also suggests that it was the experiential knowledge and priorities of some practitioners who helped shape the standard, rather than data and evidence that could validate the standard.

Based on my review of the cellars sampled, the typical characteristics of a larger cellar feature are often represented by a rectangular-shaped plan that measures on average 293 cm long by 217 cm wide. Additionally, larger cellar features are ubiquitously represented

by basin-shaped profiles that measure on average 48 cm deep. Also, a cellar feature artifact yield is determined to be, on average, 3069 objects, and comprising 43% of the entire site's artifact assemblage. At this general level, the characteristics of the cellars examined for this study tend to conform to the implied assumptions for larger cellars that shaped the S&G standard.

Individually, the cellars examined exhibited marked differences to the overall norm. For example, in terms of architectural design, some cellars had stone-lined walls, stone floors, drainage, and side-access points— or what I referred to as indicators of planned permanence that may or may not also suggest these cellars were adjacent to, rather than underneath, a domestic residence.

Although a cellar feature may appear large on the surface— i.e., plan shape and measurements— this cellar sample indicated that plan size does not necessarily correlate with larger artifact yields. As well, deeper cellar contexts do not necessarily correspond to larger artifact yields. The conventional understanding that cellars have large amounts of artifacts, however, can be corroborated through this research. Of the seven cellar features in my study sample, all but one accounted for more than 50% of a site's total artifact yield. Also, cellars are almost always the highest artifact grossing cultural feature(s) from the sites examined.

Considering the conventional expectations around architectural artifacts in a cellar assemblage, the presence of a larger quantity of this artifact group in a cellar tends to suggest that the structure above the cellar was dismantled or destroyed and filled into the cellar-hole, representing the final depositional event in the cellar's use-life. The Peter Edwards, O'Connor, and Durst Pit site cellar assemblages all contain around 30% architectural artifacts. In comparison, the rest of the cellars in this research have a relatively lower representation of architectural artifacts, which may indicate these contexts had a different set of events that led to the final episode of their use-life. Alternatively, perhaps these cellars were not located underneath a residence, or otherwise not used as a disposal receptacle for architectural debris. In other words, there are clear variations in the formation processes that led to cellars being filled in.

The current application of the S&Gs standard for larger cellar features on nineteenth century domestic sites is ultimately determined during the Stage 4 process; and since all sites in this study were found in ploughzone contexts and date after 1830, all the consultants for these samples generally followed practices similar to the S&G direction in Section 4.2.3 to strip topsoil in order to expose any cultural features. It is once this point in the excavation process has been reached that consultant archaeologists then need to assess the uncovered cultural features in plan view to decide whether to employ the cellar excavation standard.

According to the reports examined in this research, generally CRM consultant company field crews decided to employ the cellar excavation standard for any large feature thought to be a cellar, or large feature not otherwise considered to be a cellar. Or rather, they used the guideline rather than the standard, since all features deemed to be cellars were fully excavated, mostly by quadrant. In other words, these features could have been sampled by opposing quadrants only, based on “in the field” professional judgements that these features were cellars.

My review of the sample of cellars used in this study demonstrates that the conventional assumptions about what physical and content attributes constitute a cellar are nebulous; since not all large features are cellars, and not all cellars are necessarily large. Also, all cellars considered in this research exhibited variability in their physical characteristics, yet the S&Gs cellar excavation standard was invoked to apply a methodology that divides the cultural feature into quadrants as a means of systematic excavation. While any large feature can be excavated in quadrants, the assumption embedded in the S&G standard is that only opposing quadrants need to be excavated to provide a comprehensive reflection of their content, physical characteristics, and use-life. According to this research, confirmation of this assumption can better be answered during post-excavation analysis or in the field once it is fully excavated, rather than as a distinction made before excavation.

To test the validity of the implied assumptions of the S&Gs, in Chapter 4 I used chi square tests for each of the cellars in my research sample. The null hypothesis defining an expected result was that the total content of a cellar feature will be equally distributed. In

other words, each quadrant or half will contain very close to 25% or 50% of the overall content of the feature. Also implied in the standard is that above 50% the material recovered would be redundant and could be left behind; more of the exact same patterning and representation as found in the excavated quadrants. Thus, if there is a robust deviation from the assumed 25% or 50% overall content then the null hypothesis could be rejected, and the implied expectation of the cellar Standard can be determined to be unfounded.

I also considered counter-factual datasets using gross artifact yields from the cellar sample as an information base to explore differing iterations of implementing the cellar excavation standard. The results from quadrant or half artifact distributions all failed to meet the assumed null hypothesis I defined from the S&Gs, except Dennison 1, excavated by halves and containing a limited artifact yield overall. When I considered hypothetical scenarios for my sample (Appendix A: Table 4.2), two of five cellars did meet the null hypothesis for Scenario 1— excavation of opposing quadrants as per the S&Gs— suggesting this method does somewhat better account for artifact distributions across a feature. Likewise, two of six examples met the null hypothesis in Scenario 3 (west/east halves), but none of the six samples considered did so in Scenario 2 (north/south halves). This result may suggest there is some patterning to artifact distributions that are better captured across the long axis of a cellar feature. However, the study sample here is too limited to offer more than a suggestion for future exploration of this pattern. Importantly, even though 33% to 40% of the sample supported the null hypothesis for Scenario 3 and Scenario 1, the majority in each scenario did not. Given that decisions to adhere to the S&G standard are made in the field, there is simply no way to know beforehand which cellars so sampled will indeed provide close to a 50% recovery. As such, any post-excavation analysis of 50% sampled cellars would have to assume that all those datasets are likely not representative of the entire feature, and thus limiting the interpretive value of those datasets.

An aspect of excavating cellar features not defined in the S&Gs is how to approach cellar stratigraphy. Generally, stratigraphy is one of archaeology's best tools to decipher the complex history of cultural features. Understanding the different periods in a cellar's use-

life could better inform artifact distribution across a cellar feature by accounting for materials within different stratigraphic levels. In Ontario, CRM archaeologists are required to record stratigraphy to understand the taphonomic processes of an archaeological site, as per the S&Gs. According to the artifact catalogues of the five sites used in this research, only two cellars were excavated stratigraphically, even though some of the other cellars were noted to have multiple layers.

For the two cellars excavated by strata, the vertical difference in artifact frequencies revealed uneven distributions as markedly as horizonal distributions. I was also able to consider these distributions by artifact groups to break down the gross artifact frequencies further across these cellar strata. Being able to make this distinction is important, given general assumptions about the variation of in-use (i.e., daily living) and post-use (i.e., infilling and architectural collapse) deposition. Those assumptions were generally reflected in the Peter Edwards cellar (Appendix A:Table 4.4), but the Topping 1 cellar, with a small artifact yield, was more evenly distributed. As well, a closer look at the Peter Edwards stratigraphic breakdown by artifact types suggests that strata difference between architectural and kitchen group artifacts reflected unique depositional histories, rather than exclusive distinctions that differentiate simply by artifact class. Moreover, temporally sensitive classes of artifacts (Appendix A: Table 4.5), did not neatly separate out into frequency differences reflecting in-use and post-use temporal periods, and were, surprisingly, inverted for chronologically diagnostic refined earthenware types. Overall, this limited data again suggests depositional cellar histories are idiosyncratic rather than predictive, and questions the logic of assuming upper deposits are somehow not relevant to interpreting the feature as a whole.

More generally, I also considered distribution of artifact groups yielding over 100 objects by the three hypothetical scenarios I had explored earlier, to see if interpretive classes of artifacts were more evenly distributed across cellars. Generally, most artifact categories across most cellars explored in this study were not evenly distributed and again failed to meet the inferred null hypothesis explored in this thesis. Notably, of the 14 artifact groups tested against Scenario 1, eight of fourteen examples (57%) failed to meet the null hypothesis at a 95% confidence level. Though it is worth noting that if the confidence

level is lowered to 90%, ten examples (71%) then do meet the null hypothesis. When I aggregated all scenarios for each of the five cellars where I could consider all three scenarios, however, only the Kitchen Group from Topping 2 meets the null hypothesis, underscoring that artifact distribution remains variable across most artifact categories.

Finally, I tabulated across all cellars all instances of testing an artifact group across any scenario (Appendix A: Table 4.15). Overall, 73% of those tests failed to meet a 95% confidence level to support the null hypothesis. If the confidence level is weakened to 90%, that failure rate drops to 54% overall. I was surprised to see that, of the principal artifact groups I could examine across all cellars, Kitchen Group artifacts met the null hypothesis 50% of the time, or 64% of the time at a 90% confidence level. At the very least, this does suggest a degree of ubiquitous distribution of this grouped range of artifact types across cellars over their use lives.

5.2 Implications — CRM Management of Nineteenth Century Domestic Sites

From the research perspective of this study and its exploration of the implied assumptions of the S&G standard for nineteenth century domestic site cellars, a minimum requirement of 50% feature excavation does not appear to provide a comprehensive representation of the full artifact yield, internal stratigraphy, material use patterns, and structural qualities of planned permanence. The variable results for each cellar context explored here provided evidence that cellars are less predictable than commonly assumed, and that human agency leads to variable depositional behaviour.

As it stands, if a consultant assumes any cultural feature is a cellar, large or not, then they can reasonably assume Standard #3 and associated guidelines for nineteenth century domestic site cellars applies. The lack of definition of what such features are, and the potential for in the field misidentifications from plan views and surface of feature finds, can lead to improper documentation and analysis of features that, though excavated to the cellar standard, may not have been a cellar. This variable application also suggests the standard itself is being interpreted by CRM field workers to apply to any large feature, leading to rote use of culture feature classifications.

This variability in feature identification reflects what appears to be a more generalized variable understanding in the Ontario archaeological community over what the nineteenth century domestic site record consists of, why it is being conserved, and to what end, as Ferris (2007a) previously discussed. Not surprising then that the S&Gs appear to reflect variable notions of value for the nineteenth century domestic site archaeological record, and contradictory intents of the standard itself. Even dating back to 2004 when the Province vetted a draft of the S&Gs with the TAG focus group before wider consultation with the Ontario CRM community at large, the variable valuation (and latent bias) effectively targeted this one specific type of cultural feature for reduced excavation. As Ferris' notes indicate[7], most respondents during the S&Gs vetting process were not in favour of a reduced excavation standard on nineteenth century cellars as a minimum form of practice, yet the members of the TAG group were. The formal implementation of this standard was met with no reaction or call to change, so this is a curious juncture. It would seem that the guidance of the associated guideline that allows for the full excavation of a cellar feature as an optional form of practice was sufficient enough to allow for CRM practitioners to pursue these types of features on an objective basis, or seemingly any "large" feature for that matter, effectively wrapped up in the codified words "professional judgement."

Indeed, that variable understanding and difference in valuing nineteenth century domestic sites has continued to play out across the CRM community since the adoption of the S&Gs in 2011. Notably, just three years later, the MTCS felt it necessary to release a 42-page technical bulletin entitled *The Archaeology of Rural Historical Farmsteads – a DRAFT Technical Bulletin for Consultant Archaeologists in Ontario.* This document is intended to offer advice and insight into managing this site type, with a particular focus on "how to evaluate the cultural heritage value or interest of a farmstead" (MTCS 2014:1), which is defined "as a complex of structures and landscape features… since Europeans arrived in the province… [including] a house, outbuildings and land." That the Province felt the need to clarify its direction for this site type so soon after the original S&Gs had been released strongly suggests that variable assumptions of practice were

[7] Ibid.

leading to variable levels of documentation, presumably shaped by contradictory statements and variability in valuing this part of the record in the S&Gs.

While the document remains a draft today, it appears to have been developed as a result of early differences in interpreting and operationalizing S&G standards around nineteenth century domestic sites that appear to date, in part or mostly, after 1870. In the bulletin, farmsteads are defined as having "…*some* degree of cultural heritage value or interest…" (MTCS 2014:1, emphasis added), and primarily focuses on advising consultant archaeologists on how the Province will accept a finding of no CHVI for this site type. The technical bulletin also reiterates in significant detail a range of expectations around basic field and historical research practices, and the operational steps in identifying, evaluating, and documenting these sites within the intent of the S&Gs. There is very little further guidance on Stage 4 excavation in the document, and no clarification of what constitutes a cellar, or any meaningful reference to this feature, other than it is not identified as a type of outbuilding found on farmsteads. Overall, then, the technical bulletin, and its emphasis on "rural farmsteads," appears only to further underscore the generic assumptions about nineteenth century sites that shape CRM practice (see Ferris 2007a:3-4).

Indeed, as a full-time employee in Ontario CRM myself, I regularly encounter these variable and contradictory assumptions about the nineteenth century domestic site record in the practices and in the attitudes expressed by colleagues. Notably, over the course of undertaking this research, I have had ample opportunity to speak to, and be asked by, colleagues about nineteenth century archaeology and cellar features. Those very informal conversations have left me with the impression, from within my admittedly limited circle of interaction, that the Ontario CRM community generally still has mixed feelings to field investigating this feature type. Some colleagues say they prefer to rely on the excavation of opposing quadrants as per the S&Gs minimum excavation standard, while others indicate they tend to excavate the feature entirely, and yet others suggest they tend to determine their excavation strategy based on professional judgement on a per feature basis. Any logic articulated for not completely excavating cellars tend to focus on time

and fiscal constraints rather than as a viable sampling strategy, and also because the S&Gs "said so."

Ironically, the results of my research suggest that the variability between quadrant artifact yields is such that depending on quadrants selected, a consultant archaeologist could end up with as much as 80% of the feature's artifacts yield, or as little as 30%. In other words, as a time and cost-saving stratagem, 50% quadrant excavation is more a roll of the dice than a real benefit.

Alternatively, the logics that seem to inform full excavation of these features, in my experience, tend to focus on the fact that the cellar is a unique feature that represents a core component of the homestead settlement pattern, perhaps combined with a general discomfort in leaving intact deposits behind.

Also, impressionistically, I have been struck by some of the approaches to post-use strata in cellars I have seen and heard from conversations with colleagues. Beyond not excavating by strata, there can be a tendency to assume the post-fill stratum in a cellar is not relevant to the feature itself or even the site. This assumption concludes that artifacts found within the upper stratum may date to a later period, perhaps post-1870 and thus lacking CHVI and not relevant to the archaeological history of the cellar. As such, this deposit is not considered necessary to document or recover. Guideline #1 in Section 4.2.7 of the S&Gs (MTCS 2011:82) affirms this view, stating that consultants "…may use mechanical means to remove heavy post-use fill above living strata," thus justifying the expeditious removal of post-use deposits by shovel (i.e., mechanically; also interpreted as "mechanically" by machine) during cellar excavation. Indeed, this is a trade-off several colleagues cite to justify the "full" excavation of a cellar otherwise (i.e., removing by hand or machine the upper deposit of a cellar and tossing it aside before beginning to recover material). And with most cellars generating close to half or more of the total site artifact yield from an excavation, eliminating the recovery of material from upper strata avoids the recovery of "too many artifacts" that subsequently need to be stored.

As my research has shown, deposition by strata is not discrete, likely more mixed than assumed, and represents more of a gradation over the entire life of the cellar, rather than a hard boundary between archaeologically relevant material and "recent disturbances."

Moreover, the findings here suggest that, when taken together, the upper and lower strata together represent a complete history of the cellar and reflect aspects of the use-life of the site itself. But with no specified considerations for the valuation of artifact context within upper strata for this feature type in the S&Gs, the approach to cellar excavation is perceived to simply add to the site's gross artifact totals, rather than tease out life history. Also, focusing on stratigraphy, I believe, would lead to better cellar-type identification, with the more complex cellars (i.e., indicators of planned permanence) generally providing a robust interpretive framework to explore against the rest of the site's contextual record.

A major takeaway from this study is that the information potential of a *complete* cellar assemblage represents the ideal that should drive cultural feature documentation and recovery, providing in-situ contextual data amounting to 40% or more of a site's entire artifact assemblage. As it stands, while the current standard may reflect the assumption that more is the same or redundant when fully excavating cellars, in practice this standard has everything to do with time and labour expediencies, and reducing the size of recovered assemblages. This distinction is important since the null hypothesis for my research assumed the intent of the standard was on effective sampling and not about CRM efficiencies. More importantly here is that if the cellar standard in the S&Gs is more accurately about minimizing cost, time, and quantity of recovered material, then another null hypothesis needs to be considered: namely that half excavation of a cellar is an adequate trade-off between recovering some portion of these features and the need to minimize costs to client and time to consultant companies.

This study was not designed to explore that alternate hypothesis and the commercial practices of CRM more generally. However, as noted previously, this research suggests any assumption of cost savings through the excavation of half a cellar is less than imagined, depending on quadrants selected. These variable results also bring into question a critical point here, that partial datasets may not provide a representative sample, especially true for highly artifact laden cellars. This may affect not only CRM interpretations of chronology and socio-economic patterns, but also the ability for future researchers to apply these results to their analyses; especially if post-use strata are not

considered, or if cellar patterns prove at odds with surface finds due to distinct depositional processes (e.g., MacDonald 1997).

The findings from this research have shown that artifact assemblages can be skewed, a little or a lot, by the partial recovery of a cellar feature context. That this feature type, mostly unique to sites of the nineteenth- and twentieth-century archaeological record, is targeted in this manner underscores a continuing differential perception of the value of the historical archaeological record. A kind of temporal bigotry, as Charles Orser Jr. (1981) notes, and Kenyon (1986) and Ferris (2007a) have suggested for Ontario. If nineteenth century sites are so common in Ontario that we do not need to recover this intact cultural context, should we not first have established a better understanding of what actually comprises a historic farmstead complex and the full range of cellar-like features, when we choose to forego the expenditure of fully documenting this record? Yes, cellars are large, but so are other feature types, such as sweat lodges, which are clearly expected to be fully excavated and not sampled. Or is it really that we are not finding enough objectively exciting material inside a cellar context to consider it essential to be recovered?

This research can effectively state that the remnant bias towards the historical archaeological record has been codified into the spirit of the S&G standards, the same bias that Kenyon and Ferris noted in the twentieth century for an Ontario CRM archaeology, predominately consisting of prehistoric specialists when this part of the record was first recognized as being of heritage significance. So, as it currently stands, when CRM practitioners adhere to the 50% excavation standard for cellar excavation, they are also adhering to an underlying archaeological assumption that there is limited value in what is being recovered and, by effect, what is also left behind. Ian Kenyon's (1986) Rodney Dangerfield notion that historical archaeology does not merit the same respect as other periods of the archaeological record thus persists. Ultimately, that this remnant bias has been imbued into Ontario's S&Gs is unfortunate, because my research has found that outside the microcosm of Ontario CRM, there are research groups[8],

[8] Society for Historical Archaeology (SHA), https://sha.org/; Council for Northeast Historical Archaeology (CNHA), https://cneha.org/

academic journals[9], and conferences[10] devoted to the merits of historical archaeology and its intrinsic research value, especially considering the value of nineteenth century cellar datasets.

What my research suggests is that there are consequences to these perceptions of value. If we restrict the research information potential that we are recovering during fieldwork then this will inevitably lead to incomplete or deficient datasets. Indeed, we will not be able to examine and assess what effective sampling strategies could be for this feature type, and in what contexts. We are unable to compare half a recovered cellar assemblage to the site as a whole or to other site assemblages because we simply will not know when or whether these partial assemblages are at all representative of the feature or site.

So, the current practice is a curious one that seems only to reaffirm prevailing opinions that originated over forty years ago and is sustained through rote practices. Archaeological datasets are inarguably limited, and with the modern demands of commercial and residential development of Ontario's urban and rural centres, the CRM industry's increasing harvest of this record will diminish the research potential of these sites. Eventually, as researchers are unable to use these partial or banal findings, that lack of utility will simply reaffirm that there is no deeper research purpose for the material found in cellar contexts. And that affirmation in turn will re-confirm the lack of a need to fully excavate these kinds of sites (or bother with them).

This thesis continues a reflexive consideration of the CRM industry and how that practice shapes our attitudes towards the archaeological heritage of this province, the recovered record, and the role of archaeology in managing this heritage. Moving forward, I hope this research can provide some baseline understandings about nineteenth century domestic site cellar features and what they represent as vital cultural features on sites from this period. These understandings can allow for an informed approach to reassess the S&Gs cellar standard, and the implicit shortcomings and biases hidden within just a few lines of governance text. Hopefully, this thesis can contribute to potential changes in

[9] *Historical Archaeology*, ed. SHA; *International Journal of Historical Archaeology*, ed. Charles Orser, pub. Springer; *Northeast Historical Archaeology*, ed. CNHA
[10] Both SHA and CHNHA host annual conferences, as well as the OAS in Ontario.

those industry standards that will help better document, recover, or at least better sample this cultural feature, to improve both CRM and academic research arising from this recovered record. The S&Gs should provide a more comprehensive representation of what cellar feature excavation can entail, and CRM archaeologists can then critically assess nineteenth century cellar features like any other feature: wholly, and by strata. This change will allow the CHVI of nineteenth century domestic cellars and sites to facilitate a recovered record that invites new research into cultural feature use-life and social dimensions of the people(s) that used them. And the S&Gs can begin to shed the old biases latent in the document.

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Appendix A: Tables in this thesis

Table 3.1: O'Connor Site Comparison Between Artifact Totals from Entire Site and Cellar				
Artifact Groups	Total from entire site assemblage	% of entire site assemblage	Total from cellar feature	% of cellar artifacts versus entire site assemblage
Architectural	3974	26.77%	2407	16.22%
Furnishings	28	0.19%	17	0.11%
Personal	654	4.41%	419	2.82%
Tools and Equipment	283	1.91%	183	1.23%
Organic	2423	16.32%	1770	11.92%
Kitchen/Food Related	6031	40.63%	2348	15.82%
Indeterminate	1449	9.76%	843	5.68%
Aboriginal	2	0.01%	0	0.00%
Total	14844	100.00%	7987	53.81%

Table 3.2: New Breakdown of O'Connor Site Cellar, by artifact group and class							
Artifact Groups	Artifact Group Total	Artifact Classes	Artifact Class Total	Quadrant			
				NW	NE	SW	SE
Kitchen Artifact	1757						
		bowl, general	20	10	2	4	4
		container, liquor	71	22	15	26	8
		crock	3	2			1
		flatware	378	70	106	81	121
		fork	4	1	1		2
		hollowware	526	124	158	145	99
		knife, other	2		2		
		knife, table	7	4		1	2
		milkpan	4	4			
		pitcher	2	1			1
		plate, general	103	12	40	31	20
		plate, supper	52	4	7	21	20
		plate, table	42	4	10	20	8
		plate, twiffler	10		1	9	
		saucer	267	63	74	59	71
		skillet	2		1		1
		spoon, other	3		1	2	
		spoon, serving	3		1	2	
		spoon, table	9	2		3	4
		spoon, tea	2		1		1
		teacup	231	51	50	87	43
		teas	3				3
		utensil	13	2	4	1	6
		total	1757	376	474	492	415
Architectural	2407						
		brick/mortar	0				
		hinge	1			1	
		latch hook	1			1	
		nail, hand-wrought	69	13	21	14	21
		nail, indeterminate	437	141	159	13	124
		nail, machine cut	1077	253	281	322	221
		nail, wire	1	1			
		window glass	821	203	315	121	182
		total	2407	611	776	472	548
Clothing	83						
		button	73	30		22	21

		dress hook	4	3	2	1	
		shoe fragment	6	2	2		
		total	83	35	4	23	21
Personal	99						
		bead	1				1
		chamberpot	1				1
		comb	19	7	4	7	1
		container, ink	3	1	2		
		container, medicine	8	1	4	2	1
		jewel	1			1	
		pendant	4		2	1	1
		slate pencil	28	5	14	3	6
		slate tablet	34	11	10	1	12
		total	99	25	36	15	23
Tobacco Pipe	302						
		total	302	77	109	51	65
Activities	120						
		bolt	3			2	1
		chain link	1				1
		file	1	1			
		fishhook	1				1
		grommet	1				1
		harness buckle	7	3	1		3
		horse shoe nail	34	9	13	5	7
		key	4		2		2
		lock	2		1		1
		marble	5	1		1	3
		pail	7			6	1
		plough tine	1	1			
		screw	3	1	2		
		spike	4		4		
		staple	3		2	1	
		straight pin	20	9	2	2	7
		strapping	2			2	
		tack	6	3	3		
		thimble	1	1			
		wire	14	7	7		
		total	120	36	37	19	28
Furniture	17						
		clock fragment	2		2		
		coat hook	2	1			1

		lamp chimney	13		8	2	3
		total	17	1	10	2	4
Indeterminate/Unclassifiable	1432						
		container, unidentifiable	236	46	60	64	66
		unidentified non-ceramic	605	193	155	111	146
		unidentifiable ceramic	591	184	132	117	158
		total	1432	423	347	292	370
Floral & Faunal	1770						
		total	?	?	?	?	?
Lithic	0						
		total	0	0	0	0	0
Total (without Faunal)	6217			1584	1793	1366	1474
Total (with Faunal)	7987						

Table 3.3: Dennison Site Comparison Between Artifact Totals from Entire Site and Both Cellars						
Artifact Groups	Total from entire site assemblage	% of entire site assemblage	Total from cellar, Feature 38	% of cellar artifacts versus entire site assemblage	Total from cellar, Feature 45	% of cellar artifacts versus entire site assemblage
Architectural	769	10.79%	68	0.95%	123	1.73%
Furnishings	10	0.14%	2	0.03%	1	0.01%
Personal	252	3.53%	6	0.08%	170	2.38%
Tools and Equipment	260	3.65%	26	0.36%	102	1.43%
Organic	475	6.66%	103	1.44%	54	0.76%
Kitchen/Food Related	4493	63.02%	296	4.15%	2421	33.96%
Indeterminate	871	12.22%	6	0.08%	710	9.96%
Total	7130	100.00%	507	7.11%	3581	50.22%

Table 3.4: New Breakdown of Dennison Site Cellars (Features 38 and 45), by artifact group and class										
			Feature 38				Feature 45			
			Artifact Class Total	Surface	Halves		Artifact Class Total	Surface	Halves	
Artifact Groups	Combined Artifact Group Total	Artifact Classes			East	West			North	South
Kitchen Artifact	2717									
		(blank)	0				3			3
		bowl, general	10	1		9	0			
		container, food	0				19		19	
		container, liquour	1		1		190	4	176	10
		container, soft drink	1	1			15		11	4
		dish, covered	0				8			8
		dish, meat	0				11		3	8
		flatware	95	38	20	37	464	27	259	178
		hollowware	72	32	16	24	1388	41	802	545
		jug	0				32		32	
		knife, table	1		1		0			
		liner	0				1		1	
		milk crock	0				23		23	
		milkpan	11	8		3	33		3	30
		plate, general	23	8	13	2	58	1	47	10
		plate, supper	0				16	2		14
		plate, table	8	1	4	3	7		6	1
		plate, twiffler	0				13		4	9
		pot	3			3	2		1	1
		preserve jar	1			1	0			
		saucer	22	1	9	12	37		18	19
		spoon, other	2			2	0			
		spoon, tea	2		2		0			
		teacup	12	2	3	7	13		7	6
		teas	31	10	4	17	12		1	11
		teapot	1	1			58	4	36	18
		tureen, soup	0				2		2	
		waste bowl	0				16			16
		total	296	103	73	120	2421	79	1451	891
Architectural	191									
		brick/mortar	1		1		6		3	3
		chinking	0				1			1
		nail, hand-wrought	17	2	3	12	9		4	5
		nail, indeterminate	0				12		12	
		nail, machine cut	47	6	17	24	74		40	34
		nail, wire	1	1			7		6	1
		window glass	2	1	1		14		9	5
		total	68	10	22	36	123	0	74	49
Clothing	114									
		button	3		1	2	3		1	2

		shoe fragment	0				108		99	9
		total	3	0	1	2	111	0	100	11
Personal	69									
		chamberpot	0				14		10	4
		container, medicine	0				38		37	1
		container, toiletry	0				1		1	
		doll	0				2			2
		toy	0				11			11
		wash basin	0				3		2	1
		total	0	0	0	0	69	0	50	19
Tobacco Pipe	6									
		total	3	1	1	1	3	0	1	2
Activities	115									
		axe head	1		1		0			
		blacking bottle	0				4			4
		bolt	0				4		4	
		bracket	0				1		1	
		drainage tile	0				36		1	35
		drainer tile	0				6		6	
		ink bottle	0				2		2	
		metal, scrap	17		11	6	0			
		scythe blade	3		3		0			
		shovel	0				1		1	
		strapping	3		1	2	0			
		thimble	1		1		0			
		washer	0				1		1	
		wire	1		1		34	4	23	7
		total	26	0	18	8	89	4	39	46
Furniture	3									
		key	1			1	0			
		fireplace grate	1		1		0			
		oil lamp burner	0				1		1	
		total	2	0	1	1	1	0	1	0
Floral & Faunal	157									
		faunal, avian	1			1	1		1	
		faunal, mammal	102	2	68	32	53		36	17
		total	103	2	68	33	54	0	37	17
Indeterminate / Unclassifiable	716									
		container, unidentifiable	5		5		302	27	244	31
		unidentified non-ceramic	1		1		7	3		4
		unidentifiable ceramic	0				22	9	13	
		other	0				379	16	284	79
		total	6	0	6	0	710	55	541	114
	4088									

Total Assemblage		Total Feature	507	116	190	201	3581	138	2294	1149

Table 3.5:Peter Edwards Site Comparison Between Artifact Totals from Entire Site and Cellar				
Artifact Groups	Total from entire site assemblage	% of entire site assemblage	Total from cellar feature	% of cellar artifacts versus entire site assemblage
Activities	353	2.04%	48	0.28%
Architectural	3986	23.04%	2570	14.85%
Arms and Military	3	0.02%	3	0.02%
Domestic Activities	7	0.04%	6	0.03%
Foodways	8995	51.98%	3016	17.43%
Furnishings	4	0.02%	3	0.02%
Organics	2345	13.55%	1446	8.36%
Personal	292	1.69%	232	1.34%
Pre-Contact	20	0.12%	12	0.07%
Recreational	12	0.07%	8	0.05%
Unclassifiable	1287	7.44%	600	3.47%
Total	17304	100.00%	7944	45.91%

Table 3.6: New Breakdown of Peter Edwards Site Cellar, by artifact group and class									
Artifact Groups	Artifact Group Total	Artifact Classes	Artifact Class Total	Quadrant					
				NE	NW		SE		SW
				Stratum 1	Stratum 1	Stratum 2	Stratum 1	Stratum 2	Stratum 1
Kitchen Artifact	3016								
		alcohol beverage bottle	2			1			1
		colander	2			2			
		cup	8			2			6
		fork	4			1	1	2	
		handle	5		1	4			
		knife	3	1		1			1
		lid knob	1			1			
		spoon	9		2	2			5
		storage , unidentifiable	1					1	
		tableware, unidentifiable	2980	146	419	827	46	127	1415
		teapot lid	1		1				
		total	3016	147	423	841	47	130	1428
Architectural	2570								
		brick	253	139	37	64	2		11
		foundation material/mortar	50	22	6	2	16		4
		nail, machine cut	222	26	36	9	100	26	25
		nail, wrought	19	1	7	2	1		8
		nail, indeterminate	1435	277	325	317	75	27	414
		window glass	587	70	129	74	39	39	236
		wall finishing/plaster	4				4		
		total	2570	535	540	468	237	92	698
Clothing	103								
		button	93	4	27	24	3	3	32
		eyelet	2		2				
		fastener	1		1				
		garment part, unidentifiable	3		3				
		grommet	1						1
		hook	2						2
		suspender brace	1		1				
		total	103	4	34	24	3	3	35
Personal	38								
		slate pencil	12		4		1		7
		bead	5				1		4
		broach	1			1			
		coin/token	12		7	2			3
		comb	8		2		6		

		total	38	0	13	3	8	0	14
Activities	50								
		horseshoe nail	4	1				2	1
		horseshoe	1		1				
		flower pot	31	1	5	18		7	
		sewing needle	1						1
		thimble	5	1	1				3
		jaw harp	1		1				
		marble	7	2	3			1	1
		bell	0						
		total	50	5	11	18	0	10	6
Furniture	3								
		figurine	2						2
		hinge	1						1
		total	3	0	0	0	0	0	3
Floral & Faunal	1446								
		mammal	1271	150	259	369	28	71	394
		avian	123	1	32	48		3	39
		fish	43		17	7		4	15
		mollusk	9			9			
		total	1446	151	308	433	28	78	448
Indeterminate/ Unclassifiable	600								
		glass storage container, unidentifiable	48		12	21	1		14
		ceramic, unidentifiable	162	6	35	48			73
		nonceramic, unidentified	390	84	67	69	22	7	141
		total	600	90	114	138	23	7	228
Tobacco Pipe	103								
		total	103	2	35	27	0	2	37
Arms	3								
		total	3	0	2	1	0	0	0
Lithic	11								
		total	11	0	2	3	0	0	6
Total Feature Assemblage	7943								
		total feature	7943	934	1482	1956	346	322	2903

Table 3.7: Durst Site Comparison Between Artifact Totals from Entire Site and Cellar				
Artifact Groups	Total from entire site assemblage	% of entire site assemblage	Total from cellar feature	% of cellar artifacts versus entire site assemblage
Activities	8	0.69%	3	0.26%
Architectural	219	18.86%	70	6.03%
Clothing	24	2.07%	19	1.64%
Faunal & Floral	136	11.71%	68	5.86%
Food and Beverage	562	48.41%	45	3.88%
Fuel	10	0.86%	3	0.26%
Furniture	2	0.17%	1	0.09%
Health & Hygiene	65	5.60%	7	0.60%
Smoking	32	2.76%	16	1.38%
Unassigned Material	55	4.74%	10	0.86%
Unknown	46	3.96%	14	1.21%
Modern	1	0.09%		0.00%
Native	1	0.09%		0.00%
Total	1161	100.00%	256	22.05%

Table 3.8: New Breakdown of Durst Site Cellar, by artifact group and class								
Artifact Groups	Combined Artifact Group Total	Artifact Classes	Feature 15					
			Artifact Class Total	Surface (East Half)	NE	NW	SE	SW
Kitchen Artifact	45							
		bowl	2				2	
		flatware	6		2	1	2	1
		hollowware	10	2		3	1	4
		knife	1		1			
		plate	5	3			1	1
		platter	1	1				
		saucer	8	2		3	2	1
		spoon	3					3
		tableware	8		1	1		6
		tea cup	1	1				
		total	45	9	4	8	8	16
Architectural	70							
		nail, cut	40	4	1	5	8	22
		pane glass	18	2	4		6	6
		wall finishing	11	2	1	6	1	1
		window came	1		1			
		total	70	8	7	11	15	29
Clothing	19							
		button	17	2	4	5	3	3
		hook & eye	2		1			1
		total	19	2	5	5	3	4
Personal	7							
		drug bottle	6		2	4		
		pharmaceutical bottle	1		1			
		total	7	0	3	4	0	0
Tobacco Pipe	16							
		total	16	3	0	1	4	8
Activities	6							
		bucket	1					1
		fuel - charcoal	3			1	1	1
		needle	1			1		
		straight pin	1			1		
		total	6	0	0	3	1	2
Furniture	1							
		furniture tack	1			1		
		total	1	0	0	1	0	0
Floral & Faunal	68							
		mammal bone	16		16			
		unknown bone	52	8		15	15	14

		total	68	8	16	15	15	14
Indeterminate / Unclassifiable	24							
		unassigned material	10			5	3	2
		unknown - ceramic	1	1				
		unknown - composite	2				1	1
		unknown - glass	5	3	1			1
		unknown - metal	6	1	2	2		1
		total	24	5	3	7	4	5
Total Assemblage	256							
		Total Feature	256	35	38	55	50	78

Table 3.9: Topping Site Comparison Between Artifact Totals from Entire Site and Both Cellars						
Artifact Groups	Total from entire site assemblage	% of entire site assemblage	Total from cellar, Feature 27	% of cellar artifacts versus entire site assemblage	Total from cellar, Feature 34	% of cellar artifacts versus entire site assemblage
Activities	33	1.45%			22	0.97%
Architectural	274	12.02%	29	1.27%	66	2.90%
Clothing	66	2.90%			62	2.72%
Dental	1	0.04%			1	0.04%
Faunal & Floral	1024	44.93%	39	1.71%	654	28.70%
Food & Beverage	722	31.68%	125	5.48%	123	5.40%
Fuel	6	0.26%	1	0.04%	1	0.04%
Health & Hygiene	7	0.31%			6	0.26%
Lighting	4	0.18%				
Modified	2	0.09%	1	0.04%		
Native	3	0.13%				
Personal	4	0.18%			4	0.18%
Smoking	24	1.05%	3	0.13%	16	0.70%
Unassigned Material	60	2.63%	1	0.04%	42	1.84%
Unknown	49	2.15%	2	0.09%	9	0.39%
Total	2279	100.00%	201	8.82%	1006	44.14%

Table 3.10: New Breakdown of Topping Site Cellars (Features 27 and 34), by artifact group and class																					
			Feature 27														Feature 34				
				NE			NW			SE			SW								
Artifact Groups	Combined Artifact Group Total	Artifact Classes	Artifact Class Total	Stratum 1	Stratum 2	Stratum 3	Stratum 1	Stratum 2	Stratum 3	Stratum 1	Stratum 2	Stratum 3	Stratum 1	Stratum 2	Stratum 3	Artifact Class Total	NE	NW	SE	SW
Kitchen Artifact	248																				
		flatware	19	4		2	1	4		2			6			0				
		fork	0													1		1		
		glassware	0													1				1
		handle	0													2		2		
		holloware	30	7			2	5			6		10			0				
		knife	0													2		1	1	
		lid	0													0				
		saucer	1										1			0				
		spoon	0													3	2			1
		tableware	72	9		13		5		18	6		21			108	20	33	24	31
		unknown	2							2						1			1	
		utensils	0													0				
		utilityware	0													5	1			4
		wine bottle	1					1								0				
		total	125	20		15	3	15		22	12		38			123	23	37	26	37
Architectural	96																				
		brick	4					1					3			8	4	1	1	2
		cut nail	16	3		3	2	2		2	3		1			30	12	6	9	3
		mortar	0													2	2			
		nail - unidentifiable	0													1				1

		window glass	9	1		1		1		3	2		1			17	5	1	5	6
		wrought nail	1							1						7	1		1	5
		wrought spike														1			1	
		total	30	4		4	2	4		6	5		5			66	24	8	17	17
Clothing	73																			
		button														62	14	15	16	17
		needle case lid														1				1
		scissors														1	1			
		straight pin														9	8		1	
		total	0													73	23	15	17	18
Personal	19																			
		coin														2		1	1	
		drug bottle														2			2	
		lice comb														1				1
		pharmaceutical bottle														3			1	2
		slate pencil														5	4		1	
		slate tablet														5	1		3	1
		tooth														1		1		
		total	0													19	5	2	8	4
Tobacco Pipe	19																			
		total	3	2											1	16	3	6		7
Activities	5																			
		charcoal	1										1			1	1			
		doll														1	1			
		horseshoe nail																	1	
		jaw harp																1		
		total	1										1			4	2	1	1	

Furniture	0																			
		total	0													0				
Floral & Faunal	693																			
		avian	4								4					10	3	3	1	3
		egg shell														2	1			1
		fish	8										8			11	9	2		
		indeterminate	11				1						10			131	128		3	
		mammal	14	6						6			2			140	62	30	12	36
		rodent	1										1			351	335		16	
		seed/pit	1										1			5	5			
		shell														3	1	1	1	
		snail														1	1			
		total	39	6			1			6	4		22			654	545	36	33	40
Indeterminate / Unclassifiable	54																			
		ceramic	2	1									1			2				2
		glass														4	1			3
		metal	1	1												45	15		18	12
		total	3	2									1			51	16		18	17
Total Assemblage	1207																			
		Total Feature	201	34	0	19	6	19	0	34	21	0	67	0	1	1006	641	105	120	140

Table 3.11: Site comparison between the gross number of artifacts found in cellar contexts versus site total

Site Name	Artifact Total in Cellar(s)	Site Total	Percentage of Site Assemblage
O'Connor	7987	14844	53.80%
Peter Edwards	7943	14959	53.10%
Dennison 2	3581	7130	50.20%
Topping 2	1006	2279	44.10%
Durst Pit	256	1161	22.00%
Topping 1	201	2279	8.80%
Dennison 1	507	7130	7.10%
Dennison 1 & 2	4088	7130	57.30%
Topping 1 & 2	1207	2279	53.00%
Average	3068.71	7111.71	43.20%

Table 3.12: Comparison of Artifact Totals By Site and Feature Type

Peter Edwards		O'Connor		Durst		Topping*		Dennison**	
7943	f	7987	f	256	f	1006	f	3581	f
106	i	1882	g	130	n	275	o	507	f
83	n	185	r	86	r	201	f	347	i
18	l	124	n	64	j	195	p	78	n
3	k	2	q	54	j	176	q	39	d
3	l			43	n	141	c	25	a
1	k			22	b	60	n	17	a
				2	j	43	l	17	k
				1	j	42	m	12	l
				0	h	30	l	12	k
						25	l	10	k
						24	n	10	n
						13	k	9	k
						11	e	9	n
						3	n	8	k
						1	l	7	k
						0	c	7	k
								5	k
								5	k

	Legend of Feature Types:
a	animal burial
b	ash dump
c	ash pit
d	barn footing
e	brick concentration
f	cellar
g	dairy/other farm outbuilding
h	ditch
i	drain
j	indeterminate pit
k	post mould
l	refuse filled depression
m	refuse filled depression/rodent burrow
n	refuse pit
o	refuse/ash pit
p	refuse/ash pit, and post mould
q	unknown/undetermined
r	well

*Topping cellars: Feature 27=201; Feature 34=1006

**Dennison cellars: Feature 38=507; Feature 45=3581

**Dennison site also has an additional 12 features with less than 5 artifacts; 1- post-moulds, 1 animal burial, and 1 refuse filled depression

Table 3.13: Measurements and Shape of Cellar Features (cm)					
Site Name	Feature Number	Length	Width	Depth	Plan, Profile
O'Connor	12	320	263	44	Rectangular, basin
Peter Edwards	8	352	286	60	Oval to Rectangular, basin
Dennison 2	45	285	225	70	Round, basin
Topping 2	34	137	114	22	Pear, basin
Durst Pit	15	320	170	75	Rectangular, shallow basin
Topping 1	27	360	210	33	Irregular, basin
Dennison 1	38	275	250	35	Rectanguloid, basin
Average		292.7	216.9	48.43	Rectangle-shaped, basin

Table 3.14: Topping Site, Comparing Feature 27 with other highest artifact yielding features						
Feature	25	27	29	34	38	50
Feature Type	refuse/ash pit, and post mould	potential cellar	refuse/ ash pit	large refuse pit or small potential cellar	unknown	ash pit
Total Artifact Yield	195	201	275	1006	176	141
Kitchen Group	132	125	50	123	130	31
Floral & Faunal Group	31	39	156	654	10	60
Architectural Group	26	30	56	66	21	22
Clothing	1	0	0	73	2	0
Smoking Pipe	1	3	0	16	2	0
Personal	0	0	0	19	0	1
Activities	0	1	1	4	0	3
Furniture	0	0	0	0	0	4
Lithic	0	0	1	0	0	0
Indeterminate/Unclassifiable	4	3	11	51	11	20
% of Total Feature Yield	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Feature Dimensions and Shape						
length	130	360	172	137	385	127
width	105	210	130	114	316	128
depth	17	33	13	22	45	13
plan	irregular	irregular	circular	pear	irregular	circular
profile	shallow double basin and post	basin	layered basin	basin	shallow and linear	shallow basin

Table 4.1: Chi Square Test Results					
O'Connor Site					
Category	Observed	Expected	Difference	Chi Square	p-value
NE	1793	1554.25	238.75		
NW	1584	1554.25	29.75		
SE	1474	1554.25	-80.25		
SW	1366	1554.25	-188.25		
Total*	6217			64.18835451	7.48098E-14
*Without faunal artifacts					
Peter Edwards Site					
Category	Observed	Expected	Difference	Chi Square	p-value
NE	934	1985.75	-1051.75		
NW	3438	1985.75	1452.25		
SE	668	1985.75	-1317.75		
SW	2903	1985.75	917.25		
Total	7943			2917.29611	0
Durst Pit Site					
Category	Observed	Expected	Difference	Chi Square	p-value
NE	38	55.25	-17.25		
NW	55	55.25	-0.25		
SE	50	55.25	-5.25		
SW	78	55.25	22.75		
Total	221			15.25339367	0.001612424
Topping Farm Site - Feature 27 (Topping 1)					
Category	Observed	Expected	Difference	Chi Square	p-value
NE	53	50.25	2.75		
NW	25	50.25	-25.25		
SE	55	50.25	4.75		
SW	68	50.25	17.75		
Total	201			19.56	0.000209657
Topping Farm Site - Feature 34 (Topping 2)					
Category	Observed	Expected	Difference	Chi Square	p-value
NE	641	251.5	389.5		
NW	105	251.5	-146.5		
SE	120	251.5	-131.5		
SW	140	251.5	-111.5		
Total**	1006			19.56	1.4888E-174
**Inflated Faunal Total in NE Quad					
Dennison Site - Feature 38 (Dennison 1)					
Category	Observed	Expected	Difference	Chi Square	p-value
East	190	195.5	-5.5		
West	201	195.5	5.5		
Total	391			0.31	0.958239047
Dennison Site - Feature 45 (Dennison 2)					

Category	Observed	Expected	Difference	Chi Square	p-value
North	2294	1721.5	572.5		
South	1149	1721.5	-572.5		
Total	3443			380.78	3.22196E-82

Table 4.2: Hypothetical 50% excavation scenarios: cellar's artifact yield by scenario, percentage of cellar yield, and p-value

Site/ Cellar	Adjusted Artifact Total of Cellar Yield		Excavation Scenario 1		Excavation Scenario 2		Excavation Scenario 3	
			NW+SE	NE+ SW	NW+NE	SW+SE	NW+ SW	NE+SE
Peter Edwards	7943	cellar's artifact yield	4106	3837	4372	3571	6341	1602
		expected artifact yield	3971.5	3971.5	3971.5	3971.5	3971.5	3971.5
		% of cellar total	51.69%	48.31%	55.04%	44.96%	79.83%	20.17%
		artifact quantity p-value	0.002442		2.53E-19		0	
O'Connor*	6217	cellar's artifact yield	3058	3159	3377	2840	2950	3267
		expected artifact yield	3108.5	3108.5	3108.5	3108.5	3108.5	3108.5
		% of cellar total	49.19%	50.81%	54.32%	45.68%	47.45%	52.55%
		artifact quantity p-value	0.200213		9.72E-12		5.81E-05	
Durst Pit*	221	cellar's artifact yield	105	116	93	128	133	88
		expected artifact yield	110.5	110.5	110.5	110.5	110.5	110.5
		% of cellar total	47.51%	52.49%	42.08%	57.92%	60.18%	39.82%
		artifact quantity p-value	0.459336		0.018555		0.00247	
Topping 1	201	cellar's artifact yield	80	121	78	123	93	108
		expected artifact yield	100.5	100.5	100.5	100.5	100.5	100.5
		% of cellar total	39.80%	60.20%	38.81%	61.19%	46.27%	53.73%
		artifact quantity p-value	0.003828		0.001503		0.290047	
Topping 2	1006	cellar's artifact yield	225	781	746	260	245	761
		expected artifact yield	503	503	503	503	503	503
		% of cellar total	22.37%	77.63%	74.16%	25.84%	24.35%	75.65%
		artifact quantity p-value	8.49E-69		5.39E-53		1.65E-59	

Dennison 1*	391	cellar's artifact yield	-	-		-	-	201	190
		expected artifact yield						195.5	195.5
		% of cellar total	-	-		-	-	51.41%	48.59%
		artifact quantity p-value	-			-		0.57801	
Dennison 2*	3443	cellar's artifact yield	-	-		2294	1149	-	-
		expected artifact yield				1721.5	1721.5		
		% of cellar total	-	-		66.63%	33.37%	-	-
		artifact quantity p-value	-			8.42E-85		-	
*results adjusted									

Table 4.3: Aggregated p-value for individual cellar results across all scenarios (only cellars that could be quartered are presented here)										
	Peter Edwards		O'Connor		Durst		Topping 1		Topping 2	
	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed
NW+SE	3971.5	4106	3108.5	3058	110.5	105	100.5	80	503	225
NE+SW	3971.5	3837	3108.5	3159	110.5	116	100.5	121	503	781
NW+NE	3971.5	4372	3108.5	3377	110.5	93	100.5	78	503	746
SW+SE	3971.5	3571	3108.5	2840	110.5	128	100.5	123	503	260
NW+SW	3971.5	6341	3108.5	2950	110.5	133	100.5	93	503	245
NE+SE	3971.5	1602	3108.5	3267	110.5	88	100.5	108	503	761
Aggregate p-value	0		1.65126E-12		0.00933276		0.001512776		4.0137E-172	
Fits with Null Hypothesis?	no		no		no		no		no	

Table 4.4: Total artifact distributions for Peter Edwards and Topping 1 Cellars by Strata							
Site	Artifact Total for Quadrants with Strata Distinctions	Quadrant NW		Quadrant SE		Quadrant NW vs Quadrant SE Percents of Half Feature Artifact Total	Combined Strata 1 vs Strata 2 Total Percents of Artifact Total
		Strata 1 (Upper)	Strata 2 (Lower)	Strata 1 (Upper)	Strata 2 (Lower)		
Peter Edwards	4106	1482	1956	346	322	84%/16%	44%/56%
Topping 1	181	40 (66%)	21 (34%)	101 (84%)	19 (16%)	34%/66%	78%/22%
P. Edwards Kitchen Group	1441	423	841	47	130	88%/12%	33%/66%
P. Edwards Architectural Group	1337	540	468	237	92	75%/25%	58%/42%
P. Edwards Floral & Faunal Group	847	308	433	28	78	87%/13%	40%/60%
P. Edwards Small Finds Group	158	87	54	11	6	89%/11%	62%38%
Topping 1 Kitchen Group	52	3	15	22	12	35%/65%	48%/52%
Topping 1 Architectural Group	17	2	4	6	5	35%/65%	47%/53%

Table 4.5: Datable Diagnostics from Peter Edwards Cellar: breakdown by quadrant and strata (NDA 2016:28-29)															
			Breakdown of cellar quadrants, by strata								Opposing quadrant excavation scenarios				
Class	Object name/ Datable Attribute (as reported)	Date Range (as reported)	Total #	NE	SE-1	SE-2	NW-1	NW-2	SW		NE+ SW	SE+ NW		SE-1 + NW-1	SE-2 + NW-2
architectural	wrought nail	pre-ca. 1830	19	1	1	0	7	2	8		9	10		8	2
architectural	cut nail	ca. 1830-1890	222	26	100	26	36	9	25		51	171		136	35
activities	glen airn thimble*	1810-1870	2	1	0	0	0	0	0		1	0		0	0
kitchen	ironstone, transfer (willow pattern)	ca. 1840s-early 20th century	7	0	0	0	0	0	7		7	0		0	0
kitchen	pearlware (plain)	1780-ca.1840s	385	34	5	1	137	86	122		156	229		142	87
kitchen	pearlware, painted (late palette)	1830-1840	132	12	64	0	36	20	0		12	120		100	20
kitchen	pearlware, painted (sprig)	1835-1840s	47	3	21	0	18	5	0		3	44		39	5
kitchen	pearlware, annular (banded)	1790-ca. 1820	43	3	21	0	3	16	0		3	40		24	16
kitchen	refined earthenware, canary ware	1780-1835	2	0	0	0	1	1	0		0	2		1	1
kitchen	whiteware, sponge (all-over)	ca. 1840-1900s	168	3	2	6	10	43	104		107	61		12	49
kitchen	whiteware, painted (late palette)	ca. 1830- 1870	290	3	8	20	0	99	160		163	127		8	119
kitchen	whiteware, transfer (blue)	ca. 1845-early 1900s	100	5	6	11	14	26	38		43	57		20	37
kitchen	whiteware, transfer (continuous repeating linear)	ca. 1830-1891	75	0	0	0	7	35	33		33	42		7	35
kitchen	yellowware, annular (banded)	ca. 1842-early 1900s	27	0	0	1	7	5	14		14	13		7	6
personal	coin, bank of Montreal	ca.1844	2	0	0	0	2	0	0		0	2		2	0
personal	coin, bank of upper Canada (one-half penny)	1850-1857 (full range)	6	0	0	0	4	1	1		1	5		4	1
personal	coin, braided hair cent	1849-1857	1	0	0	0	0	0	1		1	0		0	0
personal	coin, Nova Scotia (half-penny)	ca. 1813	1	0	0	0	1	0	0		0	1		1	0
tobacco pipe	smoking. Henderson('s), Montreal	1847-1876	2	0	0	0	1	1	0		0	2		1	1

tobacco pipe	smoking. Murray (WN&co), Glasgow	1830-1861	7	0	0	0	4	0	3		3	4		4	0
unclassifiable***	jetware**	1870s-1880s	36	0	0	0	7	15	14		14	22		7	15
* only one glen airn thimble in catalogue; ** jetware date range in catalogue as 1790–ca. 1820; *** jetware determined as unclassifiable in report and was not changed in research dataset		Total	1574	91	228	65	295	364	530		621	952		523	429
Ratio of Pearlware vs Whiteware			0.96	4.73	6.94	0.03	6.26	0.63	0.36		0.5	1.51		6.49	0.53

Table 4.6: Chi square results for Peter Edwards cellar artifact groups									
Total Artifact Group Yield			Excavation Scenario 1			Excavation Scenario 2		Excavation Scenario 3	
			NW+SE	NE+SW		NW+NE	SW+SE	NW+SW	NE+SE
Kitchen Artifact	3016	Observed Yield	1441	1575		1411	1605	2692	324
		Expected Yield	1508	1508		1508	1508	1508	1508
		p-value	0.014687421			0.000411601		0	
Architectural	2570	Observed Yield	1337	1233		1543	1027	1706	864
		Expected Yield	1285	1285		1285	1285	1285	1285
		p-value	0.040220460			2.47E-24		5.99E-62	
Floral & Faunal	1446	Observed Yield	847	599		892	554	1189	257
		Expected Yield	723	723		723	723	723	723
		p-value	6.95E-11			6.19E-19		1.17E-132	
Indeterminate/ Unclassifiable	600	Observed Yield	282	318		342	258	480	120
		Expected Yield	300	300		300	300	300	300
		p-value	0.141644690			0.000605172		6.74E-49	
Clothing	103	Observed Yield	64	39		62	41	93	10
		Expected Yield	51.5	51.5		51.5	51.5	51.5	51.5
		p-value	0.013765577			0.038528122		2.88E-16	
Tobacco Pipe	103	Observed Yield	64	39		64	39	99	4
		Expected Yield	51.5	51.5		51.5	51.5	51.5	51.5
		p-value	0.013765577			0.013765577		7.93E-21	

Table 4.7: Aggregated p-value for Peter Edwards cellar artifact group results across all excavation scenarios													
Excavation Scenarios		Kitchen		Architectural		Floral & Faunal		Indeterminate/ Unclassifiable		Clothing		Tobacco Pipe	
		Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed
Scenario 1	NW+SE	1508	1441	1285	1337	723	847	300	282	51.50	64	51.50	64
	NE+SW	1508	1575	1285	1233	723	599	300	318	51.50	39	51.50	39
Scenario 2	NW+NE	1508	1411	1285	1543	723	892	300	342	51.50	62	51.50	64
	SW+SE	1508	1605	1285	1027	723	554	300	258	51.50	41	51.50	39
Scenario 3	NW+SW	1508	2692	1285	1706	723	1189	300	480	51.50	93	51.50	99
	NE+SE	1508	324	1285	864	723	257	300	120	51.50	10	51.50	4
Aggregate p-value		0		9.79E-81		7.59E-154		1.11E-47		3.18E-15		5.95E-20	
Fail Null Hypothesis?		yes		yes		yes		yes		yes		yes	

Table 4.8: Chi square results for O'Connor cellar artifact groups									
Total Artifact Group Yield			Excavation Scenario 1			Excavation Scenario 2		Excavation Scenario 3	
			NW+SE	NE+SW		NW+NE	SW+SE	NW+SW	NE+SE
Architectural	2407	Observed Yield	1248.00	1159.00		1387.00	1020.00	1324.00	1083.00
		Expected Yield	1203.50	1203.50		1203.50	1203.50	1203.50	1203.50
		p-value	0.069668287			7.41E-14		9.00E-07	
Kitchen Artifact	1757	Observed Yield	966.00	791.00		850.00	907.00	889.00	868.00
		Expected Yield	878.50	878.50		878.50	878.50	878.50	878.50
		p-value	0.000029804			0.173879409		0.616374624	
Indeterminate/ Unclassifiable	1432	Observed Yield	639.00	793.00		770.00	662.00		
		Expected Yield	716.00	716.00		716.00	716.00		
		p-value	0.000047099			0.004317407		0.957850114	
Tobacco Pipe	302	Observed Yield	160.00	142.00		186.00	116.00	717.00	715.00
		Expected Yield	151.00	151.00		151.00	151.00	716.00	716.00
		p-value	0.300303107			0.000056242		0.008120874	
Activities	120	Observed Yield	56.00	64.00		73.00	47.00	174.00	128.00
		Expected Yield	60.00	60.00		60.00	60.00	151.00	151.00
		p-value	0.465208818			0.017622091		0.361310429	

Table 4.9: Aggregated p-value for O'Connor cellar artifact group results across all excavation scenarios													
Excavation Scenarios		Kitchen		Architectural		Indeterminate/ Unclassifiable		Clothing		Tobacco Pipe		Activities	
		Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed
Scenario 1	NW+SE	878.5	966	1203.5	1248	716	639	41.5	27	151	160	60	56
	NE+SW	878.5	791	1203.5	1159	716	793	41.5	56	151	142	60	64
Scenario 2	NW+NE	878.5	850	1203.5	1387	716	770	41.5	39	151	186	60	73
	SW+SE	878.5	907	1203.5	1020	716	662	41.5	44	151	116	60	47
Scenario 3	NW+SW	878.5	889	1203.5	1324	716	717	41.5	25	151	174	60	65
	NE+SE	878.5	868	1203.5	1083	716	715	41.5	58	151	128	60	55
Aggregate p-value		1.53E-03		1.65E-16		1.59E-04		2.64E-04		1.90E-04		2.21E-01	
Fail Null Hypothesis?		yes		yes		yes		yes		yes		yes	

Table 4.10: Chi square results for Topping 1 cellar's artifact groups									
Total Artifact Group Yield			Excavation Scenario 1			Excavation Scenario 2			Excavation Scenario 3	
			NW+SE	NE+SW		NW+NE	SW+SE		NW+SW	NE+SE
Kitchen Artifact	125	Observed Yield	52.00	73.00		53.00	72.00		56.00	69.00
		Expected Yield	62.50	62.50		62.50	62.50		62.50	62.50
		p-value	0.060340533			0.089241646			0.244928778	

Table 4.11: Chi square results for Topping 2 cellar's artifact groups									
Total Artifact Group Yield			Excavation Scenario 1			Excavation Scenario 2			Excavation Scenario 3	
			NW+SE	NE+SW		NW+NE	SW+SE		NW+SW	NE+SE
Floral & Faunal	654	Observed Yield	585.00	69.00		581.00	73.00		578.00	76.00
		Expected Yield	327.00	327.00		327.00	327.00		327.00	327.00
		p-value	1.55E-90			8.28E-88			8.61E-86	
Kitchen Artifact	123	Observed Yield	60.00	63.00		60.00	63.00		49.00	74.00
		Expected Yield	61.50	61.50		61.50	61.50		61.50	61.50
		p-value	0.786774932			0.786774932			0.024185218	

Table 4.12: Aggregated p-value for Topping 2 cellar artifact group results across all excavation scenarios											
Excavation Scenarios		Kitchen		Architectural		Floral & Faunal		Indeterminate/ Unclassifiable		Clothing	
		Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed
Scenario 1	NW+SE	61.5	60	33	41	327	585	25.5	33	36.5	41
	NE+SW	61.5	63	33	25	327	69	9.5	18	36.5	32
Scenario 2	NW+NE	61.5	60	33	32	327	581	9.5	16	36.5	38
	SW+SE	61.5	63	33	34	327	73	9.5	35	36.5	35
Scenario 3	NW+SW	61.5	49	33	41	327	578	9.5	34	36.5	40
	NE+SE	61.5	74	33	25	327	76	9.5	17	36.5	33
Aggregate p-value		0.39		1.67E-01		1.88E-254		5.49E-31		0.86	
Fail Null Hypothesis?		no		yes		yes		yes		no	

Table 4.13: Chi square results for Dennison 1 cellar's artifact groups									
Total Artifact Group Yield			Excavation Scenario 1			Excavation Scenario 2			Excavation Scenario 3	
			NW+SE	NE+SW		NW+NE	SW+SE		NW+SW	NE+SE
Kitchen Artifact	193	Observed Yield	-	-		-	-		73.00	120.00
		Expected Yield	96.50	96.50		96.50	96.50		96.50	96.50
		p-value	-			-			0.000716636	
Floral & Faunal	101	Observed Yield	-	-		-	-		68.00	33.00
		Expected Yield	50.50	50.50		50.50	50.50		50.50	50.50
		p-value	-			-			0.000496514	

Table 4.14: Chi square results for Dennison 2 cellar's artifact groups										
Total Artifact Yield			Excavation Scenario 1			Excavation Scenario 2			Excavation Scenario 3	
			NW+SE	NE+SW		NW+NE	SW+SE		NW+SW	NE+SE
Kitchen Artifact	2342	Observed Yield	-	-		1451.00	891.00		-	-
		Expected Yield	1171.00	1171.00		1171.00	1171.00		1171.00	1171.00
		p-value	-			5.74E-31			-	
Indeterminate/ Unclassifiable	655	Observed Yield	-	-		541.00	114.00		-	-
		Expected Yield	327.50	327.50		327.50	327.50		327.50	327.50
		p-value	-			1.71E-62			-	
Architectural	123	Observed Yield	-	-		74.00	49.00		-	-
		Expected Yield	61.50	61.50		61.50	61.50		61.50	61.50
		p-value	-			0.024185218			-	
Clothing	111	Observed Yield	-	-		100.00	11.00		-	-
		Expected Yield	55.50	55.50		55.50	55.50		55.50	55.50
		p-value	-			2.98E-17			-	

Table 4.15 Compiled p-values by artifact group across all cellars				
Artifact Group	Total Scenarios Tested	Met a 95% Confidence	Met a 90% Confidence	Failed
Kitchen	14	7	2	5
Floral & Faunal	7	0	0	7
Architectural	7	1	2	4
Clothing	4	0	2	2
Tobacco Pipe	6	1	2	3
Indeterminate	7	2	0	5
Activities	3	2	1	0
TOTAL	48	13 (27%)	9 (19%)	26 (54%)

Appendix B: Figures referenced in this thesis

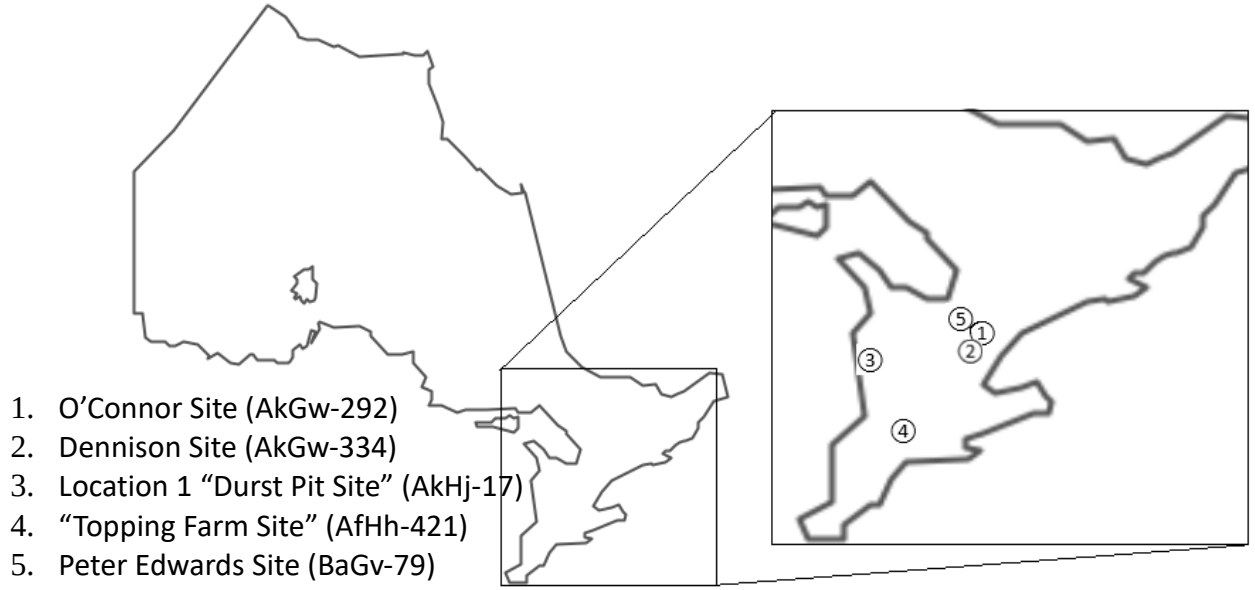


Figure 3.1: Nineteenth century sites from this research. Ontario, Canada.

PLAN OF STAGE 4 MITIGATIVE EXCAVATION OF THE O'CONNOR SITE (AkGw-292)

Figure 3.2: O'Connor Site Cultural Feature Map

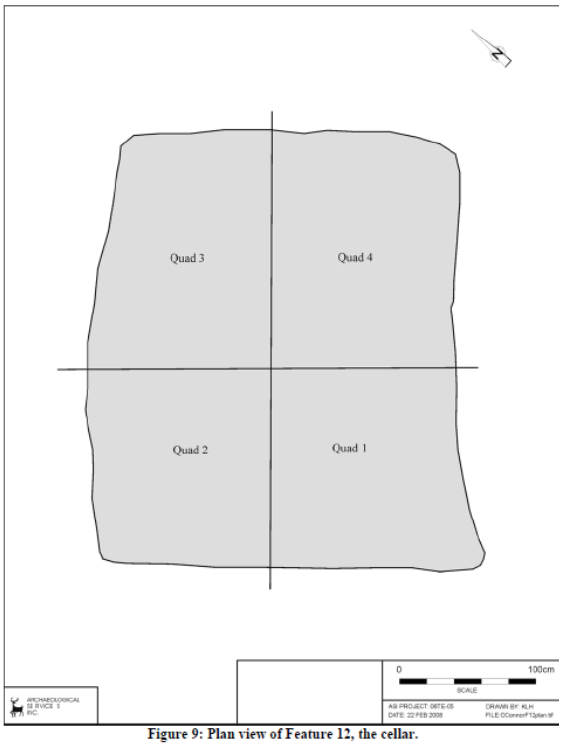


Figure 9: Plan view of Feature 12, the cellar.

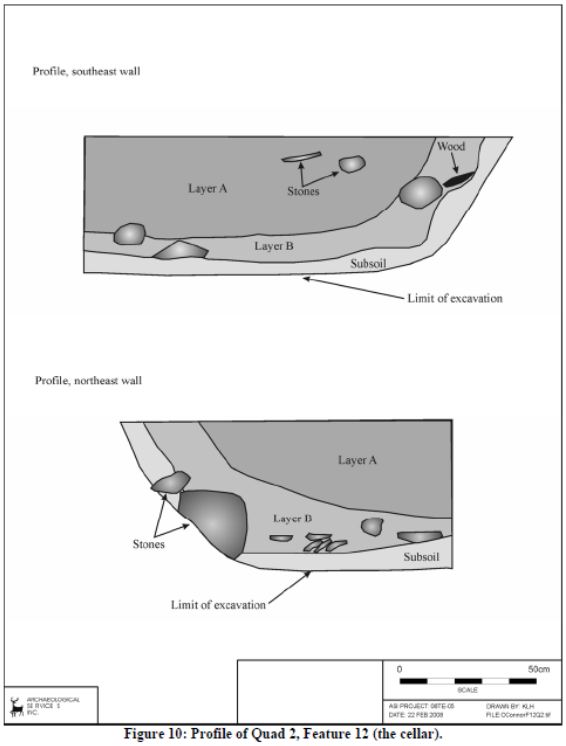


Figure 10: Profile of Quad 2, Feature 12 (the cellar).

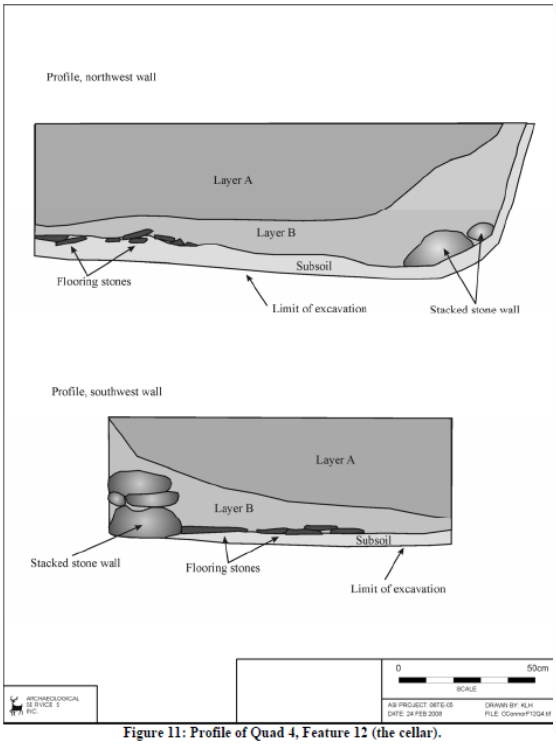


Figure 11: Profile of Quad 4, Feature 12 (the cellar).

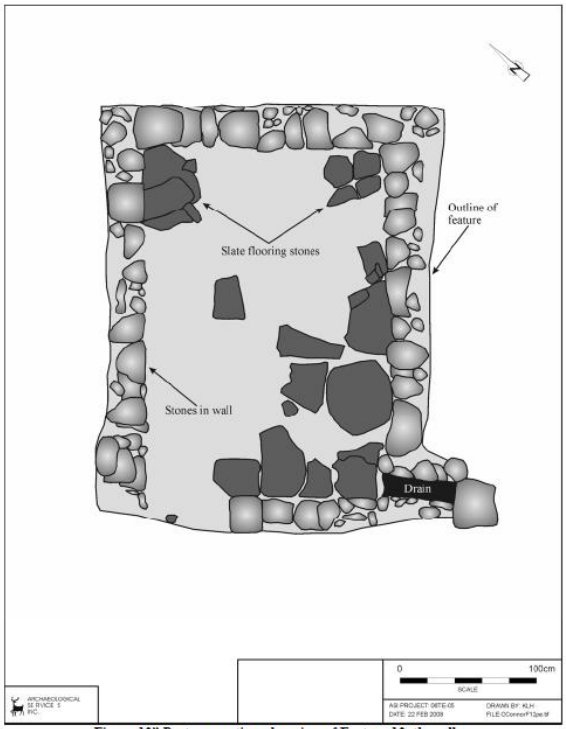


Figure 12" Post-excavation plan view of Feature 12, the cellar.

Figure 3.3: O'Connor Site plan view and profile drawings of Feature 12 (ASI 2008:13-16)

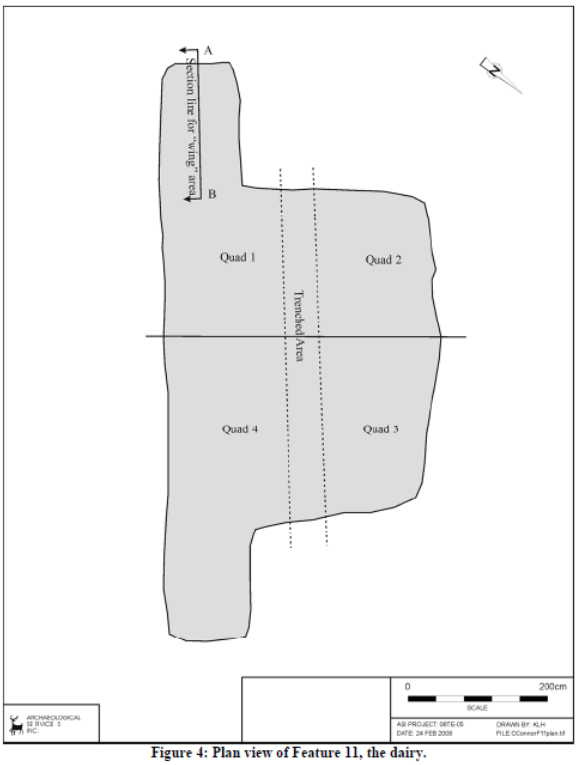


Figure 4: Plan view of Feature 11, the dairy.

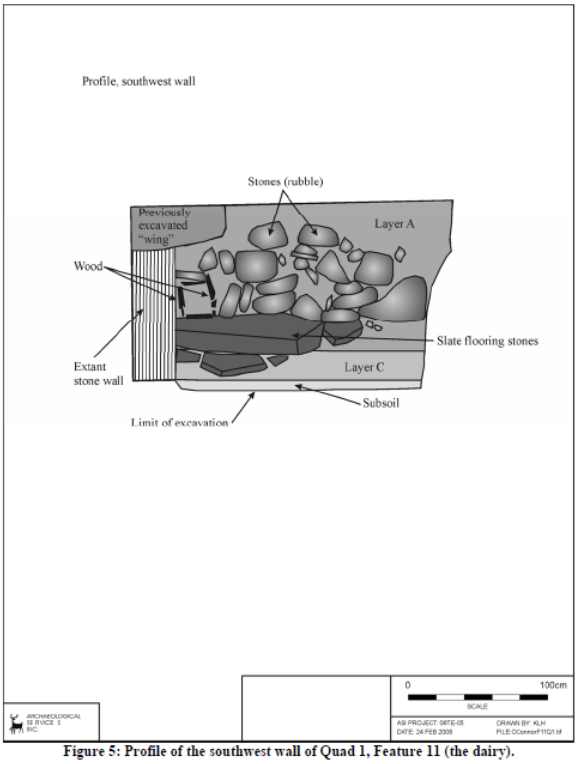


Figure 5: Profile of the southwest wall of Quad 1, Feature 11 (the dairy).

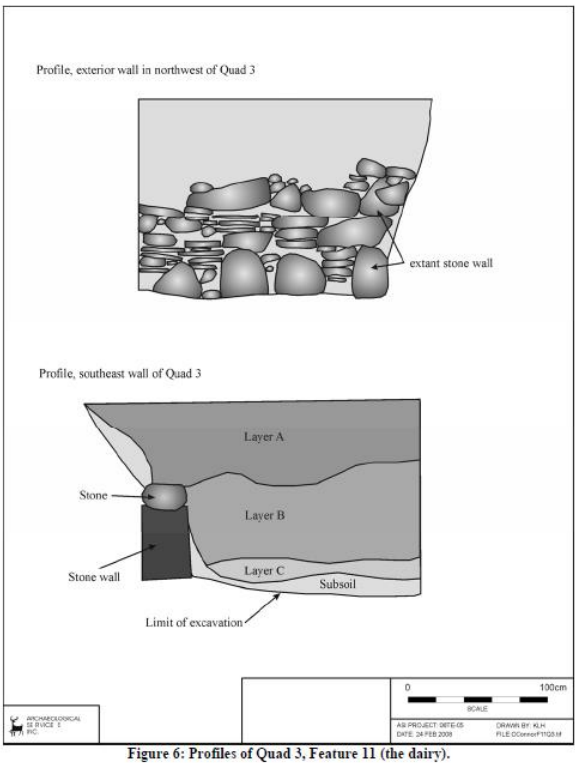


Figure 6: Profiles of Quad 3, Feature 11 (the dairy).

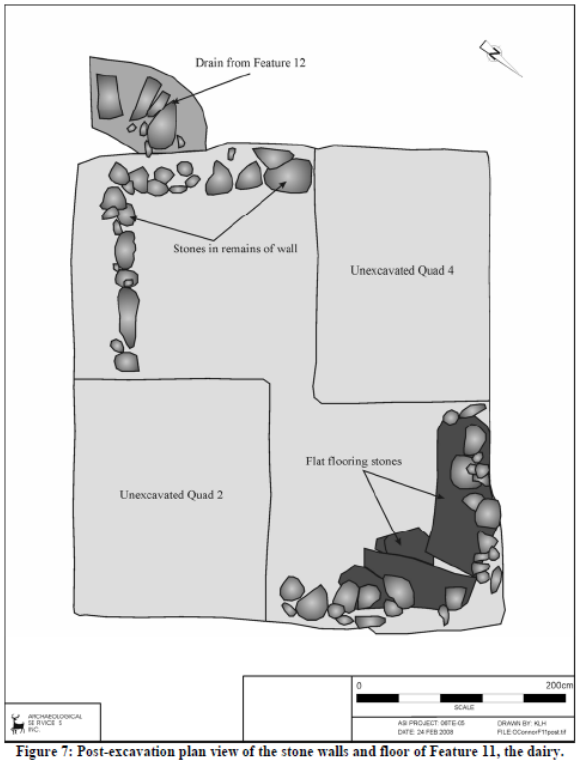


Figure 7: Post-excavation plan view of the stone walls and floor of Feature 11, the dairy.

Figure 3.4: O'Connor Site profile and plan view drawings of Feature 11 (the dairy) (ASI 2008:7-10).

Plate 1: Post-excavation of Quad 1, Feature 11 showing the stone floor and walls.

Plate 2: Post-excavation of Feature 12, showing the stone floor and walls.

Figure 3.5: O'Connor Site Post-Excavation Photographs of Features 11 (the dairy) and 12 (the cellar) (ASI 2008:42).

Plate 5: Plan view of the extant stone foundation present at the base of Feature 38, the cellar, looking south.

Plate 6: Profile of Feature 45, the root cellar, looking north. Note horse skull on pedestal of earth left in situ.

Figure 3.6: Dennison Site Plan view photograph of Feature 38 (left), and profile photograph of Feature 45 (right) (ASI 2014:39).

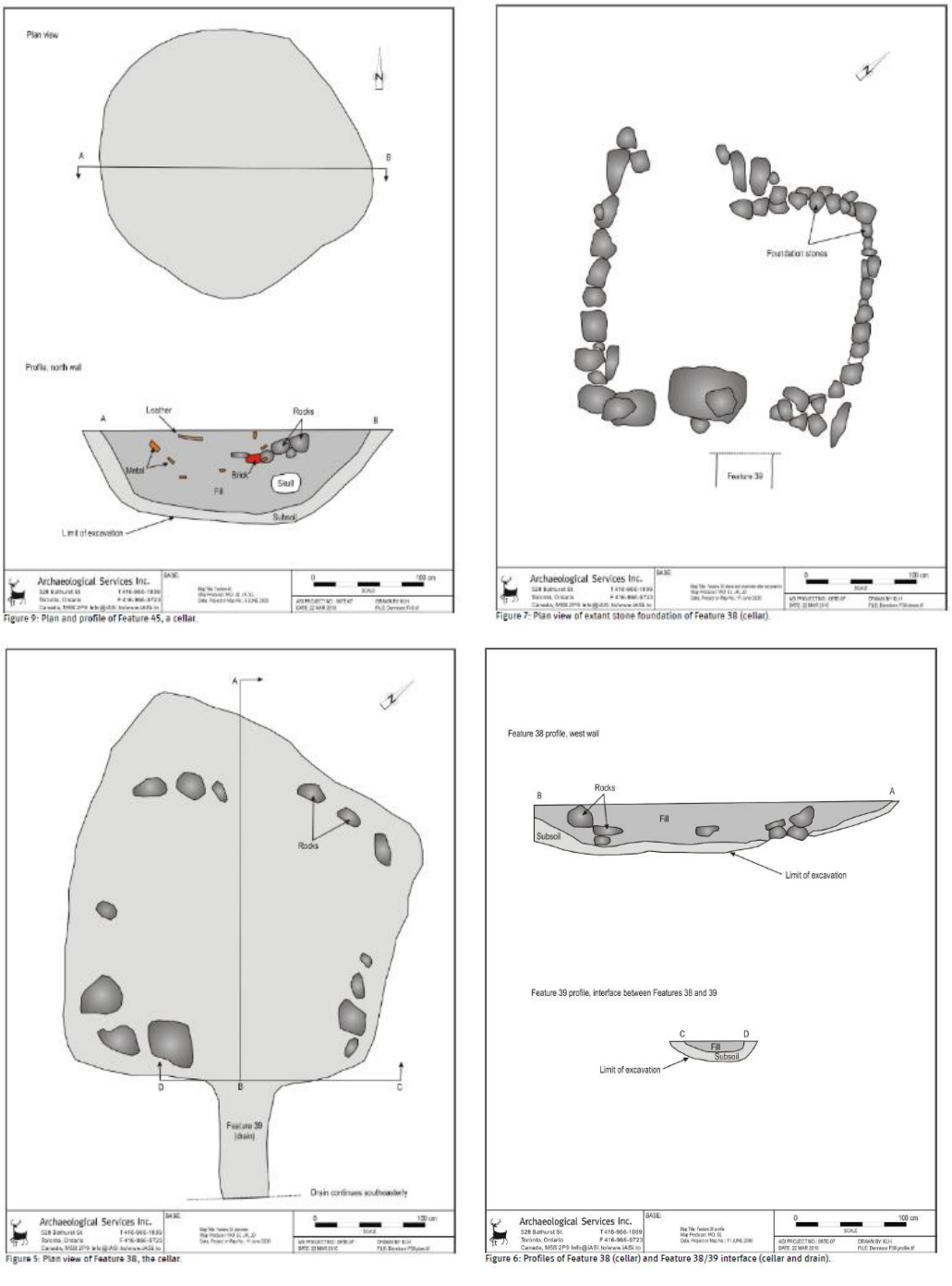


Figure 3.7: Dennison Site plan view and profile drawings of Features 38 and 45 (ASI 2014:11-13,15).

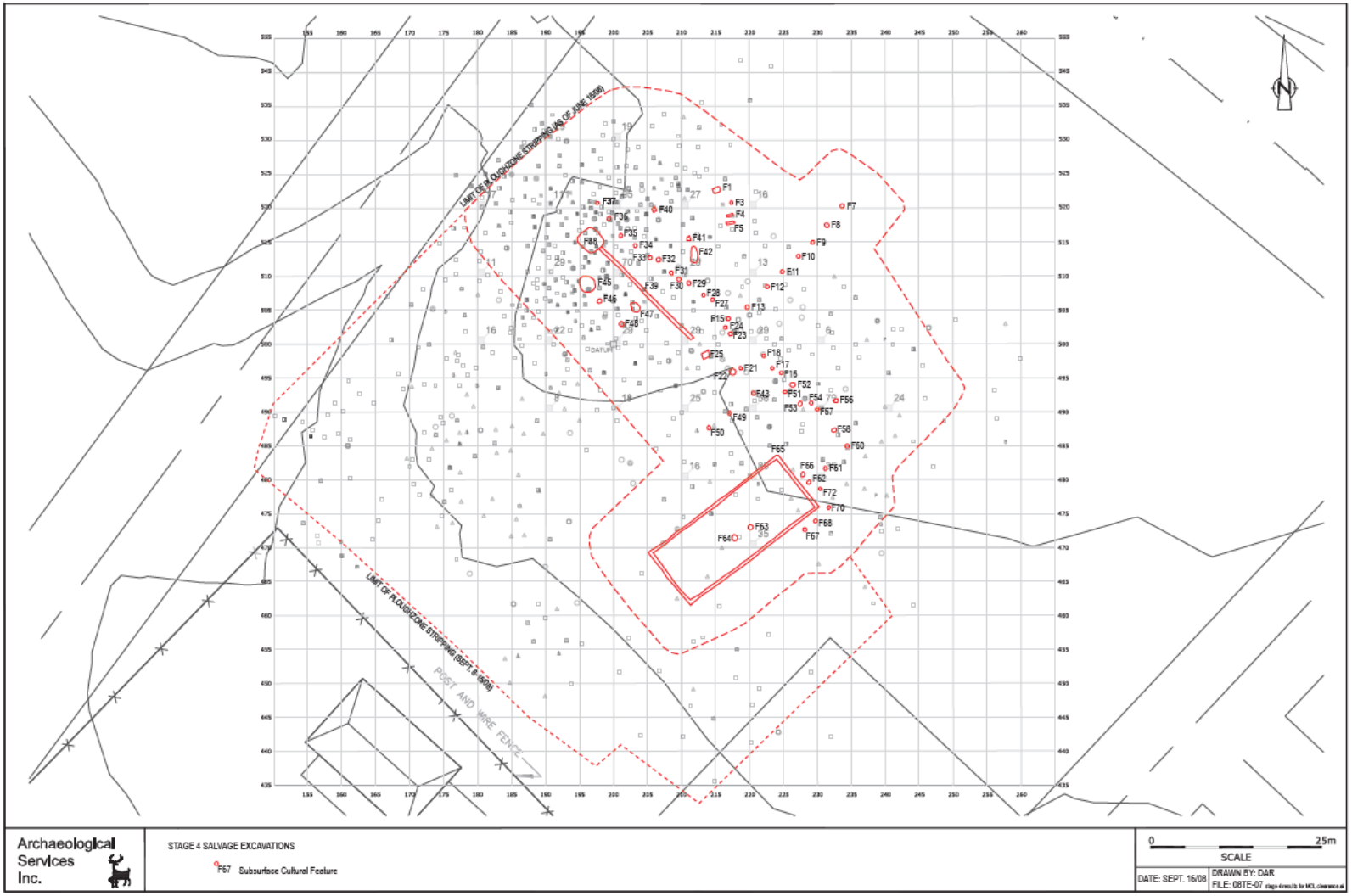
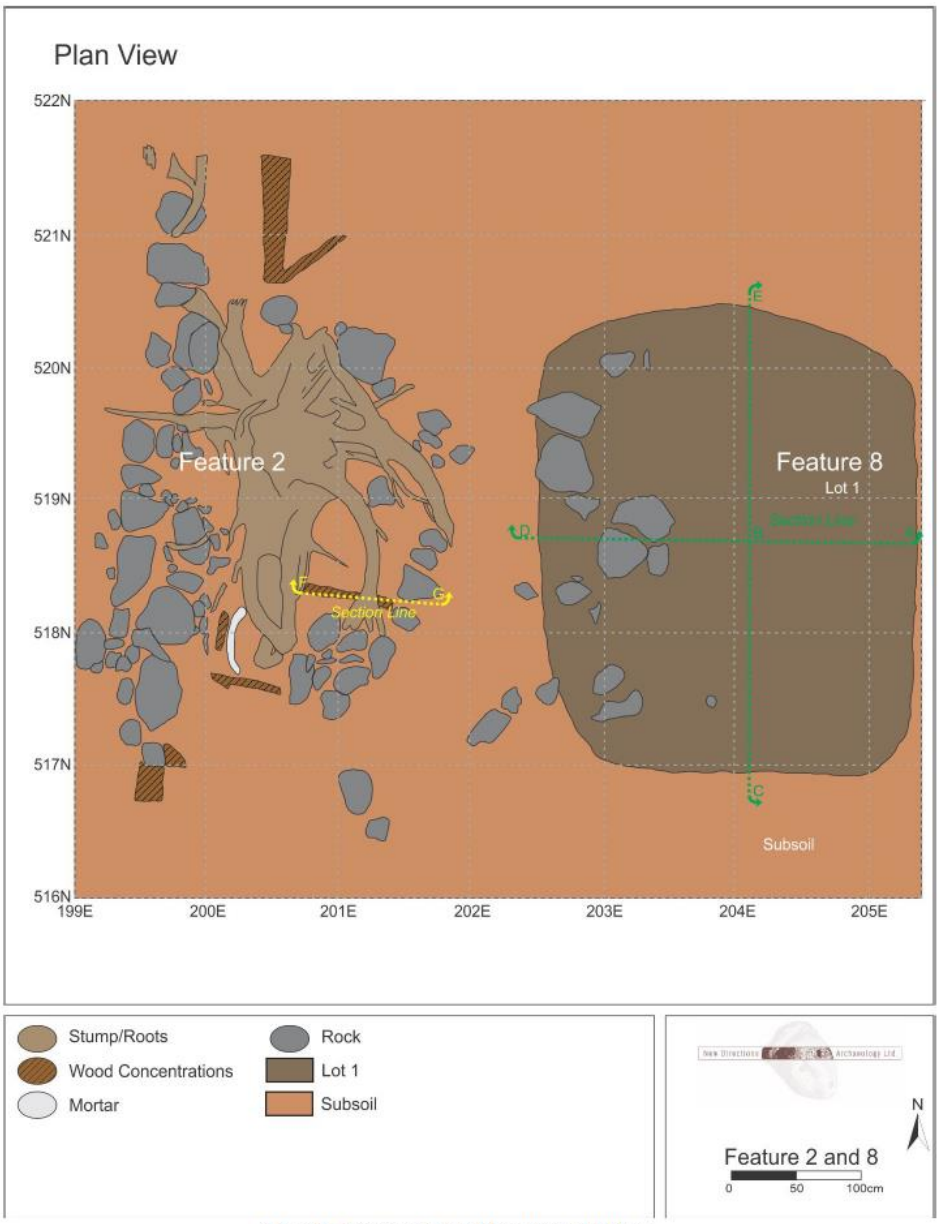


Figure 4: Stage 4 salvage excavation of the Dennison site (AkGw-334).

Figure 3.8: Dennison Site cultural feature map (ASI 2013:6).

Figure 3.9: Peter Edwards site surface view of Feature 8, the cellar, facing north, after topsoil stripped away (NDA 2016:52).



Map 8: Feature 2 and Feature 8 Plans

Figure 3.10: Peter Edwards site plan view drawing of Feature 8, the cellar, after topsoil stripped away (NDA 2016:61).

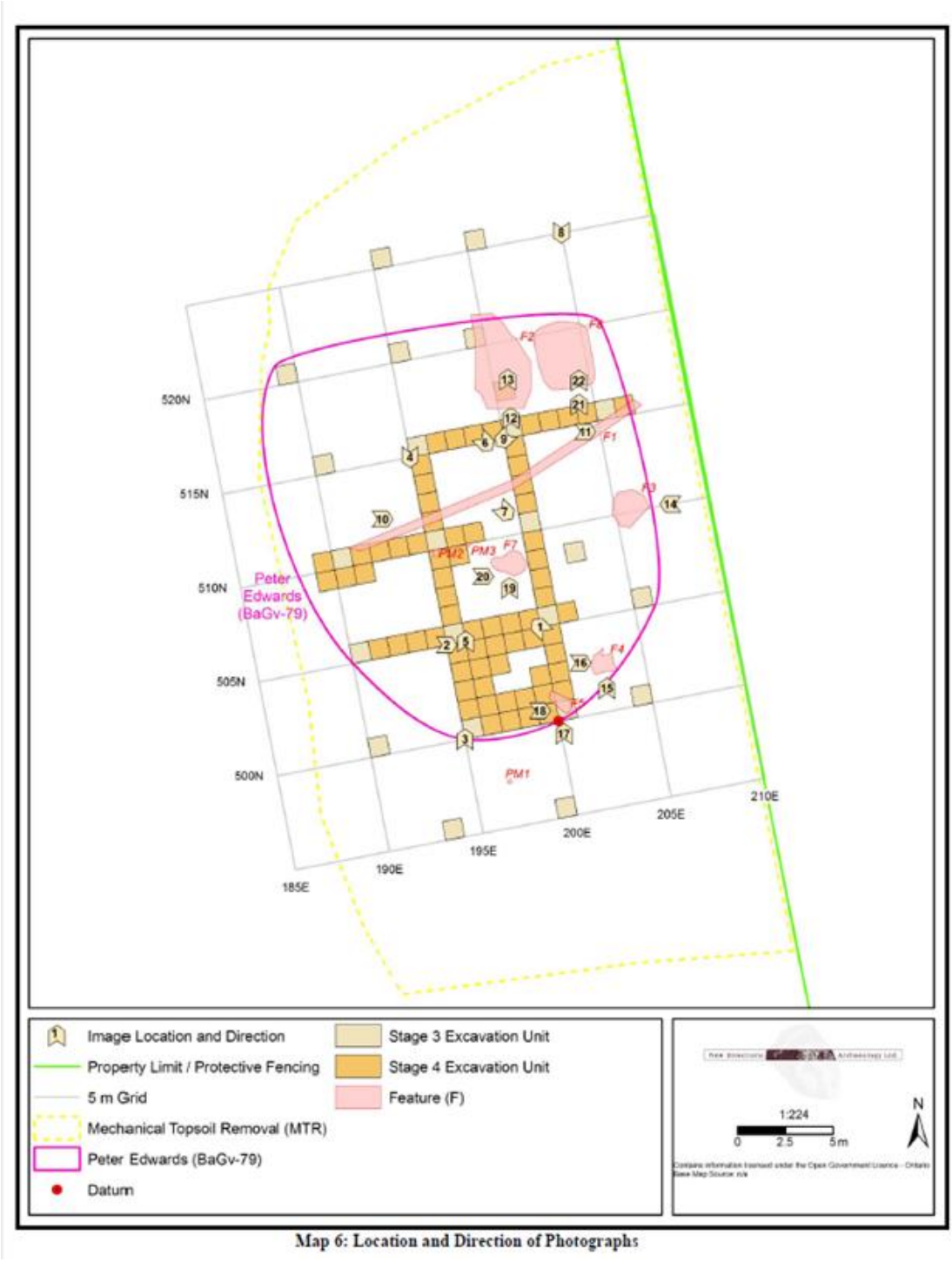
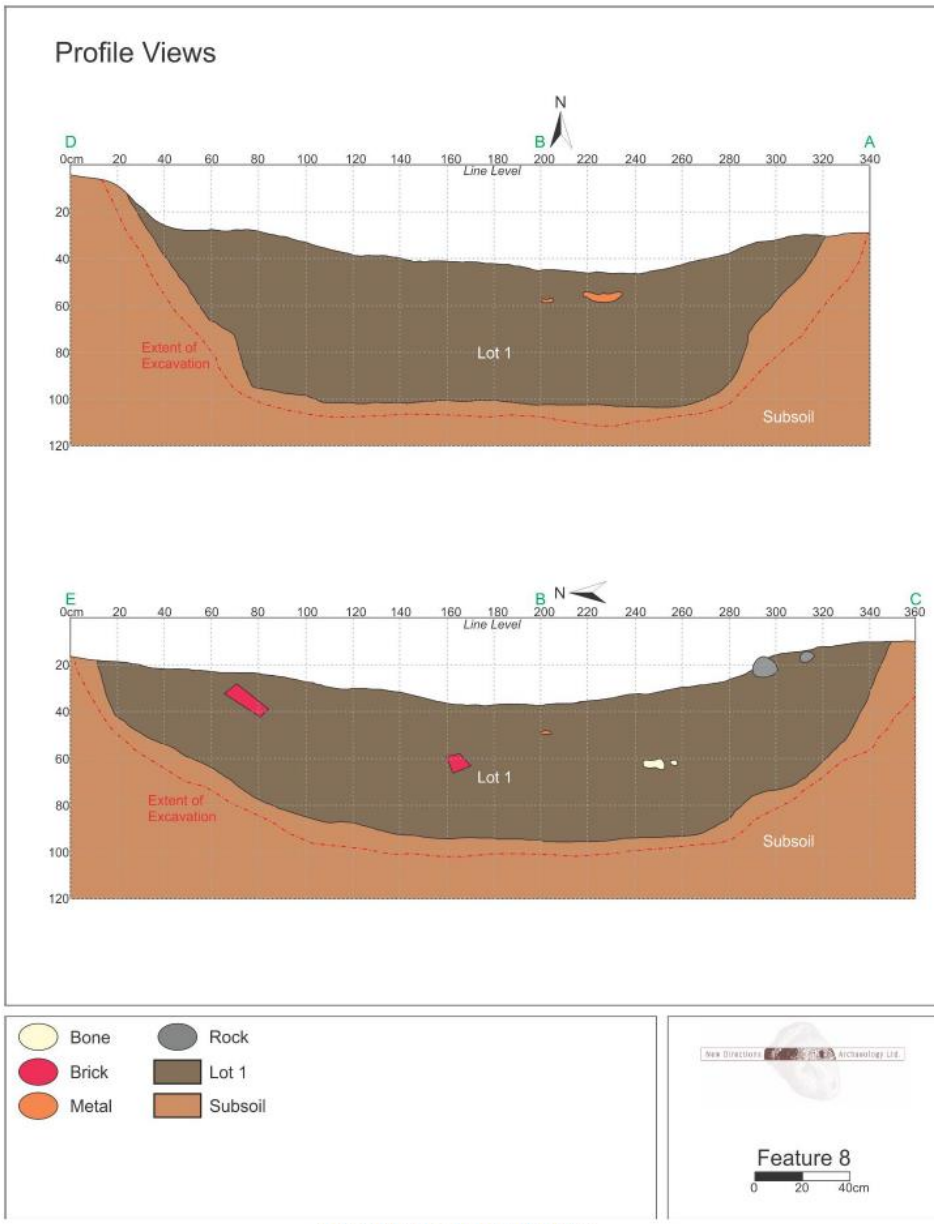


Figure 3.11: Peter Edwards Site cultural feature map (NDA 2017:59).



Map 14: Feature 8 Profiles

Figure 3.12: Peter Edwards site profile views of Feature 8, the cellar (NDA 2016:67).

Figure 3.13: Peter Edwards site southeast quadrant profile view of Feature 8, the cellar, facing north (NDA 2016:53).

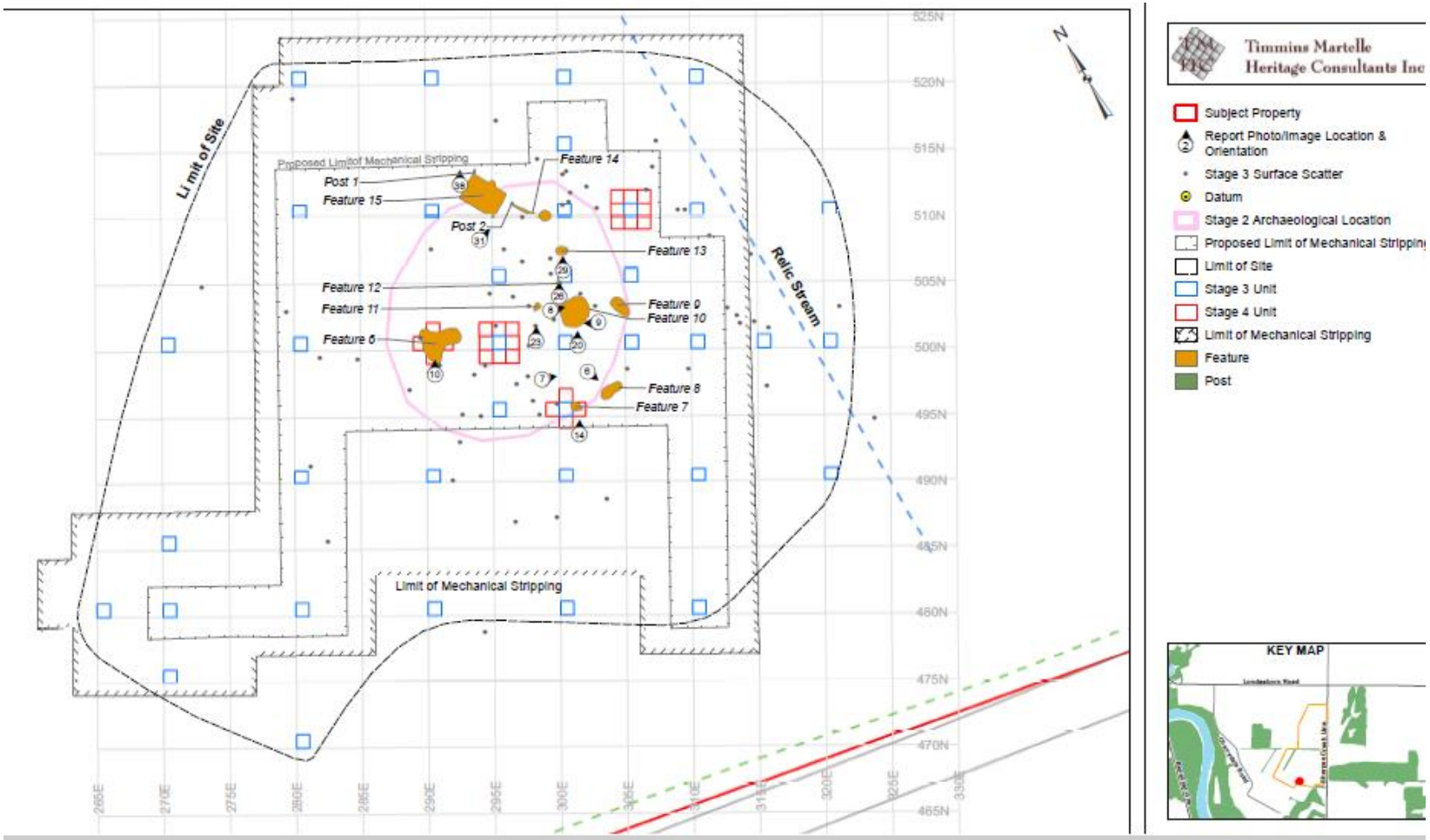


Figure 3.14: Durst Pit Site Cultural Feature Map (TMHC 2017:21).

Image 32: Features 14, 14a, 15 (looking northeast)

Image 33: Features 14, 14a, 15, and Post 1 and 2 Top Plan

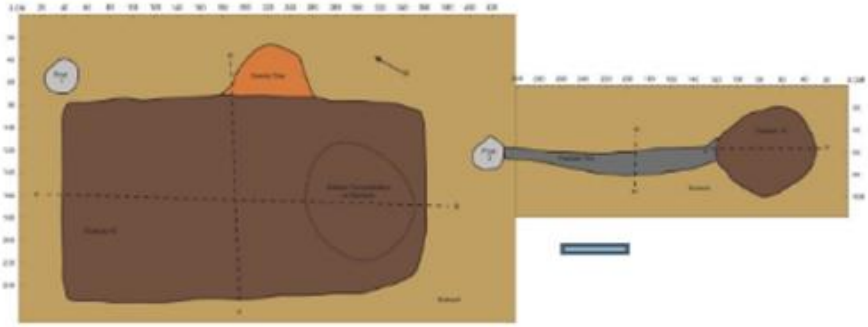


Figure 3.15: Durst Pit site Features 14 & 15, photograph and plan view drawing (TMHC 2017:54).

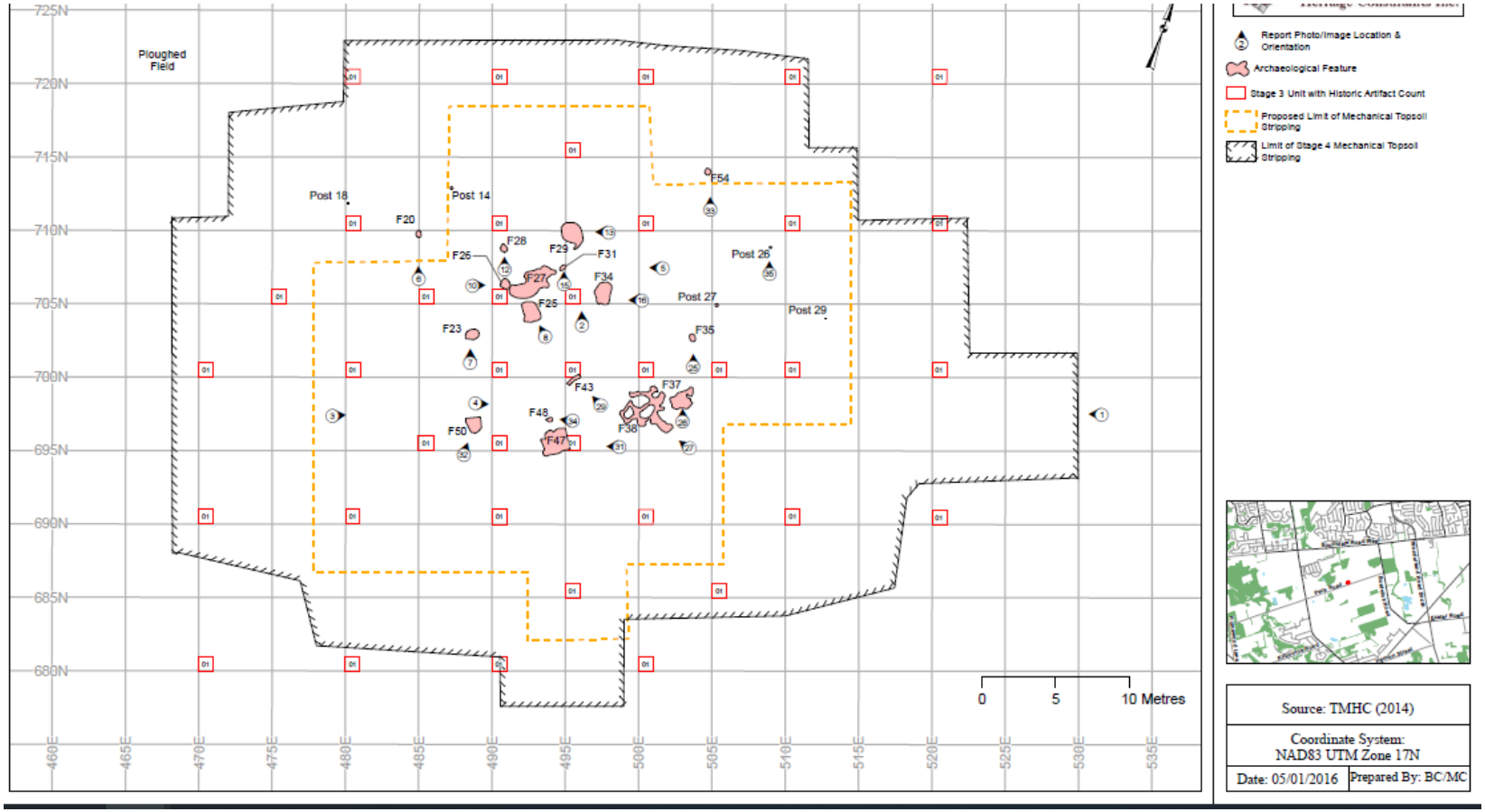


Figure 3.16: Topping Farm Site Cultural Feature Map (TMHC 2016:87).

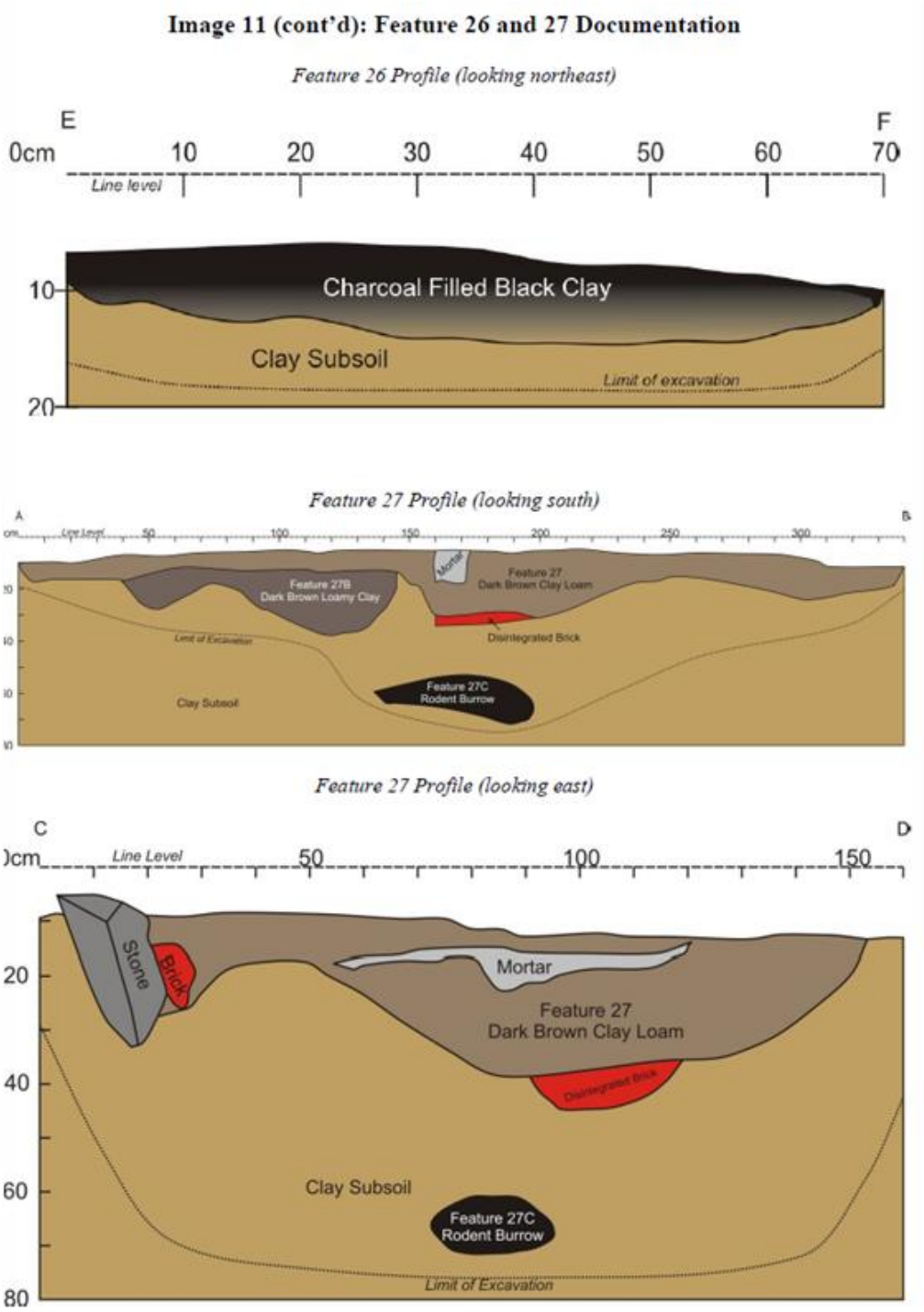


Figure 3.17: Topping Farm site Features 26 & 27, profile drawings (looking northeast, south, and east, respectively) (THMC 2016:52).

Image 17: Feature 34 Documentation

Top Plan (looking west)

Profile (looking east)

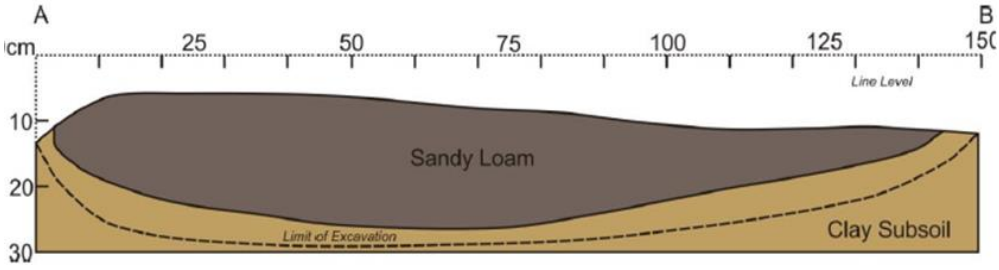


Figure 3.18: Topping Farm site Feature 34, plan view photograph (looking west), and profile drawing (looking east) (THMC 2016:52).

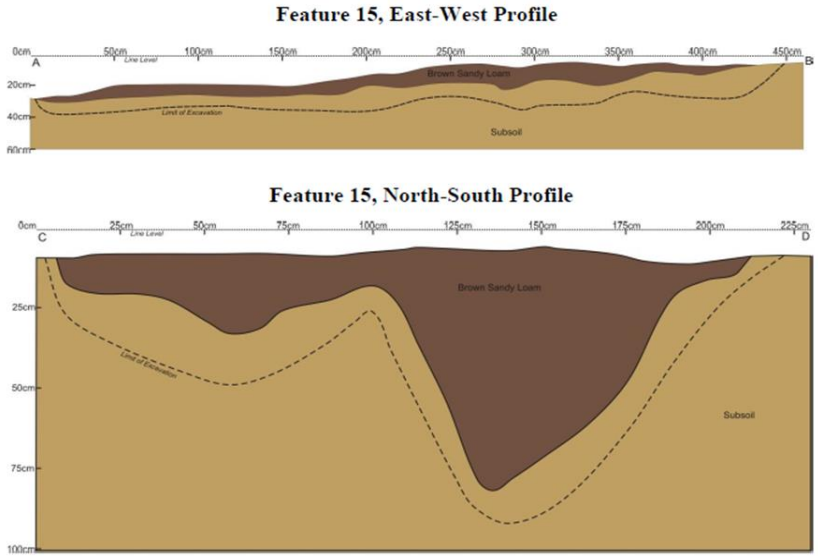


Figure 3.19: Durst Pit site profile drawings of Feature 15, the cellar (TMHC 2017:55).

Image 11: Feature 26 and 27 Documentation

Top Plan (looking east)

Top Plan (looking north)

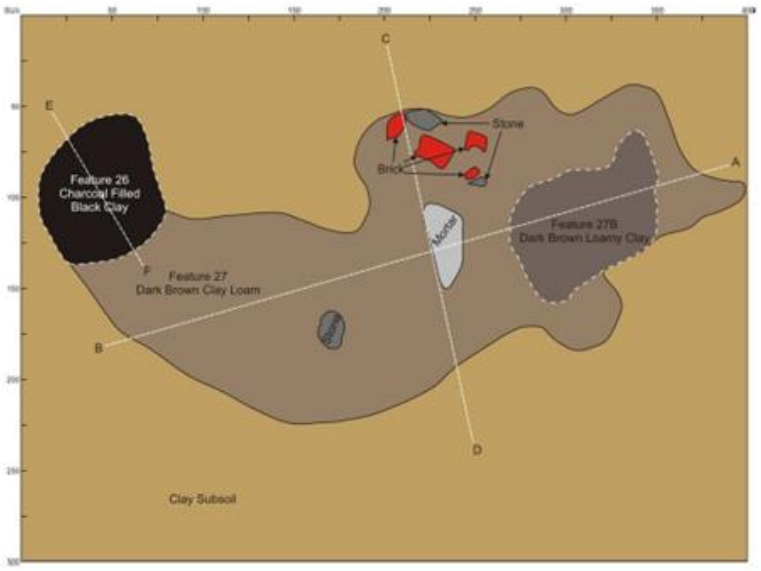


Figure 3.20: Topping Farm site Features 26 & 27, plan view photograph (looking east), and plan view drawing (looking north) (TMHC 2016:51).

Curriculum Vitae

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