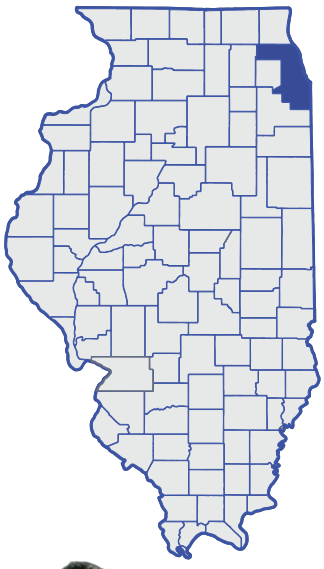
DRAFT

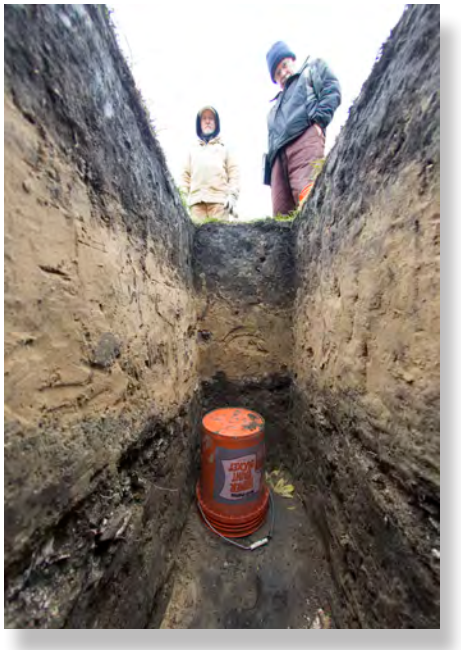
Section 106
Archaeological Properties Identification Report

Obama Presidential Center (OPC) Mobility Improvements to Support the South Lakefront Framework Plan (SLFP), Cook County, Illinois



by
Clare Tolmie
Paula Porubcan Branstner

with contributions by
Michael F. Kolb



ILLINOIS
Illinois State Archaeological Survey
PRAIRIE RESEARCH INSTITUTE

Technical Report
No. 184

ILLINOIS STATE ARCHAEOLOGICAL SURVEY TECHNICAL REPORTS

More information about ISAS Publications can be obtained online by visiting us on the web at:
www.isas.illinois.edu/publications

About the Authors

Clare Tolmie, ISAS Senior Research Archaeologist

Dr. Tolmie specializes in the archaeology of the Midwestern United States, with a primary focus on northeastern Illinois. A graduate of the University of Iowa and the University of Southampton, she has been conducting survey and excavation projects in the Midwest since the mid 1990s. Sites investigated range in date from Paleoindian through the late nineteenth century, and site types range from prehistoric habitation sites to historic farmsteads and Civilian Conservation Corps structures. She has also participated in excavations of Middle and Upper Palaeolithic open air and rock shelter sites in France. Her specific research interests include historical archaeology, environmental archaeology and landscape evolution, zooarchaeology, taphonomy and palaeoethobotany.

Dr. Tolmie maintains memberships in international, national and regional professional organizations. She is currently President-Elect of the Illinois Archaeological Survey. She has worked for private consulting companies and universities completing investigations required under both state and federal historic preservation legislation. She joined the Illinois State Archaeological Survey's Northern Illinois Field Station in 2015 as Senior Research Archaeologist.

Paula Porubcan Branstner, ISAS Northern Illinois Field Station Coordinator

Ms. Porubcan specializes in Western Great Lakes archaeology with a primary focus on the Chicago metropolitan region. A graduate of the University of Wisconsin–Milwaukee, she has been conducting survey and excavation projects throughout the Midwest since the early 1990s; sites investigated range in date from Early Archaic through the nineteenth century, and site types range from prehistoric and historic mortuary sites, to prehistoric habitations, to historic farmsteads. Her specific research interests include historic Euro–American domestic sites, historic Native American settlements and economies, and the management of cultural resources on public lands.

Ms. Porubcan maintains memberships in numerous regional and national professional organizations, and currently serves on the Illinois Archaeological Survey Board of Directors. She has worked for universities, private consulting firms, engineering firms, tribal governments, and as an individual private contractor—completing investigations required under both state and federal historic preservation legislation. She joined the Illinois State Archaeological Survey's Northern Illinois Field Station in 2009, where she currently serves as the Field Station Coordinator.

FRONT COVER IMAGES. Clockwise from top: Brass fan necklace pendant, Glass Bottle Chicago Consolidated Bottling Co., 14 to 18 Charles Place, Photo of Hand Unit 1 Profile courtesy of Andrew Jalbert, porcelain matchstick holder and striker, metal teaspoon.

INSIDE FRONT COVER IMAGES. Photo of Clare Tolmie and Paula Porubcan Branstner by Marcia L. Martinho, ISAS Photographer.

Cover Design by Marcia L. Martinho. Book Design by Linda Alexander.
ISAS Production

DRAFT

Section 106
Archaeological Properties Identification Report

Obama Presidential Center (OPC) Mobility Improvements to Support the South Lakefront Framework Plan (SLFP), Cook County, Illinois

ILLINOIS
Illinois State Archaeological Survey
PRAIRIE RESEARCH INSTITUTE

by
Clare Tolmie
Paula Porubcan Branstner

with contributions by
Michael F. Kolb

Technical Report No. 184

Thomas E. Emerson, Ph.D.
Principal Investigator, Survey Director, and State Archaeologist

Illinois State Archaeological Survey
Prairie Research Institute
University of Illinois at Urbana–Champaign

Investigations Conducted by
Illinois State Archaeological Survey
Prairie Research Institute
University of Illinois at Urbana–Champaign

Investigations Conducted Under the Auspices of
The State of Illinois
Department of Transportation

Brad H. Koldehoff
Chief Archaeologist

February 2018

Illinois State Archaeological Survey
Technical Reports

Series Editor
Thomas E. Emerson

Volume Editor
Paula Porubcan and Clare Tolmie

The Illinois State Archaeological Survey's (ISAS) mission is to investigate, preserve, and interpret the archaeological heritage of Illinois within the context of long-term public needs and economic development through its scientific research, landscape preservation, public service, education, and outreach activities. To accomplish this mission, the Survey partners with public and private organizations as well as federal, state, and local government entities.

One of ISAS's primary goals, as a state scientific survey and research unit of the Prairie Research Institute (University of Illinois), is the dissemination of information of archaeological and historical topics to both professional and public audiences. This series, ISAS Technical Reports, is designed specifically to provide an outlet for the rapid production of volumes covering detailed scientific analyses of interest primarily to archaeological researchers, administrators, and project managers and to fulfill legal compliance reporting. To facilitate such a production schedule, normal editorial procedures have been abbreviated. The contents of this report reflect the view of the authors, who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the sponsoring agencies.

The production of these volumes is accomplished through the efforts of the ISAS Publication Production Office under the direction of Sarah Boyer (Publication Manager); Rose Smith (Production Assistant); and Marcia Martino (Illustrator/Photographer/Graphic Designer). Production for this volume was performed by Sarah Boyer.

Project Information
Agency: FHWA/NPS
Project Title: SLFP-OPC (IDOT Seq. 20908)
ISAS Log Number: 17080 IHPA Log Number: 021081017

Contents

Chapter Appendices

To facilitate the production process, long appendices are available online and are not included in the paper report. However, paper reports submitted to the Illinois State Historic Preservation Office for compliance purposes have an enclosed CD inside the back cover with all online material included. Type the URL below into a web browser to down load the data. Adobe or a similar program that can open .pdf filed is required.

The following files are available for download at *https://uofi.box.com/Technical-Report-184*

Figures

Tables

Executive Summary

This survey of archaeological resources was undertaken within the Area of Potential Effects (APE) in accordance with the Section 106 process for the Obama Presidential Center (OPC) Mobility Improvements to Support the South Lakefront Framework Plan (SLFP) project. The potential for Federal actions by the National Park Service (NPS), the Federal Highway Administration (FHWA), and/or the U.S. Army Corps of Engineers (USACE) requires this project to comply with requirements of the National Environmental Policy Act (NEPA), Section 106 of the National Historic Preservation Act (NHPA) of 1966, and Section 4(f) of the Department of Transportation Act of 1966. Archaeological investigations were undertaken within Jackson Park and the Midway Plaisance in advance of proposed construction of the OPC and mobility improvements to Jackson Park developed by the City of Chicago as part of the SLFP. The APE lies within the boundaries of the Jackson Park Historic Landscape District and Midway Plaisance listed on the National Register of Historic Places (NRHP Reference #720001565). Jackson Park is the site of the 1893 Columbian Exposition or World's Fair. Three previously reported sites, 11CK1105, 11CK1106, and 11CK1107 lie within or adjacent to the APE. This report focuses only on archaeological resources. Architectural and designed landscape resources were studied separately.

The purpose of the investigations was to identify and evaluate archaeological resources for the National Register of Historic Places pursuant to Section 106 of the National Historic Preservation Act of 1966. Field investigation techniques included visual inspection, geomorphological coring, and hand excavation. ISAS revisited the three previously recorded sites and identified four new sites: 11CK1289, 11CK1290, 11CK1291, and 11CK1292. Three subsurface features were identified, two within 11CK1289 and one within 11CK1106. None of the features contained *in situ* material. Only very small portions of 11CK1105 and 11CK1107 lie within the present APE; neither site has been evaluated for NRHP eligibility, however the portions of the sites within the APE lack the potential to contribute significant new knowledge under Criteria D of the NRHP, and no further work is recommended. Sites 11CK1106, 11CK1289, 11CK1290, and 11CK1291 contain debris from the 1893 World's Fair, but in secondary fill context and in our opinion do not warrant consideration for listing on the NRHP under Criteria D. While site 11CK1292 contains buried deposits associated with the 6 month period the 1893 World's Fair was open to the public, these deposits consist of incinerated material connected to clean out events associated with the operation of the Engle Crematory. An extensive archive of documents detailing the operation of the incinerator indicate that this material is composed of a mix of incinerated sewage and general garbage collected from the grounds and various facilities of the Worlds Fair. Although the material appears to be directly related to the operation

of the Engle Crematory, the deposits lack the potential to provide additional information related to either the Worlds Fair or the operation of the Crematory beyond that provided in the extensive written record available. Therefore, it is our recommendation that 11CK1292 does not warrant NRHP consideration under Criteria D.

Acknowledgments

The project was funded by the Illinois Department of Transportation, and the authors would like to thank Brad Koldehoff, IDOT Cultural Resources Unit Chief and Chief Archaeologist, and IDOT District 1 staff for their support. The authors would also like to thank the staff of CDOT and the Chicago Park District for their support with logistics. Field investigations of the SLPF/OPC were completed by staff from the Northern Illinois Field Station (NIFS). All laboratory analysis and report generation was completed by NIFS.

ISAS investigations were conducted under the direction of Dr. Thomas E. Emerson, Principal Investigator; Dr. Thomas J. Loebel, Cultural Resource Coordinator; Dr. Brian Adams, Statewide Survey Coordinator; and Paula J. Porubcan Branstner, NIFS coordinator. All historic site evaluations, archival research, and historic artifact analysis was completed by Dr. Clare Tolmie. Map figures were produced by Lauren Fitts and Paula Bryant. Marcia Martihno produced all profile figures and artifact photographs. Artifacts were processed and inventoried by Brian McConnell, Kenton Geier, and Geoff Keehan. Field crew included Paula Porubcan Branstner, Paula Bryant, Luke Cavallaris, Lauren Fitts, Kenton Geier, Geoff Keehan, Brian McConnell, and Clare Tolmie. Lauren Fitts and Paula Bryant completed the topographic mapping of the project area.

Dr. Michael Kolb and Andrew Jalbert conducted geomorphological field and archival investigations for the project. We would like to thank Shawn Quigley (University of Illinois Urbana–Champaign), and Claudine Malik, Nathan Roseberry, Nichole Sheehan, and Heather Gleason (Chicago Park District and Chicago Department of Transportation) for their assistance in obtaining permits and background material. We would also like to thank Aaron Rutt, Reference Librarian at the Ryerson and Burnham Library, Art Institute of Chicago and the staff of the Special Collections, Harold Washington Library Center, Chicago Public Library for their assistance in our archival research.

Chapter 1

Project Description

The South Lakefront Framework Plan (SLFP) developed by the City of Chicago includes modifications to Jackson Park and the related proposed construction of the Obama Presidential Center (OPC). Together, these planned developments form the APE for this possible Federal Highway Administration and National Park Service undertaking developed in coordination with the Illinois Department of Transportation, the City of Chicago, and the Obama Foundation. The following report presents the results of investigations to identify and evaluate the potential for archaeological resources within the APE pursuant to Section 106 of the National Historic Preservation Act of 1966. The APE lies within the boundaries of the Jackson Park Historic Landscape District and Midway Plaisance listed on the National Register of Historic Places on December 15, 1972 (NRHP Reference #72001565; Figure 1.1). The SLFP/OPC APE also contains three previously recorded archaeological sites: 11CK1105, 11CK1106, and 11CK1107 (Figure 1.2). All three sites produced artifacts and/or structural debris associated with the 1893 Columbian Exposition or World's Fair. The focus of the current archaeological investigations is primarily an evaluation of the APE's National Register of Historic Places (NRHP) eligibility under Criterion D; that is, we have focused on the APE's potential to contain archaeological material that may provide information important to our understanding of prehistoric and/or the pre-urban historic use of the APE, development of Jackson Park and the World's Fair, and/or post-World's Fair use of the Park. A comprehensive context and research design was completed for this project prior to starting fieldwork (Tolmie and Porubcan Branstner 2018). For ease of reference, portions of that report are presented here as well in the following chapters.

The APE encompasses areas of potential ground disturbance related to this undertaking (Figure 1.3). Specifically, these areas include the location of the OPC and associated underground parking garage; and roadway improvements within Jackson Park, from 55th to 67th Streets, as well as improvements along Stoney Island Avenue between 67th and 68th Streets. The APE comprises 23.08 acres within the OPC and approximately 16.48 linear km (10.22 linear miles) primarily coincident with existing roadways (linear km/miles recorded here include distances along both sides of all affected roadways). Along roadways, proposed construction limits extend between 6 m and 106 m (20 ft and 350 ft) beyond existing road centerlines (total APE of 62.04 acres). Chicago Department of Transportation (CDOT) project engineers have identified two levels of anticipated construction impacts for roadways within the APE: areas where ground disturbance will extend deeper than 25 cm (10 in) below the current ground surface (orange areas on Figure 1.3) and areas where excavations will not extend farther than 25 cm (10 in) below the present ground surface (blue areas on Figure 1.3).

Proposed ground disturbance within the OPC and underground parking garage APE is understood to be greater than 25 cm (10 in).

This report discusses the potential for National Register of Historic Places eligibility of archaeological remains present within the APE. The report also discusses the geological history, past environments, and general prehistoric and early historic archaeological context of the Chicago area. This document especially considers the culture history of the Jackson Park landscape as it was developed as a leisure facility (beginning in the late nineteenth century) and the potential for archaeological resources associated with these events, in particular, to be present, within the APE. Also discussed are field, laboratory, and analytical methods employed; results of investigations; and criteria for identifying and evaluating archaeological properties for potential NRHP eligibility. Architectural and designed landscape resources were studied separately. This report focuses only on archaeological resources.

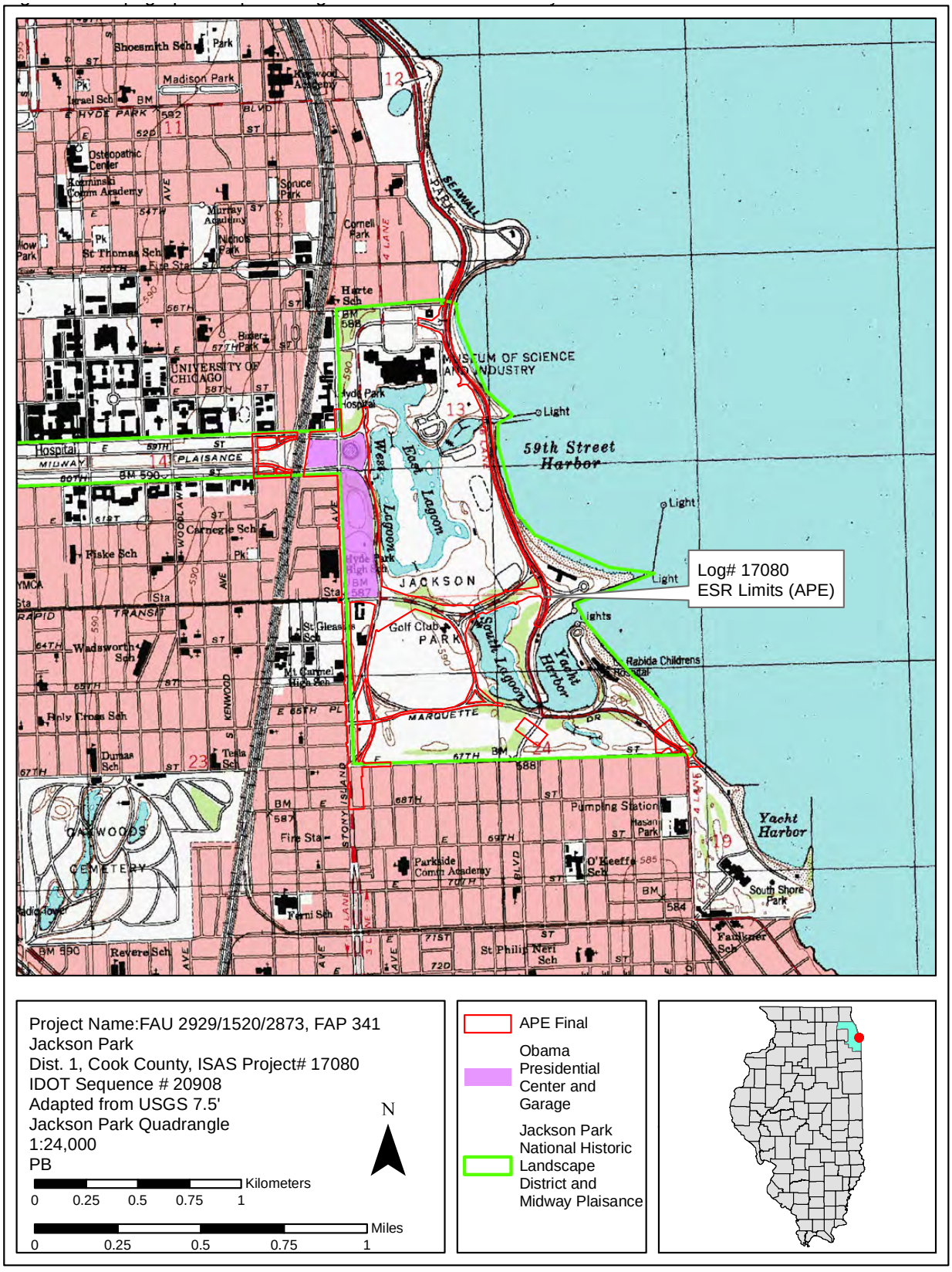


Figure 1.1. Topographic map showing the OPC and SLFP survey area.

Figure 1.2. Previously recorded sites within and near the APE.

Figure 1.3. Aerial image showing OPC footprint and existing rights-of-way (Roads).

Chapter 2

Environmental Setting

Geology

The surficial bedrock of the Chicago region is dominated by Silurian age dolomite. This bedrock surface is overlain by glacial tills deposited during at least six glacial episodes during the Quaternary period (Kolkata 2010). During these episodes, the Lake Michigan basin formed as a result of erosion caused by a series of glacial advances and retreats.

The surficial geology of the Chicago region formed during the most recent glacial episode of the Pleistocene, the Wisconsian, and in the postglacial period, the Holocene. During the Wisconsian glaciation, the Chicago region was covered by ice sheets of the Lake Michigan Lobe. The advances and retreats of the ice left a series of terminal moraines in concentric rings around what is now the Chicago-Calumet Lake Plain. As the ice retreated, a glacial lake known as Lake Chicago formed between the melting glacier and the moraines (Hansel and McKay 2010). Sediments deposited by glacial Lake Chicago formed the Chicago-Calumet Lake Plain. The lake plain is the major topographic feature of the Chicago region, bordered by the moraines to the north, south, and west and by modern-day Lake Michigan on the east.

Lake levels fluctuated greatly during the early Holocene, including periods of high water where the modern coastline was submerged and bedrock outcrops or moraines, such as Stoney Island and Blue Island, were surrounded by water. Periods of low lake levels also occurred, with levels far lower than today, as much as 90 m below modern levels. The lake level gradually rose and stabilized around 4,000 years ago, and the modern level was established around 1,700 years ago. The modern shoreline along the Chicago-Calumet Lake Plain was formed by deposition of sand by lake currents, first as beach deposits, beginning around 3,500 years ago (Chrzastowski 2010; Chrzastowski and Thompson 1992, 1994; Figure 2.1). As beach formation continued, earlier shorelines were overlain by dunes as the lakeshore migrated eastward (Chrzastowski 2010; Chrzastowski and Thompson 1992, 1994; Tolmie 2017). This sequence of beaches and dunes formed a distinctive ridge-and-swale topography with high, dry sandy ridges interspersed with lower swales that contained more-moisture-tolerant vegetation.

In summary, the APE is located on a young, geologically dynamic landform that developed over the past 3,500 years as sand was deposited to form a series of beaches and sand dunes as the shoreline

progressed eastward. These beaches and dunes overlie a sequence of Holocene lake sediments, former Holocene land surfaces, glacial lake sediments, glacial deposits, and the surface of Silurian bedrock.

Environmental Setting

Physiographically, the APE is located within the Chicago Lake Plain Section of the Northeastern Morainal Division (Schwegman 1973). The Chicago Lake Plain includes the Des Plaines and the Chicago River valleys. Prior to European settlement, the area contained prairies, wetlands, woodlands, and savannas. Approximately 73% of Cook County was in prairie vegetation and 20% was covered by forest, woodland, or savanna. Wetlands, such as marshes, sloughs and wet prairies, covered 6% of Cook County, and rivers, lakes, and ponds covered the remaining 1% of the county (Prairie Research Institute 2014). Large areas of marsh were present in the Lake Calumet area. Woodlands and forests occurred along river valleys or in other areas protected from fire. The wide areas of prairie were maintained by fires that either occurred naturally or were deliberately set by Native Americans to encourage fresh plant growth and attract game species.

Soils within the APE reflect the surficial geology and landscape history of the area. The APE traverses soils of the Oakville-Lamont-Alvin soil association (College of Agriculture, University of Illinois at Urbana-Champaign 1982). Oakville-Lamont-Alvin soils formed in sandy outwash, sandy alluvium or sandy eolian material that formed under deciduous forest (Fehrenbacher 1984). Three soil series are mapped within Jackson Park: Watseka loamy fine sand (49A), urban land (533), and Oakville fine sand (741B, 741D). (Natural Resources Conservation Service [NRCS] 2017). Watseka series soils are classified as Aquic Hapludolls, somewhat poorly drained soils that formed in sandy eolian deposits or outwash sediments under prairie vegetation. A typical profile has a 25-cm deep 10YR2/1 black to 10YR very dark gray A horizon over B horizon sediments of 10YR 4/2 dark grayish brown sand and 10YR6/2 light brownish gray fine sand to a depth of 81cm. The underlying C horizon is a 10YR 7/2 light gray fine sand. Oakville series soils are classified as Typic Udipsamments and are very deep, excessively well drained soils formed in sandy eolian deposits on dunes and beach ridges. Native vegetation was woodland. A typical profile has a shallow A horizon of 10YR 2/2 very dark brown sand to a depth of 8 cm, over a BE horizon of 10YR 4/4 dark yellowish brown fined sand. A series of B horizon soils, of 7.5YR 5/6 and 7.5YR 5/8 strong brown to 10YR6/6 brownish yellow sands, begin at 15cmbs and extend to a BC horizon at 107cmbs. The BC horizon is a 10YR 6/4 light yellowish brown sand over a C horizon of the same color that begins at 150mbs.

As with the shoreline, the vegetation pattern of the Chicago area has changed over time. Vegetation patterns changed during the early Holocene as the glaciers retreated and plant and animal communities recolonized the landscape. At the end of the Pleistocene, the upper Midwest was covered by spruce- and pine-dominated forest with a tundra-like understory. This environment supported megafauna, such as mastodon, and cold-adapted species, such as musk ox and caribou. Around 12,000 years ago, as the climate warmed, a diverse series of ecosystems began to emerge in Illinois, as hard-wood forests developed along river systems and prairies and savannas formed as the climate

dried. In northeastern Illinois, the landscape was a mosaic of forests, wetlands, and open grasslands that provided a broad array of seasonally available plant foods from the forest, prairies, and wetlands; aquatic resources (fish, crustaceans, and mussels); migratory waterfowl; and larger game such as turkeys, deer, elk, and bison. As the climate became drier and warmer (more so than today) 9,000 to 5,000 years ago, areas of prairie expanded at the expense of forests. In northeastern Illinois, in the moraines and on the Chicago Lake Plain, the landscape remained a mosaic of grasslands, oak-hickory dominated forests, and wetlands during the prehistoric period (Reber et al. 2017). Human populations utilized the landscape, hunting, fishing, and collecting wild plant foods. As the shoreline and beaches stabilized along southern Lake Michigan, a new environment formed for exploitation by prehistoric populations.

The 1842 General Land Office map shows the APE within an area of prairie, with some timber at the western extent. Areas of low wet ground were present within the APE, as well as a small "water hole" (Graff 2011). The lakeshore itself appears to have remained relatively stable over time, shown in much the same position in the 1834 GLO map as it is today (Figure 2.2). Graff (2011) notes that descriptions of the 1893 World's Fair site use terms such as "wilderness" or "swamp" despite photographic evidence to the contrary. While the site contained swales of lower, wetter ground there is no indication that large-scale land reclamation was necessary to construct Jackson Park. Instead it appears that soil excavated from the smaller ponds and the lagoon areas was likely used to level and build up the areas containing structures (Figure 2.3).

Jackson Park is one of the few large areas south of Chicago where it may still be possible to find traces of the pre-settlement shoreline of Lake Michigan, in as much as residential or industrial development has had a less severe impact on the lakefront there. Investigations of the area may have the potential to both identify and interpret the presettlement coastal environment and to determine how native occupants adapted to and exploited these unique coastal zones. Affected portions of the project APE will frame evaluations with this in mind.

Figure 2.1. Late Pleistocene and early Holocene lake levels.

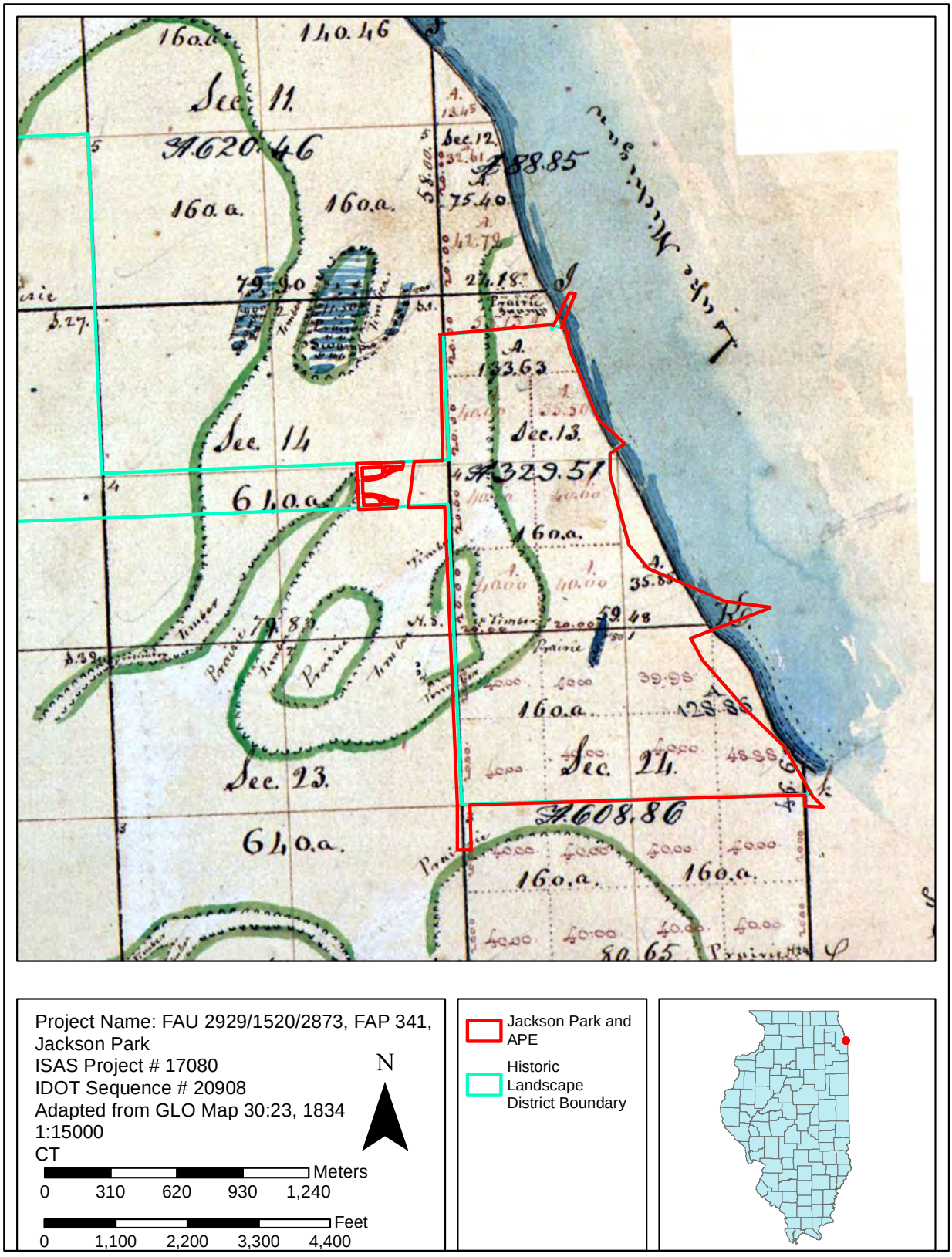


Figure 2.2. Portion of the 1834 General Land Office plat showing the location of Jackson Park.

Figure 2.3. Jackson Park landscape, ca. 1890, prior to Park improvements (Chicago History Museum, ICHi-25220).

Chapter 3

Regional Cultural History

Introduction

The landscape of northeastern Illinois has supported human populations since the end of the last ice age. The prehistoric period in northeastern Illinois is divided into four main cultural phases: Paleoindian (12,000–10,000 years ago), Archaic (10,000–2,600 years ago), Woodland (2,600–900 years ago), and Upper Mississippian (900 to 400 years ago or AD 1100–1600). The historic period begins with the interaction between indigenous Native American communities and European traders and explorers. European settlement in northeastern Illinois did not begin until the late eighteenth century with the establishment of DuSable's trading post and the construction of Fort Dearborn. The majority of European settlement occurred after 1830 (Figure 3.1).

Precontact Native American Context

Paleoindian Period (10,000–8000 BC)

The Paleoindian period is the earliest period of human occupation in the region. The initial Paleoindian groups were probably small, highly mobile bands that moved through the territory following caribou herds. These bands likely occupied large territories over the course of a season and year. The absence of good stone resources for tools in northeastern Illinois meant that these groups either traveled long distances or maintained long-distance trade networks to obtain material suitable for the tools and spear points characteristic of this archaeological period (Koldehoff 2013; Koldehoff and Loebel 2009; Loebel 2012). Sites in Cook County are typically found in association with water resources and elevated transportation corridors (Porubcan and Bryant 2016).

During the Paleoindian period, the Cook County region was a geologically immature landscape of recently deposited glacial sediments, immature drainage systems, and large poorly drained areas of lakes and impounded meltwater. Fluctuations in lake levels during this period resulted in the APE undergoing periods of inundation (Chrzastowski 2010). The higher water levels of glacial Lake Chicago during the Calumet phase (9800–9200 BC) suggest that the APE was submerged during much of the Paleoindian period, and it is unlikely that sites dating to this time period would be found.

Archaic Period (8000–600 BC)

The Archaic period is a period of considerable environmental change in northeastern Illinois. This period saw the spread of deciduous woodland and prairie into the region. It is also a period of considerable fluctuation in lake levels, including a long period during which levels were far below modern levels and other periods during which they were higher than today.

The changes in the environment produced a wide range of new habitats for humans to exploit. Heavily used food resources included deer, smaller animals, fish and reptiles, mussels, migratory birds, and a wide range of nuts and seeds. Use of these new resources is reflected in the appearance of new tools associated with woodworking (axes and adzes), fishing (fish hooks and net sinkers), and seed and nut processing (mortars and grinding stones) (Adams et al. 2000; Harris 2002; Koldehoff and Loebel 2009; Lurie et al. 2009; Porubcan and Bryant 2016; Simon 2009). Abundant and predictable resources supported growing populations that began to settle in smaller territories, moving seasonally between large base camps and smaller camps near resources. In northeastern Illinois, people in the earlier part of the Archaic period appear to have remained highly mobile and settlements remained focused on water resources and higher landforms. In the middle and later Archaic, mobility appears to decrease and settlement focuses more on exploitation of important woodland resources (Harris 2002; Tolmie 1999, 2003). These later sites are occupied more intensively and/or more frequently or for longer periods of time. A wider range of activities were conducted at these sites than at Paleoindian sites or earlier Archaic sites, and semi-permanent structures, storage pits, and cemeteries are sometimes present (McElrath and Emerson 2009; Markman 1991; Porubcan and Bryant 2016).

Toward the end of the Archaic period, lake levels stabilized and beach and dune formation began along the coastline of southern Lake Michigan (Chrzatowski and Thompson 1992, 1994; Lovis et al. 2012). The APE was inundated at certain periods, was exposed as dry land at other periods, and by the end of the Archaic, may have been part of the shoreline of the lake. Evidence for Archaic settlement within the APE may be present as a buried component or components below or within the beach and sand-dune deposits.

Woodland Period (600 BC–AD 1100)

The transition to the Woodland period is marked by the introduction of pottery, domestication of native plant species (including maygrass, sunflower, sumpweed, goosefoot, amaranth, and edible squash), and the development and spread of horticulture (Asch and Asch 1985; Markman 1991; Smith and Cowan 2003). Construction of effigy mounds shaped like birds, reptiles, mammals, or even humans is also characteristic of this period (Emerson 1986; Emerson et al. 2000). There are also periods when large midcontinent trade networks increased, facilitating exchange of raw materials, finished goods, information, and ideas (Emerson et al. 2000; Jeske 2006; Porubcan and Bryant 2016).

Hunting, fishing, and gathering wild food remained important components of Woodland subsistence and, at least in the early part of this period, groups in northeastern Illinois continued to move across the landscape to exploit seasonal resources. As cultivation of native domesticated crops became more important, beginning around AD 200, settlement focused more on easily cultivated localities

such as river floodplains. Large semi-permanent settlements developed, the inhabitants of which spent part of the year planting and harvesting crops and then dispersing to focus on other seasonal resources. By around AD 800, maize (corn) becomes a minor component of the diet in northeastern Illinois. The increased investment in time and energy in clearing land, and planting, tending, processing, and storing domesticated plant food is reflected in changes in tool types and ceramic cooking vessels, in development of semi-permanent villages with storage pits, and in changes in group and village organization (Emerson and Titelbaum 2000; Farnsworth and Emerson 1986; Porubcan and Bryant 2016; Salkin 2000).

During the Woodland period, the sand dunes and beaches likely present within the APE did not contain soils conducive for horticulture, and this would not have been a location selected for long-term settlement associated with plant horticulture. The APE was more likely utilized for short, sporadic occupations associated with seasonal activities to exploit local resources along the lakeshore or in nearby wetlands and forests.

Upper Mississippian Period (AD 1100–1600)

This period in the Chicago region is marked by the presence of agricultural groups living in larger year-round villages and growing and storing maize, beans, and squash and native domesticates such as sunflower. These groups also relied on hunting, fishing and collection of wild plant foods. The ability to grow and store food year-round and the necessity of at least part of the population staying near and tending crops is associated with increased social complexity and the development of hierarchies, and sometimes conflict, between regional groups or between immigrating and indigenous horticultural groups (Emerson 1999, 2012; Jeske 1990; Porubcan and Bryant 2016). The Chicago region contains a number of very large prehistoric village sites, many of which supported populations approaching 2,000 for at least part of the year. The sites frequently contain the remains of the below-ground portions of houses, storage pits, and hearths and evidence that some villages were fortified. Burials are also commonly found at these villages (Bluhm Herold et al. 1990; Jackson and Blewitt 2017; Markman 1991; Porubcan and Bryant 2016).

Upper Mississippian village sites are frequently found along rivers and large streams near the intersection of prairies and forests and on land suitable for agriculture. Smaller seasonally occupied camps are generally found scattered along lesser drainages near wetlands and in upland settings (Porubcan and Bryant 2016). Smaller groups occupied these sites while hunting game or waterfowl, collecting wild plant food, fishing, or collecting raw material for tools (Brown and O'Brien 1990; Jackson and Blewitt 2017; Jackson and Emerson 2013; Markman 1991; Porubcan and Bryant 2016).

The APE is not a locality likely preferred by Upper Mississippians for a permanent village site. The APE may have served as a location for short-term seasonal campsites, or the high ridges may have served as trails along the lakeshore. Albert Scharf (1901) mapped an "Indian trail" (Trail P) that ran through the western part of Jackson Park and also recorded a prehistoric or protohistoric site to the south of the park. The presence of the trail and an occupation site suggests the general use of the area in the prehistoric or protohistoric periods, and indicates that the coastal area was not all

marshland; it also contained areas of higher ground with lower wetter areas in the swales, as shown in the GLO map (see Figure 2.2).

Contact Era and Postcontact Native American Context (AD 1600–1834)

Protohistoric or contact era archaeological sites in the Cook County area are typically identified by the presence of trade goods such as glass beads, iron kettles, or brass implements. There is little or no change observed in the settlement and subsistence patterns at this time (Munson and Munson 1969a, 1969b), with the Huber phase continuing as much as 40 years into the early seventeenth century. European goods were traded into the area through down-the-line trade in the period prior to direct contact with European explorers and settlers (Mazrim and Esarey 2007). During the later eighteenth and early nineteenth centuries, Native Americans and Europeans came into direct contact, primarily through the fur trade. French, Canadian, and American trading companies operated in the region at different periods.

Different Native American groups are known to have occupied the area. Social boundaries and territories were fluid and changes in populations reflect the impact of population displacement and warfare associated with the expanding colonial presence in eastern North America and control of access to the fur trade (Keating 2012). Native American groups also became embroiled in warfare and disputes related to events on the European continent (such as the War of 1812) or later in direct conflict in territorial disputes with the United States (the Blackhawk War in 1834). The Potawatomi, Fox, Mascoutin, Illinois, and Miami/Wea were all present in the area at certain periods (Tanner 1987).

The first well-documented European explorers in Illinois were Father Jacques Marquette and Louis Joliet, in 1673, who traveled up the Illinois River and the Des Plaines River and then portaged across to Lake Michigan. A European presence was first established in northeastern Illinois beginning with French explorers and traders, followed by British and later American traders and military personnel in the eighteenth and nineteenth centuries. The first permanent settler in the Chicago area was Jean Baptiste Point DuSable, who operated a trading post on the north bank of the Chicago River between circa 1779 and 1800 (Porubcan and Bryant 2016).

A formal American military presence was established with the construction of Fort Dearborn circa 1803 on land ceded in the Treaty of Greenville in 1795. The treaty ceded 6 square miles at the mouth of the Chicago River to the United States (Davis 1998). This was a small military reserve within Indian Country. Fort Dearborn was completed in 1804 (Keating 2012). The fort served as a focus of settlement in the area, and the early population was a mixture of soldiers, traders, and Native Americans (Keating 1988). After the War of 1812, the U.S. government acquired the land running directly southwest for points 10 miles north and south of the mouth of the Chicago River, which includes the present APE, in a treaty signed at St. Louis in 1816 (Davis 1998). By 1835, all territory in northeastern Illinois had been ceded to the United States and Native American populations were removed or were in the process of removal (Tanner 1987, 2005).

Postcontact Euro-American Context

Initial Settlement (AD 1780–1840)

DuSable's post became the focus of a small trading outpost in the late eighteenth century (Keating 2012). The Treaty of Greenville had little immediate effect. Early European settlement in northeastern Illinois was limited to the area around Fort Dearborn, with a small number of families, mostly associated with the fur trade, living around the fort (Keating 1988; Miller 1996). A trading house (factory), established by the U.S. government in 1805 to trade with the Potawatomi and other groups in the area, was built alongside an Indian Agency house (Keating 2012). At the same time, independent traders such as John Kinzie and Thomas Forsyth were operating in the area. The U.S. factory closed in 1812. Fort Dearborn was destroyed during the War of 1812 and subsequently rebuilt. Following the War of 1812, a new factory was established at Fort Dearborn, along with factories at Prairie du Chien and Fort Edwards, to encourage the fur trade with American companies and lessen the influence of the British. Despite the presence of the fort and a government trading post and American Fur Company traders, Chicago remained a hamlet until the 1830s (Davis 1998).

The opening of the Erie Canal in 1825 opened the Great Lakes to settlers from the eastern United States, and the canal became a corridor for goods and raw materials headed from the prairie states to the Eastern Seaboard and foreign markets (Cronon 1991; Davis 1998). The selection of Chicago as one terminus of the Illinois and Michigan Canal in 1830 provided further impetus for development at the mouth of the Chicago River, and a steamboat service was established in 1832. Significant settlement in northeastern Illinois began after final cession of territories by Native Americans following the Black Hawk War in 1833 (Davis 1998).

The City of Chicago was platted by the canal commissioners in 1830, imposing a grid pattern on the earlier settlement around Fort Dearborn. Construction of the harbor in 1834 established Chicago as a major inland port (Miller 1996). According to a visitor in 1833, settlement in Chicago focused on the river, with approximately 150 houses then present (Davis 1998). In 1833, the population was just 370, but by 1834 the population was 1,720 (Davis 1998). Immigration was further stimulated by the opening of a Land District Office in Chicago in 1835 for the sale of land ceded by the 1833 treaty. The population of Chicago in 1837, the year the City of Chicago was founded, was 4,150 and by 1850 had risen to 30,000. Between 1850 and 1860, the population grew to 130,000 (Cronon 1991; Keating 1988, 2005). As the population grew, the city expanded out from its original core area. The original city limits were Chicago Avenue on the north, Halsted Avenue on the west, and Twelfth Street on the south. By 1863, the city limits had expanded to Fullerton Avenue on the north, Western Avenue on the west, and Egan Avenue on the south.

As the fur trade declined, new businesses were established that traded with the white settlers in the area. Businesses including tanneries, distilleries, blacksmith shops, slaughterhouses, and taverns formed the basis of a new commercial and industrial base. While merchants and craftspeople moved to Chicago, the surrounding area was cleared for farming. At the same time, the rural population of Cook County doubled as farmers took advantage of the fertile prairie, the presence of a local urban

market for produce, and the development of Chicago as a transportation nexus, funneling food and raw material to the population of the eastern United States (Cronon 1991; Keating 1988).

The location of Chicago as the eastern terminus of the Illinois and Michigan Canal provoked a great deal of land speculation and provided a focus for local markets to ship produce to the east. The earlier fur-trading economy had established a trading network with the east that expanded with the growth of bulk transportation networks in the form of canals and, later, railroads. The Chicago River became a federal harbor in 1834 (Hirsch 2005), and Chicago became a transfer point, shipping grain and raw materials such as timber eastward and finished goods from the Eastern Seaboard westward to rural populations (Cronon 1991). At the same time, local industries were established within the city, with the first manufacturing district established along the North Branch of the Chicago River (Hirsch 2005).

Development of Chicago (AD 1840–1900)

In 1848, the first railroad opened, the Chicago Board of Trade was established, and the telegraph system reached the city (Miller 1996). In the same year, the first stockyard was established and the first steam-powered grain elevator put into operation (Miller 1996). By 1854, Chicago was the premier grain port in the world; by 1856, ten railroads terminated in Chicago. By 1860, more railroads met at Chicago than at any other city in the world (Miller 1996). In addition, factories for processing meat and vegetables were established, including the Chicago Stock Yards, as were shops and warehouses that shipped finished goods to the surrounding rural communities. Other manufacturers established plants to supply equipment to farmers, such as the McCormick Reaper factory (1847).

The city population grew rapidly as immigrants arrived from Europe to work in the industries within the city limits. Chicago received a further boost during the Civil War, when trade shifted from St. Louis to Chicago following the closure of the rail network across the Mississippi. The founding of the Chicago Stockyards in 1865, just outside the city limits, resulted from the huge surge in meat processing that occurred to supply the Union army and the need to better organize the movement of livestock through the region. The Chicago fire of 1871, while devastating the downtown areas, left the industrial sectors of the city largely untouched. The burnt downtown district was rapidly rebuilt.

Despite the increasing wealth and population of the city, early Chicago was plagued by muddy streets and public-health issues. The problems were largely solved by the construction of a sewer and rainwater system above ground and, to allow for gravity to take drainage to the lake and river, the raising of the street grade by as much as 10 ft to cover the sewers (Miller 1996). Continuing problems with polluted river water resulted in use of Lake Michigan as a source of drinking water, with construction of an intake system completed in 1866 (Miller 1995).

Development of Hyde Park (AD 1861–1945)

The growth of industrial areas within and immediately outside the city limits and the development of the railroad network influenced the location of summer or country residences of the wealthier residents of Chicago. These included Paul Cornell, who purchased 300 acres along the lakeshore between 51st

and 55th Streets in 1852 and built the Hyde Park House hotel in 1856. To create a resort, he negotiated with the railroad for a stop near the hotel, which opened in 1857, and marketed large lots to attract permanent suburban residents (Keating 1988; Miller 1996). The area became well known as a resort and a number of prominent people had homes there. In 1861, Hyde Park Township was incorporated from Lake Township. The Village of Hyde Park was established in 1869, and was annexed to the City of Chicago in 1889. The residential area grew with the expansion of the streetcar and elevated railway lines into the area. In 1851, "the inhabitants of Hyde Park could have been conveniently carried in a street car without crowding" (A. T. Andreas 1884:516). In 1861, the population was estimated at 350, and by 1870 the census recorded 500 residents. Ten years later, the population had grown to 3,655, and by 1880 the population stood at 15,724. The estimated population in 1884 was 35,000 (Andreas 1884). The village contained 23 settlements, 12 lines of railroads, and $8 mil-lion worth of parks, boulevards, and walks, including Washington Park, the Midway Plaisance, and Jackson Park. The new transit lines and the parks attracted a wider range of socioeconomic classes, and by the 1890s, the Village of Hyde Park had a large middle-class and working-class population and the village itself was surrounded by the heavily industrialized township.

Additional development in Hyde Park was spurred by the establishment of the University of Chicago in 1892 and the 1893 World's Fair (Grinnell 2005). Hyde Park remained a resort or leisure destination in the early twentieth century, with the South Shore Line advertising the Rose Garden as a place to visit and relax. The beachfront along Jackson Park, south of 57th Street, remained an area of relaxation. The beaches also reflected the changes in demographics on the South Side that occurred in the early twentieth century as the Great Migration got under way. Jackson Park beach was segregated, with a division occurring at 63rd Street. African Americans were not permitted south of this boundary nor were they permitted to use the beach house. As the African American population grew in the early twentieth century, clear divisions in the population emerged in Hyde Park, with restrictive covenanting limiting housing options to those between Cottage Grove and Wentworth Avenues south to 63rd Street (Pacyga 2011). Migration from the South continued during World War II, but white Chicagoans resisted integration, particularly in housing (Pacyga 2011).

In 1890, the townships of Lake, Hyde Park, Lakeview, and Jefferson were incorporated into the City of Chicago. By that date, these townships were closely linked to the city by streetcar lines and railroads (Keating 1988; Miller 1996). The growth of the suburbs also reflected changes in population patterns that occurred following the Great Chicago Fire. By the 1880s, the downtown area of Chicago contained offices, shops, and theaters but had few fulltime residential inhabitants. This downtown area was surrounded by factories and working-class neighborhoods, while other industries moved to the outskirts or suburbs to take advantage of broad tracts of affordable land now accessible via the railroad network (Keating 2005). Residential location reflected socioeconomic status in that those who could afford mass transit lived away from their place of work. Chicago therefore had "a green semicircle of suburbs [that] stretched from . . . Lake Forest . . . to Hyde Park" (Miller 1995:275).

According to Miller, the creation of public parks had a greater role in encouraging suburban development in Chicago than in any other city. The system of parks and boulevards was constructed

expressly to attract the rich and the upper middle class to residential developments alongside the open spaces. The park program was instituted by real estate developers, such as Paul Cornell, who combined both civic pride and personal gain in pushing for the creation of the Parks Commission (Miller 1995).

History of Jackson Park (AD 1869 to Present)

Pre–Columbian Exposition/World's Fair

Cornell developed Hyde Park into the most fashionable resort in the Chicago region, and his goal was to make it the South Side equivalent of Evanston to the north (Miller 1996). To enlarge the village, Cornell developed public parks to attract more resort goers and wealthy summer or year-round residents. To accomplish this goal, he lobbied for the development of a South Parks Commission. By forming an alliance with sanitary reformers and real estate interests, he also facilitated passing of the law establishing three independent parks commissions in the Chicago region in 1869: the North, West, and South. The South Parks System contained 1,055 acres and was located in Hyde Park and Lake Townships, south of the City of Chicago (Bachrach 2017). Cornell then arranged for Frederick Law Olmsted to design the South Parks System. This provided Olmsted with the opportunity to build a leisure landscape available to all, although the parks and boulevard system were largely used by the middle and upper classes (Miller 1996; Pacyga 2011). Prior to the establishment of the streetcar system, the parks were too far from lower-class neighborhoods to be easily used by their residents. By the 1890s, the cost of the fare made a family excursion impossible, and the rules of behavior (no drinking beer, cooking, or speech making) also discouraged park use. Instead, the boulevards and parks were dominated by equestrians and carriages of the wealthy (Miller 1996).

Plans were drawn up in 1871 by Frederick Law Olmsted, who created a design for two parks joined by a greenway: West Park (now Washington Park), East Park (now Jackson Park), and the Midway Plaisance. The parks were officially named Washington Park and Jackson Park on February 1, 1881. The sites were chosen prior to the passage of the legislation establishing the Parks Commissions (Bachrach 2017) and likely reflect Cornell's lobbying and influence. Olmsted was less than enthused about the Washington Park site, citing the flatness of the area but also recognizing that this provided for a large green space, primarily in what is now Washington Park (Bachrach 2017). In contrast, the site of Jackson Park contained sand bars, boggy swales, and ridges but had the advantage of the spectacular views of the lake, which in Olmsted's opinion was "fully compensating for the absence of sublime or picturesque elevations of land" (Olmsted, Vaux and Co., Landscape Architects, cited in Bachrach 2017).

Olmsted's original plans used water as a unifying theme for the South Park, with Jackson Park containing lagoons, peninsulas, a wooded island, a 1,000-foot pier for excursion steamers, and a canal cut from a turning basin at the entrance to the canal along Midway Plaisance, which would run to a 13-acre lake in Washington Park (Bachrach 2017; Miller 1996). Unfortunately for these plans, public spending was shifted to rebuilding after the Chicago fire. The project was also some-

what impeded by destruction of the South Park Commission office during the fire (Bachrach 2017). The boulevards connecting the parks were constructed, but the budget was severely reduced, and it was mandated that few changes be made to the natural scenery of Jackson Park (Miller 1995). The majority of Jackson Park remained undeveloped, with the exception of the northern end where two oblong lakes were created (the Twin Lakes) at the northwest edge of the park, and the construction of a paved beach. The two lakes were infilled prior to or shortly after the World's Fair (Graff 2011). The North Pond (now Columbia Basin) was created in 1879, and grading and sodding created a lawn north of the basin (Bachrach 2017). To combat beach erosion, a paved beach was built from 56th to 59th Streets, between 1882 and 1884, and extended to 61st Street between 1888 and 1890. Two buildings were erected: a large shelter near the lake at 56th Street (adapted for use as the Iowa Building during the World's Fair and later demolished) and a small limestone comfort station, east of the Columbia Basin, which was built in 1888 and remains extant (Bachrach 2017).

A bridge was built to cross the inlet at the southern boundary of the Columbia Basin. Built by 1884, this "Columbia Bridge" was designed by Daniel Burnham and modified for the 1893 Columbian Exposition (Graff 2011). The partial development of Jackson Park prior to 1893 indicates that the area was used for recreation by local residents and visitors. Material from deliberate discard or accidental loss may be present from this period. It is also possible that the area contains evidence of occupations by squatters or early settlers of the area who are not recorded in the historical record.

Columbian Exposition/World's Fair Era

Jackson Park was selected as the location for the 1893 Columbia Exposition by Frederic Law Olmsted. The park remained relatively undeveloped, with improvements on the northern border, as noted above. The area was on the lake, described as "the most beautiful natural feature of the region" (Miller 1996:380). The 1893 Columbian Exposition or World's Fair resulted in the creation of lagoons, paths, and structures in the southern portion of Jackson Park. The area around the Columbia Basin at the northern end of Jackson Park remained relatively unchanged (Burnham 1969). To the south, a system of canals and basins was excavated, and the major exhibition structures, railroad terminal, stockyards, and administrative buildings were constructed. A utility system (water, sewer, and gas), required to sufficiently maintain the "City of the Future" for its 300,000 inhabitants, was built for use by visitors (Burhnam 1989 cited in Graff 2011). Excavations by Rebecca Graff, in 2006 and 2007, determined that portions of this utility system remain in place (Graff 2011; Illinois Inventory of Archaeological and Palaeontological Sites [IIAPS] 2017). Portions of the 1893 utility system remain in use to this day (Personal communication from Chicago Parks personnel to C. Tolmie and P. Porubcan Branstner, October 2017).

According to the Burnham report, the unimproved area of Jackson Park contained 469 acres, of which 19 acres were waterways. Elevation varied from 0.5 ft to 11 ft above the City of Chicago Datum, with approximately 300 acres averaging 3.5 ft above the City of Chicago Datum (Burnham 1969, Volume 2, page 42). A topographic map of the park was created in late 1890, including the location of all trees (Burnham 1969). The map includes the landscaped areas and shows the partially dredged

interior channel within the park. This channel was part of the planned lagoon excavation. In 1890, the channel extended for approximately 0.75 miles. Dredging of the interior channels began on April 1, 1891 and 10,000 cubic yards of dredge were removed per day. Dredged material was used as fill to raise the general ground surface to approximately 6.5 ft above the City of Chicago Datum. Large scale grading and filling was undertaken using scrapers operated by mule teams and steam dredgers. Existing vegetation and topsoil was removed from the unimproved areas. All topsoil was removed and either stockpiled for future landscaping or spread over areas that would not be disturbed by building construction. Trees were removed from the area, excepting those on the Wooded Island. Trees were cut down and the stumps removed by mule teams (Burnham 1969). Combined, these activities resulted in large-scale and extensive modifications to the integrity of the pre-settlement landscape of Jackson Park, south of the North Pond.

The World's Fair included the Columbian Exposition and the Midway Plaisance (Figures 3.2 and 3.3). The Columbia Exhibition grounds contained the state and national pavilions at the northern end, large exhibition halls in the central portion, and the main rail terminus, livestock exhibits, power plant, garbage incinerator, and other support facilities in the southern portion. The midway exhibits included various "villages" from around the world, live animal shows, dioramas, and other forms of entertainment. The eastern end of the Plaisance, within the APE, contained two nursery areas, the Irish Industries exhibit, a model of the Philadelphia workingmen's house, a fire and guard station, and three commercial exhibits (Rand, McNally and Company 1893; Figures 3.4–3.8).

Construction of the World's Fair occurred between January 1891 and May 1893. During construction, a water system was installed for fire safety, but the workers on the site (including Walt Disney's father) used latrines. Workers lived on-site in barracks, and other temporary on-site structures housed workshops and other facilities (Miller 1996). According to a contemporaneous report, the laborers were housed in barracks on the site of the future Court of Honor (Miller 1996). Working conditions were often hard, particularly in the winter. At least 18 deaths and over 700 accidents occurred in the 20 months of construction. According to Miller, this made working on construction at the World's Fair more dangerous than working in a Pennsylvania coal mine (Miller 1996:384).

Fair superstructures were constructed with frameworks of iron and steel, and wooden frameworks coated with "staff," a mixture of plaster, horsehair, jute fibers, and other materials (see Figures 3.4–3.8). The exception was the Japanese Ho-o-den Palace built on Wooded Island, the only fair building designed to be a permanent part of Jackson Park (Graff 2011:3). Many structures were quite large and supported 4 and 5 stories, with balconies and elevators. Large exhibition halls had indoor men's and women's toilets; some buildings had basements. Underground water, sewer, electric, and gas lines connected these structures to the water purification plant, the electrical switchboards in the Machinery Exhibit Building, and so forth (Rand, McNally and Company 1893). Pilings were used to provide foundations for structures in areas of former wetlands or swales, for example the Manufactures and Liberal Arts Building (Burnham 1894/1969). The Fair opened to the public on May 1 and closed on October 30, 1893. An estimated 12–16 million people visited the fair; in addition, there

was a community of staff resident at the state pavilions, some international buildings, and perhaps elsewhere.

Post–Columbian Exposition/World's Fair

Following the closure of the fair, the site reverted to the ownership of the Chicago South Parks Commission. Some buildings were subsequently occupied by people referred to as "squatters" and many buildings were damaged by souvenir hunters; however, the majority of the buildings were either destroyed or severely damaged by a series of fires (either accidental or deliberate) in 1894–1895. The remaining infrastructure was removed and the areas landscaped. With the exception of the Columbia or Clarence Darrow Bridge, no aboveground infrastructure associated with the 1893 World's Fair survived in situ. The Museum of Science and Industry stands at the location of the Art Gallery building. The original temporary structure was rebuilt as a stone structure between 1929 and 1933. The Ho-o-den Palace was destroyed by fire in 1947 (Graff 2011). The Columbia Bridge was dedicated by Richard M. Daley as the Clarence Darrow Bridge in 1957. Darrow was reported to have spent time on the bridge considering his cases, and his ashes were scattered from the bridge following his death on March 13, 1938. Since 1957, people have attended a memorial gathering at the bridge on the anniversary of his death, some in hopes of seeing his ghost (Kogan 2016).

In the early twentieth century, the Chicago South Parks Commission continued to implement a version of Olmsted's original plan for the park. The landscape architects Olmsted, Olmsted and Eliot (later Olmstead Brothers & Co.) completed a redesign of the park in 1895 called the Revised General Plan, and the majority of the plan was implemented by 1906. A major modification to the plan was the addition of a golf course (Bachrach 2017). The goal was to retain many features of the landscape design of the World's Fair and also incorporate modern recreation and exercise facilities. The plan focused on three principal areas: the Lake Shore, the Lagoon System, and the Midway Plaisance Canal. Along the Lake Shore, Lake Shore Drive was extended from the north boundary to the park, including the construction of new bridges at the North Inlet in 1895 and the South Haven (now the Outer Harbor) in 1904. A U.S. Coast Guard station (not part of the revised plan) was constructed on the west side of the Outer Harbor in 1904.

The revised plan included a system of interconnected lagoons as a place for boating, and envisioned a changing sequence of landscape scenes within the Park (Figure 3.9). The formal canals and basins from the World's Fair (located in the southern portion of the park) were replaced by what is now the Outer Harbor and the Southern Lagoon. This area was connected to the East and West Lagoons by the North and South Bayous. The East and West Lagoons were elongated and the Western Lagoon widened. The west bank of the West Lagoon was also restored to a more naturalistic form from the formal terrace of Horticultural Hall. Two boathouses were built on the West Lagoon—one to the north and one to the south of Midway Plaisance. These housed rowboats, canoes, and electric boats. Electric launches and a gasoline-power launch operated tours through the harbor and lake. To control water levels within the lagoons, a bridge was built between the East Lagoon and North Inlet with water gates under the arches.

The 1895 plan for Midway Plaisance intended to complete the canal envisioned by Olmsted in his original plans. The revised plan specified a canal 100 ft wide along the middle of the Plaisance, flanked by sidewalks, driveways, and lawns and bridges at each intersection. Initial work began in 1894, including excavating a shallow channel, constructing catch basins, building drives and pathways, and sodding lawns. The project was abandoned due to a combination of factors, primarily the costs of constructing bridges and locks and the need to construct a viaduct to allow the Illinois Central Railroad to cross the canal (Bachrach 2017). Before construction was abandoned, a turning basin was partially constructed within Jackson Park at the eastern end of Midway Plaisance.

The area surrounding the North Pond (or Columbia Basin) and the modern Museum of Science and Industry remained largely unchanged from the World's Fair, apart from construction of a circular drive around the museum and some landscaping and minor alterations to the basin edges. A more formal element, the Music Court, was constructed to the southeast of the circular drive.

Open areas were also part of the design. They included a long meadow west of Lake Shore Drive that was to contain tennis courts; men's and women's outdoor gymnasia and a children's play area along the western boundary of the park; and a large playing field in the southwestern part of the park. These plans were not fully implemented: only one outdoor gymnasium was completed, and the lawn-tennis area was replaced by a nine-hole golf course in 1899. Although the second gymnasium was not completed, an aerial photograph in the Chicago Park District Archive available at the Chicago Public Library Special Collections, taken ca. 1928, shows that the proposed tree plantings were completed in this area (CPD- Archive-cgp-spe-p0001_154_001_003). A second, 18-hole golf course was added in 1900, replacing the proposed playing fields (Jackson Park Advisory Council [JPAC] 2017). This project included construction of the golf shelter, which was expanded in 1903 and 1907. A second shelter was added in 1912 (Figure 3.10).

The recreational facilities for Jackson Park focused on middle-class leisure activities: boating, tennis, golf, and athletics. During the early twentieth century, Jackson Park Beach became increasingly popular for recreation, particularly for swimming and yachting. The original Jackson Park Yacht Club building was located on a floating barge and was moved to its current onshore location in 1930. A second clubhouse, now the Southern Shore Yacht Club, was built in 1934 on the South Harbor.

The early twentieth century saw increased use of the beaches for swimming and recreation. To accommodate increasing use, the beach was extended in 1917 and the 63rd Street Bathing Pavilion constructed in 1919. The eastern boundary of Jackson Park was further affected by the construction of Convent Hill on the site of the World's Fair Spanish Building and original Rabida Sanatorium in 1924, by construction of a new Rabida Sanatorium in 1931 (now the Rabida Children's Hospital), and by the expansion of Lake Shore Drive in 1947 (Bachrach 2017; JPAC 2017).

Other new structures within the park included a clubhouse for the Bowling Green, constructed in 1931 on the site of the original German Building, and WPA era improvements. WPA projects in the park included a small comfort station in the children's playground area built in 1936 that is still extant, two large shelters, both now demolished, one to the northeast of the Museum of Science and Industry and one in what became the Nike Missile site; and reconstruction and new construction of

the maintenance and service yard complex south of 64th Street (Bachrach 2017). WPA workers also planted the new Japanese Garden, restored the Ho-o-den Pavilion, and created the Perennial Garden in the location of the abandoned turning basin at the eastern end of Midway Plaisance (Bachrach 2017).

Major additional disturbances to the landscape occurred post-World War II with the construction of a Nike Missile Base between the 59th Street Harbor and Jackson Park Inner Harbor, shown as a military reservation on the 1963 USGS topographic map. Construction associated with the base included the infilling of the southern bayou and the southern ends of the east and west lagoons, resulting in the current configuration of the shoreline. The base is visible on a commercial 1953 aerial image, and by 1962 the eastern shoreline of the East Lagoon had been modified and a large area of fill is visible at the southern end of the lagoons (National Environmental Title Research [NETR] 2017). The missile base was a restricted area was between 1956 and 1971 and was then replaced by a driving range and restored landscape within Bobolink Meadows (Figure 3.11). Later construction within Jackson Park includes the Jackson Park Field House, built in 1957 at 65th Street and South Stony Island Avenue. Further major disturbance occurred in 1992 with the construction of an underground parking lot between 57th Drive and the Museum of Science and Industry and construction of the underground vault to contain the U-505 submarine in 2009 (Figure 3.12; JPAC 2017).

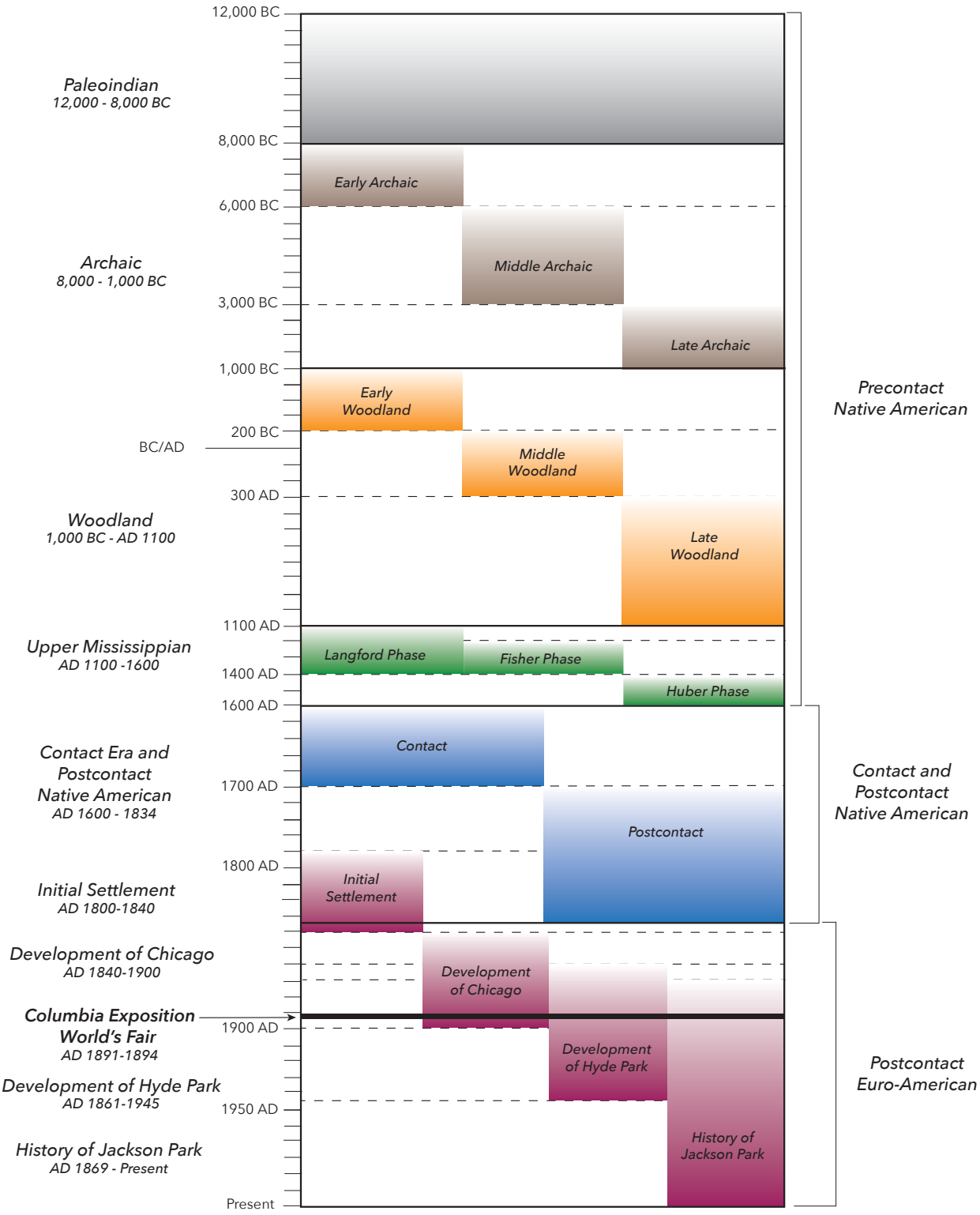


Figure 3.1. Cultural periods in the proposed South Lakefront Framework Plan APE, Jackson Park, Chicago, Illinois.

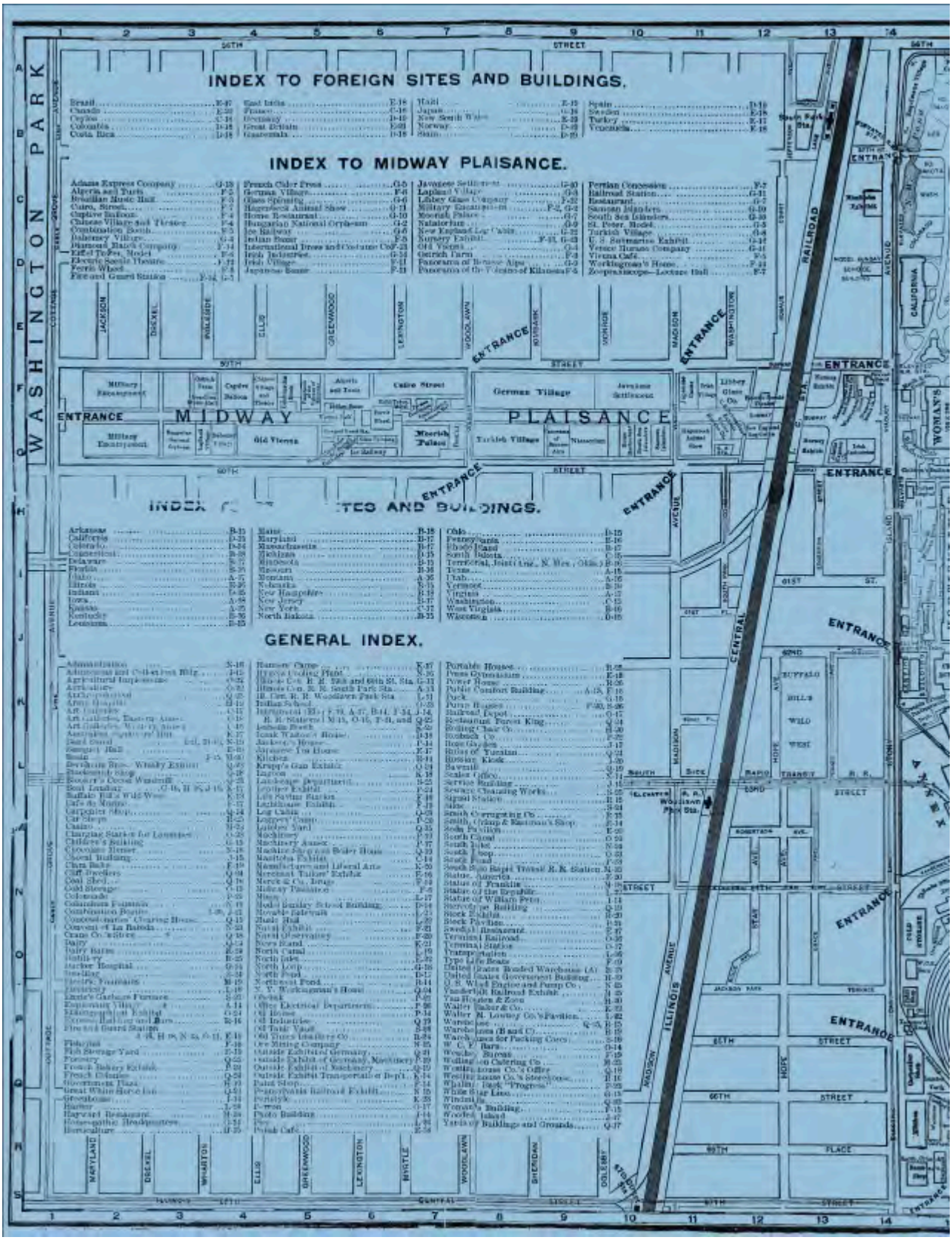


Figure 3.2. Rand, McNally and Company 1893 Map of the World's Fair (west side, Midway Plaisance).

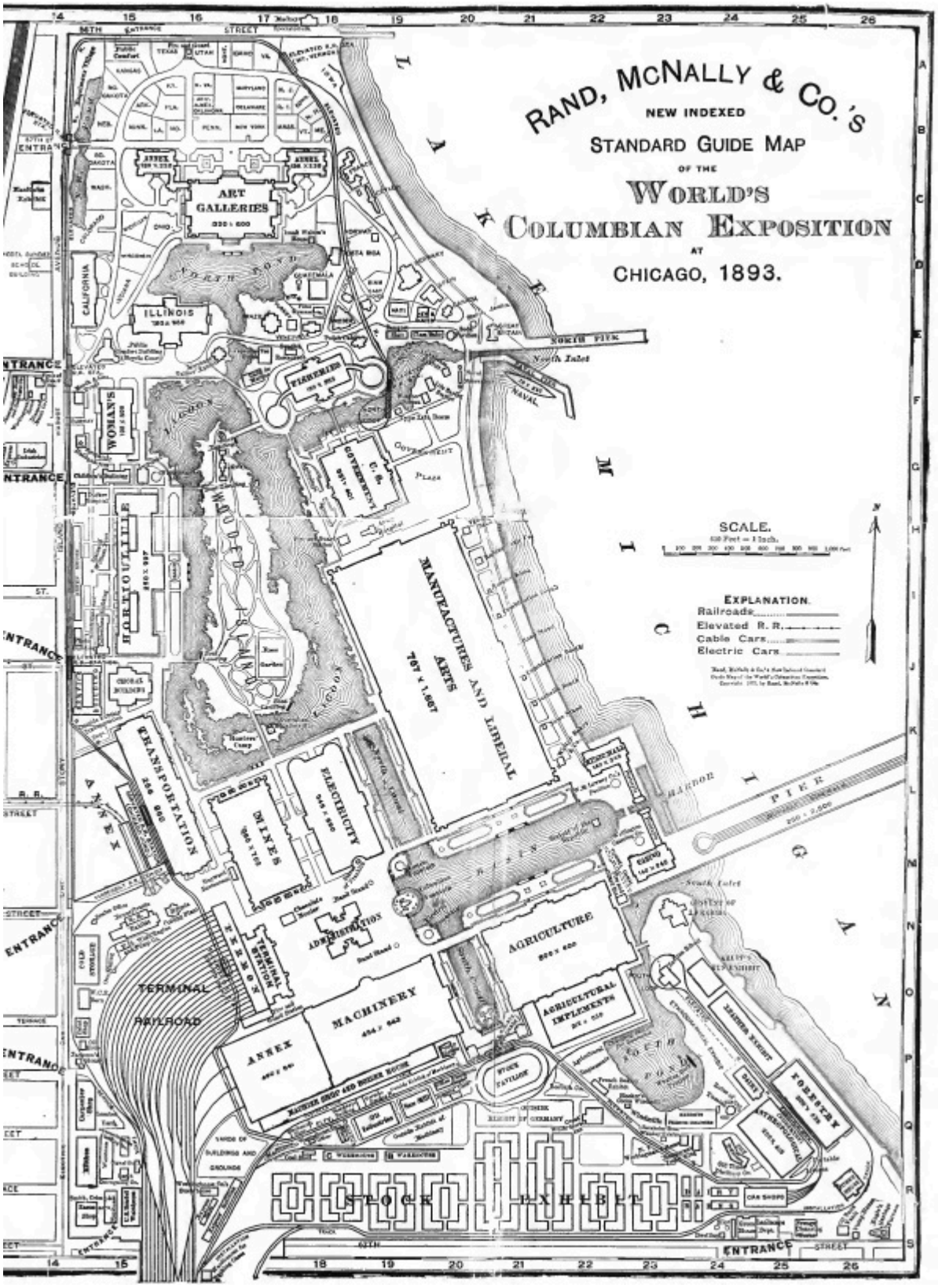


Figure 3.3. Rand, McNally and Company 1893 Map of the World's Fair (east side, Fairgrounds).

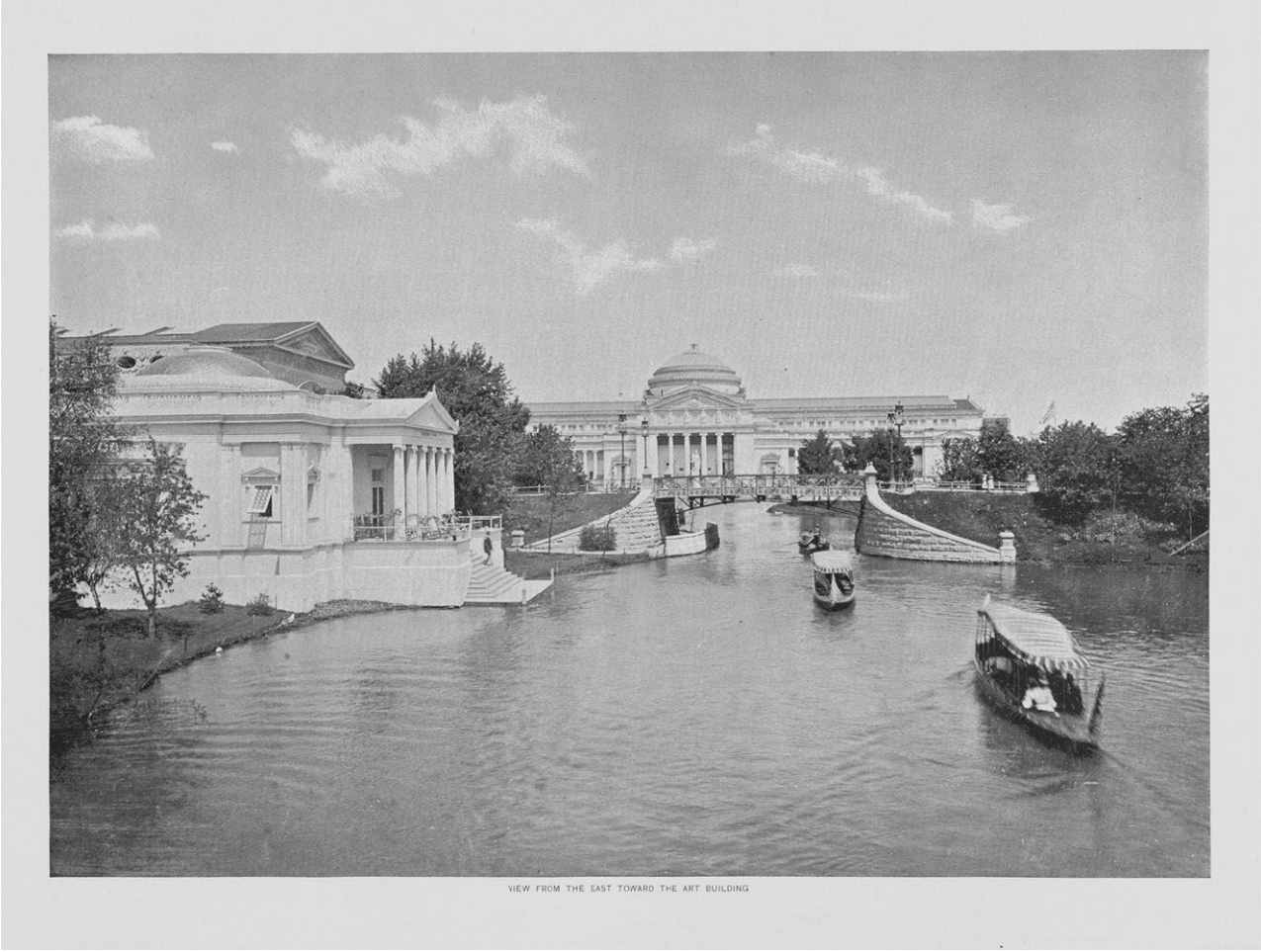


Figure 3.4. 1893 World's Fair, view to the north and Clarence Darrow Bridge, Fine Arts Building in background and Merchant's Taylors Exhibit in photo left (Historic Bridges 2017).

Figure 3.5. 1893 World's Fair, view to the southwest and the Women's Building (Werner 1893).

Figure 3.6. 1893 World's Fair, view to the west and the Horticultural Building, Ferris Wheel, and Midway Plaisance in background, Wooded Island in foreground (Brooklyn Museum 2017).

Figure 3.7. 1893 World's Fair, view to the southwest and the Transportation Building (Jackson 1893).

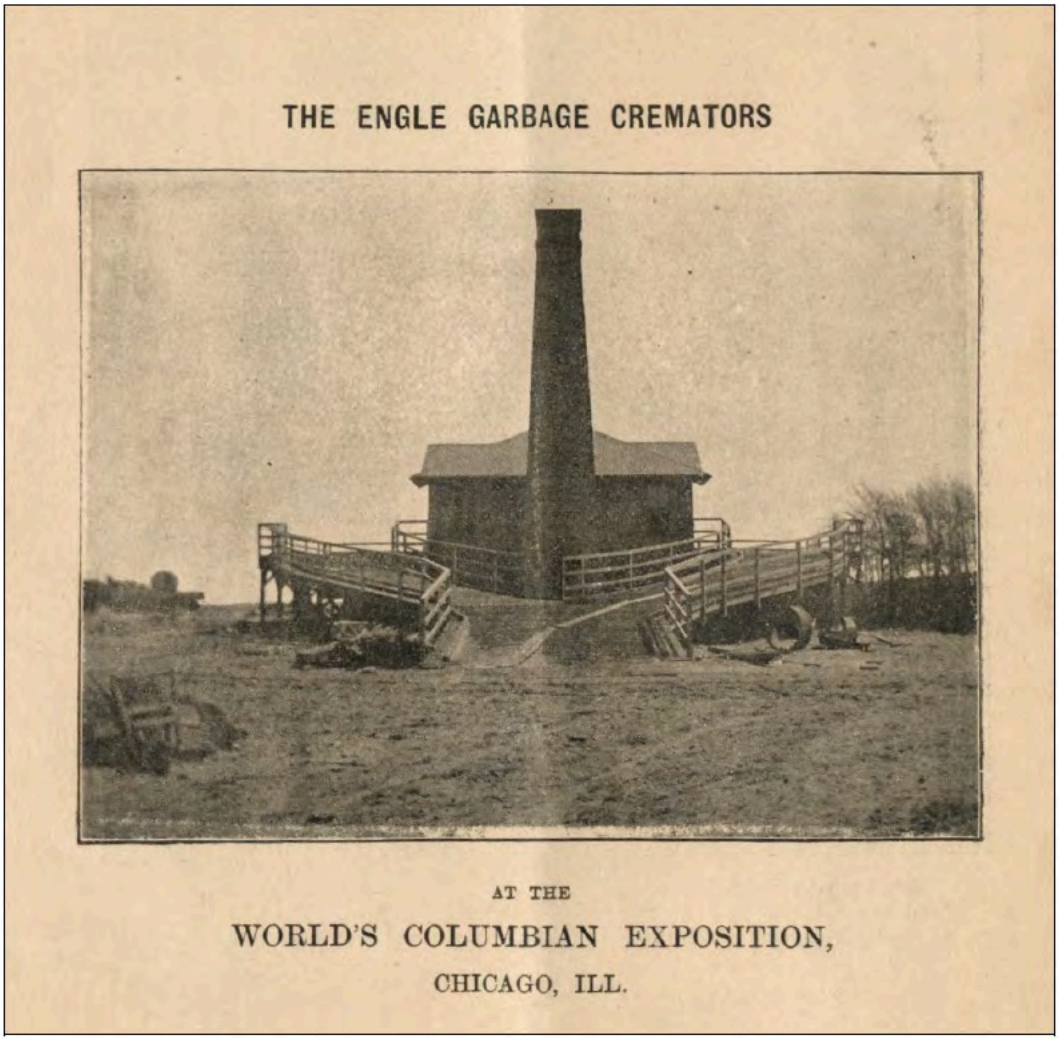


Figure 3.8. 1893 World's Fair, Engle's Garbage Incinerator (Engle Sanitary and Cremation 1893).

Figure 3.9. Post-1900, visitors to Jackson Park rowing on the lagoons (Retrosnapshots 2017).

Figure 3.10. Golfing in Jackson Park (*Chicago Tribune* 2017).

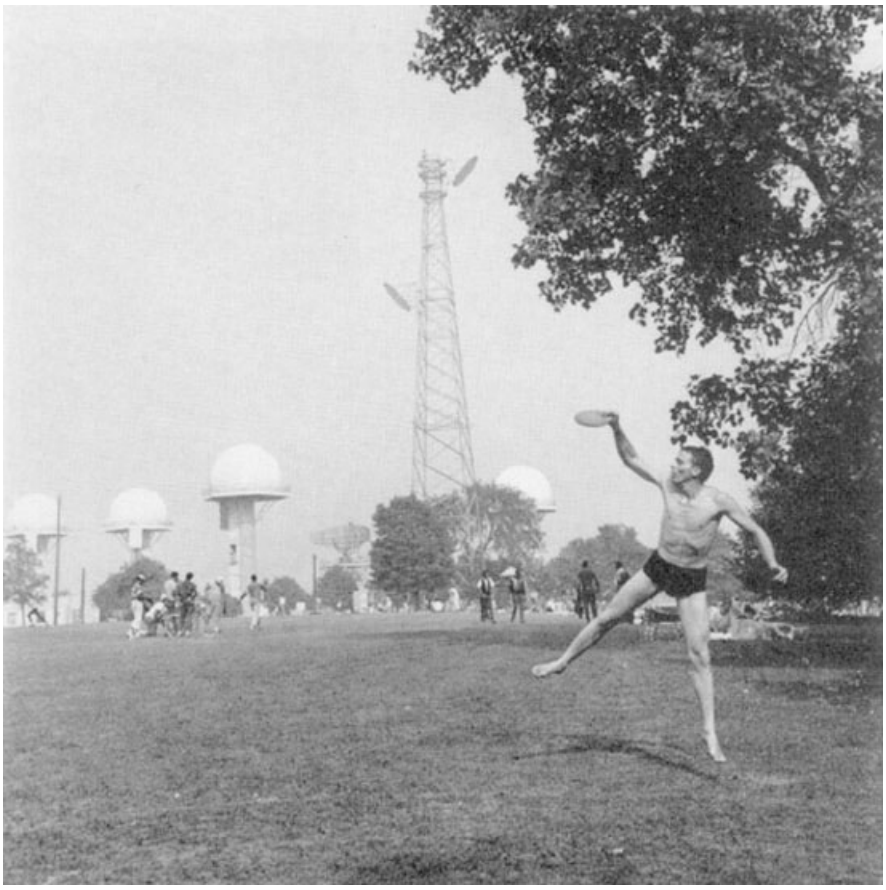


Figure 3.11. Ca. 1950, vicinity of the Nike Missile Silo Base in Jackson Park (*USA Today* 2011).

Figure 3.12. Ca. 2009, construction of the underground vault for the U505 submarine immediately north of the Museum of Science and Industry (Jones, Lang Lasalle IP, Inc. 2017).

Chapter 4

Archaeological Potential and Research Design

Previous Archaeological Survey

One previous cultural resources management survey (IHPA Survey 3713) has been undertaken within the APE along Lake Shore Drive (IIAPS 2017; Simon 1991). This small survey was conducted prior to rehabilitation of the Lake Shore Drive bridge at Jackson Park Lagoon and found no adverse effect.

The majority of the previous archaeological investigations within Jackson Park were conducted by Rebecca Graff for her dissertation research into the archaeology of events (Graff 2011). The purpose of the investigation was to obtain data from undisturbed contexts that could inform Graff's research on the impact of important, but ephemeral, events on society and to examine the evidence of both superstructure and infrastructure as the expression of an idealized urban environment. Additionally, Graff's research aimed to provide information on the architectural signatures of ephemeral buildings and activities associated with the World's Fair. The goals of the research were not fully achieved given the limited amount of excavation, field methods employed, and time available for research.

Graff's fieldwork was limited to (1) areas where the circa 1893 period landscape appeared relatively intact and (2) areas that avoided the golf course and other areas used for recreation. The Midway Plaisance was not included in the survey because Graff determined that significant post-fair disturbance had occurred in much of the Plaisance. Four areas or loci were, therefore, investigated: the area surrounding the Columbia Basin, the sunken garden, the Wooded Island, and the extreme southeastern corner of the park. Graff found that all investigated areas contained material dating to the World's Fair. The four archaeological sites within Jackson Park—11CK1104, 11CK1105, 11CK1106, and 11CK1107—represent the entirety of the areas investigated during her research (see Figure 1.2). Because Graff's investigations were not carried out as a cultural resource management survey (i.e., not related to a proposed undertaking), the identified site areas have not, to date, been evaluated or reviewed for National Register eligibility status.

During Graff's (2011) investigations, shovel tests were placed at regular intervals in all four areas. Shovel tests were placed in transects following the cardinal directions. Shovel tests were placed at 10 m intervals on the Wooded Island (Locus 1), at 15 m intervals around the Columbia Basin (Locus 2), and at 20 m intervals at Locus 3 and Locus 4 (the Sunken Garden and the Southeast area, respectively). Graff does not provide any data regarding strata within the shovel tests or the depths at which shovel

tests were terminated, or the context within which artifacts were recovered. Artifact counts from shovel tests were utilized to generate artifact density maps using SURFER software for all four loci. Artifact concentrations were present in all areas, suggesting the potential for identifying material within Jackson Park associated with the World's Fair and post–World's Fair periods (Figure 4.1).

Site 11CK1104 encompasses the Wooded Island, originally a dune ridge adjacent to the current APE. Graff's archaeological survey focused on the location of the Ho-o-Den Palace. No survey was undertaken elsewhere on the island. This locality was a popular picnic site in the early twentieth century. Relatively dense artifact concentrations were present in the center of the study area, and a concrete feature was encountered at 38 cmbs in Shovel Test 19 (Graff 2011:152). Additional hand auguring was undertaken at this location, but no formal excavation was conducted.

Site 11CK1105 encompasses the North Pond, an original water feature of Jackson Park, and the area surrounding the pond (see Figure 1.2). This area, which is not within the current APE, retains much of the original 1884 landscape, including the shoreline of the pond. The area was investigated by shovel testing in transects at 15 m intervals and subsequent excavation of eight 2 × 2 m excavation units (EUs) and a single 1 × 1 unit. Defunct utilities, some possibly associated with the World's Fair, were present in EUs 1, 2, 3, and 5 (Graff 2011:163). EU1 contained a catch basin and ceramic pipes potentially associated with the World's Fair. EU2 contained a pipe and pipe trench capped by a layer of gravel. A possible additional feature was present in EU2 but could not be investigated further due to time constraints. A feature was identified in EU3 at 66 cmbs within the footprint of the Ohio State Building, near the Museum of Science and Industry parking lot. EU5 was then excavated to expand EU3 and expose the feature. The feature was a sanitary sewer catch basin infilled with architectural remnants, possibly from the Ohio State Building (Graff 2011:170). EU4, placed at the eastern extent of the Illinois State Building, produced a rich stratum of nonbioturbated material between 47 cmbs and 64 cmbs and fill with evidence of burning between 64 cmbs and 84 cmbs, including a possible feature (Contexts 82 and 89; Graff 2011:171–72). EU 5 contained a World's Fair utility trench infilled with architectural debris from the fair itself (Graff 2011:(Figure 4.2).

Graff's written descriptions of unit profiles indicate that a range of strata were present: modern topsoil and contemporaneous material (0–20 cmbs) and post-fair landscaping fill (20–40 cmbs), which was underlain by fair debris and features sealed by a layer of immediate post-fair debris. Fair debris was found at 40–60 cmbs, and sealed features dating to the period of the fair were found at 60 cmbs or below (Graff 2011). Some excavation units contained complex stratigraphy associated with World's Fair and later construction or installation of utilities, and others contained simple stratigraphy and contained few or no features.

Site 11CK1106, at the eastern terminus of the Midway Plaisance and the location of the Women's Building, was investigated by shovel testing to examine the impact of later landscaping, specifically the creation of a circular sunken garden in the late 1930s, on the subsurface sediments. Perhaps not surprisingly, shovel testing recovered higher concentrations of historic ceramics, container glass, nails, and rubble south of the sunken garden (see Figure 1.2; Graff 2011:156).

Site 11CK1107 includes the locations of the World's Fair garbage incinerator and the Anthropology Building at the southeastern corner of the park (see Figure 1.2). This area was selected to recover information about the sanitary practices associated with the World's Fair. Shovel testing encountered high concentrations of late nineteenth- and early twentieth-century debris (Graff 2011:157). Graff argued that charcoal and plaster fragments in Shovel Test 129 further confirmed the documented location of the incinerator (Graff 2011:153). ISAS 2017 archival research indicates that this shovel test actually underlies the location of the Forestry Building, as do other artifact concentrations within 11CK1107.

In summary, Graff's archaeological research demonstrated the general potential in the northern portion of Jackson Park for intact sub-surface features and structural remains associated with the World's Fair, as well as post-Fair disturbances. In addition, concentrations of material within shovel tests across Jackson Park confirm historically documented use of space both within and between fair structures, as well as activities within the APE related to the construction, operation, and demolition of the fair buildings.

Potential Archaeological Resources within the APE

The APE lies within the boundaries of the Jackson Park Historic Landscape District and Midway Plaisance listed on the National Register of Historic Places (NRHP) on December 15, 1972 (NRHP Reference #72001565; see Figure 1.1). Landscaping and architecture in the district is considered significant under Criteria A, B, and C (associated with significant events, with significant persons, and with significant trends, respectively) under "Architecture/Engineering," and the "Architects Olmsted and Taft" (National Park Service n.d.). The periods of significance for the Historic Landscape District are 1850–1874 and 1875–1899, with specific areas indicated as Community Planning and Development, Landscape Architecture, Art, and Architecture. The NRHP eligibility of any archaeological components within the district, whether associated with these two periods of significance or with additional prehistoric or historic periods, will rely on potential for Criterion D, or data contributions suggested to be extractable from deposits identified by Graff at sites in 2011 and/or by recent investigations completed by ISAS. Graff recorded four archaeological sites within Jackson Park (11CK1104, 11CK1105, 11CK1106, and 11CK1107, with two of those (11CK1105 and 11CK1107) traversed by the current APE (see Figures 1.2 and 1.3).

Given what we know about the geology of the APE, nineteenth- and twentieth-century human uses and alterations of the APE, and limited archaeological investigations within the APE, it is probable that portions of the APE contain intact archaeological deposits. Specifically, archaeological deposits may relate to (1) prehistoric and/or historic pre-contact Native American through initial Euro-American occupation of the coastline of south western Lake Michigan, prior to 1860, (2) human activities associated with the early development of Jackson Park and the World's Fair, and/or (3) human activities associated with the end of the World's Fair and into the Cold War era, with 1967 presently being the current minimum age for consideration of NRHP eligibility. With reference to the World's Fair period

in particular, the Columbian Exhibition and Jackson Park's use is historically well documented by construction plans, photographs, published albums (e.g. The Werner Company 1893), maps, period descriptions such as the Rand McNally Guide (Rand McNally 1893), museum collections, published and online exhibits (e.g. "Opening the Vaults: Wonders of the 1893 World's Fair" exhibition at the Field Museum of Natural History from October 23, 2013 to September 7, 2015), and the associated photo gallery of period photographs and artifacts in the collections available online at https://www.fieldmuseum.org/science/blog/opening-vaults-wonders-1893-worlds-fair-photo-gallery.

Precontact Native American through Initial Euro-American Settlement (10,000 BC to AD 1860)

Published geological literature indicates that Jackson Park was submerged under glacial Lake Chicago through much of the Paleoindian period (10,000–8000 BC), and it is unlikely that any significant archaeological material dating to this time is present within the APE. In the Archaic period (8000–600 BC), Jackson Park was inundated at certain periods and at other times was a considerable distance from the lakeshore itself. Toward the end of the Archaic, lake levels stabilized and the present landscape of beaches and dunes began to form. At this time, the APE may have been close to or part of the shoreline, although lake-level transgressions during subsequent periods may have had a continued impact on the APE. It is possible that buried Archaic surfaces from prior to 600 BC are present below or within sand dunes and beach ridges within the APE. Dune formation and beach deposition continued during the Woodland (600 BC–AD 1100) and Upper Mississippian periods (AD 1100–1600). These conditions were not conducive to soil formation and, therefore, the area was unlikely to have supported the horticultural and agricultural practices of Woodland and Upper Mississippian inhabitants of the region. Nonetheless, it is likely that the area was used for short-term seasonal campsites during the Woodland and Upper Mississippian periods.

Prehistoric use of the APE is most likely associated with short-term occupations that focused on particular subsistence or resource extraction activities or those related to passage of individuals or groups through the area for trading or other purposes. The series of dune ridges that formed along the shoreline potentially served as elevated trails in the prehistoric period and are known to have been used as trails or transportation corridors during the protohistoric and early historic periods. The dune ridges provided higher, drier land above the swales and also followed the shoreline of Lake Michigan, providing a clear route along the west shore of the lake. Such a trail was documented by Scharf (1901). Use of such a trail over time could result in an archaeological signature from campsites along the trail or even accidental loss of material. A prehistoric or protohistoric site documented by Scharf to the south of the APE may reflect reuse of a point on the trail as a way station for travelers moving along the lakeshore. However, the long-term stability of these dunes is unknown, and shifting and reworking of dunes along the lakeshore likely occurred over time, leading to both the potential deflation and burial archaeological sites.

Use of such trails continued in the protohistoric and early historic periods. The documentary record for the early Euro-American settlement of Hyde Park is sparse and simply stresses the low number of inhabitants in the region prior to 1860. Archaeological research provides the opportunity to add to information lacking in the archival or documentary record, with the potential to recover data significant to understanding early Euro-American settlement in the region. The trail noted by Scharf (1901) was likely used during the early historic period given that Stony Island Avenue now follows the approximate course of the trail.

Potential archaeological resources for this phase include buried land surfaces dating to the Archaic and later periods, including lithic debris or hearths and postholes associated with prehistoric campsites, and privies, cellars, or middens associated with early historic occupation of the area. These deposits, if present, would lie beneath the layer of World's Fair remains present across much of the APE (below 60 cmbs). Within the present golf course area (much of which is outside the current APE) and the location of the former World's Fair rail yards, prehistoric and early historic materials, may be buried by fill of variable depths (Figure 4.3).

Early Park Development through World's Fair (1860–1894)

Jackson Park was established as part of a larger recreational area intended to attract wealthy Chicagoans to new residences in the suburbs or to attract resort goers to the area. Prior to the development of the park, the APE was located in an area of ridge-and-swale topography and beach dunes and regarded with low potential for agriculture or other development. The first park design (1871) by Olmsted intended the area to become a series of lagoons and meadows providing recreational opportunities in the form of boating, picnicking, and promenading along the lakeshore. Little development occurred prior to the World's Fair. The World's Fair saw the development of a complex of structures within the APE that served as an idealized city, with modern sanitation, transportation, and other facilities. As such, the overall site is significant in its development as a planned urban environment in the early to mid-twentieth century.

The fair was constructed over a period of 20 months by workers who were housed in barracks within the site. The fair was in operation for a period of six months. During the fair, the buildings and open spaces were utilized by both visitors and a support staff, many of whom lived on the site. Following closure at the end of 1894, the structures were largely destroyed by arson or accidental fires in 1894 and 1895. Surviving superstructures were removed and the area landscaped.

Graff's (2011) research demonstrated that intact archaeological deposits are present below subsequent land surfaces or fill episodes in the northern portion of the park. Features known to be present include sanitary systems associated with a network of flush toilets, electric utilities, sewer lines, and a water system for fire hydrants and also for drinking water. The footings of the state and national pavilions and the large exhibition halls, or at least the wall slots or post-holes that supported these large steel- or wood-framed structures, may also be present. It might be possible to identify interior and exterior surfaces, areas associated with relaxation rather than instruction, restaurant areas, and

areas assigned to service staff. Such spatial patterns might enable identification of archaeological signatures of areas used for exhibitions, state or national pavilions, livestock exhibitions, and service areas and provide direct evidence of actual activities undertaken within such spaces. This may expand knowledge based on the written record, if questions of apparent NRHP level of significance were to be framed around such data.

Overall, the APE intersects at least 64 fair structures, as well as paths, gardens, and additional informal or otherwise unmapped spaces (Figure 4.4; Table 4.1). Exhibition halls, and other buildings and facilities, were placed in groupings as determined by their subject matter, function, and/or association with other design elements within the fair. Structure groupings also suggest associated formal and informal activities that likely occurred in the spaces between and around these structures. For structures within or immediately adjacent to the APE, these groupings can generally be characterized as follows:

State and Country Buildings (Structures 1, 4, and 48–53): Relatively large structures and several stories tall, these contained exhibits as well as offices and living quarters for staff and visiting state or international dignitaries.

Women's Building and Children's Area (Structures 3, 5, 15, and 16): The Women's Building was a large structure, several stories tall, that contained exhibits as well as offices for staff. There were comfort stations and children's play areas; it was located near the drug store, hospital/first aid station, police and fire offices, and other support services grouped within the following category at the fair's entrance.

East End of the Midway Plaisance and Fair Entrance (Structures 2, 6–13, and 18): Within the midway, these buildings housed small exhibits, shows, and amusements, including the Workingmen's House (#10), which included a basement. A free area of the fairgrounds, the midway lies immediately adjacent to the fair entrance with services and amusements to the east requiring paid admission.

Horticulture Building and Greenhouses Area (Structures 17, 19, 20, 21, and 22): These structures included a large exhibit hall, greenhouses, smaller service buildings, and outdoor gardens. The terrace on the east side overlooked the West Lagoon.

Transportation Building, Railroad Exhibits, and Railway Tracks (Structures 24, 26, and 27): The Transportation Building was a massive and ornate structure with exhibits on five floors; it contained elevators, public toilets, and restaurants. Smaller railroad-related exhibits were nearby, with the railroad yard and tracks south and east of Transportation Building now within the golf course.

Large Exhibit Halls (Structures 25, 40, 41, 45, 46, and 47): These were very large structures and several stories tall. Some had balconies and elevators; some had associated restaurants and terraces. All had indoor toilets.

Loggers Camp and Stock Exhibits (Structures 42, 44, 55–63): These were small- to medium-sized structures with many activities and exhibitions occurring outside the actual buildings themselves.

Shops and Warehouses (Structures 28–39): These were small structures where activities associated with the repair and maintenance of fair facilities occurred or where materials were stored. They were likely an area seen by few fair visitors.

Incinerator/Garbage Furnace (Structure 64): It is reported that fair refuse was picked up daily and transported to and burned within the incinerator, known as the Engle Crematory. The incinerator was in operation from May 9th to November 1st 1893. Both garbage from the Fair and sludge cake from the Fair's sewage treatment plant were incinerated at this facility. Garbage was burnt from 11pm to 7am, and the sludge cake from 7am to 3pm. The incinerator was cleaned between 3pm and 11pm (Burnham 1969). The types of refuse that may have been discarded elsewhere, or in a different manner, are unknown. Burnham noted that the lagoons had to be cleaned of garbage at regular intervals, suggesting that visitors did not always avail themselves of the garbage cans. As with the shops and warehouses grouping above, the incinerator area was probably visited by few fair goers.

Post–World's Fair through the Cold War (post-1894)

The APE has remained a recreational site through the period following the end of the World's Fair, with the exception of an area utilized as a Nike Missile Base between 1956 and 1971. Major changes occurred in the landscape of the southern portion of the park as the 1895 revised plan was implemented and additional recreational facilities (gardens, comfort stations, sports facilities, and a golf course) were constructed (Figure 4.5). Later evidence of changing postfair use (e.g., transforming the planned boat-turning circle at the east end of the Midway Plaisance into a sunken garden or changing formal gymnasium facilities to sports fields) is also within the APE. Archaeological remains dating between 1894 and the current 1967 cutoff date for NRHP consideration will be assessed for their potential NRHP level of significance (i.e., in terms of their ability to yield extractable data sets capable of constituting a significant data contribution).

Data Expectations and Evaluation Criteria

Archaeological investigations were undertaken to document and assess potential and known contexts in the APE in terms of their ability to meet National Register of Historic Places evaluation criteria. Assessing potential significance is largely a matter of determining whether recoverable data sets possess sufficient integrity in terms of their ability to yield important information about the past (i.e., information embedded in the physical contexts and artifacts of archaeological remains that would be inherently endangered by the loss of those contexts).

1. *Prehistory:* We currently have little information on native occupation and/or utilization of the shoreline in the greater Chicago area, and most areas that would have contained this informa-

tion have been eliminated by urban development. Consequently, information on the chronology, subsistence practices, and cultural patterning of precontact use of this environmental zone will increase our knowledge and probably lead to eligibility of the site for the National Register of Historic Places.

Deposits of interest in making these determinations would include sediment profiles within geo-morphological cores and/or hand-excavated units that may contain buried stable surfaces dating to one or more prehistoric periods. Likewise, prehistoric artifacts and/or organic cultural horizons present within strata identified as buried stable prehistoric living surfaces would have the potential to contribute to our understanding of one or more prehistoric periods. The presence of diagnostic artifacts, the density and/or variety of artifacts, the presence of subsistence remains (faunal and floral), and/or the presence of datable organic materials would increase the information potential of these archaeological deposits. During field investigations, areas within the APE located along former beach ridges and along or adjacent to the Scharf trail were considered to have greater potential for containing relevant information.

2. *Pre-urban history:* The colonial period and the pre-urbanization of the Chicago landscape beginning in the post–War of 1812 era are represented by only sparse documentation indicating the presence of historically documented tribes and Europeans who came as missionaries, traders, military men, and government representatives in the area. In as much as we know only the bare outlines of their activities, lifestyles, or land use, discovery of any early historic remains from this pre-urban time period almost certainly would have the potential to provide data not available through the known historical records. While archaeological remains from the early urbanization of Chicago might help fill in the details of the local development of the area and urbanization practices, they would be less likely to contribute to our understanding of urbanization as a process. As part of field investigations, our focus on these late processes especially sought to identify unique activities (e.g., unusual manufacturing industries) not previously known from the historical record to be present in pre-1860 Chicago.

Information of greatest interest during field investigations included potential identification of undisturbed buried cultural deposits, artifact concentrations, and/or features (e.g., campsites, privies, cellars, postholes) dating to the early historic period. The presence of diagnostic artifacts, the density and/or variety of artifacts or features, subsistence information, and/or the presence of datable organic materials would increase the information potential of such pre-urban archaeological deposits. For information about early urban Chicago, remains indicating unique early industrial practices were understood to be of special interest. Given the nature of pre-1860 Chicago, we gave attention to finding evidence connected to its key role in Great Lakes shipping and transport. Areas along former beach ridges, along or adjacent to the Scharf trail, and along early roads or other shipping and transportation corridors provided the greatest potential for containing information pertinent to pre-urban history in this locale.

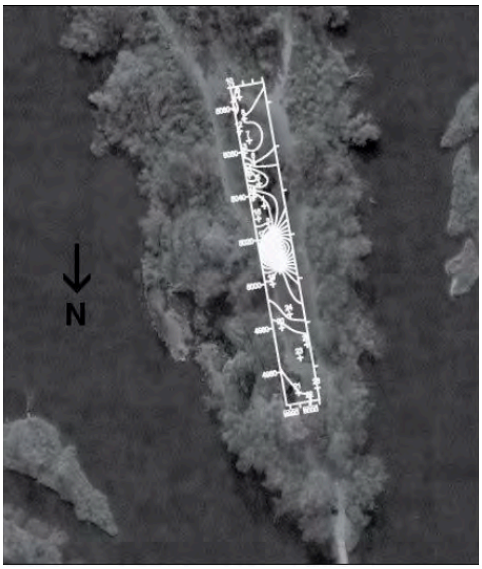
3. *Development of Jackson Park through the end of the World's Fair:* The entire APE, where not otherwise significantly altered by post-fair construction and landscaping, has high potential to

contain information in archaeological features, living surfaces, or middens associated with the early development of Jackson Park through the end of the World's Fair (AD 1860–1894). During field investigations, it was understood that sediment profiles within geomorphological cores and/or hand-excavated units may contain undisturbed buried cultural deposits, artifact concentrations, and/or features from this period. The presence of diagnostic artifacts, the density and/or variety of artifacts or features, and the integrity and relative uniqueness of subsurface features would also increase the information potential of these archaeological deposits. To be determined as NRHP eligible, remains of this period within the project impact zones would need to provide extractable data contributions relevant to specific research questions not already well documented in written records, images, oral histories, and the like.

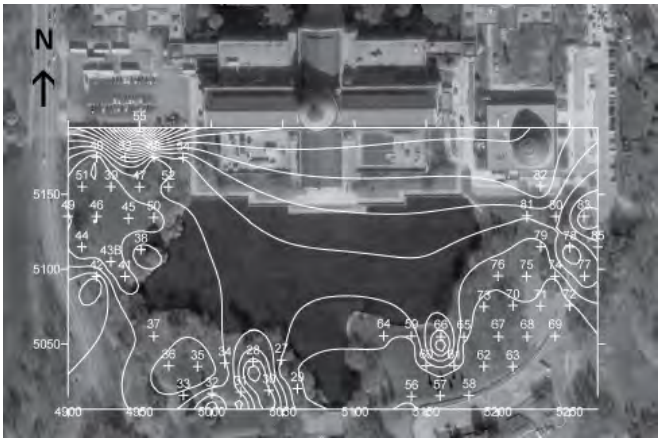
4. *Post-World's Fair through 1967:* Changes in physical, demographic, and economic attributes of the communities adjacent to and using Jackson Park occurred over this span of roughly 75 years. As part of our present investigations, any recovered archaeological contexts and material culture from this period must be evaluated for potential NRHP significance based on their ability to provide extractable data sets that can contribute significant new information to already existing records from this period. Additionally, recovered data must currently predate 1967 in order to be considered for NRHP eligibility.

Table 4.1. Structures from the 1893 World's Fair Located within or Immediately Adjacent to the APE.

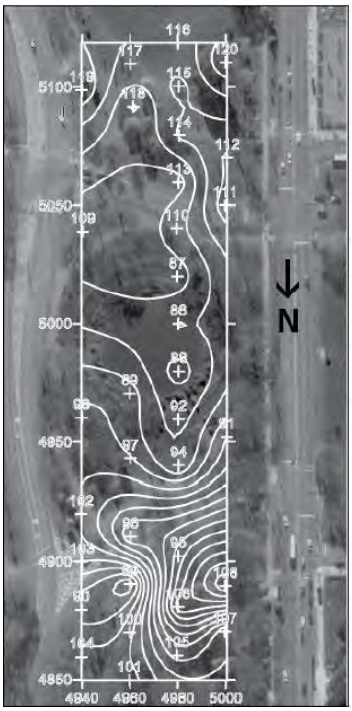
Structure #	Structure Name	Structure #	Structure Name
1	California	34	Unknown
2	Elevated RR Station	35	Booth Corrugating Co.
3	Public Comfort Station (Bicycle Court)	36	Warehouse
4	Illinois Pavilion	37	Smith, Crimp, and Eastman's Shop
5	Woman's	38	Unknown
6	Merck & Co. Drugs	39	U.S. Bonded Warehouse
7	Homeopathic Headquarters	40	unknown bldg near machine annex
8	Fire and Guard Station	41	Machinery Exhibit and Annex
9	Diamond Match Company	42	Saw Mill
10	Workingman's House	43	Office Electrical Dept.
11	International Dress and Costume Company	44	Loggers' Camp
12	Irish Industries	45	Electricity
13	Adams Express Company	46	Manufactures and Liberal Arts
15	Children's	47	Music Hall
16	Puck	48	Soda Pavilion
17	Horticulture	49	Canada
18	Ducker Hospital	50	Ceylon
19	Green House	51	Spain
20	Admissions and Collections	52	France
21	Service Building	53	Iowa
21	Service Building	54	Elevated RR Station
22	Choral	55	Stock Exhibit
24	Transportation/Annex/Chicago/Junction Railroad Station	56	Stock Exhibit
25	Mines	57	Stock Exhibit
26	Pennsylvania RR Exhibit	58	Stock Exhibit
27	Pennsylvania RR Exhibit	59	Stock Exhibit
28	Cold Storage	60	Stock Exhibit
29	W.C.E. Barn	61	Stock Exhibit
30	Paint Shop	62	Stock Exhibit
31	Carpenter Shop	63	Stock Exhibit
32	Kitchen	64	Engle's Garbage Furnace
33	Warehouse		



Graff Locus 1 (2011:154)



Graff Locus 2 (2011:155)



Graff Locus 3 (2011:155)

Graff Locus 4 (2011:157)

Figure 4.1. Historic artifact distribution within sites 11CK1104, 11CK1105, 11CK1106, and 11CK1107 (Graff 2011).

Figure 4.2. Location of excavation units 1-8, 11CK1105 (Graff 2011:161).

Figure 4.3. Aerial image showing possible beach dune alignments, and the approximate location of Scharf's (1909) early trail, within Jackson Park and the APE.

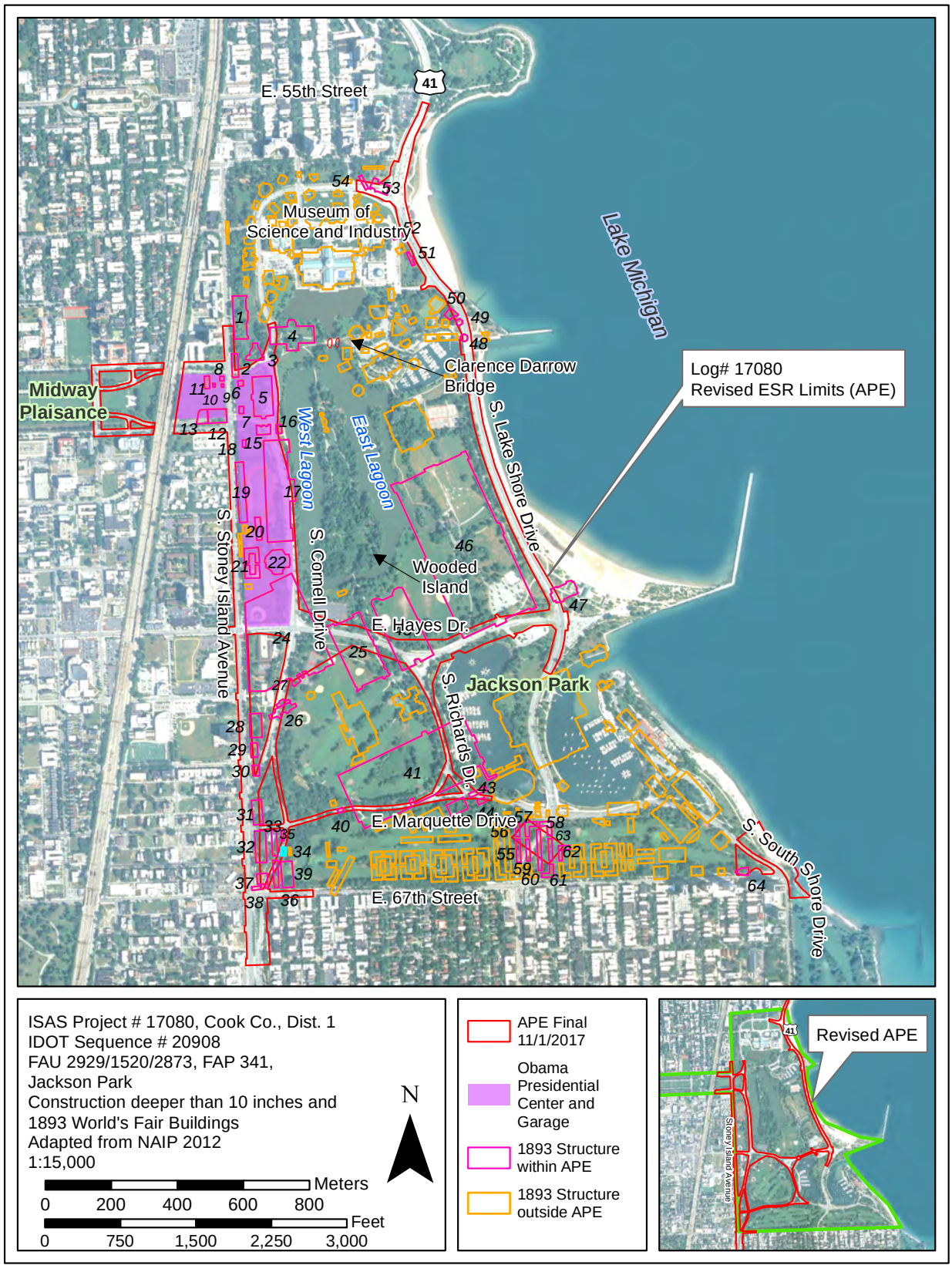


Figure 4.4. Aerial image showing the location of the 1893 World's Fair structures within and immediately adjacent to the APE.

Figure 4.5. Aerial image showing the location of twentieth century alterations and disturbances within Jackson Park and the APE.

Chapter 5

Methodology

Introduction

The APE encompasses areas of potential ground disturbance related to this undertaking. Specifically, these areas include the location of the OPC and associated underground parking garage; roadway improvements within Jackson Park, from 55th to 67th Streets; improvements along Stoney Island Avenue between 67th and 68th Streets; and proposed underpass construction on South Shore Drive, S. Jeffrey Avenue, and at the intersection of Cornell Drive and Hayes Drive. The APE comprises 23.08 acres within the OPC and approximately 16.48 linear km (10.22 linear miles), primarily coincident with existing roadways (linear km/miles recorded here include distances along both sides of all affected roadways). Along roadways, proposed construction limits extend between 6 m and 106 m (20 ft and 350 ft) beyond existing road centerlines (total APE of 62.04 acres).

In order to further refine the APE to those areas requiring archaeological field investigations, CDOT project engineers identified two levels of anticipated construction impacts for roadways within the APE: areas where ground disturbance will extend deeper than 25 cm (10 in) below the current ground surface (see orange areas on Figure 1.3) and areas where excavations will not extend farther than 25 cm (10 in) below the present ground surface (see blue areas on Figure 1.3). Proposed ground disturbance within the OPC and underground parking garage APE, and within the proposed underpass locations, is considered to be greater than 25 cm (10 in).

Areas within the APE where ground disturbance will not extend deeper than 25 cm (10 in), as well as areas where there will be no additional impact outside the existing ROW, will not require field investigations. Illinois State Archaeological Survey (ISAS) staff completed visual reconnaissance of the APE on August 30, 2017, and identified additional areas where archaeological investigations are not warranted or feasible (e.g., subsurface utility corridors, paved paths and parking lots, and areas with existing structures or large recreational facilities). Archival documents were also consulted in order to identify areas were significant ground disturbance has occurred (e.g., Nike Missile Base, Museum of Science and Industry parking lot, roadway improvements along South Lakeshore Drive). As a result, areas where archaeological field investigations are recommended consist of (1) a total of 3.87 linear km (2.4 linear miles) along existing roads (less parts of these alignments where there is no substantial impact outside of existing ROW); (2) approximately 10,194 m^2 (2.52 acres) of land at

the intersection of South Cornell Avenue and Hayes Drive, including the location of proposed underpasses; (3) 75,717 m^2 (19.3 acres) within the footprint of the Obama Presidential Library Complex (OPC); (4) 19,200 m^2 (4.7 acres) of ground within the proposed OPC parking facility; and (5) the location of proposed underpasses under South Shore Drive and S. Jeffrey Avenue which is 15,235 m^2 (3.8 acres) (Figures 5.1 and 5.2).

Archival Research

Archival research was completed as part of developing the archaeological context and research design and continued through field investigation, artifact analysis, and report preparation. Information gathered through archival research informed the evaluation of significance for archaeological materials, deposits, and/or features identified within the refined APE. Both primary and secondary sources were consulted including documents and images curated at the US Government Patent Office; the Illinois Inventory of Archaeological and Paleontological Sites; historic aerial imagery; historic topographic maps; plats, documents and images curated by the Chicago Park District archive; documents and images curated by the Burnham Library, the Art Institute of Chicago; documents and images curated by the Special Collections at the Harold Washington Library, City of Chicago Public Libraries; early published Chicago and World's Fair histories and maps; Hyde Park Historical Society; previous archaeological research; and the research of current historians working within the Chicago area (see also References, this report).

Field Investigations

Field investigations were confined to a subset of the refined APE discussed above and closely related to the need to evaluate locales to be potentially impacted by construction. The area of field investigations were further limited by (1) requirements of the Chicago Park District that no ground disturbance occur within the drip line of trees or within areas of new planting, and (2) the presence of potentially contaminated sediments in the Sunken Garden east of the Midway Plaisance.

Field investigations included geomorphological cores and hand excavation units to investigate the potential for significant intact subsurface deposits or features. Geomorphological cores (diameter 2 in) were used to evaluate the potential for buried prehistoric land surfaces or intact sediments with the potential to contain buried cultural deposits. Hand excavation units were used to investigate potential buried features or surfaces, and/or to provide additional information on subsurface stratigraphy.

Geomorphological coring was undertaken by Dr. Mike Kolb of Stratamorph Geoexploration Inc. All cores were recorded and photographed in the field by Dr. Kolb and Dr. Tolmie (ISAS), and evaluated for the presence of natural surfaces or cultural material. All sediments from cores were screened by fill zone or natural strata and all artifacts were recovered and transported to the ISAS Northern

Illinois Field Station (NIFS) in Elgin for analysis. A total of 56 geomorphological cores was completed within the APE (Appendix B).

Hand excavation units were placed where geomorphological cores indicated the presence of buried cultural material or buried surfaces, or within areas inaccessible to the coring truck. Nearly all geomorphological cores indicated the presence of a thick layer of fill sediments above any undisturbed surfaces. Excavation units were therefore completed in the following manner, following standard ISAS field methodologies (ISAS 2012a): A 1 × 0.5-m unit was excavated as a single zone to provide a stratigraphic profile. The unit was then extended and the second part of the unit excavated by cultural zone. For most units, a control column, 50 × 20 cm, was excavated by cultural zones and all artifacts were collected from the sample unit by zone as well to obtain information regarding artifact density and horizontal distribution of artifacts. One unit (HU11) was expanded to a full 1 × 1 m unit with the second half the unit excavated by cultural zone. Two units (HU9 and HU10) were culturally sterile and no control column was excavated. A total of 13 hand excavation units was completed within the APE.

Any features encountered were drawn in planview, then bisected to obtain a profile. All artifacts from feature fill were collected and transported to NIFS for analysis. Three features were encountered during the survey.

All sediments were screened through ¼-inch hardware mesh. For excavation units, flat glass, nails, brick, mortar, plaster, architectural limestone, and miscellaneous non-diagnostic metal items were inventoried in the field, weighed, and returned to the unit during backfilling. Samples of field inventoried materials were collected and transported to the NIFS laboratory for analysis. All non-field inventoried artifacts, and all cultural material from control columns, were collected and transported to the NIFS laboratory for processing and analysis.

At least two wall profiles from each hand unit were drawn and photographed. The location of all cores, hand units, underground utilities, drip lines, and park infrastructure (sidewalks, road edges, structures, etc.) were mapped with an electronic theodolite/Total Station. Hand drawn maps were generated and referenced during fieldwork.

Laboratory

Artifacts recovered during fieldwork were cleaned and labeled, according to material type, by ISAS personnel at the NIFS laboratory following standard ISAS methodologies (ISAS 2012b). Both prehistoric and historic artifacts were sorted into artifacts classes, as appropriate, prior to inventory and analysis. Inventories included description, counts, and weights all items recovered.

Prehistoric Artifact Analysis

Debitage Analysis

A small amount of prehistoric lithic material was recovered during fieldwork. Two classes were present: flakes and flake fragments. Flakes typically exhibit the following characteristics: a platform (the point of contact), a bulb of percussion, and a feathered or truncated termination (Cotterell and Kaminga 1987). Flake fragments are the medial, distal, or other portions of broken flakes. All flakes were examined and assigned to one of the following reduction flake categories: Primary Reduction, Secondary Reduction, General Reduction, Biface Thinning, or Retouch. No chipped stone tools, groundstone artifacts, ceramics, or other prehistoric materials were recovered.

Historic Artifact Analysis

The methodology adopted for analysis of the historic artifact assemblage closely follows the approach developed by Porubcan (2017) including artifact classes, information potential provided by each class of material, and references used. Historic artifacts recovered from the refined APE were sorted into classificatory groups that reflect both raw material type and functional use: Ceramics, Container Glass, Other Household, Personal Items, Hardware, Arms Related, Architectural, Miscellaneous, and Faunal. All items were counted, weighed, sorted and described as appropriate to their artifact type. The majority of the artifacts recovered from the refined APE were in secondary context, either refuse deposits (as in HU12) or material that was redeposited during post-Fair salvage and landscaping. Given the absence material from primary or feature fill contexts and time constraints, no ceramic or container glass minimum vessel counts were generated, nor were cross-mend analyses completed for ceramic or glass vessels. Likewise, window glass thickness measurements were not recorded. However, nail size and/or condition was noted for the historic assemblage.

Ceramics

This artifact class includes all ceramic vessels associated with the processing, cooking, serving and storage of food and drink. Other types of ceramic artifacts (e.g. drain tile, bricks, etc.) were placed within the appropriate functional category (e.g. Architectural). Artifacts were initially separated by ware type (refined and unrefined), followed by decoration type. Refined wares most commonly associated with later nineteenth century EuroAmerican historic sites in northeastern Illinois include whiteware/ironstone, vitrified ironstone, and porcelain. Unrefined wares include redware, stoneware, and miscellaneous coarse earthenwares. Yellowwares may be identified either as refined or unrefined dependent upon hardness of paste, body thickness, vessel form and/or decoration type.

Decoration type was recorded for refined and unrefined ceramics. Vessel form was recorded where determinable. Manufacturer's marks and/or other distinguishing elements were recorded where present. On habitation sites, decoration types can provide the most reliable diagnostic information

as decoration on refined wares change rapidly (Cross and Branstner 2014). However, the assemblage recovered from the refined APE is largely associated with a single short-term (albeit very large scale) occupation. Vessel forms therefore are also extremely important in understanding the tourist activities related to food consumption on the site. Unless otherwise noted within the assemblage descriptions (Appendix C), the following sources were consulted for the identification of ware and decoration types (Brown 1982; Lofstrom et al. 1982; McAllister 1997; MAC Lab 2017; Stelle 2001), vessel forms (Greer 2005; Mansberger 1986; Price 1981; Webster 1971), and manufacture maker's marks (Gates and Omerod 1982; Godden 1964; Lehner 1988).

Container Glass

This artifact class includes all glass vessels with forms commonly identified as bottles, jars, and tablewares. Other types of glass artifacts (e.g. glass buttons, flat glass etc.) are placed within the appropriate functional group (e.g. Personal Items, Architectural).

In the absence of basemarks or body labels, the most reliable method of dating glass vessels is identification of manufacturing technique, and vessel form is the most useful characteristic for identification of use or original contents (Deiss 1981; Farnsworth and Walthall 2011; Jones 2000; Jones and Sullivan 1989; Lindsey 2017). When present, basemarks provide information on the name, place, and period of operation of the company that produced the vessel, and body labels provide information about the original content and the name and place of the product manufacturer or distributor (e.g. Denver 1968; Farnsworth and Walthall 2011; Fike 1987; Lindsay 2017; Peterson 1968; Toulouse 1971; Whitten 2012). Glass color and labeling elements or techniques are also important in the identification of vessel date and function and were included in the analysis.

Container glass was originally sorted by manufacturing technique (e.g. free blown, mold blown, machine made) and color; followed by vessel elements (complete vessels, finish/neck, embossed shoulder/body, base) and vessel type. Additional manufacturing technique subdivisions were noted where possible (e.g. method of lip application, type of mold production, closure types, etc.) as well as labeling elements/techniques and descriptions of basemarks and body labels. Container glass elements too small to determine manufacturing technique were recorded as unidentified container glass fragments.

Other Household

This category includes primarily domestic items and household furnishings. Items assigned to this class include utensils, metal containers, lighting related hardware, furniture and furniture hardware, figurines, and drapery hardware. Given the broad range of items that can fall into this category, there are no standard reference sources. Sources frequently consulted in general are Miller (2000) and Noel Hume (2000), and for artifact categories the following are commonly used: utensils (Dunning 2000), metal containers (Rock 2000), and lighting (Woodhead et al. 1984).

Personal Items

The Personal Items category includes a wide variety of items that are associated with individuals present on the site, either as visitors or staff during the World's Fair or who used Jackson Park for recreation in the post-Fair period. The category includes items often useful for identifying gender, age, occupation, socio-economic status, or other information about demographic groups. Items may include clothing or shoes, or fasteners for clothing or shoes, specialized tools, jewelry, smoking paraphernalia, toys, coins, sports equipment, musical instruments, and grooming or personal hygiene supplies. Personal items are crafted from a wide variety of materials, and produced by a wide range of manufacturers. There is therefore no single suite of standard reference sources. Sources frequently consulted are as follows: for clothing/shoes and associated fasteners (Anderson 1968, Aultman and Grillo 2003; Butterworth 2000; Grillo et al. 2012; Miller 2000; Olson 1963; Sprague 2002); for smoking paraphernalia (Bradley 2000); and for toys (Carskadden and Gartley 1990; Randall 1971; Wagner and McCorvie 1992).

Hardware

The Hardware category generally includes non-domestic tools, fasteners, plumbing and electrical items, and some types of machinery. Items commonly placed in this category may include tools such as hammers, rakes, or shovels; fasteners such as nuts, bolts, and screws; and other items such as barrel straps, insulators, or faucets. Hardware items indicate the range of activities that occurred on the site, and the distribution of such tools and items can indicate activity areas on domestic or industrial sites. Hardware from the present APE is most likely associated with construction, maintenance, and demolition of the World's Fair structures, and perhaps to a lesser degree post-fair landscaping and maintenance of the area. Sources consulted for identification, dating, and analyses include, for tools: Arbor 1981; Barlow 1999; Ross and Light 2000; Wagner and McCorvie 1992); for fasteners (Miller 2000); and for electrical items (Gusset 2000; Myers 2010).

Architectural

This category contains all items and materials used in building construction for both superstructure and subsurface components such as foundations or cellars. Architectural items and materials have the potential to inform archaeologists about the date of construction, later remodeling events, date of demolition, and possible reuse of materials. Architectural data are usually used to reconstruct site use and structure function over time. For the present project, the dates of construction, materials employed, style and function of the structures, and the dates of demolition/destruction are well documented in the archival record. The majority of architectural material was inventoried in the field, with samples of material collected for additional analysis and curation.

Miscellaneous

Items placed in this category are primarily non-diagnostic and/or unidentifiable fragments of material remains such as corroded iron scraps, corroded iron wire, coal clinker/slag, burned or melted

conglomerates of different materials, and fragments of plastic, tin, or aluminum foil. Artifacts in this category were inventoried in the field and samples were collected for analysis and curation.

Faunal and Floral

The Faunal category includes the skeleton, hide, shell or other tissue of mammals, birds, amphibians, fish, crusteaceans, or mollusks. The Floral category includes plant parts such as seeds, nutshell, drupes, cupules, bracts, awns, stems, rhizomes, fragments of wood and charcoal, and fungi.

Faunal and floral remains are often used to reconstruct past diets and to infer past environments for prehistoric and historic sites. The recovered faunal assemblage largely reflects food refuse from the World's Fair, and indicates the food options available to visitors. Time constraints prevented specialized analysis of faunal and floral remains; however, these assemblages have been curated and are available for further study in the future.

Curation

All artifacts, materials, records, photographs and other data associated with the project are currently curated at the Illinois State Archaeological Survey's Northern Illinois Field Station and managed by ISAS in accordance with federal standards as outlined in 36 CFR, Part 79. The final curation of artifacts will be determined in coordination with the Chicago Park District.

Figure 5.1. Aerial image showing areas of proposed vertical disturbance greater and less than 10 inches.

Figure 5.2. Aerial image showing areas where survey is required (yellow).

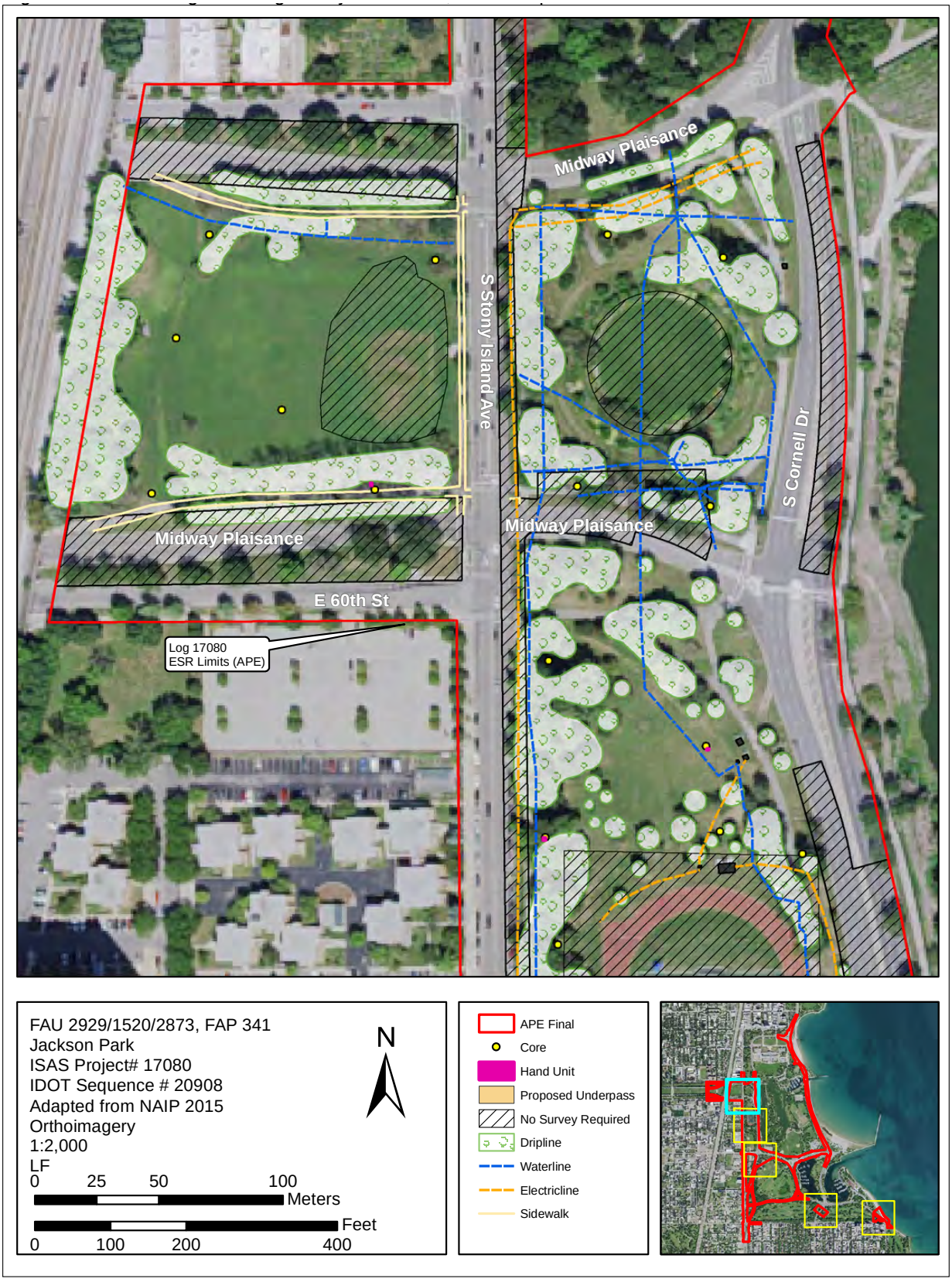


Figure 5.3. Aerial image showing survey restrictions, northern portion of OPC.

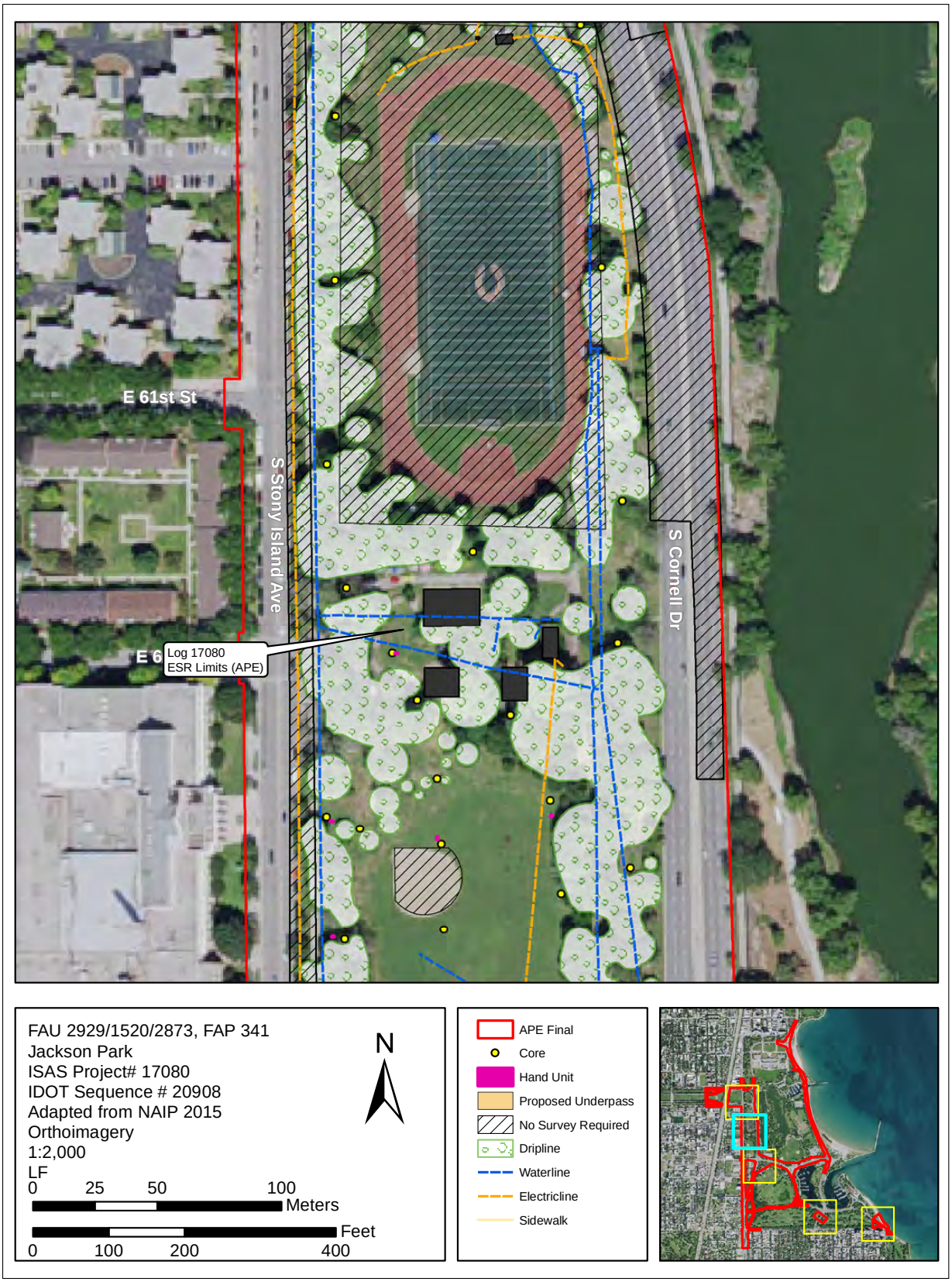


Figure 5.4. Aerial image showing survey restrictions, southern portion of OPC.

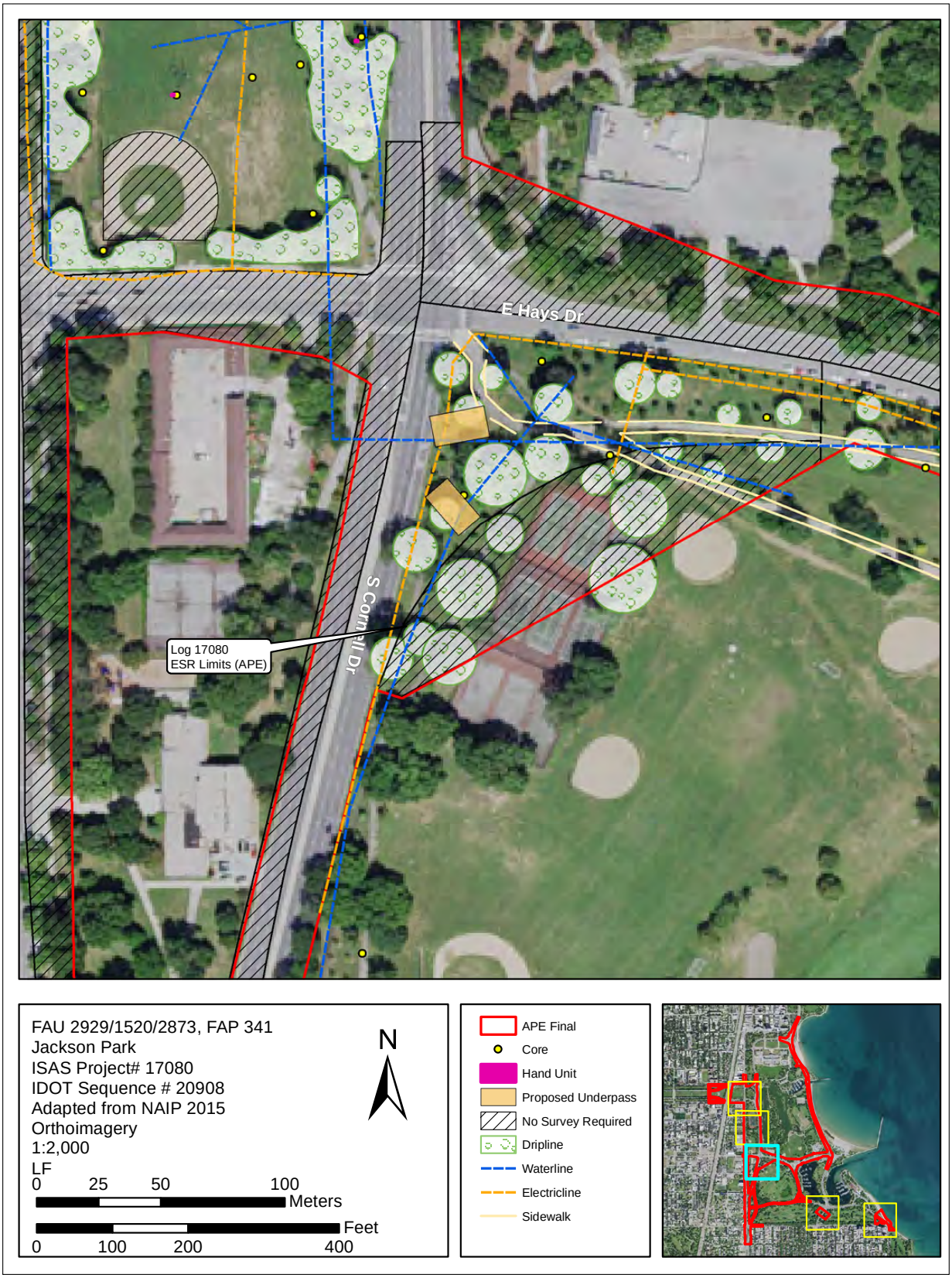


Figure 5.5. Aerial image showing survey restrictions, southern OPC and underpass at Cornell and Hayes.

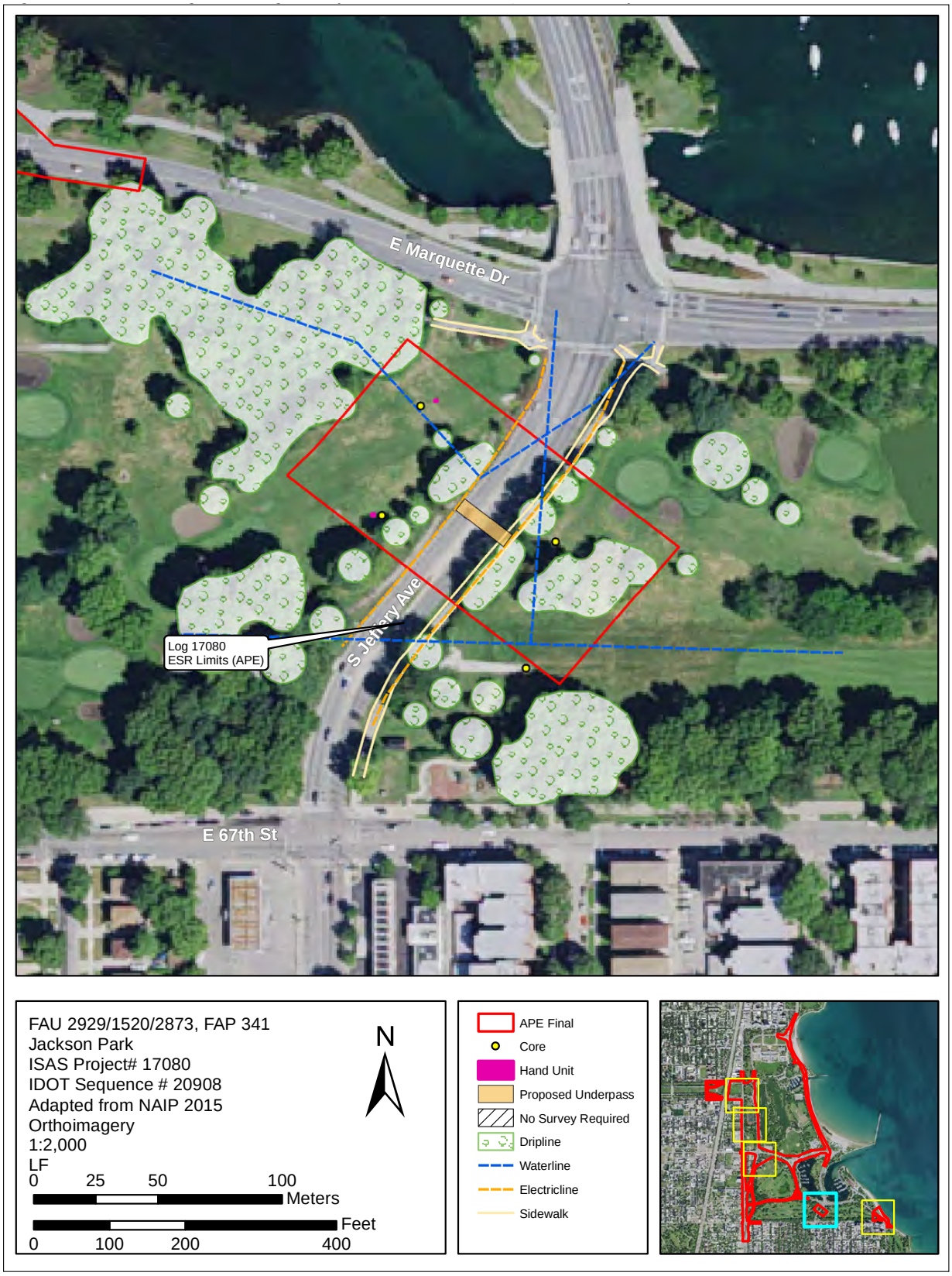


Figure 5.6. Aerial image showing survey restrictions, underpass at Jeffery.

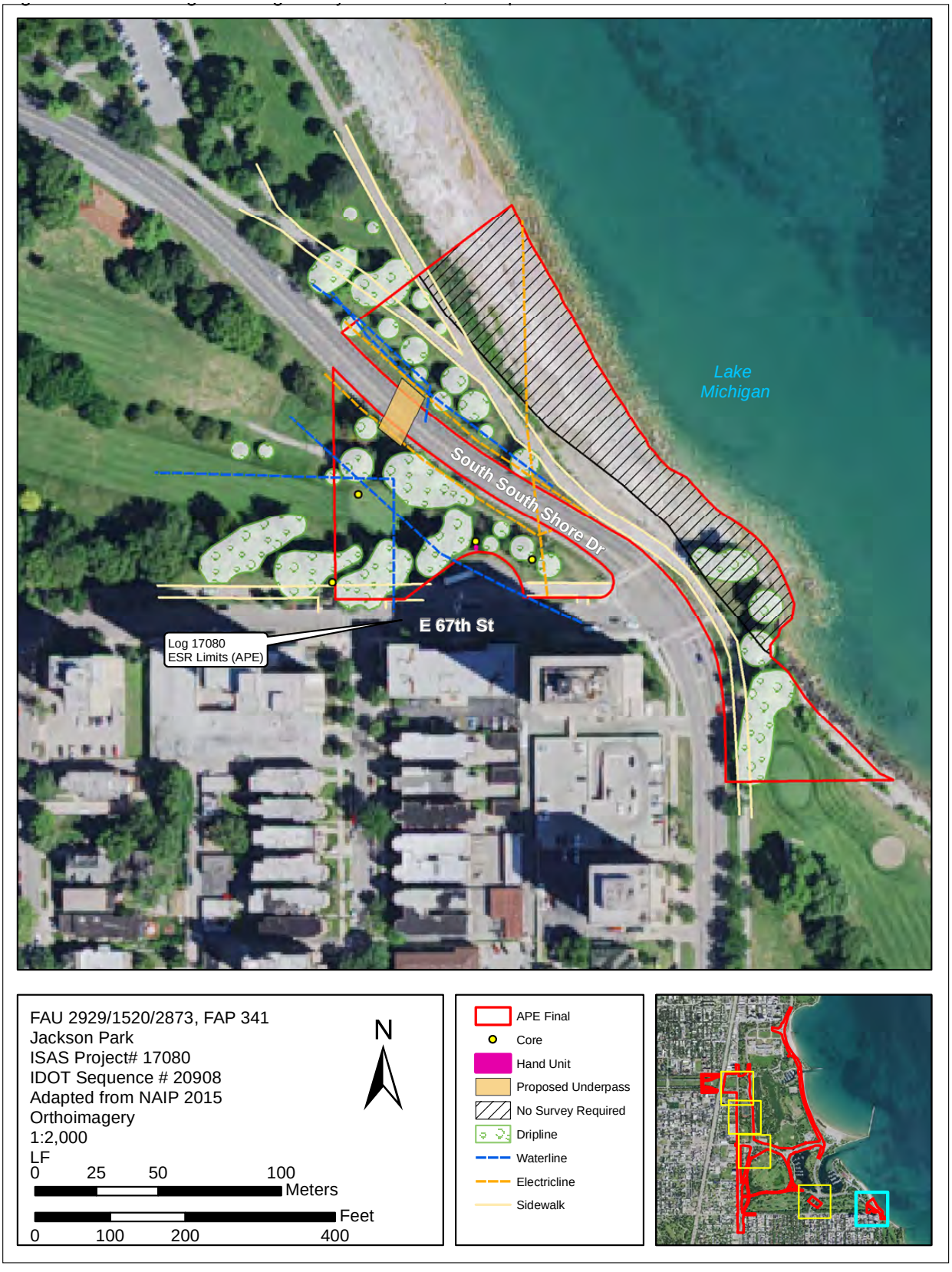


Figure 5.7. Aerial image showing survey restrictions, underpass at South Shore Drive.

Chapter 6

Results of Field Investigations

Introduction

Visual inspection and archival research determined that portions of the APE along South Lake Shore Drive, Midway Plaisance, E. Hayes Drive, S. Richards Drive, E. Marquette Drive, Stony Island Avenue, and S. Cornell Drive contained sediments previously disturbed by grading and/or filling, road construction, and installation of subsurface utilities. Field investigations were not necessary within these previously disturbed areas (Figures 5.1 and 5.2) (Tolmie and Porubcan 2018).

A total of 56 geomorphological cores (GCs) and 13 hand excavation units (HUs) were completed within the remainder of the APE. Of these, 42 geomorphological cores and 10 hand excavation units were completed within the OPC: GC1 through GC42, HU1 through HU9, and HU13. The remaining 14 geomorphological cores and 3 hand excavation units were completed along existing road rights-of-way: GC43 through GC56, HU10 and HU12 (Figures 6.1–6.10).

Three previously recorded sites (11CK1105, 11CK1106, and 11CK1107) were revisited and four new sites were recorded (11CK1289, 11CK1290, 11CK1291, and 11CK1292) (Figures 6.11–6.14).

A summary of the geocoring investigations is presented below, with a discussion of cores within the OPC APE followed by those placed within the roadway APE. The full report of investigations for the geomorphological investigations is presented in Appendices A and B.

The results of field investigations for revisited and new sites is organized first by those sites located within the OPC APE (revisited and new; 11CK1106, 11CK1289, and 11CK1290), followed by those sites located within the roadway APE (revisited and new; 11CK1105, 11CK1107, 11CK1291, and 11CK1292).

Geocoring

Geocoring was undertaken to locate stratigraphic contexts with geologic potential for buried archaeological sites. Stratigraphic contexts with potential were subsequently sampled by excavation of hand excavation units within the OPC and Roads sections of the revised APE. (See Appendices A and B for a full discussion of the geocoring methodology and results). Geocoring identified two main stratigraphic sequences: Sequence 1, fill over an intact, modified or partially truncated Ab, Ob, or Ab and

C horizon; and Sequence 2, fill over a truncated lacustrine sequence. Sequences where artifacts or debris were present at the base of the fill were designated 1a or 2a. Sequence 1a soils were present in GC4, 12,13,14, and 44. Sequence 2a soils were present in GC 6, 11, and 30. Cultural material present in other cores occurred within the fill and represent later deposition or reworking of material (See Kolb, this volume).

OPC

Cores 1-42 were placed within the footprint of the proposed OPC, within sites 11CK1106, 11CK1289, and 11CK1290. Sediment profiles indicated considerable historic alteration and infilling of the natural landscape. Archival research demonstrates that extensive land reclamation efforts occurred immediately before the World's Fair with grading and infilling, followed by another 125 years of intermittent construction of park facilities including post-1895 landscaping, lagoon dredging, and construction of boat launches, playgrounds, gymnasiums, ball fields, and so forth. Cultural material was encountered below the topsoil at depths ranging from 40cmbs in GC29 to 200cmbs in GC11. Information recovered from geocores guided the placement of hand excavation units. For a detailed analysis and interpretation of the geocores, see Kolb's discussion in Appendices A and B.

Within the OPC, 21 cores were culturally sterile (GC2, 3, 5, 9, 10, 15, 16, 21, 23, 24, 25, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, and 41); that is, they contained fill deposits over truncated former surfaces or over lacustrine deposits. Three cores (GC1, 8, and 13) contained cultural material but only within the modern topsoil. The remaining 17 cores contained cultural material encountered at depths from 40cmbs to 290cmbs (GC4, 6, 7, 11, 12, 14, 17, 18, 19, 20, 22, 26, 27, 28, 29, 30 and 42) (Figures 6.1–6.3).

Roads

Cores 43-56 were placed along roadways within the refined APE, within areas where roadway and underpass construction is proposed. Core profiles indicate considerable alteration of the landscape at the intersection of Cornell and Hayes, to the east and west of Jeffries Street within the golf course (11CK1291), and at the intersection of South Shore Drive and 65th Street, with the exception of a small area where intact subsurface material associated the World's Fair Engle Crematory was found (11CK1292) (Figures 6.3–6.5).

Roads-Jeffery Street Underpass

Four cores were completed in the vicinity of the proposed underpass on Jeffries Street (GC43, 44, 45, and 46; 11CK1291). Only one core, Core 44, contained artifacts (Figure 6.4).

Roads-South Shore Drive Underpass

Four cores (GC47, 48, 49, and 50) were placed on the west side of South Shore Drive, in the vicinity of the proposed underpass (11CK1292). Three cores (GC47, 48, and 50) contained cultural material in zones below the A horizon, at depths ranging from 26 to 188cmbs. One core, GC49, contained a

series of cultural zones from the base of the topsoil to a depth of 143cmbs in matrix unlike that of any other core completed within the project area (Figure 6.5).

Roads-Intersection of Hayes and Cornell

Cores 51, 52, 53, 54, 55, and 56 were completed along the south side of Hayes Drive, on the west side of Cornell, on the southeast side of the intersection. No cores contained cultural material below the modern topsoil (Figure 6.3).

Revisited Sites

OPC

11CK1106

Site 11CK1106 includes the area of the Sunken Garden, which has undergone significant modification in the early twentieth century. Seven geomorphological cores (GC24-GC26 and GC33-GC36) and three hand excavation units (HU8, HU9, and HU13) were completed within the portion of the APE within the original site boundary. ISAS investigations extended the site boundary to include positive GC42 and HU13 on the northwest corner of the intersection of Midway Plaisance/E. 60th Street and S. Stony Island Avenue (48,209m^2). The site extension runs for approximately 60 m west along Midway Plaisance and west of Stony Island Avenue, and extends north for approximately 30 m from the road right-of-way (Figure 6.11). Material from the site extension was consistent with the material in secondary context reported within 11CK1106 by Graff (2011). One feature, Feature 3, was identified during field investigations at 11CK106, in HU8. Approximately 90 percent of the site area lies within the current APE.

Excavation Unit 8 (HU8)

Hand excavation unit 8 was placed approximately 10 m north of GC27 to investigate the presence of artifacts and a possible buried surface encountered at 49cmbs (Figure 6.6). A 1.0 × 1.0m unit was excavated to a depth of 130cmbs. The southern half was removed as a single level and the northern half was excavated by cultural zones observed in the unit profile. Feature 3 was encountered at 65cmbs, cut into a deposit of fill. Feature 3 was bisected and excavated (Figures 6.15 and 6.16).

Zone A, the modern topsoil of 10YR 2/1 black silt loam, extends to a depth of 27–35cmbs and overlies four zones of fill: Zones B, C, D, and G. Zone B is a 10YR 5/4 yellowish brown sand. Zone C is a 10YR 3/3 dark brown sand with 50–60 percent small gravels. Zone D is a 7.5YR 4/5 brown sand mottled with 7.5YR 5/8 strong brown. Zone G is a pocket of 10YR 4/3 brown sand with 5 percent small to medium gravels. Zone E is an undisturbed gleyed subsoil, of 2.5Y 6/4 light yellowish brown sands.

ISAS archaeologists recovered 550 artifacts from HU8 including ceramics, clothing fasteners, a graphite rod from an arc lamp, and architectural material. Diagnostic artifacts present include machine-cut nails (pre-1880) and the arc lamp rod (post-1877). Vertical distribution of artifacts in

Zones C and D indicate episodes of fill that occurred in the late nineteenth and/or very early twentieth centuries. Modern or post-1900 artifacts are present in Zones A and B.

Feature 3

Feature 3 appeared in the north wall profile as two shallow trenches cut into Zone D, and capped by Zone C, Feature 3A to the east and Feature 3B to the west (Figures 6.15 and 6.16). The trenches are 65cm apart. Trench walls are straight, and the feature is approximately 25cm deep where identified at the base of Zone C. Feature 3A runs from north east to southwest across the entirety of the unit. Feature 3B is present only in the northwest portion of the unit. A 10YR 2/1 sandy loam was present in the base of both features. Feature 3A is capped by Zone H, a 10YR 4/3 brown sand mottled with 10YR 2/1 black silty loam, 2.5Y 6/4 light yellowish brown and 7.5YR 5/8 strong brown sand.

Feature 3 is interpreted as a shallow trench or excavation of unknown function dug into fill deposited during grading for the World's Fair. The feature may be related to construction of utilities or retaining walls for landscaped areas within the fairgrounds. Both trenches are straight sided and extend to approximately 1 m below the present ground surface. Feature 3 fill did not produce any temporally diagnostic material, but did produce small amounts of coal and flat glass, one fragment coated with plaster. Zone D, the surrounding matrix, contained material consistent with a late nineteenth or early twentieth century date: a broken graphite rod from an electric arc-lamp, architectural material, and a buckle from a galoshes-type boot. Feature 3, and Zone D, a are capped by Zone C, a layer of probable Fair debris, which contained a machine-cut nail, terrcotta flower pot fragments, and coal or slag.

Feature 3 is interpreted as a feature potentially associated with the Chicago World's Fair. The feature was cut into the fill spread during grading prior to construction, and abandoned and capped immediately following closure of the fair. If not associated with the fair, the feature could be associated instead with the landscaping undertaken in the immediate post-fair period, after 1895.

Excavation Unit 9 (HU9)

Hand excavation unit 9 was excavated 1 m south of GC25 to investigate the relatively shallow possible buried surface noted in the core (Figure 6.6). A 1.0 × 0.5-m unit was excavated as a single level to approximately 94 cmbs. Fill terminated at 85–95cmbs. The unit contained very little cultural material and no sample column was excavated. No features or buried surfaces were encountered in HU9.

Zone A, the modern topsoil of 10YR 2/1 black sandy loam, extends to a depth of 24–36cmbs. Zone A overlies five layers of fill: Zones B, C, D, E, and F. Zone B is a 7.5YR 5/2 brown sand mottled with 10YR 2/1 black sandy loam and 2.5YR 7/3 pale yellow sand. Zone C is a 10YR 2/1 black sandy loam with 5–10 percent gravels in the upper portion and a pocket with 20 percent gravels at the interface with Zone D. Zone D is a 2.5Y 6/3 light yellowish sand with 60-70 percent gravels. This zone occurred only in the eastern half of the unit. Zones C and D overlie Zone E, a 2.5Y 7/3 pale yellow sand which overlies Zone F, a 2.5Y 6/3 light yellowish sand with 60-70 percent gravels. The subsoil, Zone G, is a 2.5Y 7/3 pale yellow sand (Figures 6.17 and 6.18).

ISAS archaeologists recovered 17 artifacts from HU9 including ceramics, container glass, architectural debris, and coal or slag. The majority of artifacts were recovered from Zone A.

Excavation Unit 13 (HU13)

Hand excavation unit 13 was placed 3 m north of GC 43 in the Midway Plaisance to investigate a layer of lime-sand mortar and plaster fragments observed in the core (Figure 6.6). A 1.0 × 0.5-m unit was excavated as a single level to approximately 143cmbs, when sterile subsurface soils were uncovered. No sample column was excavated.

Zone A, the modern topsoil of 10YR 2/1 loam, extends to a depth of 30–50cmbs. This overlies two layers of fill: Zone B and Zone D. Zone B is a thick layer of 10YR 5/4 yellowish brown sand with 50 percent gravel. Zone D is a small pocket of 10YR 2/1 black clay in the southwest portion of the unit. Both Zone B and Zone D overlie Zone C, a sterile 2.5Y 5/1 gray clay. An iron pipe was identified at a depth of 127cmbs, running from north to south across the entire unit, approximately 12cm from the eastern wall of the unit. No trench is visible around the pipe, indicating that the pipe is contemporary with the fill matrix or was in place prior to deposition of the fill (Figures 6.19 and 6.20).

ISAS archaeologists recovered 127 artifacts from HU13, including terracotta fragments, container glass, architectural debris, and coal or slag. Diagnostic artifacts recovered include staff fragments (1893–95), machine-cut nails (pre-1880), and a neck finish and a glass stopper from a "shell cork and stopper" club sauce style bottle (1850–1950:Lindsey 2018), recovered from Zone B.

Site History

11CK1106 is located within the grounds of the 1893 World's Fair and the former locations of the Woman's Building, Children's Building, Drucker Hospital, Puck, Homeopathic Headquarters, Merck & Co. Drugs, and an elevated railroad station. Portions of the Public Comfort Station (Bicycle Court), Horticulture, and Irish Industries are within the site boundary. The Greenhouse was located immediately south of the southern site boundary (see Figure 4.4).

Feature 3 is not associated with any World's Fair structure as mapped by Burnham in his report, or by tourist guides (e.g. Rand McNally 1893). The feature may represent abandoned utilities or infrastructure associated with retaining walls or other formal landscaping features known to have been present in association with major buildings.

11CK1106 has been impacted by post-Fair development. According to the 1895 plans for the park, the area containing the Sunken Garden was planned as a turning circle for boats, and as the access to a proposed canal along the Midway Plaisance. The proposed canal was abandoned and excavations halted. The Sunken Garden was constructed by WPA workers in the 1930s in place of the turning area, and the center of the garden is known to contain fill.

Site Summary

11CK1106 represents a survey locus investigated by Graff by shovel probing as part of fieldwork for her dissertation research (Graff 2011). The site is located between S. Stony Island Avenue and Cornell Drive at the intersection with the Midway Plaisance and encompasses the Sunken Garden. The

northern site boundary is 30 m north of the intersection of Midway Plaisance and S. Stony Island Avenue; the southern boundary is 95 m south of the intersection of E. 60th Street and Stony Island Avenue. The original site dimensions as reported by Graff are 340 m north–south by 140 m east–west. Graff collected 241 artifacts (historic ceramics, container glass, nails, and rubble).

ISAS investigations in 2017 identified one subsurface feature, Feature 3, and recovered a total of 709 artifacts from cores and excavation units within the site area (15 from cores and 691 from hand units). Artifacts recovered comprise undecorated whiteware/ironstone, terracotta flowerpot fragments, container glass and bottle closures, milk glass, a bottle opener, personal items, flat window glass, rough limestone fragments, machine-cut nails, wire nails, railroad spikes, unidentified iron fragments, and slag recovered from secondary deposits.

Recommendations

Site 11CK1106 has been severely impacted by landscaping, construction of a sunken garden, construction of berms associated with a modern all-weather athletic field, and construction of utilities. Features present and cultural material recovered from 11CK1106 are unlikely to add significant data to our understanding of past prehistoric or historic lifeways or events. Therefore, it is our recommendation that 11CK1106 does not warrant NRHP consideration under Criteria D, and no further work is recommended for the portion of 11CK1106 within the APE.

New Sites

OPC

11CK1289

This site is bounded on the east by S. Cornell Drive and on the west by S. Stony Island Avenue (Figure 6.12). The northern boundary approximates to the northern boundary of the existing children's park, and the southern boundary is approximately 50 m north of E. Hayes Drive (36,530 m^2). The entire site area lies within the current APE. Eleven positive cores (4, 5, 6, 7, 11, 12, 13, 14, 17, 18, and 19), eight negative geomorphological cores 1, 2, 3, 8, 9, 10, 16, and 31), and seven hand excavation units (HU1, 2, 3, 4, 5, 6, 7) were placed within the site boundary and used to define site boundaries. Artifacts from cores and units within 11CK1289 largely comprise architectural debris—staff, mortar, nails, etc. Two features: Feature 1 and Feature 2, were identified in HU1 and HU4 respectively.

Excavation Unit 1 (HU1 and HU1A)

Hand excavation unit 1 was placed near positive GC13 to further investigate the nature of subsurface deposits in the vicinity (Figure 6.7). A 1.0 × 0.5-m unit was hand excavated as a single level to approximately 140cmbs. Feature 1 was encountered at 135cmbs (see below), and excavation of HU1 was temporarily halted. A sample column (HU1A) measuring 0.2 × 0.5 m was excavated off the east wall of the unit, and excavated by cultural zones observed in the unit profile.

In conjunction with excavation of Feature 1, portions of HU1 and HU1A were excavated to a depth of 175cmbs. At least five zones of fill were identified, from 0–135cmbs (Figures 6.21 and 22). Zone A is the modern topsoil, a 10YR 2/1 black silty loam that extends to a depth of 28–31cmbs. This is underlain by four zones of fill: Zones B, C, D, and E. Zone B is a layer of culturally sterile 2.5YR 5/6 light olive brown sand. This caps Zone C, a layer of 7.5YR 5/2 grayish brown clay that is only present in the eastern 75 percent of the unit, extending from the eastern wall to a point 82 cm west of the east wall. A fragment of dressed limestone was observed in the unit profile at the base of Zone B/top of Zone C. Zone D Is a layer of fill extending across the unit and containing plaster with little sediment present. This overlies Zone E, a 2.5Y 3/2 very dark gray sandy loam with 30 percent small to medium gravels, mottles of 10YR2/1 black sandy loam, 2.5Y 4/2 very dark grayish brown sand, and 2 percent charcoal. Two additional zones, G and H, were observed in the sample column below Zone E. Zone G is a 10YR 5/2 grayish brown sandy loam and Zone H is a 10YR 3/1 very dark gray sand. Zones, E, F, and G overlie Feature 1 and the natural subsoil.

A total of 854 artifacts were present in HU1 and HU1A. Artifacts recovered include modern material from the A horizon (Zone A) and large quantities of architectural debris (staff, plaster, lime-sand mortar, and concrete) concentrated in Zone D, and also present in Zone E. Diagnostic artifacts include the staff fragments (material from the 1893 World's Fair), machine-cut nails (pre-1880) and wire nails (post-1880). It is clear that Zone D represents a deposition of post-Fair debris associated with the demolition of nearby fair structures.

Feature 1 underlies Zone E and extends into natural sediments. Feature 1 was clearly defined and ran north–south across the width of the eastern portion of HU1. Feature 1 is a linear feature, present at 135cmbs. Feature 1 is a straight-sided trench, 55cm wide and 31cm deep, that cuts into the 2.5Y 5/2 sandy substrate. Feature 1 contains two zones of fill: Zone 1, a 2.5 Y 3/2 very dark grayish brown sandy loam similar to, or the same as, Zone 5; and Zone 2, a 10YR 5/2 grayish brown sandy loam mottled with 10YR 3/1 sand and a lighter colored 2.5Y 4/4 olive brown sand. Feature 1 is interpreted as a builder's trench with two episodes of infilling present: Fill 2 is the material used to infill the trench at the time of initial construction; and Fill 1 represents the final infilling of the trench following removal of the superstructure.

Excavation Unit 2 (HU2 and HU2A)

Hand excavation unit 2 was placed near GC4 to investigate the potential for additional architectural remains as noted in the core. The unit was located near a low berm on the east side of the baseball field area, west of Cornell Drive (Figure 6.7).

HU2 was a 1.0 × 0.5-m unit excavated to a depth of 150cmbs. It is not certain that any undisturbed subsoil was encountered in this unit. A sample column (HU2A), measuring 0.2 × 0.5 m, was excavated off the east wall of the unit by cultural zones observed in the profile (Figures 6.23 and 6.24).

Zone A is a relatively shallow layer of modern topsoil, a 10YR 2/1 black sandy loam that extends to 12–15cmbs. This overlies five zones of fill: Zones B, C, D, E, and F. Zone B is a thick layer of sand, a mixture of 2.5Y 6/2 light brownish gray and 2.5Y 5/4 light olive brown sand mottled with 2.5Y 5/4

light olive brown sand, 2.5Y 5/6 light olive brown sand, and 10YR 2/1 black sand with 5-10 percent small gravels. Zone C is a 2.5Y 4/4 olive brown sand with a sloping base, above Zone D, a 2.5Y 6/4 light yellowish brown sand with 25 percent 10YR 5/3 brown clay. A thin layer of burnt material is present at the interface of Zones D and E. Zone E is a layer of plaster and building debris. Zone F is a 2.5Y 5/4 light olive brown sand with 20-30 percent small gravels. Zone G may be natural subsoil, a 10YR 4/1 dark gray clay with 2.5Y 4/4 olive brown sand. Although Zone F appears to cut into Zone G, it was not clear if this represented a cultural anomaly or a natural depression in the Zone G sediments.

No features were encountered in HU2 or HU2A. The artifact assemblage from both units combined is relatively large, with 1,194 artifacts present, and is dominated by architectural debris—nails, staff, mortar, and plaster. Of particular interest are fragments of plaster with orange/red paint on one surface from Zones D and E, and a fragment of amber-colored stained glass from Zone D. There is a clear vertical distribution of artifacts, with modern artifacts present in the modern topsoil (Zone A), which overlies two culturally sterile zones of fill (Zones B and C). Architectural debris associated with the World's Fair is present in Zones D and E. Zone F is culturally sterile.

The painted plaster and amber-colored stained glass are likely debris from the Transportation Building, located nearby. This was the only building with a colored exterior that included red/orange pigments.

Excavation Unit 3 (HU3 and HU3A)

Hand excavation unit 3 was placed near GC17, adjacent to S. Cornell Drive, to investigate the subsurface sediments and potential buried surface identified in the core (Figure 6.8). HU3 was a 0.5 × 1.0-m unit excavated as a single level to a depth of 150cmbs. A sample column (HU3A), measuring 0.2 × 0.5 m was excavated into the east wall of the unit by cultural zones observed in the profile (Figures 6.25 and 6.26).

Zone A is a thick layer of topsoil extending to 40–42cmbs of 10YR 2/1 black silt loam. This overlies a zone of fill, Zone B. Zone B is a thick layer of 2.5Y 5/3 light olive brown and 2.5Y 7/3 pale yellow sand mottled with 10YR 2/1 black silt loam and 10YR 6/8 brownish yellow sand and contains 10 percent gravels. The upper portion of Zone B is culturally sterile. A dense layer of artifacts occurs at a depth of 85cmbs, containing post-Fair demolition debris. Zone B overlies Zone C, a 2.5Y 6/6 olive yellow and 2.5Y 6/4 light yellowish brown subsoil that slopes from west to east.

ISAS archaeologists recovered 358 artifacts from HU3 and HU3A. The majority of artifacts are architectural in nature including flat glass, with machine-cut nails and plaster also present. There is a vertical distribution of artifacts, with modern material in Zone A, then a layer of sterile sand (the upper Zone B) and a layer with architectural debris in the lower half of Zone B.

Excavation Unit 4 (HU4 and HU4A)

Excavation Unit 4 was placed on the west side of a berm, to the south of HU1, to determine if Feature 1, identified in HU1, continued to the south (Figure 6.7). A 1.0 × 0.5-m unit was excavated as a single level to approximately 162cmbs, into sterile subsoil. Feature 2 was encountered at 102cmbs.

A sample column (HU4A), measuring 0.2 × 0.5 m, was excavated off the east wall of the unit by cultural zones observed in the unit profile. Feature 2 was bisected and the southern portion excavated to sterile subsoil (Figures 6.27 and 6.28).

Zone A, a layer of topsoil that extends to 22–25cmbs, is a 10YR 2/1 black sandy loam that slopes from west to east and overlies five layers of fill: Zones B, C, D, E, and F. Zone B is a 2.5Y 6/6 olive yellow sand. Zone C is a zone of artifacts and fill of 2.5YR 3/2 very dark grayish brown sand with 60-70 percent small to medium gravels. Zone C caps and partially fills Feature 2.

ISAS archaeologists recovered 257 artifacts from HU4 and HU4A. There is a vertical distribution of artifacts. Modern or more recent material appears in the A horizon (Zone A). Field observation noted that the majority of the other artifacts were present in Zone C. Diagnostic artifacts include fragments of two bottles (one amethyst and the other aqua) manufactured by the Chicago Consolidated Bottling Co. 1886–1906 (Farnsworth and Walthall 2011), and a whiteware saucer fragment with a tea-leaf pattern decoration (1850–1900; Wetherbee 1996).

Feature 2 cuts into a buried land surface, extending from north to south across the entire unit (Figures 6.27 and 6.28). A trench, Feature 2A, is present in the western portion of HU2. The trench is approximately 55cm wide and has a flat floor visible at 160cmbs, or 55cm below the former ground surface. Two zones of fill are present within Feature 2A: Zones D and E. Zone D is a 10YR 3/3 dark brown sand mottled with 2.5Y 6/4 light yellowish brown sand and 10YR 2/1 black sandy loam; Zone E is a 10YR 3/3 dark brown sand. A second feature, Feature 2B, extends into the east wall of HU4. Feature 2B also has a flat floor visible at 160cmbs, and contains Zone F, a 10YR 3/3 dark brown sand mottled with 2.5Y 6/4 light yellowish brown sand. Zones D, E, and F comprise the same matrix with minor variations in mottling and are interpreted as a single episode of infilling. ISAS archaeologists recovered 8 artifacts from Features 2A and 2B: undecorated ironstone, annular decorated yellow ware, container glass, and coal. Features 2A and 2B are contemporaneous. Both have a level floor at the same depth, and both are infilled with similar sediments and capped by Zone C, suggesting abandonment of the features at the same period.

Feature 2 function is uncertain. Feature 2A has similar dimensions to Feature 1 present in HU1 to the north, and may be a continuation of the same structure, possibly a wall trench. Feature 2B may be a second wall trench or indicate the presence of a larger feature. Feature 2 is interpreted as a temporary structure or structure related to the period of construction of the World's Fair and then removed prior to construction of the main exhibition structures.

Excavation Unit 5 (HU5 and HU5A)

Hand excavation unit 5 was placed in the vicinity of GC8, where a possible buried ground surface was identified (Figure 6.7). A 1.0 × 0.5-m unit (HU5) was excavated as a single level to approximately 95cmbs. A 0.2 × 0.5-m sample column (HU5A) was excavated off the north wall of the unit by cultural zones observed in the unit profile (Figures 6.29 and 6.30). No features or buried surfaces were encountered.

Zone A, the modern topsoil, is a 10YR 2/1 black sandy loam that extends 20–25cmbs and overlies two zones of fill: Zone B and C. Zone B is a 10YR 5/6 yellowish brown sand that terminates

70cm south of the north wall of HU5. A layer of corroded iron sheeting is present at the interface of Zone B and Zone C. Zone B slopes from south to north and appears truncated by Zone A. Zone C is a 10YR 4/6 dark yellowish brown sand with 10YR 3/6 dark yellowish brown sand and 10 percent gravels. Zone C overlies Zone D, a natural subsoil of 10YR 7/8 yellow sand. Both Zones B and C are truncated by Zone A in the southern third of the unit. This truncation is likely the result of levelling/grading of the surface for construction of the present baseball field.

An iron pipe, a former irrigation pipe, runs north–south through the unit at depth of approximately 35cmbs. A 10cm wide gray stain runs east–west across the unit, 40cm from the northern edge of the unit, in Zone C at approximately 85cmbs near the base of the unit.

ISAS archaeologists recovered 223 artifacts from HU5 and HU5A. including undecorated ceramics, container glass, bottle closures (including a post-1892 crown cap), a graphite rod, wood screws, machine-cut nails, wire nails, charred wooden fence post fragments, slag, and a decorative lead fragment. Vertical distribution is apparent, with modern material present in Zone A topsoil, and late nineteenth/early twentieth century architectural material present in Zones B and C.

Excavation Unit 6 (HU6 and HU6A).

Hand excavation unit 6 was placed 1.0 m west of GC10 to further investigate subsurface sediments in this vicinity (Figure 6.8). A 1.0 × 0.5-m unit was excavated as a single level to approximately 130mbs. A 0.2 × 0.5-m sample column (EU6A) was excavated off the east wall of the unit by cultural zones observed in the unit profile (Figures 6.31 and 6.32). Fill terminated at 112–118cmbs. No features or buried surfaces were encountered in EU6.

Zone A is a thick layer of topsoil extending to 43–48cmbs of 10YR 2/1 black silty clay loam. Zone A overlies four zones of fill: Zone B, C, D, and E. Zone B is a 7.5YR 4/2 brown sand; Zone C is a 10YR 4/6 dark yellowish brown sand; Zone D is a 10YR 2/1 sandy loam; and Zone E is a 10YR4/6 dark yellowish brown sand. The sterile subsoil in Zone F is a 2.5Y 8/4 pale yellow sand.

ISAS archaeologists recovered 232 artifacts from HU6 and HU6A. Vertical distribution is present, with modern artifacts in the A horizon and late nineteenth century material in Zones B, D, and E. Diagnostic artifacts present include machine-cut nails recovered from Zones B, D, and E, and concrete recovered from Zone B.

Excavation Unit 7 (HU7 and HU7A)

Hand excavation unit 7 was placed approximately 10 m east of GC19 to investigate a possible buried surface that produced a single piece of slag (Figure 6.7). The unit lies within the children's playground area enclosed within a U-shaped concrete slab feature. The 1.0 × 0.5-m unit was excavated as a single level to approximately 130cmbs. Fill terminated at 115–120cmbs. A 0.2 × 0.5-m sample column (EU7A) was excavated off the west wall of the unit by cultural zones observed in the unit profile. No features or buried surfaces were encountered in EU7 (Figures 6.33 and 6.34).

Zone A, the modern topsoil of 10YR 2/1 black silt loam extends to a depth of 40–45cmbs and overlies three zones of fill: Zones B, C, and D. Zone B is a 10YR 6/8 brownish yellow and 2.5Y 7/3 pale yellow sand. Zone C is a 10YR 2/1 black sandy loam with 50–60 percent pea-sized to medium-

sized gravels. Zone D is a 10YR 2/1 black sandy loam that overlies Zone E, the 2.5Y 5/3 light olive brown sterile subsoil.

ISAS archaeologists recovered 290 artifacts from HU7 and HU7A, including container glass, personal items, hardware, architectural debris, fauna, and coal fragments. Modern material was present in the topsoil (Zone A) and artifacts occur in both Zones B and C. One diagnostic artifact, a complete aqua colored bottle manufactured by the Chicago Consolidated Bottling Co. between 1886–1906 (Farnsworth and Walthall 2011), was recovered from Zone B. The absence of a sterile fill zone in this unit, but seen in other units within the OPC, may be the result of disturbance related to a series of construction episodes in the area in the twentieth century (the U-shaped garden feature, the stone comfort station, and the modern children's playground).

Site History

11CK1289 is coincident with the locations of the 1893 World's Fair Choral Building, service structures, portions of the Admissions and Collections building, the Transportation Building, and Transportation Annex. The 1895 post-Fair master plan for this area included construction of an outdoor gymnasium. Although construction was not completed, it is possible that some landscaping and berm construction did occur—the current topography, as mapped by ISAS in 2017 shows remnants of berms on the north and east that may relate to the proposed gymnasium. A 1928 oblique aerial image and a 1938 vertical aerial photograph both indicate that the tree planting shown on the 1895 plan had occurred (Chicago Public Library archive cgp-spe-p0001_154_001_003; NETR 2017). The 1938 vertical image also shows that the existing U-shaped concrete slab structure was present in the west portion of the children's play area. The 1938 aerial indicates that a wall was also present around the exterior of this structure. The play area was further impacted by construction of the stone comfort station in 1936. By 1952, a baseball diamond was present in the southern portion of the site and the trees had been cleared in this area. By 1962, a second baseball diamond was present in the center of the site. Features 1 and 2 are both located on the exterior of the modern berm along Stony Island Avenue. No features were identified within the baseball field or in the eastern portions of the site near S. Cornell Drive.

Site Summary

ISAS archaeologists recovered 3,533 artifacts from 11CK1289 including both prehistoric and historic material. A total of eleven prehistoric items, all non-diagnostic flakes or debitage, were recovered. The majority of the lithics were recovered from HU2 in redeposited fill. All prehistoric material is in secondary context, and was redeposited from another location, possibly from within Jackson Park.

The historic assemblage contained 16 ceramics, 556 container glass, 5 household items, 23 personal items, 22 hardware fragments, 2,408 architectural fragments, 15 fauna, and 477 miscellaneous items, mostly unidentified metal, coal, or slag fragments. The artifact assemblage is dominated by architectural debris, which formed 68 percent of the total artifact assemblage. Architectural artifacts of note include fragments of painted staff or plaster that were part of façade of the Transportation Building, the only building in the White City with a painted exterior. It is likely that a fragment of

amber colored stained glass from HU2 is also from this structure. Artifacts present in 11CK1289 show a clear vertical distribution, with modern and later twentieth century material present in the topsoil, which overlies culturally sterile fill above zones containing late nineteenth century material associated with the World's Fair.

Feature 1 is a clearly defined straight-sided trench feature encountered at approximately 135cmbs in HU1. The feature, 55 cm wide and 31cm deep, cut into the 2.5Y 5/2 sandy substrate. The substrate appears to be an original ground surface. Feature 1 is interpreted as a builder's trench with two episodes of infilling present. The lower Fill 2 represents material used to infill the trench at the time of initial construction; and Fill 1 represents the final infilling of the trench following removal of the superstructure. All artifacts within Feature 1 (3 nail fragments, a brick fragment, lime-sand mortar, and five fragments of coal) were recovered from Fill 1, which is interpreted as infilling associated with removal of the superstructure.

Feature 1 is interpreted as representing the remains of a temporary structure that was built prior to the deposition of fill that occurred as part of the preparation of the site for the World's Fair. The structure may be associated with the early stages of construction of the fair, and was removed during later stages of grading and landscaping. Burnham's report and images of the fair during construction reference a number of temporary buildings or structures that were removed as grading and landscaping progressed.

Feature 2 was encountered at approximately 105cmbs in HU4. Feature 2 comprises a north-south trench with a width of 55–58cm (Feature 2a) and a second subsurface feature to the east (Feature 2b) whose eastern boundary was not determined. The two elements of Feature 2 appear contemporaneous. Both have a level floor at the same depth, 55 cm below a former ground surface; and both are infilled with similar sediments and capped by Zone C, suggesting in-filling occurred at the same time. Zone C contained few artifacts and may represent fill deposited during Fair construction or post-Fair landscaping events. Feature 2 function is uncertain. The trench has similar dimensions to Feature 1, present in HU1 to the north, and may be a continuation of the same Fair related infrastructure, possibly a wall trench. No artifacts were recovered from the feature fill. The function of Feature 2b is unknown.

Recommendations

11CK1289 has been heavily impacted by both pre-fair construction and demolition activities as well as post-fair construction of athletic facilities and buried utilities. Some truncation has occurred to the fill sediments present within the baseball field. Features present and cultural material recovered from 11CK1289 are unlikely to add significant data to our understanding of past lifeways. Therefore, it is our recommendation that 11CK1289 does not warrant NRHP consideration under Criteria D, and no further work is recommended.

11CK1290

This site comprises an artifact scatter identified in geological cores around the existing all-weather athletic track (Figure 6.12). Site dimensions are 176 m north–south, bounded on the east by S. Cornell

Drive and on the west by S. Stony Island Avenue. The southern site boundary is approximately 40 m south of the intersection of 61st Street and S. Stony Island Avenue. The northern site boundary is approximately 115 m north of the intersection of 61st Street and Stony Island Avenue (24,293m^2). The entire site area lies within the current APE. Cores contained relatively high amounts of cinder, ash, and coal slag, in contrast to the architectural debris present in 11CK1289. The artifact assemblages from these two site locations likely reflect different depositional patterns and construction sequences in this area of Jackson Park.

Five positive geomorphological cores are present within the site boundaries: 20, 22, 28, 29, and 30. In the majority of cores, the ash and cinder layer occurs 10–20cm below the base of the modern A horizon and overlies additional layers of fill that extend to a maximum depth of 3.96 cmbs (See Kolb, Appendices A and B).

ISAS recovered 411 artifacts from five geomorphological cores: 4 container glass, 185 architectural fragments, 1 fauna, and 221 miscellaneous items, mostly coal, slag, or cinder. Miscellaneous items formed 53 percent of the artifact inventory by count, with the next most common artifact class as architectural debris (41 percent of the inventory), mostly very small pieces of staff or plaster fragments.

Site History

11CK1290 contains the western half of the 1893 World's Fair Horticultural Building, the Greenhouse, and the northern portion of the Admissions and Collections building. This area was subsequently redeveloped as an open-air gymnasium, according to the 1895 plan for Jackson Park. The present all weather athletic facility was constructed sometime between 1988 and 1992.

Recommendations

11CK1290 is the locus of a series of construction and demolition episodes associated with the World's Fair and post-fair construction of an open air gymnasium, and has been severely impacted by construction of the modern athletic facility. 11CK1290 is unlikely to add significant data to our understanding of past lifeways. Therefore, it is our recommendation that 11CK1290 does not warrant NRHP consideration under Criteria D., and no further work is recommended for the site.

Revisited Sites

Roads

11CK1105

The APE within site 11CK1105 lies primarily within the existing right-of-way, and represents a very small portion of the entire site; less than 5 percent of the 61,528 m^2 reported site area lies within the current APE (Figure 6.11). Visual inspection determined that the portion of the site within the current APE has been impacted by road construction and installation of utilities. It is unlikely that any intact subsurface features are present. 11CK1105 has not been evaluated for NRHP eligibility, however no

further work is recommended for the small portion of the site within the APE. No evaluation regarding NRHP eligibility can be made for the remainder of the site area which lies outside the present APE. Should these portions of the site be subject to ground disturbance in the future, additional survey will be necessary to evaluate those areas for NRHP eligibility.

11CK1107

Site 11CK1107 has not been evaluated for NRHP eligibility, and the small portion of the site within the APE to the east of South Shore Drive was not investigated due to disturbances from road construction, pathways and park infrastructure, tree driplines, and the presence of an unmarked gas utility line (Figure 6.14). Graff recorded nineteenth century artifact concentrations to the north of the present survey area, which she interpreted as remnants of the incinerator, but are more likely redeposited fill associated with demolition activities of Worlds Fair infrastructure. Furthermore, ISAS archival research has determined that these positive shovel tests are more likely associated with the location of the former Forestry Building. ISAS revised the site boundary to distinguish the general artifact scatter identified by Graff from that associated with new site 11CK1292, which is associated with a specific Columbian Exposition structure and is described below. No evaluation regarding NRHP eligibility can be made for the remainder of the site area, which lies outside the present APE.

New Sites

Roads

11CK1291

This site is located on the west side of S. Jeffery Avenue, within the Jackson Park Golf Course (Figure 6.13). Site dimensions are 85 m from northeast to southwest and 40 m from northwest to southeast. The northern site boundary is approximately 25 m south of Marquette Drive and the eastern site boundary is 18 m west of Jeffery Avenue (2,812 m^2); the entire site area lies within the present APE. The site was defined by the presence of a buried A horizon in cores 43 and 44, Two excavation units, HU10 and HU11, were excavated near these cores to determine the nature of the buried A horizon.

Excavation Unit 10 (HU10)

Hand excavation Unit 10 was excavated 5 m south east of GC43 to better characterize sediments observed in the core and to determine if any buried surfaces were present (Figure 6.9). A 1.0 × 0.5-m unit was excavated as a single level to approximately 150cmbs. An Oakfield probe was placed in the base of the unit indicating that fill in this area terminates at 230cmbs. The unit contained very little cultural material and no sample column was excavated. No features or buried surfaces were encountered in HU10 (Figures 6.35 and 6.36).

Zone A, the modern topsoil of 10YR2/1 black sandy loam, extends to a depth of 32cmbs. Zone A overlies a single layer of fill, Zone B, of 7.5YR 5/3 brown sand with a few mottles of 10YR 5/3 brown clay, 10YR 2/1 black sandy loam, 2.5Y 6/4 light yellowish brown sand, and 10YR 5/3 brown clay.

Zone B continues to a depth of 240cmbs. At this depth, a buried horizon of soil or muck is present comprised of 10YR 2/1 sandy loam with mottles of 10YR 5/3 brown clay.

ISAS archaeologists recovered 46 artifacts from HU10, including container glass, architectural debris, other household items, and coal and slag. Diagnostic items present include wire nails (post-1880). One artifact of interest, a large hex nut, 3.5" in diameter, 2" thick, and weighing 2 kg was recovered from HU10 as well.

Excavation Unit 11 (HU11)

Hand excavation unit 11 was excavated 3 m west of GC44 to investigate the subsurface sediments in this area of the golf course (Figure 6.9). The east half was excavated as a single level to a depth of 150cmbs. The west half of the unit was then excavated by cultural zones observed in the profile. Excavation was terminated due to water seepage at this depth. A 1" diameter Oakfield probe placed in the base of the unit determined that fill continued to 187cmbs. No features were encountered in HU11 (Figures 6.37 and 6.38).

Zone A, the modern topsoil of 10YR2/1 black sandy loam, extends to a depth of 42–45cmbs. This overlies two or possibly three zones of fill: Zones B1, B2, and C. Zone B1 contains 2.5Y 6/4 light yellow brown sand with worm trails of 10YR 2/1 loam throughout. Zone B2 contains 2.5Y 6/2 light brownish clay and 2.5Y 6/4 light yellowish brown sand and worm trails are absent. The upper surface of Zone B2 appears to slope from the southeast to the northwest. Zone C is a 10YR 2/1 sandy loam, with 10 percent gravels and 10 percent 2.5Y 5/6 light olive brown sand. Zone D, natural sediments of saturated greyish sand, was identified under the fill in the Oakfield probe.

ISAS archaeologists recovered 230 artifacts from HU11 including ceramics, container glass, architectural debris, and coal or slag. Modern artifacts are present in Zone A. Zone B was culturally sterile. Zone C contained artifacts dating to the late nineteenth/early twentieth century including a blob-top finish bottle neck common prior to the twentieth century (Lindsey 2018), fragments of three Chicago Consolidated Bottle Company dating 1886–1908 (Farnsworth and Walthall 2011), and machine-cut nails (pre-1880) and wire nails (post-1880).

Site History

11CK1291 is located within the area of the World's Fair that contained structures associated with the stock exhibits. The site was subsequently landscaped as a golf course in 1895–99. Jeffery Avenue was constructed after 1939 and prior to 1952 (NETR 2017).

Site Summary

Excavations found that the potential buried horizons identified in the geocores were near the water table and are more likely to be mucks than occupation surfaces. This interpretation was confirmed by further analysis (see Kolb this volume, Appendices A and B). Fill within the site area is particularly deep, ranging in depth from 187 to 250cmbs, based on Oakfield probes placed in the base of each unit. ISAS recovered artifacts from both units, but did not encounter any features. ISAS archaeologists recovered 278 artifacts from the site: 3 ceramics, 67 container glass, 1 personal item,

1 household item, 1 hardware item, 185 architectural items, 1 fauna, and 46 miscellaneous items. The assemblage includes a large hexagonal bolt (weighing 2 kilograms) and fragments of three Chicago Consolidated Brewing Company bottles which were manufactured between 1886 and 1908. The majority of the artifacts recovered comprise architectural debris, which forms 54 percent of the assemblage by count. Container glass was the next most common category of artifact present, forming 13 percent of the assemblage.

Recommendations

While 11CK1291 contains debris from the 1893 World's Fair, any intact surfaces are at least 180cm below the present surface. Material present is in secondary context within fill utilized during construction of the World's Fair and/or within fill used for landscaping and infilling swale or marsh lands as part of golf course construction. The fill overlies muck, a soil that is saturated for more than 30 days per annum. 11CK1291 is unlikely to add significant data to our understanding of past lifeways and is unlikely to contain intact undisturbed living surfaces. In our opinion, the site does not appear eligible for NRHP listing under Criteria D, and no further work is recommended for this location.

11CK1292

This site is located 30 m west of the intersection of South Shore Drive and 67th Street (Figure 6.14). Site dimensions are 88 m east–west and 64 m north–south. The site may extend further to the west and north (3,817 m^2). The entire site lies within the current APE. 11CK1292 was identified by the presence of a series of fill deposits rich in ash, cinder, and other material in CG48. Three geomorphological cores (47, 48 and 50) and one hand excavation unit (HU12) were completed within the site boundary.

Excavation Unit 12 (HU12 and HU12A)

Hand excavation Unit 12 was excavated 2 m south of GC48 to characterize the layers of fill observed in the core (Figure 6.10). The layers were unlike any others encountered during the geomorphological coring survey and contained burned sediments and dense amounts of thermally altered cultural material. A 1.0 × 0.5-m unit was excavated as a single level to approximately 160cmbs, terminating when sterile subsurface soils were encountered. A 0.2 × 0.5-m sample column (HU12A) was excavated off the north wall of the unit by cultural zones visible in the profile. All material was collected and float samples were taken from the six cultural zones (Figures 6.39 and 6.40).

Zone A, the modern topsoil of 10YR 2/1 loam, extends to a depth of 36cmbs. This overlies a thin layer of fill, Zone B, of 2.5Y5/6 light olive brown sand. At 55cmbs, below Zone B, seven separate cultural fill zones were encountered: Zones C, D, E, F, G, H, and J (described below). These overlie sterile sand, Zone I. Zones C, D, E, F, and J are relatively thin, between 10 and 15 cm in thickness and all slope from north to south. Zones G and H are thicker, 25–30 cm thick. Zone J is only present in the south half of the unit, extending 55cm northwards into the unit.

ISAS archaeologists recovered 4,767 artifacts from HU12 and HU12A. The majority were recovered from Zones C through H, described below. In contrast to the other excavation units, where the most common artifacts comprise architectural debris in secondary context, this assemblage is

dominated by burnt material composed of ceramics (mostly hotelware) calcined animal bone, coal slag or charcoal. Architectural debris is relatively rare in the assemblage.

Fill Zones

Cultural zones in HU12 and HU12A represent a series of separate depositional episodes. Zone C is a mixture of 25 percent 10YR 4/4 dark yellowish brown sand and 75 percent artifacts. Zone D is 40 percent 10YR 5/6 yellowish brown layered sand with heavily compacted 7.5YR 5/8 strong brown sand and burnt sediment and 3 percent artifacts. Zone E is 10YR 3/4 dark yellowish brown sand mottled with 30 percent 7.5YR 5/8 strong brown sand and burnt sediment with 3-5 percent coal or charcoal and 3 percent broken ceramics. Zone F is a layer of coal fragments with some artifacts visible in the fill. Zone G contains lenses of 20 percent 10YR 5/6 yellowish brown sand and 80 percent 7.5YR 5/8 strong brown sand and burnt sediment all heavily compacted, with few artifacts visible. Zone H is primarily crushed coal with 7.5YR 5/8 sand and burnt sediment, with some ceramics and other artifacts present. Zone J is 7.5YR 4/3 brown sand containing artifacts. The underlying subsoil, Zone I, is a 10YR 5/4 yellowish brown sand.

Diagnostic artifacts present include hotel ware and other ceramics, container glass, utensils, hardware, and fauna from the World's Fair and the by-product of burnt sewerage sludge cake, also associated with World's Fair events. Makers marks present on the ceramics include United Porcelain Works (post-1877; Lehner 1988: 479), Thomas Haviland, Limoges, Greenwood China (1876–1910; Lehner 1988: 180), and Goodwin Brothers Pottery (1876–1893; Lehner 1988:175). Other items are labelled with the Chase and Sanborn Coffee Company's logo. This company was selected to supply coffee to the salons of the Worlds' Fair (History of Business 2018).

This stratified deposit is located immediately east of the location of the Engle Crematory and represents a series of deposits associated with discard of the material cleaned from the Crematory over the period of the World's Fair.

Site History

11CK1292 is directly east of the location of the Engle Crematory which functioned as the garbage incinerator for the World's Fair. The incinerator was in operation from May 9th to November 1st 1893. This facility was used to burn both garbage and sludge cake, the processed solid human waste from the sewage treatment plant. The incinerator was cleaned regularly and the layers of material present are interpreted as different episodes of clean out and discard of the incinerated waste material remains. The artifacts present are consistent with debris from what would be expected at the various eating establishments present within the fairgrounds. Extensive written documentation exists surrounding the operation of the Crematory, and describes the process of incinerating both garbage and the sewerage sludge cake collected from the Fair grounds and sewer plant. These sources describe in detail the operation, incineration process, and description of the final by-product of incineration, which matches and confirms the interpretation of the material and deposits recovered at 11CK1292 (Burnham 1894/1969; Savery and Callanan 1893).

By 1938, the site area was in trees outside the golf course fairway and appears to have remained relatively undisturbed over time. The construction of a CTA bus turning area to the south, on 67th Street, sometime between 1952 and 1962, lies outside the boundary of Jackson Park, and therefore outside the World's Fair boundary.

Site Summary

Intact deposits derived from the nearby Engle crematory were identified in HU12. The deposit contains seven layers of artifact-rich material over sterile subsoil, beginning at 55cmbs and extending to a depth of 160cmbs. Maximum feature thickness is 105 centimeters.

ISAS archaeologists recovered a total of 4,916 artifacts, all from HU12. Artifacts recovered include 1,114 ceramics, 535 container glass (mostly melted), 615 household items, 11 personal items, 16 hardware, 126 architectural items, 1,341 fauna, 1 prehistoric flake, and 1,157 miscellaneous items including cinder, burnt sludge cake, and metal fragments. The artifact assemblage is biased to those remains which have survived incineration, and are dominated by ceramics and burnt faunal remains which together form 49 percent of the total assemblage by count. Architectural items are sparse, accounting for only 2.5 percent of the assemblage. This is in strong contrast to the other assemblages from sites investigated within the APE, which are dominated by architectural debris.

Artifacts present included 1,026 fragments of hotel ware including cups, saucers, jugs, sugar dishes, small plates, and serving plates. A number of vessels are marked 'Chase and Sandborn "Seal Brand" Coffee'. Maker's marks on ceramic vessels include Greenwood China of Trenton New Jersey, UPW porcelain, and Thomas Haviland, Limoges. A fragment of a Chicago Consolidated Bottle Co. bottle is present. A considerable amount of melted container glass (n = 503) was recovered. Six teaspoons of a style known to be sold as souvenirs for the World's Fair were also recovered. Identified metal present included 606 container fragments, and a key can-opener.

Recommendations

Site 11CK1292 contains buried deposits of material associated with the 1893 Columbian Exposition, in particular redeposited material connected to clean out events associated with the operation of the Engle Crematory. An extensive archive of historic documents detailing the operation of the incinerator indicate that this material is composed of a mix of incinerated sewage and general garbage collected from the grounds and various facilities of the World's Fair. Analysis of recovered artifacts suggests the deposits are heavily biased towards material that survived incineration such as serving wares, calcined bone, and melted glass. Geomorphic cores indicate suggest this material is fairly constrained in extent and are buried beneath at least 60 cm (2 ft) of fill and lie outside current construction limits. Although the material appears to be directly related to the operation of the Engle Crematory, the deposits represent a secondary deposit of incinerated general refuse and lack the potential to provide additional information related to either the Worlds Fair or the operation of the Crematory beyond that provided in the extensive written record available. Therefore, it is our recommendation that 11CK1292 does not warrant NRHP consideration under Criteria D.

Summary

A total of 56 geomorphological cores and 13 hand excavation units were completed within the APE. Three previously recorded sites (11CK1105, 11CK1106 and 11CK1107) were revisited and four new sites, (11CK1289, 11CK1290, 11CK1291, and 11CK1292) were recorded. None of the newly recorded sites are recommended as warranting NRHP consideration under Criterion D.

Geomorphological coring and hand excavation indicate that there is a consistent pattern of a modern A horizon over relatively sterile fill to a depth of approximately 50cmbs or greater across the southern portion of the OPC, including 11CK1289. A similar pattern is seen in the cores and units in 11CK1106. Fill appears to be somewhat shallower in 11CK1290, where cores identified dense ash at 20–40cmbs. The deposit in 11CK1292 is also capped by at least 50cm of post-1893 fill. The fill at 11CK1291 is exceptionally deep, and any buried surfaces lie at least 180cmbs.

Vertical artifact distribution confirms a largely sterile layer of fill within 11CK1106, 11CK1289, 11CK1291, and 11CK1292. A general horizontal distribution pattern within the OPC indicates the presence of architectural debris in the southern portion, associated with 11CK1289, an area of possibly later construction and fill deposition reflected in the dense cinder deposits in 11CK1290, and a lighter scatter of architectural debris in portions of 11CK1106.

Only three features were identified during the survey. All three are located within the OPC. Features 1 and 2 are located on the west side of 11CK1289 and represent the foundations of two or more structures, or wall trenches for Fair infrastructure, that were excavated into an existing land surface and subsequently removed during grading and landscaping for the World's Fair. A number of temporary structures, ranging from workshops and commissaries to fences and revetments were in place during the period of Fair construction. It seems likely that these features represent ephemeral structures in use during this period, and subsequently capped by fill and fair demolition debris. Feature 3 is located in the southwest corner of 11CK1106. This feature is similar in layout to Feature 2, but is dug into fill deposited during fair construction. This feature may also be the remains of a temporary structure utilized during later stages of Fair preparation because it is also capped by Fair abandonment and demolition debris.

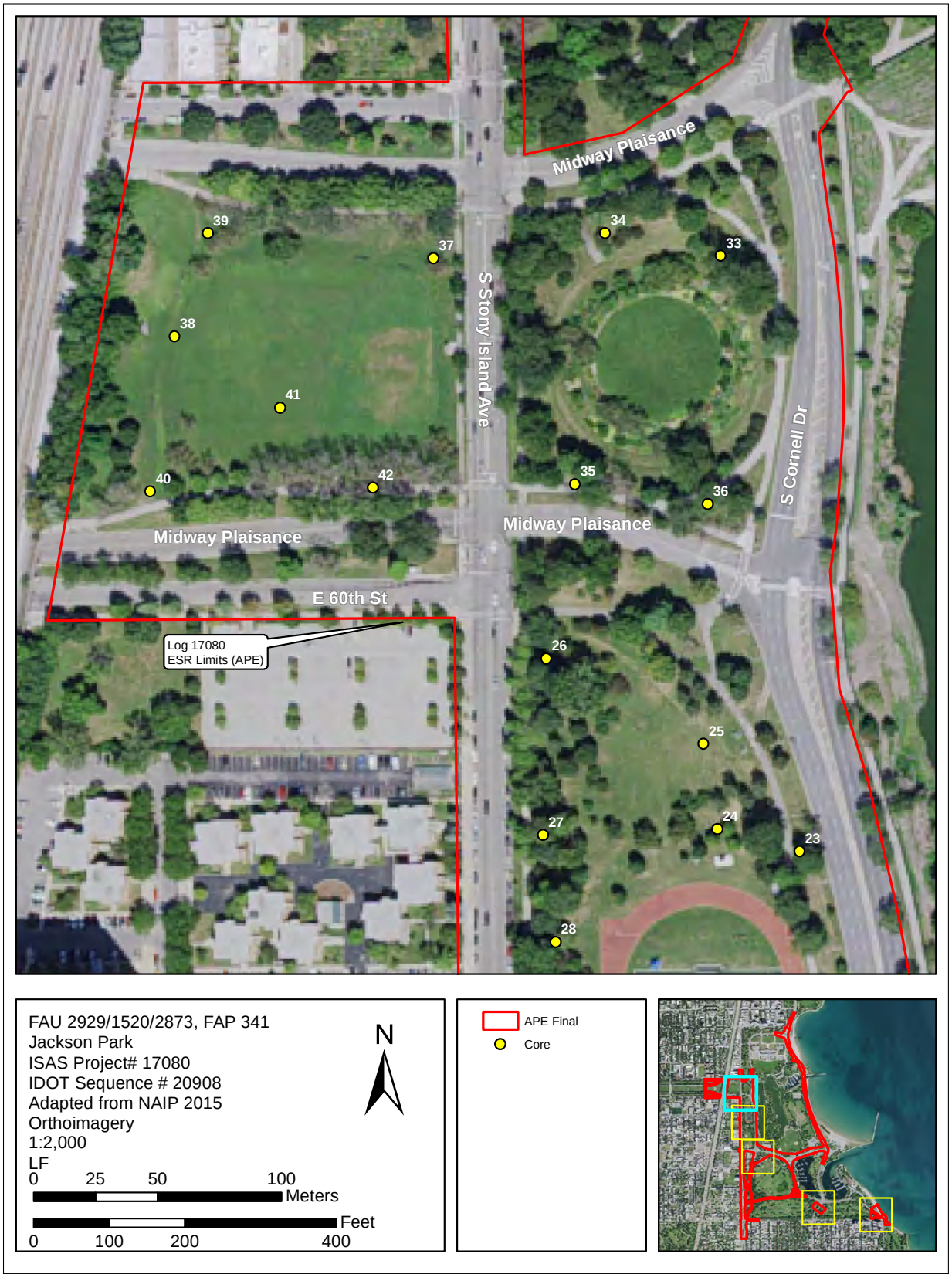


Figure 6.1. Aerial image showing locations of geological cores, northern portion of OPC.

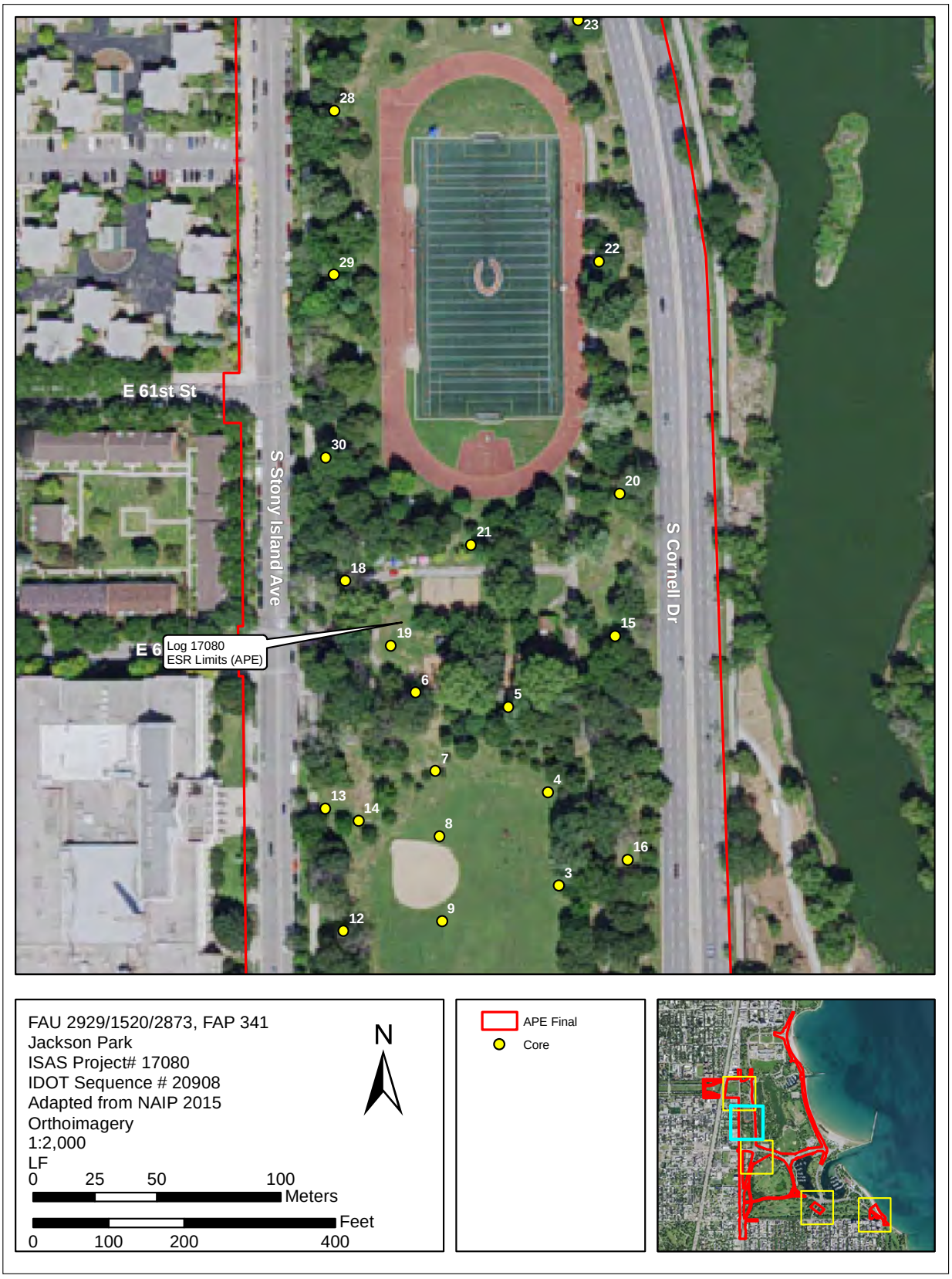


Figure 6.2. Aerial image showing locations of geological cores, southern portion of OPC.

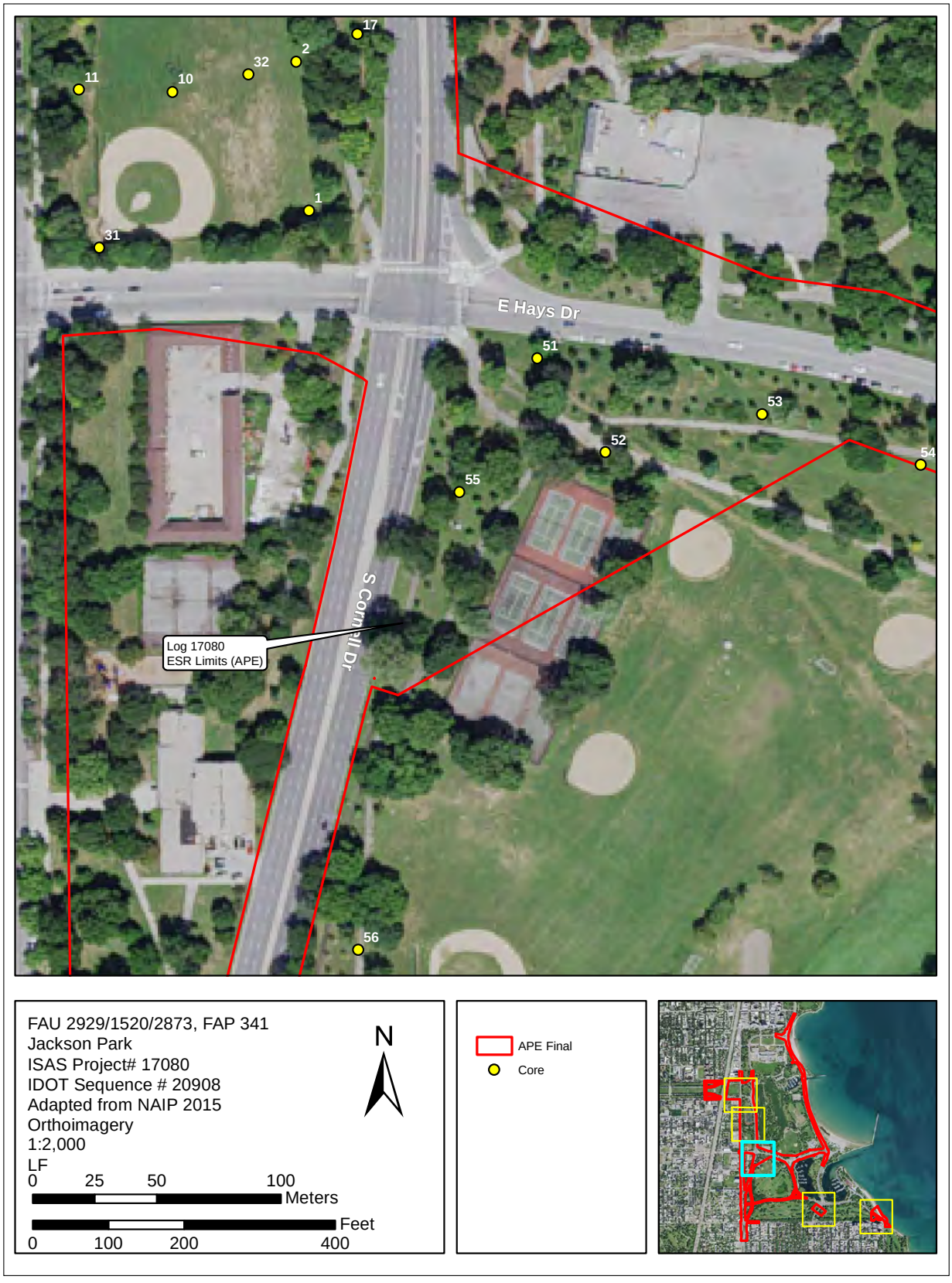


Figure 6.3. Aerial image showing locations of geological cores, southern portion of OPC and underpass at Cornell.

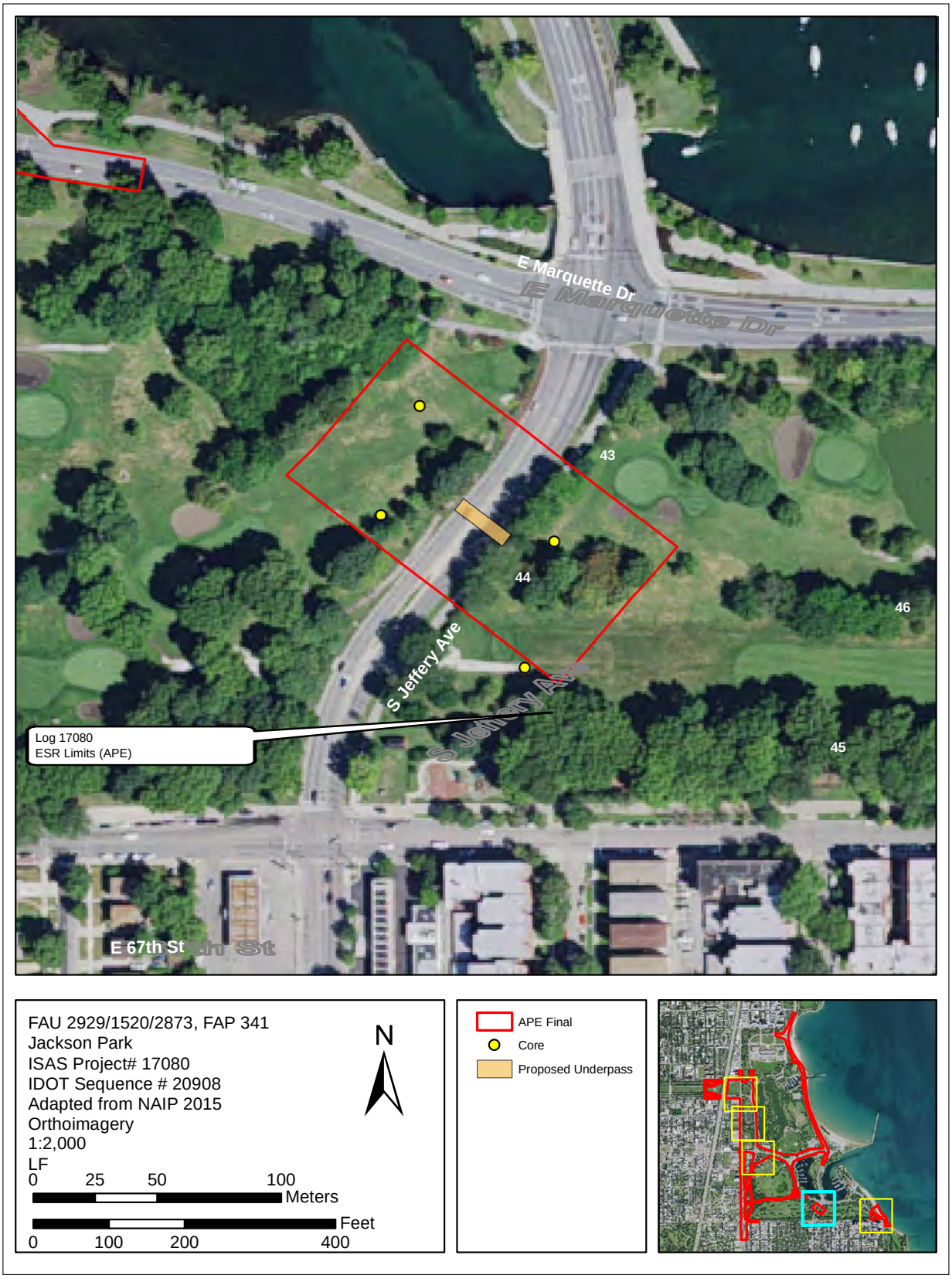


Figure 6.4. Aerial image showing geological core locations, underpass at Jeffery.

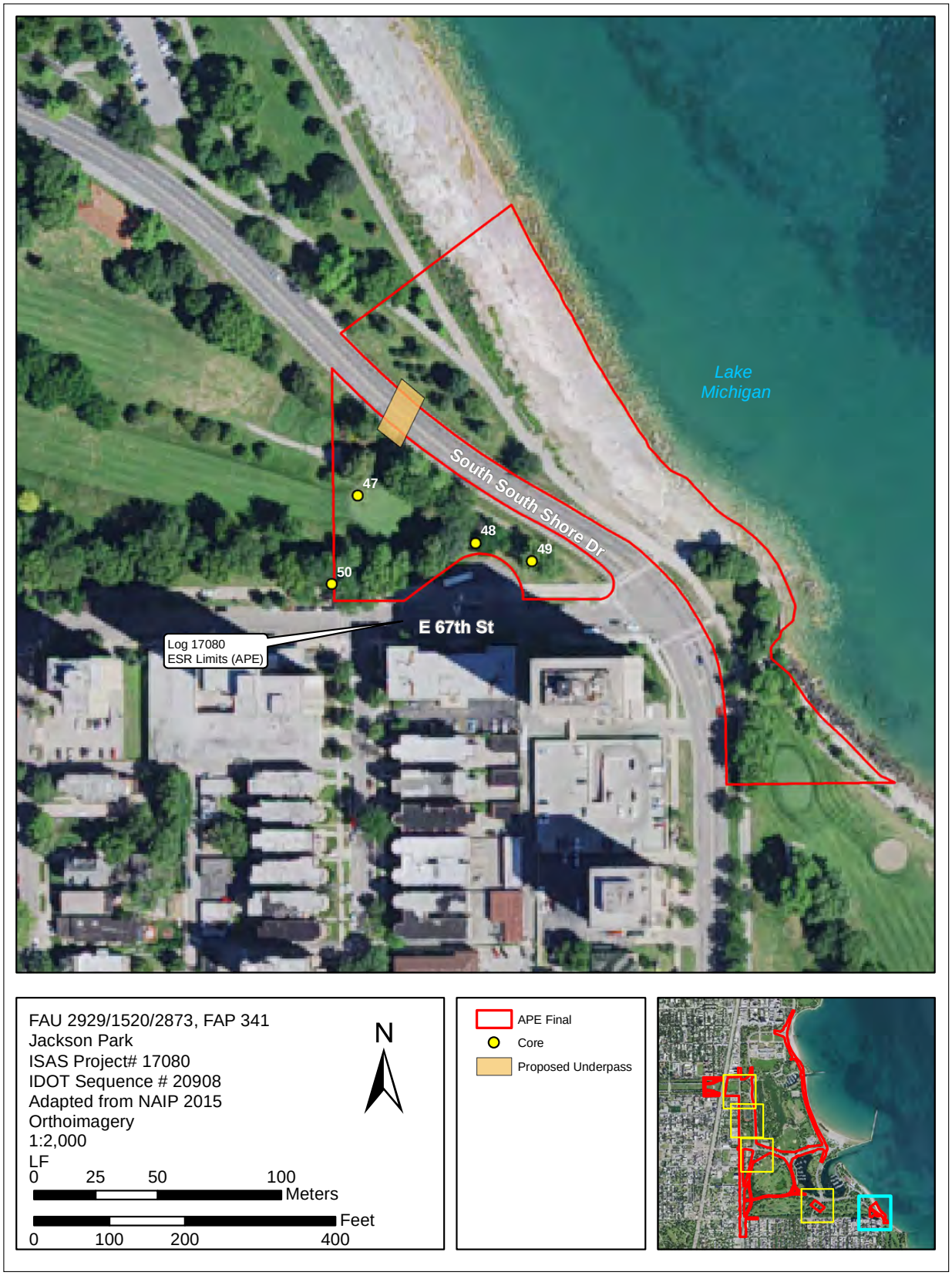


Figure 6.5. Aerial image showing geological core locations, underpass at South Shore Drive.

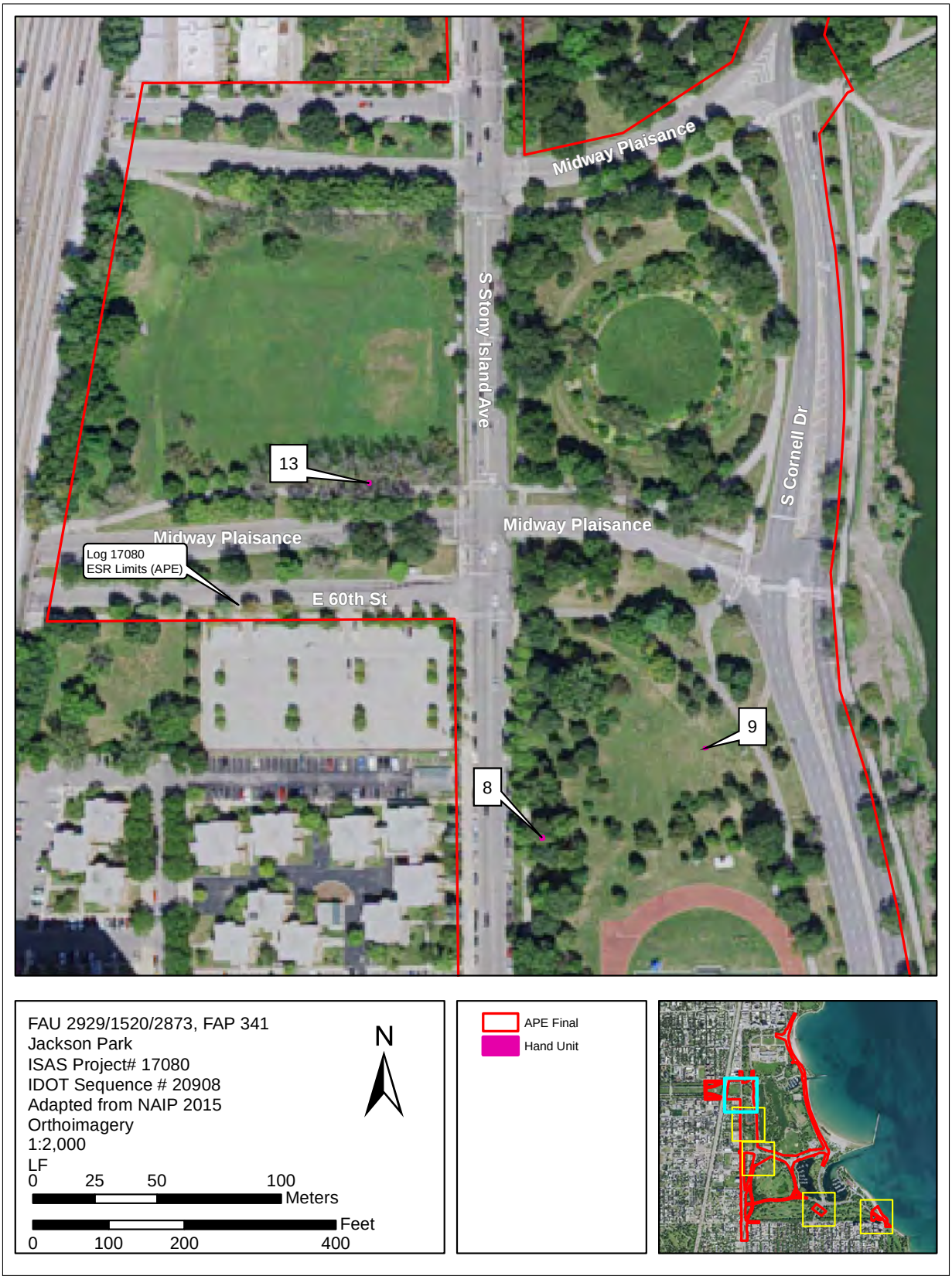


Figure 6.6. Aerial image showing location of hand excavation units, northern portion of OPC.

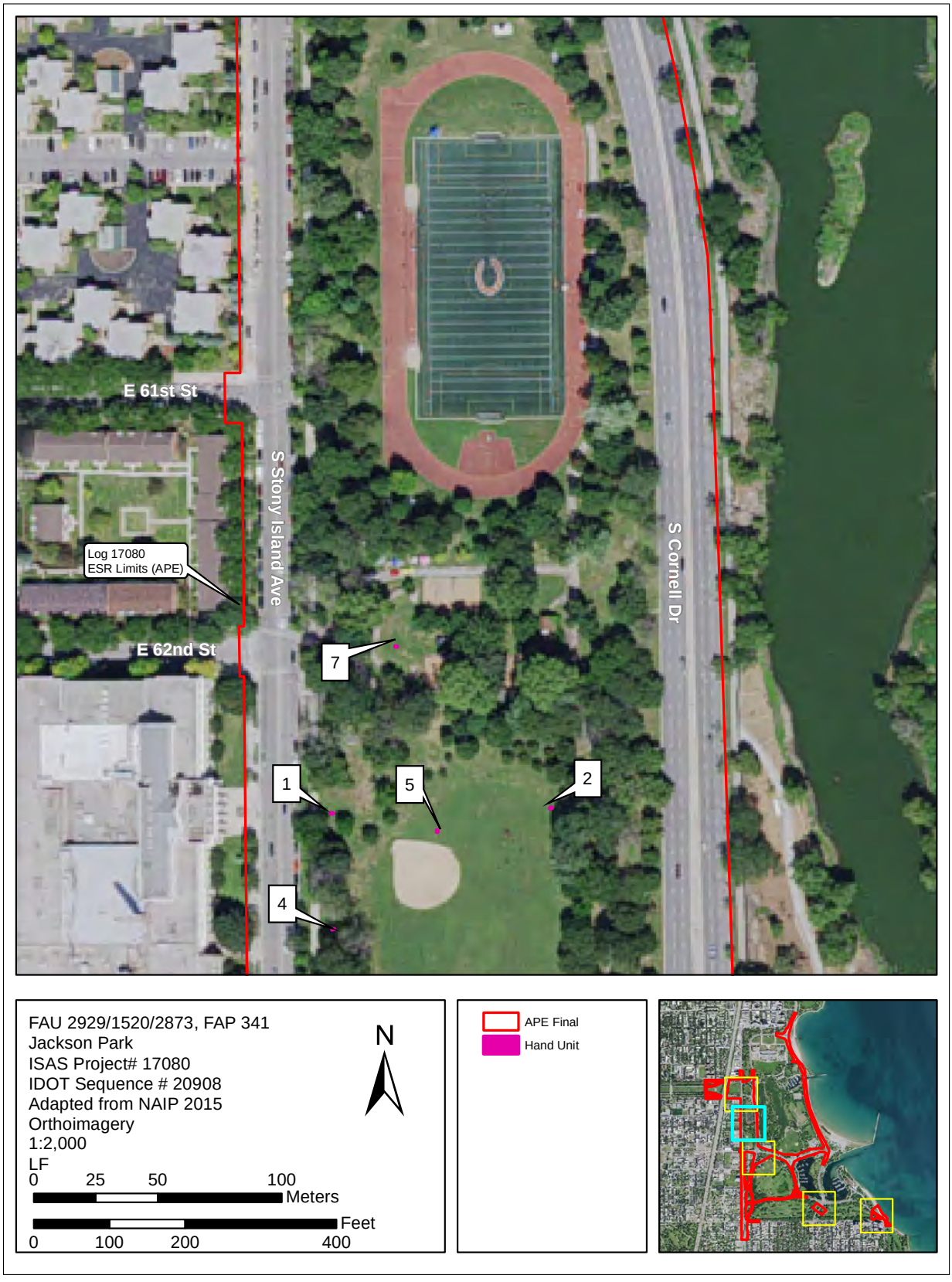


Figure 6.7. Aerial image showing location of hand excavation units, southern portion of OPC.

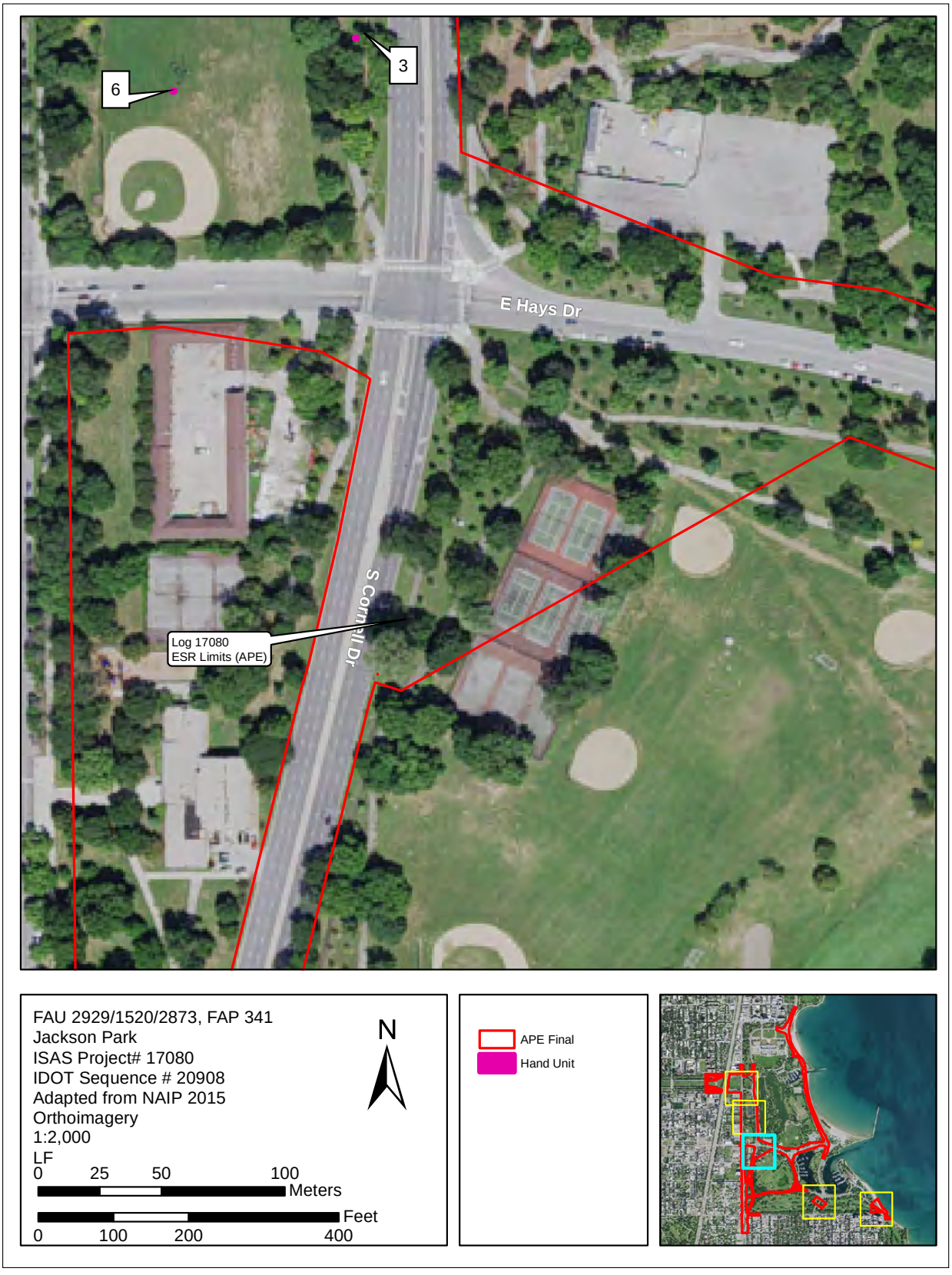


Figure 6.8. Aerial image showing location of hand excavation units, underpass at Cornell.

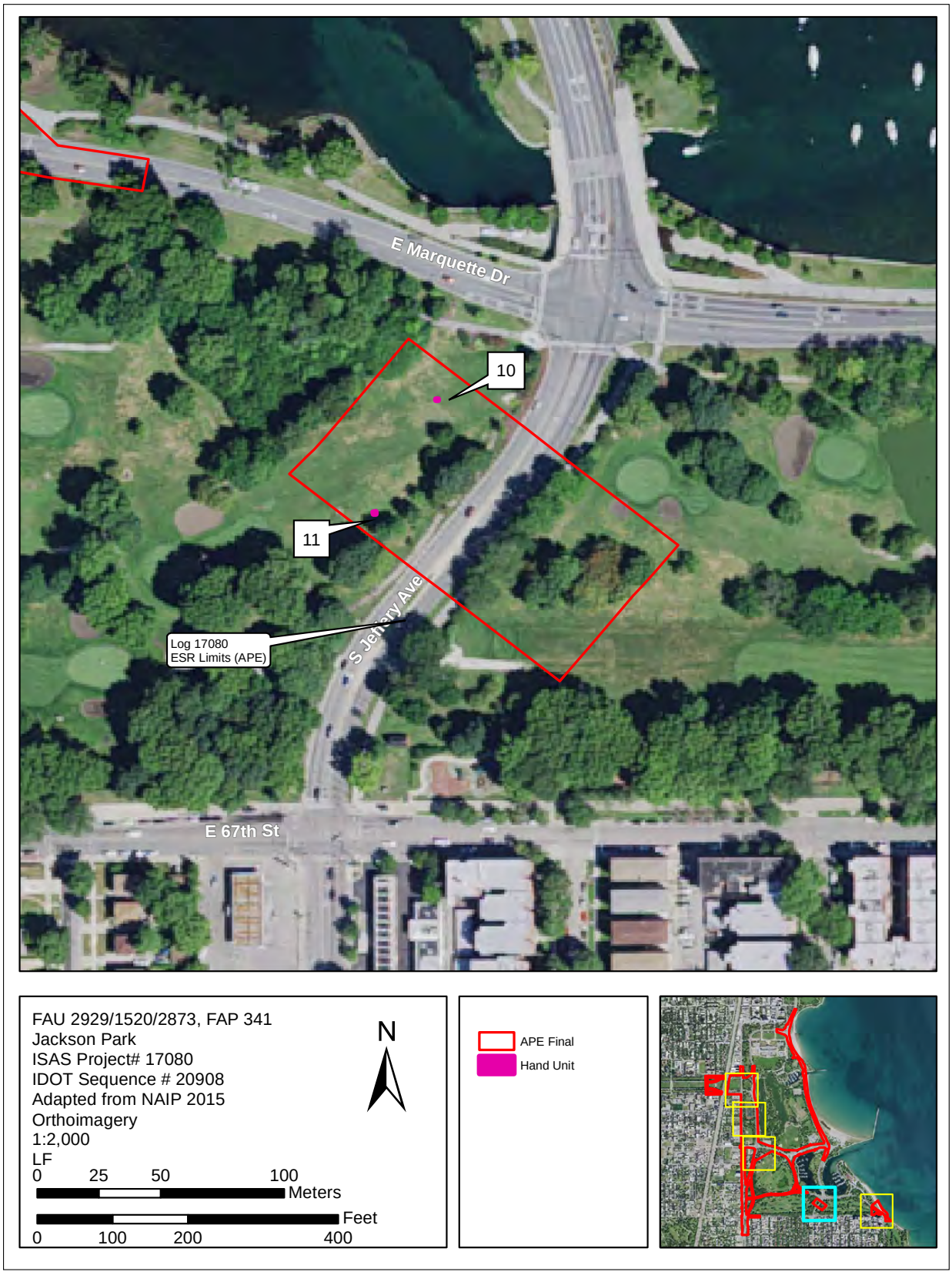


Figure 6.9. Aerial image showing location of hand excavation units, underpass at Jeffery.

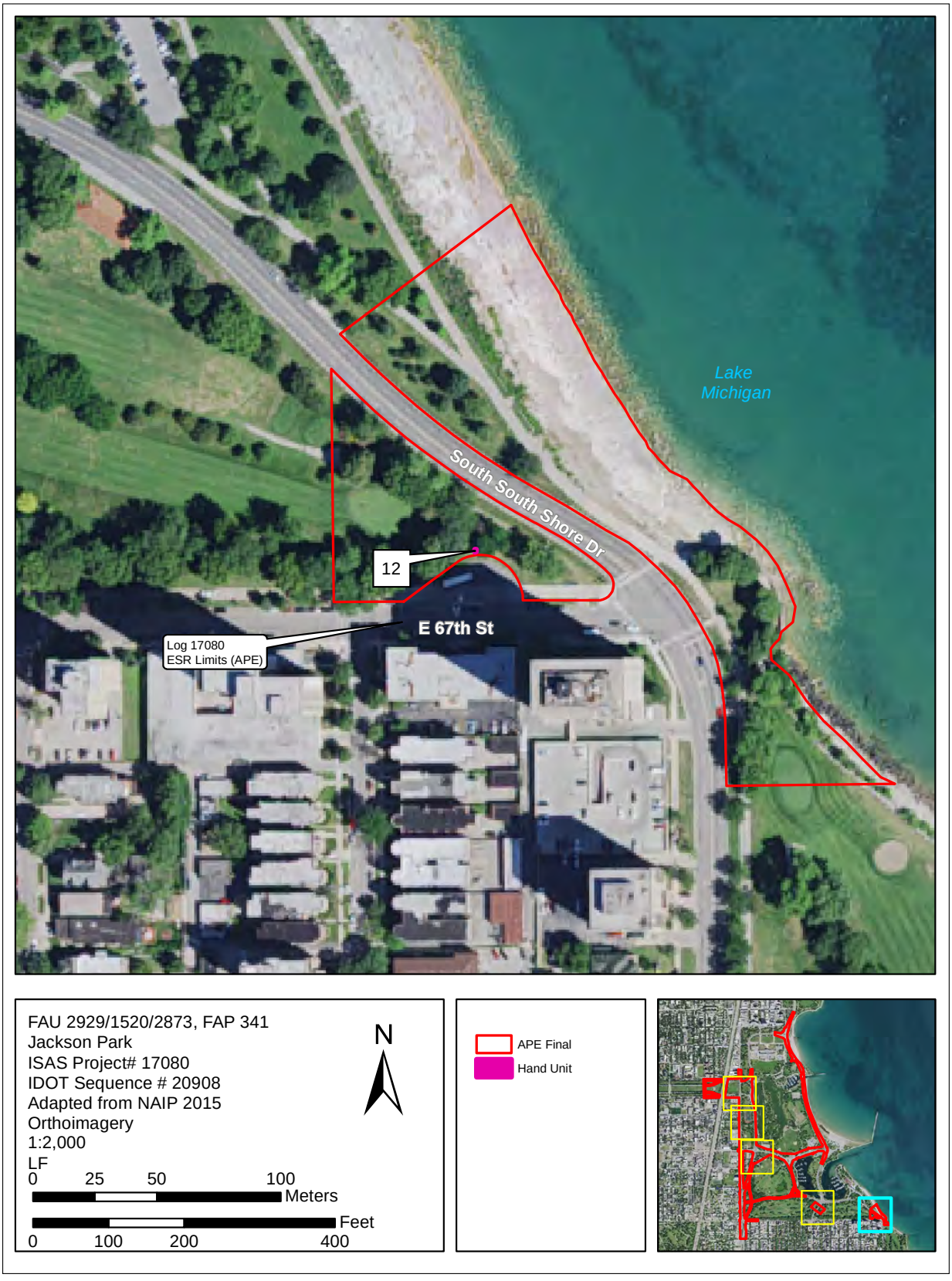


Figure 6.10. Aerial image showing location of hand excavation units, underpass at South Shore Drive.

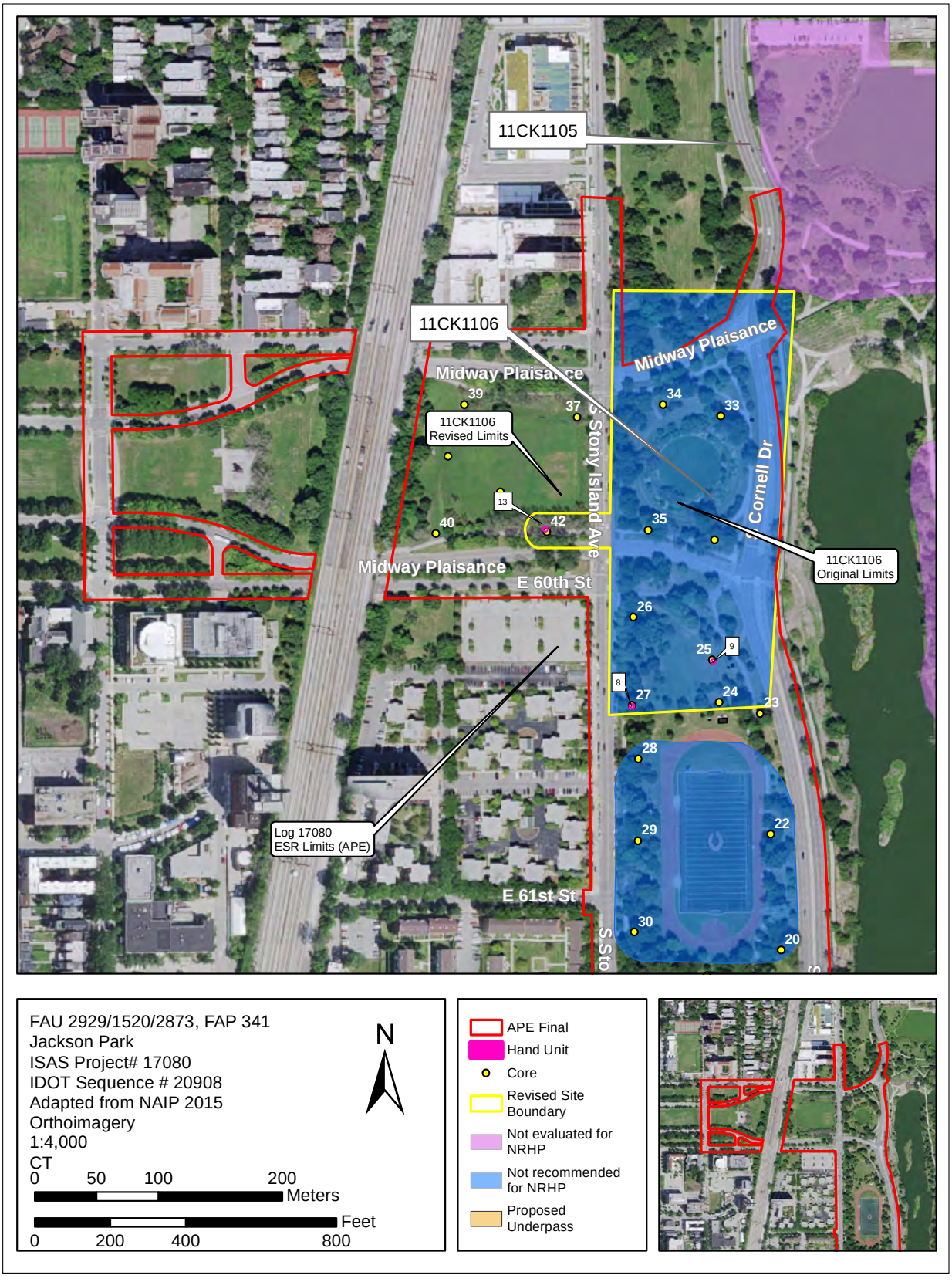


Figure 6.11. Image showing site 11CK1106, with revised site boundary in yellow.

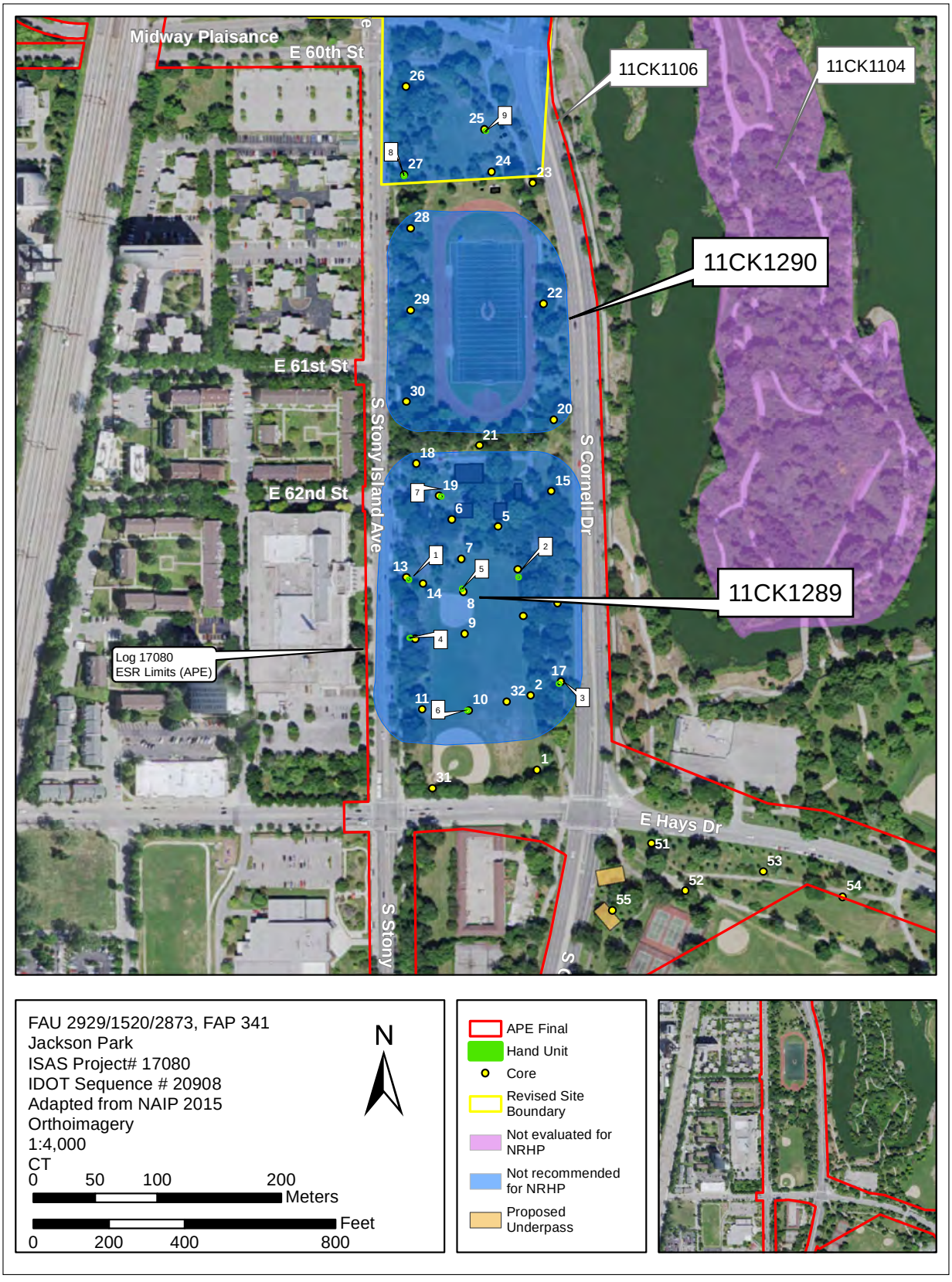


Figure 6.12. Site 11CK1289 and 11CK1290.

Figure 6.13. Site 11CK1291.

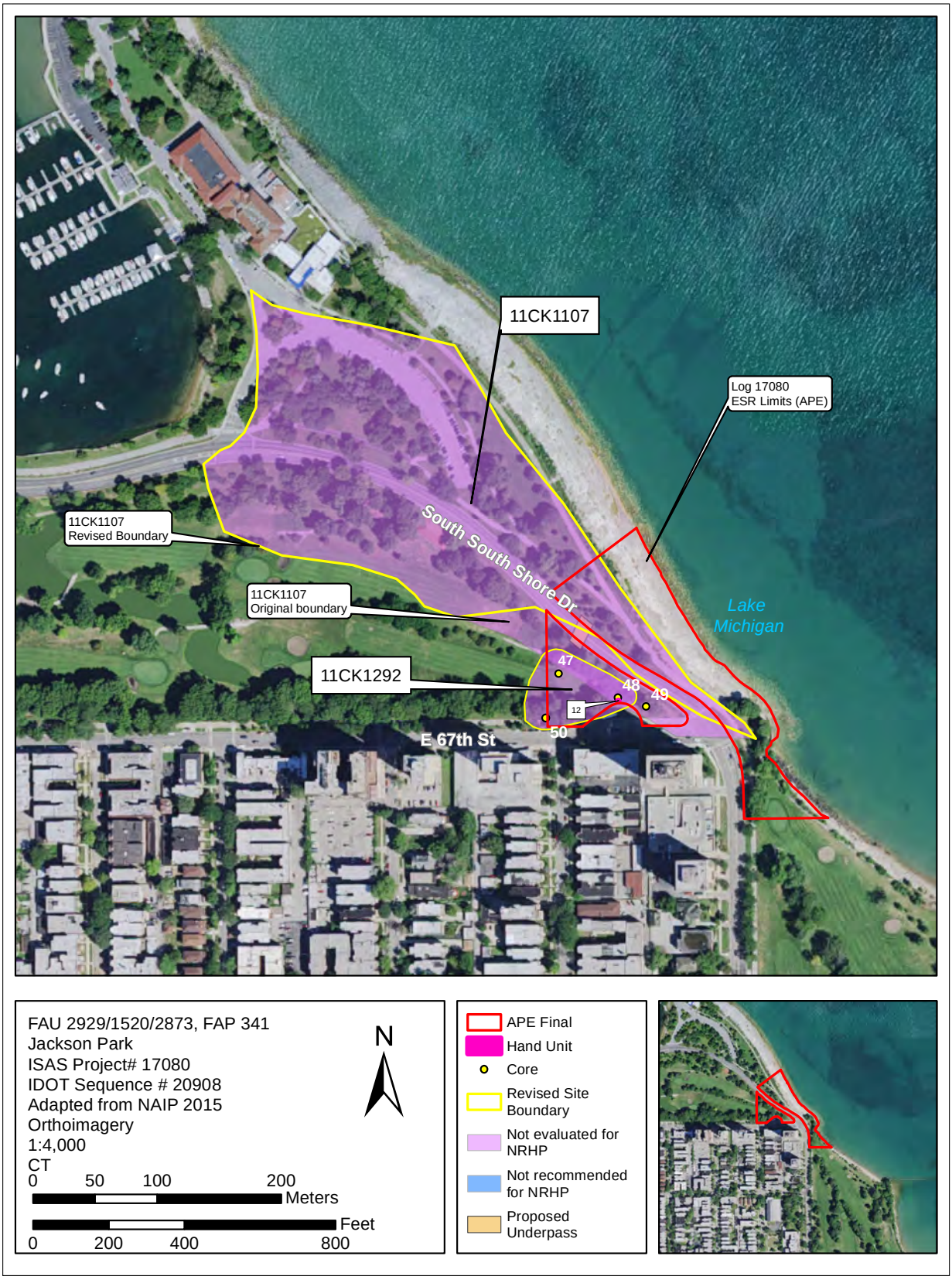
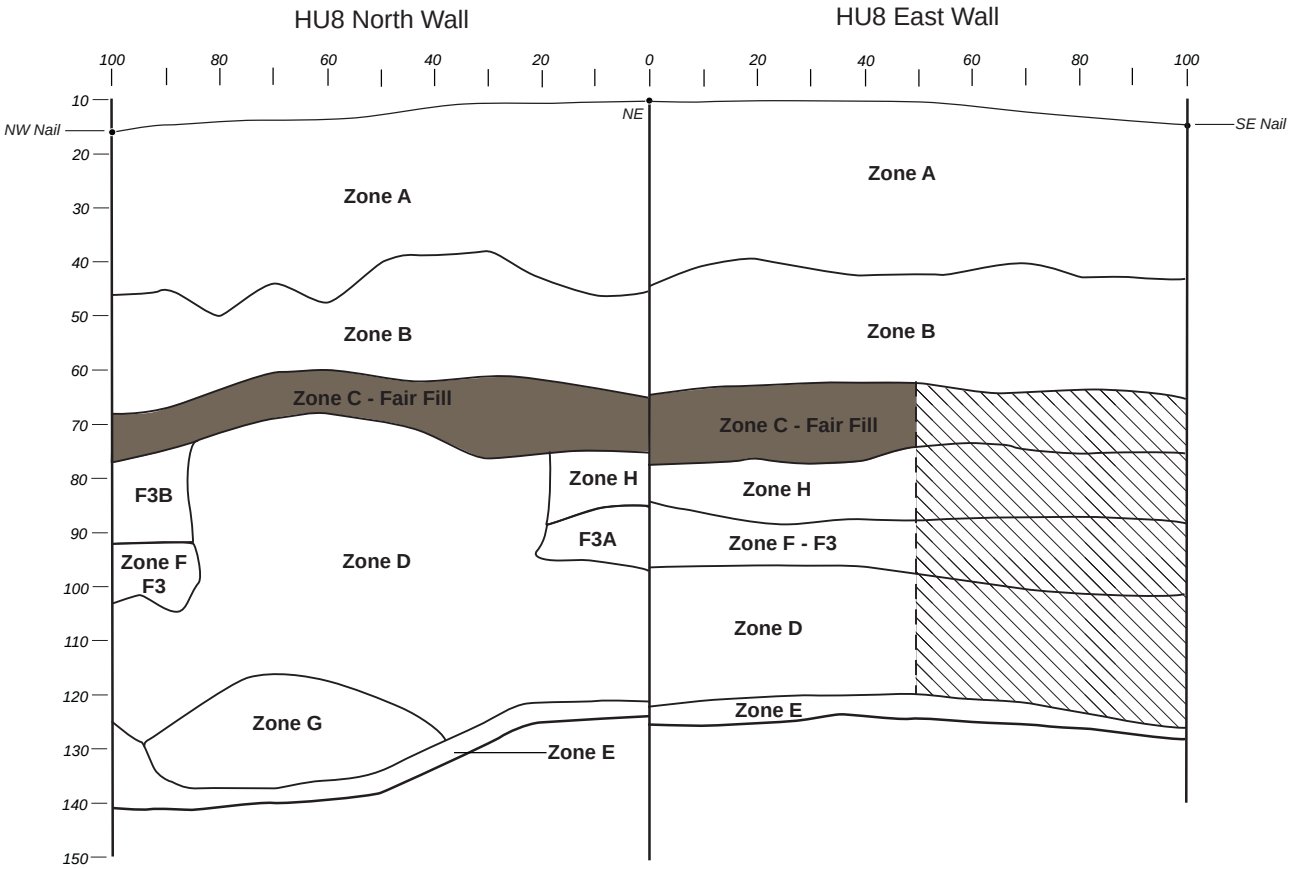


Figure 6.14. Site 11CK1292.



Zone A - 10YR 2/1 Sandy loam
Zone B - 10YR 5/4 Sand with 5% 10YR 2/1 mottles of silty loam
Zone C - 10YR 3/3 Sand with 50-60% small gravel (Fair Fill)
Zone D - 7.5YR 5/4 Sand mottled with 20% 10YR 2/1 silty loam and 30% 7.5YR 5/8 sand
Zone E - 2.5Y 6/4 Sand - sterile
Zone F - 10YR 2/1 Sand loam with 5% sterile 2.5Y 6/4 sand lensing - F3
Zone G - 10YR 4/3 Sand with 5% small to medium gravel
Zone H - 10YR 4/3 mottled with 5% 10YR 2/1 silty loam, 5% 2.5Y 6/4 sand and 2% 7.5YR 5/8 sand - F3

Area Removed as ZC HU8 S1/2

0 50cm

Figure 6.15. HU8 North and East Wall profiles.

HU8 North Wall HU8East Wall

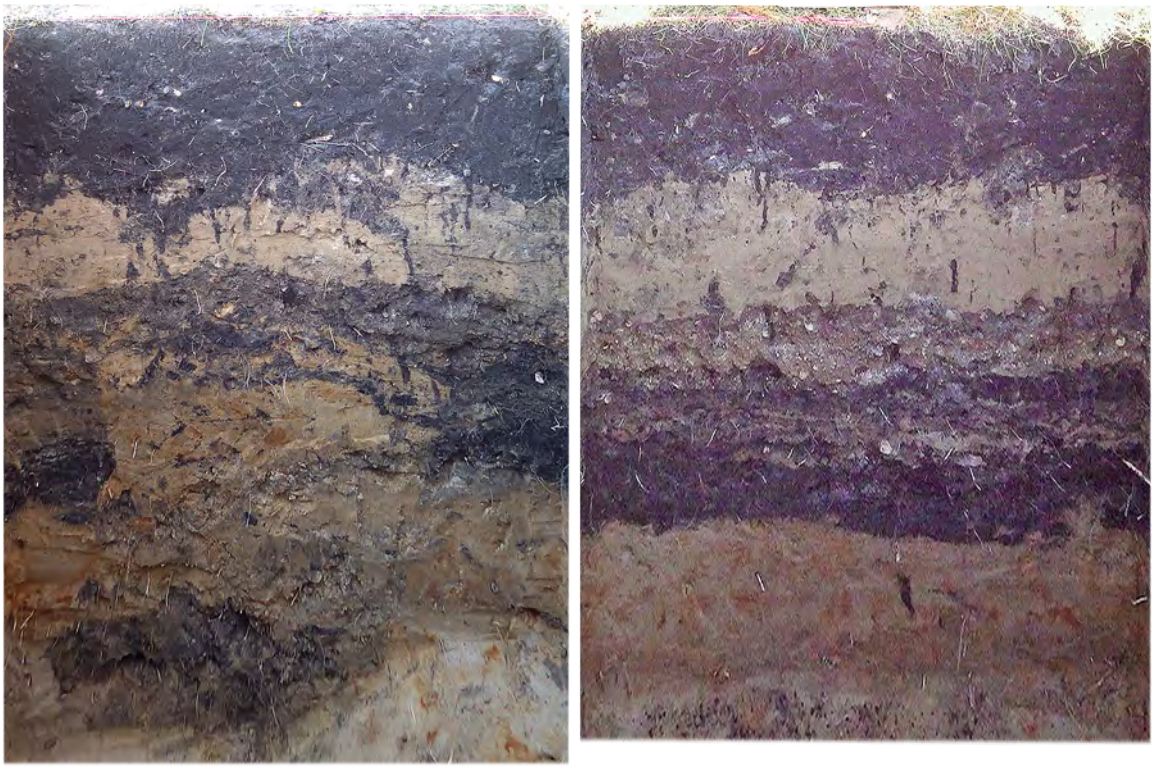


Figure 6.16. Photographs of HU8 North and East Wall profiles.

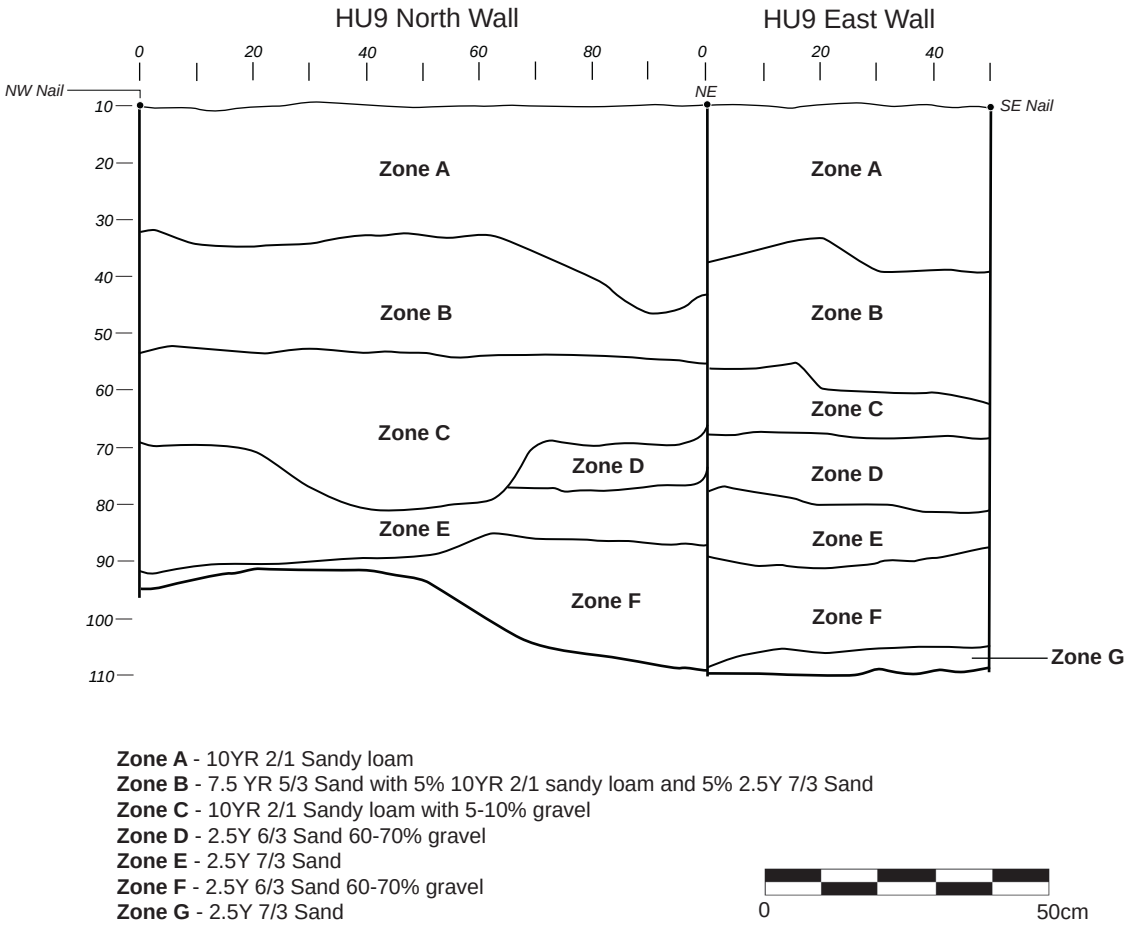


Figure 6.17. HU9 North and East Wall profiles.

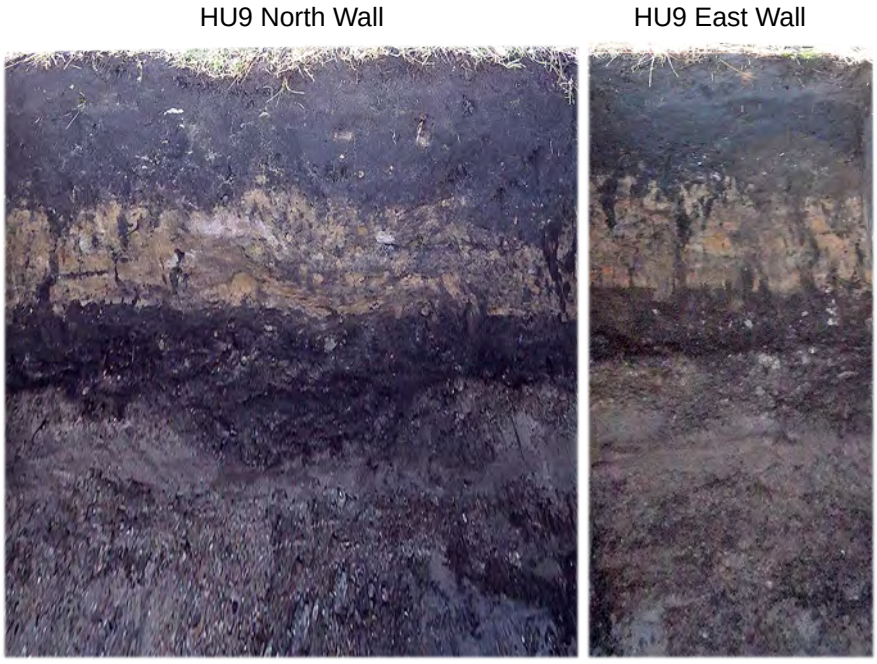


Figure 6.18. Photographs of HU9 North and East Wall profiles.

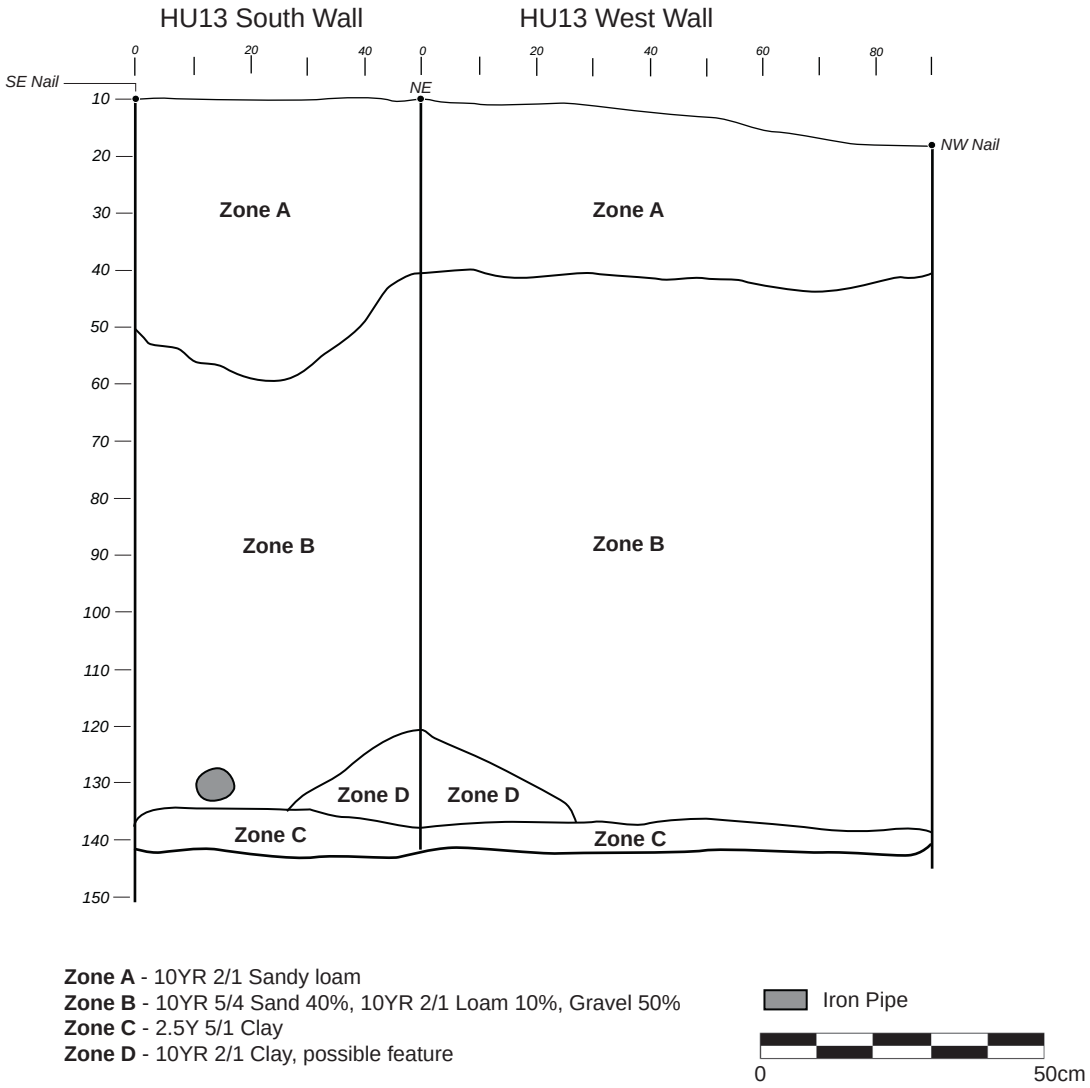


Figure 6.19. HU13 North and West Wall profiles.

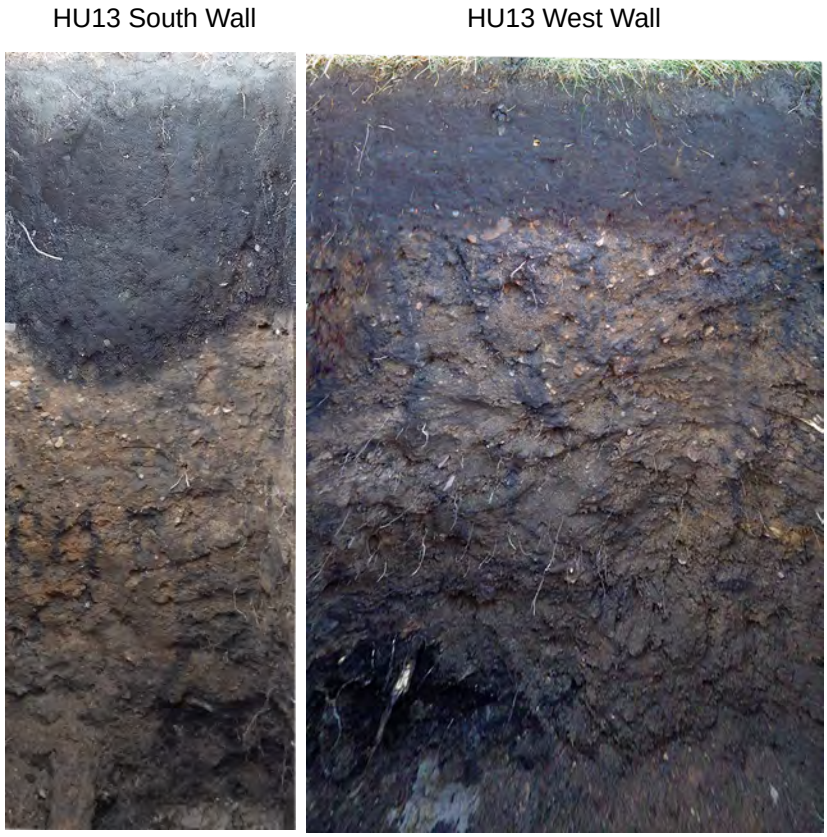
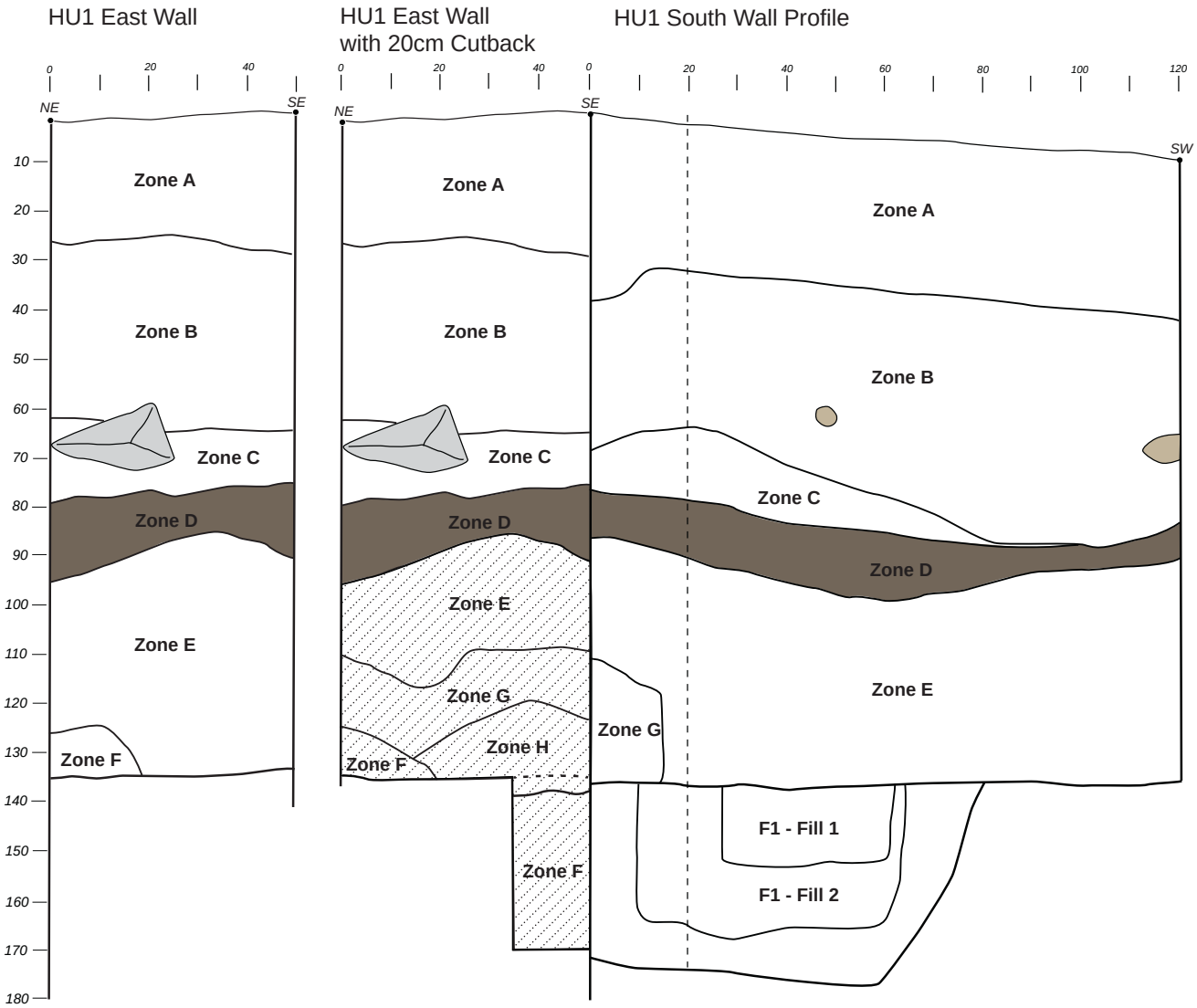


Figure 6.20. Photographs of HU13 South and West Wall profiles.



Zone A - 10YR2/1 Silty loam
Zone B - 2.5Y 5/6 Sand
Zone C - 7.5Y 5/2 Clay
Zone D - Fair fill, no soil
Zone E - 2.5Y 3/2 Sandy loam mottled with 30% small and medium gravel, 5% 10YR2/1 sandy loam, 2% 2.5Y 4/2 sand and 2% charcoal
Zone F - 2.5Y 5/2 Sand with 2% 10YR 2/1 sandy loam, possible charcoal
Zone G - 10YR 5/2 Sandy loam
Zone H - 10YR 3/1 Sand

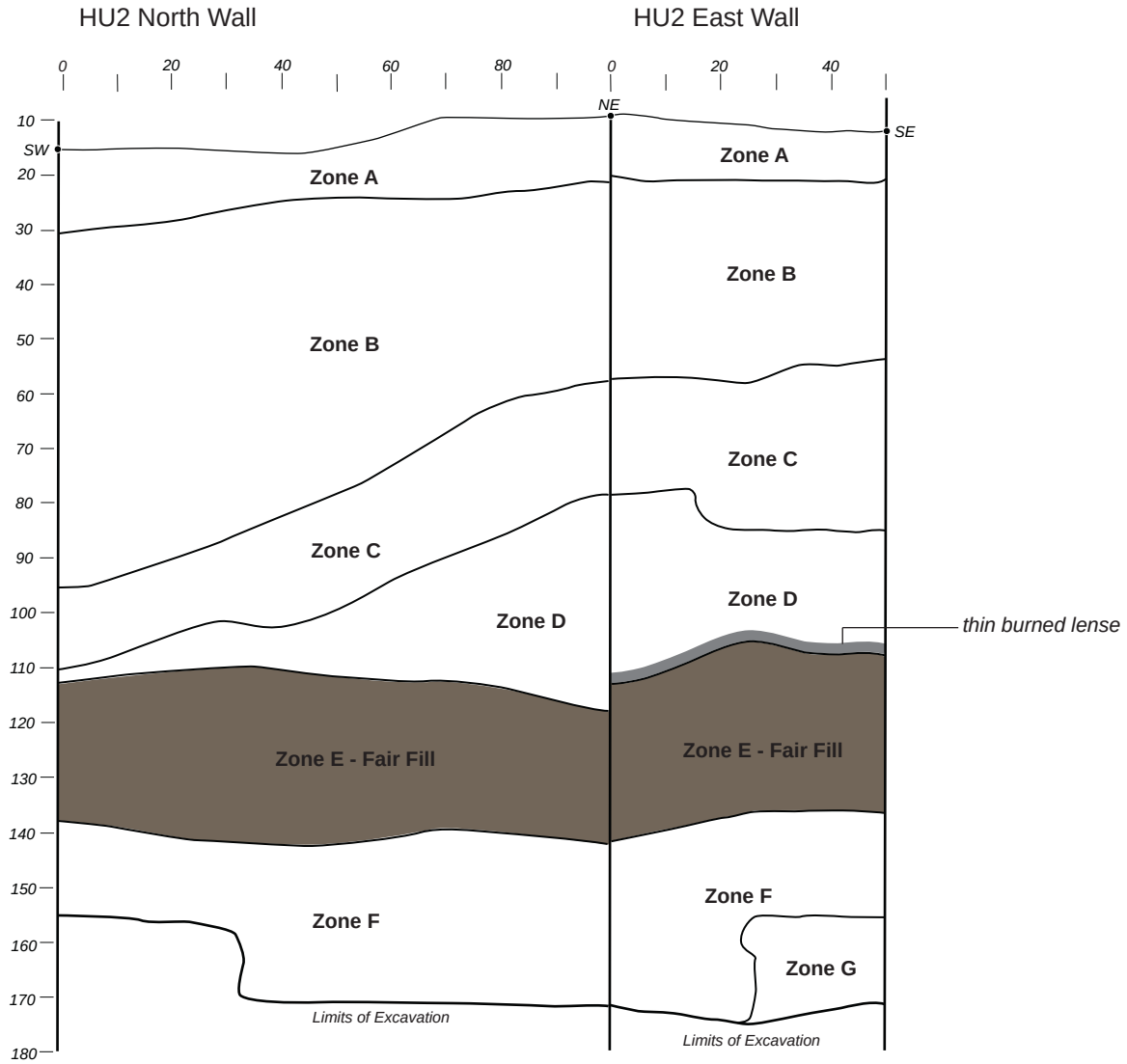
Feature 1
Fill 1 - 2.5Y 3/2 Sandy loam, similar to Zone 5
Fill 2 - 10YR 5/2 Sandy loam mottled with 10YR 3/1 sand

Figure 6.21. HU1 East and South Wall profiles.

HU1 East Wall

HU1 and HU1A South Wall with F1

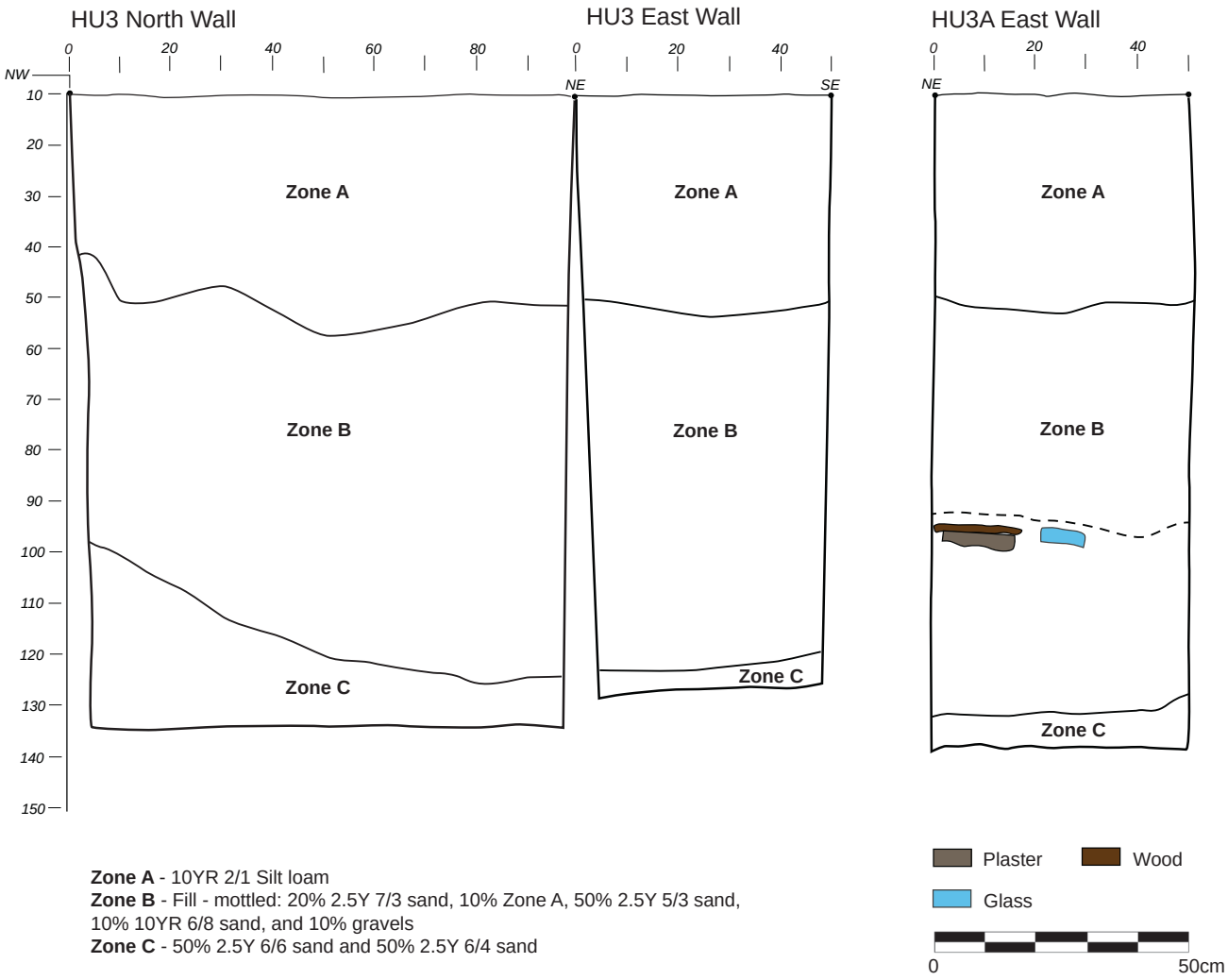
Figure 6.22. Photographs of HU1 East and South Wall profiles and Feature 1.



Zone A - 10YR 2/1 Sandy loam
Zone B - 80% 2.5Y 6/2 sand, 20% 2.5Y 5/4 sand with mottles of10YR 2/1 sand and 2.5Y 5/6 sand with 5-10% small gravel
Zone C - 2.5Y 4/4 Sand mottled with 1% small block inclusions
Zone D - 2.5Y 6/4 Sand with 25% 10YR 5/3 clay, with 75% small gravel
Zone E - Fair Fill
Zone F - 2.5Y 5/4 Sand with 20-30% small gravel
Zone G - 10YR 4/1 Clay with 10% 2.5Y 4/4 sand

Figure 6.23. HU2 North and East Wall profiles.

Figure 6.24. Photographs of HU2 North and East Wall profiles.



Zone A - 10YR 2/1 Silt loam
Zone B - Fill - mottled: 20% 2.5Y 7/3 sand, 10% Zone A, 50% 2.5Y 5/3 sand, 10% 10YR 6/8 sand, and 10% gravels
Zone C - 50% 2.5Y 6/6 sand and 50% 2.5Y 6/4 sand

Figure 6.25. HU3 North and East Wall profiles, HU3A East Wall profile.

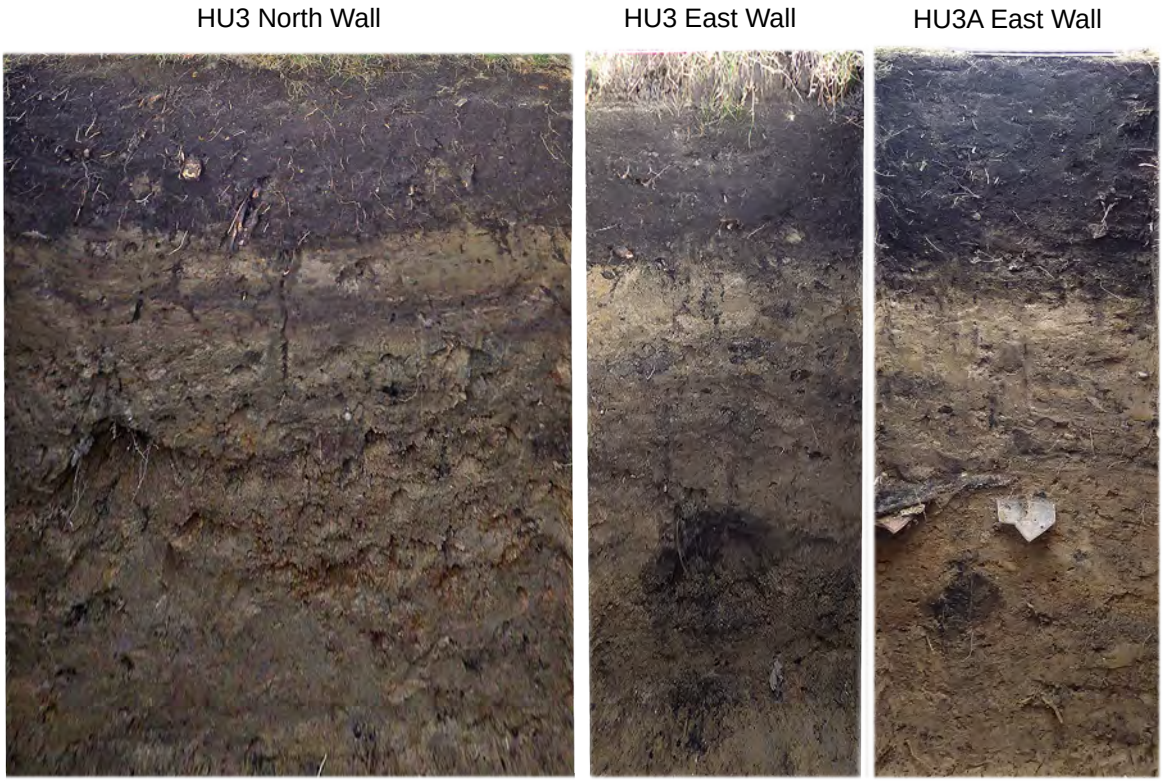


Figure 6.26. Photographs of HU3 North and East Wall profiles.

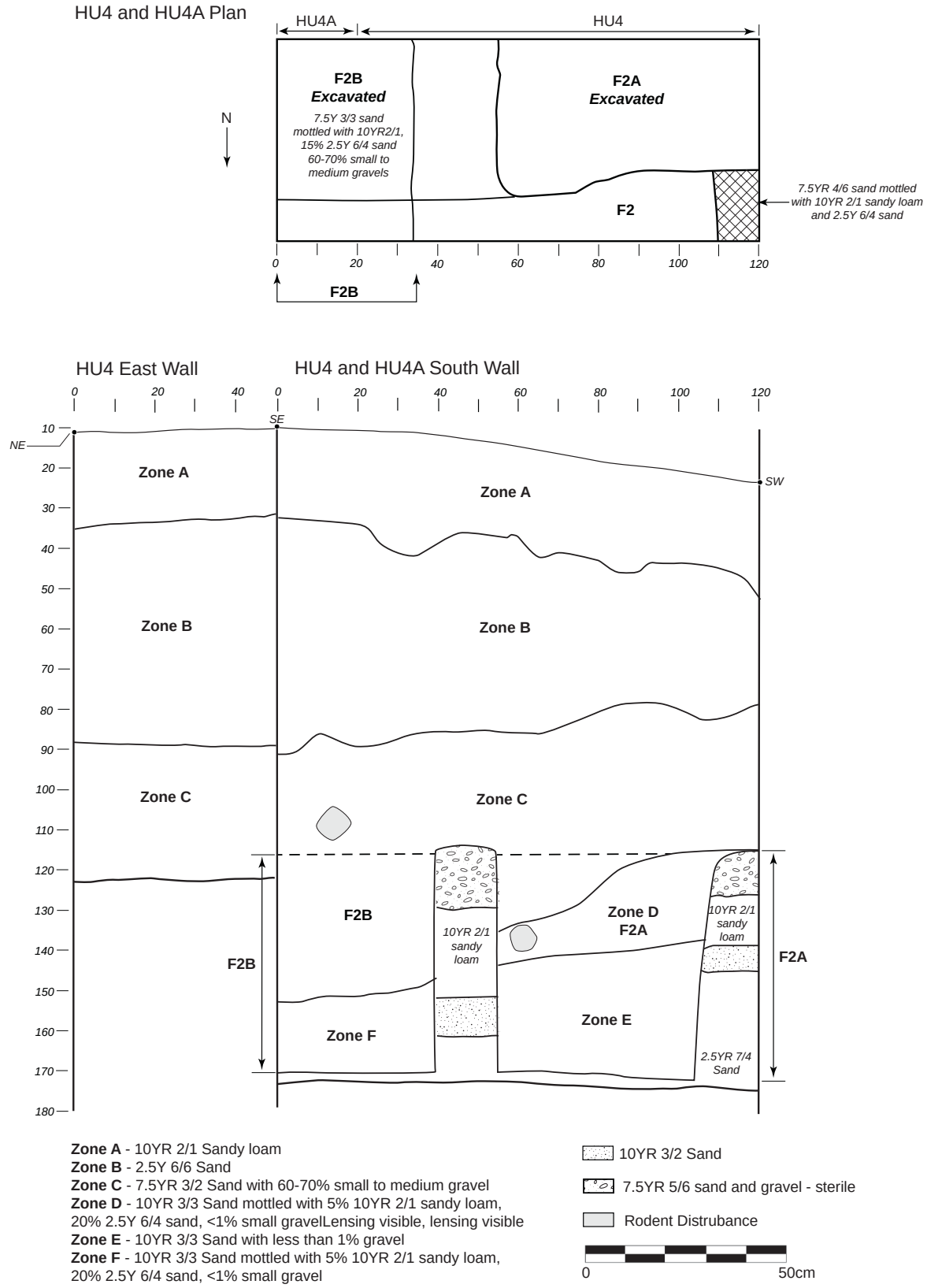


Figure 6.27. HU4 East and South Wall Profiles, Features 2A and 2B plan.

Figure 6.28. Photographs of HU4 East, South, and West Wall profiles and Feature 2 plan.

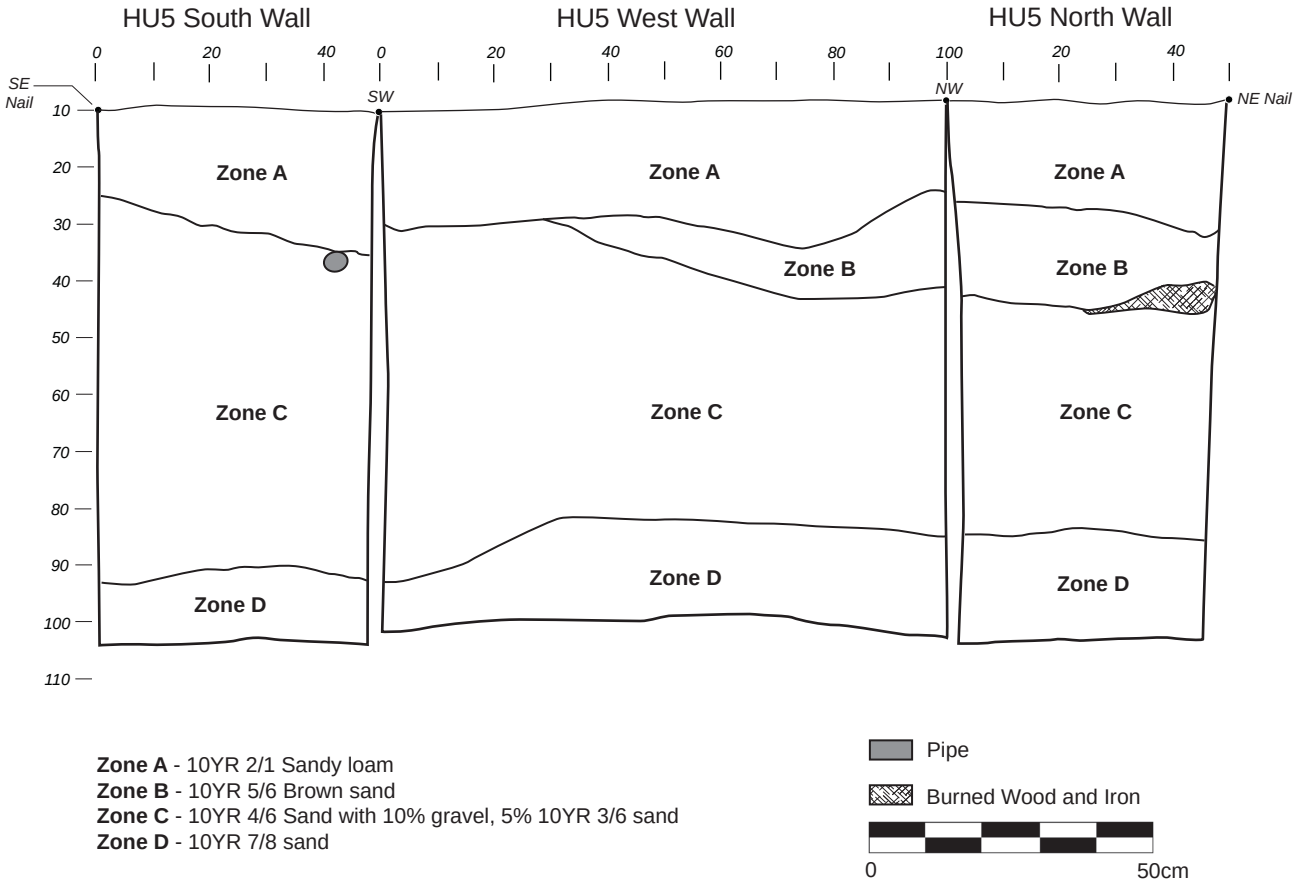


Figure 6.29. HU5 South, West and North Wall profiles.

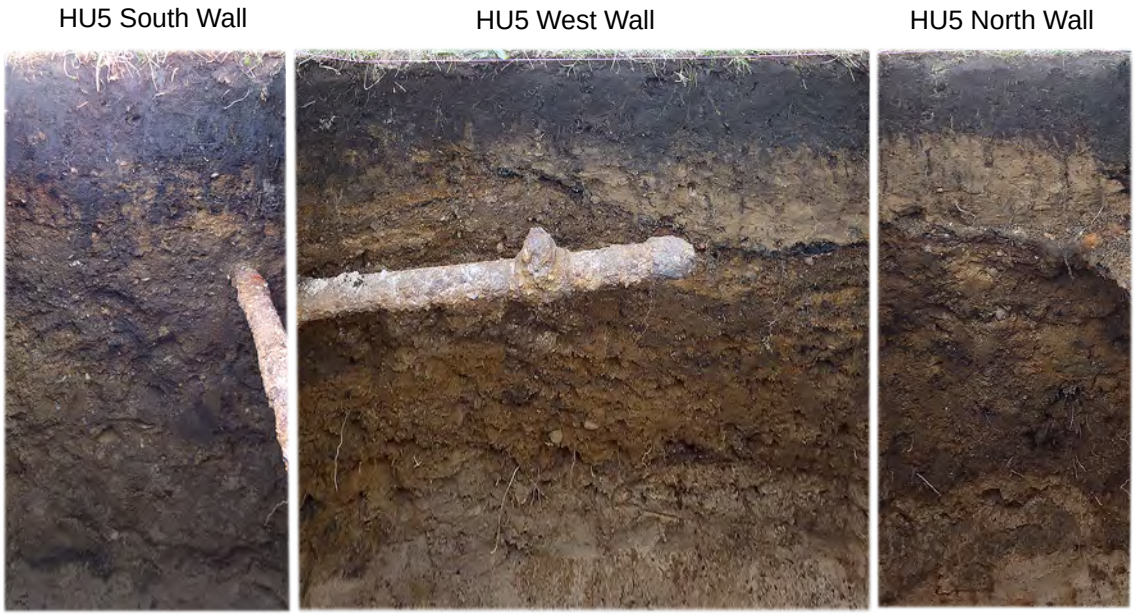
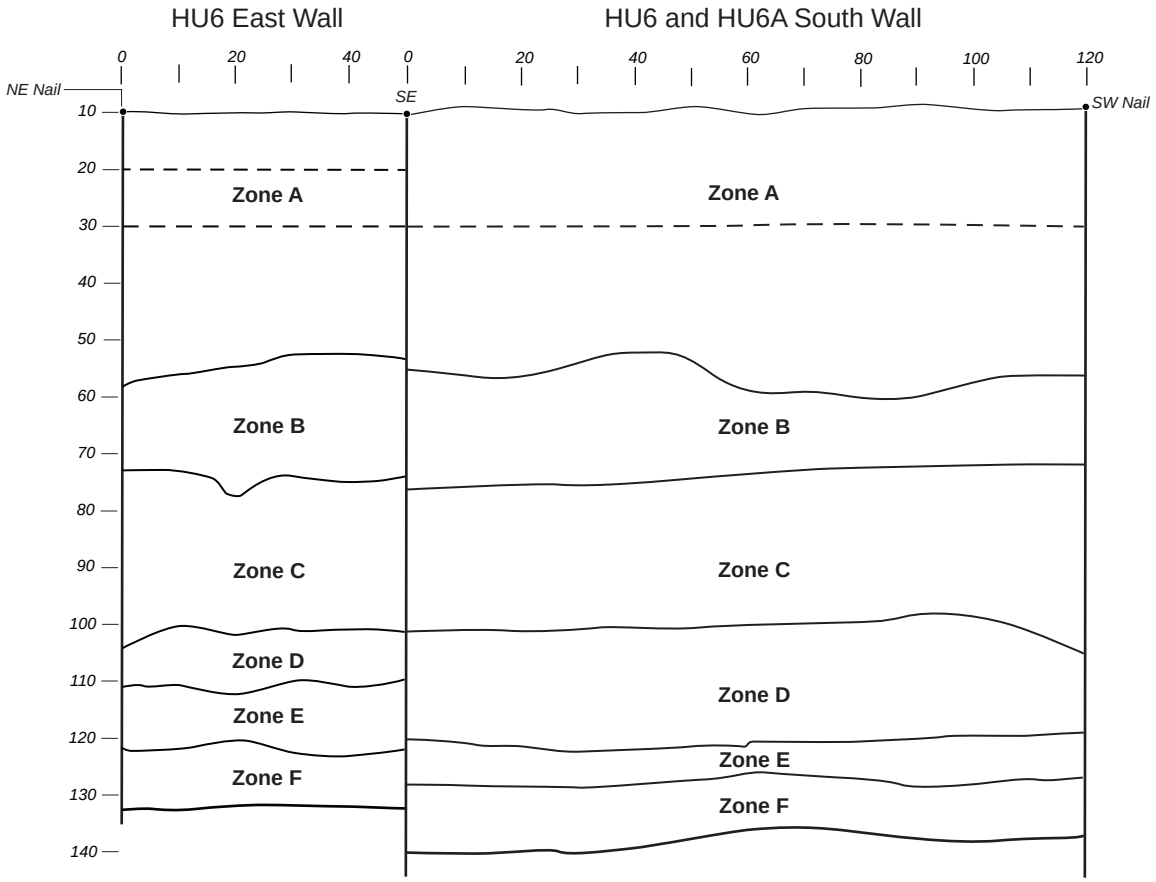


Figure 6.30. Photographs of HU5 South, West and North Wall profiles.



Zone A - 10YR 2/1 Silty clay loam and 10YR 2/1 silty loam
Zone B - 7.5YR 4/2 Sand
Zone C - 10YR 4/6 Sand
Zone D - 10YR 2/1 Sandy loam
Zone E - 10YR 4/6 Sand
Zone F - 2.5YR 8/4 Sterile sand

Figure 6.31. HU6 East and South Wall profiles.

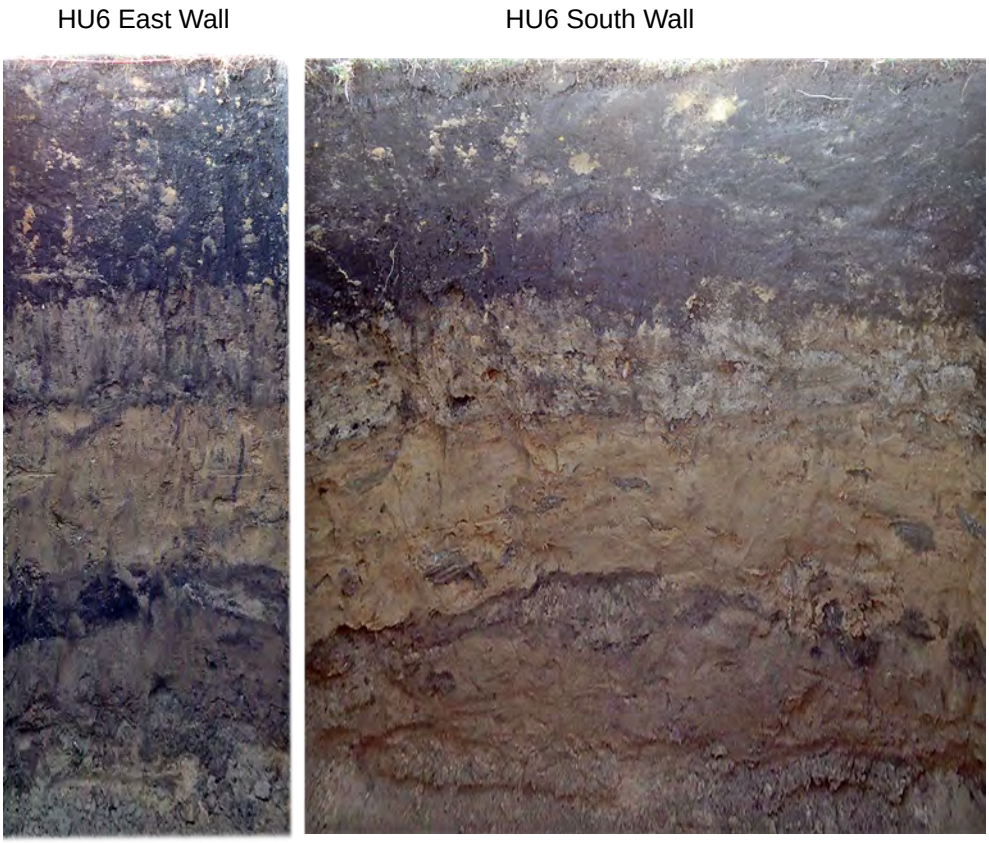
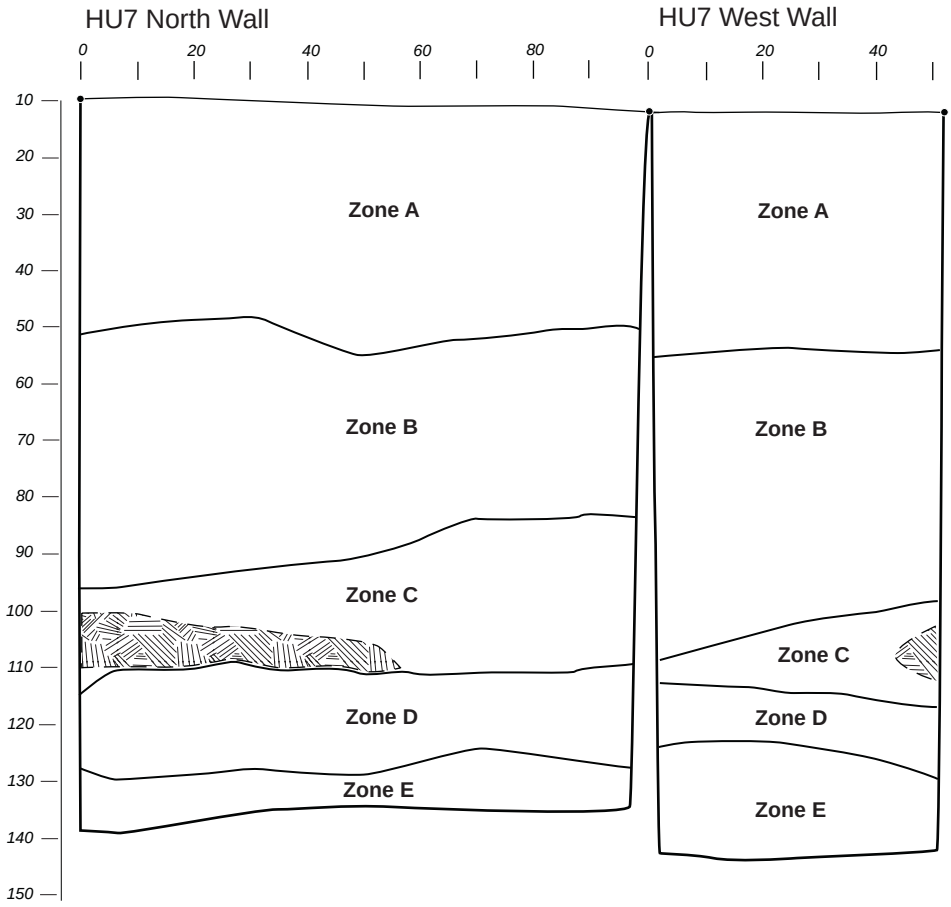


Figure 6.32. Photographs of HU6 East and South Wall profiles.



Zone A - 10YR 2/1 Silt loam
Zone B - Mottled - 50% 2.5Y 7/3 sand and 50% 10YR 6/8 sand
Zone C - 60% 10YR 2/1 sandy loam and 40% 10YR 6/8 sand with pea sized sand to gravel
Zone D - 10YR 2/1 sandy loam
Zone E - 2.5Y 5/3 sand

Lense of Mottling

0 50cm

Figure 6.33. HU7 North and West Wall profiles.

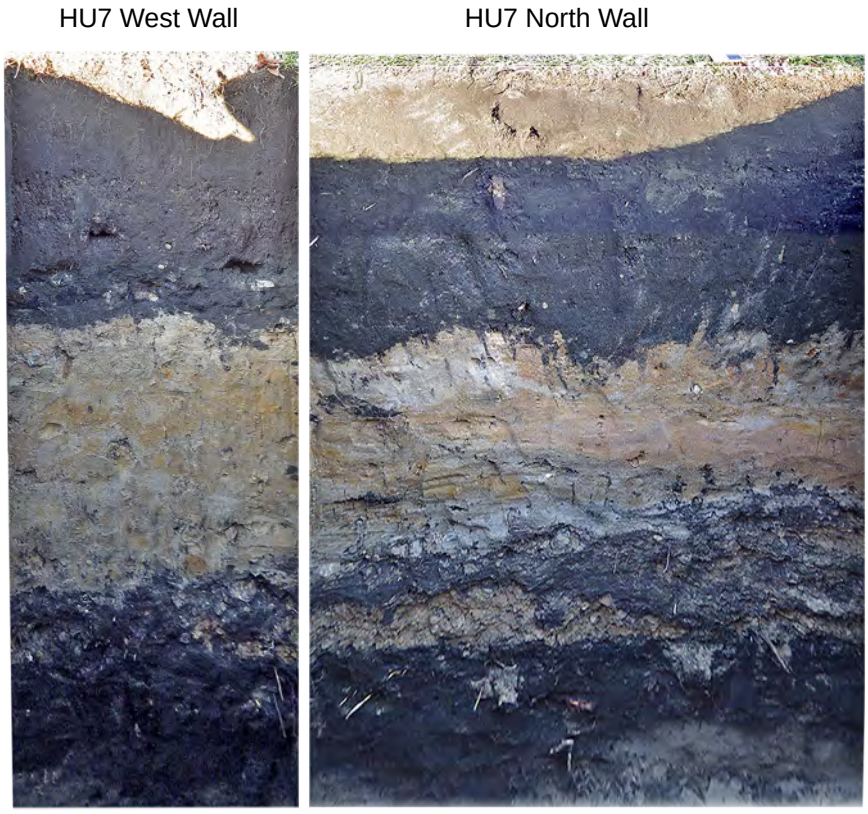


Figure 6.34. Photographs of HU7 West and North Wall profiles.

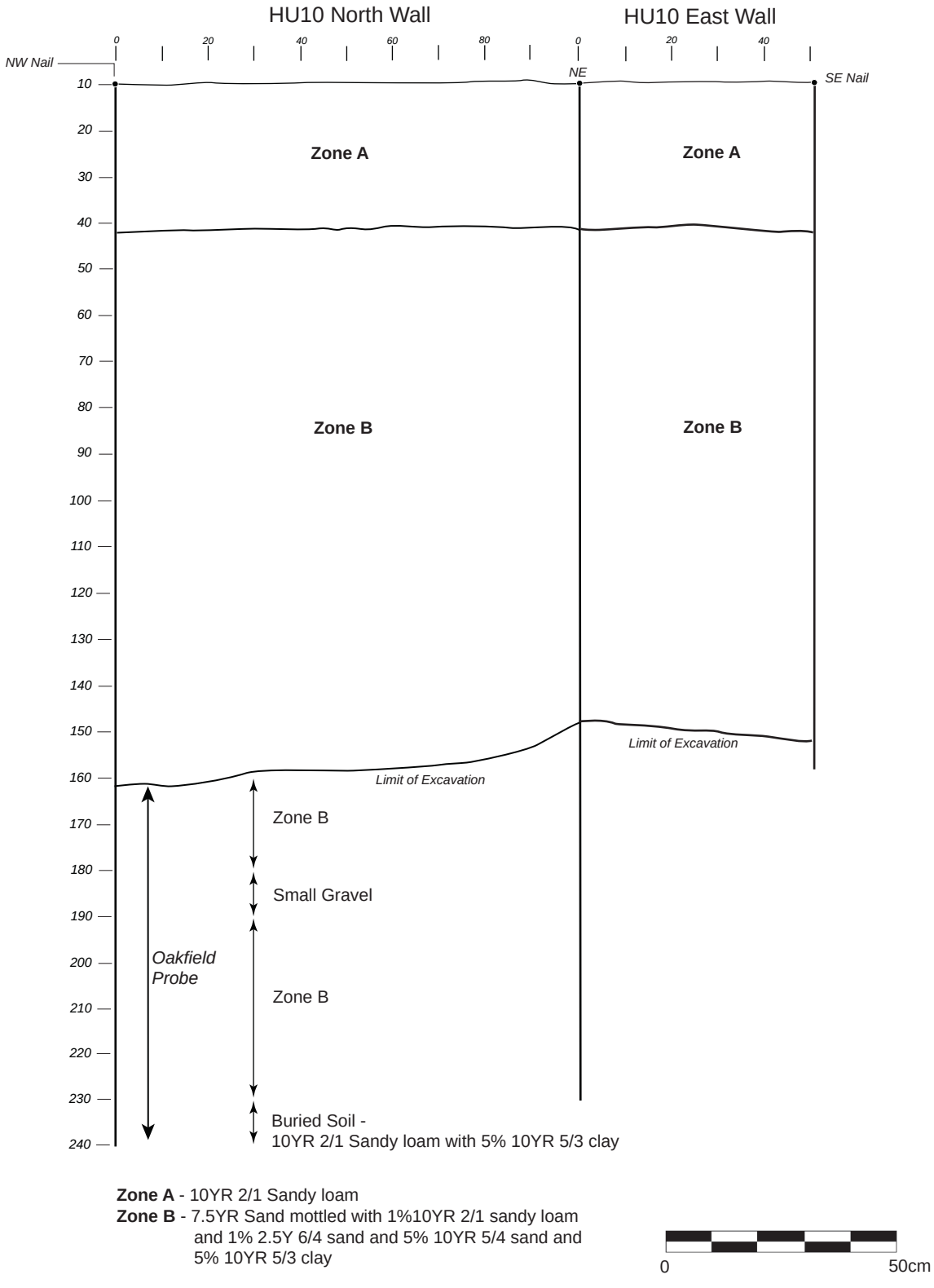


Figure 6.35. HU10 North and East Wall profiles.

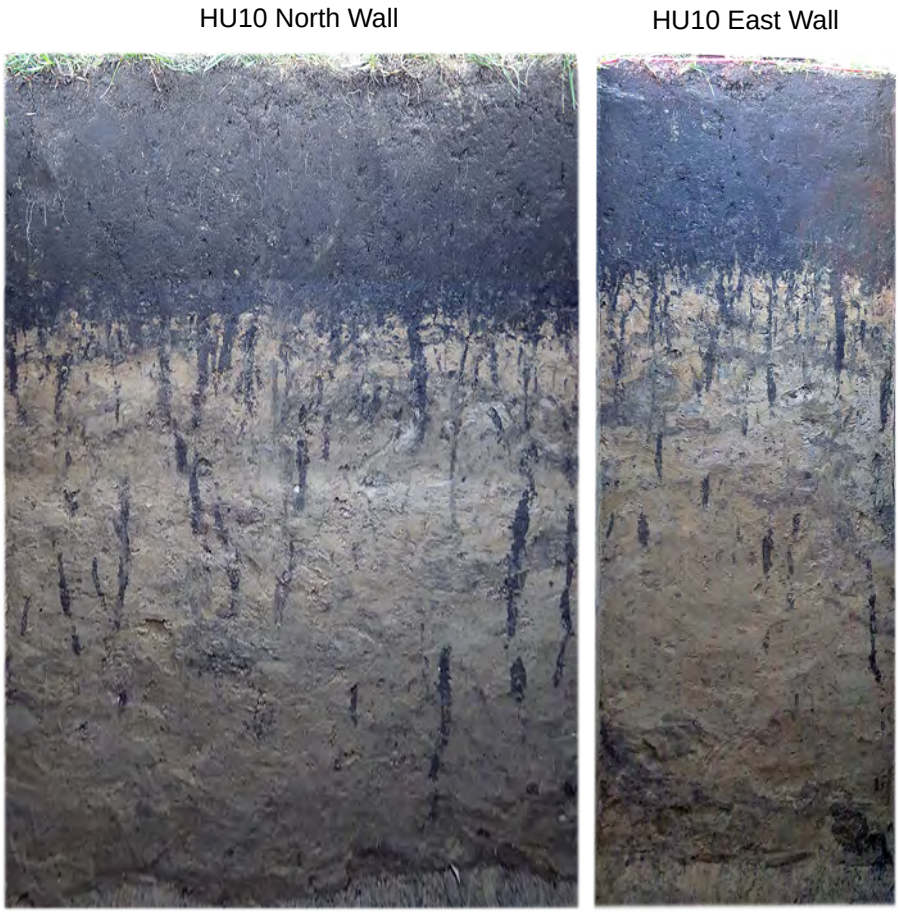
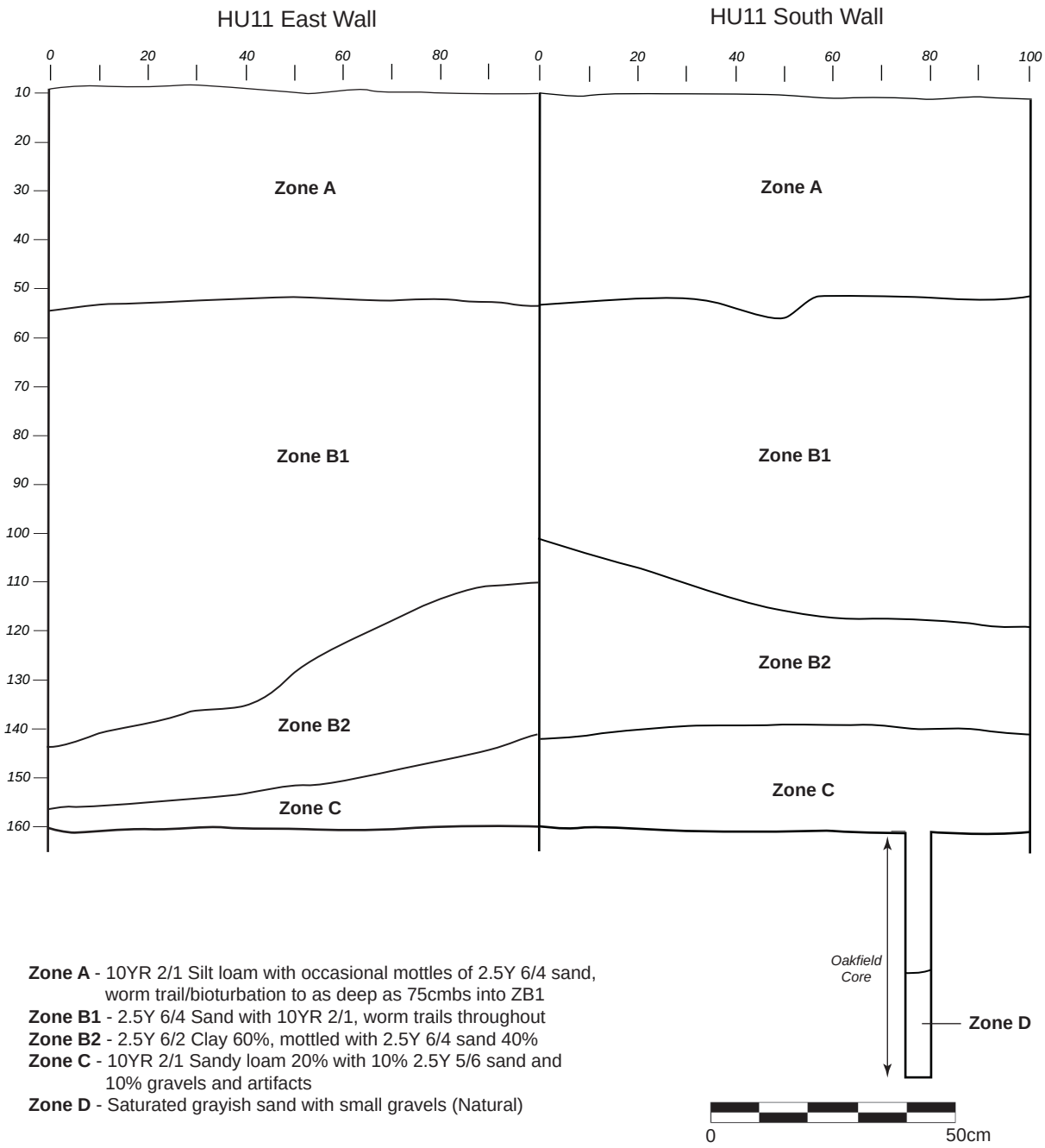


Figure 6.36. Photographs of HU10 North and East Wall profiles.



Zone A - 10YR 2/1 Silt loam with occasional mottles of 2.5Y 6/4 sand, worm trail/bioturbation to as deep as 75cmbs into ZB1
Zone B1 - 2.5Y 6/4 Sand with 10YR 2/1, worm trails throughout
Zone B2 - 2.5Y 6/2 Clay 60%, mottled with 2.5Y 6/4 sand 40%
Zone C - 10YR 2/1 Sandy loam 20% with 10% 2.5Y 5/6 sand and 10% gravels and artifacts
Zone D - Saturated grayish sand with small gravels (Natural)

Figure 6.37. HU11 East and South Wall profiles.

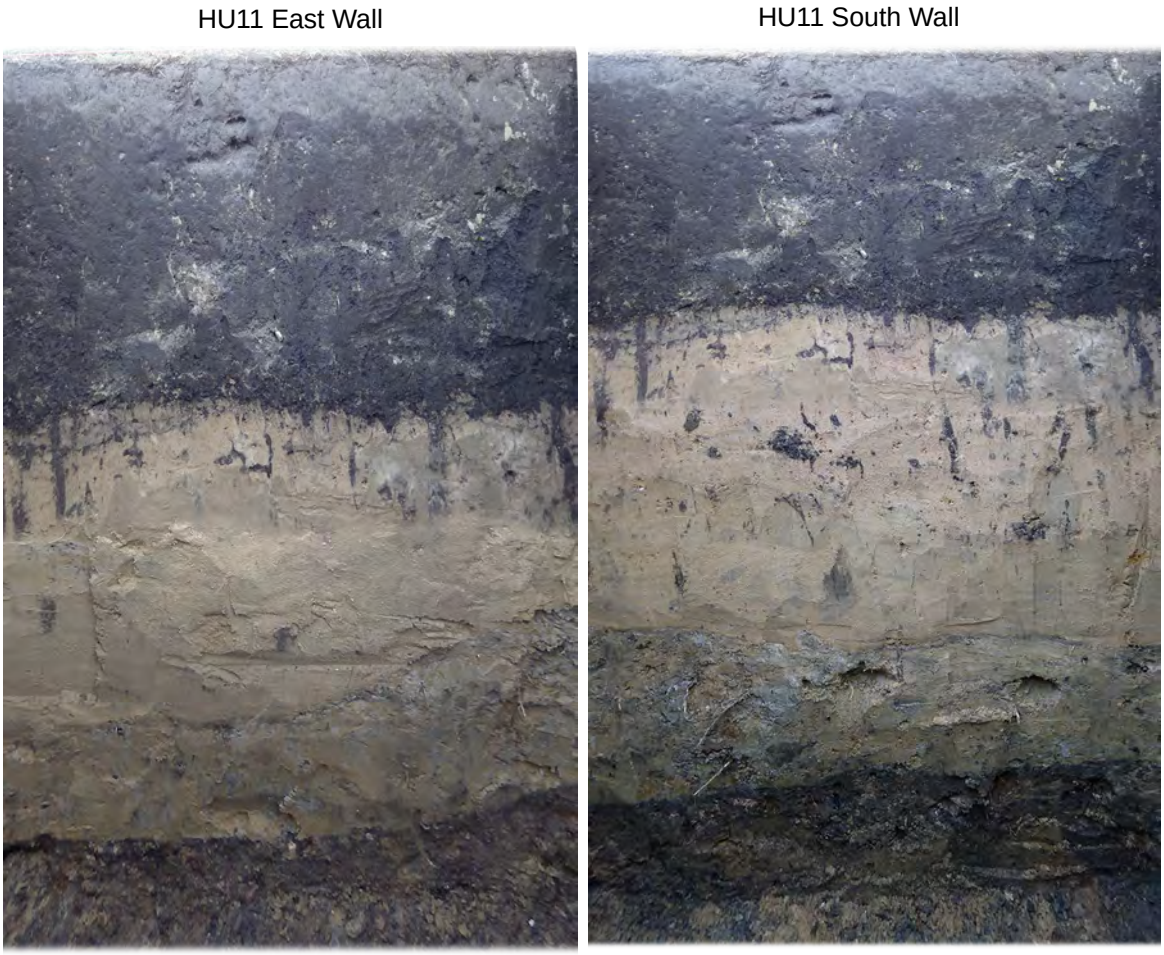
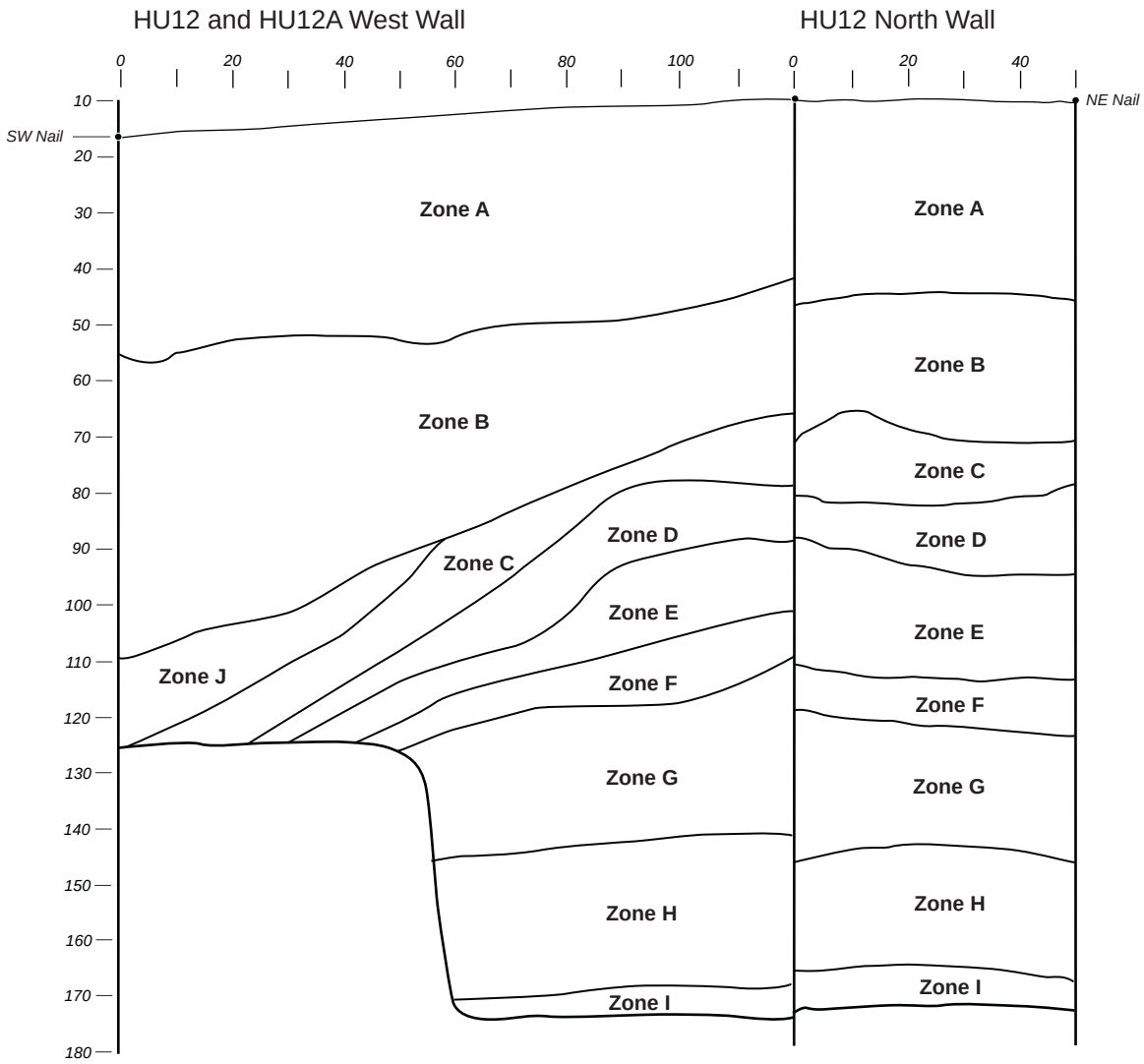


Figure 6.38. Photographs of HU11 East and South Wall profiles.



Zone A - 10YR 2/1 Sandy loam
Zone B - 2.5Y 5/6 Sand
Zone C - 10YR 4/4 Sand with 75% artifacts and possible crushed ceramics
Zone D - 10YR 5/6 Sand 40% (layered sands) with 60% 7.5 YR5/8 sand heavily compacted, with heavily compacted with burned soil mix and 3% crushed ceramics
Zone E - 10YR 3/4 Sand mottled with 30% 7.5YR 5/8 sand and burned soil mix, 3-5% charcoal or coal, 3% crushed ceramics
Zone F - Primarily crushed coal with some crushed ceramics and other artifacts
Zone G - 20% 10YR 5/6 Sand with 80% 7.5YR 5/8 sand and burned soil (layered sands) with 1% crushed ceramics, heavily compacted
Zone H - 7.5YR 5/8 Sand and burned soil, heavily compacted, primarily crushed coal with some crushed ceramics and artifacts
Zone I - 10YR 5/4 Sand - sterile
Zone J - 7.5YR Sand with artifacts

0 50cm

Figure 6.39. HU12 West and North Wall profiles.

Figure 6.40. Photographs of HU12 West and North Wall profiles.

Chapter 7

Artifact Analysis

Introduction

A total 9,841 artifacts and faunal material were collected from the survey area, of which 9,127 were recovered from hand excavation units. The remaining 714 were recovered from geomorphological cores. A comprehensive inventory of all collected material is on file at ISAS and all artifacts are curated at ISAS. A summary inventory is presented in Appendix C.

Artifact Distribution

Artifact distribution across the refined APE reflects the history of site development and indicates different loci of activity related to the 1893 Columbian Exposition and later landscape development. Within the OPC, geocores containing cultural material were clustered around the existing baseball field and all weather athletic track (GC4, 5, 6, 7, 11, 12, 13, 14, 17, 18, 19, 20, 22, 16, 28, 29, and 30), whereas only core 42 within the Midway Plaisance and Sunken Garden area was positive. Culturally sterile cores within the OPC were clustered within the Midway Plaisance and Sunken Garden, where post-fair disturbance related to partial excavation of a canal and later construction of a garden had occurred. Negative cores were present along the north side of E. Hayes Drive, and the absence of cultural material or buried surfaces at this location likely relates to grading and filling episodes associated with partial construction of an open-air gymnasium and the modern baseball field. The majority of positive cores within the OPC are associated with areas protected by berms constructed during implementation of the 1895 Olmstead plan, or later park improvements.

Cores containing cultural material within the Roads APE were restricted to the west side of Jeffery Avenue (GC 43 and 44) and the intersection of South Shore Drive and 67th Street (GC 47, 48, and 50).

Artifact distribution within the refined APE indicated four different areas of activity outside the previously recorded sites. These were recorded as sites 11CK1289, 11CK1290, 11CK1291, and 11CK1292. Site 11CK1289 contained relatively high proportions of architectural debris; site 11CK1290 contained relatively high proportions of ash and cinder; 11CK1291 represented an episode or episodes

of fill; and site 11CK1292 contained burned debris associated with the operation of the World's Fair incinerator. Artifacts present within each site are described below.

Description of Feature Assemblages

Two features were identified within 11CK1289, Features 1 and 2. One feature, Feature 3, was identified within 11CK1106. Feature 1 contained 3 unidentified nails, 1 brick fragment, 2 mortar fragments, and 5 coal fragments. Artifacts recovered from Feature 2 include 1 undecorated ironstone, 3 undecorated yellow ware, 2 colorless and 1 aqua container glass, 2 machine-cut nails, 3 unidentified nails, and 4 coal fragments. Feature 3 contained 3 unglazed flower pot fragments, 2 flat window glass fragments, 3 coal fragments, 15 slag, and 1 unidentified metal fragment. Artifacts recovered from the features reflect the infilling and redeposition of material during or after the 1893 World's Fair. All three features appear to have been deliberately infilled in the late nineteenth century. All are capped with a layer of dense redeposited Fair debris. Material recovered from the features is included in the general artifact analysis below.

Description of Site Assemblages

11CK1106

Artifacts from site 11CK1106 were recovered from the portion of the site to the south of the Sunken Garden, and from a small area in the Midway Plaisance. ISAS investigations recovered 703 artifacts from the portion of 11CK1106 within the refined APE.

Ceramics

Ceramic sherds form 9 percent of the total artifact assemblage by count (n = 65). Ceramic types collected from 11CK1106 are limited to one refined ceramic category, ironstone, and one unrefined ceramic type, redware. Refined ceramics form 5 percent of the ceramic assemblage (n = 3): two undecorated and one molded only decorated ironstone sherds. Unrefined ceramics form 95 percent of the total ceramic assemblage (n = 62). All unrefined ceramics are unglazed terracotta, mostly flowerpot fragments. The ceramic assemblage is not domestic. The high proportion of flower pot fragments may be related to earlier landscaping activities.

Container Glass

Container glass forms 10 percent of the artifact assemblage by count (n = 102). Machine made container glass forms 74 percent (n = 54) of the glass assemblage with one unidentified manufacture bottle sherd present. Other container glass comprises 17 melted container glass and four bottle closures. No glass tableware fragments or canning jar lids are present. The majority of the container glass is from Zone A, the modern topsoil. One mold blown tooled bottle finish is present. A second bottle finish, a shell cork or "club sauce" bottle neck with a tooled finish was recovered from Zone

B of HU13A. "Club Sauce" bottles date between 1850 and 1950 (Lindsey 2018). Tooled finishes on large bottles generally post-date 1890 (Lindsey 2018), therefore the bottle was likely manufactured between 1890 and 1950. A shell cork or "club sauce" stopper was also recovered from Zone B. Other closures recovered are modern—a screw top closure which postdates 1919 (Miller 2000); a crown cap closure, which postdates 1892 (Lindsey 2018) printed "… Golden"; and an aluminum pull tab which dates 1962–1972 (Cleland 1984). The container glass assemblage reflects use of the site from the late nineteenth through the early twenty-first century, primarily for leisure activities.

Other Household, Personal Items, and Hardware

Household items form 0.1 percent (*n* = 1) of the 11CK1106 assemblage; personal items form 0.8 percent (*n* = 6); and hardware forms 0.7 percent (*n* = 5) of the assemblage. The three categories form a total of 1.6 percent of the entire 11CK1106 assemblage recovered by NIFS.

Four other household items, a crown-cap or punch bottle opener and three aluminum fragments, are present. Personal items include one 4-hole copper plated button, a plastic die, a glass marble, a plastic "Bic" pen, and a galosh buckle and fastener. The galosh buckle and fastener were recovered from Zone D in HU8, a fill deposit that was subsequently cut into by Feature 3. Zone D begins approximately 65cmbs and has a maximum thickness of 60cm. The plastic items and glass marble are modern.

Hardware present consists of a graphite rod from an arc-lamp, a wire fragment, a link from a sprocket-type chain, a padlock staple, and two railroad spikes.

Architectural

Architectural material forms 47 percent of the total artifact assemblage by count (*n* = 330). Flat glass (window glass) fragments are the most common artifact in this class at 46 percent (*n* = 151). The next most common architectural category is rough limestone (33%, *n* = 110). This material may be derived from former walkways or roads within the park. Other material recovered includes brick fragments (*n* = 7), lime-sand mortar (*n* = 24), 1 staff fragment, 3 concrete fragments, a glazed porcelain insulator, a slate fragment, and a fragment of copper pipe.

Nails form 9 percent of the architectural assemblage (*n* = 31): 9 machine-cut nails, 9 wire nails, and 13 fragmentary nails of unidentified manufacture. Machine-cut nails date from 1790 to 1890, and wire nails post-date 1880 (Adams 2002; Stelle 2001). Two machine-cut nails could be assigned a pennyweight—one 10d and one 8d.

Miscellaneous

A total of 183 miscellaneous items are present. The most common artifact category is coal/ slag / clinker which forms 90 percent (*n* = 166) of the miscellaneous assemblage. Other miscellaneous items present include 12 unidentified metal fragments, two modern plastic fragments, a squeeze tube from Walgreens dated 1987, a foil fragment, and a fragment of electrical tape. Two non-cultural rocks were also collected.

Artifacts recovered from 11CK1106 are all in secondary context, present in fill deposited during construction or demolition of the World's Fair, or redeposited during subsequent landscaping of Jackson Park. The majority of artifacts within the fill are derived from structural debris or hardware related to the World's Fair. Modern debris, present in the topsoil, is consistent with accidental loss or deliberate discard of material associated with informal recreational use of the park.

11CK1289

Artifacts from 11CK1289 were present in GC4, 5, 6, 7, 11, 12, 13, 14, 17, and 18 and from HU1, HU2, HU3, HU4, HU5, HU6, and HU7. ISAS recovered a total of 3,533 artifacts from 11CK1289, which lies entirely within the OPC. Eleven prehistoric lithic artifacts and 3,522 historic artifacts form the total assemblage. Two features, Features 1 and 2, discussed above, are present within the site boundaries.

Artifact Analysis: APE Assemblage

Prehistoric

Lithics

The lithic assemblage forms 0.3 percent of the total assemblage (n = 11) and contains one secondary decortication flake, two core reduction flakes, five flake fragments, one tested item, and two thermal shatter. All material was recovered from secondary fill deposits. Lithic material was present in HU2, HU3, and HU6.

Archival research revealed that fill within the revised APE is derived from other areas of Jackson Park, excavated to form the Court of Honor water feature for the World's Fair, and the various lagoon features for the World's Fair as well as for later reiterations of the twentieth century Jackson Park landscape. The flakes present in 11CK1289 most likely represent ephemeral use of the lakeshore area during the prehistoric period, somewhere within the park boundary.

Historic

Ceramics

The ceramic assemblage is small. Sixteen ceramics are present, forming 2 percent of the entire artifact assemblage. Refined ceramics present comprise whiteware, ironstone, and porcelain. Unrefined ceramic sherds present include yellow ware and red ware.

Refined ceramics make up 62 percent, by sherd count, of the site's ceramic assemblage (n = 10). The majority are undecorated ironstone (n = 7) or porcelain (n = 1). Decoration types include hand painted floral (n = 1) and tea leaf copper luster (n = 1). The hand-painted floral sherd is a small rim sherd with sponge decoration and represents the earliest ceramic found in the refined APE; this decoration type was common between 1840 and 1860 (Loftstrom et al. 1982; Price 1981). The tea leaf decorated sherd is part of a small plate or saucer fragment. This decoration type was common between 1850 and 1900 (Wetherbee 1996). Both sherds were recovered from fill sediments.

Unrefined ceramics make up 28 percent (*n* = 6) of the 11CK1289 assemblage. All are undecorated. Sherds present are 1 unglazed and 3 glazed but undecorated yellow ware, and 1 unglazed and 1 unglazed terracotta flower pot fragment. No stoneware is present in the assemblage.

Container Glass

Container glass forms 17 percent of the entire 11CK1289 assemblage (*n* = 556). Mold blown glass forms 4 percent (*n* = 24); machine made glass 44 percent (*n* = 245); and non-diagnostic bottle glass 37 percent of the total container glass assemblage by count (*n* = 205). Other container glass is present in small quantities: 60 melted fragments, 19 caps or closures, 1 tableware, and two 2 milk glass. Closures present include a modern plastic screw top, an aluminum screw top and tear off (post-1919, Miller 2000), a metal crown cap (post-1892,Lindsey 2018), and a Hutchinson style spring stopper (1878–1920, Lindsey 2018).

Diagnostic material includes fragments of three mold blown bottles manufactured by the Chicago Consolidated Bottle Company, 1885–1905 (Farnsworth and Walthall 2011); a machine-made bottle base with the makers mark of the Sterling Glass Company, in operation 1914–1951 (Toulouse 1971:450); and a machine-made bottle body sherd embossed "..TTLE IS NEVER S..." (this bottle is never sold), manufactured 1905–1920 (Cleland 1984; Peterson 1994).

Other Household and Personal Items

These two categories combined form 0.6 percent of the entire artifact assemblage from 11CK1289. Six other household items and 20 personal items were recovered from 11CK11289. Other household items include a pair of scissors, 4 aluminum fragments, and an "Ideal Ink" Bakelite ink bottle cap. Personal items include 3 buttons (1 2-hole shell, 2 plastic 4-hole,) 1 fan necklace pendant, 1 plastic imitation pearl bead, 1 plastic comb fragment, 1 glass eyedropper tube, 1 cloth fragment, 7 leather fragments, 1 nickel sized copper disk, and 4 modern coins (1978, 1970, 1984, and 1996).

The fan necklace pendant is a Japanese import made of brass in a style popular in the 1940s, according to collector sites, for example Etsy (2018). The Bakelite ink bottle cap postdates 1927 (Lindsey 2018). All the items in these categories represent accidental loss over time, and reflect the use of the area for recreation and leisure.

Hardware

Five items of hardware are present: two railroad spikes, a link from sprocket chain and a broken graphite rod, approximately 0.5 inches in diameter, shaped to a point. This is from an electric arc-light, most likely a street lamp (Woodhead et al. 1984).

Architectural

Architectural items form 68 percent of the 11CK1289 artifact assemblage (n=2,408). The most common item is staff or plaster (*n* = 1,325). Staff is a mixture of plaster, natural fibers, and other materials utilized as cladding for the structures at the Columbian Exposition. The majority are plain, but 8 fragments of staff with red colored paint were sampled and collected. Nails are the next most common category, with machine-cut nails (*n* = 174), wire nails (*n* = 55), and unidentified nails (*n* = 386) pres-

ent. Flat window glass, some with a ridge surface is the next most common category (n = 156) as well as one additional fragment that is heat altered. One fragment of window glass is a fragment of amber colored stained glass. Fragments of lime sand mortar (n = 81), burned mortar (n = 17), concrete (n = 50), ceramic tile (n = 30), porcelain tile (n = 1), and wood (n = 43) complete the assemblage. Some of the wood recovered appears to be the base of round fence posts, recovered from fill in the baseball field area. Other wood fragments are small and could not be categorized.

The nails present both predate 1880 (machine-cut nails) and post-date 1880 (wire nails). The concrete fragments also post-date 1880. The most diagnostic artifacts present are the staff fragments, which date to 1892–1894, the period of construction and demolition of the World's Fair structures.

The red-painted staff fragments and the amber colored stained glass are likely remnants of the nearby Transportation Building (1892–1894). This structure (designed by Adler and Sullivan) was the only Great Building within the Fair to have a painted exterior, painted in a "magnificent shade of red" (Bolotin and Laing 1992:55).

Faunal

Four mammal bone fragments, nine shell fragments, and two fragments of unidentified organic material form the entirety of the faunal assemblage for 11CK1289. The mammal bone comprises a sawn large mammal vertebra, a rib fragment from a large mammal, and two small bone fragments, one burned. These items represent accidental discard of material and appear relatively modern, with little root etching or other weathering. The shell fragments present are mostly small freshwater mussel shells that occurred in the fill and represent inclusions within redeposited beach or lake sand deposits.

Miscellaneous

The Miscellaneous category represents 13 percent of the 11CK1289 site assemblage (n = 477). The majority of the material, 53 percent, comprises unidentified metal items (n = 257) and coal, slag or clinker (40%, n = 192). Other items present are unidentified plastic fragments (n = 10), aluminum foil (n = 1), a plastic buckle (n = 1), a metal cone (n = 1), and a cellophane fragment printed "…69c… tax sweet…". The plastic items and cellophane represent modern discard or accidental loss by park-goers during recreation or sports activities. The unidentified metal may be derived from fair debris, as may be the ash or coal slag.

The artifact assemblage from 11CK1289 contains material associated with the World's Fair, in secondary context, and material derived from later recreational uses of the park. World's Fair remnants include a sample of staff and the amber colored stained glass from the Transportation Building. The Chicago Consolidated Bottle Company vessels may also be associated with the Columbian Exposition. The same type of bottle was found at 11CK1291 (see below).

11CK1290

Artifacts from site 11CK1290 were recovered from geocores GC27, GC28, GC29, and GC31. There are 411 artifacts in the assemblage. All date to the historic period.

No ceramics, other household, hardware, or personal items are present within the assemblage. Four non-diagnostic container glass sherds are present, representing 1 percent of the assemblage. A single shell recovered is a fragment of mussel shell and is probably non-cultural.

Architectural debris forms 45 percent of the 11CK1290 assemblage (*n* = 187). Plaster or staff fragments are the most common architectural item (n=102), with lime-sand mortar the next most common category (*n* = 54). Fragments of brick (*n* = 19), concrete (*n* = 4), asphalt shingle (*n* = 3), asphalt paving (*n* = 2), limestone (*n* = 2), and flat glass (*n* = 1) complete the architectural assemblage.

Miscellaneous items form 53 percent of the assemblage (*n* = 219). The most common class of material is coal, slag or clinker which accounts for 93 percent of the miscellaneous category and 49 percent of the total site assemblage (*n* = 204). Other miscellaneous items present include 11 unidentified metal fragments and 4 fragments of unmodified rock.

The 11CK1290 assemblage differs from the other site assemblages within the refined APE because it contains a very high proportion of coal, ash, or clinker as compared to other investigated areas within the APE. The presence of this material suggests a different landscape use history from sites 11CK1106, 11CK1289, 11CK1291, and 11CK1292. This site is located in an area that was first graded and landscaped prior to construction of the World's Fair, then modified again after 1895 to create an open-air gymnasium. The site area today contains the modern artificial all weather athletic facility. At least two episodes of post-Fair construction have resulted in the mixture of World's Fair debris with post-Fair debris now present and observed in the 11CK1290 site area.

11CK1291

Artifacts from site 11CK1291 were recovered from excavation units HU10 and HU11 and geocore 51. A total of 278 artifacts were recovered.

Ceramics are uncommon in the recovered artifact assemblage; only two sherds of green-glazed ironstone and one sherd of undecorated porcelain were recovered. Other Household, Personal Items, Hardware, and Fauna are also sparse. One other household item, an aluminum can fragment, and one personal item, a small iron disk, were found. The hardware item, a large 3.5-inch diameter iron nut with a 2-inch thread depth, was recovered from HU10. The iron nut may have been part of one of the large machines in Machinery Hall, or may derive from one of the many windmills exhibited nearby during the Fair, or may represent imported debris present in the fill. There is little fauna present, only 6 mammal bone fragments and 4 shell fragments. In total, these categories form 6 percent of the site assemblage.

Container glass forms 25 percent of the assemblage (*n* = 68). Twenty-one mold blown and 29 machine made sherds, 14 melted glass, 1 tableware, and 3 milk glass are present. Mold blown glass present includes one complete, and fragments of a minimum of three additional, blob-top bottles manufactured by the Chicago Consolidated Bottle Company, 1885–1905 (Farnsworth and Walthall 2011). The complete bottle was recovered from Zone C fill, a black sandy loam 130cmbs below the surface, as were the remnants of the other three vessels. This zone is part of wet buried landscape and not an occupation surface (see Kolb, this volume Appendices A and B). Machine made items in-

clude a capseat or milk bottle finish fragment (Lindsey 2018) and a possible machine made octagonal vessel base. These postdate 1904 (Stelle 2001).

Architectural debris forms 53 percent of the 11CK1291 assemblage (*n* = 149). The most common items are unidentified nail fragments (*n* = 58), concrete (*n* = 20), and lime-sand mortar (*n* = 19). Other items are flat glass (*n* = 8), machine-cut nails (*n* = 5), ceramic tile (*n* = 3), decorative glass (*n* = 3), limestone (*n* = 3), wire nails (*n* = 2), a brick, wood fragments (*n* = 12), burned wood fragments (*n* = 14), and a piece of tar/gravel conglomerate. The wood fragments recovered may or may not be architectural in nature. The lower proportion of staff or plaster in this unit may relate to the nature of nearby structures or the redeposition of demolition debris during post-Fair landscaping. Site 11CK1291 is located in an area of the World's Fair that was away from the Great Buildings and served as the stock exhibit.

Miscellaneous artifacts form 16 percent of the 11CK1291 assemblage (*n* = 45). Unidentified metal fragments are the most common class (*n* = 25), followed by coal, slag or clinker (*n* = 17). Three unmodified rocks are also present.

The artifact assemblage at 11CK1291 is best interpreted as the by-product of landscape alteration during the late nineteenth century. The fill present in this area may relate to construction that occurred during the World's Fair, or to the late-nineteenth and early twentieth-century landscaping that occurred during construction of the present golf course. None of the artifacts are in primary context but instead represent material that has been incorporated into subsequent landscaping fill.

11CK1292

Artifacts from 11CK1292 were recovered from HU12 and geocores GC47, GC48, and GC50. There are 4,916 artifacts in the assemblage. One flake fragment dates to the prehistoric period. All other artifacts (*n* = 4,915) date to the historic period, specifically to the months between May 9th and November 1st 1893. The material is associated with a nearby World's Fair structure, the Engle Crematory, used to incinerate garbage and process solid waste from the Columbian Exposition. The mixing of solid waste and garbage resulted in very good preservation of some artifacts, whilst others are burned or heat altered.

Ceramics

Ceramics form 22 percent of the total site assemblage (*n* = 1,114). Most of the ceramic assemblage has been exposed to high temperatures, which has removed the glaze on many sherds. This makes any statement regarding decoration problematic as some sherds may have lost their original decoration.

Refined ceramics make up 98 percent of the collection (*n* = 1,101). The majority of the wares present are hotelware (*n* = 1,026), undecorated ironstone (*n* = 47), transfer printed ironstone (*n* = 13), decal decorated ironstone (*n* = 4), and undecorated porcelain (*n* = 11). No vessel refits were attempted, but hotelware vessel forms present include large and small flatware, cups, jugs, sugar bowls, and small dishes that may have held other condiments.

Several fragments of hollow ware and flat ware (cups and saucers) are marked with the following "Chase and Sanborn 'Seal Brand' Coffee". Chase and Sanborn were selected to supply coffee to

all the salons at the World's Fair (History of Chase and Sanborn Coffee Company 2018). Four diagnostic manufacturer's marks were identified. Three are transfer printed: Goodwin Brother's Pottery (1885–1898), who produced tealeaf decorated ironstone and hotelware (Lehner 1988:175); the Eagle Head mark of the Union Porcelain Works, (post-1877) (Lehner 1988); and a "T.H. Haviland/Limoges/France" whose factory began operation in 1892 (Fléjou 2005). Despite the origin of the pottery, the Haviland family was American and focused their production on the American market. The fourth mark is embossed "Greenwood CHINA", first used in 1886 (Lehner 1988:180).

Unrefined ceramics comprise 2 percent of the assemblage (13 total sherds), all of which are stoneware. Nine wheel thrown stoneware sherds, which generally predate 1860 (Mansberger 1986), three brown slipped, and one burnt sherd are present. Four sherds may be salt glazed, but the glaze has been damaged by fire.

Container Glass

Container glass forms 11 percent of the 11CK1292 assemblage (n = 535). The majority of the sherds are bottle fragments (n = 533), of which 503 are burned and the remainder are non-diagnostic body sherds. Two tableware, a mold blown bottle neck and finish from a tube or oil bottle neck are present. Other mold blown fragments include parts of Chicago Consolidated Bottling Company vessels.

Other Household

This artifact category forms 12 percent of the site assemblage (n = 616). Metal fragments (mostly tin can fragments) form the majority of the artifacts recovered (n = 605). A broken knife blade, 6 teaspoons (either complete or fragments), a molded porcelain match striker with a threaded or fine ribbed surface decoration, and three aluminum fragments were included in this category.

Personal Items

A small number of personal items are present (n = 10): shoe grommets (n = 4), leather fragments (n = 3), buttons (n = 2), and a buckle. Buttons present are a 4-hole ceramic Prosser button which post-dates 1850 (Petersen 1994) and a Sanders-style metal button which post-dates 1820 (Marcel 1994). One bullet, a 0.22 short, with possible rimfire casing, was also present.

Hardware

A small amount of hardware is present (n = 16), including graphite rods and other parts from arc lamps (n = 4), fasteners or clips (n = 4), wire fragments (n = 3), a barrel hoop fragment, and a brass screw top, possibly from a battery.

Architectural

Architectural items form 3 percent of the 11CK1292 assemblage (n = 125). The most common category is wire nails (n = 47), brick (n = 33), lime-sand mortar (n = 15), unidentified nails (n = 11), machine-cut nails (n = 10), limestone (n = 4), plaster or staff (n = 2), concrete (n = 2,) and charred wood (n = 1).

Fauna

Fauna forms 24 percent of the assemblage (*n* = 1,341). The majority of the faunal assemblage is burned (*n* = 1,134). Sixty-three unburnt bone fragments are present, as well as 142 shell fragments. Much of the shell is burned. Burnt sludge cake (the solid waste from treated sewage) is also included in this category (*n* = 2). Thermal damage and time constraints prohibited a comprehensive faunal analysis but a cursory examination of the material indicates that large and small mammal bone, bird bone, and fish bone are present. Much of this material represents disposal of waste associated with food preparation and consumption. However, there is the remote possibility that the remains of two camels and five reindeer that died during the World's Fair (parts of exhibits on the Midway) are included in this faunal assemblage (Bolotin and Laing 1992; Miller 1996).

Miscellaneous

Miscellaneous items form 23 percent of the assemblage (*n* = 1,157). The majority of this is coal/slag or clinker (*n* = 937), with the next most common artifact class being unidentified metal (*n* = 137). Other items present include modern plastic (*n* = 9), burned earth (*n* = 10), and an unidentified graphite object (*n* = 1). One of the unidentified metal items is a possible closure that was preserved within a fragment of burnt sludge cake. The metal item is embossed "P. SCHOENHOFEN/Chicago". This is the Shoenhofen Beer Company brewing company, which began operations in 1867 (Wilson et al. 2004).

Artifacts of all classes were distributed through the 6 cultural fill layers identified in HU12A (Figure 7.1 and Tables 7.1 and 7.2). The following paragraph discussed classes of material where quantities were sufficient to make any statistical statement. For the ceramic assemblage, hotelware occurs in every zone apart from Zone D, while all but one sherd of ironstone occurs in Zone D. The highest proportion of hotelware, 33 percent, is found in Zone E (*n* = 145), and the next highest, 26 percent, is in Zone H (*n* = 115); with 16 percent in Zone C (*n* = 73); 15 percent in Zone G; and 10 percent in Zone F (*n* = 49). Unrefined ware only occurs in Zone E. In contrast to hotelware, the highest proportion of melted glass, 23 percent, occurs in Zone F (*n* = 72); with 20 percent in Zone C (*n* = 64); 18 percent in in Zone E (*n* = 64); 16 percent in Zone H (*n* = 51); 11 percent in Zone G (*n* = 35); and 9 percent in Zone D (*n* = 30). Metal container fragments are most common in Zone D, forming 36 percent of the metal container assemblage (*n* = 214); 19 percent occurs in Zone F (*n* = 115); 17 percent in Zone H (*n* = 103); 15 percent in Zone G (*n* = 88); 10 percent in Zone E (*n* = 63); and 3 percent in Zone C (*n* = 20). Coal and clinker follows a similar pattern to that of metal container fragments. Zones D and G each account for 29 percent of the total (*n* = 244, *n* = 242, respectively); with 14 percent occurring in Zone F; 12 percent in Zone E; 11 Percent in Zone H and 5 percent in Zone C.

Burnt bone is more evenly distributed than the other classes of material, occurring in very similar proportions in Zones F, G, and H—between 22 and 23 percent (*n* = 260, 266, and 249, respectively). Zone D contains 17 percent of the bone (*n* = 190); Zone E contains 10 percent (*n* = 115); and Zone C contains 4 percent (*n* = 51).

The differential proportions of artifact classes present within each of the fill layers suggest discrete episodes of deposition that reflect different garbage collection events and/or strategies prior to

eventual incineration, and ultimately the cycles between servicing (clean-out) and operation (loading) of the incinerator.

Discussion

The four sites within the revised project area represent different areas of the larger 1893 Columbian Exposition landscape and could be argued to reflect different activity areas or the effects of post-Fair land-use histories and impacts within particular portions of Jackson Park. The artifact classes will therefore be discussed for the entire APE. A clear difference in the artifact assemblages is shown between 11CK1292, a deposit representing episodic discard of material that occurred during the World's Fair, and the other three sites, which have high proportions of architectural debris but little ceramic or fauna.

Prehistoric Artifacts

Lithics

A small prehistoric assemblage is present, a total of 12 items, 11 from 11CK1289 and one from 11CK1292. No diagnostic material is present and all prehistoric material is in secondary fill context. The fill materials for the World's Fair were obtained from within Jackson Park, therefore these items indicate that some use of the landscape occurred during prehistory, but the original site location/s is/are unknown.

Historic Artifacts

Ceramics

A total of 1,198 ceramics were recovered from within the refined APE. Refined wares present are ironstone, hotel ware, and porcelain (Figure 7.2). Makers marks (discussed above) are consistent with the time period (Figure 7.3). Indeed, one manufacturer T.H. Haviland, had been in production for less than a year when the fair opened. Unrefined wares present are yellow ware, redware, and stoneware. Ceramics are present at 11CK1106, 11CK1189, 11CK1191 and 11CK1192. No ceramics were recovered from 11CK1190. The majority, or 91 percent of the total assemblage (n = 1,117), comprises refined wares (dominated by hotelwares) and the largest amount of refined ware is from site 11CK1292 (91%, n = 1,101). Preliminary examination of the vessels present indicate that this assemblage is related to food service. Vessels represented include cups, saucers, bowls, plates, platters, condiment containers, and jugs (Figure 7.4).

Decorated refined wares include 1 hand painted floral, 1 molded only decorated ironstone, 13 transfer printed ironstone, one tealeaf decorated and four decal decorated ironstone, and 2 glazed ironstone. All the remaining refined wares are undecorated. The degree to which incineration may have effected decoration is unknown. The dominance of hotel ware suggests that many vessels would have been undecorated or that decoration would be simple, but some hotel ware sherds protected from heat alteration by a coating of sludge cake retain transferprint decoration (Figure 7.2).

Unrefined ceramics form nine percent of the assemblage (*n* = 81). Sixteen percent of the unrefined wares are present at 11CK1292 and 77 percent of the unrefined wares were recovered from 11CK1106. Unrefined wares present are yellow ware, redware, and stoneware. Stoneware only occurs at 11CK1292, but no redware or yellow ware is present at that site. Instead, yellow ware and redware occur at 11CK1106 and 11CK1189. None are decorated and the majority of the redware sherds likely represent unglazed terracotta flower pots.

The ceramic assemblage reflects the different site histories. Ceramics present at 11CK1106 and 11CK1289 have been incorporated into fill context, redeposited during episodes of filling and grading associated with the demolition of the World's Fair and/or post-fair landscaping. These sites are located where Great Buildings (the Women's Building, the Horticulture Building, and the Terminus Building) were located. Any discarded ceramics used in these areas would likely have been disposed of as part of the daily garbage pickup and delivery to the Incinerator. Ceramics recovered from these sites likely represent accidental incorporation into the fill. In contrast, 11CK1292 represents the disposal of broken china from restaurants or tea or coffee houses within the fairgrounds. Site 11CK1292 reflects the effective garbage collection system operating during the World's Fair. Also, the layers of fill present within the deposits at 11CK1292, some rich in ceramics, others not, reflect the cycles of garbage collection, incinerator operation, and cleaning. The subsequent discard and burial of these deposits near the original incinerator location reflect the minimal post-fair landscaping that occurred in the immediate vicinity.

Container Glass

All identified container glass was found in secondary context. Container glass occurs across the refined APE and was recovered from all sites (n=265). Container glass from 11CK1292 is largely burnt. The majority of identified bottle fragments are parts of aqua blob top bottles manufactured by the Chicago Consolidated Bottling Company (Figure 7.5). Fragments or complete bottles are present at sites 11CK1289 and 11CK1291. This bottle manufacturing company was in operation between 1885 and 1905 (Farnsworth and Walthall 2011), and it appears that the blob top bottles were used within the Exposition Grounds. Other identified bottle manufacturers indicate the continued use of Jackson Park after the fair. A bottle base manufactured by the Sterling Glass Company (1914-1951) (Toulouse 1971: 450) and a body sherd embossed "…TTLE IS NEVER S…" (this bottle is never sold), manufactured 1905-1920 (Cleland 1984; Peterson 1994) from site 11CK1289 likely reflect deposition during leisure activities within the park occurring in the early twentieth century.

The glass assemblage is not domestic—no canning jar lids or mason jars are present as would otherwise be expected on historic residential sites of the time period (e.g. Higgs et al. 2002; Porubcan 2002; Tolmie 2004).

Other Household

Other household items present include a bottle opener, a pair of scissors, an ink bottle cap, a porcelain match-striker, a broken knife blade, metal container fragments, and six spoons (Figure 7.1 and Figure 7.5). A total of 626 other household items is present with the majority, 98 percent (*n* = 616),

recovered from 11CK1292. The 11CK1292 assemblage largely comprises metal container fragments, plus the possible lamp base and six spoons. No household items are present at 11CK1290, and only 4 items are present at 11CK1106, 5 at 11CK1289, and one at 11CK1291. All represent accidental inclusion in fill or recent loss of items.

Personal Items

Very few personal items are present—a total of 37 in all (Figure 7.6). Personal items are present at 11CK1106, 11CK1289, 11CK1291, and 11CK1292. There is no particular distribution pattern. All are interpreted as evidence of accidental loss. The majority represent recent loss (including modern coins, plastic combs, cellophane, Bic pens and modern toys). Of particular interest are a fan pendant recovered from 11CK1289, which dates to the 1940s, galoshes fasteners from the World's Fair fill (Zone D) of 11CK1106, and shoe grommets from 11CK1292. Perhaps more interesting is the surprisingly small amount of recent material, suggesting that there is and has been a concerted effort on the part of the users and managers of Jackson Park to control litter.

Hardware

Hardware items total 43 and occur at 11CK1106, 11CK1289, 11CK1291, and 11CK1292. Items present include bolts, screws or washers, brackets, fasteners, a padlock shackle, railroad spikes, a very large hexagonal nut, a horseshoe, and possible battery fragments. Of particular interest are graphite rods from arch lamps present at 11CK1106, 11CK1289, and 11CK1292 (Figure 7.7). The Columbian Exposition was noted for the bright illuminations, which included large arc lights used as spotlights but also smaller arc lights as street lamps. These graphite rods were either disposed of deliberately in the garbage (those at 11CK1292) or were incorporated into the post-Fair debris during demolition, as at sites 11CK1106 and 11CK1289.

Architectural

Architectural material occurs at all sites within the APE. A total of 3,199 items is present. The majority of the material, 75 percent (n = 2,408) is found at 11CK1289 (Figure 7.8). The least amount of architectural material (3 percent) is associated with 11CK1292 (n = 125) and 11CK1291 (n = 149). Flat window glass, machine-cut nails, wire nails, brick, limestone fragments, staff or plaster, lime-sand mortar, concrete, tiles, wood, roofing materials, wire, tubing, decorative glass and lead, iron and tar are present. Flat glass, nails, and plaster and staff are concentrated in the western portion of the APE. 11CK1289 contains 92 percent of the staff or plaster (n = 1,325) and 50 percent of the flat glass (n = 156). 11CK1106 contains approximately 49 percent of the flat glass (n = 151). The assemblage at 11CK1289 includes red-painted staff, most probably from the Terminal Building. Much of this material was recovered from a layer of post-fair demolition debris present in areas of the site protected by later berm construction. The concentration of structural debris in this area, in contrast to the sites within the Golf Course, reflects the location of former Great Buildings in the World's Fair around the Court of Honor and northwards, and the redeposition of demolition debris in these areas. Sites 11CK1291 and 11CK1292 are located to the south of the Court of Honor, in an area of

less elaborate buildings including the stock exhibits and maintenance facilities such as the sewage treatment plant, the oil storage area, and the Engle Crematory.

Miscellaneous

A total of 2,037 miscellaneous items are present (Figure 7.9). Many of these are modern—plastic, electrical tape, aluminum foil, plastic buckle, cellophane wrapper fragments, and a Walgreen's ointment tube recovered from the topsoil or fill in sites 11CK1106 and 11CK1289. The most common artifact class in this category is coal/clinker or slag which forms 75 percent of the total assemblage (n = 1,535) followed by identified metal which is 15 percent (n = 417) of the assemblage. Coal, slag, or clinker is the most common artifact at 11CK1290 within that site assemblage, in contrast to sites 11CK1106, 11CK1189, and 11CK1191 where building debris or other materials are more common. The cinder deposits at these sites are in secondary context, within fill. In contrast, the coal, slag and clinker at 11CK1292 reflects deliberate deposition of material cleaned from the nearby incinerator.

Fauna

The majority of the faunal remains present within the four sites, 98 percent, are found at site 11CK1292 (n = 1,342) (Figure 7.10). The majority of the elements here are burned, reflecting the intentional disposal of food waste. Archival research indicated that the incinerator was also used to dispose of animal carcasses. Shell from this site included burned shell from food waste, in contrast to the shell or shell fragments at the other sites which are naturally present in the redeposited fill sediments.

Table 7.1. Summary of Artifacts Recovered from HU12A, by Cultural Zone.

Project #: 17080	HU12A Zone C		HU12A Zone D		HU12A Zone E		HU12A Zone F		HU12A Zone G		HU12A Zone H		HU12A Total	
Artifact Class	Ct.	Wt. (g)	Ct.	Wt. (g)	Ct.	Wt. (g)	Ct.	Wt. (g)	Ct.	Wt. (g)	Ct.	Wt. (g)	Ct.	Wt. (g)
CERAMICS														
Refined Ceramics														
Hotelware—Undecorated														
Large Flatware	10	304.3	—	—	45	829.2	8	160.1	12	193.1	14	316.1	89	1,802.8
Small Flatware	8	155.8	—	—	12	152.3	4	60.2	2	39.9	10	99.7	36	507.9
Holloware	9	142.8	—	—	16	333.8	12	184.9	13	219.6	14	338.7	64	1,219.8
Unknown Vessel Type	46	294.9	—	—	70	580.6	25	58.5	42	257	77	547.51	260	1,738.51
Whiteware/Ironstone														
Undecorated	0	0	29	253.7	0	0	0	0	0	0	0	0	29	253.7
Transferprinted	1	3.1	1	4.6	0	0	0	0	0	0	0	0	2	7.7
Decal	0	0	—	—	0	0	0	0	1	6.3	0	0	1	6.3
Porcelain														
Undecorated	0	0	7	136.6	0	0	0	0	0	0	0	0	7	136.6
Unrefined Ceramics														
Stoneware	0	0	—	—	0	0	0	0	0	0	0	0	0	0
Unidentified ware type	0	0	—	—	0	0	0	0	0	0	1	19.2	1	19.2
Wheel thrown	0	0	—	—	4	209.2	0	0	0	0	0	0	4	209.2
CONTAINER GLASS														
Bottle/Jar														
Mold Blown Non-Diagnostic Fragments														
Aqua	0	0	1	20	0	0	0	0	0	0	0	0	1	20
Machine Made Non-Diagnostic Fragments														
Brown	0	0	1	3.3	0	0	0	0	0	0	0	0	1	3.3
Unidentified Manuf. Technique Diagnostic Body Fragments														
Aqua	0	0	—	—	0	0	0	0	0	0	2	19.2	2	19.2

(continued)

Table 7.1, continued. Summary of Artifacts Recovered from HU12A, by Cultural Zone.

Project #: 17080	HU12A Zone C		HU12A Zone D		HU12A Zone E		HU12A Zone F		HU12A Zone G		HU12A Zone H		HU12A Total	
Artifact Class	Ct.	Wt. (g)	Ct.	Wt. (g)	Ct.	Wt. (g)	Ct.	Wt. (g)	Ct.	Wt. (g)	Ct.	Wt. (g)	Ct.	Wt. (g)
CONTAINER GLASS (continued)														
Bottle/Jar (continued)														
Non-Diagnostic Fragments														
Colorless	0	0	—	—	0	0	1	2.3	0	0	17	43.39	18	45.69
Aqua	0	0	—	—	0	0	0	0	0	0	1	12	1	12
Brown	0	0	—	—	0	0	0	0	0	0	1	14.7	1	14.7
Olive/Green	0	0	—	—	0	0	3	6.1	0	0	0	0	3	6.1
Melted Glass	64	277.73	30	114.9	56	397.4	72	257.7	35	105.1	51	262.21	308	1,415.04
Bottle Closures/Caps	0	0	—	—	1	16.4	0	0	0	0	0	0	1	16.4
Container Glass (other)														
Tableware	0	0	—	—	0	0	0	0	0	0	2	22.6	2	22.6
OTHER HOUSEHOLD														
Metal container	20	37.9	214	132.5	63	118.9	115	75.9	88	75.5	103	90.2	603	530.9
Utensils	0	0	—	—	2	28.6	0	0	0	0	0	0	2	28.6
Metal can lid	0	0	—	—	0	0	0	0	2	13.4	—	—	2	13.4
Match striker	0	0	—	—	0	0	0	0	0	0	1	77.9	1	77.9
Key can openere											1	30.6	1	30.6
PERSONAL ITEMS	0	0	—	—	0	0	0	0	0	0	0	0	0	0
Buttons	0	0	—	—	0	0	0	0	0	0	2	1.6	2	1.6
Buckles/clothing fasteners	0	0	—	—	0	0	1	1.1	0	0	0	0	1	1.1
Slate tablets/pencils	0	0	—	—	0	0	0	0	0	0	0	0	0	0
Toys (dolls, marbles, etc.)	0	0	—	—	0	0	0	0	0	0	0	0	0	0
White clay pipes	0	0	—	—	0	0	0	0	0	0	0	0	0	0
Coins/Tokens	0	0	—	—	0	0	0	0	0	0	0	0	0	0
Brass Grommets	1	1.9	—	—	0	0	3	4.4	0	0	0	0	4	6.3

(continued)

Table 7.1, continued. Summary of Artifacts Recovered from HU12A, by Cultural Zone.

Project #: 17080	HU12A Zone C		HU12A Zone D		HU12A Zone E		HU12A Zone F		HU12A Zone G		HU12A Zone H		HU12A Total	
Artifact Class	Ct.	Wt. (g)	Ct.	Wt. (g)	Ct.	Wt. (g)	Ct.	Wt. (g)	Ct.	Wt. (g)	Ct.	Wt. (g)	Ct.	Wt. (g)
ARMS RELATED														
Bullet	0	0	—	—	0	0	0	0	0	0	1	0.4	1	0.4
HARDWARE														
Bolts/screws/washers	0	0	2	7.5	0	0	0	0	0	0	1	20.4	3	27.9
Wire	1	1.4	1	0.9	0	0	0	0	0	0	0	0	2	2.3
Barrel hoop	1	38	0	—	0	0	0	0	0	0	0	0	1	38
Graphite rod	0	0	0	—	0	0	0	0	2	17.4	0	0	2	17.4
Wire fastener	0	0	0	—	0	0	0	0	0	0	2	3.5	2	3.5
Unid fastener, possible arc lamp component	0	0	0	—	0	0	0	0	2	1.6	0	0	2	1.6
Brass screws	1	28.5	—	—	0	0	0	0	0	0	0	0	1	28.5
Unid fastener	0	0	0	0	0	0	0	0	0	0	1	1.7	1	1.7
ARCHITECTURAL	0	0	—	—	0	0	0	0	0	0	0	0	0	0
Machine cut nails	0	0	1	2.1	0	0	0	0	0	0	0	0	1	2.1
Wire nails	1	1.4	5	20.9	1	3.8	4	2.8	4	10.3	10	12.9	25	52.1
Unidentified Manufacture Nail	0	0	6	4.1	0	0	0	0	4	5.3	0	0	10	9.4
Brick	0	0	—	—	0	17.11	0	0	1	23.9	3	19.2	4	60.21
Plaster/Staff	0	0	—	—	0	11.82	0	4.78	2	5.7	0	8.6	2	30.9
Lime-sand mortar	0	0	1	1.2	0	0	0	0	1	1.7	0	0	2	2.9
Concrete	0	0	—	—	0	0	0	0	1	4.8	0	0	1	130.36
Wood	0	0	—	—	0	0	0	0	0	0	0	13.61	0	13.61
Burnt Wood—Not Charcoal	0	0	—	—	0	0	1	1.95	0	0	0	0	1	1.95
FAUNAL														
Burnt Bone	51	91.6	190	99.6	115	209.15	260	250.6	266	157.4	249	208.44	1,131	1,016.79
Shell	1	1.5	12	5.8	11	8.99	23	10.9	21	16	68	101.83	136	145.02
FLORAL	0	0	—	—	0	0	0	0	0	0	0	0	0	0

(continued)

Table 7.1, continued. Summary of Artifacts Recovered from HU12A, by Cultural Zone.

Project #: 17080	HU12A Zone C		HU12A Zone D		HU12A Zone E		HU12A Zone F		HU12A Zone G		HU12A Zone H		HU12A Total	
Artifact Class	Ct.	Wt. (g)	Ct.	Wt. (g)	Ct.	Wt. (g)	Ct.	Wt. (g)	Ct.	Wt. (g)	Ct.	Wt. (g)	Ct.	Wt. (g)
OTHER MISCELLANEOUS ITEMS														
Coal clinker/slag/charcoal	42	461.46	244	477.2	105	799.9	115	714	242	1,243.5	97	603.65	845	4,299.71
Unidentified metal fragments	1	31.65	—	—	9	351.82	14	167.12	3	4.3	7	416.73	34	971.62
Modern Plastic	0	0	—	—	0	0	0	0	0	0	0	0	0	0
Styrofoam	0	0	—	—	0	0	0	0	0	0	0	0	0	0
Burned earth samples	0	0	—	—	0	512.67	0	29.6	—	—	0	177.95	9	720.22
Sludge cake samples	0	0	—	—	0	0	0	0	9	36.9	0	0	9	36.9
Non-Cultural Rock	1	7	6	10	2	8.3	2	4.5	3	4.2	4	7.1	18	41.1
TOTAL	259	2,006.5	751	1,294.9	512	4,589.96	663	1,997.45	756	2,442.9	740	3,491.62	3,681	13,380.43

Table 7.2. Distribution of Artifact Types, by Zone, Recovered from HU12A, by Cultural Zone.

	Zone C	Zone D	Zone E	Zone F	Zone G	Zone H
% Hotelware	16	0	33	10	15	26
% Melted glass	20	9	18	23	11	16
% Metal container fragments	3	36	10	19	15	17
% Coal/clinker	5	29	12	14	29	11
% Burnt bone	4	17	10	23	23	22

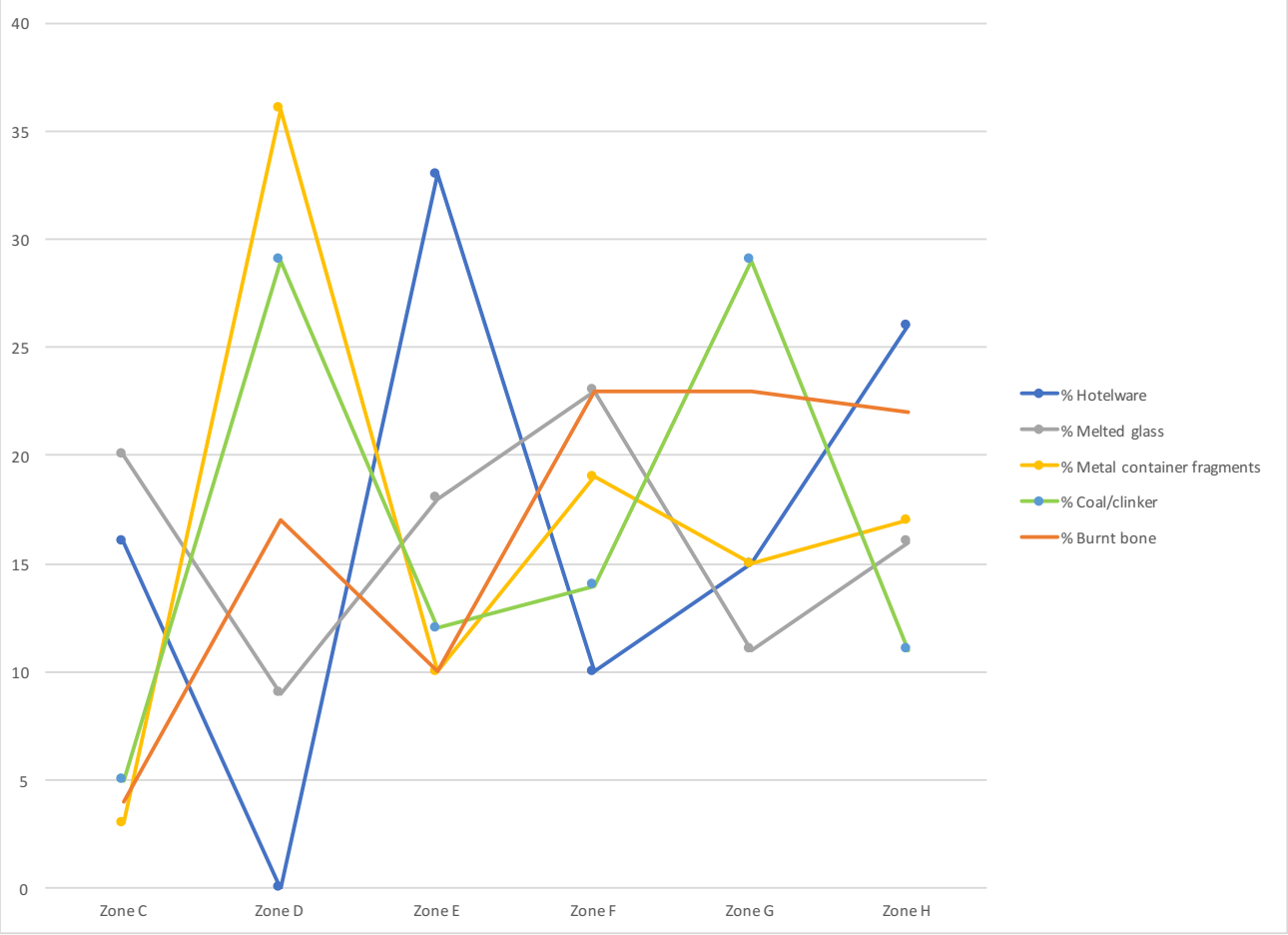


Figure 7.1. Graph showing percentage of artifacts by class per zone, 11CK1292-HU12A.

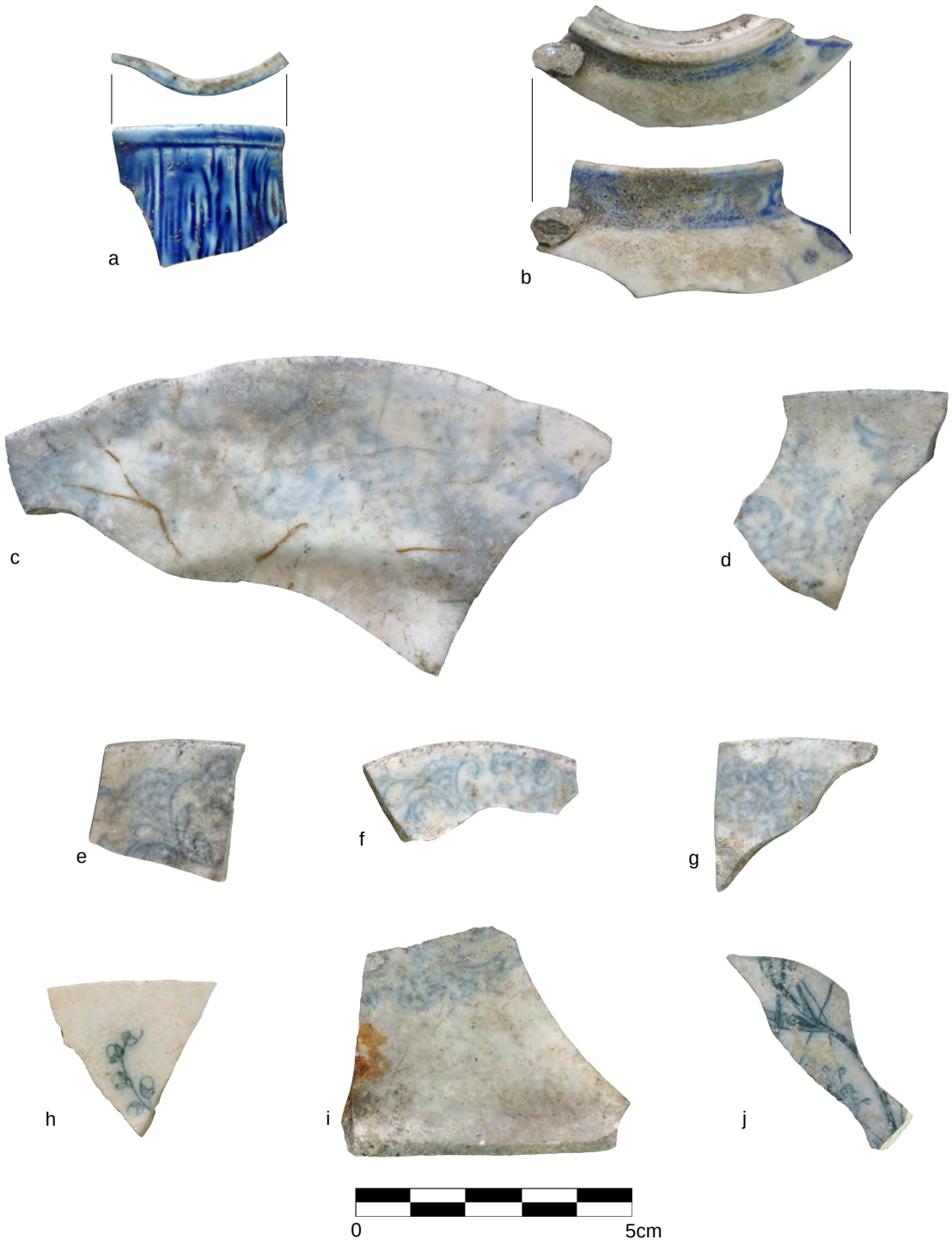


Figure 7.2. Refined ceramics, decoration: (a) 11CK1292-HU12 blue decorated porcelain; (b) 11CK1292-HU12 blue transfer decorated hollow ware; (c) 11CK1292-HU12A blue transfer decorated flatware with scalloped edge; (d) 11CK1292-HU12A blue transfer decorated flatware; (e–g) 11CK1292-HU12 blue transfer decorated flat ware; (h) 11CK1292-HU12A blue transfer decorate flatware; (j) 11CK1292-HU12 blue transfer decorated flatware.

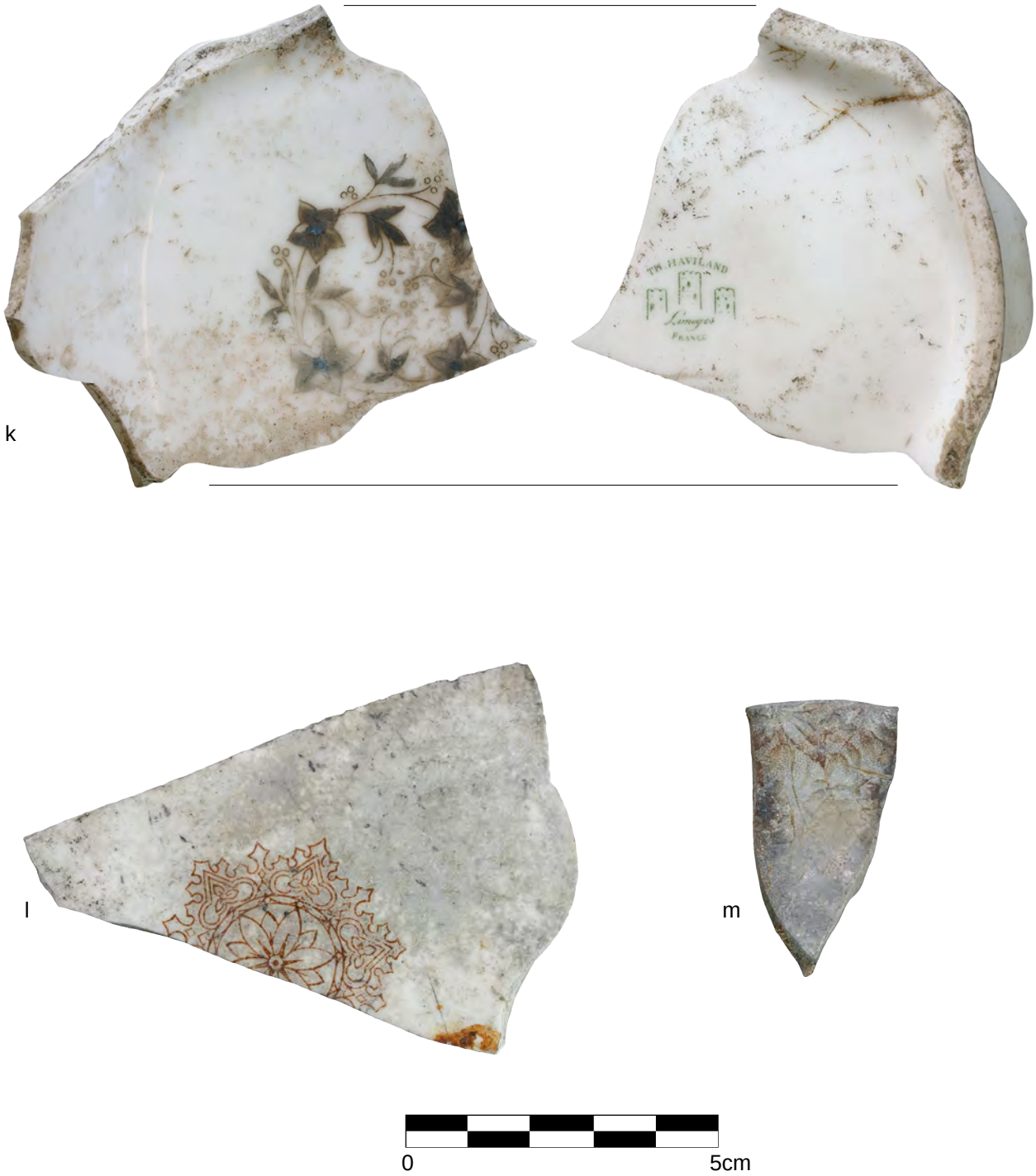


Figure 7.2, continued. Refined ceramics, decoration: (k–l) 11CK1292-HU12 blue transfer decorated flatware; (k) 11CK1292-HU12A brown transfer decorated flatware with T.H. Haviland makers' mark); (l–m) 11CK1292-HU12 brown transfer decorated flatware.

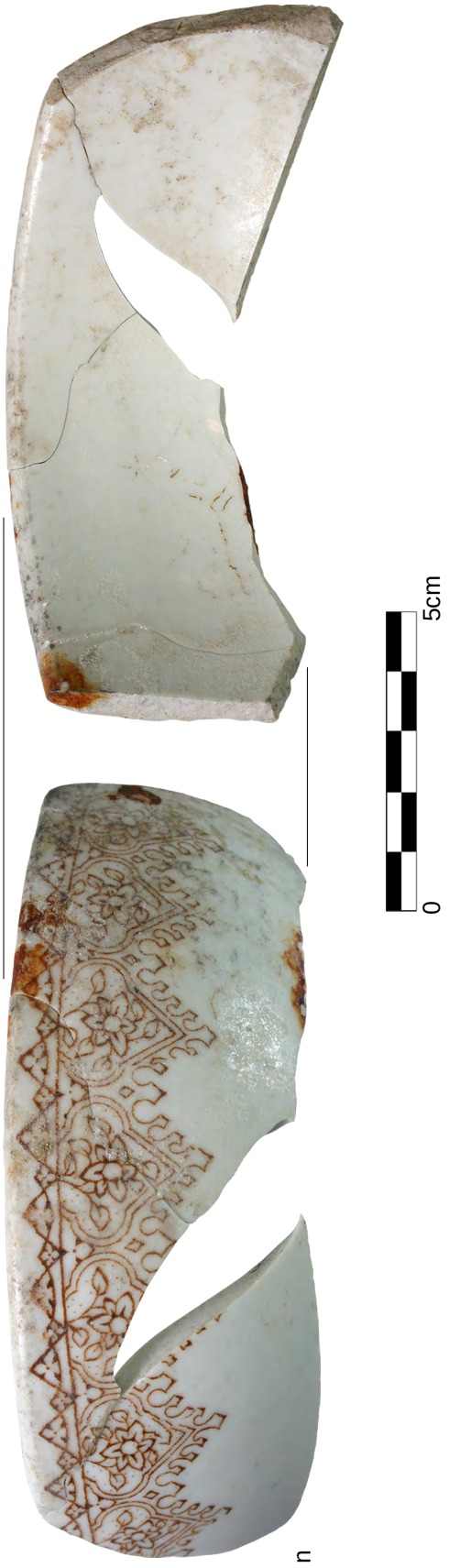


Figure 7.2, continued. Refined ceramics, decoration: (n) 11CK1292-HU12 brown transfer printed bowl.

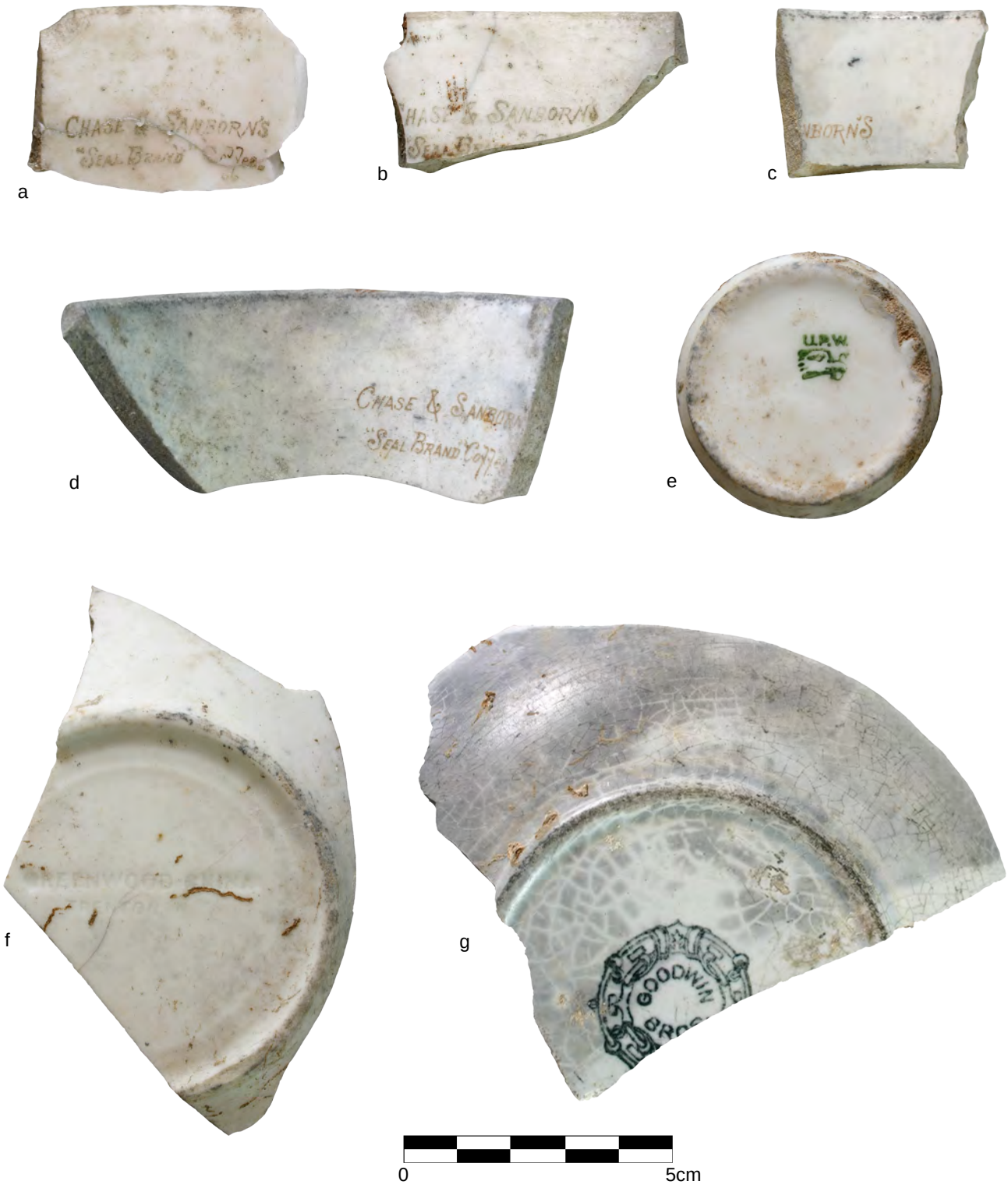


Figure 7.3. Refined ceramics, makers' marks: (a–d) 11CK1292-HU12 Chase and Sanborn's "Seal Brand" coffee; (e) 11CK1292-HU12A United Porcelain Works; (f) 11CK1292-HU12A Greenwood China embossed mark; (g) 11CK1292-HU12 Goodwin Brothers.

Figure 7.4. Refined ceramics, vessel types: (a) 11CK1292-HU12A plate (b–c) 11CK1292-HU12A platters; (d) 11CK1292-HU12 shallow bowl.

Figure 7.4, continued. Refined ceramics, vessel types: (e) 11CK1292-HU12A bowl; (f) 11CK1292-HU12A cup handle (g–i) 11CK1292-HU12 cups.

Figure 7.4, continued. Refined ceramics, vessel types: (j–k) 11CK1292-HU12A condiment bowls; (l) 11CK1292-HU12 sugar bowl lid (m) 11CK1292-HU12 match striker.

Figure 7.5. Container glass, closures and spoons: (a) 11CK1291-HU11 blob top bottle, Chicago Consolidated Bottling Company; (b) 11CK1289-HU9 tooled finish; (c–d) 11CK1106-HU13 club or sauce stopper and finish; (e) 11CK1292-HU12A Schoenhofen Brewing Company closure; (f–g) 11CK1292-HU12 bottle closures; (h) 11CK1290-HU3 Hutchinson bottle closure.

Figure 7.5, continued. Container glass, closures and spoons: (i–j) 11CK1292-HU12 teaspoons; (l) 11CK1292-HU12A large spoon; (m) 11CK1292-HU12 large spoon; (n) 11CK1292-HU12 knife blade; (o) 11CK1292-HU12 can key opener.

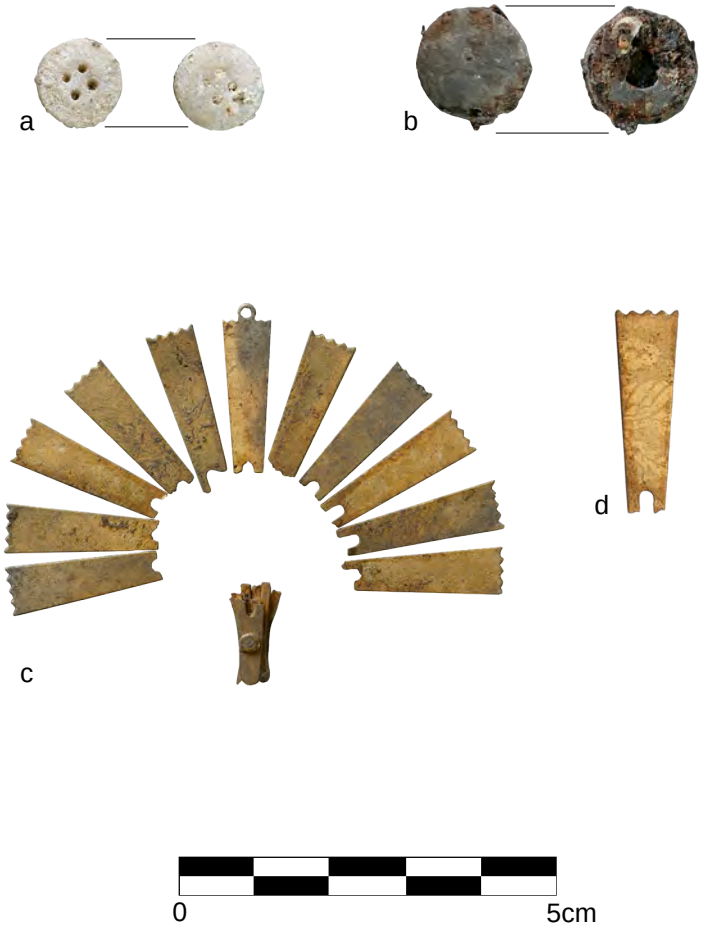


Figure 7.6. Personal items: (a–b) 11CK1292-HU12A buttons; (c) 11CK1289-HU2 brass fan pendent jewelry; (d) 11CK1289-HU2 brass fan pendent jewelry detail.

Figure 7.7. Hardware: (a) 11CK1292-HU12A graphite rod from arc lamp; (b–c) 11CK1292-HU12A clips, possibly from arc lamp mechanism; (d) 11CK1292-HU12 iron bracket; (e–f) 11CK1292-HU12 metal closures; 11CK1291-HU10 large nut.

Figure 7.8. Architectural: (a) 11CK1289-HU2 painted lime sand mortar sample; (b–c) 11CK1289-HU1 molded staff fragments.

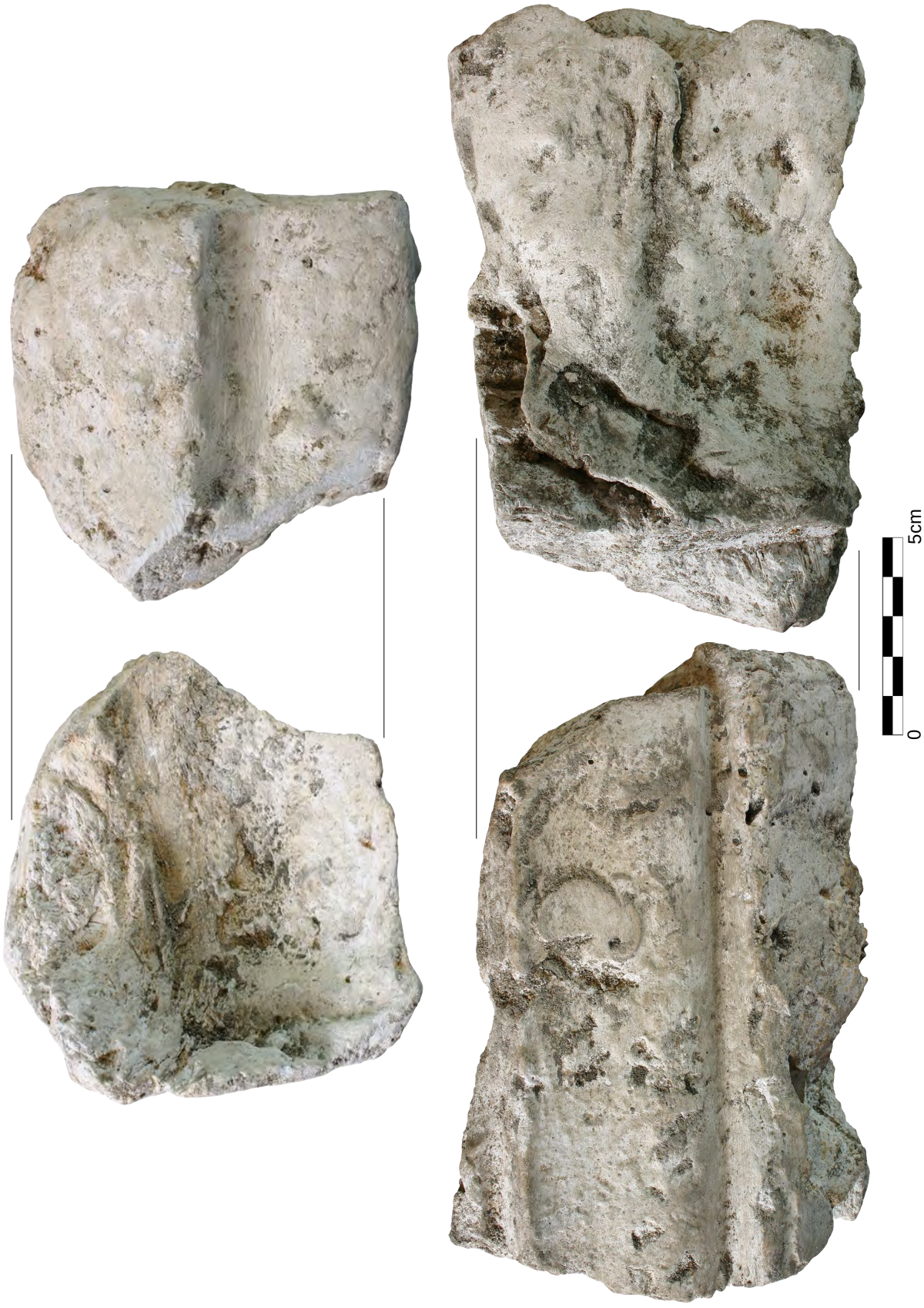


Figure 7.8, continued. Architectural: (d) 11CK1289-HU1 molded staff fragments; (e) 11CK1289-HU1A molded staff fragment.

Figure 7.9. Miscellaneous: (a) 11CK1292-HU12A burned sludge cake fragment.

Figure 7.10. Fauna: (a) 11CK1202-HU12 sample of diagnostic faunal material.

Figure 7.10, continued. Fauna: (b) 11CK1292-HU12 sample of non-diagnostic faunal material.

Chapter 8

Summary and Recommendations

Introduction

The South Lakefront Framework Plan (SLFP) developed by the City of Chicago includes improvements to Jackson Park and the related construction of the Obama Presidential Center (OPC). Together, these planned improvements form the APE for this undertaking developed in coordination with the Federal Highway Administration, the National Park Service, the Illinois Department of Transportation, the City of Chicago, and the Obama Foundation. The APE comprises 23.08 acres within the OPC and approximately 16.48 linear km (10.22 linear miles), primarily coincident with existing roadways (total APE of 62.17 acres). To further refine the APE to those areas requiring archaeological field investigations, CDOT project engineers identified two levels of anticipated construction impact depths for roadways within the APE: areas where ground disturbance will extend deeper than 25 cm (10 in) below the current ground surface and areas where excavations will *not* extend farther than 25 cm (10 in) below the present ground surface. Proposed ground disturbance within the OPC and underground parking garage APE, and within the proposed underpass locations, is considered to be greater than 25 cm (10 in). As a result, areas where archaeological field investigations were necessary consisted of (1) a total of 3.87 linear km (2.4 linear miles) along existing roads (less parts of these alignments where there is no substantial impact outside of existing ROW); (2) approximately 10,194 m^2 (2.52 acres) of land at the intersection of South Cornell Avenue and Hayes Drive; (3) 75,717 m^2 (19.3 acres) within the footprint of the Obama Presidential Library Complex (OPC); (4) 19,200 m^2 (4.7 acres) of ground within the proposed OPC parking facility; and (5) the location of proposed underpasses under South Shore Drive, S. Jeffrey Avenue, and Cornell and Hayes Drive, which is 15,235 m^2 (3.8 acres).

Areas within the APE where ground disturbance will not extend deeper than 25 cm (10 in), as well as areas where there will be no additional impact outside the existing ROW, did not require field investigation. Illinois State Archaeological Survey (ISAS) staff completed visual reconnaissance of the APE on August 30, 2017, and identified additional areas where archaeological investigations were not warranted or feasible (e.g., subsurface utility corridors, paved paths and parking lots, and areas with existing structures or large recreational facilities). Archival documents were also consulted in order to identify areas were significant previous ground disturbance has occurred (e.g., Nike Missile Base, Museum of Science and Industry parking lot, roadway improvements along South Lakeshore Drive).

Visual inspection and archival research, undertaken in November and December of 2017, determined that portions of the APE along South Lake Shore Drive, Midway Plaisance, E. Hayes Drive, S. Richards Drive, E. Marquette Drive, Stony Island Avenue, and S. Cornell Drive contained sediments previously disturbed by grading and/or filling, road construction, and installation of subsurface utilities. Field investigations were not necessary within these previously disturbed areas.

The refined APE encompasses areas of potential ground disturbance related to this undertaking. Specifically, these areas include the location of the OPC and associated underground parking garage; roadway improvements within Jackson Park, from 55th to 67th Streets; improvements along Stony Island Avenue between 67th and 68th Streets; and proposed underpass construction on South Shore Drive, S. Jeffrey Avenue, and at the intersection of Cornell Drive and Hayes Drive. The focus of the current archaeological investigations reported herein was primarily an evaluation of the APE's National Register of Historic Places (NRHP) eligibility under Criterion D; that is, the APE's potential to contain archaeological material that may provide information important to our understanding of prehistoric and/or the pre-urban historic use of the APE, development of Jackson Park and the World's Fair, and/or post-World's Fair use of the Park.

A total of 56 geomorphological cores (GCs) and 13 hand excavation units (HUs) were completed within those areas within the APE requiring field investigations. Of these, 42 geomorphological cores and 10 hand excavation units were completed within the OPC, and the remaining 14 geomorphological cores and 3 hand excavation units were completed along existing road rights-of-way. Three previously recorded sites (11CK1105, 11CK1106, and 11CK1107) were revisited and four new sites were recorded (11CK1289, 11CK1290, 11CK1291, and 11CK1292).

Landscape History

The summary of landscape history is derived from Kolb (this volume, Appendix A), Burham's report to the Commission of the Chicago World's Fair held at the Ryerson and Burham Library, the Art Institute of Chicago (Burhnam 1894); examination of digital copies of unpublished maps and images in the Chicago Park District Records: Drawings and Chicago Park District Records: Photographs, and original photographs available at the Special Collections Reading Room, Harold Washington Library Center, Chicago Public library and the Ellsworth-Arnold Photograph Album 1892–1984 collection also held in the Special Collections of the Harold Washington Library Center, Chicago Public Library (catalog # ARCHIVES WCE EAPA).

The refined APE is situated within the Lake Chicago Plain, a landform that has seen a series of lakeshore transgressions and retreats during the late Pleistocene and early Holocene periods. Any surfaces from early lake regressions such as the Chippewa Low (9,800–5,500 radiocarbon years BP) are deeply buried under later lacustrine sediments deposited during the following Nipissing high stand (ca. 5,500–2,500 radiocarbon years BP) (Kolb 2018). Parent materials for soils present at the time of Euro-American settlement were lacustrine sediments that accumulated in spits during the Nipissing inundation in a shallow lacustrine depositional environment. As the lakeshore receded, soil forma-

tion began ca. 2,500 radiocarbon years BP and continued until the modern period. Geomorphological coring determined that pedogenesis occurred with minor accumulations of sand and thin units of organic sediments in mostly paludal (marshy) environments (Kolb 2018). The Bretz map (1930) shows the distribution of dune ridges and low areas, and indicates that much of the refined APE lies within low areas, with the exception of the coring location at the intersection of South Shore Drive and 67th Street (Kolb 2018). It should be noted that the Bretz map is currently undergoing revision as part of a long-term study of the Lake Michigan coastline (Steven E. Brown, Illinois State Geological Survey, personal communication to Clare Tolmie, October 2017).

Areas of swamp or marshes were probably present during the prehistoric period. World's Fair engineers found a buried swale that curved southwest from the approximate center of the location of the Manufactures and Liberal Arts building, turning southeast at the location of the Columbian Fountain and then running under the Agriculture building. The sediment was too thick to remove, so pilings were used to provide foundations for structures in this area (Burnham 1894/1969).

At the time of Euro-American settlement, the refined APE is shown as prairie, with no significant stands of timber present. The shoreline was slightly further east than it is today, but erosion had become a problem by the late nineteenth century. This was due in part to the changes in sediment transport that resulted from the reconfiguration of the mouth of the Chicago River (Tolmie 2017). The construction of the paved beach, begun as part of Olmsted's original 1870 plan for Jackson Park, was intended to prevent further erosion. Jackson Park was intended to serve as a source of recreation and leisure for the inhabitants of Hyde Park and the City of Chicago. The original landscape was not regarded by Olmsted as particularly inspiring, based on then-current ideas of the "sublime". It was not until Jens Jensen advocated for natural parks as an expression of the natural local landscape that the prairies and marshy landscapes surviving around Lake Michigan began to be regarded as attractive (Tischler 2000). The descriptions of Jackson Park by Olmsted, Burhnam and others may therefore exaggerate the defects of the landscape based on then current paradigms of landscaping.

The contour map created for the Exposition planners prior to construction shows the refined APE (Burnham 1894) and confirms the generally level nature of the ground. By this point, the northern portion of the park around what is now the North Pond and the Museum of Science and Industry had been landscaped, and the area to the south had been significantly altered by preliminary dredging of one lagoon. Trees are shown in the western and southern portions of the park and only a few isolated stands of rushes are mapped, in lower spots in the eastern portions of the park.

The area south of the North Pond was subject to considerable alteration prior to construction of buildings for the World's Fair. The area of the Wooded Island, then a grove of oak trees, was left relatively undisturbed. The undeveloped part of the park was to be the location of canals and the Court of Honor (Burnham 1894/1969). This area was subjected to considerable alteration with grading to level ground above low wet areas, and dredging of sediment from the low swales. This sediment was piled along the edge of the waterways and then moved to the terraces under construction. Tree and topsoil removal began in 1892, and dredging began in April of the same year. Fill raised the general level at least 6.5 ft (1.8 m) above the Chicago Datum, the level of low water in Lake Michigan in 1847

(Burnham 1894/1969). The grading and dredging either truncated high ground or buried the original land surface. The degree of disturbance is likely related to the original elevation of the surfaces and the requirements of the developers.

Following the closure of the World's Fair, the area south of the North Pond was cleared of structures and structural debris, and reconfigured to follow the 1895 Olmsted and Olmsted plan. Although many buildings were destroyed by fire, salvage operations were conducted; archaeological excavation and geocores completed in 2017 indicate that the salvage and removal of debris was extremely efficient. Formal canals and water features around the Court of Honor were removed, the east and west lagoons extended, and the south lagoon excavated. Construction of recreational facilities, including open-air gymnasia along Stony Island Avenue and the golf course in the southern part of Jackson Park, resulted in berm construction and redeposition of additional fill, reflected in the sterile sandy sediment observed in the majority of hand excavation units. The presence of a relatively sterile fill layer of sand below the modern topsoil and above fair debris in the OPC indicates the introduction of additional fill, possibly from the excavations of the lagoons or from other sources. The most significant disturbance from the 1895 landscaping observed in the revised APE includes the partial excavation and abandonment of a 100-foot-wide canal within the Midway Plaisance, resulting in lowering of the ground surface and excavation of a turning circle for boats at the location of the Sunken Garden.

The Sunken Garden itself was constructed in the late 1930s. Further landscape modification occurred with the construction of baseball fields in the mid-twentieth century and an all-weather athletic facility in the late twentieth century.

Geocoring, conducted as part of the present survey, documented major episodes of landscape modification within the revised APE, associated with the 1893 World's Fair and later episodes of cut and fill locations (Kolb 2018).

In some areas where the upper sediments have not been removed, fill has capped the original ground surface. In other areas, the original sediment has been truncated. Core stratigraphy and the Bretz map indicate that sites 11CK1106, 11CK1289, 11CK1290, and 11CK1291 are located in lower areas between beach or spit ridges (Kolb 2018). In contrast, site 11CK1292 is located at the northern end of a beach ridge, with lower ground to the north and west (Bretz 1930). In the baseball and athletic fields, a cross section of cores with surviving truncated or buried surfaces demonstrates a change in elevation of approximately 1 m from west to east, consistent with description of the original low, level landscape by Olmsted and Burnham (Miller 1996). The original surfaces appear least disturbed beneath the existing berms along Stony Island Ave. (Kolb 2018). This is confirmed by the presence of subsurface Features 1 and 2 at site 11CK1189 and Feature 3 at site 11CK1106, under the lower portions of the existing berm. These berms were probably originally constructed as part of the Olmsted and Olmsted 1895 plan.

Within athletic and baseball fields in the OPC APE, fill is 0.7–3.0 m deep with an average depth of 1.61 m. Truncated or completely buried soils are present in 12 cores (cores 1, 3, 4, 12, 13, 14, 19, 33, 23, 24, 25, 28, and 31). All these cores are in areas not impacted by the baseball or athletic field, and many are associated with the existing berms. Truncated lacustrine sediments are present

in the remaining 20 cores. In the Midway Plaisance, a truncated lacustrine soil or sediment is present under 0.26–1.25 m of fill. An intact Ob horizon is present in Core 42, at 1.10 m, south of the lower ground (Appendices A and B). Within the Sunken Garden, a series of 2C horizons occur below truncated surfaces at a depth of 0.49–1.33 m of fill.

Along the roads, at the intersection of Hayes and Cornell, fill is 0.41–3.0 m deep. Buried surfaces, some very thin, occur at 1.34–1.7 m in cores 51, 52, and 55. At the Jeffery Street underpass, fill is 1.45–2.18 m deep. Artifacts in Core 44 occur over a 2Ob horizon formed in muck. Soils at this location are interlaminated muck and mucky sand indicating a wet buried landscape. Cores, in general, across the revised APE in the OPC and the above Road APE areas found horizons with redox or gleyed soils indicating extended periods of high water table within these areas.

In contrast to the buried surfaces described above, where soils formed in marshy environments, cultural deposits from site 11CK1292 (in core 48 at the intersection of South Shore Drive and 67th Street) overlay a very fine sand that may be aeolian in origin (Kolb 2018). This may be sand from beach ridges mapped by Bretz (1930).

Prehistoric Occupation

The prehistoric landscape was most probably a series of sandy dunes and swales, with moisture tolerant vegetation in lower areas. Areas of marsh or swamp were probably present in the lowest areas, evidenced by the presence of muck in some cores. Landscape history for the refined APE suggests that the prehistoric land surface has been truncated or removed in many areas. ISAS did not identify any intact subsurface prehistoric living surfaces with evidence for human occupation.

Twelve non-diagnostic prehistoric lithics—eleven flakes from 11CK1289 and 1 flake from 11CK1290, were recovered from within redeposited fill sediments. Given that large amounts of earthmoving and redeposition of fill from unknown sources took place across the park, these materials have little contextual value other than to suggest the potential for prehistoric occupation at some point in the general vicinity of the Park.

Early Historic Occupation

Archival research indicates that the revised APE, and indeed Jackson Park itself, was not occupied prior to the creation of the park. A single sherd of hand painted floral ironstone or whiteware (1830-1850) is present at 11CK1289, within fill sediments.

1893 World's Fair

All five sites within the APE contained material from the 1893 World's Fair, in zones separated from modern material by a layer of relatively sterile fill. Artifacts from 11CK1106, 11CK1289, 11CK1290, and 11CK1291 are consistent with material deposited in fill during construction and subsequent abandonment of the World's Fair, with a later upper stratum of mid-late twentieth century artifacts in or immediately below the modern ground surface. In contrast, artifacts from site 11CK1292 are the direct product of garbage disposal procedures practiced during the World's Fair.

The artifact assemblage from 11CK1106, 11CK1289, 11CK1290, and 11CK1291 is dominated by architectural debris and/or cinder and coal fragments. The presence of fragments of staff, window glass, wire and machine-cut nails, bricks, lime-sand mortar, and concrete are consistent with the documented construction and demolition of the Great Buildings, other smaller buildings, and the infrastructure of the World's Fair. The artifact assemblage indicates that both machine-cut nails and wire nails were utilized in constitution of Fair buildings, reflecting the transition from the older nail manufacturing process to the new process that began in 1884. Also present are remnants of arc lamps, used to light the exposition grounds as part of the depiction of a "City of the Future." This material was incorporated into the archaeological record when the site was cleared in preparation for construction of Jackson Park post-1895.

The artifact distribution mirrors the known location of the Great Buildings within the Fairgrounds. Architectural material present in hand units was most common at sites 11CK1106, 11CK1289, and 11CK1290 within the OPC, associated with the locations of the Women's Building, the Horticulture Building, the Greenhouse, the Choral Building, and the Terminal Building among other structures. The Great Buildings were coated with staff and plaster. Fragments of this material and other architectural debris from the destruction or demolition of these impressive but temporary structures was redeposited and incorporated into a layer of fill that was preserved under the berms constructed after 1895. Where the berms were not present, this layer of debris was removed by later grading and landscaping. Of particular interest are the painted fragments of plaster/staff, derived from the Terminal Building, and subsequently found in HU2 near the Terminal Building location.

The three features identified during the survey, Features 1, 2 and 3, at sites 11CK1289 and 11CK1106 respectively, are not associated with any known structure within the World's Fair and did not contain any temporally diagnostic artifacts. These features may represent the remnants of ephemeral structures utilized for periods during the construction of the World's Fair and abandoned prior to the Fair itself.

The association of staff and plaster with the Great Buildings is demonstrated by the absence of this material from 11CK1291 and 11CK1292. Site 11CK1291 is situated in the locations of the stock exhibit buildings, described as "sheds" in a guidebook (Rand McNally 1893); and 11CK1292 lies to the west of the Engle Crematory, which was built of brick and timber.

The artifact assemblage from sites 11CK1106, 11CK1289, 11CK1290, and 11CK1291 is in secondary context and contains little material that reflects activities occurring at the World's Fair. In contrast, site 11CK1292 contains an assemblage derived solely from the garbage and sanitation processing systems at the fair. 11CK1292 contains material cleaned from the Engle Crematory, which was used to process garbage and other waste. This formed part of the ideal of a modern city, brightly light through the use of electric light, as seen in the arc lamp rods found across the survey area, and sanitary with the efficient removal of garbage and the use of an efficient sewage system. 11CK1292 contains the end-product of the garbage and sewage collection and processing system.

The Engle Crematory was located in the extreme southeast of the Exposition and consisted of two brick furnaces with a shared chimney covered by a 45-foot square protecting house of corrugate

iron. The furnaces were surrounded by a platform that allowed the garbage carts to tip their loads into chutes that fed directly into the furnace. Each furnace could incinerate twenty tons of garbage at a time (Savery and Callanan 1893). A photograph of the structure shows the building on the west slope of a low sandy rise. Over the period of the fair, from May 9th to November 1st, 1893 tons of garbage were burnt, requiring 90,116 gallons of fuel oil. The incinerator was also used to dispose of sludge cake, the pressed solid waste from the Fair's sewage treatment plant. This dense, damp material was less combustible, and it required 79,723 gallons of fuel oil to incinerate 1,854 tons of sludge cake (Burnham 1894 volume 2:81). Material was cleaned out of the incinerator every day. The archival documents imply that all garbage was destroyed through incineration. There is no discussion of any deposition of any resulting debris.

Material from 11CK1292 contains the non-flammable remnants of waste disposal and thus largely reflects the disposal of waste from the eating establishments within the Exposition. The ceramic assemblage is primarily hotelware—plates, side plates, platters, cups, saucers, bowls, condiment dishes, and jugs. This durable material was introduced in the late nineteenth century and was often customized as a promotional tool (Myers 2016).

The layers of burned material at 11CK1292 represent the cleaning of the furnace. This material appears to have been disposed of on the site, but behind the incinerator and away from the public gaze. It seems that the perfect removal of garbage from the "City of the Future" was not accomplished, although this fact is elided in the contemporary documents and later writings.

Post-World's Fair

Modern artifacts, largely the product of accidental loss, occur at all five sites in low quantities. More personal items were recovered from excavation units within 11CK1106 and 11CK1189. These are located in areas of high pedestrian use, along Stony Island Avenue and the Midway Plaisance, and within a children's play area and the sports fields, and therefore more accidental loss of material and incorporation into the upper sediments of the sites should be expected. In contrast, 11CK1291 and 11CK1292 have relatively small amounts of modern material, reflecting their location within or adjacent to a golf course, with somewhat restricted access to foot traffic.

The absence of layers of post-fair material is intriguing and contrasts with the evidence of public land use at the site of Macktown (11WO256) in north-central Illinois where the authors served as instructors for an archaeological field school conducted by MARS, Inc. At this site, material associated with post-1945 picnicking and recreation is frequently encountered just below the modern surface (Lurie et al. 2010). Within Jackson Park, however, only minimal amounts of material associated with food/beverage consumption or other recreational activities was encountered. We will note, though, that numerous mouth guards were noted on the surface of the APE, associated with use of Jackson Park by the adjacent Hyde Park Academy High School football team, but little of this material has been incorporated into the archaeological record. The relative lack of modern debris with the upper sediment horizon reflects the long term and consistent maintenance of the park and removal of debris.

It also speaks to the behavior of park users who avail themselves of the garbage disposal facilities provided.

Geoarchaeological coring, archaeological excavation, and archival research attest to considerable landscape modification within the revised APE. Within the OPC APE, berms constructed after 1895 have protected layers of fair debris and ephemeral features within sites 11CK1106 and 11CK1289. Fill and buried surfaces are also present at 11CK1190, but no features were identified at this site. Grading and filling appears to have been minimal only at 11CK1292 where intact subsurface deposits survive.

Late nineteenth-century and twentieth-century grading and filling have impacted the original prehistoric landscape. While there is some evidence of prehistoric utilization of the area, the material is in secondary context and consequently unable to provide information on the chronology, subsistence practices, and cultural patterning of pre-contact use of this environmental zone. Overall, results of coring indicate that much of the area was dominated by wet, interdunal deposits and lacustrine landscape. The scant archaeological evidence recovered further suggests that prehistoric use of the area was ephemeral.

No archaeological deposits associated with pre-urban history have been identified. This may be due in part to the high level of late nineteenth century grading and filling within the revised APE. The artifact assemblage dates to the late nineteenth century, with only one ceramic sherd in secondary context dating to the pre-urban period. No features present within the refined APE can be associated with the pre-urban development of the area, and no archival evidence exists to suggest an extensive use of the area during the pre-Fair period.

Evidence for the development of Jackson Park through the end of the World's Fair can be divided into two categories: archaeological material associated with the World's Fair demolition in secondary context, and in situ archaeological material directly associated with World's Fair activities. Sites 11CK1106, 11CK1289, 11CK1290, and 11CK1291 fall within the first category. Although three features are present, one at 11CK1106 and two at 11CK1189, these do not contain any material in primary context. Site 11CK1292 falls into the second category, containing redeposited material that document the end result of garbage disposal practices at the World's Fair. The site contains the remains of burnt material following processing in the incinerator, and includes solid waste and debris associated with sewage processing and food consumption. The deposits are likely biased towards material that survived the incineration process (ceramics, metal, bone), and against more completely combustible material that may have also been processed.

No new data concerning the post-World's Fair through 1967 period was recovered during archaeological investigations that can add to what is already documented within existing records. Very little material was recovered—a result of, at least in part, effective garbage collection and disposal by the Chicago Parks Department and the garbage disposal practices of park-users throughout the twentieth and early twenty-first centuries.

In summary, little new data regarding the prehistory of the urban Chicago area was recovered and no new information on the post-World's Fair development or use of the park in a changing urban

environment was forthcoming. The archaeological record of the World's Fair within the revised APE shows a pattern of debris consistent with structures known to have been present within the fair.

OPC

Three sites (11CK1106, 11CK1289, and 11CK1290) are present within the OPC. Site 11CK1106 is a previously recorded site at the location of the sunken garden, identified by material recovered from shovel tests during field research by Rebecca Graff (Graff 2011). The ISAS 2017 survey encountered cultural material within the existing site boundary and extended the site boundary to the west. ISAS investigations identified one archaeological feature, Feature 3. Feature 3 comprises two shallow ephemeral trenches excavated into a layer of fill that probably date to the period of construction of the World's Fair. Feature 3 did not contain any in-situ cultural material, and has been infilled and capped by post-Fair debris. The feature is unlikely to provide significant data. ISAS investigation determined that 11CK1106 has been severely impacted by construction of the Sunken Garden, roads, and utilities and is unlikely to contain archaeological data significant to our understanding of the past. The *archaeological* component of 11CK1106 does not warrant consideration for NRHP under Criterion D. No further work is recommended at site 11CK1106.

ISAS identified two new sites, 11CK1289 and 11CK1290, characterized by differences in material recovered in geocores and hand excavation units. Site 11CK1289 is characterized by fill containing architectural debris from the World's Fair. The site is located in the baseball fields to the south of the existing all weather athletic facility within the OPC footprint. 11CK1289 contains architectural debris such as staff, nails, flat glass, and other material associated with the construction and demolition of the World's Fair buildings. All cultural material is in secondary context. Two linear features, Features 1 and 2, are present, preserved by the berm constructed along Stony Island Avenue sometime after 1895. Both features are cut into the original land surface, and are interpreted as remnants of ephemeral structures utilized during the early stages of construction of the World's Fair. Both features contained fill with secondary deposits of Fair debris and are capped by a layer containing architectural debris from the World's Fair. Neither feature contained any in-situ cultural material and are unlikely to provide significant additional data. The archaeological component of 11CK1106 does not warrant consideration for NRHP under Criterion D. No further work is recommended at site 11CK1106.

11CK1190 encompasses the existing all weather athletic field and is characterized by a layer of coal, cinder and slag within the fill sediments. Architectural debris from the World's Fair is also present, but in proportionally smaller quantities that within 1CK1189. All material is in secondary context. The site has been impacted by construction of an open-air gymnasium in the immediate post-Fair period and by late twentieth century grading and construction of the existing sports facility. The site is unlikely to provide significant additional data. the archaeological component of 11CK1290 does not warrant consideration for NRHP under Criterion D. No further work is recommended at 11CK1290.

In summary, archival research, geocoring, and limited archaeological excavation have determined that the subsurface sediments within the footprint of the OPC have been severely impacted by grading and filling associated with the construction and demolition of the World's Fair and by subsequent grading associated with construction of later sports facilities, roads, and utilities. It is ISAS' opinion that sites 11CK1106, 11CK1289, and 11CK1290 lack integrity and do not warrant consideration for the NRHP under Criterion D. No further archaeological investigation is recommended within the OPC.

Roads

Two previously recorded sites, 11CK1105 and 11CK1107, and two new sites, 11CK1291 and 11CK1292, border or intersect with the APE. Site 11CK1105 abuts the APE on the east side of Cornell Drive, north of the Midway Plaisance. Visual inspection by ISAS in 2017 determined that this portion of the site has been disturbed by construction of utilities. Graff's field investigations within 11CK1105 demonstrated that there is the potential for intact subsurface features within 11CK1105, but outside the APE as currently configured. No evaluation regarding NRHP eligibility can be made for the majority of the site which lies outside the present APE. Should these portions of the site be subject to development in the future, additional survey will be necessary to evaluate those areas for NRHP eligibility. ISAS therefore recommends no further work at 11CK1105 within the existing revised APE.

Site 11CK1107 has not been evaluated for NRHP eligibility, and the small portion of the site within the APE to the east of South Shore Drive was not investigated due to disturbances from road construction, pathways and park infrastructure, tree driplines, and the presence of an unmarked gas utility line. ISAS revised the site boundary to more accurately reflect the area surveyed by Graff, and to distinguish the general artifact scatter recorded by Graff (likely derived from fill contexts) from the in-situ deposits identified by ISAS as 11CK1292, described below. The small portion of 11CK1107 within the APE, located east of South Shore Drive, appears to represent an extension of redeposited fill associated with demolition debris from the World's Fair (Graff 2011); this area has been heavily disturbed by the construction of south Shore Drive and utility placements and no further work is recommended within the revised APE.

11CK1291 is located on the west side of S. Jeffery Avenue, on the west side of a proposed underpass location. Cultural material at this location lies directly over a buried land surface of muck sediments that formed in marshy conditions. All artifacts are in secondary context and no features were encountered. 11CK1291 does not contain archaeological data significant to our understanding of past lifeways and does not warrant consideration for the NRHP under Criterion D. It is ISAS' opinion that no further work is necessary at 11CK1291.

The final site, 11CK1292 contains buried, burnt material associated with the 1893 Columbian Exposition, in particular clean-out events associated with operation of the Engle Crematory. This facility was part of the promotion of new sanitary and waste disposal practices for the "City of the Century." An extensive archive of historic documents detailing the operation of the incinerator indicate that the burnt material is composed of a mix of incinerated sewage and garbage collected from the grounds and

various facilities of the Worlds Fair. Analysis of recovered artifacts suggests the deposits are heavily biased towards material that survived incineration such as ceramic serving wares, calcined bone, and melted glass. Geomorphic cores indicate suggest this material is fairly constrained in extent and buried beneath 60 cm (2 ft) of fill. The known extent of the deposits appears to lie outside current construction limits. Although the material appears to be directly related to the operation of the Engle Crematory, the deposits represent a secondary deposit of incinerated refuse and lack the potential to provide additional information related to either the Worlds Fair or the operation of the Crematory beyond that provided in the extensive written record available. Therefore, it is our recommendation that 11CK1292 does not warrant NRHP consideration under Criteria D.

In summary, no further work is recommended for all sites within the Roads portion of the revised APE as currently planned. Should plans change regarding road construction or underpass locations, additional archaeological work will be necessary.

ISAS recommends no further work within the OPC, or within the Roads as currently planned. No portions of previously recorded sites within the APE, nor are any of the newly reported sites within the APE recommended as warranting consideration for NRHP under Criteria D. It should be noted, as discussed earlier in the report that the ISAS survey was restricted to areas outside existing driplines and areas of recent planting and landscaping.

Appendix A

Geomorphological Survey

Michael F. Kolb, PhD
Strata Morph Geoexploration

Stratigraphic and Geoarchaeological Investigations in Conjunction with the Archaeological Investigations for the Proposed Obama Presidential Center (OPC) in Chicago, Illinois

By
Michael F. Kolb, Ph.D.
Strata Morph Geoexploration, Inc

Strata Morph Report of Investigation Number 294

January 2018

Prepared for
Illinois State Archaeological Survey
Prairie Research Institute
University of Illinois at Champaign–Urbana

Introduction

Stratigraphic and geoarchaeological investigations were conducted for the proposed OPC located in Jackson Park Chicago, Illinois. The investigation is designed to aid archaeologists in locating buried archaeological sites in the project area. It is not designed to locate artifacts or features but rather, to locate stratigraphic contexts where there is geologic potential for buried archaeological sites. Stratigraphic contexts with potential must subsequently be sampled to determine if archaeological sites are present. Deposits or stratigraphic sequences either have geologic potential to contain buried archaeological deposits or they do not. Landforms with geologic potential can be further subdivided based on the expected condition or integrity of the archaeological deposits they may contain. The condition of the archaeological deposits depends on the complex interaction of variables over space and time within each depositional environment. The three levels of geoarchaeological potential and the criteria for their selection are listed below (modified from Artz 2011; Eigenberger et al. 2009; Hudak and Hajic 2002; Monaghan et al. 2006).

Potential (high integrity): Landforms where sediment has accumulated in the last 14,000 years in depositional environments where archaeological deposits could be buried and preserved in primary context; depositional style yields stratigraphic sequences with the potential for separation of some of the archaeological components in stacked paleosols or in accretionary deposits with relatively high sedimentation rates.

Potential (moderate integrity): Landforms with limiting factors such as long-term wet conditions, short duration of sedimentation, young deposits, potential for gaps in the record due to erosion; a depositional style that yields stratigraphic sequences that are conducive to preserving buried archaeological deposits but with possible physical modifications to the primary cultural context or; landforms that are likely to have potential for buried archaeological deposits but the stratigraphic contexts of these landforms is unknown or geographically variable.

Low or No Potential: Deposits that are too old, too thin, or too disturbed to contain buried archaeological deposits in primary context or deposits that accumulated in high-energy depositional environments such as fluvial channels where any archaeological deposits are likely not in primary context.

Stratigraphic contexts with potential are subsequently investigated using hand excavations by the project archaeologists. Stratigraphy is mapped using cores extracted with a truck-mounted Geoprobe. Extensive fill documented in the historic record necessitated the use coring as an initial exploration technique. Cores can quickly sample the fill and the deposits beneath the fill with minimal surface impact.

Jackson Park is located south of the Chicago Loop along the Lake Michigan shoreline on the Lake Chicago Plain (Wilman 1971). It is the site of the 1893 World's Fair and was developed into a park soon after the fair. Elevations in the park, taken from the 1929 USGS topographic quadrangle,

range from 176.2 m (578 ft) at the shoreline to 179.7 m (590 ft) at its western boundary. A few higher localized areas are noted with elevations up to 184.4 m (605 ft). The above elevations date to post-Fair and Park development so are on the fill surface landscape. Elevations are especially important in this lakeshore setting given the wide range of geologic and historic water level fluctuations in the Lake Michigan basin. During the decade of the World's Fair water levels were below the mean lake level elevation.

Previous Research and Geomorphic Setting

Geologic processes that have shaped the landscape in and around the project area occurred over the last 20,000 years during glaciation, deglaciation, and associated water level fluctuations in the Lake Michigan basin (Hansel and Mickelson 1988, Hansel et al. 1985, Larsen 1985). The project area was deglaciated after glacial ice retreated from the nearby Lake Border moraine 13,000 ^{14}C years BP (15,300 cal years) (Table A.1). As the Lake Michigan lobe retreated north proglacial lakes formed in the Lake Michigan basin (Hansel et al. 1985). One of these lakes was Glacial Lake Chicago. It existed episodically between 13,000 ^{14}C years BP (15,300 cal years) and 11,000 ^{14}C years BP (12,900 cal years). During this time the project area was inundated when water levels rose to 189 m and 195 m (620 and 640 ft) and subaerially exposed during shortened duration low stands when the water levels fell below 580 ft (see Table A.1). With continued ice retreat the lake plane fell to the Toleston level at (605 ft) about 10,300 ^{14}C years BP (12,000 cal years BP). As the northern outlets were exposed water levels continued down to the Chippewa low stand well below the modern level of the lake (Larsen 1985).

Up until the Chippewa low phase the project area was in a geomorphic zone of transgressing and regressing proglacial lakes. With the advent of the low water during the Chippewa phase the shoreline and nearshore deposits that formed the landscape surface after the regression to the Chippewa low were subjected to soil forming and subaerial geomorphic processes for about 3500 years. This includes valley and lake bottom incision by streams flowing to the lake as they adjusted to the much lower base level (Kiesel and Mickelson 2005). During this time human populations could have occupied the project area.

A major transgression to the Nipissing water levels occurs after the Chippewa Low phase. This transgression inundates the project area and fluctuates between 178 and 183 m (584–600.5 ft) for about 2700 years (5500–3800 BP). Similar high water planes during the same time span are also documented in other locations around Lake Michigan (Thompson and Baedke 1997). The end of the Nipissing phase is marked by a short-lived regression then a rise to the Algoma water level of about 180 m (590.6 ft) sometime between 3700 and 3200 ^{14}C years BP (Dott and Mickelson 1995). From about 2500 ^{14}C years BP to the present the water levels have fluctuated around the modern mean between elevations of 176 m (577.5 ft) and 178 m (584 ft).

The Graceland spit, which is mapped in Jackson Park (Lineback 1979), formed during the Nipissing probably during the early Nipissing Phase when Nipissing lake levels were highest (Chrazastowski

2009, Chrazastowski and Thompson 1994). The spit emerges from the waters of Lake Michigan about 2500 ^{14}C years BP after being submerged for about 3000 years.

Bretz (1930) mapped beach ridges abutting the north and south boundaries of the park but not extending into the park because they had been obliterated or buried by park and fair development (Figure A.1). One ridge goes through the Midway Plaisance Locality. In other cases ridges can confidently be extended into the Incinerator Locality and one may extend along Stony Island Avenue. The rest of the localities appear to be between ridges in areas Bretz (1930) mapped as glacial lake bottom. It is not clear whether the beach ridges formed by reworking the spit sediments marking shoreline position during the Nipissing regression or are just narrow spits or some combination of both.

Methods

Cores were used to describe and map the stratigraphy in the project area. Cores penetrated to depths between 2.13 m (7 ft) and 3.96 m (13 ft) depending on the deposits encountered. Core locations were accessed on a plywood road so as not to rut up the park. A truck mounted Geoprobe® was used to extract 4.5 cm (1¾ inch) diameter cores. Core samples were described in the field using standard systems from soils (Schoeneberger et al. 1998; Soil Survey Staff 1975) and geology (Collinson and Thompson 1982; Folk 1974). Each borehole was abandoned by pouring bentonite clay and water down the hole followed by the core sample.

Results

Deposits

Lacustrine Deposits

The bulk of the lacustrine deposits consist of very fine-fine sand that is generally laminated. Coarser sand interbeds and occasional granules and fine gravel are also present. Snails are present but not abundant. The consistent very thin lamination and very fine to fine sand grain-size indicates the same depositional environment at all of the localities in the project area. One scenario is that the sand spit was reworked by wave action and shoaling during an extended emergence time with deposition consistent with the observed pattern on the backside of the lakeward sand ridges. A second scenario is that the spit emerged quickly and the depositional environment is that of a lacustrine spit.

At the top of the lacustrine sequences that are not truncated there is a thin interval of laminated or bedded silts, organic silts, very fine and fine sands, and occasionally muck. It accumulated after the lacustrine landform became subaerial by localized deposition during a quasi-stable period of pedogenesis. The base of the surface interval is conformable with the underlying lacustrine sands. Lacustrine deposits are the lowest and oldest units encountered in all of the cores.

Historic Fill

Historic fill was emplaced over the lacustrine deposits. In some cases the soil/deposits at the top of the lacustrine sequence was modified, partially removed, or totally removed. Fill in the cores is divided into three broad types: (1) silt loam with minor silty clay loam and sandy loam, (2) sand with gravel in some cores, and (3) layers of debris and artifacts. In cores the fill types are defined by the lithology of the deposit matrix. Fills with few or no artifacts in the cores may have many artifacts in the archaeological excavation units. Debris and artifact layers are identifiable in cores because they contain fine demolition debris, such as plaster and mortar, concentrated cinder, and organics as well as an abundance of other artifacts.

Topsoil Fill is silt loam, silty clay loam and sandy loams that occurs at the top of the fill at the modern landscape surface in all of the cores. It is predominately black or very dark gray silt loam with fewer occurrences of sandy loam. Silty clay loam topsoil fill is only present at the Midway Plaisance Locality. In non-geologic parlance it can be referred to as topsoil. It was spread over much of the park as a part of the landscaping process.

Sandy Fill is sand with gravel at some locations. The sands are either well-sorted very fine–fine textured or less well-sorted fine and medium sand with gravel. The different textures are due to source. The very fine –fine sands are from lacustrine deposits like the ones that occur in all the cores beneath the fill. The coarser sand with gravels was not encountered locally, at least in the upper 4 m of deposits. They could be from beach or outwash sequences from nearby or from depths below the core sample depth. Given the artifacts in the fill in some hand units there may have been secondary sources of fill such as temporary storage areas where fill could be mixed with secondary anthropogenic sources in heavily utilized areas.

Debris and Artifact Layer fills consist of concentrations of artifacts and demolition debris in dark sand, sandy loam or silt loam soil matrix that is often stratified. In most cases they occur at the base of the fill. These are secondary anthropogenic deposits.

Soils

Pedogenesis is the process of soil formation. Soils form at and near the landscape surface where the biosphere, lithosphere and atmosphere intersect and are a function of the interaction of these spheres over time. Soils form from geomorphically stable landscape surfaces where sedimentation rate are nil or very low or occurs episodically. Pedogenic modification of the fills is not readily detectable in part because much of the fill was previously modified by soil formation in a wet environment and/or given the fills age (100–120 years old) minimal pedogenesis would be expected.

Beneath the fill the lacustrine sediments are pedogenically altered. At the surface of the buried soil periods of sedimentation alternate with periods of stability resulting in sandy laminae (C horizons) alternating with organic silt laminae (A horizons) and/or muck beds (O horizons). The sequence formed under changing hydrologic conditions at different location and over time. The organic silts accumulated when the water table was fluctuating at and near the surface perhaps with seasonal ponding allowing for the preservation of the organic fraction and deposition of the silts. Muck accumulated

in ponded setting or where the water table is at the surface. The sand is either washed in or blown in (eolian) during dry periods. All of this activity occurred after the lacustrine spit became subaerial and can be very localized. The preserved organic mineral sediment and muck surface horizon and the redox near the surface indicate the soils were formed in a wet (hydric) environment (U.S.D.A. 2017).

Stratigraphic Sequences

Stratigraphy in the project area consists of lacustrine deposits overlain by historic fill. Stratigraphy is divided into 4 sequences.

Stratigraphic Sequence 1 and 1a is fill over an intact, modified, or partially truncated Ab, Ob, or Ab&C horizons. Soil horizons are formed in the upper part of the lacustrine sequence and often have fine stratification caused by minor deposition during the process of pedogenesis on a quasi-stable landform. The contact between the fill and the lacustrine sequence is a discontinuity or, if it is partially truncated, it forms an anthropogenic discontinuity. In the former case the top of the lacustrine deposits is the top of the buried soil and in the latter it is the truncated surface. Stratigraphic Sequence 1a is the same as Sequence 1 but the fill has an artifact and debris layer at its base.

Stratigraphic Sequence 2 and 2a consists of fill over a truncated lacustrine sequence. The sequence is considered truncated if all of the buried surface soil horizons (Ab, Ob, or Ab&C horizons) formed in the lacustrine sequence are missing creating an anthropogenic discontinuity. Sequence 2a is the same as Sequence 2 but fill has an artifact and debris layer at its base.

Midway Plaisance Locality

The Midway Plaisance Locality is parkland in the midway between South Stony Island Avenue on the east and railroad tracks on the west (Figure A.2). The modern landscape consists of a central low wet area surrounded by higher ground. At the beginning of the field investigation the low area held standing water. When the cores were extracted 3 weeks later the low was just muddy. Cores 37–42 were extracted in the Midway Plaisance Locality (Figure A.2).

Fill ranges from 0.26 to 1.25 m thick (Figure A.2, Table A.2). It is thickest along the eastern edge of the locality in Cores 37 and 42. The fill contains relatively thick layers of silty clay or silty cay loam at or near the modern surface that slows permeability resulting in the ponding observed at the locality. This clayey surface fill is not present at any of the other localities investigated.

Stratigraphic Sequence 2 is present in Cores 37, 38, 39 and 40. It consists of fill over a truncated lacustrine soil/sediment sequence (Appendix B). Beneath the truncated surface in Cores 38–40 there is a series of C horizons over Cg horizons formed in the lacustrine deposits. In Core 40 a Cg horizon is present directly beneath the truncated surface. Stratigraphic Sequence 1 is present in Cores 40 and 42. In Core 40 the A horizon is mixed and disturbed. In Core 42 an intact Ob horizon is present beneath the fill indicating a wet to ponded soil-forming environment was present prior to filling.

Sunken Garden Locality

The Sunken Garden Locality is in the midway to the east of Stony Island Avenue and west of South Cornell Drive (Figure A.2). Cores 33–36 were taken around the edges of the locality outside of the sunken garden, which is located in the center of the locality.

Fill ranges from 0.49–1.33 m thick (Figure A.2, Table A.2). It consists of a silty topsoil layer at the surface over mixed light and dark sand with a few pebbles. In Cores 34–36, where the fill is thin, the base of the fill is mixed light colored sand and A horizon soil indicating minimal truncation because the A horizon was mixed with fill and not removed completely.

Stratigraphic Sequence 2 is present in all of the cores. Beneath the truncated surfaces are a series of 2C horizons typically formed in laminated very fine to fine sand. They exhibit zones of iron oxide depletion and zones of high chroma redox features. In Cores 34–36 2Cg horizons are present at depth.

OPC

The OPC is the area of Jackson Park bounded on the west by South Stony Avenue, on the east by South Cornell Avenue, on the south by 63rd Street and on the north by the Midway Plaisance (Figure A.3). A total of 32 cores were extracted in the OPC.

Fill ranges from 0.74 m to 3.00 m thick with an average fill thickness of 1.65 m. There is no pattern in the spatial distribution of fill thickness (Figure A.3, Table A.2) nor does it correlate with the type of stratigraphic sequence (see Table A.2). Stratigraphic Sequence 1 occurs in 12 (37%) of the cores in the OPC. It consists of fill over a complete or partially truncated buried soils formed in the lacustrine deposits. This buried soil marks the landscape surface that was present prior to the development of Chicago.

Stratigraphic Sequence 2 is present in 20 (63%) of the cores in the OPC. It consists of fill over a truncated lacustrine sequence where the buried soil's upper solum is missing. The contact between the fill and the lacustrine sequence is an anthropogenic discontinuity. It was created when preparing the landscape for the World's Fair or during the preparation of the park soon after the fair.

A distinctive artifact and debris layer (Stratigraphic Sequences 1a and 2a) are located at the base of the fill in Cores 4, 6, 11–14 beneath the berm around the baseball fields in the southern half of the OPC, and in Core 30 in the berm northwest of the playground (Figure A.4). The artifact and debris layer is readily identifiable in cores because, in addition to sand and some gravel, it contains fine-grained anthropogenic material and organics as well as demolition debris and artifacts. Sandy fill layers that contain numerous artifacts were often not detected because no artifacts were recovered in the cores. These sandy artifact-rich fill layers were documented in the archaeological hand unit excavations.

The stratigraphic cross-section in Figure A.4 illustrates the rather typical lateral relationships among cores in the southern part of the OPC. The modern landscape has a pronounced berm at the western edge of the locality, a lower flat area in the middle where the baseball diamonds are located, and a subtle berm at the eastern edge of the locality. These park landforms are present in the entire

OPC. Fill is the surface deposit. It is mostly sand except under the berm where the debris and artifact layer occurs. It should be noted that a relatively large number of artifacts were found in the sandy fill near Core 8 in a hand excavation. All of these artifacts are in secondary cultural contexts. All or part of the upper solum of the buried soil is present in Cores 13 and 14 under the berm and in Core 3. These areas were not heavily modified during or prior to fill emplacement. In Core 8 and 16 the buried soils were truncated during or prior to fill emplacement. Truncated soils are the result of cutting and the intact soils are the result of filling without cutting. Cut and fill may be the cause of the stratigraphy beneath the berms. The soil where the initial cutting occurred contained artifacts and debris that was the first fill transported to the berm. A hydric soil is formed in the lacustrine deposits beneath the berm.

In summary, the fill is underlain by lacustrine sediment that accumulated in a spit and was reworked in shallow nearshore lacustrine depositional environment during the Nipissing Phase of Lake Michigan. When lake levels receded the spit and associated shoreline landforms became subaerial marking the start of a soil-forming interval. The best-preserved soils occur in cores with the Sequence 1 stratigraphy. Overall soil development in the OPC is weak because the soil-landscape was poorly drained. Wetness tends to retard soil horizonation and preserve depositional structures.

Hayes and Cornell Locality

The Hayes and Cornell Locality extends from the intersection of Hayes Drive and Cornell Avenue east along the south side of Hayes Drive for 175 m and south along the east side of Cornell Avenue for 200 m (Figure A.5). The modern landscape is parkland and paths along the edges of tennis courts and a golf course. Cores 51–56 were extracted at this locality (Figure A.5).

Fill ranges from 0.41 m to greater than 3.04 m thick (Figure A.5, Table A.2). The topsoil at the modern surface is black and very dark gray silt loam and sandy loam (Appendix B). Beneath the topsoil the fill is layered fine-very fine sand with minor medium sand and occasional gravel in Cores 51–53. In Cores 54–56 the fill exhibits more layering and has coarser sand and more gravel. Fill extends to the base of Core 54 at depth of 3.04 m.

Stratigraphic Sequence 1 occurs in Cores 51, 52 and 55 and Stratigraphic Sequence 2 occurs in Cores 53, 54 and 56. Stratigraphic Sequence 1 cores have Cg horizons with hydric soil colors immediately below the buried soils 2A or 2A/C horizon. Stratigraphic Sequence 2 has 2C horizons below the buried soil formed in laminated very fine-fine sand.

Golf Course Locality

The Golf Course Locality is located on both sides of South Jefferies Avenue where an underpass is proposed (Figure A.6). The modern landscape is part of the golf course. Cores 43–46 were extracted at the locality.

Fill ranges in thickness from 1.45 to 2.18 m (Figure A.6, Table A.2). Fill is divided into three units. The upper layer is the ubiquitous dark colored silt loam to sandy loam topsoil. The middle layer makes up the bulk of the fill. It consists of layers of very fine-fine sand with lesser amounts of

coarser sand with gravels. The lower layer is thin-layered sandy loam with some silt loam mixed with artifacts and darker soil inclusions from the buried soil.

Stratigraphic Sequences 1, 1a, and 2 are present. Stratigraphic Sequence 1 is present in Cores 43 and 45. It consists of relatively thick unit of interlaminated mucky silt, muck, and sand (2Ab, 2C and 2Ob horizons) in Core 43 and interlaminated muck and organic sand (2Ob and 2Ab horizons) over 2Cg horizons formed in fine sand lacustrine deposits. Stratigraphic Sequence 1a is present in Core 44. Beneath the artifact rich layer at the base of the fill is a 2Ob horizon formed in muck over a 2Ab horizon formed in mucky very fine to fine sand. This sequence overlies a 2C horizon formed in laminated very fine to fine sand lacustrine deposits. Stratigraphic Sequence 2 is present in Core 46. It consists of fill over C and Cg horizons formed in laminated very fine-fine lacustrine deposits.

Incinerator Locality

The Incinerator Locality is at the intersection of East 67th Street and South Lake Shore Drive at the modern Lake Michigan shoreline (Figure A.7). The modern landscape is part golf course and part landscaped ROW. Cores 47-50 were extracted at the locality (Figure A.7).

Fill ranges in thickness from 1.10 m to 3.22 m (Figure A.7, Table A.2). The surface layer is silt loam topsoil in all four cores (Appendix B). Beneath the topsoil fill consists of sand with occasional relatively thin layers of silty or clayey fill deposits. Sands are overwhelmingly very fine-fine textured with minor amounts of coarser sand and gravels. Core 47 appears to have two fill episodes separated by silt loam topsoil layer at 1.3 m below the surface. In Core 48 the fill below the topsoil to a depth of 1.32 m contains many artifacts and debris. This layer overlies well-sorted very fine sand that may be eolian in origin. Sandy fill continues to 3.22 m. In Core 49 fill consists of silt loam over a limestone roadbed over the typical very fine-fine sand over medium sand with a pebble lag at the base above the buried soil. Core 50 is in the ROW along the north side of East 67th Street. Beneath the silty clay loam topsoil fill consists of the typical very fine-fine sand.

Stratigraphic Sequences 1 and 2 occur at the Incinerator Locality. Sequence 1 occurs in Cores 47, 49 and 50. In Core 47 the buried surface in marked by a 2Ab&2C horizon sequence consisting of interlaminated organic loamy sand and brown to yellowish brown very fine-fine sand. Beneath the 2Ab&2C horizon a series of C horizons are formed in lacustrine deposits. In Cores 49 and 50 the fill overlies a thin Ab horizon formed in sand or loamy sand lacustrine deposits. Stratigraphic Sequence 2 occurs in Core 48 where 3.22 m of fill overlies a truncated soil with a 2C to 2Cg horizon sequence also formed in lacustrine deposits.

Columbia Basin Locality

The Columbia Bridge Locality is at the two ends of the Clarence Darrow Bridge just south of the Museum of Science and Industry (Figure A.8). Cores 57–59 were extracted at this locality.

Cores 57 and 58 are off the thick fill that forms the embankment of the bridge (Table A.2, Figure A.8). Core 59 was taken from the top of the embankment. Fill in Cores 57 and 58 ranges from 0.56–1.62 m thick and consist of very fine-fine sand with a few pebbles and silty soil inclusions (Fig-

ure A.8, Table A.2). Fill in Core 59 is 2.65 m thick and consists of fine sandy fill with a few pebbles. A plaster rubble layer is present between 1.70 and 1.82 m below the surface.

Cores 57 and 58 exhibit Stratigraphic Sequence 1 and Core 59 exhibits Sequence 2. In Cores 57 and 58 the soil formed in the lacustrine deposits consists of an upper solum with thin laminated 2Ab&2C horizon. Beneath the 2Ab&C horizon are brown and grayish brown horizons that consist of massive very fine-fine sand lacustrine deposits with few redox features; a thick horizon of iron depletion. This is underlain by 2Cg horizons formed in laminated very fine-fine sand lacustrine deposits with many distinct redox features. In Core 59 the 2Ab&C horizon is modified and mixed with fill. It abruptly overlies a sequence similar to the one below 2Ab&C horizons in Cores 57 and 58: laminated 2C horizon with few redox features over a 2Cg horizon with many distinct redox features also formed in laminated lacustrine deposits.

Discussion and Geoarchaeology

The geomorphic and cultural events that formed the stratigraphy and landscapes in the project area are discussed in chronological order including a discussion of potential for buried archaeological sites. The project area was subaerial and first available for habitation during the Chippewa Low stand of Lake Michigan (lowest elevation of 85 m (280 ft)) between about 9800 and 5500 ^{14}C years BP. The regression exposed glaciolacustrine and glacial deposits laid down during previous events that now form the substrate of the Chippewa Low landscape. In the geotechnical borings deposits beneath the upper lacustrine sands (nearshore deposits samples during this investigation) are a thick unit of silty clay or clay with minor amounts of sand. This is interpreted by the author as deep water glaciolacustrine deposits and/or glacial tills. If they are glaciolacustrine deposits they accumulated in Glacial Lake Chicago (11,000 and 11,800 ^{14}C BP) and if till, it's Oak Creek Formation that was deposited by glacial ice around 14,200 ^{14}C BP. The deposits have no potential to contain archaeological deposits. The glaciolacustrine and glacial depositional environments are not compatible with human habitation. However, these deposits are at or near the surface of the Chippewa Low landscape that could have been occupied by human populations.

The Chippewa Low Landscape is deeply buried and was not encountered in the cores. During the Chippewa Low a transgression was occurring that eventually rose up and over the project area to the Nipissing high stand of (600.5 ft). If archaeological deposits were present on the Chippewa Low landscape they would have been reworked, redeposited, or buried by the transgressing shoreline. The degree of disturbance would depend on the rate of the transgression and the topography of the buried landscape. The project area remained inundated in relatively shallow water until about 2500 ^{14}C years BP. During the period of inundation, probably during a period of relatively high water, the Graceland Spit formed. As the water regressed to modern levels the spit was reworked by shoaling and shoreline processes. After the spit emerged a period of geomorphic quasi-stability began characterized by minor episodic sedimentation and pedogenesis that lasted until the beginning of the urbanization of Chicago. Deposits at the now buried landscape surface, where preserved, indicate

sedimentation consisted of minor accumulation of sand (laminae scale units) and accumulation of thin units of organic sediment in paludal settings. Pedogenic processes consisted of the formation of O horizons and A horizons often with included sand laminae and subsoil redox processes associated with hydric soils. The varied spatial distribution of hydric morphology indicates the landscape was a mosaic of ponded, very poorly drained, and poorly drained soils. Preserved depositional laminae at or near the buried landscape surface are another indicator of wet soil condition. Stratification in the surface soil horizons indicates periods of instability occurred likely driven by hydrologic changes. Wet and dry cycles would account for the observed variation in soil formation (A verses O horizons) and deposition of sand laminae. Potential for archaeological deposits exists at the buried landscape surface because it was a subaerial landscape for 2500 years. The lacustrine sediment that makes up the spit has low potential for buried archaeological deposits.

With the onset of urbanization the low wet landscape settings were loci for dumping and in the late 1800's and early 1900's fill was emplaced covering the entire project area. The filling was necessary to prepare the area for the World's Fair and then the construction of Jackson Park. What's critical to the preservation of archaeological sites is how the now buried landscape was treated prior to fill emplacement. Stratigraphy delineated in cores indicates the fill was emplaced over the buried soil surface or the buried soils upper solum was removed and the fill was emplaced on that truncated surface. When the buried soil surface is preserved both historic and prehistoric artifact assemblages and features, if present, will be preserved. When the buried soil is truncated artifact assemblages not in features will be removed or in secondary contexts. Cut and fill appears to be one of the methods of fill emplacement. The truncated soils are cut perhaps they were originally slightly higher elevations and the preserved soils are low or level areas that did not need modification. The soil-stratigraphic data and the distribution of ridges on Bretz's (1930) map indicate the project areas, with the exception of the Incinerator Locality, are in relatively broad, wet, low between beach or spit ridges.

References

Artz, Joe A. (2011) A Geoarchaeological Overview of South Dakota and Preliminary Guidelines for Identifying and Evaluating Buried Archaeological Sites. *Office of the State Archaeologist* Contract Completion Report 1868.

Bretz, J. Harlan (1930) Surficial Geology of the Jackson Park Quadrangle. *Chicago Areal Geologic Maps, Map No. 12-Jackson Park, 1:24,000 scale*.

Chrazastowski, Michael J. (2009) The Chicago River-A Legacy of Glacial and Coastal Process. *Illinois State Geological Survey Guidebook 37*.

Chrazastowski, Michael J. and Todd A. Thompson (1994) Late Wisconsinan and Holocene Geologic History of the Illinois-Indiana Coast of Lake Michigan. *Journal of Great Lakes Research* 20:9–26.

Collinson, J. D., and D. B. Thompson (1982) *Sedimentary Structures*. George Allen & Unwin, London.

Dott, Eric R., and David Mickelson (1995) Lake Michigan water levels and the development of Holocene beach-ridge complexes at Two Rivers, Wisconsin: Stratigraphic, geomorphic, and radiocarbon evidence. *Geological Society of America Bulletin* 107(3):286–296.

Eigenberger, Dylan, Alan Stanfill, and Michael F. Kolb (2009) Proposal for the Identification and Evaluation of Deeply Buried Archaeological Sites Along the DM&E Powder River Expansion Project New Build Segment in Wyoming and South Dakota. *HDR Engineering, Sioux Falls, South Dakota (ARMS Archive OSA-0654)*.

Folk, Robert F. (1974) *Petrology of Sedimentary Rocks*. Hemphill Publishing Company, Austin.

Hansel, Ardith K., and David M. Mickelson (1988) A reevaluation of the timing and causes of high lake phases in the Lake Michigan basin. *Quaternary Research* 29:113–128.

Hansel, Ardith K., David M. Mickelson, Allen F. Schnieder, and Curtis E. Larsen (1985) Late Wisconsinan and Holocene History of the Lake Michigan Basin. In *Quaternary Evolution of the Great Lakes*, edited by P. F. K. a. P. F. Calkin, pp. 39–54. Geological Association of Canada Special Paper 30.

Hudak, C. M., and E. R. Hajic (2002) Landscape Suitability Models for Geologically Buried Precontact Cultural Resources *In A Predictive Model of Precontact Archaeological Site Location in The State of Minnesota, edited by G. J. Hudak, E. Hobbs, A. Brooks, A. Sersland, and C. Phillips* (Minnesota Department of Transportation, St Paul):12-11–12-63.

Kiesel, Diann, and David M. Mickelson (2005) Influence of Lake Michigan Holocene Lake Level Fluctuations on Fluvial Sediments of the Lower Pigeon River, Wisconsin. *Journal of Great Lakes Research* 31:343–359.

Larsen, Curtis E. (1985) Lake level, uplift and outlet incision, the Nipissing and Algoma Great Lakes. In *Quaternary Evolution of the Great Lakes*, edited by P. F. K. a. P. E. Calkin, pp. 64–77. Geological Association of Canada Special Paper 30.

Lineback, J. A., compiler (1979) Quaternary Deposits of Illinois. *Illinois State Geological Survey Map Series*.

Monaghan, G. William, K. C. Egan-Bruhy, M. J. Hambacher, D. R. Hayes, M. F. Kolb, S. Peterson, J. A. Robertson and N. R. Shaffer (2006) The Minnesota Deep Test Protocol Project (http://www.mnmodel.dot.state.mn.us/pages/DeepTestProtocol.html)

Schoeneberger, P. J., D. A. Wysocki, E. C. Benham, and W. D. Broderson (1998) Field Book for Describing and Sampling Soils Version 1.1. *National Soil Survey Center, Natural Resource Conservation Service, USDA, Lincoln, Nebraska*.

Soil Survey Staff (1975) Soil Taxonomy. *United States Department of Agriculture Handbook* 436.

Thompson, Todd A., and S. J. Baedke (1997) Strand-Plain Evidence for Late Holocene Lake Level Variations in Lake Michigan. *Geological Society of America Bulletin* 109:666–682.

U.S.D.A. (2017) Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils. Version 8.1.

Willman, H. B. (1971) *Summary of the Geology of the Chicago Area.* Illinois State Geological Survey Circular 460.

Table A.1. Geologic Events in the Lake Michigan Basin Effecting the Project Area.

Event	Age (^{14}C yrs BP) × 1000	Age (cal yrs BP) × 1000	Elevation (m)	Elevation (ft)	Project Area
Valders Ice retreat	13.0	15.3	—	—	ice covered/ underwater
Glenwood II (Lake Chicago)	ends 12.7	14.9	195	640	underwater
Two Creeks Low	12.2 to 11.5	14.1–13.3	<177	<580	subaerial
Calumet (Lake Chicago)	11.8 to 11.0	13.6–12.9	189	620	underwater
Toleston (Lake Algonquin)	10.3	12	184.4	605	underwater
Chippewa Low	9.8–6.3	11.2–7.2	70	230	subaerial
Nipissing Fluctuations	5.5–3.8	6.3–4.1	178–183	584–600.5	underwater
Algoma	3.5–2.9	3.7–3.0	179–180	587–590.5	underwater
Post-Algoma	±2.5	<2.6	176–178	577.4–584	subaerial

Table A.2. Core Data Generated during the Investigations for the Proposed Obama Presidential Library.

Core #	Fill Thickness (m)	Gap*	Core Length (m)	Debris and Artifacts Interval	Location	Buried Soil	Strat Seq	Comments
1	1.73	n	3.04	no	OPC: Baseball Fields	2Ab&2C; interlaminated mucky silt and loam	1	—
2	1.70	n	3.04	no	OPC: Baseball Fields	truncated	2	—
3	2.13	y	3.04	no	OPC: Baseball Fields	Ab&C horizon formed in fill; truncated	1	—
4	2.29	n	3.04	1.56–2.29	OPC: Baseball Fields Berm	2Apb&2Cg: interlaminated mucky silt and vf–f sand	1a	isolated artifacts above 1.56 m
5	1.60	n	3.04	no	OPC: Playground	truncated	2	faint redox
6	1.30	n	3.04	0.85–1.36	OPC: Playground	Ab horizon mixed with artifacts and debris in base of fill	2a	—
7	2.30	n	3.04	0.78–1.30	OPC: Baseball Fields Berm	artifact interval in fill at 78 cm; truncated buried soil	2	fill below mortar to 2.30?
8	1.10	n	2.13	no	OPC: Baseball Fields	truncated buried soil	2	—
9	1.40	n	2.13	no	OPC: Baseball Fields	truncated buried soil	2	—
10	1.10	n	2.13	no	OPC: Baseball Fields	possible A horizon at 41 cmbs in fill; truncated buried soil	2	—
11	2.16	y	3.96	2.00–2.16	OPC: Baseball Fields Berm	Ab&Cb is modified organic sand and mortar in base of fill	2a	gray clayey inclusion in fill; fill may extend beneath the A/C horizon
12	1.69	n	3.04	1.33-1.69	OPC: Baseball Fields Berm	2Apb horizon is organic silt	1a	—
13	1.10	y	2.13	0.35-0.43	OPC: Baseball Fields Berm	2Apb over 2 ACb Horizons truncated buried soil	1a	—

Table A.2, continued. Core Data Generated during the Investigations for the Proposed Obama Presidential Library.

Core #	Fill Thickness (m)	Gap*	Core Length (m)	Debris and Artifacts Interval	Location	Buried Soil	Strat Seq	Comments
14	1.70	n	3.04	1.50–1.70	OPC: Baseball Fields Berm	2Ab&2C is interlaminated mucky silt and vf–f sand	1a	gray clayey inclusion in fill;
15	2.00	y	3.04	no	OPC: Playground Berm East	truncated	2	gley is silt
16	1.37	n	3.04	no	Baseball Fields Berm East	truncated	2	—
17	1.00	y	2.13	no	Baseball Fields Berm East	truncated	2	possibly all fill? If not paleosurface silt is gleyed
18	1.57	n	2.13	no	OPC: Playground	truncated; A horizon mixed and layered in base of fill	2	—
19	0.92	n	2.13	no	OPC: Playground	2Ab horizon	1	—
20	3.00	n	3.96	no	OPC: Track Berm East	A/C in base of fill; truncated buried soil	2	—
21	1.45	n	2.13	no	OPC: Track Berm South	truncated	2	—
22	2.90	y	3.96	no	OPC: Track Berm East Edge	truncated	2	—
23	2.16	y	3.04	no	OPC: Track Berm East	partially truncate thin 2Apb horizon	1	silt at upper lacustrine sequence
24	2.27	n	3.04	no	OPC: Track Berm North	partially truncate 2Apb horizon	1	—
25	0.75	n	2.13	no	OPC: Track Berm North	A horizon; partially trucated	1	—
26	1.30	y	2.13	no	OPC: Track Berm North	truncated buried soils; A horizon soil in base of fill	2	gray clayey inclusion in fill
27	1.40	y	2.13	no	OPC: Track Berm West Base	truncated	2	—

(continued)

Table A.2, continued. Core Data Generated during the Investigations for the Proposed Obama Presidential Library.

Core #	Fill Thickness (m)	Gap*	Core Length (m)	Debris and Artifacts Interval	Location	Buried Soil	Strat Seq	Comments
28	1.73	n	3.04	0.52–0.72	OPC: Track Berm West	2Apb horizon mixed with fill	1	artifact debris layer in fill
29	2.55	n	3.04	0.42–1.35	OPC: Track Berm West	truncated	2	artifact debris layer in fill
30	0.88	y	2.13	0.69–0.84	OPC: Track Berm West	truncated buried soil	2a	artifact debris layer in fil; gray clayey inclusion in fill
31	1.20	y	3.96	no	OPC: Baseball Fields	2Apb horizon truncated & mixed	1	—
32	1.10	y	2.13	no	OPC: Baseball Fields	Ab horizon is formed in filll	2	—
33	1.33	y	3.04	no	OPC: Sunken Garden	truncated	2	—
34	0.56	n	2.13	no	OPC: Sunken Garden	truncated	2	some A horizon is mixed in lowest fill strata
35	0.53	n	3.04	no	OPC: Sunken Garden	truncated	2	some A horizon is mixed in lowest fill strata
36	0.49	n	2.13	no	OPC: Sunken Garden	truncated	2	—
37	1.25	y	3.04	no	OPC: Midway Paisance	truncated	2	sl cl lm and sc cl fill in upper 36 cm; silt upper lacustrine; hydric
38	0.70	n	2.13	no	OPC: Midway Paisance	truncated; A horizon mixed in base of fill	2	sl cl lm and sc cl fill in upper 51 cm; A horizon is mixed in lowest fill strata
39	0.53	n	2.13	no	OPC: Midway Paisance	truncated; A horizon mixed in base of fill	2	sl cl lm fill in upper 34 cm; A horizon is mixed in lowest fill strata

Table A.2, continued. Core Data Generated during the Investigations for the Proposed Obama Presidential Library.

Core #	Fill Thickness (m)	Gap*	Core Length (m)	Debris and Artifacts Interval	Location	Buried Soil	Strat Seq	Comments
40	0.26	n	2.13	no	OPC: Midway Paisance	surface A horizon is partially truncated & mixed	2	—
41	0.38	n	2.13	no	OPC: Midway Paisance	surface A horizon is partially truncated & mixed	2	sl cl lm fill in upper 29 cm; A horizon is mixed in lowest fill strata
42	1.10	y	3.04	no	OPC: Midway Paisance	2Ob horizon	1	Cg1 has gleyed matrix
43	1.78	n	3.04	no	Golf Course Underpass	2Ab&2Ob&2C interlaminated mucky silt & silty muck & f sand	1	wet buried landscape
44	1.45	n	2.13	1.31–1.45	Golf Course Underpass	2Ob over 2Ab horizons	1a	wet buried landscape
45	1.53	n	3.04	no	Golf Course Underpass	2Ab&2Ob&2C interlaminated mucky silt & silty muck & f sand	1	wet buried landscape
46	2.18	y	3.04	no	Golf Course Underpass	truncated	2	very thin interlayerd sand and silt at base of fill
47	2.41	n	3.96	no	Incinerator Underpass	2Ab & 2C horizons; Ab formed in fill at 1.30 mbs	1	Two fill episoded: 0–1.30 m and 1.30–2.41 m
48	2.22	n	3.96	0.43-1.32	Incinerator Underpass	truncated	2	possible eolian (fill?) unit from 1.32–2.41
49	1.34	n	3.04	no	Incinerator Underpass	2Apb horizon	1	—
50	1.10	y	2.13	no	Incinerator Underpass	2Apb horizon	1	—
51	1.30	y	2.13	no	Hayes & Cornell	2Apb horizon	1	—

(continued)

Table A.2, continued. Core Data Generated during the Investigations for the Proposed Obama Presidential Library.

Core #	Fill Thickness (m)	Gap*	Core Length (m)	Debris and Artifacts Interval	Location	Buried Soil	Strat Seq	Comments
52	1.37	n	2.13	no	Hayes & Cornell	2Ab&2C very thin bed of laminated organic silt and fine sand	1	—
53	0.41	y	3.04	no	Hayes & Cornell	truncated	2	possible eolian stratum just below fill
54	3.04+	n	3.04	no	Hayes & Cornell	truncated	2	—
55	1.31	n	2.13	no	Hayes & Cornell	2Ab&2C very thin layered/ laminated silt loam and very fine sandy loam	1	—
56	1.41	y	2.13	no	Hayes & Cornell	truncated	2	low recover = inaccurate fill thickness
57	0.56	n	2.13	no	Columbia Bridge	2Ab & 2C; interlaminated silt loam and sand	1	—
58	1.62	n	3.04	no	Columbia Bridge	2Ab & 2C interlaminated v f sandy loam and v f–f sand	1	—
53	0.41	y	3.04	no	Hayes & Cornell	truncated	2	possible eolian stratum just below fill

*The gap column indicates if a gap created by short recover in the upper 1.22 m affects the accuracy of strata or horizon thickness determinations.

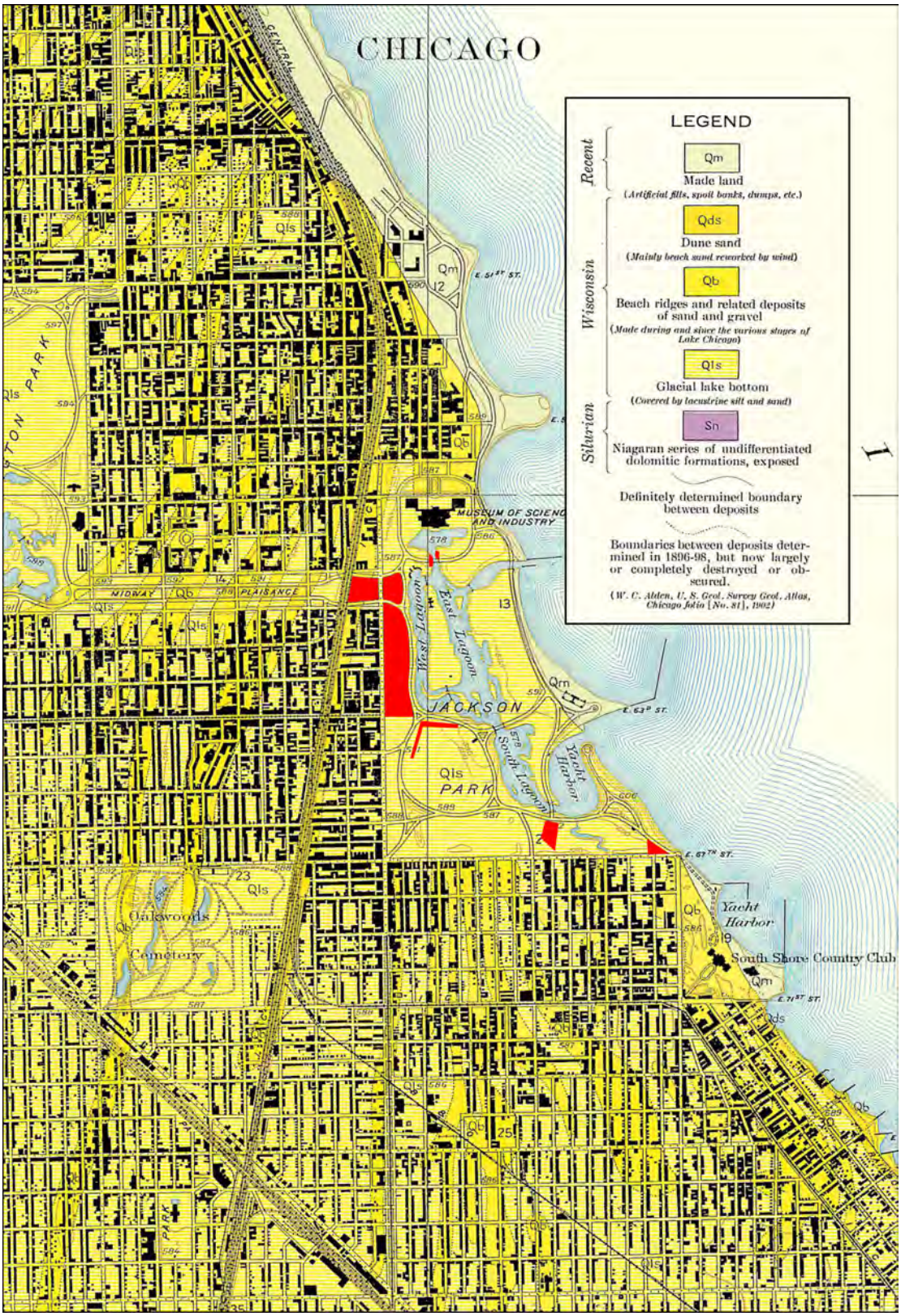


Figure A.1. Map showing the surficial geology of the landscape around the project area (modified from Bretz 1930). Solid yellow fills are beach ridges and yellow striped fills are glacial lake bottoms. Note that the ridges around the park were originally mapped between 1896 and 1898. Coring areas illustrated in red.

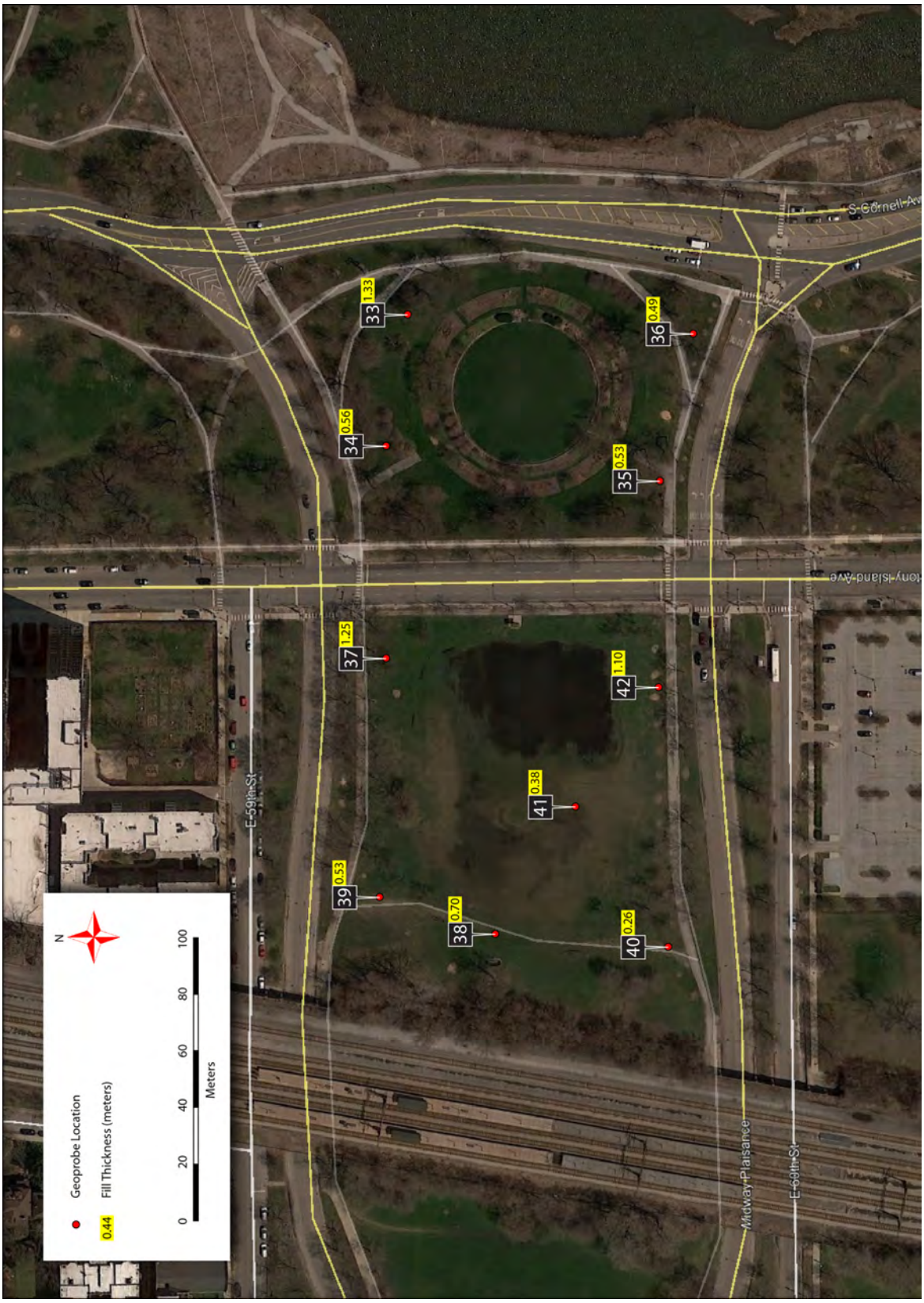


Figure A.2. Core locations and fill thickness at the Midway Plaisance and Sunken Garden Localities.

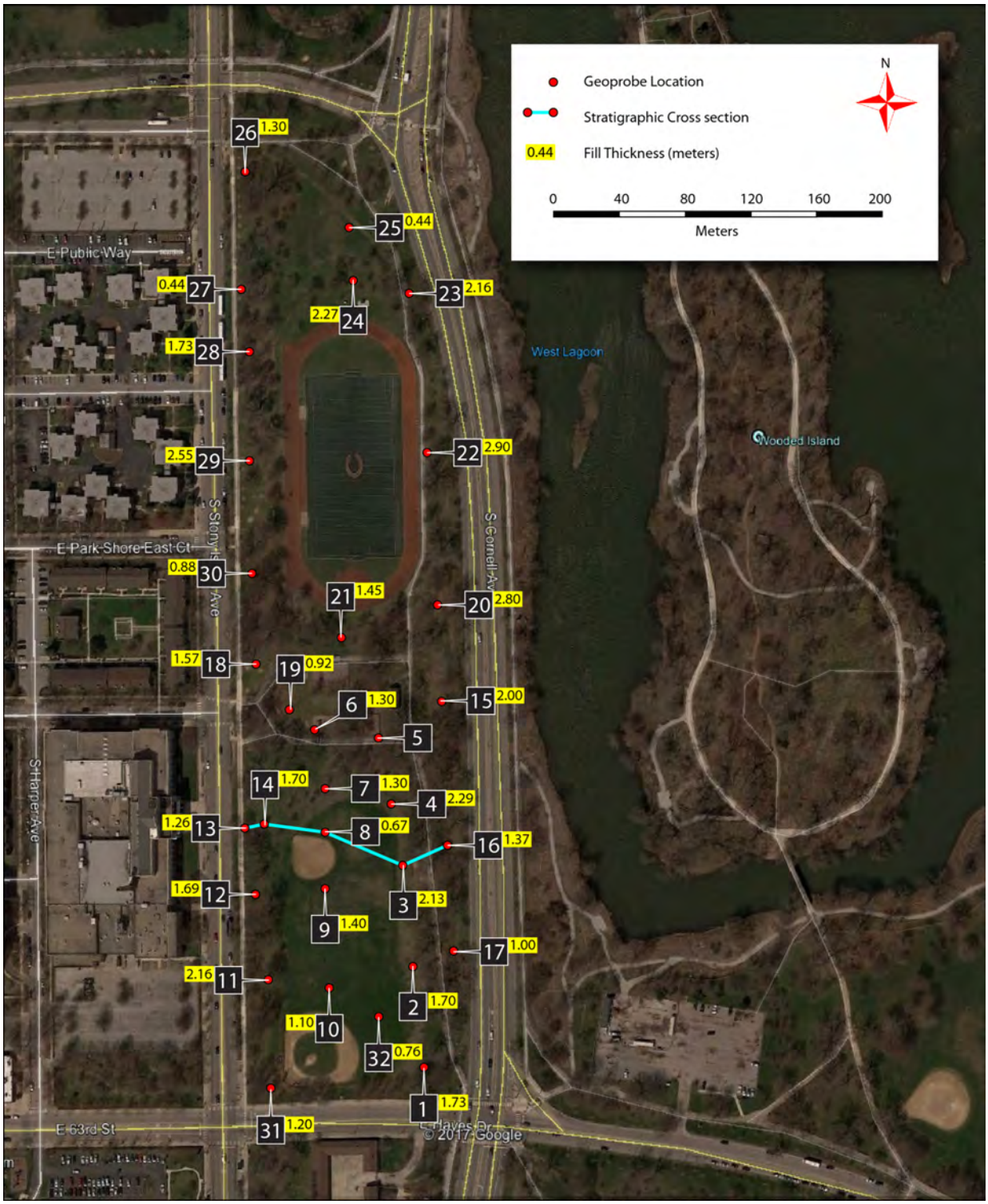


Figure A.3. Core and stratigraphic cross section locations and fill thickness at the OPC Locality.

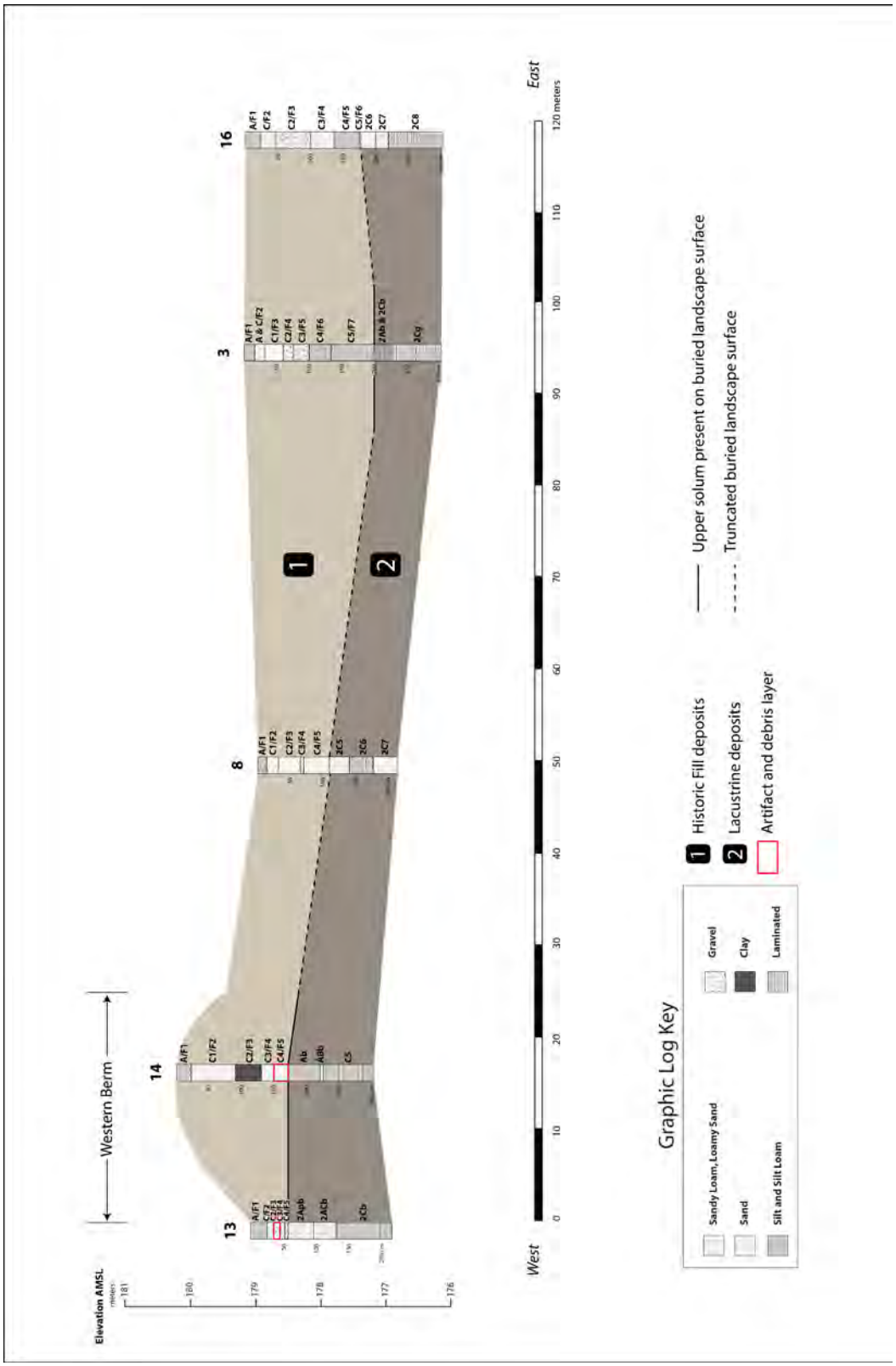


Figure A.4. Stratigraphic cross-section constructed from cores in the southern part of the OPC Locality. See Figure A.3 for cross-section location.

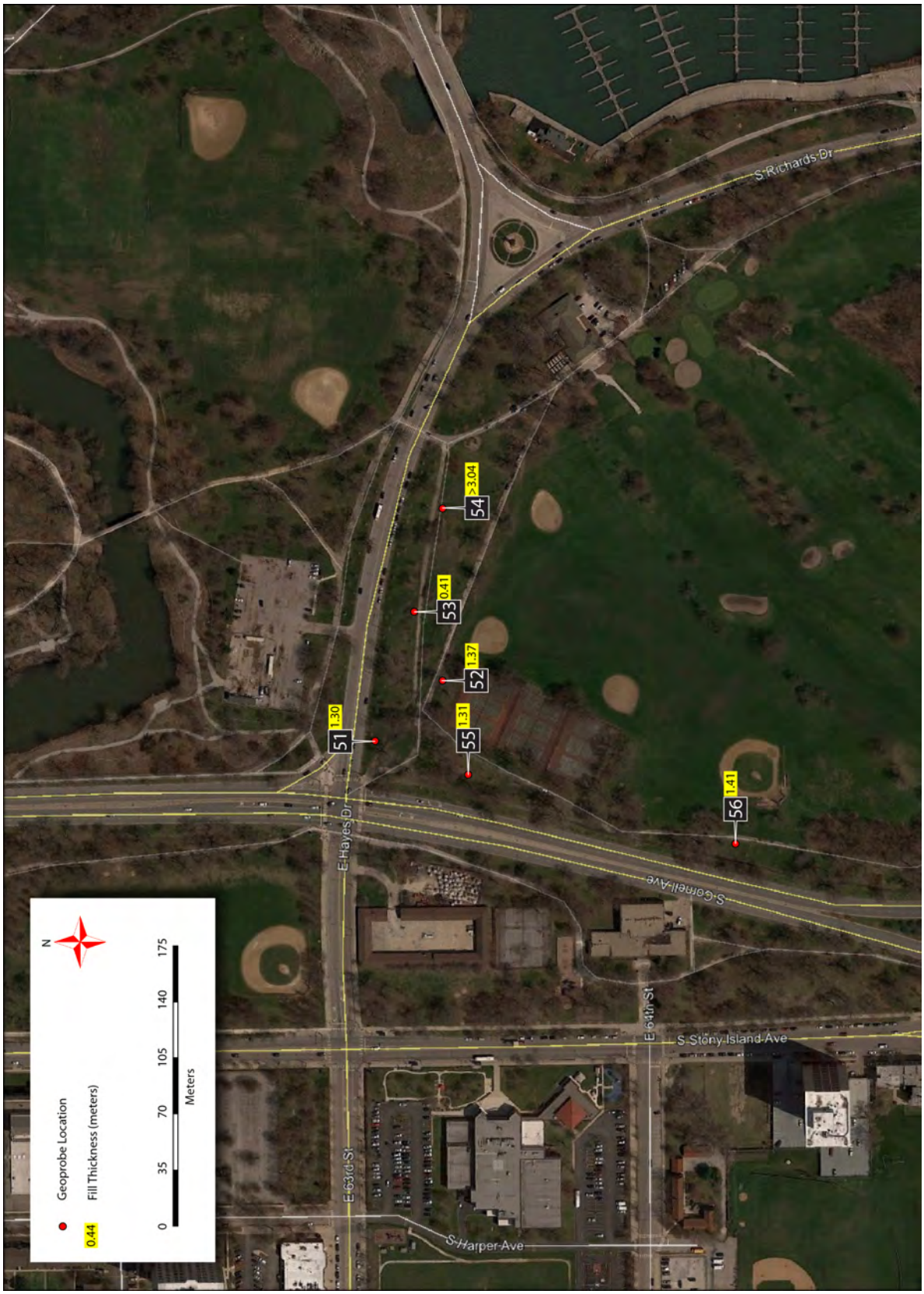


Figure A.5. Core locations and fill thickness at the Hayes and Cornell Locality.

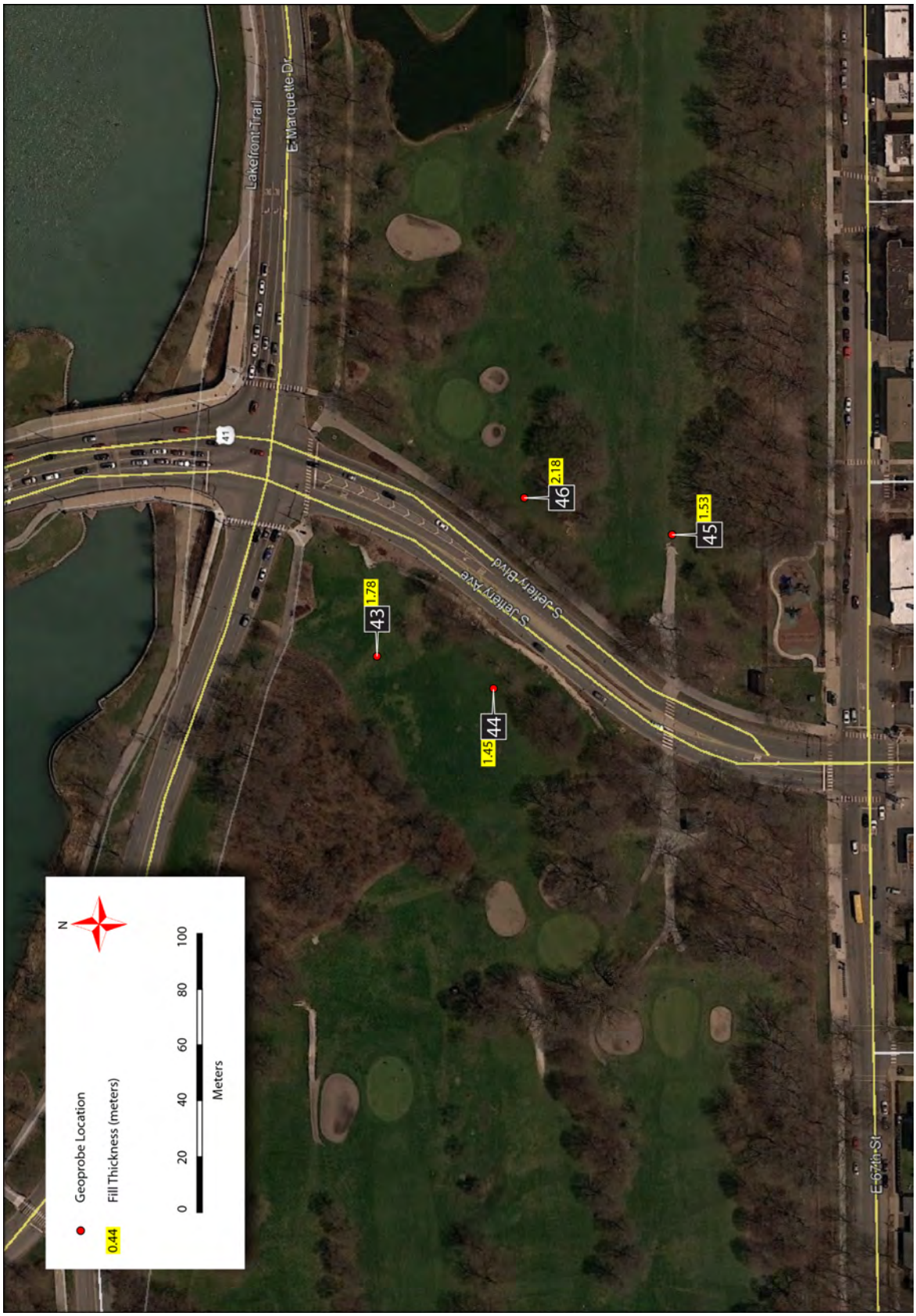


Figure A.6. Core locations and fill thickness at the Golf Course Locality.

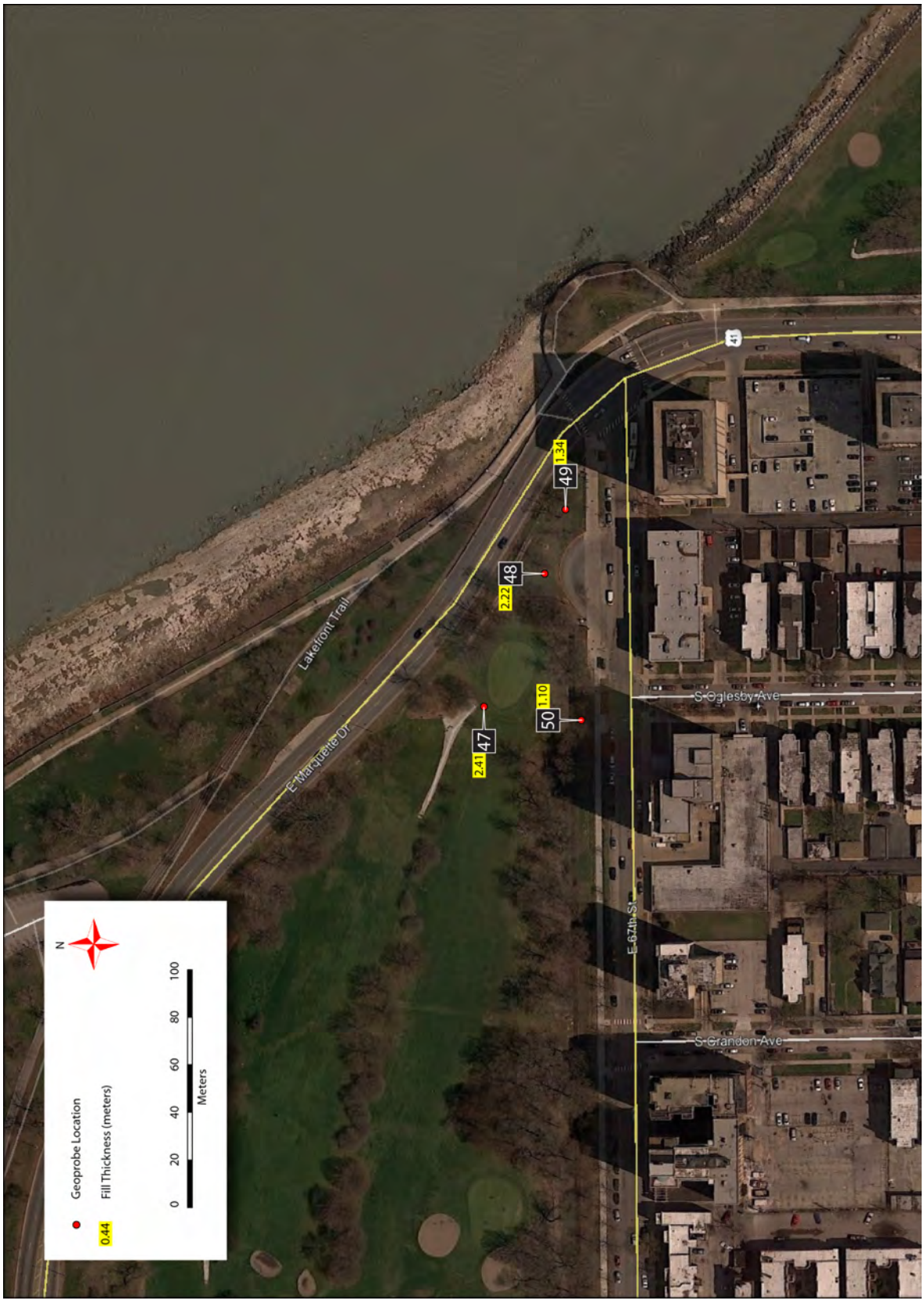


Figure A.7. Core locations and fill thickness at the Incinerator Locality.

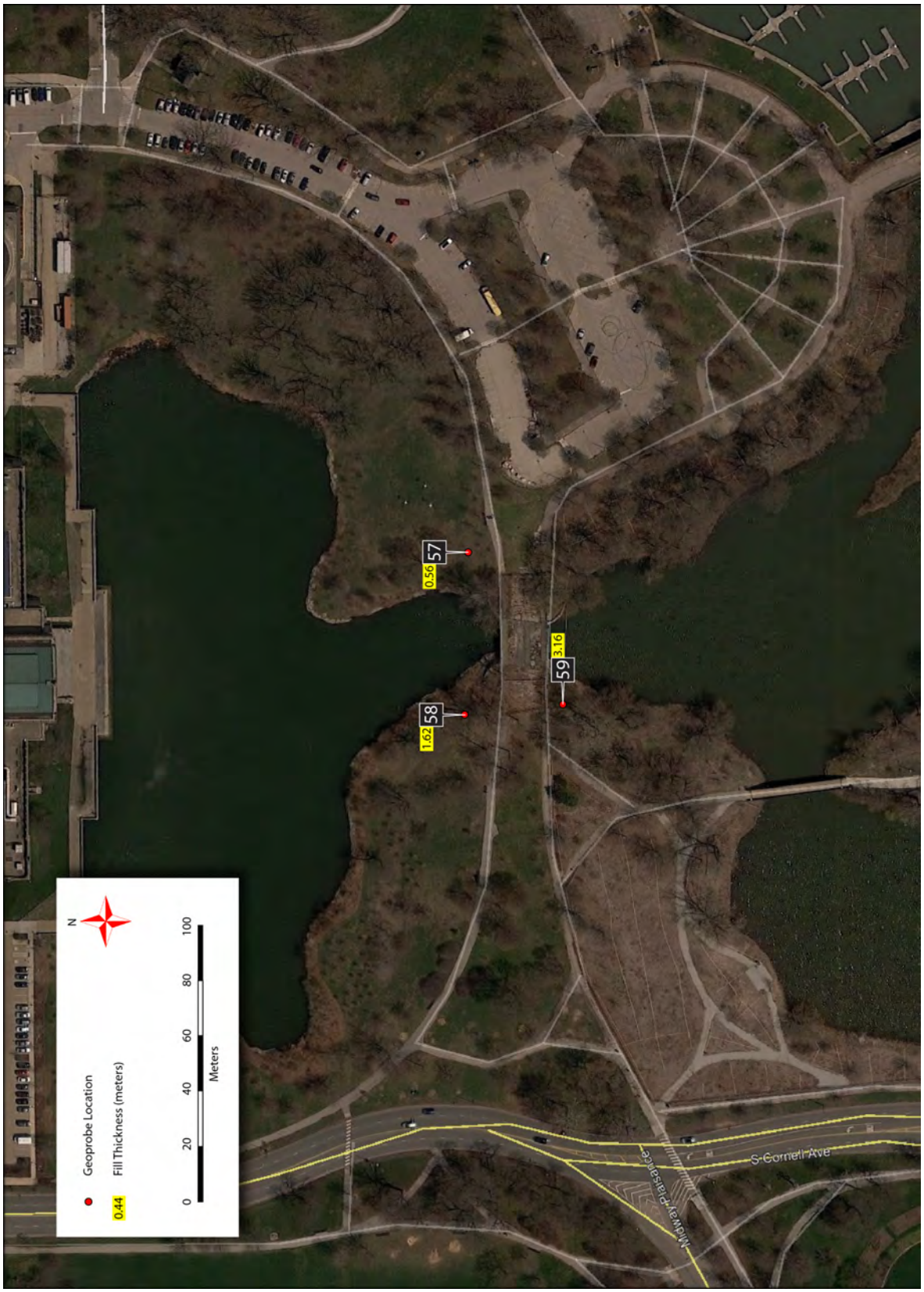


Figure A.8. Core locations and fill thickness at the Columbia Basin Locality.

Appendix B

Core Logs

Michael F. Kolb, PhD
Strata Morph Geoexploration

Core 1: OPC

Depth (cm)	Horizon	Description
0–23	A|F1	Very dark gray–black (10YR 3/1–2/1) SILT LOAM with large very fine sand mode; very abrupt boundary.
23–50	C1|F2	Brown–yellowish brown (10YR 5/3–5/4) very fine–fine SAND; few granules; clear.
50–105	C2|F3	Brown (10YR 4/3–5/3) very fine–fine SAND; ± 1% fine gravel.
105–132	C3|F4	GAP 90–120 cm Laminated dark brown and very dark grayish brown (10YR 3/3 & 3/2) fine and medium SAND with coarse sand mode; ± 1% fine gravel; very abrupt boundary.
132–138	C4|F5	Dark yellowish brown (10YR 4/4) fine–medium SAND; trace granules and fine gravel; very abrupt boundary.
138–145	C5/|F6	Laminated dark brown and very dark grayish brown (10YR 3/3 & 3/2) fine and medium SAND with coarse sand mode; ± 1% fine gravel; very abrupt boundary.
145–158	C6|F7	Laminated dark brown and very dark grayish brown (10YR 3/3 & 3/2) fine and medium SAND with coarse sand mode; very abrupt boundary.
158–173	C6|F8	Stratified dark yellowish brown and brown (10YR 4/4 and 4/3) fine and medium sand; very abrupt boundary.
173–205	2Ab&Cb	Grayish brown (2.5Y 5/2) light LOAM; very fine sand fraction; interbedded with mucky silt; few matrix-supported gravel clasts.
205–225	2Cg2	Organic laminae and light olive brown (2.5Y 5/4) organic lag; abrupt boundary
225–270	2Cg3	Light olive brown (2.5Y 5/4) very fine–fine SAND; laminated with matrix-supported gravel at 240cm; fine gravel and granule lag at 235–238cm; faint redox features; abrupt color boundary.
270–302	2Cg4	Gray (2.5Y 5/1) very fine–fine SAND; homogeneous color; snail shell at top.

Core 2: OPC

Depth (cm)	Horizon	Description
0–15	A|F1	Black (10YR 2/1) SILT LOAM; ± 25% very fine sand; very abrupt boundary.
15–25	C1|F2	Brown (10YR 4/3–5/3) and very dark gray (10YR 3/1) very fine–fine LOAMY SAND; clear boundary.
25–56	C2|F3	Brown (10YR 5/3 & 4/3) very fine–fine SAND; abrupt boundary
56–75	C3|F4	Grayish brown & brown laminated very fine–fine SANDY LOAM and fine SAND; few distinct redox features; abrupt boundary.
75–85	C4|F5	Brown (10YR 4/3–5/3) very fine–fine SAND; massive; abrupt boundary.
85–110	C5|F6	Very dark brown (10YR 2/2) loamy very fine–fine SAND; poorly sorted; pebble-size gravel.
110–170	C6|F7	GAP 90–120 Brown–grayish brown (10YR 4/3–5/2) gravelly SAND; very abrupt boundary.
170–190	2C7	Grayish brown (10YR 5/2) very fine–fine SAND with black organic silt laminae.
190–227	2C8	Interbedded granules and dark grayish brown (2.5Y 4/2) very fine LOAMY SAND; very abrupt boundary.
227–302	2Cg1	Olive brown–light olive brown (2.5Y 4/4–5/4) fine SAND; snail shells; shell lag at 254cm; common faint olive redox features.

Core 3: OPC

Depth (cm)	Horizon	Description
0–14	A|F1	Black (10YR 2/1) SILT LOAM; 15% very fine sand; very abrupt boundary.
14–30	A&C|F2	Dark grayish brown and brown (10YR 4/2 & 5/3) very fine–fine SAND; mixed redox; clear boundary.
30–60	C1|F3	Brown (10YR 5/3) very fine–fine SAND; charcoal; few distinct redox features; clear boundary.
60–76	C2|F4	Brown (10YR 4/3) very fine–fine SAND; pebble gravel common; distinct redox features; very abrupt boundary.
76–100	C3|F5	Very dark grayish brown (10YR 3/2) very fine–fine LOAMY SAND; gravel.
100–132	C4|F6	GAP 85–122 cm Laminated very dark gray and black (10YR 3/1 & 2/1) light very fine–fine SANDY LOAM; matrix-supported fine gravel; very abrupt boundary.
132–200	C5|F7	Grayish brown (10YR 5/2) fine SAND; common faint redox features; laminated; granules bed from 146–150cm; floating fine pebble gravel; abrupt boundary.
200–225	2Ab&2Cb	Interlaminated organic silt loam and very fine sand
225–302	2Cg	Light olive brown (2.5Y 5/4) laminated very fine–fine SAND; few very coarse sand and granules; common olive redox features.

Core 4: OPC

Depth (cm)	Horizon	Description
0–27	A|F1	Black (10YR 2/1) SILT LOAM; ± 5% fine sand; very abrupt boundary. FILL.
27–43	C1|F2	Dark grayish brown and brown (10YR 4/2 & 4/3) very fine–fine SAND; few granules; glass; very abrupt boundary.
43–100	C2|F3	Layered pale brown and brown (10YR 6/3 & 5/3) very fine–fine SAND.
100–156	C|3F4	GAP 75–120 cm Brown (10YR 4/3) very fine–fine SAND mixed with slightly darker soil; glass.
156–190	C4/F5	Plaster, mortar, cut stone; effervescent.
190–229	C5/F5	Wood; very abrupt boundary.
229–242	Ab&Cgb	Grayish brown (2.5Y 5/2) very fine–fine SAND with black organic silt loam with wood fragments; very abrupt boundary.
242–302	Cg2	Laminated light olive brown (2.5Y 5/4) very fine–fine LOAMY SAND.

Core 5: OPC

Depth (cm)	Horizon	Description
0–15	A1|F1	Very dark gray (10YR 3/1) SILT LOAM; glass; very abrupt boundary.
15–36	A2|F2	Very dark gray (10YR 3/1) heavy SILT LOAM; matrix-supported granules; very abrupt boundary.
36–64	C1|F3	Mixed brown (10YR 5/3) medium SAND and very dark grayish brown (10YR 4/2) light SANDY LOAM; fine pebbles; very abrupt boundary.
64–100	C2|F4	Dark yellowish brown (10YR 4/4) fine LOAMY SAND.
100–125	C3|F5	GAP 75–120 cm Dark grayish brown (10YR 4/2) pebbly SAND; very abrupt boundary.
125–133	C4|F6	Black–very dark gray (10YR 2/1–3/1) SILT LOAM; few pebbles; very abrupt boundary.
133–139	C5|F7	Dark grayish brown (10YR 4/2) pebbly SAND; very abrupt boundary.
139–150	C6|F8	Very dark gray (10YR 3/1) LOAM with gravel; very abrupt boundary.
150–160	C7|F9	Light grayish brown–grayish brown (10YR 3/2–5/2) fine SAND with gravel; very abrupt boundary
150–232	2C8	Light grayish brown–grayish brown (10YR 3/2–5/2) fine SAND; laminated abrupt boundary.
232–274	2C9	Light olive brown (2.5Y 5/3) very fine–fine SAND; well sorted; abrupt color boundary.
274–302	2C10	Grayish brown (2.5Y 5/2) very fine–fine SAND; laminated.

Core 6: OPC

Depth (cm)	Horizon	Description
0–34	A|F1	Very dark gray–black (10YR 3/1–2/1) SILT LOAM with ±15% fine sand; large pebble; historic ceramic; abrupt boundary.
34–50	C1|F2	Mix of very dark gray (10YR 3/1) and brown (10YR 4/3–5/3) LOAMY SAND and SAND; abrupt boundary.
50–69	C2|F3	Brown (10YR 4/3) medium SAND; very abrupt boundary.
69–85	C3|F4	Dark grayish brown (10YR 4/2) fine SAND with granules and fine pebbles; very abrupt boundary.
85–131	C4|F5	GAP 105–122 cm Very dark gray (10YR 2/1) SILT LOAM; ceramics; compact with thin platy structure; very abrupt boundary.
131–213	2Cg	Grayish brown (2.5Y 5/2) very fine–fine SAND; laminated.

Core 7: OPC

Depth (cm)	Horizon	Description
0–13	A|F1	Very dark grayish brown (10YR 3/2) very fine–fine SANDY LOAM; fine limestone gravel.
13–78	C1|F2	Yellowish brown (10YR 5/4) very fine–fine SAND; well sorted; 1 pebble; very abrupt boundary.
78–130	C2|F3	Light gray (10YR 7/2) MORTAR; few very dark grayish brown loamy sand laminae over mortar.
130–230	C3|F4	GAP 90–122 Yellowish brown–brown (10YR 5/4–5/3) very fine–fine SAND with some light colored sand; common gravel; abrupt boundary.
230–240	2C2	Gray (2.5Y 5/1) very fine–fine SAND.
240–302	2C3	Yellowish brown (10YR 5/6) very fine–fine SAND.

Core 8: OPC

Depth (cm)	Horizon	Description
0–11	A|F1	Very dark grayish brown–very dark gray (10YR 3/2–3/1) SILT LOAM with fine gravel; very abrupt boundary.
11–32	C1|F2	Yellowish brown very fine SAND at top with mixed very dark grayish brown sand with gravel; abrupt boundary.
32–67	C2|F3	Yellowish brown (10YR 5/4–5/6) medium SAND with fine gravel; very abrupt boundary.
67–70	C3|F4	Dark yellowish brown (10YR 4/6) loamy medium SAND; very abrupt boundary.
70–110	C4|F5	Pale brown (10YR 6/3) fine and medium SAND with very coarse sand and fine gravel.
110–140	2C5	GAP 95–122 Pale brown (10YR 4/3) fine SAND; occasional pebble; massive; clear gradational boundary.
140–177	2C6	Gray (10YR 5/1) SILT and very fine SAND; laminated from 141–144cm.
177–213	2C7	Yellowish brown (10YR 5/3) very fine–fine SAND.

Core 9: OPC

Depth (cm)	Horizon	Description
0–19	A|F1	Very dark gray (10YR 3/1) SILT LOAM; very abrupt boundary.
19–55	C1|F2	Brown (10YR 4/3) with minor dark grayish brown (10YR 4/2) very fine–fine SAND with gravel; bio-mixed; very abrupt boundary.
55–81	C2|F3	Brown (10YR 5/3) very fine–fine SAND with ±15% gravel; very abrupt boundary.
81–86	C3|F4	Dark yellowish brown (10YR 4/6) sticky SANDY LOAM with ± 2% gravel; very abrupt boundary.
86–140	C4|F5	GAP 95–122 cm Brown (10YR 5/3) loose SAND & granules; very fine–fine sand mode; ±5% gravel; very abrupt boundary.
140–155	2C5	Pale brown (10YR 6/3) fine LOAMY SAND; laminated in lower 3rd; very abrupt color boundary.
155–213	2C6	Brown (10YR 5/3) fine SAND; common distinct redox features.

Core 10: OPC

Depth (cm)	Horizon	Description
0–12	A1|F1	Very dark gray (10YR 3/1) SILT LOAM; very abrupt boundary.
12–24	A2|F2	Black–very dark gray (10YR 2/1–3/1) heavy SILT LOAM with yellowish brown silty clay loam inclusions; abrupt boundary.
24–44	A3|F3	Black–very dark gray (10YR 2/1–3/1) heavy SILT LOAM; very abrupt boundary.
44–52	C1|F4	Brown–dark grayish brown (10YR 4/3–4/2) very fine–fine SAND mixed with A horizon; abrupt boundary.
52–57	C2|F5	Laminated brown and pale brown (10YR 5/3–6/3) very fine–fine SAND; few granules; abrupt boundary.
57–75	C3|F6	Dark yellowish brown (10YR 4/4) very fine–fine SAND; laminated; very abrupt boundary.
75–110	C4|F7	Brown (10YR 4/3) very fine–fine SAND with organic soil inclusion; few pebbles; few distinct redox features.
110–163	2C5	GAP 90–122 cm Laminated pale brown–brown (10YR 6/3–5/3) fine SAND with coarse textured laminae between 148 and 163cm that coarsen downward; very abrupt gradational boundary.
163–213	2C6	Laminated pale brown–brown (10YR 6/3–5/3) fine SAND with coarse textured laminae between 148 and 163cm that coarsen downward; common faint redox features; very abrupt gradational boundary.

Core 11: OPC

Depth (cm)	Horizon	Description
0–19	A|F1	Black (10YR 2/1) SILT LOAM with ± 25% sand; very abrupt boundary.
19–163	C1|F2	GAP 80–122 cm Dark yellowish brown–yellowish brown (10YR 4/4–5/4) very fine–fine SAND; weak platy parting; few pebbles and dark soil inclusions; gray silty clay inclusion at 160 cm; clear boundary.
163–210	C2|F3	Brown (10YR 4/3) very fine–fine SAND; 1% gravel.
210–216	C3|F4	Layer of organic sand over layer of mortar; roots; very abrupt boundary.
216–251	2C3	Yellowish brown (10YR 5/4) very fine–fine SAND; few laminae below 240cm.
251–261	2C4	Yellowish brown (10YR 5/4) very fine–fine and medium SAND; laminated; abrupt boundary.
261–288	2C5	Mixed dark grayish brown and very dark grayish brown (10YR 4/2 & 3/2) SAND; fine gravel; few distinct redox features.
288–314	2C6	Yellowish brown laminated medium SAND.
314–356	2C7	Brown–dark grayish brown (10YR 4/3–5/3) medium SAND; plant fragments; gravelly near base.

Core 12: OPC

Depth (cm)	Horizon	Description
0–16	A|F1	Black and very dark gray (10YR 2/1 and 3/1) SILT LOAM; few pebbles; very abrupt boundary.
16–26	A/C|F2	Very dark gray (10YR 3/1) SANDY LOAM; mixed with brown (10YR 4/3) SAND; abrupt boundary.
26–48	C1|F3	Mixed topsoil with brown (10YR 4/3) very fine–fine SAND fill; abrupt boundary.
48–63	C2|F4	Yellowish brown (10YR 5/4) very fine–fine SAND; abrupt boundary.
63–69	C3|F5	Dark grayish brown (10YR 4/2) very fine–fine SAND; abrupt boundary.
69–76	C4|F6	Dark grayish brown (10YR 4/2) very fine–fine SAND; abrupt boundary.
76–79	C5|F7	Yellowish brown (10YR 5/4) very fine–fine SAND.
79–126	C6|F8	GAP 85–122 cm Yellowish brown (10YR 5/4) very fine–fine SAND with darker, finer soil inclusions; 1 piece of gravel.
126–133	C7|F9	Very dark gray (10YR 3/1) very fine–fine LOAMY SAND; glass; very abrupt boundary.
133–135	C8|F10	Crushed limestone layer.
135–144	C9|F11	Dark grayish brown (10YR 4/2) very fine–fine LOAMY SAND; fine gravel; very abrupt boundary.
144–152	C10|F12	Yellowish brown (10YR 5/6) SAND and gravel; very abrupt boundary.
152–169	C11|F13	Very thin layered very dark gray and brown (10YR 3/1 and 4/3) fine SAND; glass; plant fragments; fine gravel; very abrupt boundary.
169–175	2Apb	Black (10YR 2/1) organic SILT; ± 50% organics; very abrupt boundary.
175–205	2C1	Pale brown (10YR 6/3) very fine–fine SAND.
205–302	2C2	Laminated pale brown (10YR 6/3) very fine–fine SAND–fine SAND; common distinct olive redox features; with depth below 246cm.

Core 13: OPC

Depth (cm)	Horizon	Description
0–23	A/F1	Very dark gray (10YR 3/1) SILT LOAM; few granules and pebbles; very abrupt boundary.
23–35	C/F2	Brown (10YR 5/3) very fine–fine SAND; very abrupt boundary.
35–43	C2/F3	Mixed limestone layer; soil and crushed limestone; abrupt boundary.
43–51	C3/F4	Thin layered fill; san with few pieces of gravel; very abrupt boundary.
51–55	C4/F5	Yellowish brown (10YR 5/6) SAND and gravel; thin layer of organic silt at base.
55–95	2Apb	GAP 65–122 cm Black (10YR2/1) SANDY LOAM
95–130	2ACb	Very dark grayish brown (2.5Y 5/2) very fine LOAMY SAND over grayish brown very fine sand; clear boundary.
130–213	2Cb	Brown (10YR 5/3) and pale brown (10YR 6/3) very fine–fine SAND; more brown with depth; common distinct redox features; laminated.

Core 14: OPC

Depth (cm)	Horizon	Description
0–21	A|F1	Black (10YR 2/1) heavy SILT LOAM; very abrupt boundary.
21–90	C1|F2	Yellowish brown (10YR 5/4) very fine–fine SAND; more brown in lower 10cm; very dark grayish brown (10YR 3/2) sandy loam inclusions; and dark gray clay inclusion at base.
90–131	C2|F3	GAP 65–122 cm Dark gray (10YR 4/1) paper thin CLAY laminate; diamicton; very abrupt boundary.
131–150	C3|F4	Brown (10YR 4/3–5/3) very fine–fine SAND; few pebbles; very abrupt boundary.
150–170	C4|F5	Brown and pale brown (10YR 4/3 and 6/3) very fine–fine SAND; layered; mortar; slag; cinder; very abrupt boundary.
170–220	**2Ab&C**	Very dark gray (10YR 3/1) organic SILT/muck; layered; thin platy with leaves; abrupt gradational boundary.
220–224	2ABb	Dark grayish brown (10YR 4/2) very fine–fine SAND; abrupt gradational boundary.
224–302	2C5	Pale brown and grayish brown–light brownish gray (10YR 6/3 and 5/2–6/2) very fine–fine SAND; laminated; few siltier laminae; grades to fine sand at depth; few redox features below 270cm.

Core 15: OPC

Depth (cm)	Horizon	Description
0–14	A|F1	Black (10YR 2/1) SILT LOAM; ± 10% very fine SAND; very abrupt boundary.
14–19	AC|F2	Layered A and fill from below.
19–39	C1|F3	Brown–yellowish brown (10YR 5/3–5/4) fine SAND; very abrupt boundary.
39–53	C2|F4	Grayish brown (10YR 5/2) coarse SAND; abrupt boundary.
53–100	C3|F5	GAP 70–122 cm Brown (10YR 4/3) fine SAND; inclusion of A horizon.
100–152	C4|F6	Brown–olive brown (10YR 4/3–2.5Y 4/3) loamy fine SAND; common pebbles; layers of A horizon.
152–200	C5|F7	Brown (10YR 4/3) very fine–fine LOAMY SAND; large pebbles.
200–260	2C6	Dark yellowish brown (10YR 4/4) very fine–fine SAND; laminated; very abrupt boundary.
260–263	2Cg1	Gray (2.5Y 5/1) SILT–very fine SAND; very thin laminated; very abrupt boundary.
263–302	2Cg2	Dark yellowish brown (10YR 4/4)–olive brown (2.5Y 4/4) very fine–fine SAND.

Core 16: OPC

Depth (cm)	Horizon	Description
0–22	A|F1	Black (10YR 2/1) SILT LOAM ± 5% sand; granules, fine pebbles.
22–44	C|F2	Brown and pale brown (10YR 5/3 & 6/3) very fine–fine SAND with darker layer of upper solum; clear boundary.
44–100	C2|F3	Dark grayish brown (10YR 4/2) very fine–fine SAND; thin layered; fine gravel with few larger pebbles.
100–137	C3|F4	GAP 75–122 cm Brown (10YR 4/3) SAND; mixed with darker soil; black and gray silt and very fine sand; very abrupt boundary.
137–175	C4|F5	Yellowish brown (10YR 5/4) very fine–fine SAND; pebble sand from 152–154cm; very abrupt boundary.
175–179	C5|F6	Gray (2.5Y 5/1) heavy SILT LOAM with ± 5% very fine sand and organic clay laminae.
176–200	2C6	Yellowish brown (10YR 5/4) very fine–fine SAND.
200–218	2C7	Gray (10YR 5/1) very fine SANDY LOAM; very abrupt gradational boundary.
218–302	2Cg	Light olive brown (2.5Y 5/6) very fine and fine SAND with common distinct redox features; laminated; dark grayish brown (2.5Y 4/2) very fine–fine sand with ± 30% granules at 241cm.

Core 17

Depth (cm)	Horizon	Description
0–30	A/F1	Black (10YR 2/1) SILT LOAM; very abrupt boundary.
30–40	AC/F2	Black (10YR 2/1) very fine SANDY LOAM and dark grayish brown (10YR 4/2) SANDY LOAM; coal or tar; abrupt boundary.
40–98	C1/F3	Brown (10YR 5/3) very fine–fine SAND with fine gravel; grayish brown (10YR 5/2) interbedded with dark grayish brown (10YR 4/2) LOAMY SAND with gravel and glass.
98–140	C2|F4	GAP 70–122 cm Yellowish brown–dark yellowish brown (10YR 5/4–4/4) very coarse SAND grading to dark grayish brown–grayish brown (10YR 4/2–5/2) very fine–fine SAND; very abrupt boundary.
140–141	2Ob	Black (N2.5/) clay laminae
140–151	2Cg1	gray (10YR 5/4) heavy SILT LOAM grading to very fine sandy loam; olive redox; abrupt color boundary.
151–213	2Cg	Light olive brown (2.5Y 5/6) very fine–fine SAND; few distinct redox features; few pebbles; few sand laminae.

Core 18: OPC

Depth (cm)	Horizon	Description
0–33	A|F1	Black (10YR 2/1) SILT LOAM; very abrupt boundary.
33–54	C1|F2	Brown (10YR 5/3) very fine–fine SAND with A/F1 inclusions; abrupt boundary.
54–70	C2|F3	Brown–pale brown (10YR 5/3–6/3) very fine–fine SAND; few darker soil inclusions; abrupt boundary.
70–110	C3|F4	GAP 90–122 cm Brown–dark brown (10YR 4/3–3/3) LOAMY SAND; poorly sorted sand fraction; gravel.
110–140	C4|F5	Yellowish brown (10YR 5/6) very fine–fine SAND with few soil inclusions; abrupt boundary.
140–151	C5|F6	Mixed and layered black, yellowish brown SILT LOAM & very fine–fine SANDY LOAM; abrupt boundary.
151–173	2C6	Brown (10YR 5/3) very fine–fine SAND; many prominent redox features below 163cm; laminated.
173–175	2C7	Grayish brown–gray (10YR 5/2–5/1) very fine–fine SAND; roots; abrupt gradational boundary.
175–213	2C8	Brown (10YR 5/3) very fine–fine SAND.

Core 19: OPC

Depth (cm)	Horizon	Description
0–40	A|F1	Very dark gray–black (10YR 3/1–2/1) SILT LOAM with variable % of sand (5–15%); clear boundary.
40–78	C1|F2	Brown–yellowish brown (10YR 5/3–5/4) very fine–fine SAND; mixed A horizon inclusions; few distinct redox features; abrupt boundary.
78–92	A/C|F3	Black and pale brown (10YR 2/1 and 6/3) Silt Loam with ± 15% very fine sand; very fine–fine sand laminae/layers; fine gravel; very abrupt gradational boundary.
92–115	**2Ab**	GAP 100–122 cm Black (10YR 2/1) SANDY LOAM; few lighter sand inclusions/layers.
115–128	2C2	Grayish brown–dark grayish brown (10YR 5/2–4/2) very fine–fine SAND; abrupt gradational boundary.
128–138	2C3	Dark gray–gray (10YR 4/1–3/1) fine SAND; very abrupt boundary.
138–213	2C4	Grayish brown and light gray (10YR 5/2–6/2) laminated very fine–fine, fine and medium SAND; pebble at 140cm.

Core 20: OPC

Depth (cm)	Horizon	Description
0–22	A/F1	Black (10YR 2/1) SILT LOAM; very abrupt boundary.
22–40	C/F2	Brown (10YR 5/3) and pale brown (10YR 6/3) very fine–fine SAND; platy; clear boundary.
40–190	C2/F3	GAP 90–122 cm Brown (10YR 5/3) very fine–fine SAND; few pebbles; intervals of weak platy; pebble at 80cm; gray silty clay inclusion at 164cm; rounded limestone pebble at 140cm.
190–230	C3/F4	Olive brown (2.5Y 4/3) gravelly SANDY LOAM; gray silty clay inclusion; abrupt boundary.
230–280	C4/F5	Pale brown (10YR 6/3) very fine–fine SAND with few fine pebbles; very abrupt boundary.
280–300	A/C|F6	Olive brown (2.5Y 4/3) fine SAND; few pebbles and Fe concretions; slag.
300–334	2C5	Light olive brown (2.5Y 5/6) fine SAND; laminated intervals; few clay clasts; very abrupt boundary.
334–338	2Cg1	Gray (2.5Y 5/1) SILTY CLAY with very fine sand; very abrupt boundary.
338–385	2Cg2	Light olive brown (2.5Y 5/6) fine SAND; laminated; common redox features.

Core 21: OPC

Depth (cm)	Horizon	Description
0–16	A|F1	Black (10YR 2/1) SILT LOAM; trace of very fine sand; very abrupt boundary.
16–40	C1|F2	Yellowish brown–dark yellowish brown (10YR 5/4–4/4) very fine–fine SAND; very abrupt boundary.
40–60	C2|F3	Dark gray (10YR 4/1) CLAY diamicton; very abrupt boundary.
60–105	C3|F4	Yellowish brown (10YR 5/4) very fine–fine SAND; dark soil inclusions; few pebbles.
105–132	C4|F5	GAP 90–122 cm Brown (10YR 5/3) very fine–fine SAND over grayish brown (10YR 5/2) SANDY LOAM; very abrupt boundary.
132–145	C5|F6	Grayish brown–brown (10YR 5/2–5/3) very fine–fine SAND with ± 50% granules and pebble gravel; very abrupt boundary.
145–213	2C6	Light brownish gray (10YR 4/2) very fine–fine SAND; laminated; few pebbles.

Core 22: OPC

Depth (cm)	Horizon	Description
0–13	A|F1	Very dark gray (10YR 3/1) SANDY with pebbles; abrupt boundary.
13–40	C1|F2	Yellowish brown–dark yellowish brown (10YR 5/4–4/4) very fine–fine SAND; dark soil inclusions.
40–131	C2|F3	GAP 80–122 Yellowish brown (10YR 5/4) very fine–fine SAND; large pebble at base; very abrupt boundary.
131–165	C3|F4	Cinder and slag.
165–195	C4/F5	Dark brown–brown (10YR 3/3–4/3) SANDY LOAM.
195–268	C5|F6	Laminae-sized layers of black (10YR 2/1) SILT CLAY LOAM with variable amounts of very fine sand and brown (10YR 5/3) very fine–fine SAND; very abrupt boundary.
268–288	C6|F7	Brown (10YR 5/3) very fine SAND; abrupt boundary.
288–370	2Cg	Light olive brown (2.5Y 5/5) very fine–fine SAND over light olive brown (2.5Y 5/4) laminated very fine to fine sand; many prominent redox features.

Core 23: OPC

Depth (cm)	Horizon	Description
0–25	A|F1	Black (10YR 2/1) SILT LOAM; ± 1–25% sand.
25–138	C1|F2	Yellowish brown and brown (10YR 5/3 & 5/3) very fine–fine SAND with darker soil inclusions/layers; few pebbles; abrupt boundary.
138–156	C2|F3	GAP 90–122 cm Grayish brown (10YR 5/2) very fine–fine SAND with mixing and platy structure; abrupt boundary.
156–213	C3|F4	Black, dark gray, and dark grayish brown fine gravelly SILT LOAM and grayish brown and brown (10YR 5/2–5/3) very fine–fine SANDY LOAM.
213–216	**2Ab**	Black (10YR 2/1) heavy SILT LOAM; very abrupt boundary.
216–229	2Cg1	Grayish brown–gray (2.5Y 5/2–5/1) heavy SILT LOAM; carbonate filaments; common distinct redox features; very abrupt boundary.
229–244	2Cg2	Dark gray–very dark gray (2.5Y 4/1–3/1) sticky LOAM; soil inclusions from above; very abrupt boundary.
244–253	2Cg3	Grayish brown (2.5Y 5/2) fine and medium SAND; very coarse sand mode.
253–302	2Cg4	Light olive brown (2.5Y 5/6) very fine–fine SAND–light olive brown (2.5Y 5/4) ; laminated.

Core 24: OPC

Depth (cm)	Horizon	Description
0–30	A|F1	Black–very dark grayish brown (10YR 2/1–3/1) SILT LOAM; pebble in lower half.
30–81	C1|F2	Yellowish brown (10YR 5/4) very fine–fine SAND; abrupt boundary.
81–110	C2|F3	Brown (10YR 5/3) very fine–fine SAND.
110–154	C3|F4	GAP 90–122 cm Brown and yellowish brown (10YR 5/3 and 5/4) very fine–fine SAND; platy intervals; few faint redox features; very abrupt boundary.
154–162	C4|F5	Grayish brown (2.5Y 5/2) SILT LOAM; laminated; common distinct redox features; very abrupt boundary.
162–186	C5|F6	Very dark grayish brown–dark grayish brown (10YR 3/2–4/2) medium SAND; platy.
186–220	C6|F7	Dark grayish brown and yellowish brown (10YR 4/2 and 5/4) very fine–fine SAND; very abrupt boundary.
220–227	C7|F8	Very thin layered very dark brown (10YR 2/2) and dark yellowish brown (10YR 4/4) very fine–fine LOAMY SAND; very abrupt boundary.
227–230	**2Ab**	Black (10YR 2/1) fine LOAMY SAND; inclusions from below.
230–302	2Cg	Laminated light brownish gray (2.5Y 6/2) very fine–fine SAND with slightly darker coarser sand laminae and a few gray (2.5Y 5/3) silt laminae; many prominent redox features below 270cm.

Core 25: OPC

Depth (cm)	Horizon	Description
0–25	A|F1	Black (10YR 2/1) SILT LOAM; ± 15% sand; very abrupt boundary.
25–44	C1|F2	Yellowish brown (10YR 5/4) very fine–fine SAND over dark brown (10YR 3/3) very fine–fine SAND; all have topsoil inclusions; very abrupt boundary.
44–48	A|F3	Black (10YR 2/1) gravelly very fine SANDY LOAM; very abrupt boundary.
48–53	Cg1|F4	Grayish brown (2.5Y 5/2) very fine–fine SAND with pebbles; abrupt boundary.
53–64	Cg2|F5	Gravel with minor sand matrix; very abrupt boundary.
64–75	Cg3|F6	Thin bedded very fine–fine SAND and gravelly sand; abrupt boundary.
75–136	2Cg4	GAP 75–122 cm Brown (10YR 5/3) fine SAND; very abrupt boundary.
136–213	2Cg5	Grayish brown–light brownish gray (2.5Y 5/2–4/2) laminated very fine–fine SAND; many prominent redox features below 164cm.

Core 26: OPC

Depth (cm)	Horizon	Description
0–29	A/F	Black (10YR 2/1) SILT LOAM; ± 20% very fine sand; abrupt boundary.
29–45	C1/F2	Yellowish brown (10YR 5/4) very fine–fine SANDY LOAM; very abrupt boundary.
45–53	C2/F3	Gray (10YR 5/1) compacted SILTY CLAY LOAM; very abrupt boundary.
53–69	C3/F4	Brown (10YR 5/3) very fine–fine SAND; few darker soil inclusions; very abrupt boundary.
69–71	C4/F5	Grayish brown (10YR 5/2) angular fine pebbles (6–8mm) abrupt boundary.
71–80	C5/F6	Brown (10YR 4/3) fine SAND; few pebbles; abrupt boundary.
80–127	C6/F7	GAP 90–122 cm Yellowish brown (10YR 5/4) very fine–fine SAND; darker soil inclusions; abrupt boundary.
127–129	Ab|F8	Very dark grayish brown (10YR 3/2) very fine–fine SAND; very abrupt boundary.
129–213	2Cg1	Grayish brown (2.5Y 5/2) laminated very fine–fine SAND with few silty laminae; common faint redox features

Core 27: OPC

Depth (cm)	Horizon	Description
0–23	A/F1	Black (10YR 2/1) SILT LOAM; very thin layered in lower 5cm; very abrupt boundary.
23–36	C1/F2	Brown (10YR 5/3) very fine–fine SAND with few darker soil inclusions; abrupt boundary.
36–44	C2/F3	Brown (10YR 5/3–4/3) very fine–fine SAND; brick fragments.
44–47	A|F4	Very dark gray (10YR 3/1) SILT LOAM; very thin layered; very abrupt boundary.
47–53	C3|F5	Yellowish brown (10YR 5/6) very fine–fine SAND with strong brown (7.5YR 4/6) weak lamella at base; abrupt boundary.
53–98	C4|F6	Strong brown (7.5Y 5/6) very fine–fine SAND; loose.
98–128	C5|F7	GAP 65–122 cm Yellowish brown (10YR 5/6) very fine–fine SAND; abrupt boundary.
128–140	C6|F8	Brown (10YR 5/3) fine SAND; clear boundary.
140–213	2C2	Light brownish gray (10YR 6/2) laminated very fine SAND–fine SAND; few gray silty laminae; common faint redox features.

Core 28: OPC

Depth (cm)	Horizon	Description
0–22	A|F1	Black (10YR 2/1) SILT LOAM; abrupt boundary.
22–36	AC|F2	Black–very dark gray (10YR 2/1–3/10 SILT LOAM with ± 25% very fine–fine SAND; few pebbles at lighter soil inclusions; abrupt boundary.
36–52	C1|F3	Brown–yellowish brown (10YR 5/3–5/4) very fine–fine SAND; white inclusions in lower 2cm; abrupt boundary.
52–64	C2|F4	Very dark gray (10YR 3/1) very fine–fine SAND with sand-sized artifacts; white laminated slag; unleached matrix; very abrupt boundary.
64–72	C3|F5	Brown–pale brown (10YR 5/3–6/3) very fine–fine SAND; very abrupt boundary.
72–80	C4|F6	Dark grayish brown (10YR 4/2) fine SAND with mortar and charcoal; very abrupt boundary.
80–105	C5|F7	Brown (10YR 4/3) fine SAND; few cinders.
105–148	C6|F8	GAP 90–122 cm Thin layered brown (10YR 4/3) fine SAND with cinder and gravel; abrupt boundary.
148–173	C7|F9	Brown and pale brown (10YR 5/3 and 6/3) very fine–fine SAND; light olive brown sand at base; abrupt boundary.
173–176	**2Ab**	Very dark gray and dark grayish brown (10YR 3/1 & 4/2) fine SAND with few pebbles and cinder; very abrupt boundary.
176–183	2C1	Grayish brown (2.5Y 5/2) very fine–fine SANDY LOAM; leached; few pebbles; abrupt boundary.
183–210	2C2	Brown (10YR 5/3) very fine–fine SAND; indistinct platy structure; leached; abrupt boundary
210–235	2C3	Brown–grayish brown (10YR 5/3–5/2) laminated very fine–fine SAND with few very fine sand/silt laminae; unleached; few faint redox features; abrupt boundary.
235–302	2Cg	Brown–grayish brown (10YR 5/3–5/2) grading to light olive brown (2.5Y 5/4) fine SAND; laminated; unleached; many prominent redox features.

Core 29: OPC

Depth (cm)	Horizon	Description
0–28	A|F1	Black (10YR 2/1) sticky SILT LOAM; very thin layer of sand in lower 6cm; very abrupt boundary.
28–42	C1|F2	Yellowish brown (10YR 5/4) very fine–fine SAND; very abrupt boundary.
42–135	C2|F3	GAP 65–122 cm Dark yellowish brown (10YR 4/1) SAND; gravel, cinder, wood, slag, mortar, brick fragments; abrupt boundary.
135–150	C3|F4	Brown (10YR 5/3) very fine–fine SAND with topsoil inclusions; abrupt boundary.
150–200	C4|F5	Brown and pale brown (10YR 5/3 & 6/3) very fine–fine SAND,
200–255	C5|F6	Brown, grayish brown and yellowish brown (10YR 5/3, 5/2, and 5/4) SAND; very fine–fine shell; mixed; few plant fragments; clam shell at 242 cm; mixed and layered with organics at base.
255–302	2C6	Grayish brown (10YR 5/2) fine SAND; common faint redox features.

Core 30: OPC

Depth (cm)	Horizon	Description
0–34	A|F1	Black (10YR 2/1) heavy SILT LOAM; very abrupt boundary.
34–58	C1|F2	Brown–yellowish brown (10YR 5/3–5/4) very fine–fine SAND; light and dark finer soil inclusions; very abrupt boundary.
58–69	C3|F3	Gray (10YR 5/1) compact clay and silt diamicton; abrupt boundary.
69–88	C4|F	Cinder with sand layer in between.
88–110	C5|F	Dark olive brown (2.5Y 3/3) SILT LOAM.
110–130	2Cg1	GAP 95–122 cm Light olive brown (2.5Y 5/4) SILT with light yellowish brown (2.5Y 5/4) laminae at base; common distinct redox features; very abrupt gradational boundary.
130–135	2Cg2	Laminated olive brown (2.5Y 4/3) very fine SANDY LOAM and grayish brown (2.5Y 5/2) SILT LOAM; very abrupt boundary.
135–213	2Cg3	Light yellowish brown (10YR 6/4) very fine–fine sand; many prominent redox features below 143cm; laminated; many prominent redox features.

Core 31: OPC

Depth (cm)	Horizon	Description
0–8	C|F1	Yellowish brown (10YR 5/4) SILT LOAM and "chip gravel"; very abrupt boundary.
8–16	AC|F2	Dark brown (10YR 3/3) SILT LOAM; ±15% sand; very abrupt boundary.
16–28	A/F3	Very dark gray (10YR 3/1) to black (10YR 2/1) SILT LOAM; ±10% fine sand; platy; abrupt boundary.
28–75	C1|F4	Brown (10YR 5/3) and brown (10YR 5/3–4/3) very fine–fine SAND; very abrupt boundary.
75–90	C2|F5	Thin layer of very dark gray (10YR 3/1) very fine–fine SANDY LOAM underlain by gray and grayish brown (10YR 5/1 and 5/2) very fine–fine SAND; silt balls; abrupt boundary.
90–118	C3|F6	Dark yellowish brown (10YR 4/4) very fine–fine SAND fill.
118–136	2Apb	GAP 110–122 cm Black (10YR 2/1) SILT LOAM ±25% very fine SAND with inclusions of light olive brown and pale brown SAND; very abrupt boundary.
136–148	2C4	Strong brown (7.5YR 5/6) very fine–fine SAND; many prominent redox features.
148–213	2C5	Brown (10YR 5/3) very fine–fine SAND; laminated; strong brown redox features.
213–302	2Cg	Brown and brown–light olive brown (10YR 5/3 and 2.5YR 5/3–10YR 5/3) very fine–fine SAND; laminated; common distinct redox features; pebbles in sand at 292 cm; few very fine shell fragments; coarsens downward; abrupt boundary.
302–396	2C6	Brown (10YR 5/3)–light olive brown (2.5Y 5/3) very fine–fine SAND; laminated; common distinct redox features.

Core 32: OPC

Depth (cm)	Horizon	Description
0–32	A|F1	Very dark gray (10YR 3/1) SILT LOAM; sticky; sand increases from ± 1–5% with depth; a dark yellowish brown (10YR 4/4) inclusion; abrupt boundary.
32–67	C1|F2	Brown (10YR 5/3) very fine–fine SAND; gravel; abrupt boundary.
67–76	C2|F3	Very dark grayish brown (10YR 3/2–2.5Y 3/2) fine SAND; few pale brown (10YR 6/3) inclusions; abrupt boundary.
76–87	Ab|F4	Black (10YR 2/1) LOAMY SAND; gravelly; abrupt boundary.
87–100	Ab/C|F5	Mix of above and below.
100–115	C3|F6	Brown–grayish brown (10YR 5/3–5/2) gravelly fine SAND.
115–213	2C2	Grayish brown (10YR 5/2) laminated very fine–fine SAND; few laminae with granules; few gravel clasts.

Core 33: OPC/Sunken Garden

Depth (cm)	Horizon	Description
0–14	A|F1	Very dark gray–black (10YR 3/1–2/1) SILT LOAM–SANDY LOAM; clear boundary.
14–28	A|F2	Very dark gray–black (10YR 3/1–2/1) SILT LOAM; ±25% fine sand; platy parting; very abrupt boundary.
28–60	C1|F3	Layered brown and yellowish brown (10YR 5/3 & 5/4) very fine and fine SAND; few fine pebbles; abrupt boundary.
60–75	C2|F4	Brown (10YR 4/3) very fine–fine SAND; very abrupt boundary.
75–98	C3|F5	Yellowish brown (10YR 5/6) fine SAND.
98–132	C4|F6	GAP 80–122 cm Brown (10YR 5/3) fine SAND; fine pebbles and granules; very abrupt boundary.
132–135	2C5	Brown–grayish brown (10YR 7/3–5/2) laminated fine SAND; very abrupt boundary.
135–142	2C6	Grayish brown (10YR 5/2) very fine SAND; very abrupt boundary.
142–205	2C7	Grayish brown at top; yellowish brown–light olive brown (10YR 5/6–2.5Y 5/6) very fine–fine SAND; massive; abrupt boundary.
205–262	2C8	Brown–yellowish brown (10YR 5/3–5/4) very fine–fine SAND; massive; few granules; very abrupt boundary at silt laminae.
262–302	2Cg	Light olive brown (2.5Y 5/3) laminated very fine–fine SAND; heavy mineral lamination.

Core 34: OPC/Sunken Garden

Depth (cm)	Horizon	Description
0–24	A|F1	Black (10YR 2/1) SILT LOAM–fine SANDY LOAM; very abrupt boundary.
24–27	A/C||F2	Mixed soil from above and below; very fine–fine SAND with high% gravel; very abrupt boundary.
27–56	C1|F3	Brown–yellowish brown (10YR 5/3–5/4) very fine–fine SAND; dark soil (A horizon) inclusions; fill or mixed natural soil; very abrupt boundary.
56–100	2C1	Laminated brown (10YR 5/3) with some grayer laminae very fine–fine SAND with coarser sand interbeds; few faint redox features.
100–213	2C2	GAP 75–122 cm Brown–yellowish brown (10YR 5/3–5/4) very fine, fine & fine–medium SAND; very fine sand bed from 131–134cm; few very coarse sand grains; laminated.

Core 35: OPC/Sunken Garden

Depth (cm)	Horizon	Description
0–30	A|F1	Black (10YR 2/1) SILT LOAM; ±25% sand; few fine pebbles and granules; abrupt boundary.
30–36	AC|F2	Dark grayish brown (10YR 4/2) gravelly fine SAND; abrupt boundary.
36–53	C1|F3	Yellowish brown (10YR 5/6) very fine–fine SAND; very abrupt boundary.
53–105	2C2	Brown (10YR 5/3) very fine–fine SAND; very thin laminated; few granules and very coarse sand grains.
105–234	2C3	GAP 85–122 cm Brown (10YR 5/3) grading down to brown–light olive brown (2.5Y 5/3) very fine and fine SAND; slight fining downward.
234–238	2Cg1	Gray (2.5Y 5/1) fine–very fine SAND; very thin laminated; very abrupt boundary.
238–302	2Cg2	Brown–light olive brown (10YR 5/5–21.5Y 5/3) laminated very fine–fine SAND.

Core 36: OPC/Sunken Garden

Depth (cm)	Horizon	Description
0–23	A|F1	Black (10YR 2/1) SILT LOAM–SANDY LOAM; few pebbles.
23–49	C|F2	Brown (10YR 4/3) fine SAND and very dark gray (10YR 3/1) very fine SANDY LOAM; interlayered; very abrupt boundary.
49–95	2C1	Grayish brown–brown (10YR 5/2–5/3) very fine–fine SAND; few laminae.
95–213	2C2	GAP 65–122 cm Grayish brown (10YR 5/2) very fine–fine SAND; laminated; grades to light olive brown (2.5Y 5/3) laminated very fine–fine sand; few pebbles.

Core 37: OPC/Midway Plaisance

Depth (cm)	Horizon	Description
0–28	A|F1	Very dark gray (10YR 3/1) SILTY CLAY LOAM; few pebbles; abrupt boundary.
28–36	C|F2	Dark gray (10YR 4/1) SILTY CLAY; very abrupt boundary.
36–54	C2|F3	Mix of very dark gray & brown (10YR 3/1–4/3) SANDY LOAM; common gravel; very abrupt boundary.
54–66	C3|F4	Black (10YR 2/1) SILT that becomes interlayered with grayish brown (10YR 5/2) sand; very abrupt gradational boundary.
66–125	C4|F5	Brown (10YR 5/3) fine SAND; common faint redox features; very abrupt boundary.
125–141	2Cg1	GAP 70–122 cm Gray–grayish brown (10YR 5/1–5/2) SILT LOAM; shell; ±15% very fine sand; fine root and plant fragments; krotavina; clear gradational boundary.
141–210	2Cg2	Light olive brown (10YR 5/4) very fine–fine SAND; laminated.
245–302	2Cg3	Gray (2.5Y 5/1) very fine SAND; laminated.

Core 38: OPC/Midway Plaisance

Depth (cm)	Horizon	Description
0–24	A|F1	Thin SILT LOAM over black (10YR 2/1) SILTY CLAY LOAM; topsoil fill; abrupt boundary.
24–33	A/C1|F2	Black and dark gray (10YR 2/1 and 4/1) SILTY CLAY LOAM; mixed; very abrupt boundary.
33–51	C1|F3	Dark gray (10YR 4/1) SILTY CLAY LOAM–CLAY; few lighter colored soil inclusions; very abrupt boundary.
51–70	A/C2|F4	Brown (10YR 5/3) fine LOAMY SAND; dark colored silt loam inclusions; clear boundary. Mixed upper solum
70–136	2C1	Brown (10YR 5/4) laminated very fine–fine, fine, and fine–medium SAND; common faint redox features; few coarse and very coarse sand grains.
136–213	2Cg	Brown–light olive brown (10YR 5/3–2.5Y 5/3) laminated very fine–fine SAND; common faint redox features.

Core 39: OPC/Midway Plaisance

Depth (cm)	Horizon	Description
0–34	A|F1	Black (10YR 2/1) SILTY CLAY LOAM with slightly siltier cap; very abrupt boundary.
34–53	A/C|F2	Brown (10YR 5/3–4/3) fine SAND mixed with dark soil; very abrupt boundary.
53–155	2C1	GAP 90–122 cm Brown and yellowish brown (10YR 5/3 & 5/4) very fine–fine SAND; laminated; common faint redox features; few granules; brown–grayish brown (10YR 5/3–5/2) very fine–fine sand; massive.
155–172	2C2	Brown and yellowish brown (10YR 5/3 & 5/4) medium SAND; laminated; common faint redox features; few granules; brown–grayish brown (10YR 5/3–5/2) very fine–fine sand; massive; few distinct redox features.
172–213	2Cg	Light olive brown (2.5Y 5/3) very thin laminated very fine–fine SAND; many distinct redox features.

Core 40: OPC/Midway Plaisance

Depth (cm)	Horizon	Description
0–10	A|F1	Very dark gray–very dark grayish brown (10YR 3/1–3/2) SILT LOAM; ±25% very fine–fine sand; very abrupt boundary.
10–20	C1|F2	Dark yellowish brown (10YR 4/2) very fine–fine SAND; limestone gravel; very abrupt boundary.
20–26	C2|F3	Mix of dark grayish brown (10YR 3/1) SAND and heavy SILT LOAM; very abrupt boundary.
26–61	2C3	Brown (10YR 5/3) fine SAND; mixed to 48cm; thin laminated with very fine–fine & fine–medium sand; coarsens downward; very abrupt gradational boundary.
61–100	2C4	Yellowish brown (10YR 5/4) very fine–fine SAND mixed with medium sand below 71cm; laminated intervals.
100–133	2C5	GAP 90–122 cm Laminated dark yellowish brown (10YR 4/4) fine SAND; more poorly sorted than normal; abrupt gradational boundary.
133–213	2C6	Yellowish brown (10YR 5/4) very fine–fine SAND; laminated interbeds; common faint redox features.

Core 41: OPC/Midway Plaisance

Depth (cm)	Horizon	Description
0–13	A|F1	Black (10YR 2/1) heavy SILT LOAM; very abrupt boundary.
13–29	C1|F2	Dark gray–very dark gray (10YR 4/1 & 3/1) SILTY CLAY LOAM; very abrupt boundary.
29–38	C2|F3	Very dark gray (10YR 3/1) SILT LOAM mixed with brown (10YR 5/3) very fine–fine SAND; mixed soil.
38–110	2C3	Laminated yellowish brown (10YR 5/4) medium and fine SAND with granules to 72cm; gravel at 72cm; common faint redox features.
110–168	2C3	GAP 90–122 cm Brown–yellowish brown (10YR 5/3–5/4) very fine–fine SAND; very thin laminated; common faint redox features; very abrupt color boundary.
168–213	2Cg	Grayish brown (2.5Y 5/2) very fine–fine SAND.

Core 42: OPC/Midway Plaisance

Depth (cm)	Horizon	Description
0–40	A|F1	Black (10YR 2/1) heavy SILT LOAM; granular; blocky; abrupt boundary.
40–45	C|F2	Mixed SAND and SILT LOAM; abrupt boundary.
45–56	AC|F3	Very dark gray (10YR 3/1) SANDY LOAM over mortar; very abrupt boundary.
56–77	C|F4	Yellowish brown (10YR 5/4) gravelly very fine–fine SAND.
77–110	C|F5	Very dark grayish brown (10YR 3/2) gravelly SANDY LOAM; 1 piece of coal.
110–124	2Ob	Black (N 2.5/1) SILTY MUCK; very abrupt boundary.
124–155	2Cg1	Grayish brown–gray (2.5Y 5/2–5/1) SILTY CLAY LOAM; fine shell; thin laminated intervals; abrupt boundary.
155–260	2Cg2	Yellowish brown–dark olive brown (10YR 5/4–2.5Y 4/3) very fine–fine SAND; laminated; pebble at 170cm; medium sand laminae at 250cm; common faint redox features; very abrupt color boundary.
260–302	2Cg3	Gray (2.5Y 5/1) very fine–fine SAND.

Core 43: Golf Course

Depth (cm)	Horizon	Description
0–19	A|F1	Very dark gray (10YR 3/3) very fine–fine SANDY LOAM; very abrupt boundary.
19–32	A/C|F2	Mixed A horizon and brown (10YR 5/3) very fine–fine SAND; abrupt boundary.
32–105	C1|F3	Yellowish brown (10YR 5/4) very fine–fine SAND mixed with brown (10YR 5/3) very fine–fine sand.
105–147	C2|F4	GAP 85–122 cm Dark grayish brown (10YR 4/2) poorly sorted SAND with common granules; few pebbles; very abrupt boundary.
147–178	C3|F5	Brown and grayish brown (10YR 5/3 & 5/2) SANDY LOAM; mixed; common pebbles; abrupt boundary.
178–200	2Ab&Ob&C	Brown (10YR 5/3) fine SAND with 1–2cm bed of black (10YR 2/1) silty muck.
200–225	2A&C1	Brown (10YR 5/3) fine SAND; silty muck with 1–2% sand at top and mucky silt bed 1 cm from bottom.
225–233	2Ob&C2	Black MUCK with ±10% sand to 229cm over laminated fine SAND and organic sand; shell laminae at 232 cm; very abrupt boundary.
233–252	2Cg1	Grayish brown–gray (10YR 5/2–5/1) fine SAND; homogeneous color; clear color boundary.
252–302	2Cg2	Light olive brown (2.5Y 5/4) fine SAND.

Core 44: Golf Course

Depth (cm)	Horizon	Description
0–16	A|F1	Very dark gray (10YR 3/1) SILT LOAM–SANDY LOAM; sand is very fine–fine textured; very abrupt boundary.
16–22	C|F2	Mix of A horizon and pale brown (10YR 6/3) very fine–fine SAND; very abrupt boundary.
22–48	A|F3	Very dark gray (10YR 3/1) SILT LOAM; very abrupt boundary.
48–131	C1|F4	GAP 100–122 cm Yellowish brown (10YR 5/4) very fine–fine SAND; interlayered with SILT LOAM between 80 and 90cm; very abrupt boundary.
131–134	C2|F5	Thin layered dark gray, black and dark gray (10YR 4/1, 2/1 & 3/1) SILT LOAM.
134–143	C3|F6	Very dark grayish brown (10YR 3/2) fine and medium SANDY LOAM; glass; very abrupt boundary.
143–150	C4|F7	SILTY MUCK with clay inclusions.
150–155	2Ob	Black (10YR 2/1) MUCK; very abrupt boundary.
155–158	2Ab	Very dark gray (10YR 3/1) MUCK, fine–very fine SAND, and CLAY.
158–213	2C	Laminated brown (10YR 5/3) very fine–fine SAND.

Core 45: Golf Course

Depth (cm)	Horizon	Description
0–25	A|F1	Very dark gray (10YR 3/1) SILT LOAM; ±20% very fine sand; common gravel; very abrupt boundary.
25–33	C1|F2	Dark gray (10YR 5/1) heavy SILT LOAM; few granules; very abrupt boundary.
33–60	C2|F3	Brown (10YR 5/3) very fine–fine SAND; thin layering with darker sandy loam at base; abrupt boundary.
60–100	C3|F4	Dark yellowish brown (10YR 4/4) fine SAND with common gravel.
100–134	C4|F5	GAP 80–122 cm Very dark gray (10YR 3/1) fine gravelly SILT LOAM; platy; very abrupt boundary.
134–153	C5|F6	Yellowish brown–dark yellowish brown (10YR 5/4–4/4) very fine–fine SAND; few darker soil inclusions.
153–158	2Ab&Ob&C	MUCK, very fine SAND, and organic sand; medium–coarse sand laminae; abrupt boundary.
158–166	2Cg1	Grayish brown (10YR 5/2) very fine–fine SAND; clear boundary.
166–302	2Cg2	Light olive brown–olive brown (2.5Y 5/3–4/3) very fine–fine SAND; common faint redox features; laminated.

Core 46: Golf Course

Depth (cm)	Horizon	Description
0–43	A|F1	Black–very dark gray (10YR 2/1–3/1) SILT LOAM; very abrupt boundary.
43–50	C2|F2	SAND laminae.
50–87	C3|F3	Dark gray (10YR 4/1) CLAY diamicton; sand at joints; abrupt boundary.
87–105	C4|F4	SAND mixed with diamicton; clear boundary.
105–128	C5|F5	Yellowish brown (10YR 5/4) very fine–fine SAND; abrupt boundary.
128–175	C6|F6	Layered dark yellowish brown and brown (10YR 4/4 & 5/3) SAND and GRAVEL; sand ranges from very fine–fine–coarse; abrupt boundary.
175–218	2C6	Very thin layered dark SANDY LOAM over grayish brown (10YR 5/2) very fine–fine SAND over very thin layered gray and very dark gray SILT LOAM; very abrupt boundary.
218–237	2C7	Laminated brown (10YR 5/3) very fine–fine SAND; clear boundary.
237–302	2Cg	Light olive brown–brown (2.5Y 5/3–10YR 5/3) laminated very fine–fine SAND.

Core 47: Incinerator

Depth (cm)	Horizon	Description
0–68	A|F1	Black (10YR 2/1) SILT LOAM; fine gravel above 32cm; mixed with lighter colored fine soil inclusion below 46cm.
68–80	C1|F2	Dark gray (10YR 4/1) CLAY diamicton; pebble at top; abrupt boundary.
80–130	C2|F3	105–122 cm Brown–pale brown (10YR 5/3–6/3) very fine–fine SAND; very abrupt boundary.
130–144	ACb|F4	Very dark gray (10YR 3/1) heavy SILT LOAM mixed with lighter colored soil inclusions; weak layering; very abrupt boundary.
144–241	C3|F5	Brown (10YR 5/3) very fine–fine SAND; few pebbles.
241–247	2ACb	Very dark gray (10YR 3/1) fine LOAMY SAND; very abrupt boundary.
247–251	2C4	Brown–yellowish brown (10YR 5/3–5/4) very fine–fine SAND; very abrupt boundary.
251–254	2C5	Very dark gray (10YR 3/1) fine LOAMY SAND; very abrupt boundary.
254–302	2C6	Brown (10YR 5/3) fine SAND with very coarse sand and granules.
302–336	2C7	Grayish brown–light brownish gray (10YR 5/2–6/2) fine SAND; laminated in lower 10cm; abrupt color boundary.
336–396	2Cg	Yellowish brown (10YR 5/4) to light olive brown (2.5Y 5/4) very fine–fine SAND; laminated many distinct redox features.

Core 48: Incinerator

Depth (cm)	Horizon	Description
0–27	A/F1	Very dark gray–very dark grayish brown (10YR 3/1–3/2) SILT LOAM; few soil inclusions; very abrupt boundary.
27–43	C1/F2	Brown (10YR 5/3) very fine–fine SAND; few artifacts; inclusions; abrupt boundary.
43–132	C2/F3	GAP 70–122 Incinerator debris.
132–222	C3|F4	Pale brown (10YR 6/3) very fine SAND; well-sorted; loose.
222–241	C4|F5	Brown (10YR 5/3) medium SAND; small coarse sand mode; loose; single grain; vertically well-sorted; very abrupt boundary.
241–250	2ACb	Very dark gray (10YR 3/1) fine light SANDY LOAM; few fine pebbles; very abrupt boundary.
250–322	2C5	Brown–grayish brown (10YR 5/3–5/2) fine and medium SAND; very abrupt boundary.
322–360	2C6	Brown (10YR 5/3) very fine–fine SAND; laminated; abrupt color boundary.
360–375	2Cg	Light olive brown (2.5Y 5/3) very fine–fine SAND; many distinct redox features.

Core 49: Incinerator

Depth (cm)	Horizon	Description
0–10	A|F1	Very dark gray (10YR 3/1) SILT LOAM; 20% sand; abrupt boundary.
10–26	A|F2	Limestone road gravel mixed with A horizon below 14cm; abrupt boundary.
26–87	C1|F3	Brown and yellowish brown (10YR 5/3 & 5/4) very fine–fine SAND with darker, siltier soil inclusions; small piece of dark gray diamicton clay at 85cm.
87–134	C2|F4	Pale brown (10YR 6/3) medium SAND; pebbly sand lag at base; very abrupt boundary.
134–149	2Ab	GAP 90–120 cm Very dark gray (10YR 3/1) very fine–fine LOAMY SAND; very abrupt boundary.
149–200	2C3	Pale brown (10YR 6/3) very fine–fine SAND; loose; massive.
200–302	2Cg	Brown (10YR 5/3)–light olive brown (2.5Y 5/3) very fine–fine SAND; very thin laminated.

Core 50: Incinerator

Depth (cm)	Horizon	Description
0–26	A|F1	Mixed dark yellowish brown and very dark gray (10YR 4/4 & 3/1) SILTY CLAY LOAM; very abrupt boundary.
26–42	C1|F2	Brown–pale brown (10YR 5/3–6/3) very fine–fine SAND; abrupt boundary.
42–62	C3|F3	Very dark grayish brown (10YR 3/2) very fine–fine LOAMY SAND; brick fragments; white material; abrupt boundary.
62–100	C4|F4	Brown (10YR 5/3) very fine–fine SAND.
100–128	2Ab	Black (10YR 2/1) very fine LOAMY SAND; very thin pale brown sand laminae/lenses; very abrupt boundary.
128–170	2C1	Brown–grayish brown (10YR 5/3–5/2) very fine–fine SAND; laminated; abrupt boundary.
170–213	2C2	Brown–light olive brown (10YR 5/3–5/4) very fine–fine SAND.

Core 51: Hayes and Cornell

Depth (cm)	Horizon	Description
0–19	A|F1	Black (10YR 2/1) very fine–fine SANDY LOAM; very abrupt boundary.
19–120	C1|F2	Mixed brown (10YR 5/3), pale brown (10YR 6/3) and small amount of olive brown (2.5Y 5/3) very fine–fine SAND with minor inter-beds of sand.
120–122	C2|F3	2 cm zone of layered black and brown (10YR 2/1 & 5/3) very fine–fine SAND.
122–130	2Ab	Black (10YR 2/1) SILT LOAM; ±20% sand; very abrupt boundary.
130–132	2C3	GAP 80–122 cm Grayish brown (10YR 5/2) fine SANDY LOAM; few pebbles; very abrupt boundary.
132–170	2Cg	Gray (2.5Y 5/1) and grayish brown (2.5Y 5/2) SILT LOAM; ± 0–15% very fine sand; clear boundary.
170–213	2Cg	Light olive brown (2.5Y 5/3) very fine–fine SAND; few fine pebbles.

Core 52: Hayes and Cornell

Depth (cm)	Horizon	Description
0–25	A/|F1	Black (10YR 2/1) SILT LOAM–SANDY LOAM; mixed with fill from below in lower 1/3; abrupt boundary.
25–60	C1|F2	Brown (10YR 5/3) very fine–fine LOAMY SAND.
60–137	C2|F3	GAP 90–122 cm Yellowish brown (10YR 5/4) very fine–fine SAND; few concrete pieces.
137–145	C3|F4	Very dark grayish brown (2.5Y 3/2) layered medium and coarse SAND with few granules; very abrupt boundary.
145–149	2Ab&C	very thin laminated black (10YR 2/1) organic silt and brown to brownish gray (10YR 5/3–5/2) sand
149–151	2C4	Light brownish gray (2.5Y 6/2) fine sand
151–155	2C5	gray (10YR 5/1) fine sand
155–213	2Cg	pale brown (10YR 6/3) few faint redox features

Core 53: Hayes and Cornell

Depth (cm)	Horizon	Description
0–16	A|F1	Very dark gray (10YR 3/1) fine SANDY LOAM; abrupt boundary.
16–26	C1|F2	Woody MUCK.
26–41	C2|F3	Dark grayish brown and yellowish brown (10YR 4/2 & 4/4) coarse and very coarse SAND and fine gravel; abrupt boundary.
41–100	2C3	Pale brown (10YR 6/3) very fine–fine SAND; few pebbles.
100–237	2C4	GAP 70–122 cm Brown and yellowish brown (10YR 5/3 & 5/4) with few finer laminae; laminated; clear boundary.
237–285	2C5	Brown–grayish brown (10YR 5/3–4/2) very fine–fine SAND; coarse laminae; abrupt gradational boundary.
285–302	2C6	Brown–light olive brown (10YR 5/5–2.5Y 5/3) laminated very fine and fine SAND with few heavy mineral laminae.

Core 54: Hayes and Cornell

Depth (cm)	Horizon	Description
0–23	A|F1	Black (10YR 2/1) SILT LOAM; ±25% very fine SAND; very abrupt boundary.
23–49	C1|F2	Brown–yellowish brown (10YR 5/3–5/4) very fine–fine SAND; mixed; inclusions at base.
49–55	C2|F3	Yellowish brown (10YR 5/4) very fine–fine SAND; abrupt boundary.
55–100	C3|F4	Brown (10YR 4/3) fine–medium SAND.
100–155	C4|F5	GAP 75–122 cm Yellowish brown (10YR 5/4) fine SAND with gravel; abrupt boundary.
155–250	C5|F6	Grayish brown–brown (10YR 5/2–5/3) and yellowish brown (10YR 5/4) gravelly fine and medium SAND; very abrupt boundary.
250–302	C6|F7	Brown (10YR 5/3) fine and medium SAND; scattered fine pebbles; weak platy parting.

Core 55: Hayes and Cornell

Depth (cm)	Horizon	Description
0–40	A|F1	Black (10YR 2/1) SILT LOAM–SANDY LOAM in upper 2cm; SILT LOAM below 20cm; historic artifacts; gravel.
40–57	C|F2	Dark grayish brown (10YR 4/2) gravelly medium SANDY LOAM; abrupt boundary.
57–66	C2|F3	Yellowish brown (10YR 5/6) gravelly coarse SAND; abrupt boundary.
66–105	C3|F4	Very dark grayish brown and very dark gray (10YR 3/2 & 3/1) fine SAND with gravel.
105–131	C4|F5	Layered gray and dark grayish brown (10YR 3/1 & 4/2) SILT LOAM with few sandy layers.
131–133	2C5	Thin laminae of poorly sorted SILT LOAM and very fine SANDY LOAM; very abrupt boundary.
133–160	2Cg1	Brown–grayish brown (10YR 5/3–5/2) very fine–fine LOAMY SAND; heavy redox at base; very abrupt gradational boundary.
160–163	2Cg2	Grayish brown (2.5Y 5/2) very fine SAND; very abrupt gradational boundary.
163–213	2Cg3	Laminated gray (5Y 5/1) very fine–fine SAND; few distinct redox features.

Core 56: Hayes and Cornell

Depth (cm)	Horizon	Description
0–18	A|F1	Very dark gray–dark grayish brown (10YR 3/1–3/2) SANDY LOAM; very abrupt boundary.
18–141	C1|F2	Brown (10YR 5/3–4/3) gravelly medium SAND; 1 large pebble; brown (10YR 5/3) granules and very coarse sand near base; very abrupt boundary.
141–178	2C2	GAP 35–122 cm Pale brown–brown–yellowish brown (10YR 6/3–5/3–5/4) very fine–fine SAND; laminated; heavy mixed laminae at 148cm.
178–213	2C3	Yellowish brown (10YR 5/6) very fine–fine SAND with common granules.

Core 57: Columbia Bridge

Depth (cm)	Horizon	Description
0–22	A|F1	Black (10YR 2/1) SILT LOAM; ±25% very fine sand; very abrupt boundary.
22–56	C1|F2	Brown (10YR 5/3) very fine–fine SAND; few pebbles.
56–62	2Ab&C	Black (10YR 2/1) SILT LOAM; ±25% very fine sand; very thin lenses of very fine–fine sand that increase in size and frequency with depth; 1 pebble; abrupt boundary.
62–100	2C2	Brown (10YR 5/3) very fine–fine SAND; massive.
100–134	2C3	GAP 70–122 cm Grayish brown (10YR 5/2) very fine–fine SAND; massive; very abrupt color boundary.
134–146	2C4	Yellowish brown (10YR 5/6) very fine–fine SAND; very abrupt boundary.
146–213	2Cg	Light olive brown (2.5Y 5/4) very fine–fine SAND; laminated; few heavy mineral laminae.

Core 58: Columbia Bridge

Depth (cm)	Horizon	Description
0–46	A|F1	Black (10YR 2/1) SILT LOAM–very fine SANDY LOAM; few soil inclusions; mixed at base; abrupt boundary.
46–162	C1|F2	Brown (10YR 5/3) very fine–fine SAND; silt loam inclusion; very abrupt boundary.
162–168	2Ab&C	Very thin layered very dark gray (10YR 3/1) and grayish brown (10YR 5/2) very fine SANDY LOAM and very fine–fine sand; abrupt boundary.
168–200	2C2	Grayish brown–brown (10YR 5/2–5/3) very fine–fine SAND.
200–221	2C3	Grayish brown (2.5Y 5/2) very fine SANDY LOAM; very abrupt boundary.
221–302	2C4	Laminated brownish gray (2.5Y 5/2 and light olive brown (2.5Y 5/4) very fine–fine SAND.

Core 59: Columbia Bridge

Depth (cm)	Horizon	Description
0–23	A|F1	Mixed topsoil and lighter colored fill; very dark gray (10YR 3/1).
23–140	C1|F2	Layered sandy fill.
140–170	C2|F3	Brown (10YR 5/3) very fine SAND; artifacts.
170–182	C3|F4	Plaster layer.
182–200	C4|F5	Dark grayish brown (10YR 4/2) very fine SAND.
200–236	C5|F6	LOAMY SAND fill.
236–265	C6|F7	Brown and yellowish brown (10YR 5/2 & 5/4) fine SAND.
265–283	2Ab	Layered very dark grayish brown (2.5Y 3/2) very fine–fine SAND and black (10YR 2/1) SANDY LOAM.
283–302	2C7	Grayish brown–brown (10YR 5/2–5/3) very fine–fine SAND; some darker soil inclusions.
302–316	2C8	Dark brown and grayish brown (2.5Y 5/4 & 5/2) poorly sorted medium and coarse SAND with granules; very abrupt boundary.
316–370	2Cg	Layered grayish brown and light olive brown (2.5Y 5/2 % 5/4) very fine–fine SAND.

The following file is available for download at:
https://uofi.box.com/Technical-Report-184

Appendix C
Summary Inventory of Artifacts Recovered from the APE

17080_Jackson_Park_Artifact_Summary_Appendix_C.xlsx

Appendix D
Inventory of Artifacts Recovered from the SLFP/OPC Investigations

17080_Jackson_Park_Inventory_Appendix_D.xlsx

References

A. T. Andreas (1884) *A History of Cook County, Illinois From the Earliest Period to the Present Time.* A. T. Andreas, Chicago.

Adams, Brian, Kevin McGowan, and Gregory Walz (2000) *Phase II National Register Evaluation of Four Sites For Northern Border's Project 2000 in Will County, Illinois.* Northern Border Cultural Resources Report No. 4. Public Service Archaeology Program, Department of Anthropology, University of Illinois at Urbana–Champaign.

Anderson, Adrienne (1968) The Archaeology of Mass-Produced Footwear. *Historical Archaeology* 2:56–65.

Arbor, Marilyn (1981) *Tools and Trades of America's Past: The Mercer Collection*. Bucks County Historical Society, Doylestown, Pennsylvania.

Asch, David L., and Nancy B. Asch (1985) Prehistoric Plant Cultivation in East-Central Illinois. In *Prehistoric Food Production in North America* edited by Richard I. Ford, pp. 149–203. Anthropological Papers No. 75, Museum of Anthropology, University of Michigan, Ann Arbor.

Aultman, Jennifer, and Kate Grillo (2003) DAACS Cataloguing Manual: Buttons. Electronic resource, http://www.daacs.org/wp-content/uploads/buttons.pdf. Downloaded December 2012, on file at NIFS.

Bachrach, Julia (2017) *History of Jackson Park and the Midway Plaisance and Summary of Significant Features.* Preliminary Draft dated November 2, 2017. Commissioned by the Chicago Department of Transportation and the Department of Planning and Development. Civiltech Engineering, Inc. Copy on file at the Illinois State Archaeological Survey, Northern Illinois Field Station.

Barlow, Ronald S. (1999) *The Antique Tool Collector's Guide to Value.* L-W Book Sales, Gas City, Indiana.

Bluhm Herold, Elaine A., Patricia O'Brien, and David J. Wenner (1990) Hoxie Farm and Huber: Two Upper Mississippian Archaeological Sites in Cook County, Illinois. In *At the Edge of Prehistory: Huber Phase Archaeology in the Chicago Area* edited by James A. Brown and Patricia J. O'Brien, pp. 7–99. Center for American Archaeology Press, Kampsville, Illinois.

Bolotin, Norman, and Christine Laing (1992) *The World's Columbian Exposition: The Chicago World's Fair of 1893*. University of Illinois Press, Urbana.

Bradley, Charles S. (2000) Smoking Pipes for the Archaeologist. In *Studies in Material Culture Research,* edited by Karlis Karklins, pp. 104–133. Society for Historical Archaeology, Uniontown, Pennsylvania.

Bretz, J. Harlan (1930) Surficial Geology of the Jackson Park Quadrangle. *Chicago Areal Geologic Maps, Map No. 12-Jackson Park.* Illinois State Geological Survey, Urbana.

Brooklyn Museum (2017) Image of the Horticultural Pavilion, Chicago World's Fair. Brooklyn Museum Archives, Goodyear Archives available at https://upload.wikimedia.org/wikipedia/commons/0/0d/Brooklyn_Museum_-_Horticultural_Building_%28pd%29.jpg, accessed November 2017.

Brown, Ann R. (1982) *Historic Typology with Principal Date of Manufacture and Descriptive Characteristics for Identification.* Prepared for the Federal Highway Administration, U.S. Department of Transportation, Washington, D.C., and the Bureau of Archaeology and Historic Preservation, Division of Historical and Cultural Affairs, Delaware Department of Transportation, Dover.

Brown, James A., and Patricia J. O'Brien (1990) The Oak Forest Site: Investigations into Oneota Subsistence-Settlement in the Cal-Sag Area of Cook County, Illinois. In *At the Edge of Prehistory: Huber Phase Archaeology in the Chicago Area* edited by James A. Brown and Patricia J. O'Brien, pp. 123–208. Center for American Archaeology Press, Kampsville, Illinois.

Burhham, Daniel H. (1894) *The Final Official Report of the Director of Works of the World's Fair Exposition*. Document on file at the Ryerson and Burnham Archives, Ryersona and Burhham Library, Art Institute of Chicago, Chicago. Facsimile published by Garland Press, New York 1969.

Burnham, Daniel Hudson, and Edward H. Bennet (1909) *Plan of Chicago*. The Commercial Club, Chicago.

Butterworth, Jeffrey A. (2000) Forming the Past. In *Approaches to Material Culture Research for Historical Archaeologists,* compiled by David R. Brauner, pp. 373–380. Society for Historical Archaeology, Uniontown, Pennsylvania.

Carskadden, Jeff, and Richard Gartley (1990) A Prelimary Seriation of 19th-Century Decorated Porcelain Marbles. *Historical Archaeology* 24(2):55–69.

Chicago History Museum (2017) Image of unimproved Jackson Park ca. 1880–1890, J. W. Taylor, photographer. Digital image available at http://digitalcollection.chicagohistory.org/cdm/singleitem/collection/p16029coll5/id/359/rec/36, accessed August 2017.

Chicago Tribune (2017) Golfing in Jackson Park. Digital image available at http://www.trbimg.com/img-5878103e/turbine/ct-golf-jackson-park-tiger-woods-edit-1113-md-20170112, accessed November 2017.

Chrzastowski, Michael J. (2010) The Illinois Coast of Lake Michigan. In *Geology of Illinois*, edited by Dennis R. Kolkata and Cheryl K. Nimz, pp. 404–417. Illinois State Geological Survey, University of Illinois at Urbana–Champaign.

Chrzastowski, Michael J., and Todd A. Thompson (1992) Late Wisconsin and Holocene Coastal Evolution of the Southern Shore of Lake Michigan. In *Quaternary Coasts of the United States: Marine and Lacustrine Sediments*:397–413. SEPM Special Publication No. 48, Society for Sedimentary Geology.

Chrzastowski, Michael J., and Todd A. Thompson (1994) Late Wisconsinan and Holocene Geologic History of the Illinois-Indiana Coast of Lake Michigan. *Journal of Great Lake Research* 20(1):9–26.

Chrzastowski, Michael J., and Todd A. Thompson (1982) *General Soil Map of Illinois.* Soil Conservation Service, United States Department of Agriculture.

Cotterell, Brian, and Mark C. Kamminga (1987) The formation of flakes. *American Antiquity* 52: 675–708.

Cross, Matthew E., and Mark C. Branstner (2014) *An Early Nineteenth Century Farmstead in Western Illinois: the Siebert Site.* Research Report No. 31. Illinois State Archaeological Survey, Prairie Research Institute, University of Illinois at Urbana–Champaign.

Cronon, Willian (1991) *Nature's Metropolis*. W. W. Norton and Company, New York.

Davis, James E. (1998) *Frontier Illinois*. Indiana University Press, Bloomington and Indianapolis.

Deiss, Ronald W. (1981) *The Development and Application of a Chronology for American Glass.* Midwestern Archaeological Research Center, Illinois State University, Bloomington–Normal.

Denver, Kay (1968) *Patent Medicine Picture.* Tombstone Epitaph Printers, Tuscon, Arizona.

Dunning, Phil (2000) Composite Tale Cutlery from 1700 to 1930. In *Studies in Material Culture Research,* edited by Karlis Karklins, pp. 32–45. Society for Historical Archaeology, Uniontown, Pennsylvania.

Emerson, Thomas E. (1986) A Retrospective Look at the Earliest Woodland Cultures in the American Heartland. In *Early Woodland Archaeology*, edited by Kenneth B. Farnsworth and Thomas E. Emerson, pp. 621–633. Kampsville Seminars in Archaeology, Vol. 2. Center for American Archaeology, Kampsville, Illinois.

Emerson, Thomas E. (1999) The Late Prehistoric Cultural Context of the Keeshin Farm Site. In *The Keeshin Farm Site and the Rock River Langford Tradition in Northern Illinois*, edited by Thomas E. Emerson, pp. 15–26. Transportation Archaeological Research Reports 7. Illinois Transportation Archaeological Research Program, University of Illinois at Urbana–Champaign.

Emerson, Thomas E., Dale L. McElrath, and Andrew C. Fortier, Eds. (2000) *Late Woodland Societies: Tradition and Transformation Across the Midcontinent.* University of Nebraska Press, Lincoln.

Emerson, Thomas E., and Anne R. Titelbaum (2000) The Des Plaines Complex and the Late Woodland Stage of Northern Illinois. In *Late Woodland Societies: Tradition and Transformation Across the Midcontinent,* edited by Thomas E. Emerson, Dale L. McElrath, and Andrew C. Fortier, pp. 413–427. University of Nebraska Press, Lincoln.

Engle Sanitary and Cremation Company (1893) *The Exhibit of the Engle Sanitary and Cremation Company at the World's Columbian Exposition*. Engle Sanitation and Cremation Company, Des Moines, Iowa.

Etsy (2018) Japanese Fan Crane Necklace. https://www.etsy.com/listing/235749156/japanese-fan-necklace-crane-necklace?gpla=1&gao=1&&utm_source=google&utm_medium=cpc&utm_campaign=shopping_us_c-jewelry-necklaces-pendants&utm_custom1=4cb27d62-f426-4be2-a7e0-e65a69b1927b&gclid=CjwKCAiAvMPRBRBIEiwABuO6qQ7hES9w4IJUmH2BMlSvo3bGttGhvvSyfF_DOX_cHk2NYNtpWqYYbRoC0qoQAvD_BwE. Accessed January 2018.

Farnsworth, Kenneth B. and Thomas E. Emerson, Eds. (1986) *Early Woodland Archaeology.* Kampsville Seminars in Archaeology 2. Center for American Archaeology, Kampsville, Illinois.

Farnsworth, Kenneth B., and John A. Walthall (2011) *Bottled in Illinois: Embossed Bottles and Bottled Products of Early Illinois Merchants from Chicago to Cairo.* Studies in Archaeology No. 6. Illinois State Archaeological Survey, Prairie Research Institute, University of Illinois at Urbana–Champaign.

Fehrenbacher, J. B., J. D. Alexander, I. J. Jansen, R. G. Darmody, R. A. Pope, M. A. Flock, E. E. Voss, J. W. Scott, W. F. Andrews, and L. J. Bushue (1984) *Soils of Illinois,* Bulletin 778 University of Illinois College of Agriculture Agricultural Experiment Station in Cooperation with the Soil Conservation Service, U.S. Department of Agriculture, Urbana–Champaign.

Fike, Richard E. (1987) *The Bottle Book: A Comprehensive Guide to Embossed Medicine Bottles.* Peregrine Smith Books, Salt Lake City, Utah.

Fléjou, Lucie (2002) *L'enterprise Théodore Haviland de 1892 a 1941 : Destinées industrielles de la porcélaine à Limoges*. Unpublished thesis, Ecole National des Chartres, Paris Science et Lettres, Paris.

Gates, William C., Jr., and Dana E. Omerod (1982) The East Liverpool, Ohio, Pottery District: Identification of Manufacturers and Marks. *Historical Archaeology* 16(1–2):1–358.

Godden, Geoffrey A. (1964) *Encyclopedia of British Pottery and Porcelain Marks.* Bonanza Books, New York.

Graff, Rebecca (2011) *The Vanishing City: Time, Tourism, and the Archaeology of Event at Chicago's 1893 World's Columbian Exposition.* Unpublished Ph.D. Dissertation, Department of Anthropology, University of Chicago. UMI#3472854.

Greenberg, Joel (2002) *A Natural History of the Chicago Region*. University of Chicago Press, Chicago, Illinois.

Greer, Georgeanna H. (2005) *American Stonewares: The Art and Craft of Utilitarian Potters.* Schiffer Publishing, Atglen, Pennsylvania.

Grillo, Kate, Jennifer Aultman, and Nick Bon-Harper (2012) DAACS Cataloguing Manual: Buckles. Electronic resource, http://www.daacs.org/wp-content/uploads/buckles.pdf. Downloaded December 2012, on file at NIFS.

Grinnell, Max (2005) Hyde Park. In *The Electronic Encyclopedia of Chicago*. Available online at http://www.encyclopedia.chicagohistory.org/pages/622.html. Accessed October 2017.

Gusset, Gerard (2000) A Preliminary Annotated Bibliography on Electrical Artifacts. In *Studies in Material Culture Research,* edited by Karlis Karklins, pp. 131–140. Society for Historical Archaeology, Uniontown, Pennsylvania.

Hansel, Ardith K., and E. Donald McKay (2010) Quaternary Period. In *Geology of Illinois*, edited by Dennis R. Kolkata and Cheryl K. Nimz, pp. 216–247. Illinois State Geological Survey, University of Illinois at Urbana–Champaign.

Harris, Wendy (2002) Upland Abandonment during the Middle Archaic Period: A View from Northeastern Illinois. *The Wisconsin Archaeologist* 83:3–18.

Higgs, Andrew S., Clare Tolmie, and Paula J. Porubcan (2002) *Phase II Archaeological Testing at the Burdick (11WI2642) and Carter (11WI2640) Sites: Two Nineteenth Century Farmsteads in Plainfield, Illinois*. Illinois CRM Document No. 13039 Cultural Resources Management Report No. 1097, Midwest Archaeological Research Services, Marengo, Illinois.

Hirsch, Susan E. (2005) Economic Geography. *The Electronic Encyclopedia of Chicago.* Chicago Historical Society. Available online at http://www.encyclopedia.chicagohistory.org/pages/409.html. Accessed November 2017.

Historic Bridges (2017) Clarence Darrow Bridge. Available online at http://historicbridges.org/illinois/jacksonnorthlagoon/historical.jpg, accessed August 2017.

History of Business (2018) *History of Chase and Sanborn Coffee Company.* Electronic document available at http://historyofbusiness.blogspot.com/2012/09/history-of-chase-and-sanborn-coffee.html. Accessed January 2018.

Illinois Inventory of Archaeological and Paleontological Sites (IIAPS) (2017) *Archaeological Site Files*. Electronic documents available at http://geoserver.dnr.illinois.gov/Archaeologyviewer/, accessed July 2017.

Illinois State Archaeological Survey (2012a) *Standard IDOT-ISAS Field Procedures for Phase I, II, and III Archaeological Investigations.* Illinois State Archaeological Survey, Prairie Research Institute, University of Illinois at Urbana–Champaign.

Illinois State Archaeological Survey (2012b) *Standard IDOT-ISAS Laboratory Procedures for Phase I, II, and III Archaeological Investigations.* Illinois State Archaeological Survey, Prairie Research Institute, University of Illinois at Urbana–Champaign.

Jackson Park Advisory Council (2017) *Jackson Park Time Line.* Online document available at (www.jacksonparkadvisorycouncil.org/history_2. Accessed August 2017.

Jackson, Douglas K., and Rosemarie Blewitt (2017) *The Hoxie Farm Site Main Occupation Area: Late Fisher and Huber Phase Components in South Chicago.* Research Report 40. Illinois State Archaeological Survey, Prairie Research Institute, University of Illinois Urbana–Champaign.

Jackson, Douglas K., and Thomas E. Emerson (2013) *The Hoxie Farm Site Fortified Village: Late Fisher Phase Occupation and Fortification in South Chicago.* Research Report 27. Illinois State Archaeological Survey, Prairie Research Institute, University of Illinois Urbana–Champaign.

Jackson, William Henry (1893) *Jackson's Famous Pictures of the World's Fair.* Online image available at https://commons.wikimedia.org/wiki/File:Transportation_Building_from_Wooded_Island,_William_Henry_Jackson,_1893.jpg, accessed November 2017.

Jeske, Robert J. (1990) Langford Tradition Subsistence, Settlement, and Technology. *Midcontinental Journal of Archaeology* 15:221–249.

Jeske, Robert J. (2006) Hopewelll Regional Interactions in Southeastern Wisconsin and Northern Illinois. In *Re-creating Hopewell* edited by Douglas K. Charles and Jane E. Buikstra, pp. 283–309. University Press of Florida, Gainesville.

Jones, Lang, Lasalle IP (2017) *Behind the Scenes at the Museum of Science and Industry*. Article available online at http://jllcampaigns.com/pdsbook/portfolio-item/the-museum-of-science-and-industry, accessed online November 2017.

Jones, Olive R. (2000) A Guide to Dating Glass Tableware: 1800–1940. In *Studies in Material Culture Research,* edited by Karlis Karklins, pp. 141–232. Society for Historical Archaeology, Uniontown, Pennsylvania.

Jones, Olive R., and Catherine Sullivan (1989) *The Parks Canada Glass Glossary for the Description of Containers, Tableware, Flat Glass and Closures.* Studies in Archaeology, Architecture and History. National Historic Parks and Sites, Canadian Parks Service, Environment Canada, Ottawa, Ontario.

Keating, Ann Durkin (1988) *Building Chicago: Suburban Developers and the Creation of a Divided Metropolis.* University of Illinois Press, Urbana.

Keating, Ann Durkin (2005) *Chicagoland: City and Suburbs in the Railroad Age.* The University of Chicago Press, Chicago.

Keating, Ann Durkin (2012) *Rising Up From Indian Country: The Battle of Fort Dearborn and the Birth of Chicago.* The University of Chicago Press, Chicago.

Kogan, Rick (2016) Clarence Darrow's Words, If Not His Ghost, Still Linger in Jackson Park. *Chicago Tribune*, March 4th 2016. Available online at http://www.chicagotribune.com/entertainment/ct-clarence-darrow-bridge-chicago-ae-0306-20160303-column.html. Accessed July 19th 2017.

Kolb, Michael F. (2018) *Stratigraphic and Geoarchaeological Investigations in Conjunction with the Archaeological Investigations for the Proposed Obama Presidential Center in Chicago, Illinois*. Strata Morph Report of Investigation Number 294, Strata Morph Geoexploration, Sun Prairie, Wisconsin.

Koldehoff, Brad (2013) *Paleoindian and Archaic Settlement and Lithic Procurement in the Illinois Uplands*. Technical Report No. 148. Illinois State Archaeological Survey, Prairie Research Institute, University of Illinois at Urbana–Champaign.

Koldehoff, Brad, and Thomas J. Loebel (2009) Clovis and Dalton: Unbounded and Bounded Systems in the Midcontinent of North America. In *Lithic Materials and Paleolithic Societies,* edited by Brian Adams and Brooke Blades, pp. 270–287. Wiley-Blackwell, West Sussex, United Kingdom.

Kolkata, Dennis R. (2010) Overview of Illinois Geology. In *Geology of Illinois*, edited by Dennis R. Kolkata and Cheryl K. Nimz, pp. 59–75. Illinois State Geological Survey, University of Illinois at Urbana–Champaign.

Lehner, Lois (1988) *Lehner's Encyclopedia of US Marks on Pottery, Porcelain and Clay.* Collectors Books.

Lindsey, Bill (2018) Historic Glass Bottle Identification and Information Website, Electronic document, Society for Historical Archaeology https://sha.org/bottle/index.htm.

Loebel, Thomas J. (2012) Pattern or Bias? A Critical Evaluation of Midwestern Fluted Point Distributions Using Raster Based GIS. *Journal of Archaeological Science* 39(5):1205–1217.

Lofstrom, Ted, Jeffrey P. Tordoff, and Douglas C. George (1982) A Seriation of Historic Earthenwares in the Midwest. *The Minnesota Archaeologist* 41(1):3–14.

Lovis, William A., Alan F. Arbogast, and G. William Monaghan (2012) *The Geoarchaeology of Lake Michigan Coastal Dunes*. MDOT Environmental Research Series Volume 2, Michigan State University Press.

Lurie, Rochelle, Douglas Kullen, and Scott Demel (2009) Defining the Archaic in Northern Illinois. In *Archaic Societies: Diversity and Complexity Across the Midcontinent*. Edited by Thomas E. Emerson, Dale L. McElrath, and Andrew C. Fortier, pp. 755–785. State University of New York Press, Albany.

Lurie, Rochelle, Sara L. Pfannekuche, M. Catherine Bird, Clare Tolmie, Steven A. Katz, and Jay Martinez (2010) *The 2005 through 2008 Excavations at the Henry Bates House at Macktown (11-Wo-256) in the Macktown Forest Preserve, Rockton, Illinois.*Illinois CRM Archive No. 18532 (Cultural Resources Management Report No. 1586), Midwest Archaeological Research Services, Marengo, Illinois.

Mansberger, Floyd (1986) Changing Patterns in Nineteenth Century Ceramics. In *Nineteenth Century Historic Archaeology in Illinois*, edited by Thomas E. Emerson and Charles L. Rohrbaugh, pp. 131–179. Illinois Cultural Resources Study No. 2. Illinois Historic Preservation Agency, Springfield.

Markman, Charles (1991) *Chicago Before Prehistory: The Prehistoric Archaeology of a Modern Metropolitan Area.* Studies in Illinois No. 7. Illinois Historic Preservation Agency, Springfield.

Maryland Archaeological Conservation Laboratory [MAC Lab] (2018) Diagnostic Artifacts in Maryland. Electronic resource, www.jefpat.org/diagnostic/index.htm, accessed January 2018.

Mazrim, Robert, and Duane Esarey (2007) Rethinking the Dawn of Prehistory: The Schedule, Signature and Agency of European Goods in Protohistoric Illinois. *Midcontinental Journal of Archaeology*:145–200.

McAllister, Lisa S. (1997) *Collector's Guide to Yellow Ware*. Schroeder Publishing, Paducah, Kentucky.

McElrath, Dale L., and Thomas E. Emerson (2009) Concluding Thoughts on the Archaic Occupation of the Eastern Woodlands. In *Archaic Societies: Diversity and Complexity Across the Midcontinent*, edited by Thomas E. Emerson, Dale L. McElrath, and Andrew C. Fortier, pp. 841–856. State University of New York Press, Albany.

Miller, Donald L. (1996) *City of the Century*. Simon and Schuster, New York and London.

Miller, George L. (2000) Telling Time for Archaeologists. *Northeast Historical Society* 29:1–22.

Munson, Cheryl A., and Patrick J. Munson (1969a) The Palos Site: An Early Historic Indian Village near Chicago. *Chicago Field Museum of Natural History Bulletin* 40(3):5–6.

Munson, Cheryl A., and Patrick J. Munson (1969b) Preliminary Report on an Early Historic Site, Cook County, Illinois. *The Wisconsin Archaeologist* 50:184–188.

Myers, Adrien T. (2010) Telling Time for the Electrified: An Introduction to Porcelain Insulators and the Electrification of the American Home. Society for Historical Archaeology *Technical Briefs in Historical Archaeology* 5:31–42.

Myers, Adrien T. (2017) The Significance of Hotel-Ware Ceramics in the Twentieth Century. *Historical Archaeology* 50(2):110–126.

National Environmental Title Research (NETR) (2017) *Historic Aerials.* Online database available at http://www.historicaerials.com. Accessed August 2017.

National Park Service (n.d.) *National Register Bulletin, No. 18: How to Evaluate and Nominate Designed Historic Landscapes*. U.S. Department of the Interior, Interagency Resources Division.

Natural Resources Conservation Services [NRCS] (2017) *Official Soil Series Descriptions*. Electronic document compiled by NRCS available at http:/soils.usda.gov/technical/classification/osd.index.html. Accessed September 14, 2017.

Noel Hume, Ivor (1969) *A Guide to Artifacts of Colonial America.* Alfred A. Knopf, New York.

Olson, Stanley J. (1963) Dating Early Buttons by Their Form. *American Antiquity* 28(4):551–554.

Pacyga, Dominic A. (2011) *Chicago: A Biography*. The University of Chicago Press, Chicago.

Peterson, Arthur G. (1968) *400 Trademarks on Glass.* Washington College Press, Takoma Park, Maryland.

Porubcan, Paula J. (2002) *Results of Phase II Archaeological Data Recovery of the ca. 1835–1909 Branham's Farm (11-Ck-861), Hanover Township, Cook County, Illinois.* Cultural Resource Management Report No. 849, Midwest Archaeological Research Services, Harvard, Illinois.

Porubcan, Paula J., and Paula L. Bryant (2016) *Managing the Archaeological Resources of the Forest Preserves of Cook County.* Technical Report No. 161. Illinois State Archaeological Survey, Prairie Research Institute, University of Illinois at Urbana–Champaign.

Porubcan, Paula J., Ed. (2017) *An Archaeological Survey of the Proposed Illiana Expressway B3 Corridor.* Technical Report No. 152, Illinois State Archaeological Survey, Prairie Research Institute, University of Illinois at Urbana–Champaign.

Prairie Research Institute (2014) *Natural and Cultural Resources Master Plan for the Forest Preserves of Cook County*. University of Illinois at Urbana–Champaign.

Price, Cynthia (1981) Early to Mid-Nineteenth Century Refined Earthenwares. In *Mid-American Research Center Research Paper No. 1*, edited by Charles Orser, Jr., pp. 24–48. Loyola University and University of Chicago.

Rand McNally (1893) *A Week at the Fair: Illustrating the Exhibits and Wonders of the World's Columbian Exposition.* Rand McNally, Chicago.

Reber, Robert J., Steven Boles, Thomas E. Emerson, Madelaine G. Evans, Thomas J. Loebel, Dale L. McElrath, and David J. Nolan (2017) *Projectile Points and the Illinois Landscape: People, Time and Place.* Illinois State Archaeological Survey, Prairie Research Institute, University of Illinois Urbana–Champaign.

Retrosnapshots.com (2017) Rowing on the lakes in Jackson Park, early 1900s. Digital image available at www.retrosnapshots.com/early-1900s-people-boating-at-jackson-park-chicago-photo.html, accessed November 2017.

Rock, James T. (2000) Cans in the Countryside. In *Approaches to Material Culture Research for Historical Archaeologists*, compiled by David R. Brauner, pp. 275–289. Society for Historical Archaeology, Uniontown, Pennsylvania.

Ross, Lester A., and John D. Light (2000) A Guide to the Description and Identification of Metal Files. In *Studies in Material Culture Research,* edited by Karlis Karklins, pp. 20–31. Society for Historical Archaeology, Uniontown, Pennsylvania.

Salkin, Philip H. (2000) The Horicon and Kekosee Phases: Cultural Complexity in the Late Woodland Period Stage of Southeastern Wisconsin. In *Late Woodland Societies: Tradition and Transformation Across the Midcontinent,* edited by Thomas E. Emerson, Dale L. McElrath and Andrew C. Fortier, pp. 525–542. University of Nebraska Press, Lincoln.

Savery, James C., and James Callanan (1893) *The Exhibit of the Engle Sanitary and Cremation Company at the World's Columbian Exposition, Chicago.* The Engle Sanitary and Cremation Company, Des Moines and New York.

Scharf, Albert (1901) *Map of the Indian Trails and Villages of Chicago and of Cook, DuPage and Will Counties, Illinois*. Electronic document available at http://history.wilmettelibrary.info/2487821/image/1394360. Accessed July 24th, 2017.

Schwegman, J. E. (1973) The Natural Divisions of Illinois. *Comprehensive Plan for the Illinois Nature Preserves System Part 2,* Illinois Nature Preserves Commission, Springfield.

Simon, Mary (1991) *Route 41, FAU 2873, 80-E0418-00-BR, IX-500 (171)-DEMD, P88-031-80.* Archaeological Survey Short Report, Illinois CRM Archive Document No. 3713, Resource Investigation Program, Department of Anthropology, University of Illinois at Urbana–Champaign.

Simon, Mary (2009) A Regional and Chronological Synthesis of Archaic Period Plant Use in the Midcontinent. In *Archaic Societies: Diversity and Complexity Across the Midcontinent*. Edited by Thomas E. Emerson, Dale L. McElrath, and Andrew C. Fortier, pp. 81–44. State University of New York Press, Albany.

Smith, Bruce D., and C. Wesley Cowan (2003) Domesticated Crop Plants and the Evolution of Food Production Economies in Eastern North America. In *People and Plants in Ancient North America* edited by Paul E. Minnis, pp. 105–125. Smithsonian Books, New York and London.

Sprague, Roderick (2002) China or Prosser Button Identification and Dating. *Historical Archaeology* 36(2):111–127.

Stelle, Lenvile J. (2001) An Archaeological Guide to Historic Artifacts of the Upper Sangamon Basin. Center for Social Research, Parkland College, Champaign, Illinois. Electronic resource, http://virtual.parkland.edu/lstelle1/len/archguide/documents/arcguide.htm.

Tanner, Helen Hornbeck (1987) *Atlas of Great Lakes Indian History.* University of Oklahoma Press, Norman.

Tanner, Helen Hornbeck (2005) Treaties. In *The Electronic Encyclopedia of Chicago*. Available online at http://www.encyclopedia.chicagohistory.org/pages/1270.html. Accessed October 2017.

Tischler, William H., Ed. (2000) Shaping America's Heartland *in Midwestern Landscape Architecture*, edited by William H. Tischler, pp. 1–4. University of Illinois Press, Urbana.

The Werner Company (1893) *Columbian Gallery: A Portfolio of Photographs of the World's Fair.* The Werner Company, Chicago. Digital Imagery available online at https://upload.wikimedia.org/wikipedia/commons/8/80/The_Women%27s_Building_%283573566864%29.jpg, accessed November 2017.

Tolmie, Clare (1999) *Home is Where the Hearth Is: Archaic Site Location in Northeastern Illinois.* Paper presented at the 69th Annual meeting of the Society for American Archaeology, Chicago, Illinois.

Tolmie, Clare (2003) *Catchment Analysis for the Archaic Period Chen and Cement Pond Site*s. Paper presented at the 49th Annual Midwest Archaeological Conference, Milwaukee 16–19 October.

Tolmie, Clare (2004) *Pioneers, Preachers, and Potawatomi: Phase III Mitigation of 11WI2624, the James and Jane Walker Farmstead, Plainfield, Will County, Illinois*. Illinois CRM Document No. 14407. (Cultural Resources Management Report No. 1207), Midwest Archaeological Research Services, Marengo, Illinois.

Tolmie, Clare (2017) Desirable Lakeshore Properties in the Early and Middle Archaic in Northeastern Illinois? *Illinois Archaeology* 28:153–172.

Tolmie, Clare, and Paula Porubcan Branstner (2018*) Archaeological Context and Research Design: South Lakefront Framework Plan (SLFP)/Obama Presidential Center (OPC), Jackson Park National Historic Landscape District, Chicago, Illinois.* Technical Report No. 180. Illinois State Archaeological Survey, Prairie Research Institute, University of Illinois at Urbana–Champaign.

Toulouse, Julian Harrison (1971) *Bottle Makers and Their Marks.* Thomas Nelson, Camden, New Jersey.

United States General Land Office (1842) *Federal Township Plats of Illinois: Hyde Park Township,* Cook County 30:23. Electronic document available at https://landplats.ilsos.net Accessed July 2017.

USA Today (2014) Sunday in the Park with Chicago's Cold War Missile Defense Shield. Photograph by Nancy Hayes. Available online at http://content-usa-today.blogspot.com/2011/04/sunday-in-park-with-chicago-cold-war.html, accessed November 2017.

Wagner, Mark J., and Mary McCorvie, Eds. (1992) *The Archaeology of the Old Landmark: Nineteenth Century Taverns Along the St. Louis-Vincennes Trace in Southern Illinois.* Center for American Archaeology, Kampsville, Illinois.

Webster, Donald B. (1971) *Decorated Stoneware Pottery of North America*. Charles E. Tuttle, Rutland, Vermont.

Whitten, David (2018) Glass Bottle Marks. Electronic resource, https://glassbottlemarks.com accessed January 2018.

Wilson, Mark R, Stephen R. Porter, and Janice L. Reiff (2004) P. Shenhofen Brewer. In *The Encyclopedia of Chicago.* Electronic document at http://www.encyclopedia.chicagohistory.org/pages/2834.html. Accessed January 2018.

Woodhead, E. I., C. Sullivan, and G. Gusset (1984) *Lighting Devices in the National Reference Collection, Parks Canada.* Studies in Archaeology, Architecture and History, National Historic Parks and Sites Branch, Environment Canada, Ottawa, Ontario.