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Final Report

*Bioarchaeological Monitoring of Water Main Repairs and  
Identification of Associated Human Skeletal Remains,  
Chambers Street Between Broadway and Centre Street,  
Lower Manhattan, New York City*

LP-1901

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## ABSTRACT

Between October 28 and 31, 1998, Kise Straw & Kolodner Inc. (KSK) and The Public Archaeology Laboratory (PAL) conducted bioarchaeological monitoring of water main repairs at Chambers Street between Broadway and Centre Street in Lower Manhattan, New York. Archaeological monitoring was required by the New York City Landmarks Preservation Commission (LPC) because the repairs were conducted within the African Burial Ground and the Commons Historic District, an area known to contain human remains. The work was performed for the New York City Department of Environmental Protection.

The Chambers Street Bioarchaeological Monitoring Project consisted of three primary components:

- 1) field monitoring of four trench excavations and recovery of human remains from the disturbed soil;
- 2) stabilization of all human remains by professional conservators from Cultural Preservation and Restoration, Inc. (CPR); and
- 3) identification and analysis of all human remains exposed as a result of the water main repairs.

A total of 2,108 human bones, bone fragments, and teeth were identified as a result of the water main repairs. All of these remains were found in highly disturbed soils contained within the Elk Street trench, located opposite the New York County (Tweed) Courthouse. Additionally, 48 fragments of animal bone representing various mammal species also were found. No mortuary artifacts and few cultural materials were recovered from any of the trenches.

Results of the physical anthropological examination indicate that at least ten individuals are represented by the remains, which were highly fragmented and poorly preserved. Although the remains were *found only in a single, localized soil layer* within the Elk Street trench, it is clear that they were located within redeposited fill that most likely originated from some portion of adjacent City Hall Park. The remains generally represent young adults of both sexes and several children buried during the historical period; no remains of elderly individuals or newborns were recovered. The individuals represented by the remains probably were associated with one of the institutions that occupied the park during the historical period, possibly one of the early almshouses or a hospital. The primary burials were most likely disturbed during excavations for the Tweed Courthouse in 1861 and the fragmented remains redeposited beneath Chambers Street around that time. The remains were further disturbed and became extensively fragmented through excavations for the installation of innumerable utility lines, beginning at least in the 1870s when the water main beneath Chambers Street was installed.

## BIBLIOGRAPHIC ABSTRACT

- Title: *Bioarchaeological Monitoring of Water Main Repairs and Identification of Associated Human Skeletal Remains, Chambers Street Between Broadway and Centre Street, Lower Manhattan, New York City*
- Authors: Thomas A.J. Crist, Ph.D., James C. Garman, Ph.D., Gary S. McGowan, M.A., and Douglas B. Mooney, M.A.
- Location: Manhattan, New York City
- Project Components: Archaeological monitoring of water main repairs beneath Chambers Street from Broadway to Centre Street;  
Stabilization of all recovered human remains; and  
Identification and analysis of all recovered human remains recovered during monitoring and subsequent soil screening
- Historic Contexts: African Burial Ground and The Commons Historic District

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A project of the sensitivity and complexity of the Chambers Street Bioarchaeological Monitoring project requires the cooperation and commitment of many individuals and agencies. As representatives of Kise Straw & Kolodner Inc., The Public Archaeology Laboratory, Inc., and Cultural Preservation and Restoration, Inc., the authors would like to extend our appreciation to the numerous individuals who contributed to the successful execution and completion of this unique and challenging project.

The project team would particularly like to thank Mr. Michael D. Krysko, P.E., Deputy Director of Operations at the New York City Department of Environmental Protection. The successful excavation and identification of the human remains from beneath Chambers Street was due in large part to Mr. Krysko's interest and sensitivity regarding the values embodied by the remains. He and the on-site DEP staff members were instrumental in assisting the monitoring team and graciously provided assistance throughout the project, including use of the DEP's mobile command center. We also would like to acknowledge the numerous excavators working for John P. Picone, Inc. whose intense labor moved the excavations along smoothly.

We also would like to extend our appreciation for the assistance provided by forensic anthropologist Ms. Peggy C. Caldwell-Ott of the Office of the City Medical Examiner (OCME); Dr. Leslie Eisenberg, former forensic anthropologist with the OCME; Dr. Rebecca Yamin, former President of Professional Archaeologists of New York City (PANYC); other PANYC members Dr. Joan H. Geismar, Dr. Robert K. Fitts, and Ms. Linda Stone; and Dr. Sherene Baugher, former LPC City Archaeologist.

Among the staff members at KSK, PAL, and CPR who contributed to this project were conservator Ms. Noreen Carroll of CPR and PAL; Mr. John Michael, environmental planner/geoarchaeologist with KSK; and Ms. Elizabeth Amisson and Mr. Theodore Wells of KSK, who together prepared the plates for the project report. Mr. Christopher G. Ricciardi supervised the screening of soil from Chambers Street at the DEP's facilities in Manhattan and Brooklyn, while the following Brooklyn College undergraduates, along with CUNY graduate student Alyssa Loorya, conducted the actual sifting of the fill:

Kevin Barrett	Vincent Dugan
Michael Barrett	Sandra Meadows
Michele Besson	Judy Morgan
Richard Boccato	Julie Srikkin
Paul Castagnini	Gabriel Stein

Together, KSK, PAL, and CPR sincerely appreciate the work, skills, and commitment of all of those who contributed to making this a successful project.

# 1. INTRODUCTION

This report addresses the methods and results of bioarchaeological monitoring conducted by Kise Straw & Kolodner Inc. (KSK) and The Public Archaeology Laboratory, Inc. (PAL) of water main repairs performed by the New York City Department of Environmental Protection (DEP) beneath Chambers Street in Lower Manhattan, New York. Bioarchaeological monitoring was required by the New York City Landmarks Preservation Commission (LPC) because the section of Chambers Street that was subject to the repairs, situated between Broadway and Centre Street, lies within the African Burial Ground and the Commons Historic District.

## PROJECT OBJECTIVES

The primary objectives of this project were to:

- identify and record all human remains and historical features exposed during excavations associated with the required repairs to the water main beneath Chambers Street;
- document and excavate human remains and historical features that could not be avoided;
- recover and identify all human skeletal remains disinterred as a result of the water main repairs; and
- provide adequate conservation treatments to stabilize the remains for their subsequent examination and possible long-term storage and curation.

## PROJECT DESCRIPTION AND LOCATION

The Chambers Street Bioarchaeological Monitoring Project comprised three primary components:

- 1) field monitoring of all excavations and recovery of human remains from the excavated soil;
- 2) stabilization of all human remains by professional conservators; and
- 3) identification and analysis of all human remains exposed as a result of the water main repairs.

The Chambers Street project commenced when archaeologists working for the LPC were called to monitor DEP excavations at Chambers Street near Elk Street over the weekend of October 24-25, 1998. No detailed written information regarding this work is available. At that time, the LPC archaeologists identified fragmented human remains in the fill removed by the DEP to expose the ruptured water main. Representatives from the Office of the City Medical Examiner (OCME) were called to the scene to investigate and assigned the skeletal remains "OCME Case Number M98-5690" on October 25, noting that they were recovered from "61 Chambers Street." OCME forensic anthropologist Peggy C. Caldwell-Ott examined the remains later that day and determined that the skeletal fragments were human, dated from the historical period, and represented at least one and perhaps several individuals.

Because of these findings, a DEP dump truck was used to transfer all soil excavated from Chambers Street on October 24-25 to the DEP facility at Pike Street for a 100-percent screening regimen

designed to recover all human remains potentially contained in the fill. This soil screening was overseen by Dr. H. Arthur Bankoff, LPC's City Archaeologist, and Amanda L. Sutphin, LPC's Urban Archaeologist. Students retained by the LPC completed screening of this soil on November 20, 1998 after it was transferred to the DEP facility at Remson Avenue in Brooklyn.

The KSK/PAL bioarchaeological team conducted field monitoring of additional DEP excavations between October 29 and October 31, 1998. The on-site monitoring team consisted of:

- two archaeologists holding both doctorate degrees (one a Ph.D. in biological anthropology) and membership in the Register of Professional Archaeologists (RPA);
- a geoarchaeologist with previous experience in the identification and handling of fragmented human remains; and
- a professional conservator with extensive experience in the conservation of human remains from archaeological contexts.

Appendix I presents the qualifications of the key personnel from KSK, PAL, and CPR involved in this project.

The dignified and respectful handling of the human remains exposed during the Chambers Street water main repairs was of the utmost concern to the KSK/PAL monitoring team. To that end, all human remains identified in the backdirt during monitoring of the DEP's excavations were immediately bagged and temporarily stored in a secured space in the DEP's on-site mobile command center. No on-site screening of excavated soil was conducted. The human remains identified in the backdirt were then transferred to the LPC office at 100 Old Slip for cleaning and stabilization by professional conservators from Cultural Preservation and Restoration, Inc. (CPR).

Additionally, in order to ensure complete recovery of all human remains potentially contained in the Chambers Street fill, all soil excavated by the DEP between October 29 and October 31 was transferred by truck to the DEP facility at Remson Avenue in Brooklyn for 100-percent screening through ¼-inch hardware cloth. This soil screening operation, conducted on December 2-4, 7, and 9, was supervised by Christopher G. Ricciardi, M.A., a doctoral candidate in anthropology working with the Brooklyn College Archaeological Research Center (BC-ARC). Subsequent to the field monitoring and soil screening, all human remains unearthed during the water main repairs were cleaned and stabilized by professional conservators from CPR.

The skeletal and dental remains from the Chambers Street monitoring activities in October 1998 initially were stored at the LPC office (100 Old Slip) in Lower Manhattan and then transferred to the New York County (Tweed) Courthouse at City Hall Park for examination and identification. KSK's physical anthropologist examined the human remains on March 4 and again on March 11, 1999 in a field laboratory set up in Room 112 of the Tweed Courthouse. The remains subsequently were transferred to the Brooklyn College Archaeological Research Center (BC-ARC) for storage until their final disposition is determined.

## 2. METHODS

### ARCHAEOLOGICAL MONITORING

Archaeological monitoring of the Chambers Street water main excavations was conducted to identify and recover human remains encountered in the course of subsurface repair efforts. The water main repair operations monitored by the KSK/PAL team were conducted over the course of a 48-hour period commencing on the evening of October 29 and ending on the afternoon of October 31, 1998. As depicted in Figure 1, the DEP excavated four trenches along Chambers Street near its intersections with Broadway, Elk Street, and Centre Street, respectively.

Archaeological involvement with the repair operations was limited to:

- monitoring and recording all trench excavations; and
- examining trench profiles and establishing stratigraphic contexts for the exposed soil matrix.

For the purposes of this archaeological project, under the direction of the LPC only human skeletal remains were considered significant; consequently, artifacts were documented in the field and subsequently were discarded without laboratory processing.

The excavations at Chambers Street were conducted by workers provided by John P. Picone, Inc. under contract to the New York City DEP. Excavations were performed both manually and with backhoe assistance (Plate 1). Existing asphalt paving and the underlying concrete roadbed were removed with the aid of a backhoe and other mechanized equipment, while the majority of the underlying soil was excavated manually. To ensure complete recovery of human skeletal remains, all excavated soil was temporarily deposited in adjacent sections of Chambers Street and visually inspected by members of the KSK/PAL archaeological team. All human bone fragments identified on-site were wrapped in acid-free tissue, placed in bags labeled with relevant provenience information, and stored in secured space for later identification and analysis.

The soil excavated from Chambers Street during this water main repair project was removed from the work area in trucks and transported to two different off-site DEP facilities for further examination. At these locations a 100-percent sample of the soil was screened through ¼-inch hardware cloth to ensure complete recovery of all skeletal materials contained within them. Recovered remains were stored in bags labeled with detailed provenience information and transferred to the LPC office at 100 Old Slip for processing and stabilization. The remains subsequently were examined and identified at the Tweed Courthouse.

### STABILIZATION OF HUMAN SKELETAL REMAINS

The very nature of excavation alters the conditions of the involved soils and, if present, artifacts and human remains. Prior to excavation, artifacts and skeletal remains both reach a state of equilibrium with their surrounding matrices whereby, through the passage of time, the agents of deterioration become exhausted. Upon excavation, however, soils are re-oxygenated, changes occur in water percolation rates, and biological agents infuse the matrix, rendering the deleterious aspects of the archaeological site active once again. The act of relocating artifacts and human remains from their long-time micro-environments therefore places them in jeopardy of rapid deterioration if the appropriate steps are not taken to adequately stabilize them.

Consequently, the objective of the conservation of the human remains recovered during monitoring of the Chambers Street water main repairs was to provide the appropriate treatments necessary to stabilize the remains for the physical anthropological examination and possible long-term storage and curation.

Due to the ruptured water pipes, the condition of the skeletal remains was expected to range from damp to waterlogged. Consequently, the initial phase of conservation treatment was to allow the skeletal materials to acclimate to the above-ground environment and dry slowly. This was achieved by placing a single layer of skeletal materials on perforated metal racks that were draped in polyethylene sheets, which facilitated a slow and even drying process. To protect against biological activity such as mold and mildew, CPR conservators sprayed each tray of remains with an aerosol application of orthophenolphenol, a bactericidal agent found in the proprietary product Lysol™.

After adequate drying, the next treatment phase involved mechanically cleaning each bone fragment and tooth to prevent any long-term damage by either biological growth or soils and particles adhering to the bone surfaces. CPR conservators used soft nylon brushes, a scalpel, and dental tools to effect this treatment. In areas where concreted soils were bound too tenaciously to the bone surface to be removed mechanically, anhydrous ethanol was applied as a wetting agent to the soils to loosen them prior to removal. Ethyl alcohol was used rather than water to prevent any swelling or cracking of the skeletal material as the bones dried. Extreme care was taken to minimize removal of the cortical surface of the bone fragments during the mechanical cleaning phase. The techniques and tools used in this work were chosen to reduce the potential for surface abrasion or other postmortem alterations which may have obscured evidence of pathology and/or trauma.

Subsequent to complete drying of the skeletal remains, CPR conservators wrapped all skeletal and dental remains in acid-free tissue. Large single bones and bone fragments were wrapped individually; smaller fragments were wrapped in groups. The acid-free tissue serves to cushion the fragile bone fragments and prevent damage through crushing or abrasion.

Once wrapped, the skeletal remains were placed into 4 mm-thick Ziploc™ bags for storage. Provenience information was placed both inside the bags and marked on the bags' exteriors in permanent ink (Plate 2). Each bag was perforated in order to create a consistent storage macro-environment. The bags were then placed into acid-free archival boxes and transferred to the New York County (Tweed) Courthouse for storage.

The decision to store the human remains in a macro-environmental climate rather than create a separate microclimate within the storage room was made to allow the skeletal materials to acclimate naturally to their long-term storage environment. The acclimation process was maintained through the use of the perforated polyethylene bags and storage in acid-free cardboard boxes. The LPC agreed to ensure that the storage room and all subsequent storage spaces would be provided with adequate air circulation kept at a relative temperature constant that ranged between 70°-75°F. In addition, relative humidity levels were not to exceed 45-50 percent.

#### SKELETAL IDENTIFICATION AND ANALYSIS

The initial questions addressed upon discovery of undocumented human remains are the identity of the interred individuals and the social group they represent. While personal identification of each individual often may be impossible, forensic analyses of the skeletal remains taken as a group, even of severely fragmented remains, can yield important information regarding the date range of the burial ground from which the remains originated, the demographics and size of the population using the site and, in many cases, the causes of death for the individuals found there.

The goals of the physical anthropological analysis of the human remains recovered from beneath Chambers Street were to:

- determine the minimum number of individuals represented by the skeletal remains;
- generate a basic demographic profile for each individual;
- identify the nature and context of the burial ground(s) from which the remains originated (i.e., family plots, church-affiliated, military, institutional, etc.) based on the demographic profiles of the people represented by the recovered remains; and
- provide a biological context for the population that used the burial ground(s) by assembling data on the prevalence of disease and arthritis, documenting levels of biomechanical stress and, if possible, determining causes of death.

Many of the techniques used to analyze intact human skeletal remains can be applied to individual and fragmented bones recovered from disturbed contexts, including the fill beneath Chambers Street. When disturbed remains are excavated, the data collection and analytical methods are tailored to the specific bones that are recovered. First, the minimum number of individuals represented by the remains are determined. Subsequently the sex, age range at death, and ancestry of the individual(s) represented by the partial remains are assessed, if possible. Personal characteristics and documentation of skeletal lesions and anomalies are also recorded. Dental analyses likewise follow the methods used to analyze intact dentitions. While the accuracy of the determinations from partial remains is limited, even fragmented bones and teeth can provide meaningful information regarding the demography and health status of the population using the burial ground(s).

#### GENERAL LABORATORY METHODS: DATA COLLECTION AND INVENTORY

The primary goal in collecting osteological and dental data from archaeological contexts is to generate information that parallels data collected from other historical skeletal samples for future comparative studies. This is accomplished by following standard physical anthropological procedures for collecting and recording morphological and metrical data, including data from fragmented remains, according to recommendations set forth in *Skeletal Database Committee Recommendations* (Paleopathology Association 1991), *Standards for Data Collection from Human Skeletal Remains* (Buikstra and Ubelaker 1994), and *Data Collection Procedures for Forensic Skeletal Material* (Moore-Jansen et al. 1994).

The examination of each bone fragment and teeth began with an inventory. The remains were laid out on a table covered with an inert polyethylene foam (Ethafoam™) to reduce the potential for breakage and protect the skeletal materials from abrasion during examination. To the extent possible, the bones and fragments were placed in the normal anatomical position to: 1) facilitate identification; 2) determine the minimum number of individuals; 3) identify patterns of traumatic or pathologic lesions; and 4) assess the differential preservation of skeletal components.

The recovered teeth were identified according to the standard Universal System of tooth charting for both permanent and deciduous dentitions. In this system, adult teeth are number 1 through 32 and deciduous teeth are lettered "a" to "t." Each tooth was inventoried by type (incisor, canine, premolar, or molar); jaw of origin (maxillae or mandible); position within the tooth group (i.e., first, second, or third, where appropriate); and the side from which it came (left or right). When maxillary or mandibular alveolar processes were available, teeth were noted as either present or absent. Teeth recorded as present were further recorded as "present-tooth only" (i.e., with no observable supporting

bony socket) or "present-tooth in socket." Absent teeth were reported as either: 1) lost postmortem, 2) lost antemortem, or 3) not observable, the latter in cases where there was insufficient bone matrix available upon which to make a determination.

Where possible, individual bones and bone fragments were identified first by name and side and subsequently classified according to their location in the body. For instance, frontals, sphenoids, parietals, temporals, and occipitals were classified under the general term "cranial vault bones." Likewise, the smaller bones of the face were identified by name and side and then grouped into the category "facial bones." Mandibles and mandibular portions were classified separately. Bone fragments that could be identified but not sided were listed in the inventory as "unsided."

Postcranial remains were identified and then classified in two ways. If the bone or fragment comprised a limb it was classified according to name (e.g., radius, femur, etc.); vertebrae, ribs, and bones from the hands and feet were not analyzed by name but rather were grouped into larger categories (e.g., "vertebrae and vertebral fragments," "hand bones," etc.).

A large number of bone fragments could not be specifically identified by name. These were classified into the general categories "unidentified cranial fragments," "unidentified long bone fragments," "unidentified irregular bone fragments," and "unidentified bone fragments." The term "long bone" refers to bones that are tubular in shape and comprise a body (diaphysis) and two ends (epiphyses). The length of a long bone is greater than its breadth, even though some long bones are actually fairly short (e.g., fingers and toes). "Irregular" bones are those of various shapes, including bones of the face, vertebrae, and innominates. As used in this study, "unidentified bone fragments" are those whose morphological features are so badly eroded or damaged that the fragment cannot be assigned a specific name or classified as to bone type. The majority of fragments included in this latter category measured less than one square inch.

#### *Erosion and Fragmentation*

As part of the skeletal inventory, the degree of erosion and fragmentation of each bone and bone fragment was recorded. Erosion refers to complete destruction of bony tissue and is not reversible. Fragmentation denotes the breakage of bones into smaller fragments without destruction of the bone tissue comprising the fragments. Fragmentation is reversible using consolidants and supports to reconstruct the original morphology of the skeletal element. No consolidation of any skeletal remains from Chambers Street was performed.

#### *Documentation of Pathologic Lesions*

Each pathologic and traumatic lesion was assessed grossly and with the aid of a binocular microscope. Following terminology suggested by Buikstra and Ubelaker (1994), Ortner (1994), and the Paleopathology Association (1991) and employing the Smithsonian Institution Paleopathology Coding System, periosteal reactions were recorded by location (proximal, middle, and distal thirds of each shaft diaphysis), extent of involvement (widespread or localized), amount of associated swelling, and degree of remodeling. Reactions were graded as mild, moderate, or severe, and listed as either remodeled (healed) or unremodeled (active).

Degenerative joint disease (also called osteoarthritis) is a chronic disease that predilects the weight-bearing joints. It is characterized by degeneration of the articular cartilage, narrowing of the joint space, and hypertrophic bone development that results in osteophytes (bone spurs) located around the borders of the joints (marginal osteophytes) and the articular surfaces themselves (surface osteophytes). It is generally taken to reflect joint degeneration in response to biomechanical stress,

although other interpretations emphasize the biochemical nature of the disorder and its association with aging.

Using the Smithsonian Institution Paleopathology Coding System, arthritic lesions were recorded at the articular surfaces of each intact long bone and among the intact zygapophyseal joints by location (surface or margin) and the intact vertebral centra at either the interior of the endplate or its margin. Porosity was graded as mild, moderate, or severe. Osteophyte formation was likewise graded as mild, moderate, severe, or ankylosed (fused). If present, eburnation of the joint surfaces was also noted.

#### *Adult Demographic Profiles: Sex, Age Range at Death, and Ancestry*

To the extent possible, a demographic profile was established for the individuals represented in the skeletal assemblage. Depending on the bone or tooth portion that was present, sex was determined using a combination of morphological and metrical techniques, as appropriate. Age ranges at death were also estimated using a combination of macroscopic methods. Ancestry was determined based primarily on morphological features and the prevalence of non-metric traits, following standard forensic anthropological references. General demographic data also were collated from bones and teeth that could not be used to determine the minimum number of individuals represented by the remains but otherwise exhibited morphological features reflecting sex, age and/or ancestry.

For analytical purposes adult age ranges are reported in five-year increments for consistency and use in statistical analysis. The age ranges of the subadults are reported more specifically, with standard errors measured in months rather than years. This process allows for a more accurate reconstruction of the demography of the group and fosters comparative studies with other skeletal samples.

#### *Subadult Demographic Profiles: Sex and Age Range at Death*

For the purposes of the present analysis, a subadult is defined as an individual who had not attained the age of 16 years prior to death. While some indicators of sex are observable among the skeletal remains of adolescents below the age of 16 years, current research on the determination of sex from the remains of infants and young children has not yet produced a reliable method that can be applied with a high degree of accuracy.

Accurate estimates of age ranges at death for subadults are possible due to the well-documented information available regarding rates of dental development and eruption, diaphyseal length and growth, and epiphyseal union. As with the adults exposed during the archaeological monitoring, data on age-related osteological features also were collected from the subadults.

#### *Personal Characteristics*

The personal characteristics for each individual were recorded where possible. These attributes included stature; traumatic or pathologic lesions; non-metric morphological traits; evidence of pregnancy; evidence of biomechanical stress, including location and severity of enthesophytes and osteophytes; degree of dental attrition; evidence of occupational activities; and evidence of intentional cultural modifications. A differential disease diagnosis was made when possible to account for the observed lesions on each skeletal portion.

#### *Anthropometry*

Anthropometry is the technique of expressing quantitatively the form of the body. Osteometry is the subdivision of anthropometry that deals with measurements of the skeleton and the skull, the latter

measurements of which are often grouped under the term craniometry. Anthropometrics are used in forensic physical anthropology to assist in the identification of the sex and ancestry of undocumented skeletal remains through the use of discriminant function analyses. More general applications include documentation of secular trends in nutrition and health status in prehistoric and historic populations throughout the world.

Measurements of intact skeletal remains were taken following standards for the University of Tennessee Forensic Data Bank (Moore-Jansen et al. 1994). The resulting data were entered onto standardized forms generated by the Data Bank Project and subsequently entered into a computerized database.

### 3. RESULTS

#### ARCHAEOLOGICAL MONITORING

Excavations of four water main repair trenches in Chambers Street revealed a variety of stratigraphic sequences, all of which reflect extensive disturbance. Moving from east to west (see Figure 1), the two trenches excavated near the Centre Street intersection were relatively short, irregularly shaped excavations that were oriented perpendicular to the main east-west axis of Chambers Street. Trench 1, located approximately 75 feet west of Centre Street and excavated during the night of October 29, was aligned with the southern edge of Chambers Street and extended north approximately 25 feet, in two adjoining sections (Plate 3). Excavated to a depth of approximately 4.5 feet below street grade (bsg), this trench contained a series of highly mixed gravelly fill horizons and terminated with exposure of an iron hydrant connector pipeline. These various fill layers produced a very low number of historical artifacts including a variety of earthenware ceramic sherds as well as ash and cinders; however, no human skeletal remains were identified.

Trench 2, excavated on October 31, was located approximately 40 feet east of Trench 1 and was aligned along the northern edge of Chambers Street. Initially a 5-x-5 foot square excavation for the installation of a new high-pressure hydrant, this trench was eventually extended approximately 20 feet to the south (Plate 4). Excavation of the original section of this trench, to a depth of 5.5 feet bsg, revealed a complex stratigraphy dominated by mixed sandy fills associated with a large, clearly defined builders' trench. The builders' trench traversed the excavation unit from west to east and contained a series of small utility conduits as well as a section of granite curb foundation at its base. Within the southern extension of Trench 2 excavations exposed a considerably more homogenous profile consisting of coarse-grained reddish-brown fill interspersed with pockets of ash and cinders. While the builders' trench portion of the excavation was largely devoid of historical artifacts of any kind, the reddish-brown fill produced a diffuse, low density scatter of domestic refuse, including fragments of undecorated creamware, tin-glazed earthenware, varied transfer-printed whitewares, and lead-glazed redware. No human remains were encountered in any portion of this trench.

Situated near the center of the project area, the Elk Street Trench was oriented parallel to the long axis of Chambers Street and aligned approximately 15 feet south of the northern curb line (Plates 5 and 6). The largest of the four repair trenches, it extended 83 feet west from a starting point located 20 feet west of Elk Street. This trench measured 4.5 feet in width and was excavated to a maximum depth of 5.5 feet bsg. In addition to the 1870s-era water main that runs beneath Chambers Street, located at a depth of 5 feet bsg (Plate 7), this trench was also traversed by a electrical conduit approximately 2 feet below the surface.

Excavation of the Elk Street trench revealed a horizontally segmented stratigraphic sequence comprised of alternating pockets of coarse reddish-brown sandy fill (similar to that encountered in the southern portion of Trench 2) and yellow-brown fine sandy fill. From east to west along the trench the segments of reddish-brown fill were designated Locus 1 through Locus 4, as follows:

- Locus 1: 0-7 feet west;
- Locus 2: 19-24 feet west;
- Locus 3: 38-62 feet west; and
- Locus 4: 62-83 feet west.

While Loci 1 and 2 represented horizontally segregated pockets of fill, the separation of Locus 3 and 4 was defined on the basis of a stratigraphic discontinuity between adjacent reddish-brown soil packages. Within Locus 3 the reddish-brown fill was limited to portions of the soil profile situated immediately *above* the more recent electrical conduit, at a depth of between 1-2 feet bsg, and as such likely constituted a lens of redeposited soil. In contrast, Locus 4's reddish-brown horizon was, like Loci 1 and 2, considerably more substantial and extended from the base of the current roadbed to the floor of the excavation.

Although similar soils in Trench 2 were found to be nearly devoid of cultural materials, each of the reddish-brown fill segments in the Elk Street Trench contained highly fragmented human skeletal remains dispersed throughout the fill (Plate 8). Of the four loci, Locus 4 produced the largest number of skeletal materials, with the greatest concentrations deriving from a depth of approximately 4 feet bsg. No *in situ* interments or articulated individuals were identified in any portion of the trench.

The fourth excavation unit, Trench 4, was placed at the western end of the project area, approximately 28 feet east of the Chambers Street-Broadway intersection. Aligned parallel to Chambers Street, this trench was located 14.5 feet south of Chambers Street's northern curb line. It extended a maximum length of 58 feet, was 6 feet in width, and reached a maximum depth of 7 feet bsg. Unlike the sub-grade soil profile identified in the other three trenches, Trench 4 exhibited a stratigraphic sequence that consisted of a thick upper fill horizon of olive brown sandy silt (1-6 feet bsg) that directly overlaid a bed of medium coarse gravel fill of indeterminate thickness. Both fill horizons were almost completely devoid of historical cultural materials of any kind and no human skeletal remains were present.

#### STABILIZATION OF HUMAN SKELETAL REMAINS

The human remains and faunal bones recovered from beneath Chambers Street were processed and stabilized as described in the Methods section above, wrapped in acid-free tissue, and then placed into 4 mm-thick Ziploc™ bags for storage. The bags subsequently were placed into acid-free archival boxes and transferred to the New York County (Tweed) Courthouse for storage. No unusual conservation issues were encountered during the stabilization process.

The remains were bagged and stored according to their recorded provenience data and the order in which the field bags were opened for processing of the remains. Bag numbers were assigned consecutively starting with Bag 1 (Table 1). Bag 36 was the last in the series.

#### SKELETAL INVENTORY AND ANALYSIS

##### *Inventory*

The inventory of human remains recovered during the bioarchaeological monitoring of water main repairs beneath Chambers Street is included as Appendix II. A total of 2,108 human bones, bone fragments, and teeth comprise the assemblage. In addition, 48 fragments of animal bone representing various mammal species also were found. One of the animal rib fragments exhibited a hole 18 mm in diameter that had been manually punched through its center (Plate 9). This rib fragment most likely represents a discarded button blank. Historical documentation indicates that the manufacture of bone buttons occurred at the two Almshouses formerly located at present-day City Hall Park (Grossman 1991).

A summary inventory of the human remains recovered from beneath Chambers Street is provided in Table 2. Of the 2,108 discrete human remains identified, 2,067 (98.1%) were bones and bone fragments and 41 (1.9%) were teeth (including 1 tooth from a child aged 8-10 years at death). The skeletal sample itself consisted of 2,049 adult bones and bone fragments (99.1% of the total number of bones) and 18 bones (0.9%) from subadults, the latter defined as individuals who died before reaching the age of 16 years.

When analyzed by bone type, unidentified fragments comprise the largest percentage of the adult human remains. Combined, these 1,490 fragments represent 72.7 percent of the 2,049 adult bones and bone fragments in the sample (Table 3). Individually, the 618 fragments classified as "unidentified," meaning that they were so damaged or eroded that they could not be assigned to a more specific bone type, accounted for 30.2 percent of the sample. Unidentified long bone fragments (N=522) were the next most prevalent bone type, comprising 25.5 percent of the collection. Unidentified irregular bone fragments (N=261) and unidentified cranial fragments (N=89) comprised 12.8 percent and 4.3 percent of the assemblage, respectively. At 141 fragments (6.9% of the sample), only ribs and rib fragments represented a larger numerical component of the assemblage than did the unidentified cranial fragments.

Among the more specific bone types, bones of the hands (N=66) were the next most commonly identified type, representing 3.2 percent of the group (Table 3). Bones of the feet (N=34; 1.7%) were only half as prevalent as those from the hands. Cranial vault bones (N=54) represented 2.6 percent of the identifiable adult remains, and vertebral fragments (N=33) accounted for 1.6 percent of the collection. Reflecting their more durable nature, the femora (N=39) were the most commonly represented long bone, accounting for 1.9 percent of the assemblage. As a group, though, the bones of the upper limbs were more prevalent in this sample; combined, the humeri, radii, and ulnae comprised 4.1 percent of the sample as compared with the femora, tibiae, and fibulae, which represented 3.1 percent of the adult remains. Only two patellar fragments were identified, at 0.1 percent the smallest component of the skeletal assemblage.

Among the 18 bones and bone fragments representing subadults, cranial vault bones (N=7) comprise the largest percentage (38.8%). Two each of unidentified cranial fragments, humeri, radii, and femora were also identified; each type represented 11.1 percent of the 18 subadult bones (Table 4). One subadult ulnar fragment and one subadult rib fragment also were identified.

#### *Minimum Number of Individuals Represented*

Whenever the commingled remains of multiple individuals are encountered, physical anthropologists attempt to determine or estimate the minimum number of individuals (MNI) represented by the remains. This is achieved by determining the most frequently duplicated part of the skeleton, whether bones or teeth, in the assemblage. It is assumed that the total number of that specific bone or bony portion represents the minimum number of people represented by all the remains. Vertebrae, ribs, innominates, and phalanges are not usually included in this type of analysis since their fragments are often unidentifiable by specific location and/or side of the body from which they originated. Since it is virtually impossible in highly disturbed contexts to determine whether individual bones and bone fragments from various portions of the body represent the same individual, the MNI is necessarily an estimate and almost certainly undervalues the actual number of individuals comprising the collection.

The petrous portion of the temporal is the most resilient and durable component of the human skeleton. This bony portion encloses the small bones of the inner ear and tends to survive even the most rigorous postmortem environments. In fact, the petrous is often used by forensic physical anthropologists to determine MNI recovered from mass fatality incidents, especially airplane crashes and explosions. In the assemblage of human remains recovered from beneath Chambers Street during

the water main repairs, a total of six left temporals and one right temporal were recovered. Based on sex and age determinations, these bones represent a minimum of six individuals. It is possible that the one right temporal represents an additional person, raising the MNI using the temporals to seven.

Apart from the temporals, the most frequently duplicated identifiable bone portion in the Chambers Street collection was the mandibular body or ramus. The body of the mandible in adults is a single bone consisting of a left and right dental arcade and a middle portion or chin (Plate 10). A total of nine adult mandibular bodies (five left and four right mandibular halves) was present in the Chambers Street assemblage (Table 5). Through a process of elimination based on duplication of tooth sockets, the MNI represented by these mandibles is seven. It was not possible to exclude the potentiality that the two mandibular fragments with sockets for right third molars mended with one of the other mandibular fragments; consequently, the MNI from the mandibles is seven even though nine, apparently discrete, mandibular portions were identified.

Three matched sets of teeth, each representing a single adult individual, also were identified in the assemblage (Plate 11). These remains were stored in Examination Bags 2, 5, and 8 (see Appendix II). Since the possibility could not be excluded that the three sets of teeth originated from any of seven individuals represented by the mandibular portions described above, the MNI can be reasonably increased to ten. All three individuals represented by the sets of teeth were of European descent. The individual from Bag 2 was a male aged 20-25 years; the individual from Bag 5 was a 40-45 year old female; and the third individual was an adult of indeterminate sex who died between the ages of 25-35 years.

#### *Demographic Data*

Where possible, demographic data including age, sex, and ancestry were collected from the various skeletal and dental remains recovered from beneath Chambers Street. Due to the extensive degree of commingling and fragmentation, demographic profiles for specific individuals could not be established. A general overview of the population that was represented by the remains, however, could be discerned from basic demographic analyses of the skeletal and dental fragments.

In terms of the age and sex distributions of individuals represented by the Chambers Street remains, adults far outnumber children in this assemblage. No remains of newborns or infants were identified, and no obviously elderly adults were represented. Most of the remains that provided age-related data, including the three matched sets of teeth discussed above, represent adults of both sexes whose ages at death ranged between 20 and 50 years. Most of the remains originated from individuals approximately 30-40 years of age at death, and none were older than about 55 years. At least one teenager (17-19 years) of indeterminate sex was represented, as was at least one child who was 4-5 years old at death and another who was 8-10 years old.

A specific determination, or even an accurate estimate, of the numbers of males and females represented by the remains in the Chambers Street collection is impossible to make. It is clear, however, that the assemblage comprises both males and females, although males appear to predominate.

Ancestry of the individuals represented by the remains is also difficult to assess with precision, but the vast majority of the morphological and epigenetic traits expressed by both the skeletal and dental remains is most commonly associated with individuals of European origin. This does not mean to infer that individuals of African and/or Native American descent are not represented in the collection; rather, the morphological features that could be identified among the fragmented and commingled remains are most frequently observed among skeletons documented to be of European origin. Due to

the fragmentary nature of the collection in general, neither the ancestry or sex of any individual could be assessed using multivariate statistical techniques.

### *Paleopathology*

Among the goals of this project was the compilation of data regarding the prevalence of disease and arthritis among the individuals represented by the skeletal remains, documenting evidence of biomechanical stress, and, if possible, determining causes of death. Unfortunately, the highly fragmented nature of the recovered remains precluded systematic recording of these types of data. No obvious causes of death were presented by any of the skeletal remains, and the prevalence of disease and distribution of lesions related to biomechanical stress could not be accurately assessed due to the lack of observable cortical and articular bony surfaces.

Although unassociated with specific individuals, several bone fragments present pathologic lesions associated with inflammation, infection, biomechanical stress, and possible postmortem modification. For instance, an adult's first ray metatarsal (the "big toe") presents a series of unhealed lytic lesions located along the medial surface of the metatarsophalangeal joint (Plate 12). These lesions represent gouty arthritis, the result of a metabolic disorder in which sodium urate crystals are deposited in various connective tissues.

Two tibial fragments in the collection present evidence of reactive periosteal bone. The larger fragment, from an adult's left tibial shaft, presents widespread, moderately severe, healed reactive bone most likely related to an unidentified systemic infection (Plate 13). The tibiae are particularly susceptible to inflammation from systemic infections and nutritional deficiencies due to the bones' venous distribution; consequently, reactive periosteal bone is a fairly common finding among the tibiae from individuals associated with historical burial contexts.

The fragment of a woman's left ilium provides evidence of biomechanical stress possibly associated with pregnancy (Plate 14). The posterior border of the greater sciatic notch presents a narrow groove just anterior to the articular surface for the sacro-iliac joint. This groove corresponds to the attachment site for a pelvic ligament that may be stretched by a developing fetus *in utero*, thereby creating a "scar of pregnancy" identifiable on the dry bone. The number of pregnancies cannot be determined based on this lesion.

Five different bone fragments present possible evidence of postmortem modification, including the lateral half of an adult's left clavicle with apparent cut marks across its superior surface (Plate 15). Like the other four bone fragments, the surface of this clavicle exhibits a patina or "handling wear" often associated with anatomical specimens that have been repeatedly palpated. The lesions presented by the clavicle consist of a series of at least four short striations oriented antero-posteriorly across the superior surface of the bone, at the attachment site for the left deltoid. It is possible that these lesions represent cut marks resulting from anatomical dissection. They clearly are not related to the excavation of the remains during the water main repairs or to processing and stabilizing the bone after its recovery. None of the other bones that exhibit a patina, including rib fragments from Bags 19 and 22, a left humerus from Bag 28, and femur fragments from Bag 29, present cut marks but also may have represent anatomical specimens. Alternatively, the patina presented by these five bone fragments simply may have resulted from localized taphonomic factors that affected only these remains.

The suggestion that these remains may have been used in a dissection laboratory derive from the fact that The New York Hospital formerly was located two blocks north of Chambers Street, at Duane Street just across Broadway. In the 1780s, the hospital was occupied by Dr. Bayley's Anatomical Museum and Medical Laboratory (Turkel et al. 1997). At least one autopsied individual and at least

ten empty graveshafts were identified during excavations in 1991 and 1992 at the African Burial Ground, strongly suggesting that graves in this area were robbed to supply local medical students with bodies for anatomical study (Turkel et al. 1997). Added support for this conclusion comes from a petition presented by prominent African Americans in February 1788 to the New York Common Council that protested grave robbing by medical students in the African Burial Ground area. In April 1788, a three-day riot broke out in New York City during which the homes of local physicians were ransacked as mobs searched for the remains of deceased loved ones. Five rioters were shot and killed during the melee. Ironically, these five rioters most likely were buried in the graveyards previously plundered by the body snatchers against whom they were protesting. The fact that at least one autopsied individual was discovered during excavations at the African Burial Ground suggests that the remains of other dissected individuals likely were reburied at the Commons, only to be relocated in the fill beneath Chambers Street at some unidentified later date.

## 4. SUMMARY AND CONCLUSIONS

Between October 29 and 31, 1998, a bioarchaeological monitoring team from Kise Straw & Kolodner Inc. (KSK) and The Public Archaeology Laboratory, Inc. (PAL) supervised excavations conducted by the New York City DEP to repair a ruptured water main beneath Chambers Street. Bioarchaeological monitoring was required by the New York City Landmarks Preservation Commission (LPC) because the section of Chambers Street under repair lies within the *African Burial Ground and the Commons* Historic District, an area known to contain human remains.

### ARCHAEOLOGICAL MONITORING

From the stratigraphy revealed in the four trenches excavated in Chambers Street between October 29 and 31, 1998, it appears that much of the soil package that underlies the street has been heavily disturbed to the point that no near-surface natural soil layers are preserved intact. All soils excavated in the course of the water main repairs, including those that contained human skeletal remains, were found to represent obviously reworked and redeposited fill, the product of over one hundred years of urban development and repeated disturbance through installation of various utilities.

Despite the fact that human remains were confined to a single, localized, and comparatively homogenous soil layer, it is clear that the remains were located within redeposited fill that most likely originated from some portion of adjacent City Hall Park. The evidence for this conclusion includes:

- the horizontally discontinuous nature of the soil matrix;
- the recovery of bones from soils perched *above* the 1980s-era utility conduit;
- the highly fragmented nature of the recovered human remains; and
- the complete absence of *in situ* burials or articulated skeletal elements.

### STABILIZATION OF HUMAN SKELETAL REMAINS

Professional conservators from Cultural Preservation and Restoration Inc. (CPR) processed and stabilized all human remains recovered during the Chambers Street water main repairs in October 1998. The remains were cleaned, wrapped in acid-free tissue, and initially stored in 4 mm-thick Ziploc™ bags at the LPC office at 100 Old Slip. The bags subsequently were transferred to the New York County (Tweed) Courthouse for storage and later examination by KSK's physical anthropologist. A total of 36 bags containing human skeletal and dental remains were prepared by CPR conservators.

It is advisable to check the collection for its physical and chemical stability four times a year during each seasonal change. If, on visual inspection the tissue has changed color or there seems to be changes to the bags, supervising staff should not unwrap the skeletal remains. Instead, a professional conservator should be consulted to evaluate potential changes of the remains and reevaluate their storage media.

## SKELETAL IDENTIFICATION AND ANALYSIS

### *Inventory*

The Chambers Street excavations yielded a total of 2,108 human bones, bone fragments, and teeth. In addition, 48 fragments of animal bone representing various mammal species were also found. Of the 2,108 discrete human remains identified, 2,067 (98.1%) were bones and bone fragments and 41 (1.9%) were teeth. The skeletal sample itself consisted of 2,049 adult bones and bone fragments (99.1% of the total number of bones) and 18 bones (0.9%) from subadults, the latter defined as individuals who died before reaching the age of 16 years.

The remains were recovered from highly disturbed secondary contexts and were badly fragmented and eroded. When analyzed by bone type, unidentified fragments (N=1,490) comprised the largest percentage of the adult human remains representing 72.7 percent of the 2,049 adult bones and bone fragments in the sample. Additionally, 618 fragments (30.2 percent of the sample) were classified as "unidentified," meaning that they were so damaged or eroded that they could not be assigned to a more specific bone type.

Based on analysis of mandibular and temporal remains, the minimum number of individuals (MNI) represented by the remains is seven. Due to the extensive degree of fragmentation and commingling, it is likely that the MNI undercounts the actual number of individuals represented by the remains. Three individuals represented by matched sets of teeth were of European ancestry and had died at ages 20-25 years, 40-45 years, and 25-35 years, respectively. No dental restorations were identified among any of the teeth recovered from beneath Chambers Street.

### *General Profile of Population Represented by Remains*

Among the goals of conducting this study was to identify the nature and context of the burial ground(s) from which the human remains originated. Although recovered from disturbed contexts and highly fragmented, the demographic data yielded by the skeletal remains do provide some suggestion regarding the nature of the population represented by the assemblage.

The Chambers Street skeletal collection comprises remains from adult males and females of various age ranges, as well as from several children. Unfortunately, no funerary artifacts were associated with any of the remains and the date(s) of their primary and secondary interments cannot be estimated from the bones and teeth themselves. Historical evidence indicates that the most likely origin of the soil in which the remains were discovered was City Hall Park, from which fill was removed during construction of the New York County (Tweed) Courthouse in 1861 (Harris et al. 1993). City records indicate that the water main under Chambers Street was installed in the early 1870s, which probably further disturbed the relocated remains. It should be noted, however, that the extensive use and successive reconfigurations of both the African Burial Ground and City Hall Park that began in the eighteenth century also may have resulted in relocation of the remains at various other times during the historical period. Even given these possibilities, though, the best explanation is that the remains were disturbed and relocated from their original burial locations during the excavations in City Hall Park associated with construction of the Tweed Courthouse.

Pinpointing the actual burial ground(s) from which the remains originated is virtually impossible and represents an informed guess at best. Both the African Burial Ground and City Hall Park were the sites of numerous types of interments, including burials of enslaved individuals, Revolutionary War executions, almshouse residents, and prison inmates (Harris et al. 1993). Given that women and children comprise a portion of the assemblage, it is most likely that the Chambers Street sample represents people removed from an antebellum burial ground associated with an almshouse or

hospital. Recovery of an animal rib fragment with an 18-mm diameter hole punched through its center may provide corroborating evidence to support this conclusion. This rib fragment most likely represents a discarded button blank. Historical documentation indicates that the manufacture of bone buttons occurred at the two Almshouses formerly located at present-day City Hall Park, the second of which was located between 1797 and 1857 along the south side of Chambers Street at the present site of the Tweed Courthouse (Harris et al. 1993).

While the possibility cannot be absolutely excluded, it is less likely that the remains represent Revolutionary War executions. It is also difficult to exclude association of the Chambers Street remains with the African Burial Ground, although the available skeletal evidence strongly suggests that the individuals who can be distinguished were of European ancestry. Also, as suggested by evidence from the African Burial Ground, it is possible that some of the remains recovered from beneath Chambers Street represent anatomical specimens prepared during the late eighteenth century.

To summarize, the remains recovered from beneath Chambers Street represent a mixed historical population most likely originally buried within the boundaries of present-day City Hall Park. The individuals represented by the remains probably were associated with one of the institutions that occupied the park during the historical period, probably one of the almshouses or a hospital. The primary burials most likely were disturbed during excavations for the New York County (Tweed) Courthouse in 1861 and the fragmented remains redeposited beneath Chambers Street around that time. The remains were further disturbed and became extensively fragmented through excavations for the installation of innumerable utility lines, beginning at least in the 1870s when the water main beneath Chambers Street was installed.

Although generally possessing limited physical anthropological research value, the human remains found beneath Chambers Street reflect City Hall Park's various uses and represent the hundreds, if not thousands, of anonymous people who lived, worked, and died, often under the most terrible of circumstances, in historical Manhattan.

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**FIGURES**

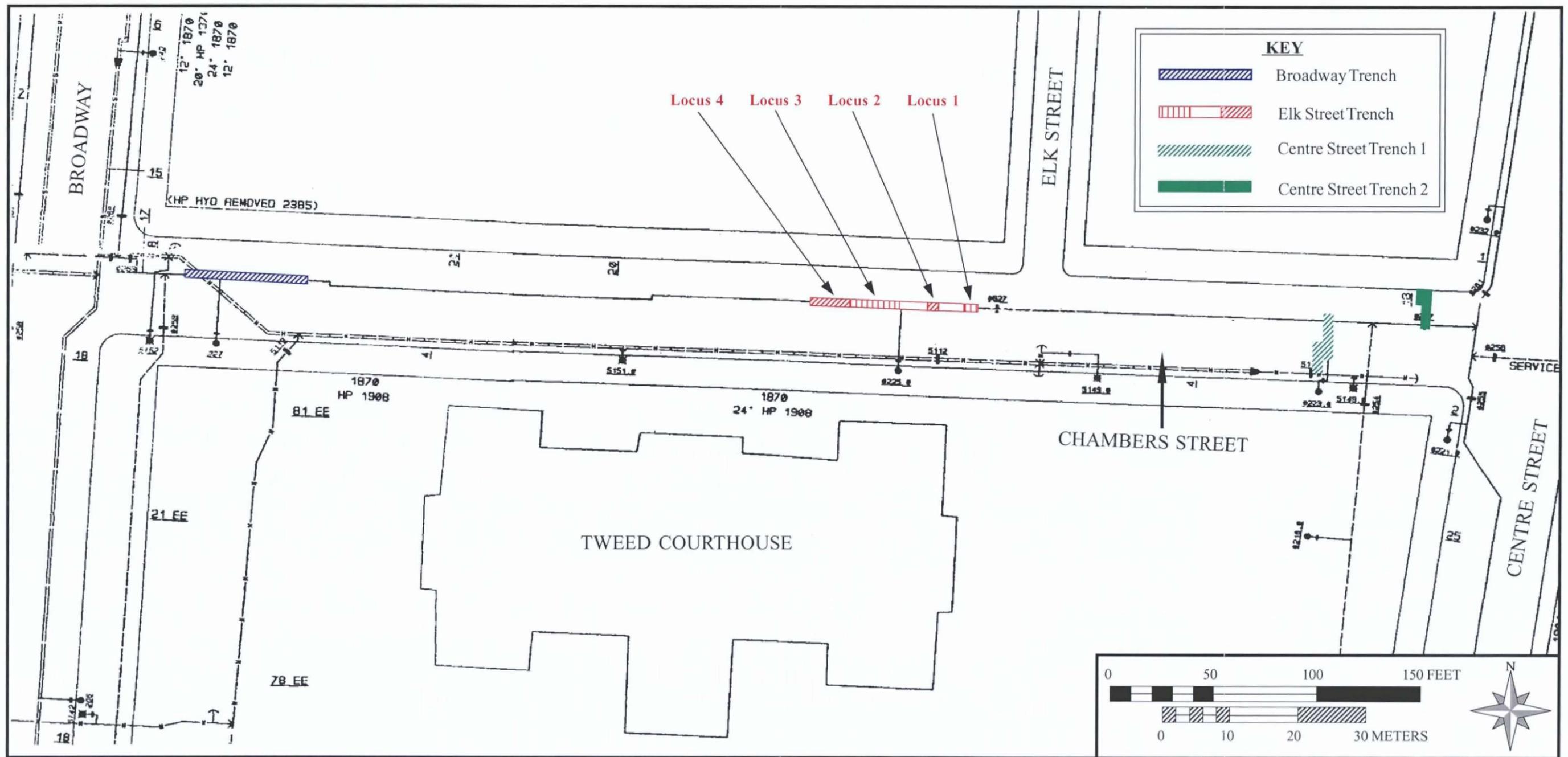


Figure 1. Plan of Chambers Street Water Main Repair Trenches Monitored by KSK/PAL, October 29-31, 1998.

PLATES

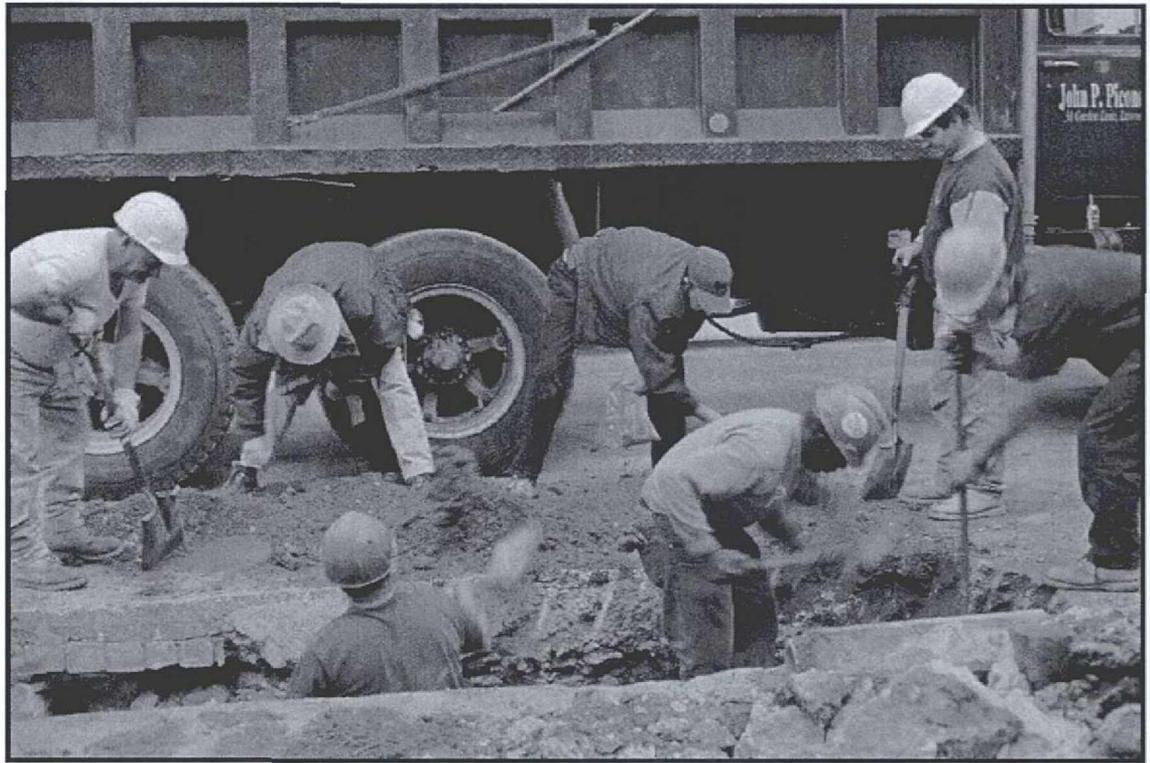


Plate 1. Workers from John P. Picone, Inc. manually excavate the Elk Street trench (Trench 3) while members of KSK/PAL monitoring team examine fill for human remains. Photograph date: October 31, 1998.

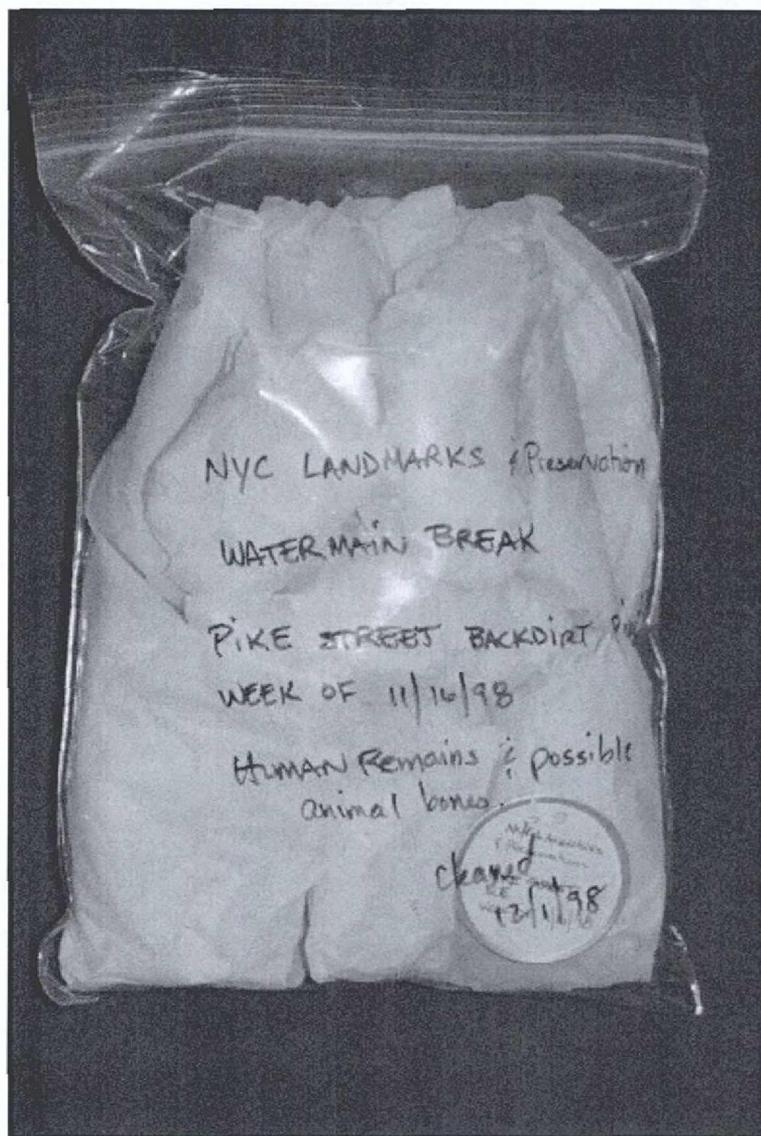


Plate 2.

Example of a storage bag with acid-free tissue and provenience data after cleaning and stabilization of skeletal remains by project conservators. Photograph date: March 11, 1999.

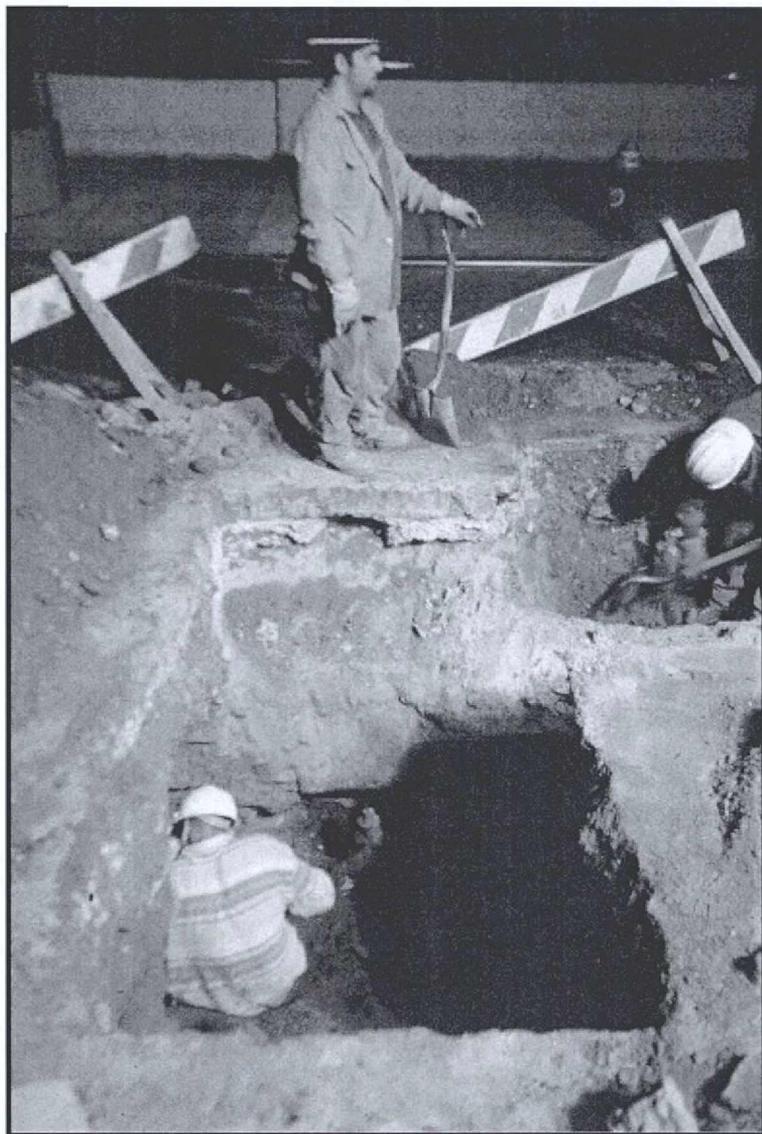


Plate 3. Overview of Trench 1, facing south. Note hydrant situated along south curb of Chambers Street at upper right. Photograph date: October 29, 1998.

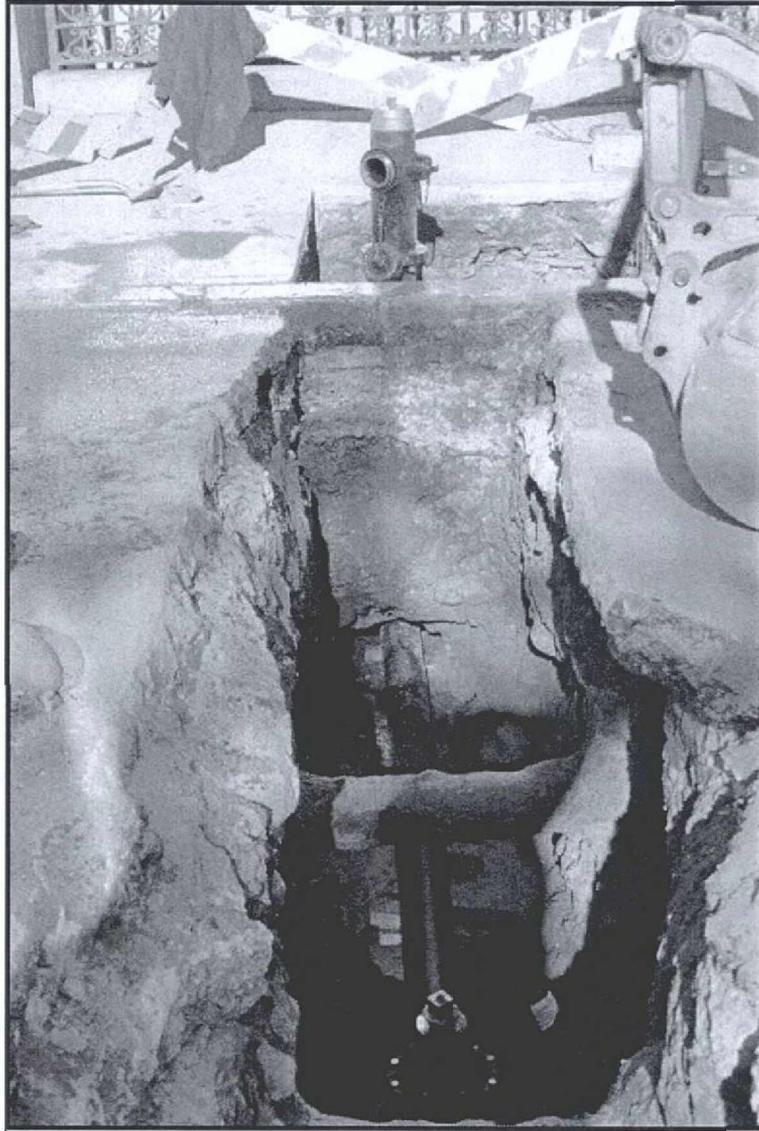


Plate 4. Overview of Trench 2, facing north. Note newly-installed hydrant at top of image. Photograph date: October 31, 1998.

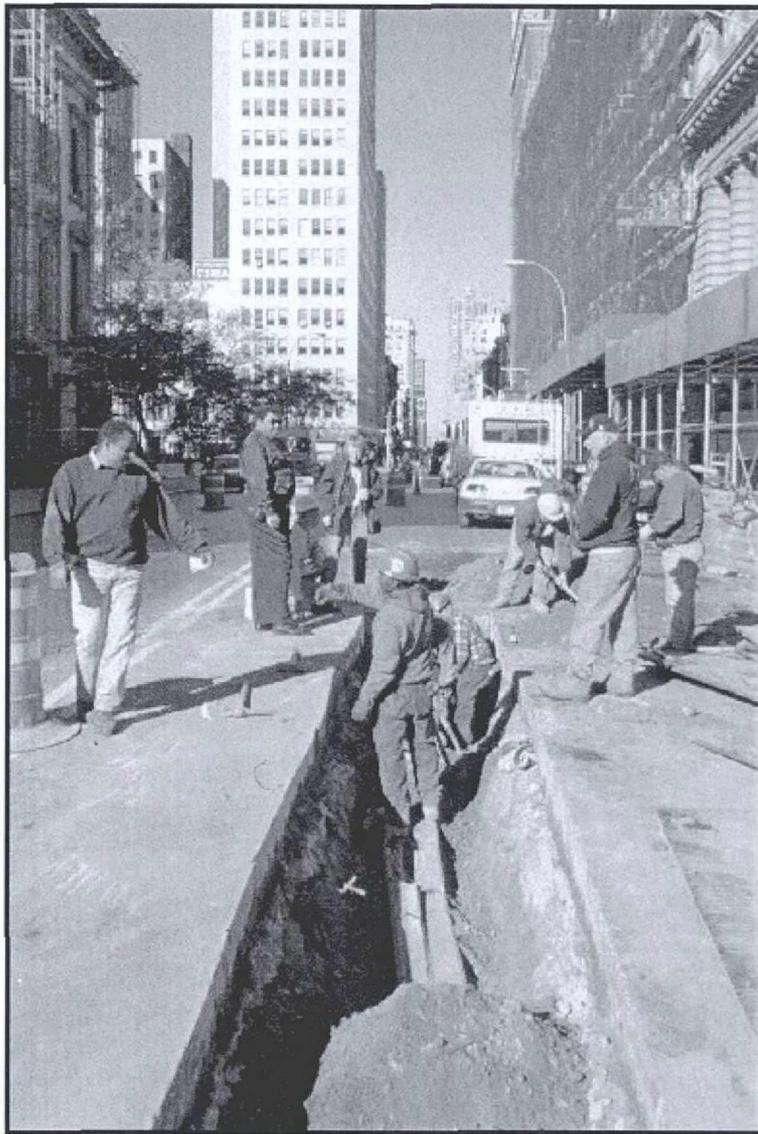


Plate 5. Overview of western half of the Elk Street trench (Trench 3), facing west. Photograph date: October 31, 1998.

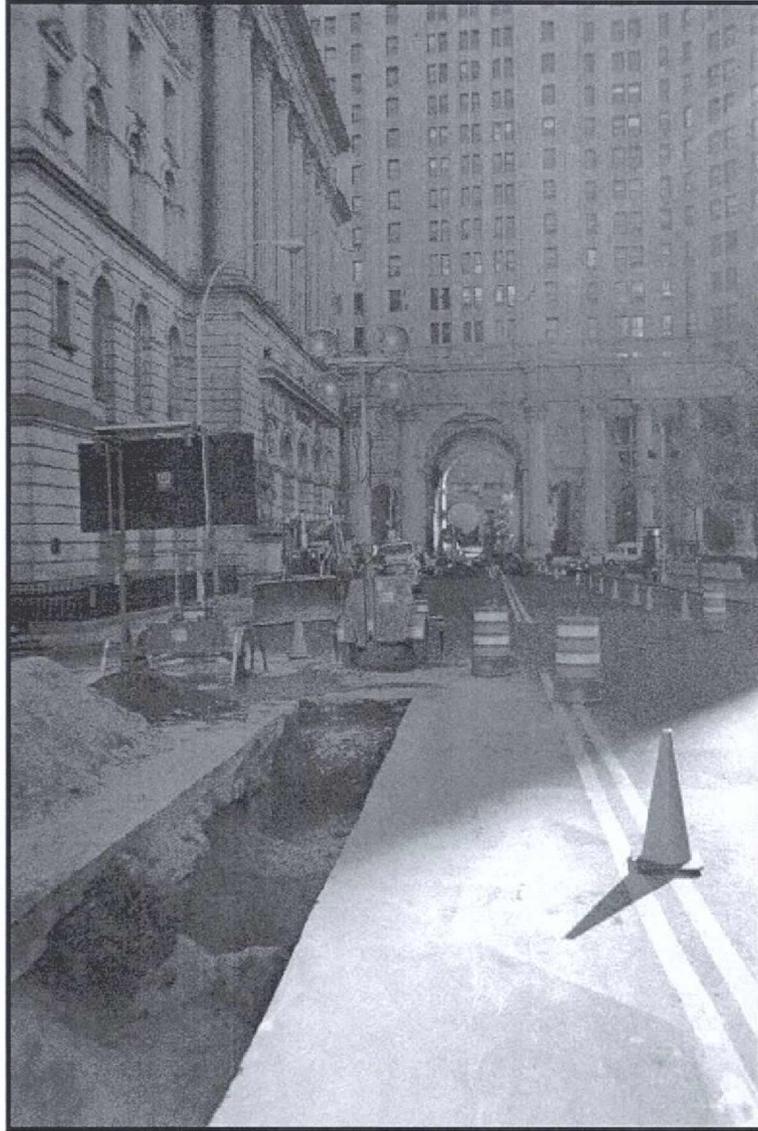


Plate 6. Overview of eastern half of the Elk Street trench (Trench 3), facing east. Note excavation of Trench 2 in distance. Photograph date: October 31, 1998.

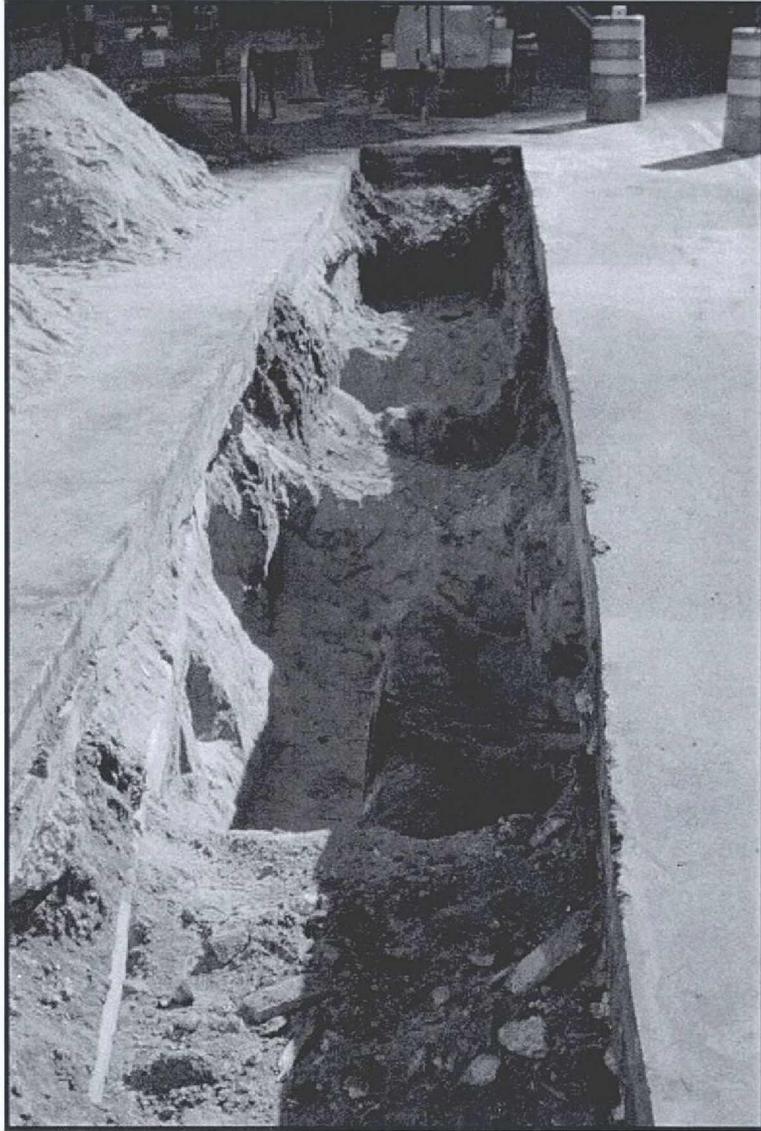


Plate 7. Close view of eastern half of the Elk Street trench, facing east. Note exposed 1870s water main in foreground. Photograph date: October 31, 1998.

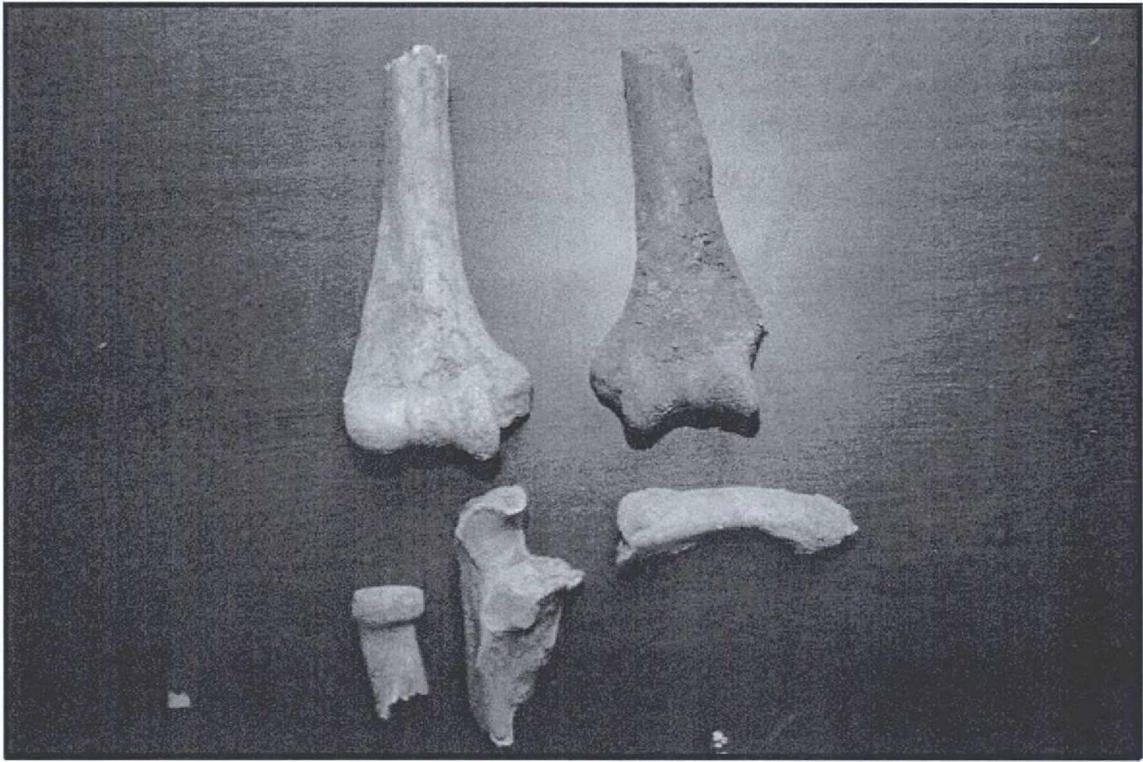


Plate 8. Sample of fragmented human skeletal remains immediately after recovery from the Elk Street trench. Bones include a left humerus, right humerus, right radius, and right ulna from multiple adults. Photograph date: October 31, 1998.

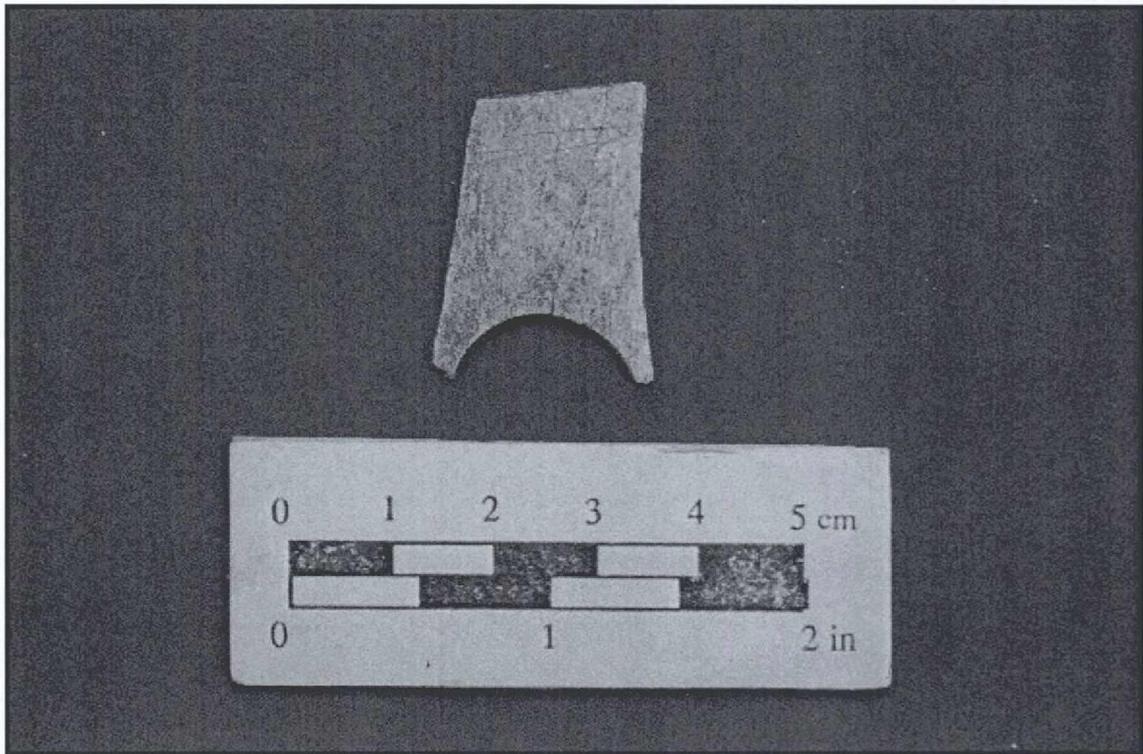


Plate 9. Animal rib fragment with a manually punched hole recovered from the Elk Street trench. This artifact most likely represents a discarded button blank. Photograph date: March 11, 1999.

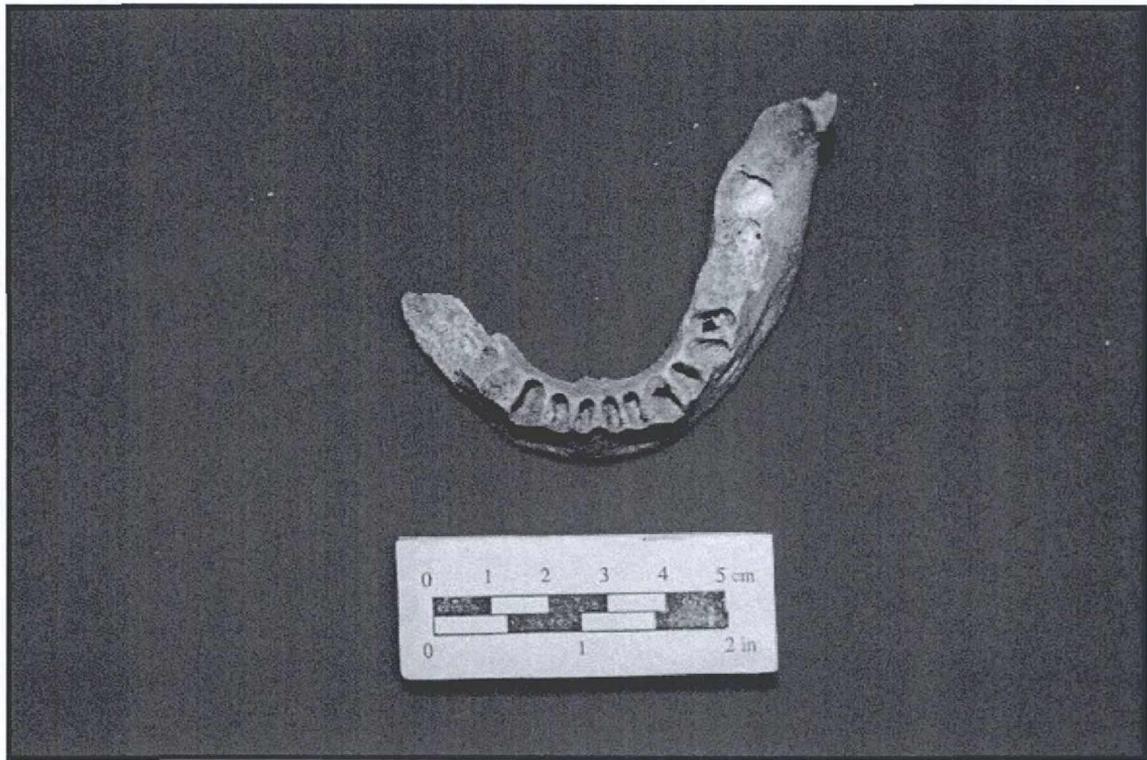


Plate 10. Example of a fragmented adult mandible recovered from the Elk Street trench. Note postmortem loss of all anterior teeth. Photograph date: March 11, 1999.

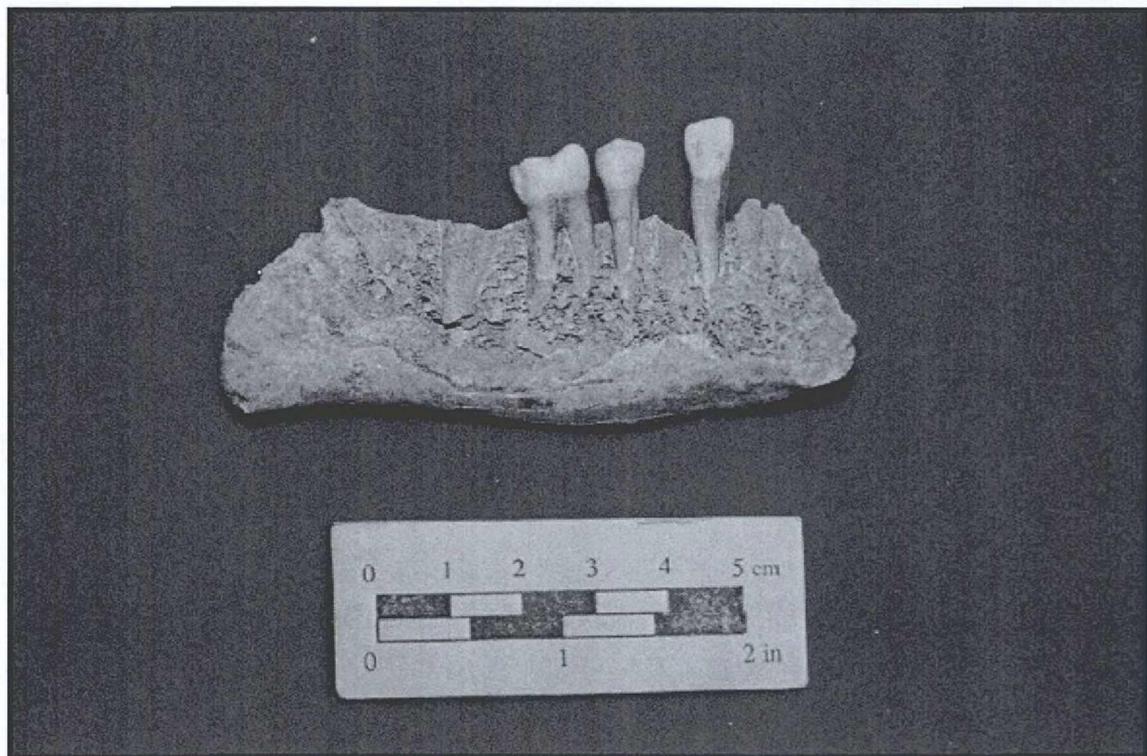


Plate 11. Example of a fragmented adult mandible recovered from the Elk Street trench. Note the highly eroded bone matrix and resultant exposure of tooth roots. Photograph date: March 11, 1999.

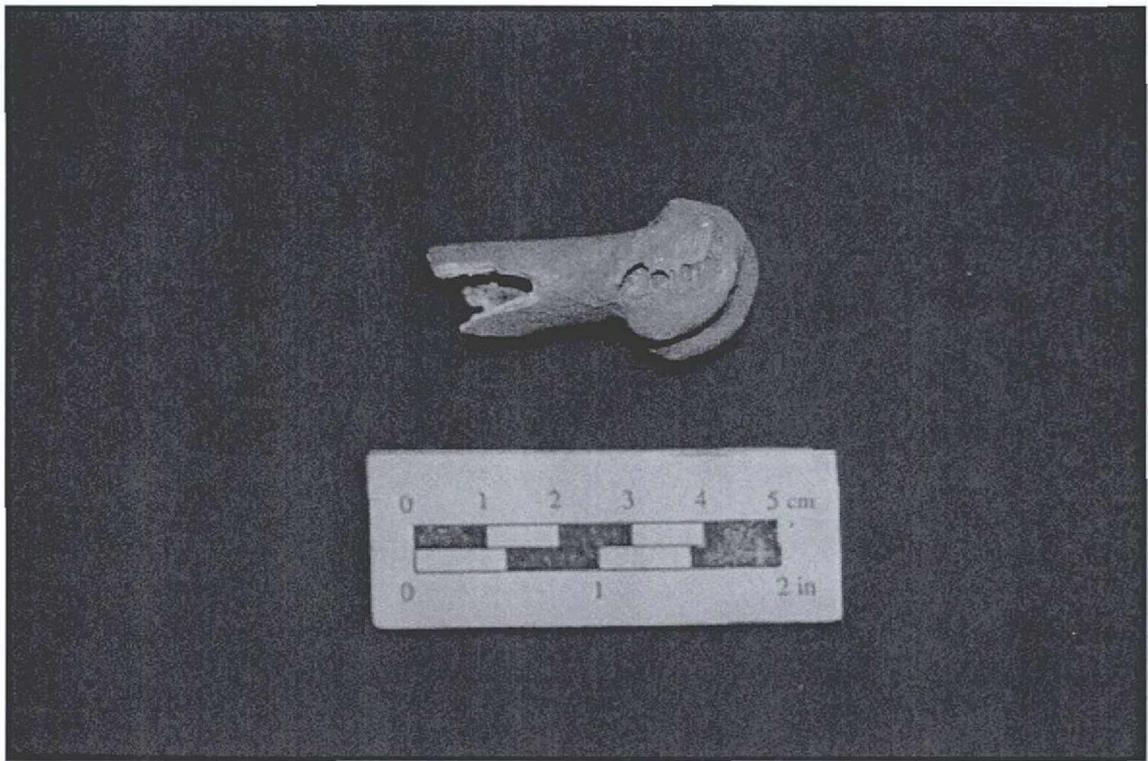


Plate 12. Close view of an adult left first metatarsal presenting unremodeled lytic lesions across articular surface representative of gouty arthritis. Photograph date: March 11, 1999.



Plate 13. Close view of the distal end of an adult left tibia presenting widespread healed periosteal reactive bone representative of an unidentified systemic infection. Photograph date: March 11, 1999.

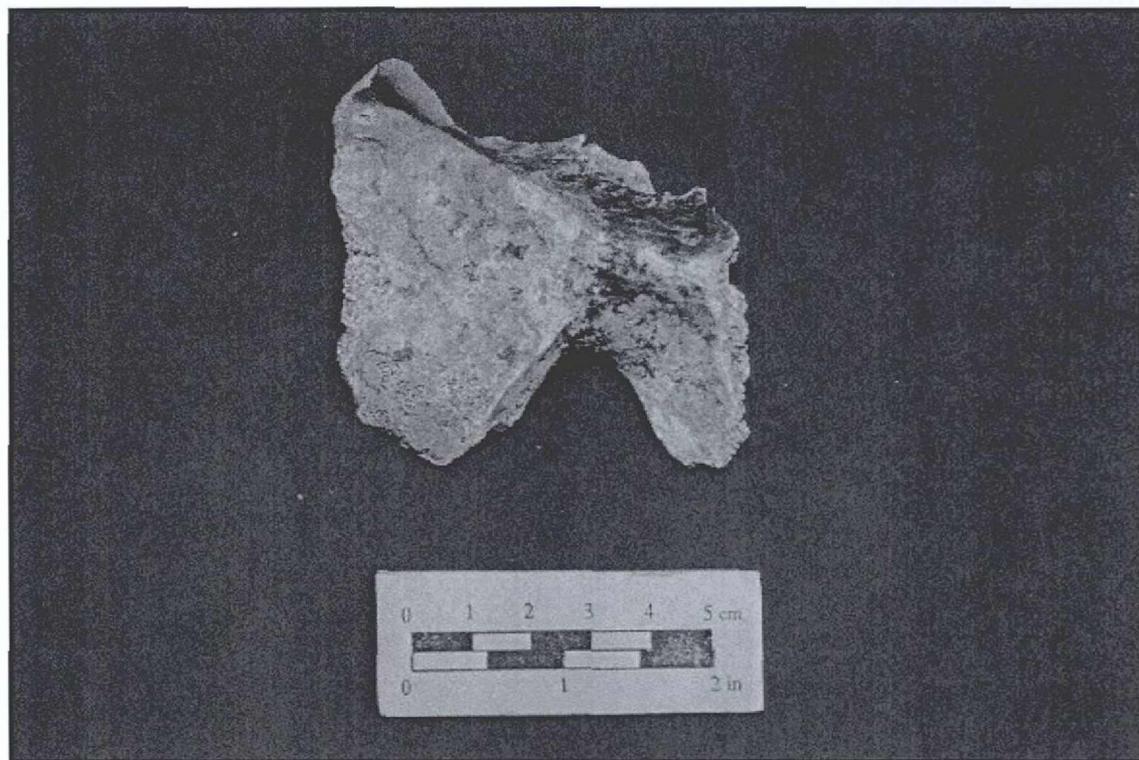


Plate 14. View of medial surface of an adult female's left innominate presenting marked preauricular groove along posterior border of the greater sciatic notch. This groove is usually interpreted as a ligament scar associated with pregnancy. Photograph date: March 11, 1999.

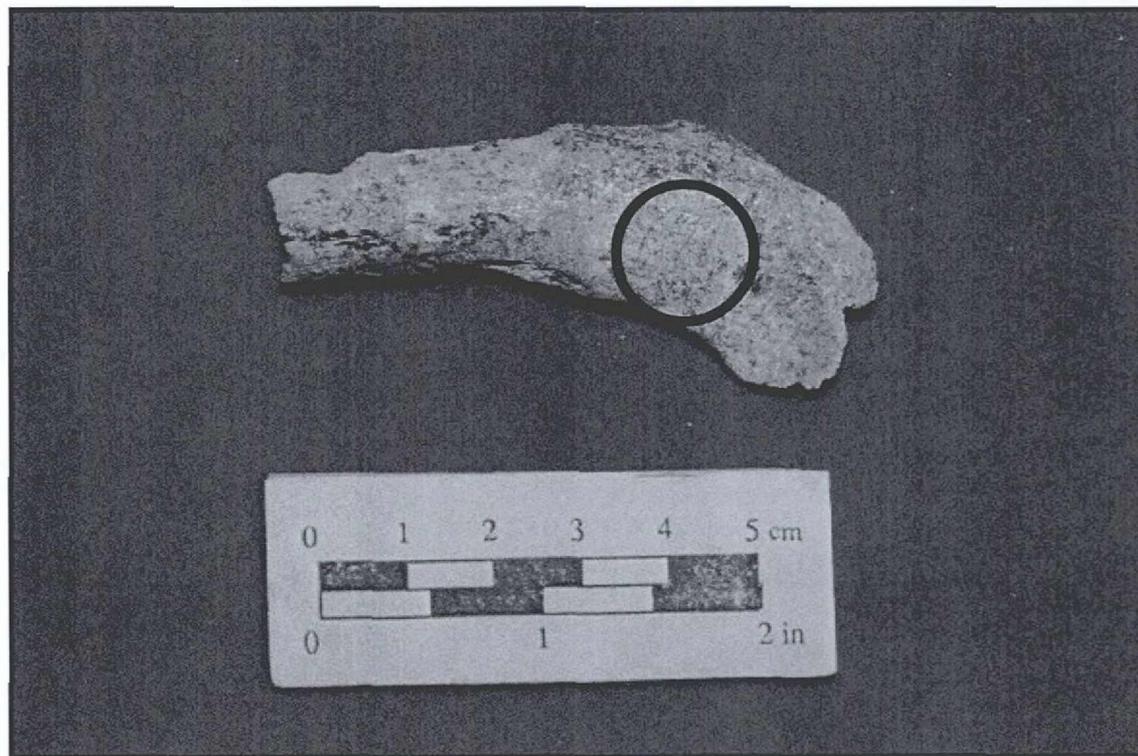


Plate 15. Close view of the superior surface of the lateral half from an adult left clavicle presenting possible cut marks associated with anatomical dissection. Photograph date: March 11, 1999.

**TABLES**

TABLE 1. SUMMARY PROVENIENCE DATA FOR HUMAN REMAINS RECOVERED DURING BIOARCHAEOLOGICAL MONITORING OF CHAMBERS STREET WATER MAIN REPAIRS.

Provenience	Date Remains Recovered <sup>1</sup>	Examination Bag Numbers <sup>2</sup>
Elk Street Trench	Recovered during fieldwork on OCT 24-25 <sup>3</sup>	1-8
Elk Street Trench	Recovered on NOV 16-20 and DEC 2-4, 7, and 9 from screened soil excavated on OCT 24-25 <sup>3</sup>	9-13; 18-21; and 28-29
Elk Street Trench	Recovered during fieldwork on OCT 25 and sent to OCME for preliminary analysis <sup>3</sup>	14 and 36
Elk Street Trench, West End, Locus 4, North Side, Cluster A	Recovered during fieldwork on OCT 30-31 <sup>4</sup>	15-17
Elk Street Trench, West End, Locus 4, North Side, Cluster A, 3 ft. b.g.	Recovered during fieldwork on OCT 30-31 <sup>4</sup>	22-27
Elk Street Trench, West End, Locus 4	Recovered during fieldwork on OCT 30-31 <sup>4</sup>	30
Elk Street Trench, West End, Locus 2, 3-4 ft. b.g.	Recovered during fieldwork on OCT 30-31 <sup>4</sup>	31
Elk Street Trench, West End, Locus 3	Recovered during fieldwork on OCT 30-31 <sup>4</sup>	32-35

<sup>1</sup> All dates in 1998.

<sup>2</sup> Bag numbers assigned by CPR conservator during post-excavation stabilization.

<sup>3</sup> Recovered by personnel from New York Landmarks Preservation Commission.

<sup>4</sup> Recovered by KSK/PAL Bioarchaeological Monitoring Team.

TABLE 2. SUMMARY INVENTORY OF HUMAN REMAINS RECOVERED DURING BIOARCHAEOLOGICAL MONITORING OF CHAMBERS STREET WATER MAIN REPAIRS.

	Total	Percentage of Total Sample
All Human Bones and Teeth	2,108	100.0
Bones and Bone Fragments Only	2,067	98.1
Teeth Only	41 <sup>1</sup>	1.9
Adult Skeletal Remains	2,049	99.1 <sup>3</sup>
Subadult Skeletal Remains <sup>2</sup>	18	0.9 <sup>3</sup>

<sup>1</sup> Includes one tooth from a child aged 8-10 years.

<sup>2</sup> Remains representing individuals younger than 16 years at death.

<sup>3</sup> Percentage of total number of bones and bone fragments recovered (N=2,067).

TABLE 3. SUMMARY OF ADULT BONE TYPES IN THE CHAMBERS STREET SKELETAL ASSEMBLAGE.

Category	Total	Percentage of Total Adult Sample <sup>1</sup>
Cranial Vault Bones	54	2.6
Facial Bones	12	0.6
Mandibles and Mandibular Fragments	15	0.7
Scapulae	15	0.7
Clavicles	13	0.6
Humeri	32	1.6
Radii	26	1.3
Ulnae	24	1.2
Femora	39	1.9
Patellae	2	0.1
Tibiae	13	0.6
Fibulae	13	0.6
Innomimates	27	1.3
Vertebrae and Vertebral Fragments	33	1.6
Ribs and Rib Fragments	141	6.9
Hand Bones	66	3.2
Foot Bones	34	1.7
Unidentified Cranial Fragments	89	4.3
Unidentified Long Bone Fragments	522	25.5
Unidentified Irregular Bone Fragments	261	12.8
Unidentified Bone Fragments	618	30.2
Total	2,049	100.0

<sup>1</sup> Percentage of total number of adult skeletal remains recovered (N=2,049).

TABLE 4. SUMMARY OF SUBADULT BONE TYPES IN THE CHAMBERS STREET SKELETAL ASSEMBLAGE

Category	Total	Percentage of Total Subadult Sample <sup>1</sup>
Cranial Vault Bones	7	38.8
Facial Bones	0	0.0
Mandibles and Mandibular Fragments	1	5.6
Scapulae	0	0.0
Clavicles	0	0.0
Humeri	2	11.11
Radii	2	11.11
Ulnae	1	5.6
Femora	2	11.11
Patellae	0	0.0
Tibiae	0	0.0
Fibulae	0	0.0
Innomimates	0	0.0
Vertebrae and Vertebral Fragments	0	0.0
Ribs and Rib Fragments	1	5.6
Hand Bones	0	0.0
Foot Bones	0	0.0
Unidentified Cranial Fragments	2	11.11
Unidentified Long Bone Fragments	0	0.0
Unidentified Irregular Bone Fragments	0	0.0
Unidentified Bone Fragments	0	0.0
Total	18	100.0

<sup>1</sup> Percentage of total number of subadult skeletal remains recovered (N=18).

TABLE 5. MINIMUM NUMBER OF INDIVIDUALS IN THE CHAMBERS STREET SKELETAL ASSEMBLAGE AS INDICATED BY MANDIBULAR REMAINS.

Bag Number	Portion of Mandibular Arcade	Demographic Determination	Individual
6	RPM <sub>2</sub> to LC <sub>1</sub>	Probable male	1
17	RM <sub>2</sub> to LI <sub>1</sub>	Male	2
17	LC <sub>1</sub> to LPM <sub>2</sub>	Male	3
18	RM <sub>3</sub> to gonial angle	Male	----- <sup>1</sup>
22	RI <sub>1</sub> to RI <sub>2</sub> with chin portion	Female; 20-30	4
24	LI <sub>1</sub> to LM <sub>2</sub>	Indeterminate	5
27	LC <sub>1</sub> to LM <sub>3</sub>	Indeterminate	6
32	LM <sub>3</sub> to RC <sub>1</sub>	Indeterminate	7
35	RM <sub>3</sub> only	Indeterminate, 25+	----- <sup>1</sup>

<sup>1</sup> Cannot be excluded from association with one of the other individuals who are represented by mandibular portions.

**APPENDIX I:**

**KEY PROJECT PERSONNEL**

## APPENDIX I: KEY PROJECT PERSONNEL

**Dr. Thomas A.J. Crist** is Director of Archaeological Services at Kise Straw & Kolodner. An Associate of the firm, he received his doctorate in Biological Anthropology from Temple University and also holds a Master's degree in Anthropology/Public Service Archaeology from the University of South Carolina. His bachelor's degree is in Archaeology and Classics from Rutgers College. A Registered Professional Archaeologist (RPA), Dr. Crist is nationally recognized as an expert in historical cemetery archaeology and forensic anthropology and currently serves as the Forensic Anthropologist for the Philadelphia and the New Jersey State Regional Medical Examiners' Offices. He has conducted and supervised over 100 archaeological projects in the United States and Ireland, including numerous projects requiring the excavation and analysis of prehistoric and historical human remains. He served as Principal Investigator for some of the highest-profile cemetery excavations in the country, including monitoring utilities installations in the African Burial Ground Historic District and data recovery projects at the Tenth Street First African Baptist Church site in Philadelphia, Cemeteries Nos. 86 and 88 in Johnston, RI, and the Mother UAME Cemetery in Wilmington, DE. Dr. Crist has written over 100 professional publications and cultural resources reports, including an article for *CRM* magazine entitled "Engaging the Public Through Mortuary Archaeology at Philadelphia's First African Baptist Church Cemeteries." His second paper on archaeology and public involvement, "The Relevance of Mortuary Archaeology to the American Public," is included as a chapter in a National Park Service volume currently in press.

**Dr. James C. Garman** earned his doctorate in anthropology from the University of Massachusetts in Amherst and holds a bachelor's degree in Archaeological Studies from Yale University. Senior Archaeologist at The Public Archaeology Laboratory, Inc. and a Registered Professional Archaeologist (RPA), Dr. Garman has extensive experience in both urban and historical cemetery archaeology. He has served as Principal Investigator for a large number of historical cemetery projects, including Cemeteries Nos. 86 and 88 in Johnston, RI; the Dinah Field Cemetery in Plymouth, MA; the Harwich United Methodist Church Burial Ground in Harwich, MA; and the Common Burying Ground in Newport, RI. Dr. Garman has written extensively about the analysis and interpretation of historical cemeteries both from an historical perspective and one emphasizing current regulations and statutes. One of his most widely-read papers is entitled "Viewing the Color Line Through the Material Culture of Death," published in *Historical Archaeology* in 1995. His second major paper on historical cemetery archaeology is "'This Church is for the Living': An Assessment of Archaeological Standards for the Removal of Cemeteries in Rhode Island and Massachusetts," published in *Northeast Historical Archaeology*.

**Mr. Gary S. McGowan** is President and Conservator at Cultural Preservation and Restoration, Inc. (CPR). As conservator for the South Street Seaport Museum, Mr. McGowan worked on virtually all the collections that were excavated in lower Manhattan in the 1970s and 1980s. Principal Conservator for John Milner Associates, Inc. between 1992 and 1997, Mr. McGowan developed and equipped the Foley Square Archaeology Laboratory and directed conservation of the cultural materials recovered from the African Burial Ground and Five Points sites. In addition to his involvement with the African Burial Ground he also has been involved in numerous projects where human skeletal remains were encountered, including excavations of Chambers Street in 1994 and data recovery work at Trinity Church in Newark, NJ, and the Tenth Street First African Baptist Church in Philadelphia. Among his recent publications is a seminal work regarding conservation of human remains entitled "The Ethical Dilemma Facing Conservation: Care and Treatment of Human Skeletal Remains and Mortuary Objects," co-authored with Cheryl A. LaRoche and published in 1996 in the *Journal of the American Institute of Conservation*. Mr. McGowan is President of the New York Conservation Association and has received the distinction of Professional Associate within the American Institute for Conservation of Historic and Artistic Works (AIC).

**Mr. Douglas B. Mooney** earned his Master's degree in Anthropology from Pennsylvania State University and holds a bachelor's degree in Anthropology from West Virginia University. He also completed two years of post-graduate study at the Institute of Archaeology, University College, London. Principal Archaeologist at Kise Straw & Kolodner Inc., Mr. Mooney has over ten years experience in cultural resources management and has participated in the excavation of more than 100 sites throughout the Mid-Atlantic region and in England. The primary author of more than 25 technical reports and professional papers and presentations, Mr. Mooney's experience encompasses historical, urban, mortuary, and prehistoric archaeology. His experience with human skeletal remains includes excavations at the Tenth Street First African Baptist Church in Philadelphia and the Wampanoag Burial Ground on Martha's Vineyard as well as the analysis of Native American remains from various sites throughout West Virginia.

**APPENDIX II:**

**INVENTORY OF SKELETAL AND  
DENTAL REMAINS**

**Appendix II.**  
**Inventory of Skeletal and Dental Remains**  
**Bioarchaeological Monitoring of Chambers Street Water Main Repairs**  
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 Kise Straw & Kolodner Inc.  
 Philadelphia, PA

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Provenience	Count	Description
Elk Street Trench; recovered in field by LPC, 24-25 Oct 1998		
Examination Bag 1	1	Frontal fragment, endocranial portion of orbit at sphenoid, adult
	1	Right temporal fragment, squamous portion, adult (30-40 yrs.), male, mild TMJ erosion
	1	Left temporal fragment, squamous portion adult (30-40 yrs.), male
	1	Left parietal fragment, adult, unfused sagittal suture
	1	Parietal fragment, unisided, adult
	1	Occipital fragment, adult
	2	Occipital fragments, child (age indeterminate)
	1	Right maxilla fragment, nasal portion, adult
	2	Unidentified cranial fragments, adult
	1	Right scapula fragment, spine only, adult
	1	Right clavicle fragment, lateral end only, adult, mild enthesopathy at deltoid attachment
	1	Right clavicle fragment, lateral end only, adult, slight enthesopathy at deltoid attachment
	1	Left humerus, middle one-third present only, adult
	1	Left radius, middle one-third present only, adult
	1	Left radius, middle one-third present only, adult
	1	Left ulna, middle one-third only present, child (4-5 yrs.)
	1	Left ulna, proximal one-third present only, adult, slight supinator crest enlargement
	1	Right ulna, middle one-third present only, adult
	1	Left rib fragment, posterior end with facet, adult
	3	Right rib fragments, shafts only, adult
	2	Unidentified rib fragments
	1	Left femur, proximal one-third present only, head and trochanters absent, adult
	1	Left femur, proximal one-third present only, head absent, adult
	1	Left femur, middle one-third present only, adult
	1	Right femur, proximal one-third present only, head epiphysis visible, teenager (17-19 yrs.)
	1	Right femur, proximal one-third present only, child (age indeterminate)
	1	Right tibia, middle one-third present only, adult
	1	Right third metacarpal, proximal one-third only, adult
	2	Unisided metacarpal shaft fragment, adult
	1	Unidentified long bone fragment, adult
	11	Unidentified long bone fragments
	1	Unidentified irregular bone fragment
Examination Bag 2	1	Frontal fragment, roof of right orbit, child (age indeterminate), mild, active, cribra orbitalia present
	2	Frontal fragments, adult
	1	Left temporal fragment, EAM with small portion of crest only, child (age indeterminate)
	1	Left temporal, fragmented, squamous portion with EAM and TMJ, adult, male
	3	Parietal fragments, unisided, adult, unfused sutures
	3	Occipital fragments, adult, unfused sutures
	1	Occipital fragment, condyle only, adult
	1	Right zygomatic fragment, lateral half only, adult
	1	Right zygomatic fragment, adult
	1	Mandible, left half only (sockets from LI <sub>1</sub> to LPM <sub>1</sub> ), all teeth lost postmortem, adult (20-25 yrs.), male
	11	Unidentified cranial fragments
	1	Right humerus, capitulum portion present only, adult
	1	Unisided humerus, head fragment only, child (age indeterminate), 37 mm diameter
	1	Left ulna, middle one-third present only, adult
	1	Right ulna, middle one-third present only, adult

**Appendix II.**  
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Provenience	Count	Description
	1	Unidentified vertebra fragment, lamina portion, lumbar region, adult
	1	Unidentified vertebral fragment, lamina portion, adult
	1	Unidentified vertebra fragment, centrum portion, recent epiphyseal ring fusion, adult (25-35 yrs.)
	1	Unidentified vertebral fragment, facet, adult
	1	Unidentified vertebra fragment, lamina portion, lumbar region, adult
	13	Unidentified rib fragments, adult
	1	Unidentified rib fragment, sternal end, adult (20-30 yrs.)
	1	Right ilium fragment, crest portion, adult (20-30 yrs.)
	2	Unsided ilium fragments, acetabulum portion, adult
	1	Unsided ilium fragment, acetabulum border, adult
	1	Unsided metacarpal, adult
	2	Unsided metacarpals, proximal ends only, adult
	1	Unsided metacarpal fragment, proximal half only, adult
	1	Unsided distal hand phalange, adult
	1	Left middle hand phalange, unidentified ray, adult
	1	Unsided proximal hand phalange, unidentified ray, distal end absent, adult
	1	Unsided distal hand phalange, adult
	1	Unsided proximal hand phalange, unidentified ray, adult
	1	Left middle phalange, great toe, adult
	1	Right metatarsal, unidentified ray, adult
	39	Unidentified long bone fragments
	14	Unidentified irregular bone fragments
	95	Unidentified bone fragments
(The following 15 teeth represent a single individual: male, 20-25 yrs., of European descent)	1	Right maxillary third molar (RM <sup>3</sup> ), fully erupted
	1	Right maxillary second molar (RM <sup>2</sup> )
	1	Right maxillary first molar (RM <sup>1</sup> )
	1	Right maxillary canine (RC <sup>1</sup> ), slight attrition, possible nicotine stains
	1	Left maxillary lateral incisor (LI <sup>2</sup> ), large lingual occlusal carie, chipped enamel on buccal surface
	1	Left maxillary canine (LC <sup>1</sup> ), slight attrition, possible nicotine stains
	1	Left mandibular first molar (LM <sub>1</sub> ), +4 cusp pattern
	1	Left mandibular canine (LC <sub>1</sub> )
	1	Left mandibular lateral incisor (LL <sub>1</sub> )
	1	Left mandibular central incisor (LI <sub>1</sub> ), slight attrition
	1	Right mandibular central incisor (RI <sub>1</sub> ), very slight attrition
	1	Right mandibular canine (RC <sub>1</sub> ), pinpoint dentin exposure, possible nicotine stains
	1	Right mandibular first premolar (RPM <sub>1</sub> )
	1	Right mandibular first molar (RM <sub>1</sub> ), +4 cusp pattern, 2 occlusal caries
	1	Right mandibular second molar (RM <sub>2</sub> ), +4 cusp pattern, pinpoint dentin exposure
Examination Bag 3	1	Parietal fragment, unsided, adult
	1	Right parietal fragment, adult, two epiteric bones in suture, unfused suture
	1	Occipital fragment, adult, partially fused lambdoidal suture
	1	Unidentified cranial fragment, adult
	1	Unsided scapula fragment, adult
	1	Unsided clavicle fragment, adult
	1	Right humerus, head fragment only, adult
	2	Unidentified vertebrae fragments, lamina portions, adult

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Provenience	Count	Description
	1	Unidentified vertebra fragment, centrum portion, thoracic region, recent epiphyseal ring fusion, adult (25-35 yrs.)
	1	Unidentified vertebra fragment, lamina portion, lumbar region, adult
	1	Left rib fragment, adult
	9	Unidentified rib fragments, adult
	1	Right ilium fragment, superior border of sciatic notch only, adult
	1	Left ischium, adult
	1	Left femur, head only, adult, 43 mm diameter
	1	Right femur, middle one-third present only, adult
	1	Right femur, proximal one-third present only, head and trochanters absent, adult
	1	Unsided metacarpal, proximal half only, unidentified ray, adult
	1	Unsided metacarpal fragment, adult
	1	Unsided distal hand phalange, unidentified ray, adult
	2	Unsided middle hand phalanges, unidentified ray, adult
	1	Left talus, adult
	1	Right talus, adult, male
	1	Unsided metatarsal, unidentified ray, adult
	23	Unidentified long bone fragments
	3	Unidentified irregular bone fragments
	70	Unidentified bone fragments
	1	Right mandibular central incisor (RI <sub>1</sub> ), adult, mild attrition
Examination Bag 4	1	Frontal fragment, superior and lateral portion of right orbit, adult
	1	Right sphenoid fragment, greater wing portion only, adult
	2	Unidentified cranial fragments, adult
	1	Left clavicle, shaft only, adult, slight costoclavicular plateau
	1	Unidentified vertebra fragment, lamina portion, adult
	4	Unidentified rib fragments, adult
	1	Left ilium fragment, acetabulum and ramus portions, adult
	1	Left femur, partial head only, adult, male, 47 mm diameter
	1	Right femur, partial head only, adult, 45 mm diameter
	1	Right femur, middle one-third present only, adult, 87 mm midshaft diameter, slight bowing of proximal section of shaft
	1	Right calcaneus fragment, adult
	2	Unidentified irregular bone fragments
Examination Bag 5	2	Unidentified cranial fragments, adult, one with unfused suture
	1	Unsided scapula fragment, adult
	1	Unidentified vertebra fragment, centrum portion, recent epiphyseal ring fusion, adult (25-35 yrs.)
	3	Unidentified rib fragments, adult
	1	Unidentified metacarpal fragment, adult
	1	Unsided middle toe phalange, adult
	4	Unidentified long bone fragments
	12	Unidentified irregular bone fragments
	12	Unidentified bone fragments
	107	Unidentified bone fragments <1 mm
(The following 18 teeth represent a single individual: female, 40-45 yrs., of European descent)	1	Right maxillary first molar (RM <sup>1</sup> ), cusps worn flat, pinpoint dentin exposure
	1	Right maxillary second premolar (RPM <sup>2</sup> )

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Provenience	Count	Description
	1	Right maxillary first premolar (RPM <sup>1</sup> )
	1	Right maxillary canine (RC <sup>1</sup> ),
	1	Right maxillary central incisor (RI <sup>1</sup> ), spatulate-shaped, mild dentin exposure, distal carie
	1	Left maxillary central incisor (LI <sup>1</sup> ), spatulate-shaped, mild dentin exposure
	1	Left maxillary lateral incisor (LI <sup>1</sup> )
	1	Left maxillary canine (LC <sup>1</sup> ), mild attrition, pinpoint dentin exposure
	1	Left maxillary second premolar (LPM <sup>2</sup> ), distal carie
	1	Left mandibular second molar (LM <sub>2</sub> ), mild attrition
	1	Left mandibular first molar (LM <sub>1</sub> ), +4 cusp pattern, mild attrition
	1	Left mandibular second premolar (LPM <sub>2</sub> )
	1	Left mandibular first premolar (LPM <sub>1</sub> ), single lingual cusp
	1	Left mandibular canine (LC <sub>1</sub> )
	1	Left mandibular lateral incisor (LI <sub>1</sub> ), mild attrition
	1	Left mandibular central incisor (LI <sub>1</sub> ), mild attrition
	1	Right mandibular first premolar (RPM <sub>1</sub> ), single lingual cusp
	1	Right mandibular second premolar (RPM <sub>2</sub> )
Examination Bag 6	1	Frontal fragment, adult
	1	Left temporal fragment, squamous portion with EAM, adult (40+ yrs.)
	2	Sphenoid fragments, adult
	1	Mandible fragment, anterior portion (RPM <sub>1</sub> to LC <sub>1</sub> ) only, alveolar process absent, adult (age indeterminate), probable male
	11	Unidentified cranial fragments, adult
	1	Left clavicle, lateral two-thirds only, adult
	1	Right clavicle fragment, lateral end only, adult, mild enthesopathy at deltoid attachment
	1	Right humerus, middle one-third present only, adult
	1	Left radius, middle one-third present only, adult
	1	Right radius, middle one-third present only, adult
	1	Right radius, middle one-third present only, adult
	1	Left ulna, proximal one-third present only, articular surface absent, marked supinator crest enlargement
	1	Right ulna, proximal one-third present only, adult
	1	Right ulna, proximal one-third present only, adult, marked supinator crest enlargement
	2	Unidentified vertebra fragments, lamina portions, adult
	2	Unidentified rib fragments
	1	Left ilium fragment, inferior border of acetabulum only, adult
	1	Unsided femur condyle fragment, adult
	1	Unsided femur epiphysis, unfused, child (< 12 mos.)
	1	Right patella fragment, adult
	1	Unsided metacarpal, proximal end only, adult
	2	Unidentified metacarpal fragments, adult
	1	Right navicular, adult
	1	Unsided calcaneus fragment, posterior portion only, adult
	37	Unidentified long bone fragments
	11	Unidentified irregular bone fragments
	1	Left mandibular third molar (LM <sub>3</sub> ), mild attrition, adult (40-50 yrs.)
Examination Bag 7	1	Right temporal, squamous portion with fused petrous portion, mastoid process undeveloped, child (< 12 mos.)
	1	Left temporal fragment, squamous and petrous portions only, adult, male
	1	Left zygomatic fragment, adult
	1	Right maxilla fragment, nasal portion, adult
	10	Unidentified cranial fragments

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Provenience	Count	Description
	1	Unsided scapula fragment, adult
	1	Left humerus, distal one-third present only, articular surface absent, adult
	1	Right humerus fragment, distal articular surface only, adult
	1	Unidentified vertebra fragments, lamina portion, lumbar region, adult
	1	Unidentified vertebra fragment, lamina portion, thoracic region, adult
	1	Unidentified vertebra fragment, centrum portion only, C-3 or C-4, fused epiphyseal ring, adult (30-40 yrs.)
	1	Right first rib fragment, adult
	1	Unidentified rib fragment, sternal end only, adult (<30 yrs.)
	20	Unidentified rib fragments
	1	Right ilium fragment, superior border of sciatic notch, adult
	1	Unsided femur condyle fragment, adult
	1	Left fibula, distal one-third present only, adult
	1	Unsided metacarpal, unidentified ray, adult
	2	Unidentified metacarpal fragments, adult
	1	Unsided proximal hand phalange, unidentified ray, adult
	1	Unsided proximal hand phalange, unidentified ray, adult
	1	Unsided distal hand phalange, unidentified ray, adult
	1	Right middle phalange, great toe, adult
	24	Unidentified long bone fragments
	40	Unidentified irregular bone fragments
	53	Unidentified bone fragments
	1	Right maxillary second molar (RM <sup>2</sup> )
	1	Right maxillary second molar (RM <sup>2</sup> )
	1	Right maxillary lateral incisor (RI <sup>1</sup> )
Examination Bag 8	1	Frontal fragment, right side superior to orbit, adult
	1	Frontal fragment, right side superior to orbit, adult
	1	Frontal fragment, supraorbital torus portion, adult, male
	10	Unidentified cranial fragments
	17	Unidentified rib fragments
	1	Unidentified rib fragment, sternal end only, adult (<30 yrs.)
	3	Unidentified hand phalange fragments, unidentified rays, adult
	6	Unsided middle hand phalanges, unidentified rays, adult
	5	Unsided metatarsals, unidentified rays, adult
	30	Unidentified long bone fragments
	48	Unidentified irregular bone fragments
	157	Unidentified bone fragments
	1	Left maxillary canine (LC <sup>1</sup> )
(The following 26 teeth represent a single individual: indeterminate sex, 25-35 yrs., of European descent)	1	Right maxillary third molar (RM <sup>3</sup> ), fully erupted, slight attrition
	1	Right maxillary second molar (RM <sup>2</sup> ), slight attrition
	1	Right maxillary first molar (RM <sup>1</sup> ), mild attrition
	1	Right maxillary second premolar (RPM <sup>2</sup> )
	1	Right maxillary lateral incisor (RI <sup>1</sup> ), crown lost to caries, attrition to CEJ
	1	Right maxillary central incisor (RI <sup>1</sup> )
	1	Left maxillary central incisor (LI <sup>1</sup> )
	1	Left maxillary lateral incisor (LI <sup>1</sup> )
	1	Left maxillary canine (LC <sup>1</sup> ), peg-shaped

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Provenience	Count	Description
	1	Left maxillary second molar (LM <sup>2</sup> ), slight attrition
	1	Left maxillary third molar (LM <sup>3</sup> ), fully erupted, slight attrition
	1	Left mandibular third molar (LM <sup>3</sup> ), fully erupted, mild attrition
	1	Left mandibular second molar (LM <sup>2</sup> ), +4 cusp pattern, mild attrition
	1	Left mandibular first molar (LM <sup>1</sup> ), +4 cusp pattern, mild attrition
	1	Left mandibular second premolar (LPM <sub>2</sub> )
	1	Left mandibular canine (LC <sub>1</sub> ), mild attrition
	1	Left mandibular lateral incisor (LI <sub>1</sub> )
	1	Left mandibular central incisor (LI <sub>1</sub> ), mild attrition
	1	Right mandibular central incisor (RI <sub>1</sub> ), mild attrition
	1	Right mandibular lateral incisor (RI <sub>1</sub> )
	1	Right mandibular canine (RC <sub>1</sub> ), mild attrition
	1	Right mandibular first premolar (RPM <sub>1</sub> ), single lingual cusp
	1	Right mandibular second premolar (RPM <sub>2</sub> )
	1	Right mandibular first molar (RM <sub>1</sub> ), +4 cusp pattern, mild attrition, pinpoint dentin exposure
	1	Right mandibular second molar (RM <sub>2</sub> ), +4 cusp pattern, mild attrition, pinpoint dentin exposure
	1	Right mandibular third molar (RM <sub>3</sub> ), fully erupted, mild attrition, pinpoint dentin exposure
	31	Faunal bones representing various mammal species, 1 butchered bone fragment
	7	Faunal teeth representing various mammal species
	9	Faunal teeth fragments representing various mammal species
Elk Street Trench; monitored by LPC 24-25 Oct 1998 and screened at DEP facilities 16-20 Nov and 2-4, 7 and 9 Dec		
Examination Bag 9	1	Left maxilla fragment, portion from LPM <sup>1</sup> to LM <sup>1</sup> , sockets for LPM <sup>1</sup> and LPM <sup>2</sup> present and empty (postmortem loss), LM <sup>1</sup> in situ with crown lost to caries, adult (age indeterminate)
	2	Occipital fragments, child (age indeterminate)
	7	Unidentified cranial fragments
	1	Left scapula fragment, acromion process only, adult
	1	Left humerus, distal one-quarter present only, adult
	1	Right humerus, distal one-third present only, moderate enthesophyte located at inferior border of deltoid tuberosity (118 mm superior to medial epicondyle) extends 8 mm laterally
	1	Right radius, middle one-third present only, adult
	1	Left ulna, distal one-third present only, articular surface absent, adult
	1	Unidentified vertebra fragment, lamina only, cervical region, adult
	1	Unidentified vertebra fragment, centrum portion only, thoracic region, Schmorl's node present, adult (40-50 yrs.)
	2	Unidentified vertebra fragments, centrum portions only, lumbar region, epiphyseal rings fused but visible, adult (30-40 yrs.)
	1	Unidentified rib fragment, adult
	1	Unidentified rib fragment, posterior portion, adult
	1	Right femur, head and neck only, 44 mm head diameter, adult (<40 yrs.), probable male
	1	Left fibula, middle one-third present only, adult
	2	Right fibula fragments, middle one-third present only, adult
	8	Unsidled middle hand phalanges, unidentified rays, adult
	27	Unidentified long bone fragments
	3	Unidentified irregular bone fragments
Examination Bag 10	3	Unidentified cranial fragments

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Provenience	Count	Description
	1	Left humerus, distal one-third present only, articular surface absent, adult
	1	Right humerus, distal one-third present only, adult
	1	Left radius, distal one-third present only, adult
	1	Right radius, proximal one-third present only, articular surface absent, marked tuberosity, adult
	1	Left ulna, proximal articular surface present only, adult
	6	Unidentified rib fragments
	1	Unsided ilium fragment, auricular surface portion only, green stain (possible coffin nail stain), adult
	1	Right ilium fragment, auricular surface and sciatic notch portions only, adult (40-50 yrs.), male
	1	Unsided proximal hand phalange, unidentified ray, adult
	1	Unsided middle hand phalange, unidentified ray, adult
	14	Unidentified long bone fragments
	2	Unidentified irregular bone fragments
Examination Bag 11	2	Unidentified cranial fragments
	1	Right scapula fragment, adult
	1	Left humerus, distal one-quarter present only, articular surface absent, adult
	1	Left radius, proximal one-third present only, articular surface absent, adult
	1	Right radius, middle one-third present only, adult
	1	Unidentified vertebra fragment, centrum portion, recent epiphyseal ring fusion, adult (25-35 yrs.)
	1	Right first rib fragment, adult
	1	Unsided ilium fragment, iliac crest portion only, adult
	1	Right metatarsal, great toe, distal half only, adult
	13	Unidentified long bone fragments
	10	Unidentified irregular bone fragments
	1	Unidentified irregular bone fragment, adult
Examination Bag 12	1	Occipital fragment, adult
	2	Unsided parietal fragments, adult
	1	Right maxilla fragment, inferior border of orbit only, adult
	6	Unidentified cranial fragments
	1	Right scapula fragment, adult
	1	Unsided scapula fragment, acromion process only, adult
	1	Left radius, proximal one-third present only, child (age indeterminate)
	1	Right radius, proximal one-third present only, child (age indeterminate)
	1	Right radius, proximal one-quarter present only, articular surface absent, adult
	1	Unidentified vertebra fragment, centrum portion only, lumbar region, epiphyseal ring fused, adult (30-40 yrs.)
	1	Unidentified vertebra fragment, lamina portion, adult
	1	Left rib fragment, posterior portion, adult
	6	Unidentified rib fragments, adult
	1	Unidentified rib fragment, child (age indeterminate)
	1	Right tibia, proximal one-third present only, articular surface absent, 80 mm diameter at nutrient foramen, mild enthesopathy of soleal line, adult
	2	Unsided metacarpal fragments, unidentified rays, adult
	1	Unsided navicular fragment, adult
	35	Unidentified long bone fragments
	21	Unidentified irregular bone fragments
	6	Unidentified bone fragments
	1	Left mandibular first premolar (LPM), pinpoint dentin exposure, single lingual cusp, adult

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Provenience	Count	Description	
Examination Bag 13	1	Occipital fragment, marked nuchal lines, adult, male	
	1	Mandible fragment, right posterior half only, right third molar (RM <sub>1</sub> ) in situ, fully erupted, slight attrition, +4 cusp pattern, adult (25-40 yrs.)	
	2	Unidentified cranial fragments, adult	
	1	Right humerus, middle one-third present only, adult	
	1	Left radius, distal one-third present only, adult	
	1	Left ulna, proximal one-quarter present only, adult	
	10	Unidentified long bone fragments	
	1	Left maxillary central incisor (I <sub>1</sub> <sup>1</sup> ), mild dentin exposure, adult	
Elk Street Trench; recovered in field by LPC, 25 Oct 1998; OCME Tag #M98-5690, 61 Chambers Street			
Examination Bag 14	1	Unsided parietal fragment, adult, unfused sutures	
	1	Left temporal fragment, EAM and TMJ portions, adult	
	1	Right maxilla fragment, portion from RI <sup>1</sup> to RPM <sup>2</sup> , sockets for RI <sup>1</sup> and RI <sup>2</sup> present and empty (postmortem loss), RC <sup>1</sup> in situ with pinpoint dentin exposure, sockets for RPM <sup>1</sup> and RPM <sup>2</sup> present and empty (postmortem loss), adult (age indeterminate)	
	2	Unidentified cranial fragments	
	1	Left humerus, distal articular surface present only, adult	
	1	Right humerus, middle one-third present only, adult	
	1	Right ulna, proximal one-third present only, marked supinator crest enlargement	
	1	Right femur, distal one-third present only, articular surface absent, adult	
	2	Unsided metacarpals, unidentified rays, adult	
	7	Unidentified long bone fragments	
	11	Unidentified irregular bone fragments	
	7	Unidentified bone fragments	
Elk Street Trench; recovered in field by KSK/PAL 30-31 Oct 1998; West End, Locus 4, North Side, Cluster A			
Examination Bag 15	1	Frontal fragment, right orbit portion, adult, male	
	1	Left temporal fragment, squamous portion with partial mastoid process, adult, male	
	1	Unsided parietal fragment, adult	
	1	Left clavicle fragment, adult	
	1	Left clavicle, medial half only, fused medial epiphysis, adult (30+ yrs.)	
	1	Right clavicle, lateral half only, adult	
	1	Left radius, proximal one-third present only, articular surface absent, adult	
	1	Left ulna, proximal one-third present only, slight marginal lipping, adult	
	1	Left ulna, middle one-third present only, adult	
	1	Unsided ilium fragment, adult	
	1	Right ilium fragment, sciatic notch portion, adult, female	
	1	Right femur, head fragment, adult	
	1	Right fibula, distal articular surface only present, adult	
	3	Unsided fibula fragments, adult	
	1	Unsided metacarpal fragment, unidentified ray, adult	
	1	Unsided metatarsal fragment, unidentified ray, adult	

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Provenience	Count	Description
	36	Unidentified long bone fragments
	17	Unidentified bone fragments
Examination Bag 16	1	Frontal fragment, left nasal and orbit portions, adult, male
	1	Mandible fragment, right ascending ramus with (rm <sub>1</sub> ) in situ only, root ½ complete, child (8-10 yrs.)
	1	Right humerus, distal one-third present only, articular surface absent, adult
	1	Left femur, distal one-third present only, articular surface absent, adult
	1	Right femur, middle one-third present only, adult
	20	Unidentified long bone fragments
	4	Unidentified bone fragments
	1	Left maxillary canine (LC <sup>1</sup> ), pinpoint dentin exposure, adult
Examination Bag 17	1	Frontal fragment, superior border of left orbit only, adult, male
	2	Unsided parietal fragments, adult
	1	Occipital fragment, adult
	1	Left zygomatic fragment, adult
	1	Mandible fragment, right alveolar process from RM <sub>1</sub> to LI <sub>1</sub> only, sockets for RM <sub>1</sub> and RM <sub>1</sub> present and empty (antemortem loss), socket for RPM <sub>1</sub> present and empty (postmortem loss), RPM <sub>1</sub> present in situ with mild dentin exposure, socket for RC <sub>1</sub> present and empty (postmortem loss), all incisor sockets present and empty (all antemortem loss), adult (age indeterminate), male
	1	Mandible fragment, left alveolar process from LC <sub>1</sub> to LPM <sub>1</sub> only, sockets for LC <sub>1</sub> to LPM <sub>1</sub> present and empty (all postmortem loss), sockets for LM <sub>1</sub> to LM <sub>1</sub> present and empty (antemortem loss), adult (age indeterminate), male
	2	Unidentified cranial fragments
	2	Unsided scapula fragments, adult
	1	Unsided scapula fragment, acromion process only, adult
	1	Right humerus, distal one-third present only, articular surface absent, child (age indeterminate)
	1	Left ulna, olecranon process only, adult
	1	Unidentified vertebra fragment, lamina portion, adult
	1	Unidentified vertebra fragment, lamina portion, lumbar region, adult
	1	Right femur, head only, 47 mm diameter, adult
	1	Left fibula, middle one-third present only, adult
	2	Unsided middle hand phalanges, unidentified rays, adult
	1	Unsided distal hand phalange, unidentified ray, adult
	1	Unsided proximal hand phalange, unidentified ray, adult
	1	Unsided hand phalange, unidentified ray, adult
	1	Right metatarsal, great toe, lytic lesions present (probable gout), adult
	1	Unsided metatarsal, unidentified ray, adult
	1	Left proximal foot phalange, great toe, adult
	1	Right navicular, adult
	1	Right third cuneiform, adult
	1	Right second cuneiform, adult
	82	Unidentified long bone fragments
	6	Unidentified irregular bone fragments
	15	Unidentified bone fragments
	1	Right maxillary third molar (RM <sup>1</sup> ), slight cusp, crenulation, no attrition, adult (age indeterminate)
	1	Right mandibular first premolar (RPM <sub>1</sub> ), adult (age indeterminate)
	1	Right maxillary central incisor (RI <sup>1</sup> ), spatulate-shaped, slight dentin exposure, adult (age indeterminate)

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Provenience	Count	Description
Elk Street Trench; monitored by LPC 24-25 Oct 1998 and screened at DEP facilities 16-20 Nov and 2-4, 7 and 9 Dec		
Examination Bag 18	1	Mandible fragment, RM, to gonial angle only, socket for RM, present and empty (postmortem loss), adult, male
	1	Left clavicle, lateral half only, apparent cut marks on superior surface, "handling wear" patina across exterior surface (possible anatomical specimen), adult
	1	Right ulna, proximal one-third present only, articular surface absent, marked supinator crest enlargement, adult
	1	Right femur, middle one-third present only, adult
	7	Unidentified long bone fragments
Examination Bag 19	4	Unidentified cranial fragments
	1	Right humerus, distal articular surface and medial epicondyle only, adult
	1	Unidentified rib fragment, "handling wear" patina across exterior surface (possible anatomical specimen), adult
	2	Unidentified rib fragments
	2	Unidentified metatarsal fragments, unidentified rays, adult
	4	Unidentified long bone fragments
	10	Unidentified irregular bone fragments
	6	Unidentified bone fragments
Examination Bag 20	1	Left zygomatic fragment, adult
	1	Mandible fragment, unisided, alveolar process absent, adult
	3	Unidentified cranial fragments
	1	Left ulna, distal one-third present only, adult
	1	Unidentified vertebra fragment, lamina portion, adult
	2	Unidentified vertebra fragments, adult
	3	Unidentified rib fragments, adult
	3	Unidentified metacarpal fragments, unidentified rays, adult
	1	Left calcaneus fragment, sustentaculum tali portion, adult
	1	Unidentified metatarsal fragment, unidentified ray, adult
	10	Unidentified long bone fragments
	14	Unidentified irregular bone fragments
	1	Left maxillary second molar (LM <sup>2</sup> ), mild dentin exposure, adult (age indeterminate)
Examination Bag 21	2	Unidentified cranial fragments, child
	1	Unidentified cranial fragment, adult
	1	Unisided scapula fragment, adult
	1	Right ulna, distal one-third present only, adult
	1	Unidentified vertebra fragment, lamina portion, adult
	15	Unidentified rib fragments, adult
	1	Left ilium fragment, acetabulum portion, adult
	1	Right ischium fragment, adult
	4	Unidentified metacarpal fragments, unidentified rays, adult
	1	Unidentified middle hand phalange, unidentified ray, adult
	1	Unidentified distal hand phalange, unidentified ray, adult
	1	Unidentified middle foot phalange, unidentified ray, adult
	1	Unidentified metatarsal fragment, unidentified ray, adult
	33	Unidentified long bone fragments

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Provenience	Count	Description
	26	Unidentified irregular bone fragments
	17	Unidentified bone fragments
	1	Right maxillary canine (RC <sup>1</sup> ), adult (age indeterminate)
Elk Street Trench; recovered in field by KSK/PAL 30-31 Oct 1998; West End, Locus 4, North Side, Cluster A, 3 ft. b.g.		
Examination Bag 22	1	Frontal fragment, squamous and nasion portions, large supraorbital ridges, slight persistent metopic suture, adult, male
	1	Mandible fragment, chin portion only, sockets for RI <sub>1</sub> and RI <sub>2</sub> present and empty (postmortem loss), adult, female
	1	Mandible fragment, right ascending ramus and condyle present only, adult
	1	Unidentified cranial fragment
	1	Right scapula fragment, glenoid fossa portion, adult
	1	Right ilium fragment, sciatic notch portion, adult, female
	1	Left ilium fragment, auricular surface portion, adult (30-35 yrs.)
	3	Unsidid ilium fragments, adult
	1	Unidentified rib fragment, "handling wear" patina across exterior surface (possible anatomical specimen), adult
	1	Right calcaneus fragment, adult
	2	Unidentified long bone fragments
Examination Bag 23	2	Unidentified cranial fragments, adult
	1	Right humerus, middle one-third present only, adult
	2	Unsidid humerus fragments, distal articular surface, adult
	1	Right radius, middle one-third present only, adult
	1	Left ulna, distal one-third present only, articular surface absent, adult
	3	Unidentified rib fragments, adult
	1	Left tibia, middle one-third present only, anterior surface eroded, widespread moderate active periostitis present, healed periostitis present distally, adult
	1	Left tibia, middle one-third present only, adult
	7	Unidentified long bone fragments
	3	Unidentified irregular bone fragments
Examination Bag 24	1	Frontal fragment, superior border of left orbit only, adult, female
	1	Left zygomatic fragment, adult
	1	Mandible fragment, LI <sub>1</sub> to LM <sub>1</sub> only, sockets for LI <sub>1</sub> , LI <sub>2</sub> , and LPM <sub>1</sub> present and empty (postmortem loss), LC <sub>1</sub> , LPM <sub>2</sub> , and LM <sub>1</sub> present in situ, +4 cusp pattern on LM <sub>1</sub> , all teeth mild attrition, adult (20-30 yrs.), male
	3	Unidentified cranial fragments, adult
	1	Right humerus, distal one-third present only, articular surface absent, adult
	1	Left radius, middle one-third present only, adult
	1	Left radius, proximal one-third present only, mild enthesopathy of tuberosity, adult
	1	Unsidid ischium fragment, adult
	1	Left femur, proximal portion, head and trochanters absent, adult
	1	Unsidid patella fragment, adult
	1	Left tibia, middle one-third present only, adult
	1	Right tibia, middle one-third present only, adult
	1	Left fibula, distal one-third present only, adult
	6	Unidentified long bone fragments

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Provenience	Count	Description
	5	Unidentified irregular bone fragments
	4	Unidentified bone fragments
	1	Right mandibular first premolar (RPM <sub>1</sub> ), adult
Examination Bag 25	1	Unsided parietal fragment, open sutures
	1	Occipital fragment, adult
	1	Unidentified cranial fragment
	1	Right ulna, proximal one-third present only, marked supinator crest, adult
	3	Unidentified rib fragments
	1	Unidentified rib fragment, sternal end, adult
	1	Right femur, middle one-third present only; adult
	1	Right tibia, middle one-third present only; adult
	5	Unidentified long bone fragments
	14	Unidentified bone fragments
Examination Bag 26	1	Left clavicle, lateral half only, adult
	1	Right humerus, distal one-third present only, articular surface absent, adult
	1	Right radius, middle one-third present only, adult
	1	Right ulna, olecranon only, adult
	1	Right tibia, distal articular surface only, adult
	1	Unsided tibia fragment, active mild periostitis present, adult
	3	Unidentified long bone fragments
	1	Unidentified irregular bone fragment
Examination Bag 27	1	Frontal fragment, superior border of right orbit only, adult
	3	Occipital fragments, adult
	1	Mandible fragment, LC <sub>1</sub> to LM <sub>1</sub> only, sockets for LC <sub>1</sub> , LPM <sub>1</sub> , LPM <sub>2</sub> , and LM <sub>2</sub> present and empty (postmortem loss), LM <sub>1</sub> and LM <sub>2</sub> lost antemortem with healed sockets, adult (age indeterminate)
	1	Right clavicle, middle one-third present only, adult
	1	Right humerus, proximal one-third present only, adult
	1	Left radius, middle one-third present only, adult
	1	Right radius, middle one-third present only, adult
	1	Left ulna, proximal one-third present only, adult
	1	Right femur, middle one-third present only, adult
	1	Left fibula, middle one-third present only, adult
	3	Unidentified long bone fragments
Elk Street Trench: monitored by LPC 24-25 Oct 1998 and screened at DEP facilities 16-20 Nov and 2-4, 7 and 9 Dec		
Examination Bag 28	1	Left humerus, proximal one-third missing only, "handling wear" patina across exterior surface (possible anatomical specimen), adult
	1	Right femur, proximal one-third missing only, adult, male
	1	Left tibia, intact except for proximal articular surface, adult
Examination Bag 29	1	Left humerus, middle one-third present only, adult
	3	Unsided femur fragments, "handling wear" patina across exterior surface (possible anatomical specimens), adult
	4	Unidentified long bone fragments

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Provenience	Count	Description
Elk Street Trench; recovered in field by KSK/PAL 30-31 Oct 1998; West End, Locus 4		
Examination Bag 30	1	Left humerus, distal one-third present only, articular surface absent, adult
	1	Right humerus, distal one-third present only, adult
	1	Left femur, head only, moderate porosity at fovea capitis, 51 mm diameter, adult
	1	Right femur, middle one-third present only, adult
	1	Right femur, head only, 45 mm diameter
	1	Unsided femur head fragment, adult
	1	Right tibia, middle one-third present only, adult
	1	Left fibula, middle one-third present only, adult
	1	Left fibula, distal one-third present only, articular surface absent, adult
	14	Unidentified long bone fragments
Elk Street Trench; recovered in field by KSK/PAL 30-31 Oct 1998; West End, Locus 2, 3-4 ft. b.g.		
Examination Bag 31	1	Left clavicle, lateral half only, marked deltoid attachment, adult
	1	Left humerus, middle one-third present only, adult
	1	Right humerus, middle one-third present only, robust deltoid tuberosity, adult
	1	Right humerus, distal one-third present only, articular surface absent, adult
	1	Right radius, middle one-third present only, adult
	1	Left femur, greater trochanter portion only, adult
	3	Unidentified long bone fragments
	25	Unidentified bone fragments
	1	Unsided rib fragment, probable faunal bone. 18 mm-diameter hole manually punched out through bone surface (probable button blank), other cut marks present
Elk Street Trench; recovered in field by KSK/PAL 30-31 Oct 1998; West End, Locus 3		
Examination Bag 32	1	Mandible fragment, anterior portion from LM <sub>1</sub> to RC <sub>1</sub> , all tooth sockets present and empty (all postmortem loss), LM <sub>1</sub> and LM <sub>2</sub> lost antemortem with healed sockets, adult
	1	Right ilium fragment, acetabulum portion only, adult
	1	Right ilium fragment, acetabulum portion and sciatic notch portions only, adult, female
	1	Right ilium, partial auricular surface and sciatic notch portions only, adult, female
	1	Right femur, head only, mild surface osteophytes present, 52 mm diameter, adult
	1	Right femur, proximal one-third present only, head absent, adult
	1	Left tibia, middle one-third present only, adult
	3	Unidentified irregular bone fragments
	1	Mandibular right third molar (RM <sub>3</sub> ), crown lost to caries, adult
Examination Bag 33	1	Frontal fragment, superior border of right orbit, adult, male
	1	Right zygomatic fragment, adult
	1	Right scapula fragment, glenoid fossa and coracoid process portions only, adult
	1	Left radius, proximal one-quarter present only, adult
	1	Right radius, middle one-third present only, adult

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Provenience	Count	Description
	1	Right ulna, intact except for proximal articular surface, adult
	1	Unidentified vertebra fragment, centrum portion only, epiphyseal rings fused, adult (35+ yrs.)
	1	Left rib fragment, sternal end only, adult (30-35 yrs.)
	8	Unidentified rib fragments
	1	Right ilium fragment, acetabulum portion only, adult
	1	Unsidled ilium fragment, auricular surface portion only, adult (40-45 yrs.)
	1	Unsidled metatarsal fragment, unidentified ray, adult
	11	Unidentified irregular bone fragments
	7	Unidentified bone fragments
Examination Bag 34	1	Right humerus, middle one-third present only, adult
	1	Left radius, proximal one-third present only, adult
	1	Right radius, middle one-third present only, adult
	1	Right radius, middle one-third present only, adult
	1	Left ulna, middle one-third present only, adult
	1	Left ischium, adult
	1	Left tibia, middle one-third present only, 93 mm diameter at nutrient foramen, adult
	1	Unsidled metacarpal fragment, unidentified ray, adult
	1	Unidentified long bone fragment
	2	Unidentified bone fragments
Examination Bag 35	1	Mandible fragment, left ascending ramus portion only, condyle absent, adult
	1	Mandible fragment, right ascending ramus portion and RM, only, RM, in situ, +4 cusp pattern, mild wear, adult (25+ yrs.)
	1	Mandible fragment, alveolar process absent, adult
	1	Unidentified cranial fragment
	1	Unsidled scapula fragment, adult
	1	Right radius, distal one-third present only, adult
	1	Right ulna, distal one-third missing only, adult
	1	Right femur, middle one-third present only, adult
	1	Unidentified vertebra fragment, body portion, thoracic region, epiphyseal rings fused, adult (35+ yrs.)
	1	Unidentified vertebra fragment, body and lamina portions, lumbar region, epiphyseal rings fused, adult (35+ yrs.)
	1	Unidentified vertebra fragment, lamina portion, lumbar region, adult
	7	Unidentified rib fragments
	1	Left ischium, adult
	1	Right metatarsal, great toe, adult
	1	Right metatarsal, fifth ray, adult
	5	Unidentified long bone fragments
	3	Unidentified irregular bone fragments
Elk Street Trench; recovered in field by LPC, 25 Oct 1998; OCME Tag #M98- 5690, 61 Chambers Street		
Examination Bag 36	1	Occipital fragment, right condyle and half of foramen magnum portions, adult
	1	Occipital fragment, adult
	1	Left humerus, distal one-third present only, articular surface absent, adult
	1	Right humerus, distal one-third present only, cortex actively flaking, adult
	1	Unidentified rib fragment

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Remains Examined and Identified by Thomas A.J. Crist, Ph.D.  
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Provenience	Count	Description
	1	Left femur, proximal portion, head and trochanters absent, adult
	1	Left femur, proximal one-quarter present only, 48 mm head diameter, adult
	1	Left femur, middle one-third present only, adult
	1	Left femur, middle one-third present only, adult
	1	Right femur, proximal one-third present only, articular surface absent, adult
	2	Unidentified long bone fragments

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