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Incorporating the Skeletal Remains of Two German Lutheran Cemeteries into the Surrounding Immigrant Population of Mequon, Wisconsin

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INCORPORATING THE SKELETAL REMAINS OF TWO GERMAN LUTHERAN CEMETERIES INTO THE SURROUNDING IMMIGRANT POPULATION OF MEQUON, WISCONSIN

by

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ABSTRACT

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Under the Supervision of Dr. Patricia Richards

The skeletal remains of 24 individuals were disinterred from the Altenburg Lutheran Church Society Cemetery and the German Evangelical Lutheran Cemetery (Stolz Site) in 1987 and 1989, respectively. Both unmarked cemeteries were located in Mequon, Wisconsin. The majority of these individuals were interred during the mid-nineteenth century, a time when German populations were becoming established as a major cultural and ethnic force within the region. Although these cemeteries have undergone multiple analyses, they have not been incorporated into larger discussions of settlement and mortuary practices in the area. By characterizing German immigrant settlement and mortuary practices, it is possible to incorporate the Altenburg and Stolz cemeteries into this larger framework.

DEDICATION

This thesis is dedicated to my niece, Reyna J. Barske. Follow your dreams and I will support you along the way. I promise.

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ACKNOWLEDGEMENTS

My graduate school journey would not have begun without the support of my mother, Monica Wroblewski, and my husband, Michael Bluma. This journey was kept on successful course through the guidance of my archaeology mentor and friend, Alexis Jordan. The classroom, field, and laboratory opportunities provided to me by Dr. Patricia Richards, Dr. Robert Jeske, and Dr. Bettina Arnold have been invaluable to my knowledge and understanding of archaeology and bioarchaeology. Not only have I grown as an archaeologist, but also as a person throughout my graduate school program. I am thankful for this opportunity and excited for the road that lies ahead.

I must thank Richard Edwards IV for offering advice and many resources in the early stages of this thesis. In addition, I offer my most sincere thanks to Carrie Jones for assisting in skeletal paleopathology identification. Emily Laak and David Stock assisted in the skeletal inventory and initial research. I thank you both for your contributions. Also, the volunteers at the Ozaukee County and Mequon-Thiensville Historical Societies made themselves available to guide me in my research, oftentimes outside of their regular hours. The resources offered by these institutions were instrumental in the development of this paper.

Finally, I would like to acknowledge all of my family and friends, not listed above, for their support during this journey including: Wayne Wroblewski, Michelle Gleman, and Ryan Wimer (proofreader extraordinaire).

Chapter I. Introduction

Anchored by skeletal data collected from two disinterred and unmarked German Lutheran cemeteries from Mequon, Wisconsin, this research focuses on early German settlement and burial practices in southeastern Wisconsin and includes demographic, spatial, and osteological analyses. These two cemeteries, the Altenburg Lutheran Church Society Cemetery and the German Evangelical Lutheran Cemetery, date between 1839 and 1910, a time when the earliest German immigrants began to populate southeastern Wisconsin (Meer 1990; Rusch 1989). "German" is a designation that can be applied to three dozen loosely allied states in Europe during the mid-nineteenth century (Conzen 1972).

The Altenburg Lutheran Church Society Cemetery (also known as the Altenburg Cemetery) was located along State Highway 181 in Mequon, Wisconsin. Due to a Wisconsin Department of Transportation road widening project in 1987, 12 burials containing nine adults and five subadults were archaeologically excavated from the Altenburg Cemetery by the Wisconsin Historical Society (Rusch 1989).

The German Evangelical Lutheran Cemetery (also known as the Stolz Cemetery site) was located 5 km from the Altenburg Cemetery on what is today LeMont Boulevard in Mequon, Wisconsin. In late 1988, the construction of a home addition disturbed human remains and the Wisconsin Historical Society excavated five adults and five subadults from the property, owned by the Stolz family (Meer 1990).

Subsequently, the Wisconsin Historical Society conducted historical and osteological analyses on these two cemeteries in the years following the excavations. In 1988, Susan J. Wade prepared the *Osteological Analysis of Nineteenth Century German-*

American Burials from the Altenburg Cemetery, Ozaukee County, Wisconsin. In this report, Wade provides the age, sex, ethnic affiliation, stature, and pathologies of each individual. The age range is from seven fetal lunar months to more than 45 years (Wade 1988). Trauma to one individual was described and several pathologies were noted on multiple individuals (Wade 1988). Soon after, in 1989, Dr. Diane Young Holliday completed an osteological inventory and analysis of the Altenburg Cemetery. The inventory describes the complete or fragmented nature for each bone of every individual. Holliday also identified the age, sex, and ethnic affiliation of each individual.

Lynn A. Rusch's 1989 site report *Archaeological and Historical Analysis of Some Nineteenth Century German-American Burials from the Altenburg Cemetery, Ozaukee County, Wisconsin* discusses field methods, archaeological analysis, and historical research conducted on the Altenburg Cemetery. Each burial casket was described in detail along with any grave furniture found. The burials were roughly dated using information about machine-cut square nails and the availability of the white pine used in casket construction. Based on the square nails and the white pine used in casket construction, Rusch determined the Altenburg Cemetery dated from 1839 to 1910.

In 2004, Meghan Cotter completed the osteological report *Analysis of Human Skeletal Remains from the Altenburg Cemetery.* Cotter's report revisits the sex, age, ethnic affiliation, pathologies, traumas, and stature of the individuals from the Altenburg Cemetery. She observed several pathologies in addition to those already identified by Wade and Holliday. She also detailed the Strontium isotope analysis conducted in 1998 by R. Alexander Bentley and Dr. James Burton at the University of Wisconsin - Madison. Strontium isotope analysis was conducted on burials 4, 6, 7, 8, 9, and 12 of the Altenburg

Cemetery. Individuals 4, 6, 7, 8, and 9 were found to be born locally and lived locally during the last ten years of their lives. The analysis also revealed that the individual from burial 12 was born in the central area of Saxony.

One report was completed on the Stolz Cemetery. In 1990, Rosanne M. Meer prepared the *Report of Investigation of Skeletal Remains Recovered from the Stolz Site (BOZ0048/198807), Ozaukee County, Wisconsin*. She described the methods used in the field as well as each burial casket and grave furniture in detail. An osteological analysis was also conducted by Meer. She completed an inventory of the remains and identified each individual's sex, age, ethnic affiliation, pathologies, traumas, and stature. Using information on coffin construction, Meer estimated that the Stolz Cemetery was in use between 1830 and 1880. Strontium isotope analysis was conducted on Stolz Cemetery burials 1 and 4 in 1998 by R. Alexander Bentley and Dr. James Burton in conjunction with the Altenburg strontium isotope analysis (Cotter 2004). The analysis concluded that both individuals were born locally and lived locally during the last ten years of their lives (Cotter 2004).

In 2008, the skeletal remains from both cemeteries were transferred to the University of Wisconsin - Milwaukee (UWM) for final disposition. The remains were accessioned, stabilized, and conserved by UWM students Emily Laak, David Stock, and the author under the direction of the Dr. Robert Jeske, Project Director, and Alexis M. Jordan, Project Supervisor. Throughout this process, several professional papers, posters, and publications have been completed on the subject of the project, *Analysis of Immigrant EuroAmerican Cemeteries: Age, Sex, and Health in 19th-early 20th Century Southeastern Wisconsin*, including this thesis.

Emily Laak and David Stock, undergraduate students who assisted in this project, presented the poster *Secondary Analysis of Skeletal Remains from Altenburg Cemetery* at the 2012 University of Wisconsin (UW) System Symposium for Undergraduate Research at UW-Parkside. This poster highlighted the process of stabilizing the collection including the methods of conservation and inventory practices implemented for this project. Also in 2012, Stock presented the paper *Tertiary Analysis of Skeletal Remains from the Altenburg Cemetery* at the National Conference on Undergraduate Research at Weber State University. This paper expanded upon and provided further details on the topics of conservation and inventory of the cemetery remains.

All students who assisted in this project (Bluma, Jordan, Laak, and Stock) presented the poster *A Twice Forgotten Cemetery: A New Analysis of the Human Remains from the Altenburg Cemetery* at the 2012 Midwest Archaeological conference in East Lansing, Michigan. This poster introduced the preliminary assessment of the pathology and trauma witnessed in the Altenburg Cemetery skeletal collection. Also at this conference, Jordan presented *A Discussion of the Altenburg Lutheran Church Society Cemetery in Relation to Other Southeastern Wisconsin German Cemeterie*s (co-authored by Bluma). This paper confirmed the inhabitants of the Altenburg Cemetery were likely German Lutheran immigrants and their descendants. It also offered a preliminary examination of the number and locations of immigrant cemeteries in Southeastern Wisconsin.

In 2013, Bluma, Jordan, Laak and Stock presented on the pathology and trauma observed in the Altenburg Cemetery. This poster added the assessment of pathology and trauma in the German Evangelical Lutheran Cemetery skeletal collection resulting in the

comparative analysis *Fractured Pasts and Brittle Bones: Another Look at Two Mid-nineteenth Century German Cemeteries of Southeastern Wisconsin* at the Society for American Archaeology annual meeting in Honolulu, Hawaii. Also at this conference, Bluma presented *An In-depth Comparison of Immigrant Life Expectancies from German Lutheran Cemeteries in Southeastern Wisconsin* (co-authored by Jordan). This paper was a preliminary demographic study of life expectancies within and between immigrant populations in Southeastern Wisconsin.

Bluma also presented a paper with an expanded demographic study, *A Closer Look at Immigrant Life Expectancies from German Cemeteries in Southeastern Wisconsin*, at the 2015 Society for American Archaeology annual meeting in San Francisco, California. The results of this presentation are expanded upon in this thesis.

To further understand the lives of the German Lutheran immigrant population in Mequon, Wisconsin, including those interred in the Altenburg and Stolz cemeteries, the following questions will be explored:

1. Where did the early German immigrants settle and place their burials in Mequon, Wisconsin?
2. What types of cemeteries are common among German immigrants?
3. What were the life expectancies of the German immigrants from 1780 to 1910?
4. What were the biological characteristics of the inhabitants of the Altenburg and Stolz cemeteries?

By characterizing German Lutheran immigrant settlement and mortuary practices in Mequon, Wisconsin, it is possible to incorporate the Altenburg and Stolz cemeteries into this larger framework.

Chapter II. Theoretical Perspective

The study of death and burial in archaeology has been addressed by many anthropologists, each of whom has provided a stepping stone of knowledge for researchers to follow. The theoretical framework explored for this paper builds on the work of Malinowski (1948), Evans-Pritchard (1948), Radcliffe-Brown (1964), Ucko (1969), Binford (1970), Saxe (1971), Tainter (1975), Randsborg (1980), Goldstein (1981), Chapman (1981), Carr (1995), Parker-Pearson (2000), and Mytum (2004). The topics of identity at death, funerary ritual, disposal of the dead, and placement of the dead are visited in this section.

During the first half of the twentieth century, anthropologists often used functionalist explanations of human behavior and societies. Functionalism established the superiority of the social whole over the individual parts (Parker-Pearson 2000). Funeral ritual, according to the functionalist view, supported social bonds among mourners and strengthened political authority when death produced strong emotion such as fear or fascination (Malinowski 1948; Evans-Pritchard 1948; Radcliffe-Brown 1964).

Following functionalist anthropology, processual archaeology (or new archaeology) developed, with its law-like theories of human social dynamics, including mortuary behavior (Parker-Pearson 2000). Archaeologists began analyzing ethnographic studies to explore cross-cultural similarities and generalizations (Parker-Pearson 2000).

A correlation between the number of people with relationships to a deceased individual and the social rank of the deceased was evaluated in Lewis Binford's study of forty ethnographically documented societies published in 1971. According to Binford, the deceased's funerary ritual should have a direct relationship to their social rank. The ritual

should vary between the types of social groups studied. The more complex the society, he concluded, the more complex the funeral ritual.

Around this same time, Arthur Saxe's 1970 dissertation described eight hypotheses on the social dimensions of mortuary practices. Hypothesis number four, notably associated with Binford's studies, stated that the greater an individual's social rank, the more their most significant identities are represented at death, at the expense of their lesser identities. Hypothesis number seven also correlates with Binford's studies, suggesting that there is less funerary variation in simpler societies. Also of note, Saxe's hypothesis number eight suggests that formal disposal areas for the exclusive use of burying the dead are maintained by corporate groups with the intent of legitimizing their rights over resources through descent of their ancestors.

In 1981, Lynne Goldstein established further support for Saxe's hypothesis number eight. After reviewing thirty ethnographic studies of mortuary ritual, Goldstein confirmed that the maintenance of a formal, permanent disposal area of the dead may have been a means for a corporate group to legitimize its rights for scarce resources. Robert Chapman added to Saxe and Godstein's concepts by assessing Neolithic burials in western Europe. In 1981, Chapman's evaluation supported the notion that during periods of inequity between societies and critical resources interment in cemeteries or monuments emerged. A change in social order was witnessed by the construction of formal disposal areas, used to establish a claim to the land and resources through the presence of their ancestors, according to Chapman.

Peter Ucko introduced the notion that the belief in an afterlife cannot be assumed based on the presence of funerary ritual. In this 1969 ethnographic based study, he also

established the fact that a change in ritual does not necessarily correlate with a change in beliefs. There is no predictable direct relationship between the quantity of grave goods and the deceased's social status, according to Ucko. He suggests the grave goods are a product of social or ritual practices.

In 1975, Joseph Tainter introduced the idea of energy expenditure in funerary practices. He found that there was greater expenditure of energy on mortuary rites for those with greater social rank than on those with lesser social rank. In 90 percent of his study of 103 societies, he found that social rank correlated with energy expenditure in mortuary practices. In 5 percent of his study, he found that social rank was visible through grave goods. This supports Ucko's claim that there is not always a direct relationship between social rank and grave goods. In 1980, Klavs Randsborg concluded that the communication of social status or succession could not be derived from a simple archaeological formula. Randsborg also advised to enter the study of social dimensions and treatment of the dead knowing the local tradition. Christopher Carr's 1995 study of 31 societies revealed that in 42 percent of cases grave goods were associated with vertical social position, i.e. social system hierarchy. He also found that it may not be the quantity of grave goods which correlated with social position, but the quality.

Post-processual archaeology reflects the most recent school of thought (Parker-Pearson 2000). The New Archaeology often saw rank and status in funerary practices, whereas post-processual archaeologists are more likely to see social roles being manipulated or denied at funerals (Parker-Pearson 2000). In 2000, Michael Parker-Pearson argued that the deceased may be misrepresented in death by the living. He describes material culture retrieved by archaeologists as the active manipulation of

people's allegiances, beliefs, and perceptions in funeral rites, not as the results of behavioral dynamics. Because the dead do not bury themselves, the material culture reveals more about the living than the deceased, according to Parker-Pearson (2000). Material culture is added to the burial by the living, but has a chance of aiding in the identity of the deceased. As the skeletal remains of an individual are less likely to be altered by the living, the remains reveal pathologies and trauma to further identify aspects of the deceased's life.

Every society encounters death and each responds in a different manner. In most instances, death is followed by funerary rites and disposal of the body. The body is separated from society. This paper evaluates cemeteries in southeastern Wisconsin during the historic period of 1780 to 1910. As described by Harold Mytum in 2004, rural farmstead burials were common in the United States during the historic period between the eighteenth and twentieth centuries. He also explains that during this time period, burial locations began expanding from the farmstead to include rural cemeteries; some associated with churches or whole communities. Rural burial grounds were generally small, but had land on which to expand (Mytum 2004).

As evidence of burials does not always survive on the landscape, and burials are abundant spatially and temporally, human burials are one of the most common cultural features observed by archaeologists (Binford 1971). Unmarked cemeteries are regularly encountered during construction projects. Dating excavated remains from unmarked cemeteries of the historic period can be challenging, for the majority of burials do not include items that can provide a close date (Mytum 2004). Evaluating coffin nail types can be valuable for dating the cemetery as a whole, but specific burials within the

cemetery are generally not able to be dated individually using nails alone (Mytum 2004). In some cases, identification of the individual and date is painted directly on the coffin or provided on a metal plate, but this type of identification does not usually survive to the time of excavation. Though many cemeteries eventually become unmarked, in some cases, deliberate planting of trees or other vegetation can still be witnessed today that may help to support a cemetery's presence.

Death does not always result in the burial of a corpse. The practice of cremation is carried out to reduce the human body to ash, completely destroying the bones. The remains from cremation may be buried or scattered upon the landscape. Cremation is an example of cultural taphonomy. Taphonomy, the physical and chemical process that modifies an organism after its death, literally means "study of burial processes" in Greek (Nawrocki 1995). Different forms of taphonomy are characterized by environmental, individual, and cultural factors. Environmental factors associated with taphonomy include carnivores, fungi, bacteria, insects, plants, soil pH, and water among others (Nawrocki 1995). Individual factors involve the human remains themselves; these include body size, body fats, and disease (Nawrocki 1995). Finally, cultural factors associated with taphonomy include cremation, burial, vaults, and coffins (Nawrocki 1995).

Whether containing cremated or inhumed remains, marked cemeteries are repositories of demographic data. Grave marker and burial records can be analyzed to determine the life expectancy for various birth years. In their seminal study of gravestones in Massachusetts, entitled *Death's Heads, Cherubs, and Willow Trees: Experimenetal Archaeology in Colonial Cemeteries,* Edwin Dethlefsen and James Deetz

present the range of analyses possible using grave markers, including a demographic study (1966).

Demographic data for a large date range can be translated into the life expectancy of a series of decades to make trends more clear. In addition to providing sex, ethnicity (based on surname), and mortality patterns, the 19th century Wisconsin grave markers may also yield information regarding marital status or other familial relationships (Foster 2003). Not all deaths resulted in burials and not all burials included a grave marker. Because of this, demographic analyses should be carried out in multiple contexts to reveal more accurate patterns (Mytum 2004). If available, burial registry data should be considered because the marked grave sample may not reflect the entire population (Mytum 2004).

Highland Park Skeletal and Demographic Study

Rosanna Higgins and Joyce Sirianni completed *An Assessment of Health and Mortality of Nineteenth Century Rochester, New York Using Historic Records and the Highland Park Skeletal Collection* in 1995. In 1984, skeletal remains were found during a Monroe County Parks Department project at Highland Park in New York State. As a result, the Rochester Museum and Science Center excavated 300 skeletons at the site. The cemetery was likely associated with a nearby facility which was originally an almshouse that operated from 1826 to 1865. After the almshouse closed, the poor were buried in the pauper section of the Mount Hope Cemetery. Higgins and Sirianni analyzed the remains of 65 subadults and 77 adult female skeletons from the Highland Park burials before comparing them to the demographic profile of the area using death records, including the Mount Hope Cemetery records.

Higgins and Siranni found in both the skeletal and death records that the largest amount of deaths in the subadult population were in the neonate and infant group. When examining the results of the analysis of the adult female sample, they found the highest death rate among the Highland Park skeletal collection was between 30-39 years and 60-69 years, while the area death records show the highest percentage of death occurring between 20 and 49 years. In addition, they evaluated the dental health of the skeletal population and cause of death as reflected in the death records.

The study concluded that subadult mortality was similar between the skeletal sample and the area death records with death declining after the first year of life in both groups. The adult female mortality rate was also similar in the skeletal sample and as reflected in the area death records. The skeletal analysis of the Highland Park individuals and comparison with area death records provides insight into the nineteenth century historic period of Rochester, New York with special consideration to those individuals often times overlooked in history, the poor.

The concept of analyzing skeletal remains and incorporating them into the greater population as exhibited in the work of Higgins and Siranni will be adopted by the author in the Altenburg and Stolz Cemeteries presented here, incorporating them into the greater population using cemetery data.

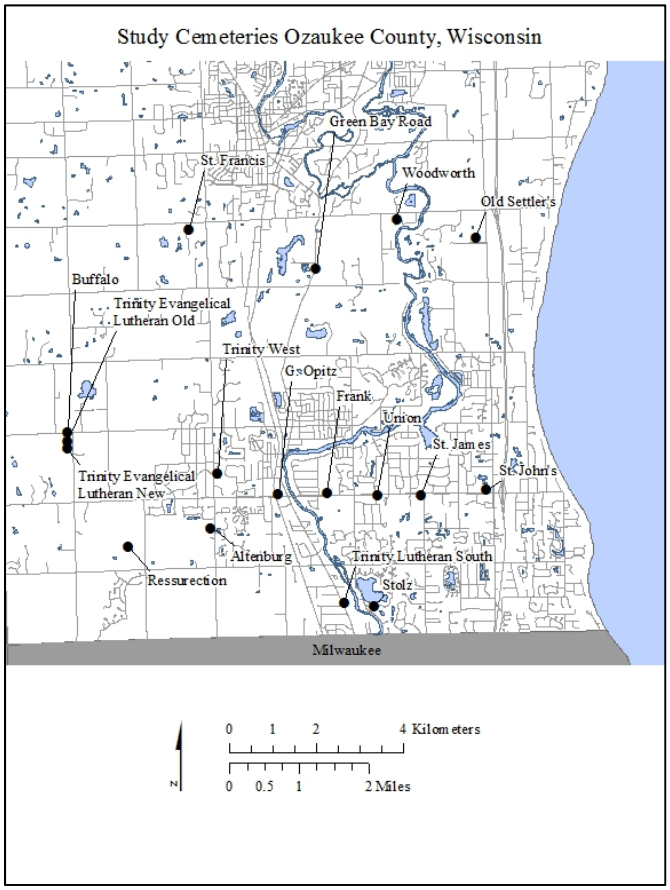
Chapter III. Methods

Demography

To understand how the inhabitants of the Altenburg and Stolz cemeteries compare to the mortality trends of early immigrant populations in the Mequon area, all available grave marker inscriptions were obtained from 17 area cemeteries using available Mequon-Thiensville Historical Society and the Ozaukee County Historical Society records. Working closely with the archivist of the Mequon-Thiensville Historical Society has allowed for the conclusion that the 17 cemeteries include all known cemeteries in Mequon and Thiensville. This demographic study is a snapshot in time and does not reflect a living population. The study cemeteries can be viewed in Figure 1.

Each cemetery was visited by the author, save one, and a small sample of grave markers was verified against the documents from the Historical Society. Not included on the map below are two cemeteries, St. Cecelia's and St. Peter's cemeteries. The reasons for this will be addressed in the GIS analysis section. Of the 17 cemeteries, 10 were determined to contain the remains of persons of general non-specified European ancestry, while the remaining seven were determined to contain the remains of individuals with only German ancestry. The grave marker data were recorded by separating the information into groups based on age, sex, and location.

Figure 1: Study Cemeteries Ozaukee County, Wisconsin



Following Russell Barber's exercises on cemetery demography, age at death in the grave marker sample was calculated by subtracting the birth year from the death year and the sex of the individual was determined by first name gender designations consistent with this time period (Barber 1994). The birth months were not taken into account, as many grave markers did not record the month of death. An example can be viewed in Figure 2, below. When the grave marker data were combined, the life expectancy of a group was calculated by finding the average of the age at death for all persons born in the same year. The date ranges were set using the birth years of the cemetery inhabitants making the range of this study 1780 to 1910. The life expectancies of each birth decade were then compared to the life expectancies of the inhabitants, of the Altenburg and Stolz

cemeteries. As no gravestones were recovered at the Altenburg or Stolz cemeteries, the age and sex of these individuals were determined osteologically. This has implications for the comparability of these two data sets, which consist of actual calendar dates on the one hand and occasionally large age estimate ranges on the other. It is one of the reasons a statistical comparison was not carried out.

Figure 2: Opitz Cemetery, Grave Marker Sample - photo by author

Geographic Information Systems

Geographic information systems (GIS) refer to computer software packages geared toward the analysis and presentation of spatial and aspatial data (Price 2012). Using a map database obtained from the Ozaukee County Land Information Office, combined with the GIS mapping program ArcGIS, and the geographic locations of cemeteries included in the demography study, it was possible to conduct spatial analyses to determine the relationship between Mequon area cemeteries and settlements.

The geographic locations of the Altenburg and Stolz cemeteries were recorded in the manuscripts obtained from the Wisconsin Historical Society. In addition, the Wisconsin Historical Society and Mequon Historical Society provided geographic

information for 15 other cemeteries in Mequon and the surrounding area that corresponded with the date range of the Altenburg and Stolz cemeteries of 1839 to 1910. Two cemeteries could not be located geographically due to lack of sufficient information. Each cemetery and settlement was manually located in the Ozaukee County map database. The author physically visited all cemeteries included in the study to ensure the accuracy of the map database.

Osteology

In 2008, the skeletal and material remains recovered from the Altenburg and Stolz cemeteries were transferred from the Wisconsin Historical Society to the University of Wisconsin - Milwaukee. An updated analysis and re-housing was completed by the author between 2011 and 2014. The remains and grave goods arrived in paper or plastic bags inside cardboard boxes. To slow deterioration, all remains and grave goods were placed in acid-free bags within acid-free boxes. The bags and boxes were labeled according to the University of Wisconsin - Milwaukee Archaeology Lab's procedures. The labeling included the Wisconsin Historical Society's catalogue number, followed by the Archaeology Lab's catalogue number, as well as the name of the cemetery. In addition, the specific contents were listed along with an element and fragment count. The grave goods consisted of material culture such as clothing fasteners and jewelry, in addition to casket materials including casket hardware. Assessment of the grave goods is forthcoming in the Altenburg and Stolz Cemetery Project report and is not included in this thesis.

Methods of accurately determining the age and sex of human remains are constantly evolving. Because of this, the author analyzed the age and sex of each

individual in accordance with the most current procedures outlined for the UW-Milwaukee Archaeology Lab in the Osteological Analysis Manual.

The Osteological Analysis Manual synthesizes the methods of several osteologists. Sex estimation was completed both osteometrically and non-metrically. For osteometric estimation, the following measurements were recorded: the maximum length of the talus (Steele 1976), the vertical diameter of the humeral head (Stewart 1979), and the maximum diameter of the femoral head (Stewart 1979). Non-metric sex estimation was completed by calculating scores assigned to the pelvis and cranium. Scoring the pelvis included the ventral arc, subpubic concavity, ischiopubic ramus ridge (Phenice 1969), greater sciatic notch (Walker 2005), and preauricular sulcus (Buikstra and Ubelaker 1994). Scoring the non-metric traits of the skull included the nuchal crest, mastoid process, supraorbital margin, glabella, and mental eminence (Acsadi and Nemeskeri 1970). After completing the sex estimation, the age of the individual was evaluated non-metrically. The following were scored for age estimation: pubic symphysis (Suchey-Brooks in Brooks 1990 and Todd 1921), auricular surface (Osborne 2004), and cranial suture closure (Meindl and Lovejoy 1985). In both age and sex evaluations, if an element consisted of a left and right side, the left side's measurement or score was recorded.

The Osteological Analysis Manual also outlines the procedure for determining any pathologies and trauma that may be present. A complete inspection of the remains was completed by the author. Upon examination, pathologies and trauma were divided into the following categories: unidentified lesions, non-specific infection, neoplastic conditions, growth and developmental stress, joint pathology, and trauma. The author's

analysis of each individual's age, sex, pathology, and trauma was confirmed by Carrie Jones and Alexis Jordan, Certified Skeletal Analysts for the State of Wisconsin.

Chapter IV. Historical Context

Prior to 1838, the land that would become Mequon was inhabited by the Sauk, Meskawaki (Fox), Potawatomi, and Memomonee Native American tribes. It was covered with forests of oak, maple, beech, and ash trees. There was a swampy area associated with the Memonomee River (now the Milwaukee River) which was home to tamarack and cedar trees. Trails created by the Native Americans were used by settlers to travel, as there were no wagon roads. Upon the settlers' arrival, land was only available for purchase on the east side of the river. The west side of the river was not open for land purchase until 1846 (Thurk 1990).

Between 1820 and 1910, about 5.5 million Germans immigrated to the United States from a wide variety of nations and provinces (Wyatt 1986). Many early German immigrants were adventurers (Kuyper 1980). From 1839 to 1846 primary reasons for immigration included agricultural reforms, expanding population, crop failures, and industrialization (Wyatt 1986). Around the same time, German Lutherans began their immigration in search of religious freedom.

King Frederick William III of Prussia announced the union of the Prussian Reformed Church and the Lutheran Church in 1817, upsetting many who belonged to the Lutheran Church (Kuyper 1980). After resisting the union for over 20 years, the Lutherans were granted permission to leave Prussia (Kuyper, 1980). Seeking religious freedom, Prussian Lutherans from four different German provinces, Pomerania, Brandenburg, Saxony, and Silesia, began emigrating to Australia in 1838 and America in 1839 (Boehlke 1989). By 1847, the German Lutherans who came to North America settled in Canada, New York, and Wisconsin (Boehlke 1989). Most who settled in

Wisconsin had an initial stop in New York (Boehlke 1989). After travelling to Wisconsin, some settled in Milwaukee, but most of that land was already purchased. Many travelled on to Mequon, 15 miles northwest of Milwaukee, where land was still available for $1.25 an acre (Boehlke 1989). The Green Bay trail, a Native American trail, was the main route from Milwaukee to Mequon. It is thought that today's Green Bay Road follows nearly the same route as the trail (Corrigan 1950).

The first German Lutherans arrived in Mequon in 1839 (Corrigan 1950). They had little to no money and most were trained as craftsmen, tradesmen, or rural laborers before arriving in America (Conzen 1972). From 1839 to 1846, over three thousand Lutherans travelled to Wisconsin (Kuyper 1980). The majority of this number settled in Ozaukee, Washington, Dodge, and Milwaukee counties (Kuyper, 1980).

Immigrant stories of religious freedom and economic success made their way from Wisconsin back to the Old Country and when economic distress and political unrest took hold in Germanic Prussia, a second wave of Lutheran immigrants reached Wisconsin between 1854 and 1860 (Gurda 1999; Kuyper 1980). Many Germans in the second wave were political refugees, as a result of the 1848 revolution in Europe (Conzen 1972). They were trained similarly to the first wave, as craftsmen, tradesmen, or rural laborers, but there was also an increase of professionals and students (Conzen 1972) and the Forty-Eighters, as they were known, brought their progressive social politics with them. Many of these immigrants found jobs and homes in urban areas where they would have sought out like-minded earlier migrants. Milwaukee, for example, became known as the "German Athens" because of its numerous German language periodicals and institutions like the Engelmann School, Milwaukee Turners and the Milwaukee Public

Museum, all of which were founded by post-1848 German immigrants (Gurda 1999). Low land costs, general economic opportunities, a State Commission of Emigration, and the Wisconsin Central Railroad helped draw the immigrants to the Wisconsin region (Bungert 2006; Kuyper 1980). Germans were not the only immigrants attracted to the Mequon area, however; there were also English and Irish settlers among the earliest immigrants (Corrigan 1950).

In 1839, Andreas Geidel, a German Lutheran immigrant from Saxony, purchased 320 acres of land in present day Mequon. He arrived with Ed Jalpen, H. Haypen, John Thomson, Michael Mueller, Andrew Lanzendorf, W. Schumann, and Gottfried Baer all of whom settled in the community known as the Saxe-Altenburg settlement (Corrigan 1950). Geidel sold part of his land to the Altenburg Lutheran Church Society in 1852 (Rusch 1989). It is unclear which families used the Altenburg Cemetery originally, but a local source suggests that Geidel family members were buried there. In 1853, the Mequon Free Lutheran Congregation was incorporated and the Altenburg Lutheran Church Society was disbanded or subsumed (Wendt 1983 in Rusch 1989). Geidel's ownership of the land and the religious makeup of the regional population strongly suggest that the individuals interred at the Altenburg Cemetery were German Lutheran immigrants and their descendants. The estimated period of use for the Altenburg Cemetery is between 1839, when Geidel purchased the land, and 1910, based on a lack of material evidence that can be dated beyond this point and some physical circumstantial evidence related to casket construction (Rusch 1989).

Also in 1839, Joachim Dumstrey arrived in the United States, at the age of 47, from Pomerania (Boehlke 1989). Dumstrey and his family were early members of the

German Lutheran Freistadt settlement until he purchased property on the Milwaukee River in 1841 that would eventually become the Stolz Cemetery (Boehlke 1989; Meer 1990). Dumstrey then sold the land to Johann Schauss in 1859 (Meer 1990). An 1867 map shows The Evangelical Lutheran Church of the Town of Mequon located on the Schauss property. However, this church and cemetery were not included on later maps of the area (Meer 1990). It remains unclear how Schauss and the church are connected, as physical evidence of the church building has yet to be identified. The estimated period of use for the Stolz Cemetery was from 1841, when Joachim Dumstrey purchased the land, to 1895, based on a lack of material evidence from the cemetery that can be dated beyond this point and the lack of cartographic references after 1867 (Meer 1990).

Chapter V. Analysis

Demography

All available grave marker inscriptions from 17 area cemeteries were obtained using available Mequon-Thiensville and Ozaukee County Historical Society records. The Mequon-Thiensville Historical Society retains paper copies of the grave marker inscriptions. These are handwritten documents compiled by Wisconsin State Old Cemetery Society members. The Ozaukee County Historical Society provided paper copies of early maps to assist in the location of the cemeteries.

Of the 17 cemeteries included in the study, 10 cemeteries were determined to contain the remains of individuals of general European ancestry while the remaining 7 specifically contained the remains of individuals of German ancestry. As the information yielded by this demographic analysis was intended as a baseline for comparison, the Altenburg and Stolz cemeteries were not included in the analysis. Further, having the population data of all 17 cemeteries as well as the clearly-defined subset of 7 specifically German cemeteries allows for a comparison of the Altenburg and Stolz cemeteries against trends in both the overall population and in the German community. The following summary describes the life expectancy findings resulting from the analysis.

The Mequon area cemeteries study provided cemetery data for 3,652 individuals. For the full population, adults and subadults, 1780 was the decade with the highest average life expectancy at 86.23 years (n=13), while 1870 was the decade with the lowest average life expectancy at 52.62 years (n=357) (Table 1). The subset of German cemeteries included 1334 individuals. Similar to the total population data, the decade with the highest average life expectancy within the German cemeteries was 1780 at 90.38 years (n=8) and the decade with the lowest average life expectancy was 1870 at 47.90

years (n=159) (Table 2). These figures indicate that persons from the German cemeteries had a lower life expectancy than the overall population in the 1870s. The figures also appear to indicate that persons buried in the German cemeteries had a greater life expectancy than the overall population in the 1780s; however, due to the small sample sizes for that decade, that cannot be conclusively determined. These data also suggests that the German population had a lower life expectancy overall than the population as a whole. Tables 1 and 2 below show the decades with the greatest average life expectancy highlighted green. Decades with the lowest life expectancy are highlighted orange.

Table 1: Life Expectancies of All Individuals by Decade

Table 2: Life Expectancies of Germans by Decade

Life Expectancies of All Individuals by Decade		
Decade	**Life Expectancy**	**Persons**
1900	67.53	677
1890	63.81	533
1880	59.22	460
1870	52.62	357
1860	56.39	330
1850	58.82	309
1840	62.79	258
1830	67.63	193
1820	70.92	184
1810	71.93	179
1800	73.89	112
1790	76.15	47
1780	86.23	13
Grand Total	**63.17**	**3652**

Life Expectancies of Germans by Decade		
Decade	**Life Expectancy**	**Persons**
1900	63.85	178
1890	60.85	185
1880	56.65	211
1870	47.90	159
1860	57.11	122
1850	57.53	118
1840	59.78	97
1830	67.51	67
1820	72.14	74
1810	76.65	57
1800	73.42	31
1790	75.59	27
1780	90.38	8
Grand Total	**60.73**	**1334**

The 284 subadults in this study were aged 10 years and younger. For the total subadult population, 1840 was the decade with the highest average life expectancy at 4.13 years (n=8), while 1900 was the decade with the lowest average life expectancy at 1.38 years (n=45) (Table 3). The decade with the highest average life expectancy for the subset of German subadult was 1840 at 3.5 years (n=4), whereas 1890 was the decade

with the lowest average life expectancy for the German subadults at 0.80 years (n=20) (Table 4). This data suggests that subadults from the German cemeteries had a lower life expectancy than the overall population in the 1890s and the decade with the highest life expectancy, 1840, was the same as the overall population. It also suggests that the German subadults had a lower life expectancy than the overall population throughout the duration of the study.

Table 3: Life Expectancies of All Subadults by Decade

Table 4: Life Expectancies of German Subadults by Decade

Life Expectancies of All Subadults by Decade		
Decade	**Life Expectancy**	**Persons**
1900	1.38	45
1890	1.66	50
1880	1.90	69
1870	3.20	60
1860	3.56	34
1850	2.44	18
1840	4.13	8
Grand Total	**2.35**	**284**

Life Expectancies of German Subadults by Decade		
Decade	**Life Expectancy**	**Persons**
1900	1.59	22
1890	0.80	20
1880	1.17	41
1870	2.91	35
1860	3.00	14
1850	1.83	12
1840	3.50	4
Grand Total	**1.89**	**148**

A total of 3,368 adults were included in this study: 1,531 females, 1,794 males, and 43 adults of undetermined sex. An undetermined adult has age data present but the gender (sex) designation was ambiguous. This lack of information results from broken grave markers, only a first initial present, or other issues.

For the entire population of adults, 1780 was the decade with the highest average life expectancy at 86.23 years (n=13), while 1850 was the decade with the lowest average life expectancy for adults at 62.31 years (n=291) (Table 5). When divided into the subsection of German adults, 1780 is the decade with the highest average life expectancy at 90.38 years (n=8), while 1870 is the decade with the lowest average life expectancy for German adults at 60.60 years (n=124) (Table 6). These figures suggest that German

adults had a slightly lower life expectancy that the overall population in the 1870s, as suggested when looking at the total population including the subadults. The figures also continue to suggest that the German adults had a higher life expectancy than the overall population in the 1780s. In addition, the life expectancy of the German adult population very closely matched that of the total adult population in this study.

Table 5: Life Expectancies of All Adults by Decade

Table 6: Life Expectancies of German Adults by Decade

Life Expectancies of All Adults by Decade		
Decade	**Life Expectancy**	**Persons**
1900	72.24	632
1890	70.25	483
1880	69.34	391
1870	62.60	297
1860	62.46	296
1850	62.31	291
1840	64.67	250
1830	67.63	193
1820	70.92	184
1810	71.93	179
1800	73.89	112
1790	76.15	47
1780	86.23	13
Grand Total	**68.30**	**3368**

Life Expectancies of German Adults by Decade		
Decade	**Life Expectancy**	**Persons**
1900	72.63	156
1890	68.13	165
1880	70.03	170
1870	60.60	124
1860	64.13	108
1850	63.83	106
1840	62.20	93
1830	67.51	67
1820	72.14	74
1810	76.65	57
1800	73.42	31
1790	75.59	27
1780	90.38	8
Grand Total	**68.08**	**1186**

For the entire population of adult females, the decade with the highest average life expectancy was 1780 at 86 years (n=4). The decade with the lowest average life expectancy for all adult females was 1850 at 62.34 years (n=134) (Table 7). For the subset of German adult females, the decade with the highest average life expectancy was 1780 at 82 years (n=2); the same as the overall population of adult females. The decade with the lowest average life expectancy for German adult females was 1840 at 62.40 (n=48) (Table 8). These data indicates that German adult females had a lower life expectancy than the overall population in the 1840s and they had their highest life

expectancy for the duration of this study in the decade of 1780, which is the same as the total population. It also reinforces the idea that the life expectancy of the entire adult female population closely matches that of the German adult female population.

Table 7: Life Expectancies of All Females by Decade

Table 8: Life Expectancies of German Females by Decade

Life Expectancies of Adult Females by Decade		
Decade	**Life Expectancy**	**Persons**
1900	73.92	259
1890	71.38	202
1880	70.80	208
1870	63.06	147
1860	63.56	140
1850	62.34	134
1840	65.02	120
1830	65.28	83
1820	69.06	88
1810	71.85	79
1800	74.25	51
1790	76.50	16
1780	86.00	4
Grand Total	**68.67**	**1531**

Life Expectancies of German Adult Females by Decade		
Decade	**Life Expectancy**	**Persons**
1900	75.72	68
1890	70.19	72
1880	71.39	90
1870	62.55	56
1860	63.55	56
1850	64.81	43
1840	62.40	48
1830	63.96	28
1820	70.91	32
1810	76.77	22
1800	73.81	16
1790	76.50	10
1780	82.00	2
Grand Total	**68.75**	**543**

When analyzing the 1,794 adult males, 1780 was the decade with the highest average life expectancy for all adult males at 88.86 years (n=7). The decade with the lowest average life expectancy for all adult males was 1860 at 61.94 years (n=154) (Table 9). For the German adult male subset, the decade with the highest average life expectancy was the same as the overall population, 1780 at 94.20 years (n=5), while the decade the lowest average life expectancy for adult males was 1870 at 58.99 (n=68) (Table 10). These figures suggest that German adult males had a lower life expectancy than the overall population in the decade of 1870. The decade with the highest life expectancy was 1780 for the German population as well as the population overall. Again,

this data continues to suggest that the life expectancy of the overall adult male population closely matches that of the German adult male population.

Table 9: Life Expectancies of All Males by Decade

Table 10: Life Expectancies of German Males by Decade

Life Expectancies of Adult Males by Decade		
Decade	**Life Expectancy**	**Persons**
1900	71.00	368
1890	69.43	281
1880	67.79	181
1870	62.09	148
1860	61.94	154
1850	62.96	149
1840	64.58	128
1830	69.11	105
1820	72.61	90
1810	72.13	95
1800	73.83	58
1790	76.10	30
1780	88.86	7
Grand Total	**68.07**	**1794**

Life Expectancies of German Adult Males by Decade		
Decade	**Life Expectancy**	**Persons**
1900	70.25	88
1890	66.53	93
1880	68.77	78
1870	58.99	68
1860	65.53	51
1850	63.69	62
1840	61.82	44
1830	70.05	39
1820	73.07	42
1810	76.74	34
1800	73.00	15
1790	75.06	17
1780	94.20	5
Grand Total	**67.62**	**636**

In brief, when examining the data as a whole for the overall population, the German population has a lower average life expectancy than the total population. The population trend of a higher average life expectancy in 1780, then decreasing from 1790 to 1870, before beginning to rise again applies to the overall population and the sub-set of Germans. Also, throughout the entire study, females have a slightly higher life expectancy than males.

To explore the disparities of life expectancies between cemeteries, the data was broken down into average life expectancies by cemetery for a given decade. The decade with the lowest life expectancy was 1870, for the overall study. There are 13 cemeteries containing 297 adult individuals for this decade. Of these, five have been identified as solely German cemeteries. When looking at the cemeteries, excluding the German subset,

those buried in St. Peter's Cemetery have the lowest adult life expectancy at 40.60 years (n=10) (Table 11). The cemetery with the lowest adult life expectancy for the German subset is Trinity Old at 21.08 (n=12) (Table 12).

Table 11: 1870 Life Expectancies of Adults by Cemetery

1870 Life Expectancies of Adults by Cemetery		
Cemetery	**Life Expectancy**	**Persons**
Old Settler's	75.12	17
Opitz	65.67	52
Rintelmann's	44.38	8
St. Francis	71.28	36
St. James	52.45	22
St. John's	65.79	24
St. Peter's	40.60	10
TrNew	67.70	54
TrOld	21.08	12
TrSouth	61.50	4
TrWest	62.45	53
Union	81.50	4
Woodworth	49.00	1
Grand Total	**62.60**	**297**

Table 12: 1870 Life Expectancies of German Adults by Cemetery

1870 Life Expectancies of German Adults by Cemetery		
Cemetery	**Life Expectancy**	**Persons**
TrNew	67.70	54
TrOld	21.08	12
TrSouth	61.50	4
TrWest	62.45	53
Woodworth	49.00	1
Grand Total	**60.60**	**124**

The disparities of life expectancies between cemeteries were also considered for the subadult population. The decade with the lowest average life expectancy for subadults was 1900, for the overall study. There are 11 cemeteries containing 45 subadult individuals for this decade. Of these, four have been identified as solely German cemeteries. When looking at the cemeteries as a whole, those buried in St. John's

Cemetery have the lowest subadult life expectancy at 0.17 years (n=6) (Table 13). The cemetery with the lowest subadult life expectancy for the German subset is Trinity West Cemetery at 0.67 (n=3) (Table 14).

Table 13: 1900 Life Expectancies of Subadults by Cemetery

1900 Life Expectancies of Subadults by Cemetery		
Cemetery	**Life Expectancy**	**Persons**
Opitz	0.50	4
Rintelmann's	2.50	2
St. Francis	1.33	3
St. James	1.00	2
St. John's	0.17	6
St. Peter's	1.40	5
TrNew	2.43	7
TrOld	0.73	11
TrSouth	8.00	1
TrWest	0.67	3
Union	6.00	1
Grand Total	**1.38**	**45**

Table 14: 1900 Life Expectancies of German Subadults by Cemetery

1900 Life Expectancies of German Subadults by Cemetery		
Cemetery	**Life Expectancy**	**Persons**
TrNew	2.43	7
TrOld	0.73	11
TrSouth	8.00	1
TrWest	0.67	3
Grand Total	**1.59**	**22**

The Altenburg and Stolz cemeteries can be incorporated into the larger discussion of life expectancies in the Mequon area by looking at the age at death of both adult and subadult inhabitants. Further detail into the osteological assessments of these cemeteries can be found in the *Osteology* section of this paper. Because a range is often noted when determining an age at death, the median age was used for this analysis. Similarly, if less-than-or-equal-to (≤) appeared in the calculation of age, the base age was used. The overall average life expectancy for the Stolz Cemetery was 23.15 years (n=10) (Table

15). In regards to the Altenburg cemetery, the overall average life expectancy was 25.04 years (n=13) (Table 16).

Table 15: Stolz Cemetery Age at Death by Age Category and Sex

Stolz Cemetery Age at Death by Age Category and Sex		
Adult Female	**Age at Death**	**Median (years)**
Stolz Burial 1	> 20 Years	20
Stolz Burial 8	35-50 Years	42.5
Adult Male	**Age at Death**	**Median (years)**
Stolz Burial 2	24-82 Years	53
Stolz Burial 6	23-69 Years	46
Stolz Burial 7	25-83 Years	54
Subadult	**Age at Death**	**Median (years)**
Stolz Burial 3	1 Year	1
Stolz Burial 4	1-6 Years	3.5
Stolz Burial 5	6-13 Years	9.5
Stolz Burial 9	9 Fetal month - 2 Years	1
Stolz Burial 10	9 Fetal month - 2 Years	1

Table 16: Altenburg Cemetery Age at Death by Age Category and Sex

Altenburg Cemetery Age at Death by Age Category and Sex		
Adult Female	**Age at Death**	**Median (years)**
Altenburg Burial 4	> 20 Years	20
Altenburg Burial 5	> 20 Years	20
Altenburg Burial 6	≤ 27 Years	27
Altenburg Burial 7	24-82 Years	53
Altenburg Burial 8	20-75 Years	47.5
Altenburg Burial 9	24-82 Years	53
Altenburg Burial 12	≤ 46 Years	46
Adult Male	**Age at Death**	**Median (years)**
Altenburg Burial 3	24-82 Years	53
Subadult	**Age at Death**	**Median (years)**
Altenburg Burial 1, 1	≤ 8 Fetal months	0
Altenburg Burial 1, 2	≤ 8 Fetal months	0
Altenburg Burial 10	2-5 Years	3.5
Altenburg Burial 11	8 Fetal months - 2 Years	1
Altenburg Burial 2	1-2 Years	1.5

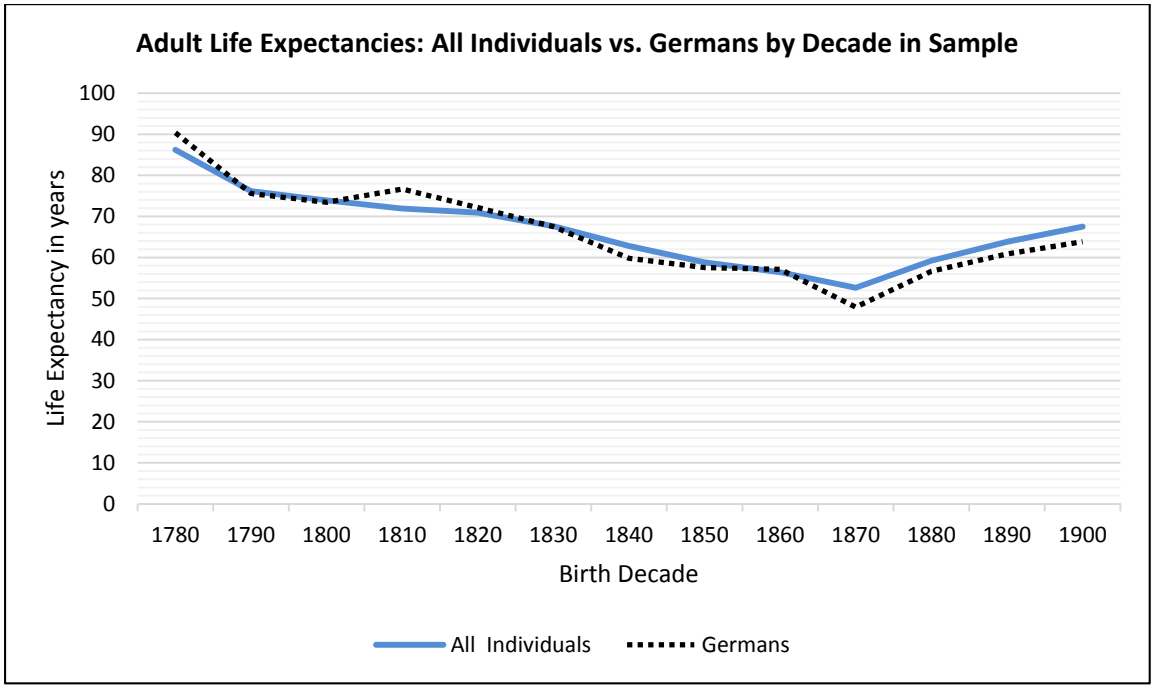
Of the two cemeteries, adults from the Stolz Cemetery have a higher average life expectancy, at 43.1 years (n=5), than the Altenburg adults at 39.94 (n=8). Similarly, subadults from the Stolz Cemetery have a higher average life expectancy at 3.20 years (n=5), than the Altenburg subadults at 1.20 years (n=5). The overall adult life expectancies for the Altenburg and Stolz cemeteries are considerably lower than the overall adult life expectancies of the demography study population (68.30 years, n=3,368), while the overall subadult life expectancy was only slightly lower than subadults from the other area cemeteries (2.35 years, n=284).

When the adults of the Altenburg and Stolz cemeteries are separated into male and female categories, the female inhabitants of the Stolz Cemetery have an average life expectancy of 31.25 years (n=2), which is less than that of the females of the Altenburg Cemetery at 38.07 (n=7). Similarly, male inhabitants of the Stolz Cemetery have a lower average life expectancy at 51 years (n=3) when compared to the adult males of the Altenburg Cemetery at 53 years (n=1). Both adult males and adult females of the Altenburg and Stolz cemeteries have lower average life expectancies than the other area cemeteries.

In conclusion, the average life expectancies of all individuals included in this study trended downward from the start of the study, 1780, to the decade with the lowest average life expectancy, 1870, before trending upward in the later part of the study to its end in 1910. This trend is best represented in Figure 3 below. The German subset trended in a similar fashion, while having a lower average life expectancy overall. One possible explanation for this is that 11.09% of the German subset consists of subadults, whereas the total population included a subadult population of 7.77%. In the Altenburg

and Stolz cemetery populations, the subset of subadults was 43.48%. This does not necessarily indicate that more German subadults died at a younger age than the rest of the Mequon area population. It may only suggest that the total population was burying a greater number of their deceased children on their homestead property, which was a common practice at the time, rather than in the documented cemeteries included in this study (Mytum 2004). This theory is supported by the fact that the Altenburg and Stolz cemeteries are small scale cemeteries that were unmarked at the time of exhumation with a substantial percentage of subadults included in their populations.

Figure 3: Adult Life Expectancies: All Individuals vs. Germans by Decade in Sample



Many diseases affect the youngest and oldest segments of the population most severely. Within the duration of this study, 1780 to 1910, many diseases afflicted the Wisconsin population, including measles, mumps, typhoid fever, and tuberculosis. Also of note is the 1849-1854 cholera epidemic. The absence of sewer systems and clean water sources increased the threat of waterborne illnesses. In addition, the newly incorporated

passenger and freight railroad, with stations in Mequon and Thiensville, would have helped to spread these communicable diseases (Corrigan 1950).

Thousands of Wisconsin natives were killed in the Civil War from 1861 to 1865. Not only were they killed in battle, but also by the spread of disease. While many were away as a part of the war effort, at home there was a great blizzard and freeze on January 1, 1862. In the Mequon area, large numbers of people and livestock died as a result of the weather. In addition, historic references describe a group of enlisted persons on their way to Fond du Lac who were caught in the blizzard and perished (Corrigan 1950).

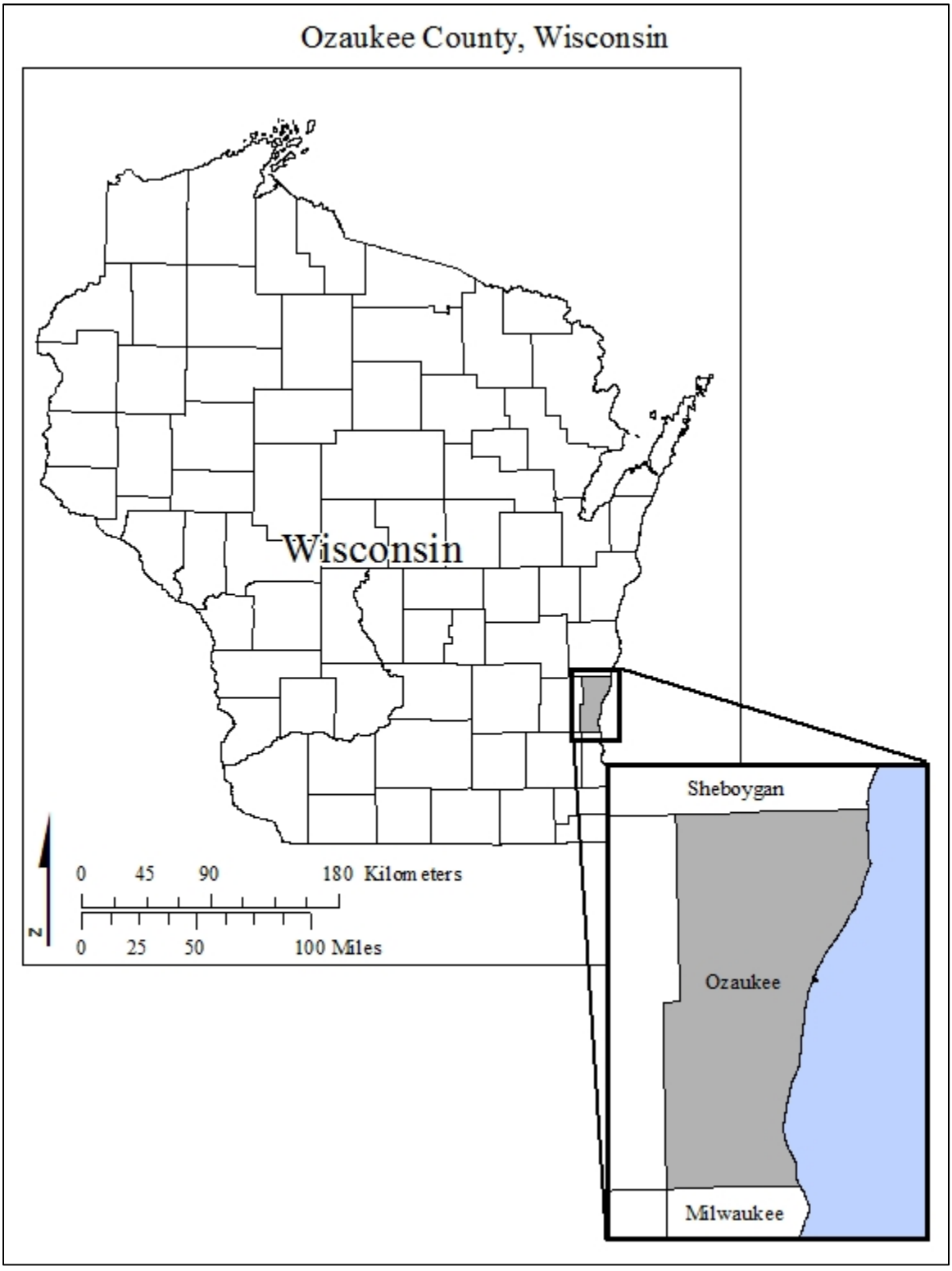
Geographic Information Systems

Geographic information systems allow history to connect with geography (Marti-Henneberg 2011). Using these relationships, it may be possible to determine why certain sites were picked for use as settlements or cemeteries. Altenburg and Stolz are historic cemeteries. As such, there are hints of their existence in historical records.

Documentation on Andreas Geidel's arrival from Saxony and land purchase records reveals he was the original owner of the property that would become the Altenburg Cemetery. The location of the Altenburg Cemetery was Section 28, Township 9, North Range 21 East, City of Mequon, Ozaukee County, Wisconsin (Rusch 1989).

The German Evangelical Lutheran Cemetery (also known as the Stolz Cemetery site) was located at 3818 W. LeMont Boulevard, Section 36, City of Mequon, Ozaukee County, Wisconsin (Meer 1990). In 1841, Joachim Dumstrey purchased the property that would become the Stolz Cemetery, which he sold to Johann Schauss in 1859. The land history of the Altenburg and Stolz cemeteries helps to define the characteristics of their populations. Ozaukee County (established 1950) (Figure 4) is bordered by Sheboygan County (to the north), Lake Michigan (to the east), Milwaukee County (to the south), and Washington County (to the west).

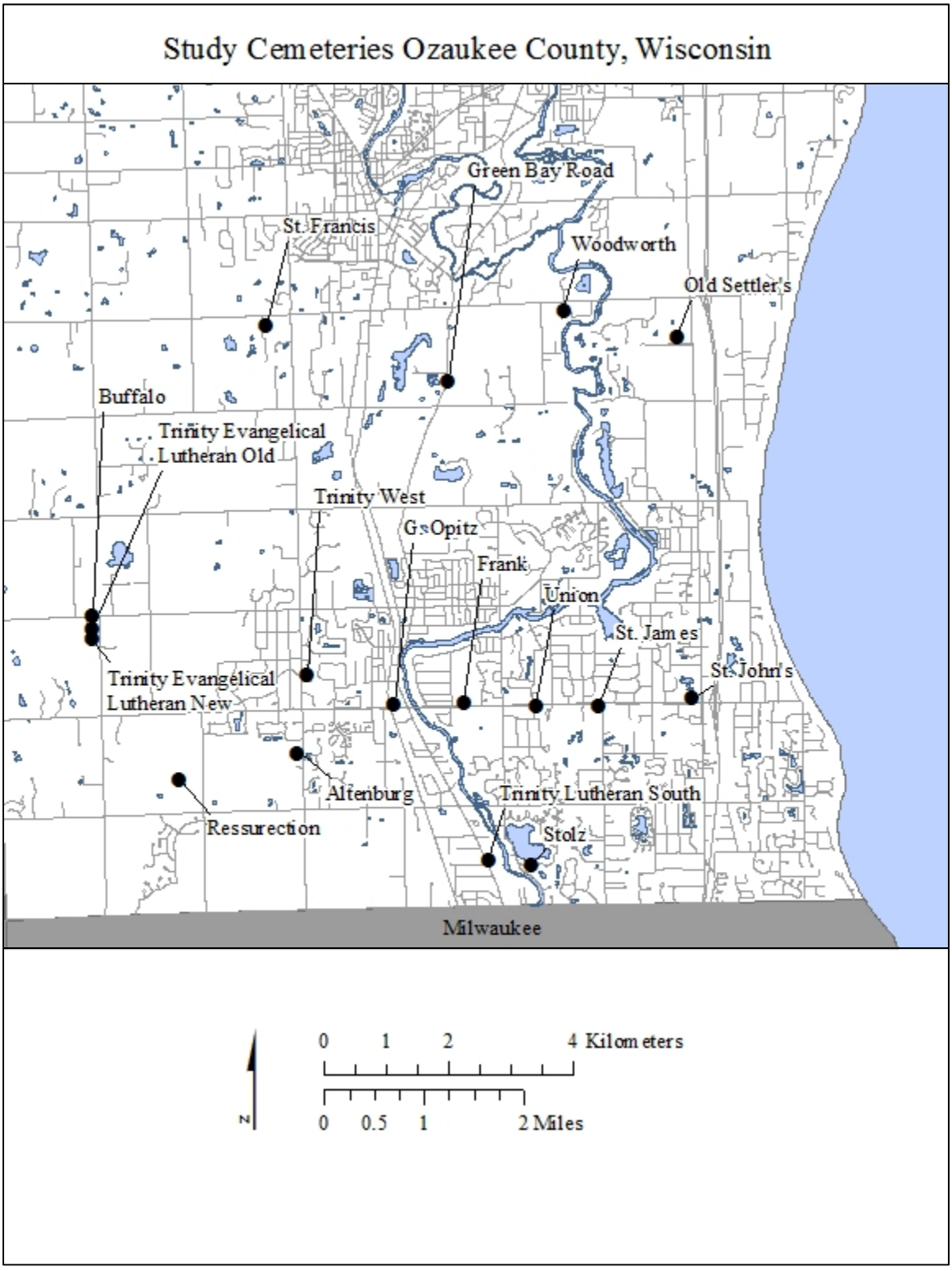
Figure 4: Ozaukee County, Wisconsin



Of the 17 cemeteries included in the demographic study, 15 were geographically located by the author (not including the Altenburg and Stolz cemeteries). These 15 cemeteries are as follows: Buffalo, Frank Family, G. Opitz, Green Bay Road, Old Settler's, Resurrection, St. Francis, St. James, St. John's, Trinity Evangelical Lutheran Old, Trinity Evangelical Lutheran New, Trinity Lutheran South, Trinity West, Union, and Woodworth Cemeteries. St. Cecelia's Cemetery and St. Peter's Cemetery are not included in the GIS study, as St. Cecelia's inhabitants are believed to have been removed in the late 20th century and the location of the cemetery was not found by the author. St. Peter's Cemetery is located at the northern end of Milwaukee County, and is thus not included in the map of Ozaukee County. St. Peter's Cemetery's inclusion in this study was determined to be worthwhile; however, as it is thought that the Stolz Cemetery's descendants were later buried there according to the archivist at the Mequon-Thiensville Historical Society.

It is recognized that Green Bay Road, or Green Bay Trail as it was then known, was a main line of transport coming out of Milwaukee when the Mequon area was being settled. In Figure 5, the Green Bay Road and Trinity Lutheran South cemeteries are located along Green Bay Road. Further examination of Figure 5 reveals that several cemeteries are located east to west along a single road, Mequon Road. Also, there are three closely placed cemeteries in the west portion of the map, located near the corner of Freistadt and Granville Roads. The earliest evidence for burials in the cemeteries on Green Bay Road, Mequon Road, and Freistadt/Granville Roads occurred in the 1840s and 1850s, which supports the idea that these cemeteries were associated with early settlement areas and these roads were likely main thoroughfares at the time.

Figure 5: Study Cemeteries Ozaukee County, Wisconsin



In order to directly associate cemeteries with early settlements, seven of the earliest known settlements have been included in Figure 6. These settlements are referred to by the last name of the property owner or eventual owner, save the final name listed: Bigelow (1836), Woodworth (1837), Turck (1838), Altenburg (1839), Bonniwells (1839), Opitz (1839), and Freistadt (1839) (Boehlke 1989; Corrigan 1950). Most historical documents listed families or groups who settled in Mequon and the surrounding area along with the year of settlement, but few described the location of their settlement. This is why there are just seven settlements included in Figure 6. The earliest maps, from 1867 and 1873, list many surnames and locations. However, nearly 30 years had passed from the earliest settlers to the time of the maps. These data were not sufficiently reliable for use.

Of the seven settlements, four are near the Milwaukee River. Land along the river may have been preferred not only for the transportation option, but also for the food and water the river provided. Of note is that there are no known settlements or cemeteries located along Lake Michigan.

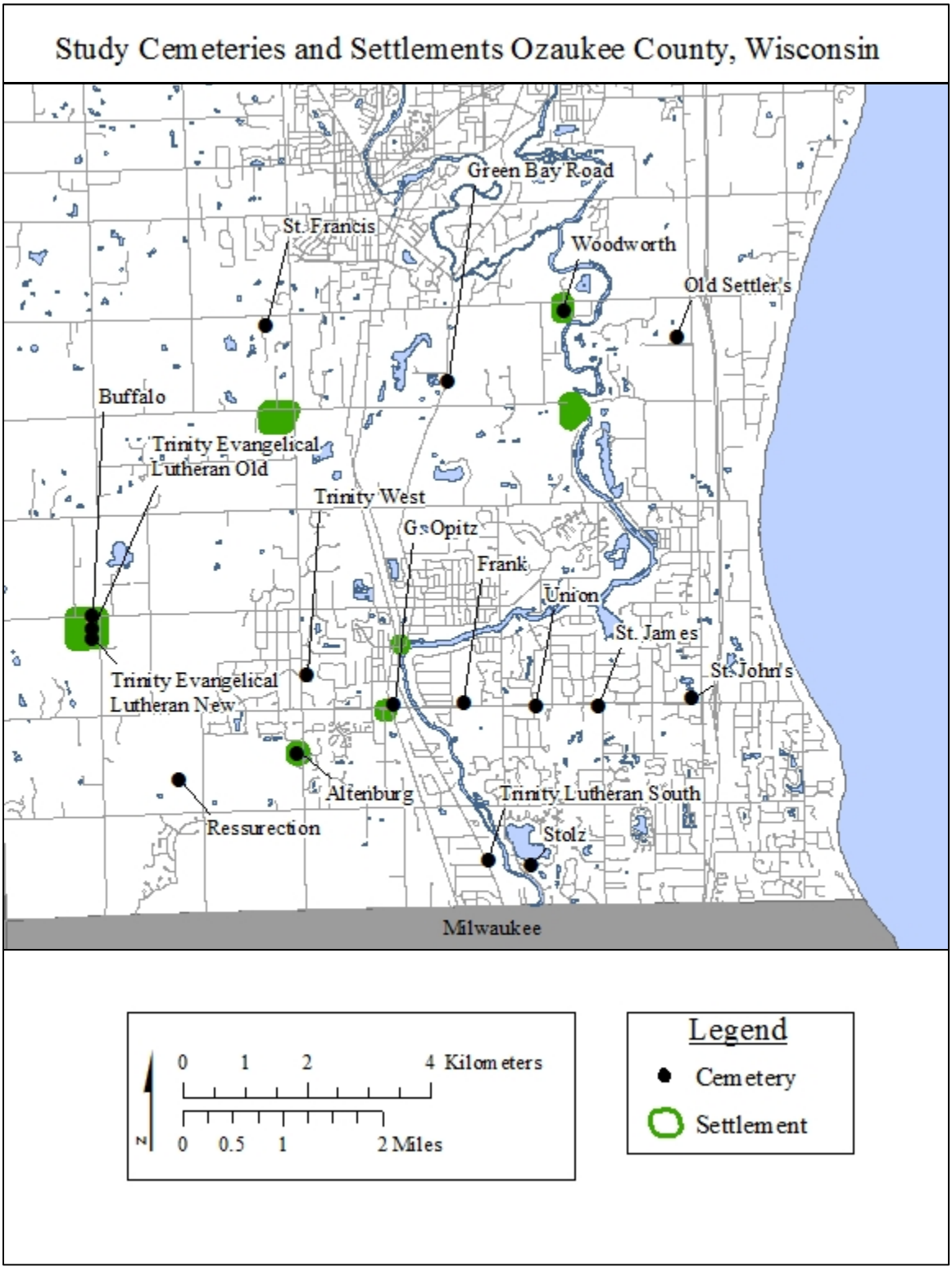
In four cases, settlements are associated with known cemeteries. The remaining three settlements do not have cemeteries associated with them. The lack of an associated cemetery could mean that one may have existed, but is no longer marked. Another reason for the lack of association may be the settlement inhabitants' relationship with neighboring homestead cemeteries. Finally, burials increasingly transitioned from the homestead cemetery to other larger cemeteries with community, ethnic, or religious ties as the immigrants became more established.

The religious settlement of Freistadt, the settlement farthest west on the map, consists of a church and three cemeteries. In 1845, the congregation at Freistadt split into two groups, the Buffalo Synod and Missouri Synod (Boehlke 1989). Two of the three cemeteries belong to the Missouri Synod and one belongs to the Buffalo Synod.

Historical documentation revealed that the area surrounding the Altenburg Cemetery was settled by Andreas Geidel and his family in 1839 (Rusch 1989). The 1852 sale of a half-acre parcel to the Trustees of the Altenburg Lutheran Church Society describes that land as a graveyard (Rusch 1989). It is unclear who was buried in the Altenburg Cemetery, but local tradition suggests Geidel family members were buried there.

Historical documents also disclosed that Joachim Dumstrey and his family were early members of the Freistadt settlement before he purchased the property that would eventually become the Stolz Cemetery (Boehlke 1989, Meer 1990). Dumstrey sold the land to Johann Schauss in 1859. An 1867 map shows a church, The Evangelical Lutheran Church of the Town of Mequon, located on the Schauss property. However, this church and cemetery were not included on later maps of the area (Meer 1990) and it remains unclear how Schauss and the church are connected as physical evidence of this church has yet to be identified. The Stolz cemetery is not listed as being associated with an early settlement, as evidence was not found to support this hypothesis. Also of note, the water near the Stolz cemetery in Figure 6 is a man-made lake that was not present at the time of the Stolz burials.

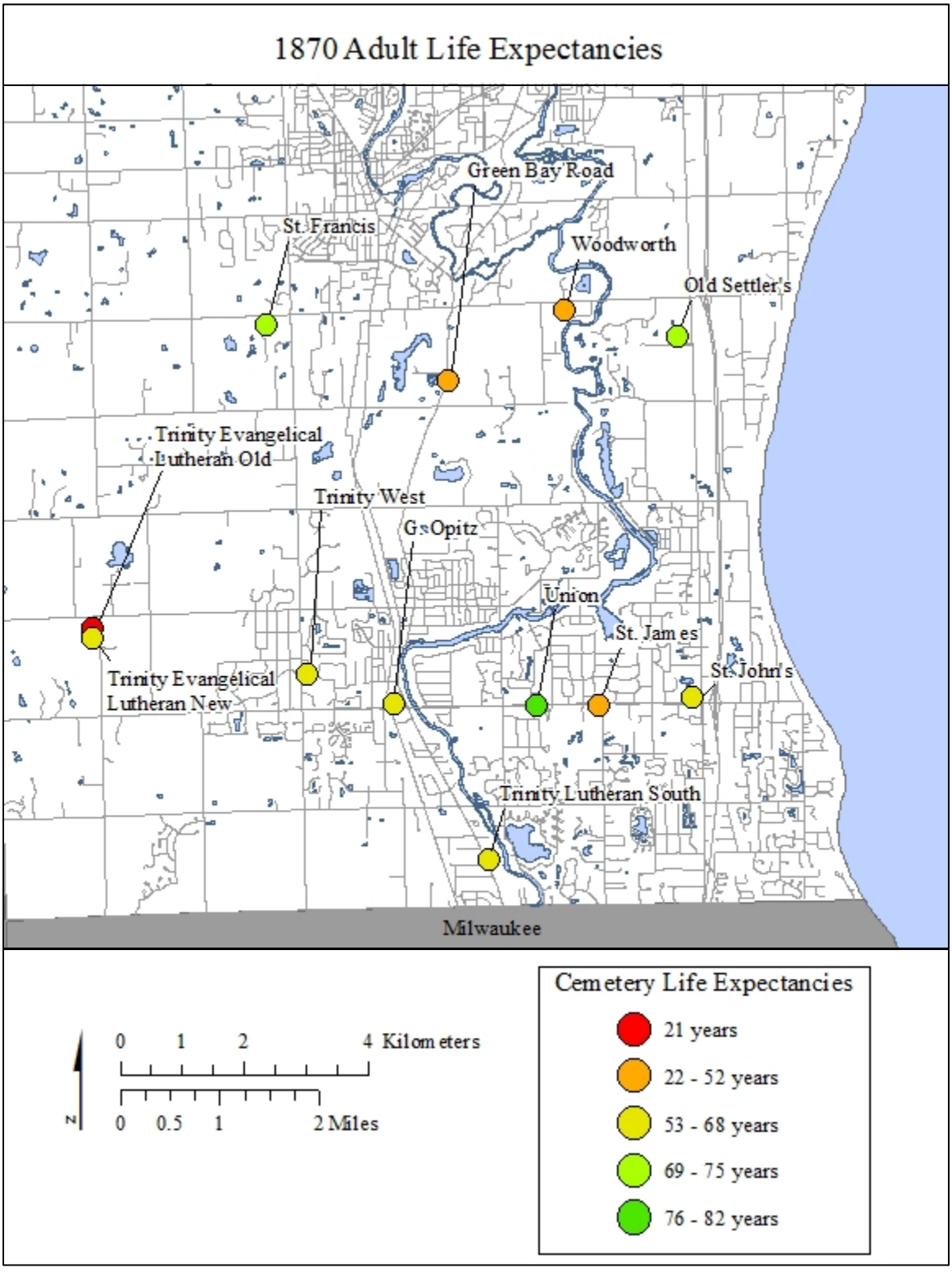
Figure 6: Study Cemeteries and Settlements Ozaukee County, Wisconsin



To further describe the disparities in the life expectancies of adults as outlined in the preceding discussion, a map was created to spatially represent the decade with the lowest life expectancy for sample overall in 1870 (Figure 7). There are 13 cemeteries containing 297 adults for this decade. The complete sample included 17 cemeteries; however, cemeteries were not represented if they did not have grave markers of persons born in the decade that began in 1870.

In the complete sample, those buried at St. Peter's Cemetery had the lowest adult life expectancy at 40.60 years (n=10). St. Peter's is not on the map, but it can be included because it was as located on the northern border of Milwaukee County, near the river. The cemetery with the next lowest adult life expectancy, in the complete sample, was the Green Bay Road Cemetery at 44.38 years (n=8). Those buried at Trinity Old Cemetery had the lowest adult life expectancy for the German subset at 21.08 years (n=12). Spatially, there does not seem to be a correlation between those cemeteries with the lowest life expectancies (Figure 7).

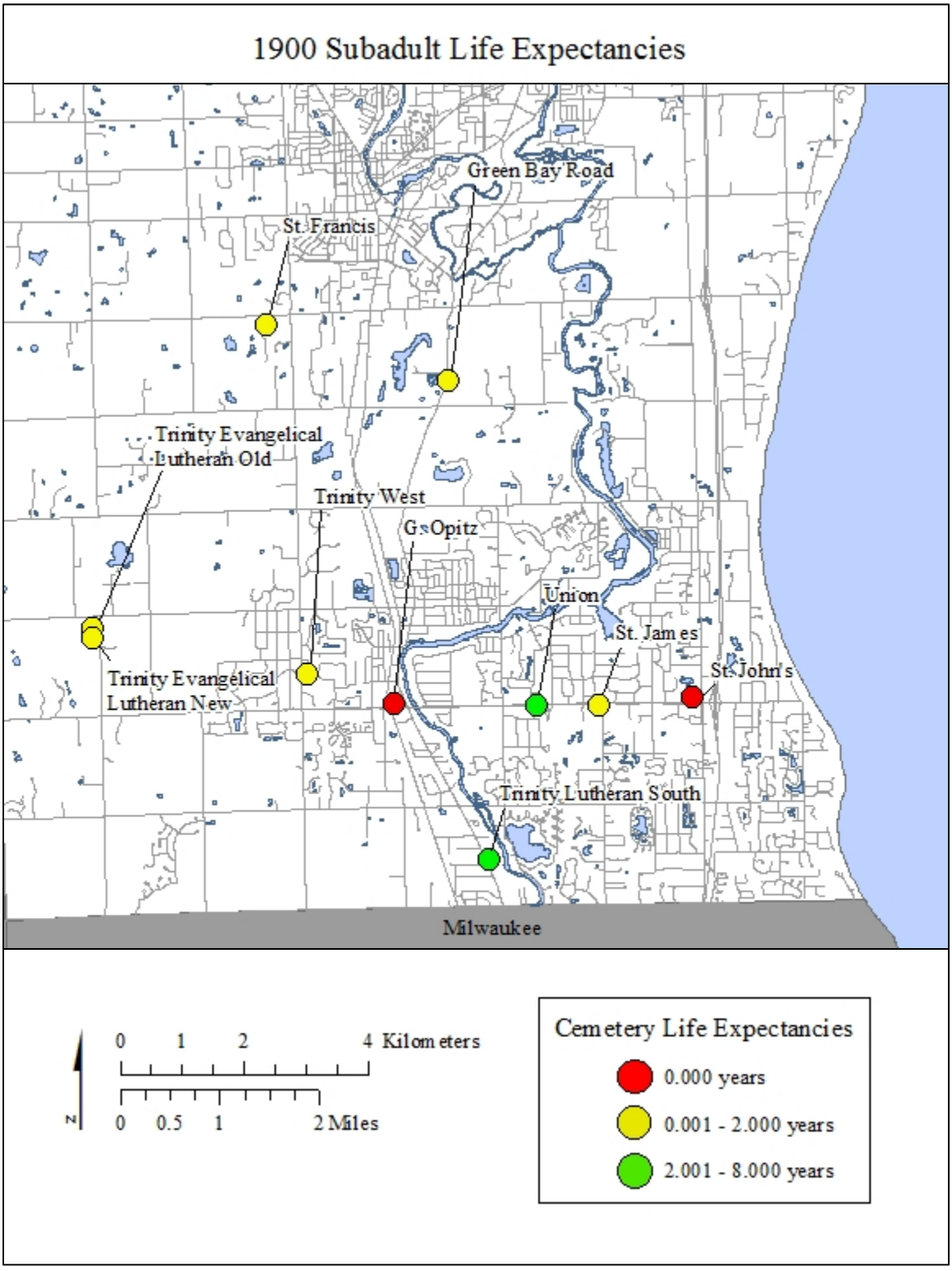
Figure 7: 1870 Adult Life Expectancies



A second map was created to spatially represent the decade with the lowest life expectancy for the overall subadult population in the decade beginning in 1900 (Figure 8). There are 11 cemeteries containing 45 subadult individuals for this decade in the sample. As previously explained, the complete demographic study included 17 cemeteries; however cemeteries are not represented if they did not have grave markers of subadults born in the decade of 1900.

For the overall subadult population, those buried at St. John's Cemetery have the lowest subadult life expectancy at 0.17 years (n=6). Those buried at Trinity West Cemetery have the lowest subadult life expectancy for the German subset at 0.67 years (n=3). Spatially, there does not seem to be a correlation between cemeteries with the lowest subadult life expectancies (Figure 8).

Figure 8: 1900 Subadult Life Expectancies



Of the 17 cemeteries included in the demographic and GIS analyses, three cemeteries are associated with known settlements, 10 are associated with known churches (some of which are churches associated with settlements), and four have no known settlement affiliation. Adding in the Altenburg and Stolz Cemeteries, it might be presumed that the Altenburg Cemetery was associated with a known settlement, while the Stolz Cemetery was perhaps associated with a known church.

Andreas Geidel and his second wife, Christine Scheunert Geidel, are named on gravestones at the Trinity South Cemetery. However, a source suggests that Mr. Geidel's first wife, Christine Kertscher Geidel, is buried on the Geidel homestead. This source is a book of the Geidel family history that can be found at the Mequon-Thiensville Historical Society. This implies that his first wife was buried at the Altenburg Cemetery. This may help to support that there was a transition away from burials on the homestead to burials in public cemeteries.

In conclusion, the land history documentation of the Altenburg and Stolz Cemeteries revealed that the inhabitants are likely those of German immigrants and their descendants. Spatially characterizing the Altenburg and Stolz Cemeteries has allowed for them to be compared to other contemporary cemeteries by including the visualization of life expectancies.

Osteology

In 2008, final disposition for the skeletal remains from both cemeteries was transferred to the University of Wisconsin - Milwaukee. The remains were accessioned, stabilized, and conserved by the author, Emily Laak, and David Stock under the direction of the Dr. Robert Jeske, Project Director, and Alexis M. Jordan, Project Supervisor between 2011 and 2014.

The reports compiled by the Wisconsin Historical Society were reviewed before the analysis was initiated. These reports were invaluable in reconstructing a history of the cemeteries. In addition, the previously completed osteological analyses provided a guide to understanding the population. Carrying out an updated osteological analysis of the Altenburg and Stolz Cemetery sample allowed an updated identification of biological characteristics of this collection of German immigrants and their descendants to be documented.

The ages of the Altenburg Cemetery inhabitants were initially determined by Rusch and Cotter at the Wisconsin Historical Society in 1989 and 2004, respectively. Age determinations were re-visited by the author in 2014 using accepted osteological methods outlined by Suchey-Brooks (1990), Todd (1921), Osborne (2004) and Meindl and Lovejoy (1985). The following adult skeletal elements were scored for age estimation: pubic symphysis, auricular surface, and cranial suture closure. The subadult skeletal elements were assessed for age using cranial elements including: sphenoid, temporal, occipital, mandible, and maxilla (including dentition). In addition, non-cranial elements were used in assessment, these included: sacrum, vertebrae, os coxa, humerus, and pelvis. The results can be viewed in tables 17 and 18.

The sex of each individual from the Altenburg Cemetery was initially determined by Wade and Cotter at the Wisconsin Historical Society in 1988 and 2004, respectively. The results can be seen in Tables 18 and 20. The sexes of individuals were re-evaluated by the author at the Archaeology Lab in 2014 using accepted osteological methods outlined by Steele (1976), Stewart (1979), Phenice (1969), Walker (2005), Buikstra and Ubelaker (1994), and Acsadi and Nemeskeri (1970). The following skeletal elements were scored for osteometric sex estimation: talus, humeral head, and femoral head. For non-metric sex estimation, the ventral arc, subpubic concavity, ischiopubic ramus ridge, greater sciatic notch and the preauricular sulcus were scored on the pelvis. In addition, the nuchal crest, mastoid process, supraorbital margin, glabella, and mental eminence were scored on the skull. Because determining sexes of subadults is not possible due to their pre-pubescent status, no subadult remains were sexed for the Altenburg or Stolz Cemeteries. The results can be viewed in Tables 17 and 19. An indeterminate designation is the result of fragmented skeletal elements which could not be adequately assessed.

Table 17: Altenburg Cemetery: Adult Age and Sex Determination 2015

Altenburg Cemetery: Adult Age and Sex Determination				
Burials	**Non-metric Sex**	**Osteometric Sex**	**Category Age**	**Age Range**
Burial 3	Indeterminate	Male	Middle Adult	24-82 y
Burial 4	Indeterminate	Indeterminate	Indeterminate	> 20 y
Burial 5	Probable Female	Indeterminate	Indeterminate	> 20 y
Burial 6	Probable Female	Indeterminate	Young Adult	≤ 27 y
Burial 7	Probable Female	Indeterminate	Indeterminate	24-82 y
Burial 8	Probable Female	Indeterminate	Indeterminate	20-75 y
Burial 9	Probable Female	Female	Middle Adult	24-82 y
Burial 12	Female	Indeterminate	Indeterminate	≤ 46 y

y = years

Table 18: Altenburg Cemetery: Initial Adult Age and Sex Determination

Altenburg: Initial Adult Age and Sex Determination				
Burials	Age 1988 Wade	Sex 1988 Wade	Age 2004 Cotter	Sex 2004 Cotter
Burial 3	> 45 y	Male	> 40 y	Male
Burial 4	> 22 y	Female	> 27 y	Indeterminate
Burial 5	> 22 y	Female	> 27 y	Female
Burial 6	17-20 y	Female	18-25 y	Female
Burial 7	> 45 y	Male	39-67 y	Male
Burial 8	> 22 y	Female	> 60 y	Female
Burial 9	> 25 y	Female	30-40 y	Female
Burial 12	> 25 y	Female	45-50 y	Female

y = years

Table 19: Altenburg Cemetery: Subadult Age Determination 2015

Altenburg Cemetery: Subadult Age Determination		
Burials	Category Age	Age Range
Burial 1, 1	Prenatal	≤ 8 fm
Burial 1, 2	Prenatal	≤ 8 fm
Burial 2	Prenatal	1-2 y
Burial 10	Early Childhood	2-5 y
Burial 11	Prenatal	8 fm-2 y

y = years, fm = fetal months

Table 20: Altenburg Cemetery: Initial Subadult Age Determination

Altenburg: Initial Subadult Age Determination		
Burials	Age 1988 Wade	Age 2004 Cotter
Burial 1, 1	7 fm	7-8 fm
Burial 1, 2	7 fm	7-8 fm
Burial 2	1-2.5 y	2 y 8 m
Burial 10	6.9-7.4 y	5-7 y
Burial 11	7 fm	7.5-8 fm

y = years, m = months, fm = fetal months

The ages of the Stolz Cemetery inhabitants were determined by Meer at the Wisconsin Historical Society in 1990 and were re-evaluated by the author in 2014. Meer's results can be viewed in Tables 22 and 24. The same adult and subadult skeletal

elements were used for the Stolz cemetery as were used in the Altenburg Cemetery analysis, above. The results can be viewed in Tables 19 and 20.

The sex of each individual from the Stolz cemetery was initially determined by Meer at the Wisconsin Historical Society in 1990 and was re-visited by the author in 2014 using the same methods as for the Altenburg Cemetery material described above. The results can be viewed in Tables 21 and 23.

Table 21: Stolz Cemetery: Adult Age and Sex Determination 2015

Stolz Cemetery: Adult Age and Sex Determination				
Burials	**Non-metric Sex**	**Osteometric Sex**	**Category Age**	**Age Range**
Burial 1	Probable Male	Female	Indeterminate	> 20 y
Burial 2	Probable Male	Indeterminate	Middle Adult	24-82 y
Burial 6	Male	Male	Middle Adult	23-69 y
Burial 7	Male	Male	Middle Adult	25-83 y
Burial 8	Male	Female	Middle Adult	35-50 y

y = years

Table 22: Stolz Cemetery: Initial Adult Age and Sex Determination

Stolz: Initial Adult Age and Sex Determination		
Burials	**Age 1990 Meer**	**Sex 1990 Meer**
Burial 1	65-75+ y	Female
Burial 2	55-65+ y	Male
Burial 6	30-34 y	Male
Burial 7	50-65 y	Male
Burial 8	40-58 y	Female

y = years

Table 23: Stolz Cemetery: Subadult Age Determination 2015

Stolz Cemetery: Subadult Age Determination		
Burials	**Category Age**	**Age Range**
Burial 3	Prenatal	1 y
Burial 4	Early Childhood	> 1y-< 6 y
Burial 5	Late Childhood	6-13 y
Burial 9	Prenatal	9 fm-2 y
Burial 10	Prenatal	9 fm-2 y

y = years, fm = fetal months

Table 24: Stolz Cemetery: Initial Subadult Age Determination

Stolz: Initial Subadult Age Determination	
Burials	**Age 1990 Meer**
Burial 3	9-12 fm
Burial 4	5.5-6.5 y
Burial 5	2.5-3.5 y
Burial 9	9-11 fm
Burial 10	9-11 fm

y = years, fm = fetal months

In the case of Altenburg Cemetery burial 4, most of the evaluation resulted in the classification of indeterminate adult, but when taking into account the overall robusticity of the skeleton, female sex can be cautiously assigned. As noted in White et al. 2012, the gracile, smaller elements are usually female.

In Stolz Cemetery burial 1, the non-metric assessment resulted in the assignment of probable male, while the osteometric assessment revealed female. As this resulted in an indeterminate identification, the pelvis was deferred to. As noted in White et al. 2012, because the sexes overlap at the center of distribution, the elements of the skull and pelvis are traditionally concentrated on. Taking this into account, this individual was provisionally assigned the female sex. This was also the case for Stolz Cemetery burial 8. The non-metric assessment resulted in an assignment of male, while the osteometric

assessment resulted in classification as female. This resulted in the indeterminate category being assigned; however, concentrating on the pelvis allowed for the assignment of the female sex.

Pathology is known as the cause and effect of disease. Paleopathology refers to the diseases that can be seen on human and animal remains (White et al. 2012). For this analysis, the author focused on describing the paleopathologies present in the Altenburg and Stolz Cemeteries.

In the adult population of the Altenburg Cemetery, the two most prevalent paleopathologies were lytic lesions and osteophytic lipping (Table 25). All adult individuals of the Stolz Cemetery had osteophytic lipping present. This was the most prevalent paleopathology of the Stolz population (Table 26). Lytic lesions appear as bone being eaten away, as opposed to blastic lesions that appear as bone deposits (White et al. 2012). Osteophytes, the cause of osteophytic lipping, are projecting spicules of bone that can be associated with osteoarthritis (White et al. 2012). Osteophytic lipping can be seen in Figure 9.

Table 25: Altenburg Cemetery: Adult Skeletal Paleopathology and Trauma

Altenburg: Adult Skeletal Paleopathology and Trauma								
	Burial 3	**Burial 4**	**Burial 5**	**Burial 6**	**Burial 7**	**Burial 8**	**Burial 9**	**Burial 12**
Unidentified Lesions								
Blastic	X		X		X			
Lytic		X	X		X	X		X
Non-specific Infection								
Osteitis								X
Neoplastic Conditions								
Osteoma								X
Growth and Developmental Stress								
Cribra Orbitalia		X	X					
Porotic Hyperstosis								
Growth and Developmental Stress Anomalies								
Bi-parietal Thinning						X		
Butterfly Vertebra							X	
Joint Pathology								
Anklyosis								
Eburnation	X				X			
Schmorl's Nodes							X	
Osteophytic Lipping	X	X		X	X	X		
Joint Degeneration	X	X						
Kyphosis								
Trauma								
Healed fracture	X							
Total # of Paleopathologies/Trauma	**5**	**4**	**3**	**1**	**4**	**3**	**2**	**3**

Figure 9: Altenburg Burial 4: Osteophytic Lipping - photo by author

Table 26: Stolz Cemetery: Adult Skeletal Paleopathology and Trauma

Stolz: Adult Skeletal Paleoathology and Trauma					
	Burial 1	**Burial 2**	**Burial 6**	**Burial 7**	**Burial 8**
Unidentified Lesions					
Blastic	X	X	X	X	
Lytic	X	X		X	X
Non-specific Infection					
Osteitis	X	X			
Neoplastic Conditions					
Osteoma		X			
Growth and Developmental Stress					
Cribra Orbitalia					
Porotic Hyperstosis			X		
Joint Pathology					
Anklyosis		X			
Eburnation		X		X	
Schmorl's Nodes				X	
Osteophytic Lipping	X	X	X	X	X
Joint Degeneration					
Kyphosis		X			
Joint Pathology Anomaly					
Vertebra Collapse		X			
Trauma					
Healed fracture	X	X	X	X	
Total # of Paleopathologies/Trauma	**5**	**10**	**4**	**6**	**2**

Trauma is described as change to bone including: fracture, dislocation, disrupting blood supply or nerves, or artificially deforming it (White et al. 2012). In the case of the Altenburg and Stolz Cemetery individuals, fractures were the only types of trauma present. In all cases, the fractures were healed. In cases of healing, a bony callus forms to heal the fracture (White et al. 2012). The adult population of the Altenburg Cemetery revealed one instance of healed fracture, whereas four individuals from the Stolz Cemetery adult population had healed fractures present. An example of a healed fracture can be seen in Figure 10.

Figure 10: Altenburg Burial 3: Healed Fracture - photo by author

In the subadult population, only one individual had an occurrence of paleopathology and no subadults revealed any type of trauma. One subadult in the Altenburg Cemetery (Burial 2) presented signs of cribra orbitalia. Considered a growth or developmental stress marker, cribra orbitalia is characterized by small lesions in the eye orbits. Studies suggest it is caused by iron-deficiency or other types of deficiencies (White et al. 2012).

Dentition reveals physical and biological changes, but is also affected by genetic predisposition. In both the Altenburg and Stolz Cemetery adult populations, there are examples of dental paleopathologies. There were no examples of dental paleopathology in the study's subadult population. In many instances, among the adult population, periodontal disease is present. Periodontal disease ultimately causes recession of the alveolar bone (White et al. 2012). An example of recession of the alveolar bone can be seen in Figure 11.

Enamel hypoplasia was witnessed in Stolz Cemetery Burial 6. Characterized as lines, pits, and grooves on the surface of tooth crowns, enamel hypoplasia forms as a

result of biological stress and developmental defects (Ortner 2003; White et al. 2012). The dental traits of the Altenburg and Stolz Cemeteries, which can be viewed in Tables 27 and 28, reveal information on environment, development, and diet.

Figure 11: Altenburg Burial 9: Recession of Alveolar Bone - photo by author

Table 27: Altenburg Cemetery: Adult Dental Paleopathology

Altenburg: Adult Dental Paleopathology								
	Burial 3	**Burial 4**	**Burial 5**	**Burial 6**	**Burial 7**	**Burial 8**	**Burial 9**	**Burial 12**
Growth and Developmental Stress								
Enamel Hypoplasia								
Periodontal Disease								
Calculus	X	X	X	X	X	X	X	X
Caries	X	X	X	X	X		X	X
Abscess								
Remodeled Alveolous/Tooth Loss	X	X	X		X	X	X	X
Anomolous Condition								
Peg Tooth								X
Possible Cultural Modification								
Unidentified Wear	X							
Total # of Dental Paleopathologies	**4**	**3**	**3**	**2**	**3**	**2**	**3**	**4**

Table 28: Stolz Cemetery: Adult Dental Paleopathology

Stolz: Adult Dental Paleopathology					
	Burial 1	**Burial 2**	**Burial 6**	**Burial 7**	**Burial 8**
Growth and Developmental Stress					
Enamel Hypoplasia			X		
Periodontal Disease					
Calculus	X	X	X		
Caries	X	X	X		
Abscess					
Remodeled Alveolous/Tooth Loss	X				
Anomolous Condition					
Peg Tooth					
Possible Cultural Modification					
Unidentified wear		X			
Total # of Dental Paleopathologies	**3**	**2**	**3**	**0**	**0**

Using current methods of skeletal aging and sexing has allowed for the most accurate understanding of the Altenburg and Stolz Cemeteries. The Altenburg Cemetery population consisted of seven adult females, one adult male, and five subadults, for a total of 13 individuals. The Stolz Cemetery contained two adult females, three adult males, and five subadults, for a total of 10 individuals. Females outnumber males in the Altenburg Cemetery, while males outnumber females in the Stolz Cemetery.

When looking at the paleopathologies of the Altenburg and Stolz cemeteries, it was found that adult males had more joint pathologies than adult females (Altenburg burial 3, Stolz burial 2, and Stolz burial 7). The adult male in Stolz Cemetery Burial 6 was an exception, with only one type of joint pathology. The large number of joint pathologies could be indicative of a physically burdened lifestyle.

The large amount of dental paleopathologies throughout the study provides corresponding data for the overall health of the population. The same individual with evidence of enamel hypoplasia also had evidence of porotic hyperostosis (Stolz Burial 6).

Both paleopathologies are signs of biological or developmental stressors. This is an example of disease that is developed as a subadult, but can still be seen in the adult population. The biological characteristics of the Altenburg and Stolz populations, as provided in this section, serves as a rare glimpse into the transitional time of German immigration to southeastern Wisconsin.

Chapter VI. Discussion

The historical, demographic, spatial, and osteological data from the Altenburg Lutheran Church Society Cemetery (Altenburg Cemetery) and the German Evangelical Lutheran Cemetery (Stolz Cemetery) has provided a unique look into early German settlement and burial in southeastern Wisconsin. As the cemeteries were unmarked and only found and recovered as the result of construction projects, the dates of use have been determined by material evidence (coffin hardware) and by lack of material evidence. The following questions were developed to accurately assess the Altenburg and Stolz Cemetery populations and to incorporate them into the larger picture of the surrounding population of the mid-nineteenth to early twentieth centuries.

Where did the early German immigrants settle and place their burials in Mequon, Wisconsin?

Of the seven earliest settlements, four are near the Milwaukee River. These sites may have been chosen due to the transportation the river offers, as well as the food and water the river provided. Two settlements on the river and two settlements west of the river are associated with known cemeteries. Three reasons were suggested to why some settlements may not have associated cemeteries: 1. A cemetery may have existed, but is no longer marked. 2. The settlement's inhabitants had a relationship with a neighboring homestead cemetery. 3. Burials transitioned from the homestead cemetery to other larger cemeteries with community, ethnic, or religious ties as the immigrants became more established. There is not likely one reason for this, but a combination of factors.

Further exploration of the topic of settlements and burial location could be evaluated by comparing this study, completed in the Mequon area, to the city of Milwaukee.

In this area, what types of cemeteries are common among German immigrants?

Of the 17 cemeteries assessed in the demographic and GIS studies, three are associated with known settlements, 10 are associated with known churches (some of which are churches associated with settlements), and four are of unknown affiliation. When the Altenburg and Stolz Cemeteries are included, it is possible that the Altenburg Cemetery was associated with a known settlement, while the Stolz Cemetery was associated with a known church.

Studies regarding a further breakdown into subsets of German immigrants could be warranted, as there was a large population of German Catholics in addition to German Lutherans (Gurda 1999).

What were the life expectancies of the German immigrants from 1780 to 1910?

The average life expectancies of all individuals included in the demography study trended downward from the start of the study, 1780, to the decade with the lowest average life expectancy, 1870, before trending upward again in the later part of the study to its end in 1910. The German subset trended in a similar fashion, while having a lower average life expectancy overall.

Stories of religious freedom and economic success were communicated from Wisconsin while economic distress and political unrest took hold in Germanic Prussia. These stories encouraged the second wave of Lutheran immigrants that reached Wisconsin between 1854 and 1860 (Gurda 1999). The downward trend from 1780 to

1870 reveals a struggle for early settlers which was unknown to the newcomers, but is revealed in this demographic study.

Of the German subset, 11.09% consists of subadults, whereas the total population included a subadult population of 7.77%. When only considering the Altenburg and Stolz Cemetery populations, the subset of subadults was 43.48%. This does not necessarily indicate that more German subadults died at a younger age than the rest of the Mequon area population. It may only suggest that the total population was burying a greater number of their deceased children on their homestead property, which was a common practice at the time, rather than in the documented cemeteries included in this study (Mytum 2004). This theory is supported by the fact that the Altenburg and Stolz cemeteries are small scale cemeteries that were unmarked at the time of exhumation with a substantial percentage of subadults included in their populations.

A variety of future studies could be pursued to further explore these life expectancies in other contexts. One way could be to conduct further strontium isotope analyses to compare the health of immigrants to that of their descendants. This may reveal an explanation for the life expectancy trends discovered in this demographic study. Another would be to assess these life expectancies against life expectancy data at the county, state, or national level to further develop trends in the study.

What were the biological characteristics of the inhabitants of the Altenburg and Stolz cemeteries?

As noted above, 43.48% of the Altenburg and Stolz Cemetery populations consisted of subadults. The Altenburg Cemetery consisted of seven adult females, one adult male, and five subadults. The Stolz Cemetery contained two adult females, three

adult males, and five subadults. When looking at the paleopathologies of the Altenburg and Stolz cemeteries, it was found that adult males had more joint pathologies than adult females. The large number of joint pathologies could be indicative of a physically burdened lifestyle. In addition, unidentified lesions, infections, neoplastic conditions, growth and developmental stress conditions, and traumas were evaluated. Two growth and developmental stress condition anomalies, as well as a joint pathology anomaly were also discovered in the osteological analysis.

Further studies into the Altenburg and Stolz Cemeteries are recommended in the form of analyses regarding the material culture found with the burials. This could lead to a better understanding of individual identities.

By pursuing the answers to these questions, sufficient context was determined in regards to German immigrant settlement and mortuary practices in Mequon, Wisconsin. Because of this, it was possible to incorporate the Altenburg and Stolz Cemeteries into this larger framework.

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Burial Inventory Elements Present

N = Number of elements f = Number of Fragments*

CU 584	
BOZ 0009	
Altenburg	
Burial #	**1**
Individual	**1&2**

(Individual = N/A if one)

CRANIAL									
Frontal	(N)	1	(f)	3					
Occipital	(N)	2	(f)	4					
Sphenoid	(N)	2	(f)	6					
Mandible	(N)	1	(f)	4					
Ethmoid	(N)		(f)						
Vomer	(N)		(f)						
Hyoid	(N)		(f)						
Parietal**	Left	(N)		(f)		Right	(N)		(f)
Temporal**	Left	(N)		(f)		Right	(N)		(f)
Maxilla	Left	(N)		(f)		Right	(N)		(f)
Nasal	Left	(N)		(f)		Right	(N)		(f)
Zygomatic**	Left	(N)		(f)		Right	(N)		(f)
Lacrimal	Left	(N)		(f)		Right	(N)		(f)
Palate	Left	(N)		(f)		Right	(N)		(f)
Inf. Nas. Conhc.	Left	(N)		(f)		Right	(N)		(f)
Maleus	Left	(N)		(f)		Right	(N)		(f)
Incus	Left	(N)		(f)		Right	(N)		(f)
Stapes	Left	(N)		(f)		Right	(N)		(f)
Maxillary Teeth	(N)		(f)						
Mandibular Teeth	(N)		(f)						
Unclassified Teeth	(N)		(f)						
Wormian Bones	(N)		(f)						

POSTCRANIAL									
Cervical Vertebrae	(N)	2	(f)						
Thoracic Vertabrae	(N)		(f)						
Lumbar Vertabrae	(N)		(f)						
Unclassified Vertabrae	(N)		(f)	24					
Sacrum	(N)		(f)						
Coccyx	(N)		(f)						
Sternum	(N)		(f)						
Ribs	(N)		(f)	13					
Scapula	Left	(N)		(f)		Right	(N)		(f)
Clavicle	Left	(N)		(f)		Right	(N)		(f)
Humerus**	Left	(N)		(f)		Right	(N)		(f)
Radius**	Left	(N)		(f)		Right	(N)		(f)
Ulna**	Left	(N)		(f)		Right	(N)		(f)
Carpals	Left	(N)		(f)		Right	(N)		(f)
Metacarpals	Left	(N)		(f)		Right	(N)		(f)
Hand Phalanges	Left	(N)		(f)		Right	(N)		(f)
Innominate**	Left	(N)		(f)		Right	(N)		(f)
Femur**	Left	(N)		(f)		Right	(N)		(f)
Patella	Left	(N)		(f)		Right	(N)		(f)
Tibia**	Left	(N)		(f)		Right	(N)		(f)
Fibula	Left	(N)		(f)		Right	(N)		(f)
Tarsals	Left	(N)		(f)		Right	(N)		(f)
Metatarsals	Left	(N)		(f)		Right	(N)		(f)
Foot Phalanges	Left	(N)		(f)		Right	(N)		(f)

* Elements in x fragments

** Further explaination present

Total (N):	39

Digital inventory completed by: JB

Comments				
**Further Explaination:				
Parietal (unsided)	(N)	2	(f)	3
Temporal (unsided)	(N)	3	(f)	4
Zygomatic	(N)	2	(f)	4
Scaplua (unsided)	(N)	3	(f)	
Humerus (unsided)	(N)	2	(f)	3
Radius (unsided)	(N)	2	(f)	3
Ulna (unsided)	(N)	3	(f)	
Innominate (unsided)	(N)	4	(f)	6
Femur (unsided)	(N)	4	(f)	5
Tibia (unsided)	(N)	4	(f)	6

Misc. Bags:				
Misc. Cranial	(N)		(f)	>50
Misc. Phalanges	(N)	2	(f)	
Misc. Limbs	(N)		(f)	12
Misc. Fragments	(N)		(f)	>40
Misc. Sediment bag	(N)		(f)	

Notes:
Fragmented crania

Two individuals, possibly twins, age 7-8 fetal lunar months (Cotter, 2004).

Labels on two original brown bags: "Note: Cranial speciments falling out of original bags 2/18/2009. EM" and "Sediment/Matrix containing human remains;… 2/18/2009. EM"

One element may have fragments in multiple bags. Fragment totals listed encompass all bags.
This inventory was checked against the 1988, 1989, and 2004 inventories.
Initial inventory completed by: AJ, JB, DS, EL

CU 584 BOZ 0009 Altenburg	
Burial #	**1**
Individual	**1&2**
(Individual = N/A if one)	

Burial Inventory Elements Present

N = Number of elements f = Number of Fragments*

CU 584	
BOZ 0009	
Altenburg	
Burial #	**2**
Individual	**N/A**

(Individual = N/A if one)

CRANIAL											
Frontal	(N)	1	(f)								
Occipital	(N)	1	(f)	13							
Sphenoid	(N)	1	(f)	3							
Mandible	(N)	1	(f)	4							
Ethmoid	(N)	1	(f)								
Vomer	(N)		(f)								
Hyoid	(N)		(f)								
Parietal	Left	(N)	1	(f)		Right	(N)	1	(f)		
Temporal	Left	(N)	1	(f)		Right	(N)	1	(f)	5	
Maxilla**	Left	(N)	1	(f)		Right	(N)		(f)		
Nasal	Left	(N)		(f)		Right	(N)		(f)		
Zygomatic	Left	(N)	1	(f)		Right	(N)	1	(f)		
Lacrimal	Left	(N)		(f)		Right	(N)		(f)		
Palate	Left	(N)		(f)		Right	(N)		(f)		
Inf. Nas. Conhc.	Left	(N)		(f)		Right	(N)		(f)		
Maleus	Left	(N)		(f)		Right	(N)		(f)		
Incus	Left	(N)		(f)		Right	(N)		(f)		
Stapes	Left	(N)		(f)		Right	(N)		(f)		
Maxillary Teeth	(N)		(f)								
Mandibular Teeth	(N)		(f)								
Unclassified Teeth	(N)	1	(f)								
Wormian Bones	(N)		(f)								

POSTCRANIAL											
Cervical Vertebrae	(N)		(f)								
Thoracic Vertabrae	(N)		(f)								
Lumbar Vertabrae	(N)		(f)								
Unclassified Vertabrae	(N)	24	(f)	67							
Sacrum	(N)	1	(f)	14							
Coccyx	(N)		(f)								
Sternum	(N)	1	(f)	3							
Ribs	(N)		(f)	53							
Scapula	Left	(N)	1	(f)		Right	(N)	1	(f)		
Clavicle	Left	(N)	1	(f)		Right	(N)	1	(f)		
Humerus	Left	(N)	1	(f)		Right	(N)	1	(f)		
Radius	Left	(N)	1	(f)		Right	(N)	1	(f)		
Ulna	Left	(N)	1	(f)		Right	(N)	1	(f)		
Carpals	Left	(N)		(f)		Right	(N)		(f)		
Metacarpals**	Left	(N)		(f)		Right	(N)		(f)		
Hand Phalanges**	Left	(N)		(f)		Right	(N)		(f)		
Innominate	Left	(N)	1	(f)	3	Right	(N)	1	(f)	3	
Femur	Left	(N)	1	(f)		Right	(N)	1	(f)		
Patella	Left	(N)		(f)		Right	(N)		(f)		
Tibia	Left	(N)	1	(f)		Right	(N)	1	(f)		
Fibula	Left	(N)	1	(f)		Right	(N)	1	(f)		
Tarsals	Left	(N)		(f)		Right	(N)		(f)		
Metatarsals**	Left	(N)		(f)		Right	(N)		(f)		
Foot Phalanges**	Left	(N)		(f)		Right	(N)		(f)		

* Elements in x fragments

** Further explaination present

Total (N):	69

Digital inventory completed by: JB

Comments				
**Further Explaination:				
Metacarpals (unsided)	(N)	1	(f)	
Hand Phalanges (unsided)	(N)	4	(f)	
Metatarsals (unsided)	(N)	6	(f)	
Foot Phalanges (unsided)	(N)	1	(f)	

Misc. Bags:				
Misc. Pectoral Fragments	(N)		(f)	>13
Misc. Cranial Sediment	(N)		(f)	>20
Misc. Cranial	(N)		(f)	43
Misc. Fragments	(N)		(f)	>73
Misc. Earth bag and scraping	(N)		(f)	

Notes:
Fragmented cranium

Age approximately 2 years, 8 months (Cotter, 2004).

A. Frontal and parietal bones of 2 yr old were misplaced and mislabelled in Burial 6 during class use (likely 2009). These elements were reassociated using the 1989 inventory, which noted 2 complete parietals and an incomplete frontal bone for a 2 yr old. The 2004 inventory noted that the frontal bone was warped and the articulation of the left parietal with occipital fragments from Burial 2.

B. Adult cranial bones found in this burial were found to be misplaced. Adult parietal and occipital articulated with Burial 4. The remaining adult cranial bones that could not be articulated were also added to Burial 4, after no better match could be made. These were checked against Burial 4, 5, 6, 7, 8, 10, 11, 12. These burials had fragmented cranium. Cranial bones that could not be articulated have an asterick (*) on the bags in Burial 4.

One element may have fragments in multiple bags. Fragment totals listed encompass all bags.
This inventory was checked against the 1988, 1989, and 2004 inventories.
Initial inventory completed by: AJ, JB, DS, EL

CU 584 BOZ 0009 Altenburg	
Burial #	**2**
Individual	**N/A**
(Individual = N/A if one)	

Burial Inventory Elements Present

N = Number of elements f = Number of Fragments*

CU 584	
BOZ 0009	
Altenburg	
Burial #	**3**
Individual	**N/A**

(Individual = N/A if one)

CRANIAL											
Frontal	(N)	1	(f)								
Occipital	(N)	1	(f)								
Sphenoid	(N)	1	(f)								
Mandible	(N)	1	(f)								
Ethmoid	(N)	1	(f)								
Vomer	(N)	1	(f)								
Hyoid	(N)		(f)								
Parietal	Left	(N)	1	(f)		Right	(N)	1	(f)		
Temporal	Left	(N)	1	(f)		Right	(N)	1	(f)		
Maxilla	Left	(N)	1	(f)		Right	(N)	1	(f)		
Nasal	Left	(N)	1	(f)		Right	(N)	1	(f)		
Zygomatic	Left	(N)	1	(f)		Right	(N)	1	(f)		
Lacrimal	Left	(N)	1	(f)		Right	(N)	1	(f)		
Palate	Left	(N)	1	(f)		Right	(N)	1	(f)		
Inf. Nas. Conhc.	Left	(N)	1	(f)		Right	(N)	1	(f)		
Maleus	Left	(N)		(f)		Right	(N)		(f)		
Incus	Left	(N)		(f)		Right	(N)		(f)		
Stapes	Left	(N)		(f)		Right	(N)		(f)		
Maxillary Teeth	(N)	1	(f)								
Mandibular Teeth	(N)	2	(f)								
Unclassified Teeth	(N)	14	(f)								
Wormian Bones	(N)		(f)								

POSTCRANIAL											
Cervical Vertebrae	(N)	7	(f)								
Thoracic Vertabrae	(N)	10	(f)	11							
Lumbar Vertabrae	(N)	5	(f)	10							
Unclassified Vertabrae	(N)		(f)								
Sacrum	(N)	1	(f)	>12							
Coccyx	(N)		(f)								
Sternum	(N)		(f)								
Ribs	(N)		(f)	>40							
Scapula	Left	(N)	1	(f)	3	Right	(N)	1	(f)		
Clavicle	Left	(N)	1	(f)		Right	(N)	1	(f)		
Humerus	Left	(N)	1	(f)		Right	(N)	1	(f)		
Radius	Left	(N)	1	(f)		Right	(N)	1	(f)		
Ulna	Left	(N)	1	(f)		Right	(N)	1	(f)		
Carpals	Left	(N)	8	(f)		Right	(N)	6	(f)		
Metacarpals	Left	(N)	5	(f)		Right	(N)	5	(f)	6	
Hand Phalanges	Left	(N)	11	(f)	12	Right	(N)	15	(f)		
Innominate	Left	(N)	1	(f)	3	Right	(N)	1	(f)	3	
Femur	Left	(N)	1	(f)		Right	(N)	1	(f)		
Patella	Left	(N)	1	(f)		Right	(N)		(f)		
Tibia	Left	(N)	1	(f)		Right	(N)	1	(f)		
Fibula	Left	(N)	1	(f)		Right	(N)	1	(f)		
Tarsals**	Left	(N)		(f)		Right	(N)		(f)		
Metatarsals**	Left	(N)		(f)		Right	(N)		(f)		
Foot Phalanges**	Left	(N)		(f)		Right	(N)		(f)		

* Elements in x fragments

** Further explaination present

Total (N):	171

Digital inventory completed by: JB

Comments				
**Further Explaination:				
Tarsals (unsided)	(N)	14	(f)	16
Metatarsals (unsided)	(N)	10	(f)	
Foot Phalanges (unsided)	(N)	16	(f)	

Misc. Bags:				
Misc. Scapula and Clavicle	(N)		(f)	>50
Misc. Arm Bone	(N)		(f)	>25
Misc. Carpal fragments	(N)		(f)	3
Misc. Hand (Right)	(N)		(f)	>25
Misc. Hand (Left)	(N)		(f)	>50
Misc. Vertebrae	(N)		(f)	>30
Misc. Innominate	(N)		(f)	>28
Misc. Tibia	(N)		(f)	1
Misc. Long Bone (Lower)	(N)		(f)	>100
Misc. Feet	(N)		(f)	>100
Misc. Fragments	(N)		(f)	>100

Notes:
Complete cranium

Male (Cotter, 2004), age 50-60 years according to 1989 inventory.

Mandibular teeth bagged with mandible.
Maxillary tooth bagged with maxilla.
Other teeth: One bag of 12 and one bag of 5.

Lumbar vertabrae bagged in two separate bags, as that is how they were originally bagged.

First right rib bagged with sacrum piece.

Right pubic bone bagged separately.

Extra right humerus misplaced in Burial 3. Right humerus was found to match Burial 9 and this has been labelled as such and bagged in Burial 9.

One element may have fragments in multiple bags. Fragment totals listed encompass all bags.
This inventory was checked against the 1988, 1989, and 2004 inventories.
Initial inventory completed by: AJ, JB, DS, EL

CU 584 BOZ 0009 Altenburg	
Burial #	**3**
Individual	**N/A**
(Individual = N/A if one)	

Burial Inventory Elements Present

N = Number of elements f = Number of Fragments*

CU	**584**
BOZ	**0009**
Altenburg	
Burial #	**4**
Individual	**N/A**

(Individual = N/A if one)

CRANIAL										
Frontal	(N)	1	(f)	3						
Occipital	(N)	1	(f)	5						
Sphenoid	(N)	1	(f)	11						
Mandible	(N)	1	(f)							
Ethmoid	(N)		(f)							
Vomer	(N)		(f)							
Hyoid	(N)		(f)							
Parietal	Left	(N)	1	(f)	5	Right	(N)	1	(f)	6
Temporal	Left	(N)	1	(f)		Right	(N)	1	(f)	4
Maxilla**	Left	(N)	1	(f)		Right	(N)	1	(f)	1
Nasal	Left	(N)	1	(f)		Right	(N)		(f)	
Zygomatic	Left	(N)	1	(f)		Right	(N)	1	(f)	
Lacrimal	Left	(N)		(f)		Right	(N)		(f)	
Palate	Left	(N)		(f)		Right	(N)		(f)	
Inf. Nas. Conhc.	Left	(N)		(f)		Right	(N)		(f)	
Maleus	Left	(N)		(f)		Right	(N)		(f)	
Incus	Left	(N)		(f)		Right	(N)		(f)	
Stapes	Left	(N)		(f)		Right	(N)		(f)	
Maxillary Teeth	(N)		(f)							
Mandibular Teeth	(N)		(f)							
Unclassified Teeth	(N)	4	(f)							
Wormian Bones	(N)		(f)							

POSTCRANIAL										
Cervical Vertebrae	(N)	6	(f)	7						
Thoracic Vertabrae	(N)	7	(f)	8						
Lumbar Vertabrae	(N)	5	(f)	10						
Unclassified Vertabrae	(N)		(f)							
Sacrum	(N)		(f)							
Coccyx	(N)		(f)							
Sternum	(N)		(f)							
Ribs	(N)		(f)	>100						
Scapula**	Left	(N)		(f)		Right	(N)		(f)	
Clavicle	Left	(N)	1	(f)		Right	(N)	1	(f)	
Humerus	Left	(N)	1	(f)	2	Right	(N)	1	(f)	2
Radius	Left	(N)	1	(f)		Right	(N)	1	(f)	2
Ulna	Left	(N)	1	(f)	4	Right	(N)	1	(f)	
Carpals**	Left	(N)		(f)		Right	(N)		(f)	
Metacarpals**	Left	(N)		(f)		Right	(N)		(f)	
Hand Phalanges**	Left	(N)		(f)		Right	(N)		(f)	
Innominate**	Left	(N)		(f)		Right	(N)		(f)	
Femur	Left	(N)	1	(f)		Right	(N)	1	(f)	3
Patella	Left	(N)	1	(f)		Right	(N)		(f)	
Tibia	Left	(N)	1	(f)	3	Right	(N)	1	(f)	
Fibula	Left	(N)	1	(f)		Right	(N)	1	(f)	
Tarsals**	Left	(N)		(f)		Right	(N)		(f)	
Metatarsals**	Left	(N)		(f)		Right	(N)		(f)	
Foot Phalanges**	Left	(N)		(f)		Right	(N)		(f)	

* Elements in x fragments

** Further explaination present

Total (N):	108

Digital inventory completed by: JB

Comments				
**Further Explaination:				
Maxilla (unsided)	(N)		(f)	4
Scapula (unsided)	(N)		(f)	>40
Carpals (unsided)	(N)	9	(f)	10
Metacarpals (unsided)	(N)	10	(f)	11
Hand Phalanges (unsided)	(N)	13	(f)	15
Innominate	(N)	2	(f)	27
Tarsals (unsided)	(N)	11	(f)	>28
Metatarsals (unsided)	(N)	10	(f)	11
Foot Phalanges (unsided)	(N)	3	(f)	>4

Misc. Bags:				
Misc. Cranial	(N)		(f)	19
Misc. Cervical Vertebra	(N)		(f)	1
Misc. Vertebrae	(N)		(f)	>20
Misc. Humeri	(N)		(f)	9
Misc. Long Bone (from arm bag)	(N)		(f)	>30
Misc. Hand	(N)		(f)	>4
Misc. Femur	(N)		(f)	2
Misc. Tibia	(N)		(f)	3
Misc. Lower Limb	(N)		(f)	>10
Misc. Long Bone	(N)		(f)	1
Misc. Foot	(N)		(f)	>20
Misc. Fragments	(N)		(f)	>60
Misc. Bone	(N)		(f)	1
Misc. Dirt and Bone	(N)		(f)	>50

Notes:
Fragmented cranium

Female (Cotter, 2004), age >50 years according to 1989 inventory.

3 cranial bags have multiple elements on individual fragments.
Bagged separately for ease in future reconstruction.

Adult cranial bones found in Burial 2 that could be rearticulated were bagged with parietal(s) and occipital.

Adult cranial bones found in Burial 2 that could not be rearticulated were bagged separately and have astericks (*) on bags.

C1 vertebrae identified and complete.

One element may have fragments in multiple bags. Fragment totals listed encompass all bags.
This inventory was checked against the 1988, 1989, and 2004 inventories.
Initial inventory completed by: AJ, JB, DS, EL

CU 584 BOZ 0009 Altenburg	
Burial #	**4**
Individual	**N/A**
(Individual = N/A if one)	

Burial Inventory Elements Present

N = Number of elements f = Number of Fragments*

CU 584	
BOZ 0009	
Altenburg	
Burial #	**5**
Individual	**N/A**

(Individual = N/A if one)

CRANIAL										
Frontal	(N)	1	(f)	4						
Occipital	(N)	1	(f)	2						
Sphenoid	(N)	1	(f)	6						
Mandible	(N)	1	(f)	2						
Ethmoid	(N)		(f)							
Vomer	(N)		(f)							
Hyoid	(N)		(f)							
Parietal	Left	(N)	1	(f)	2	Right	(N)	1	(f)	3
Temporal	Left	(N)	1	(f)	2	Right	(N)	1	(f)	
Maxilla	Left	(N)	1	(f)		Right	(N)		(f)	
Nasal	Left	(N)		(f)		Right	(N)		(f)	
Zygomatic	Left	(N)	1	(f)		Right	(N)	1	(f)	
Lacrimal	Left	(N)		(f)		Right	(N)		(f)	
Palate	Left	(N)		(f)		Right	(N)		(f)	
Inf. Nas. Conhc.	Left	(N)		(f)		Right	(N)		(f)	
Maleus	Left	(N)		(f)		Right	(N)		(f)	
Incus	Left	(N)		(f)		Right	(N)		(f)	
Stapes	Left	(N)		(f)		Right	(N)		(f)	
Maxillary Teeth	(N)		(f)							
Mandibular Teeth	(N)	13	(f)	14						
Unclassified Teeth	(N)	11	(f)	13						
Wormian Bones	(N)		(f)							

POSTCRANIAL										
Cervical Vertebrae	(N)	7	(f)							
Thoracic Vertabrae	(N)	7	(f)	10						
Lumbar Vertabrae	(N)	2	(f)	2						
Unclassified Vertabrae	(N)		(f)							
Sacrum	(N)	1	(f)	>7						
Coccyx	(N)		(f)							
Sternum	(N)		(f)							
Ribs	(N)		(f)	44						
Scapula	Left	(N)	1	(f)	3	Right	(N)	1	(f)	3
Clavicle	Left	(N)	1	(f)		Right	(N)	1	(f)	
Humerus	Left	(N)	1	(f)		Right	(N)	1	(f)	
Radius	Left	(N)	1	(f)		Right	(N)	1	(f)	
Ulna	Left	(N)	1	(f)		Right	(N)	1	(f)	
Carpals**	Left	(N)		(f)		Right	(N)		(f)	
Metacarpals**	Left	(N)		(f)		Right	(N)		(f)	
Hand Phalanges**	Left	(N)		(f)		Right	(N)		(f)	
Innominate	Left	(N)	1	(f)	>10	Right	(N)	1	(f)	>10
Femur	Left	(N)	1	(f)	2	Right	(N)	1	(f)	2
Patella	Left	(N)	1	(f)		Right	(N)	1	(f)	
Tibia	Left	(N)	1	(f)		Right	(N)	1	(f)	
Fibula	Left	(N)	1	(f)	2	Right	(N)	1	(f)	
Tarsals**	Left	(N)		(f)		Right	(N)		(f)	
Metatarsals**	Left	(N)		(f)		Right	(N)		(f)	
Foot Phalanges**	Left	(N)		(f)		Right	(N)		(f)	

* Elements in x fragments

** Further explaination present

Total (N):	132

Digital inventory completed by: JB

Extra Bagging Information
Frontal bagged in two bags: 1. Frontal, Left and Right Parietal (bagged as N=3) 2. Frontal (bagged as 3 frags) Occipital bagged in two bags: 1. Occipital (bagged as N=1) 2. Occipital, Sphenoid (bagged as N=2) Sphenoid bagged in two bags: 1. Sphenoid (bagged as N=1, 5 frags) 2. Occipital, Sphenoid (bagged as N=2) Mandibular Dentition (bagged as N=12, 13 frags) Left Parietal bagged in two bags 1. Left and Right Parietal (bagged as N=2) 2. Frontal, Left and Right Parietal (bagged as N=3) Right Parietal bagged in two bags: 1. Left and Right Parietal (bagged as N=2) 2. Right Parietal (bagged as N=1)

CU 584	
BOZ 0009	
Altenburg	
Burial #	**5**
Individual	**N/A**
(Individual = N/A if one)	

Comments				
**Further Explaination:				
Carpals (unsided)	(N)	7	(f)	
Metacarpals (unsided)	(N)	7	(f)	
Hand Phalanges (unsided)	(N)	18	(f)	
Tarsals (unsided)	(N)	14	(f)	15
Metatarsals (unsided)	(N)	10	(f)	12
Foot Phalanges (unsided)	(N)	4	(f)	5

Misc. Bags:				
Misc. Temporal	(N)		(f)	4
Misc. Maxilla	(N)		(f)	3
Misc. Cranial	(N)		(f)	>25
Misc. Vertebrae	(N)		(f)	>25
Misc. Scapulae	(N)		(f)	3
Misc. Humerus	(N)		(f)	2
Misc. Arm and Pectoral Girdle	(N)		(f)	>50
Misc. Hand	(N)		(f)	>10
Misc. Long Bone (lower)	(N)		(f)	>10
Misc. Fragments	(N)		(f)	>50
Misc. Earth	(N)		(f)	

Notes:
Fragmented cranium

Female (Cotter, 2004), age at least 30 years according to pdf document "Beard, Burton".

Femoral heads bagged separately

One element may have fragments in multiple bags. Fragment totals listed encompass all bags.
This inventory was checked against the 1988, 1989, and 2004 inventories.
Initial inventory completed by: AJ, JB, DS, EL

CU 584 BOZ 0009 Altenburg	
Burial #	**5**
Individual	**N/A**
(Individual = N/A if one)	

Burial Inventory Elements Present

N = Number of elements f = Number of Fragments*

CU 584	
BOZ 0009	
Altenburg	
Burial #	**6**
Individual	**N/A**

(Individual = N/A if one)

CRANIAL										
Frontal	(N)	1	(f)	3						
Occipital	(N)	1	(f)	3						
Sphenoid	(N)	1	(f)	4						
Mandible	(N)	1	(f)	2						
Ethmoid	(N)		(f)							
Vomer	(N)		(f)							
Hyoid	(N)	1	(f)							
Parietal	Left	(N)	1	(f)		Right	(N)	1	(f)	3
Temporal	Left	(N)	1	(f)	4	Right	(N)	1	(f)	2
Maxilla	Left	(N)	1	(f)		Right	(N)	1	(f)	
Nasal	Left	(N)		(f)		Right	(N)		(f)	
Zygomatic	Left	(N)	1	(f)		Right	(N)	1	(f)	
Lacrimal	Left	(N)		(f)		Right	(N)		(f)	
Palate	Left	(N)		(f)		Right	(N)		(f)	
Inf. Nas. Conhc.	Left	(N)		(f)		Right	(N)		(f)	
Maleus	Left	(N)		(f)		Right	(N)		(f)	
Incus	Left	(N)		(f)		Right	(N)		(f)	
Stapes	Left	(N)		(f)		Right	(N)		(f)	
Maxillary Teeth	(N)	17	(f)							
Mandibular Teeth	(N)	15	(f)							
Unclassified Teeth	(N)		(f)							
Wormian Bones	(N)		(f)							

POSTCRANIAL										
Cervical Vertebrae	(N)	7	(f)							
Thoracic Vertabrae	(N)	12	(f)							
Lumbar Vertabrae	(N)	5	(f)							
Unclassified Vertabrae	(N)		(f)							
Sacrum	(N)	1	(f)	3						
Coccyx	(N)		(f)							
Sternum	(N)	1	(f)	6						
Ribs	(N)		(f)	48						
Scapula	Left	(N)	1	(f)		Right	(N)	1	(f)	2
Clavicle	Left	(N)	1	(f)		Right	(N)	1	(f)	
Humerus	Left	(N)	1	(f)		Right	(N)	1	(f)	
Radius	Left	(N)	1	(f)		Right	(N)	1	(f)	
Ulna	Left	(N)	1	(f)		Right	(N)	1	(f)	
Carpals**	Left	(N)		(f)		Right	(N)		(f)	
Metacarpals	Left	(N)	4	(f)		Right	(N)	5	(f)	
Hand Phalanges**	Left	(N)		(f)		Right	(N)		(f)	
Innominate	Left	(N)	1	(f)	2	Right	(N)	1	(f)	3
Femur	Left	(N)	1	(f)		Right	(N)	1	(f)	
Patella	Left	(N)	1	(f)		Right	(N)	1	(f)	
Tibia	Left	(N)	1	(f)	3	Right	(N)	1	(f)	
Fibula	Left	(N)	1	(f)		Right	(N)	1	(f)	
Tarsals**	Left	(N)		(f)		Right	(N)		(f)	
Metatarsals**	Left	(N)		(f)		Right	(N)		(f)	
Foot Phalanges**	Left	(N)		(f)		Right	(N)		(f)	

* Elements in x fragments

** Further explaination present

Total (N):	173

Digital inventory completed by: JB

Comments				
**Further Explaination:				
Finger bone w/ ring in vial (ring in grave goods box)	(N)	1	(f)	
Carpals (unsided)	(N)	14	(f)	
Hand Phalanges (unsided)	(N)	26	(f)	
Tarsals (unsided)	(N)	13	(f)	
Metatarsals (unsided)	(N)	10	(f)	
Foot Phalanges (unsided)	(N)	9	(f)	12

Misc. Bags:				
Misc. Cranial, Wood, Earth	(N)		(f)	>200
Misc. Temporal	(N)		(f)	2
Misc. Vertebrae	(N)		(f)	>50
Misc. Sacrum	(N)		(f)	>20
Misc. Scapula	(N)		(f)	3
Misc. Arm, Clavicle, Scapula	(N)		(f)	>50
Misc. Humeri	(N)		(f)	4
Misc. Pectoral Girdle	(N)		(f)	>50
Misc. Innominate	(N)		(f)	>15
Misc. Long Bone	(N)		(f)	15
Misc. Long Bone (Lower)	(N)		(f)	>75
Misc. Feet	(N)		(f)	>50
Misc. Fragments	(N)		(f)	>100
Misc. Earth	(N)		(f)	>10
Possible Tissue	(N)		(f)	

Notes:
Fragmented cranium

Female, age 18-25 years (Cotter, 2004).

Right Humerus misplaced in Burial 9 was reassociated with this burial.

Mandible contains 6 molars. Total mandibular dentition = 9.
Upper right first molar labelled "Sample 13" from earlier inventories.

Left Maxilla contains 1 premolar.

One element may have fragments in multiple bags. Fragment totals listed encompass all bags.
This inventory was checked against the 1988, 1989, and 2004 inventories.
Initial inventory completed by: AJ, JB, DS, EL

CU 584 BOZ 0009 Altenburg	
Burial #	**6**
Individual	**N/A**
(Individual = N/A if one)	

Burial Inventory Elements Present

N = Number of elements f = Number of Fragments*

CU 584	
BOZ 0009	
Altenburg	
Burial #	**7**
Individual	**N/A**

(Individual = N/A if one)

CRANIAL										
Frontal	(N)	1	(f)	3						
Occipital	(N)	1	(f)	3						
Sphenoid	(N)	1	(f)	3						
Mandible	(N)	1	(f)	3						
Ethmoid	(N)	1	(f)							
Vomer	(N)		(f)							
Hyoid	(N)		(f)							
Parietal	Left	(N)	1	(f)	4	Right	(N)	1	(f)	2
Temporal	Left	(N)	1	(f)	2	Right	(N)	1	(f)	
Maxilla**	Left	(N)	1	(f)		Right	(N)	1	(f)	
Nasal	Left	(N)	1	(f)		Right	(N)		(f)	
Zygomatic	Left	(N)	1	(f)		Right	(N)	1	(f)	
Lacrimal	Left	(N)		(f)		Right	(N)		(f)	
Palate	Left	(N)		(f)		Right	(N)		(f)	
Inf. Nas. Conhc.	Left	(N)		(f)		Right	(N)		(f)	
Maleus	Left	(N)		(f)		Right	(N)		(f)	
Incus	Left	(N)		(f)		Right	(N)		(f)	
Stapes	Left	(N)		(f)		Right	(N)		(f)	
Maxillary Teeth	(N)		(f)							
Mandibular Teeth	(N)		(f)							
Unclassified Teeth	(N)	11	(f)	12						
Wormian Bones	(N)		(f)							

POSTCRANIAL										
Cervical Vertebrae	(N)	6	(f)	>40						
Thoracic Vertabrae	(N)	9	(f)	21						
Lumbar Vertabrae	(N)	6	(f)	11						
Unclassified Vertabrae	(N)		(f)							
Sacrum	(N)	1	(f)	>25						
Coccyx	(N)		(f)							
Sternum	(N)	1	(f)	2						
Ribs	(N)		(f)	>161						
Scapula	Left	(N)	1	(f)		Right	(N)	1	(f)	3
Clavicle	Left	(N)	1	(f)		Right	(N)	1	(f)	
Humerus	Left	(N)	1	(f)		Right	(N)	1	(f)	
Radius	Left	(N)	1	(f)		Right	(N)	1	(f)	2
Ulna	Left	(N)	1	(f)		Right	(N)	1	(f)	2
Carpals**	Left	(N)		(f)		Right	(N)		(f)	
Metacarpals**	Left	(N)		(f)		Right	(N)		(f)	
Hand Phalanges**	Left	(N)		(f)		Right	(N)		(f)	
Innominate	Left	(N)	1	(f)		Right	(N)	1	(f)	2
Femur	Left	(N)	1	(f)		Right	(N)	1	(f)	
Patella	Left	(N)	1	(f)		Right	(N)	1	(f)	
Tibia	Left	(N)	1	(f)	2	Right	(N)	1	(f)	
Fibula	Left	(N)	1	(f)		Right	(N)	1	(f)	
Tarsals**	Left	(N)		(f)		Right	(N)		(f)	
Metatarsals**	Left	(N)		(f)		Right	(N)		(f)	
Foot Phalanges**	Left	(N)		(f)		Right	(N)		(f)	

* Elements in x fragments

** Further explaination present

Total (N):	142

Digital inventory completed by: JB

Extra Bagging Information
Right Frontal fused to Right Parietal. They have been bagged as: Right Frontal, Right Parietal N=2 Part of Occipital fused to Right Temporal and two Parietal elements. They have been bagged as: Occipital, Temporal (Right), (2) Parietal N=4. 3 Parietal elements fused to other cranial elements. 2 Parietal elements fused to Occipital and Right Temporal and 1 Right Parietal element fused to Right Frontal. Left Parietal element bagged separately as 1 Left Parietal N=1, 1 frag. Right Temporal fused to Occipital and 2 Parietal elements. They have been bagged as: Occipital, Right Temporal , (2) Parietal N=4. Part of Maxilla fused to Right Zygomatic. They have been bagged as: Right Zygomatic and Maxilla N=2. Have both fibulas in 3 frags. Unsided.

CU 584	
BOZ 0009	
Altenburg	
Burial #	**7**
Individual	**N/A**
(Individual = N/A if one)	

Comments				
**Further Explaination:				
Maxilla	(N)		(f)	10
Carpals (unsided)	(N)	13	(f)	16
Metacarpals (unsided)	(N)	9	(f)	10
Hand Phalanges (unsided)	(N)	20	(f)	
Tarsals (unsided)	(N)	11	(f)	>37
Metatarsals (unsided)	(N)	13	(f)	15
Foot Phalanges (unsided)	(N)	1	(f)	
Phalanges (unknown location)	(N)	7	(f)	

Misc. Bags:				
Misc. Temporal	(N)		(f)	1
Misc. Cranial and Earth	(N)		(f)	45
Misc. Vertebrae	(N)		(f)	>200
Misc. Scapula	(N)		(f)	4
Misc. Radii	(N)		(f)	2
Misc. Arm	(N)		(f)	>100
Misc. Hand and Earth	(N)		(f)	>100
Misc. Innominate	(N)		(f)	>120
Right Femur (distal end)	(N)		(f)	1
Left Femur (distal end)	(N)		(f)	1
Misc. Tibia	(N)		(f)	3
Misc. Long Bone	(N)		(f)	1
Misc. Foot	(N)		(f)	>10
Misc. Frags	(N)		(f)	>100
Misc. Earth and Frags	(N)		(f)	

Notes:
Fragmented cranium

Male (Cotter, 204), age 42-47 years according to pdf document "Beard, Burton".

Left Parietal and Frontal misplaced in Burial 12 was reassociated with this burial.

One element may have fragments in multiple bags. Fragment totals listed encompass all bags.
This inventory was checked against the 1988, 1989, and 2004 inventories.
Initial inventory completed by: AJ, JB, DS, EL

CU 584 BOZ 0009 Altenburg	
Burial #	**7**
Individual	**N/A**
(Individual = N/A if one)	

Burial Inventory Elements Present

N = Number of elements f = Number of Fragments*

CU 584	
BOZ 0009	
Altenburg	
Burial #	**8**
Individual	**N/A**

(Individual = N/A if one)

CRANIAL											
Frontal	(N)	1	(f)								
Occipital	(N)	1	(f)	3							
Sphenoid	(N)	1	(f)	9							
Mandible	(N)	1	(f)								
Ethmoid	(N)		(f)								
Vomer	(N)		(f)								
Hyoid	(N)		(f)								
Parietal	Left	(N)	1	(f)		Right	(N)	1	(f)		
Temporal	Left	(N)	1	(f)		Right	(N)	1	(f)		
Maxilla**	Left	(N)		(f)		Right	(N)		(f)		
Nasal	Left	(N)		(f)		Right	(N)	1	(f)		
Zygomatic	Left	(N)	1	(f)		Right	(N)		(f)		
Lacrimal	Left	(N)		(f)		Right	(N)		(f)		
Palate	Left	(N)		(f)		Right	(N)		(f)		
Inf. Nas. Conhc.	Left	(N)		(f)		Right	(N)		(f)		
Maleus	Left	(N)		(f)		Right	(N)		(f)		
Incus	Left	(N)		(f)		Right	(N)		(f)		
Stapes	Left	(N)		(f)		Right	(N)		(f)		
Maxillary Teeth	(N)		(f)								
Mandibular Teeth	(N)		(f)								
Unclassified Teeth	(N)	3	(f)								
Wormian Bones	(N)		(f)								

POSTCRANIAL											
Cervical Vertebrae	(N)	4	(f)	5							
Thoracic Vertabrae	(N)	5	(f)								
Lumbar Vertabrae	(N)	5	(f)								
Unclassified Vertabrae	(N)		(f)								
Sacrum	(N)	1	(f)	10							
Coccyx	(N)		(f)								
Sternum	(N)	1	(f)								
Ribs	(N)		(f)	>60							
Scapula	Left	(N)	1	(f)	2	Right	(N)	1	(f)		
Clavicle	Left	(N)	1	(f)		Right	(N)		(f)		
Humerus	Left	(N)	1	(f)		Right	(N)	1	(f)		
Radius	Left	(N)	1	(f)		Right	(N)	1	(f)		
Ulna	Left	(N)	1	(f)	3	Right	(N)	1	(f)	2	
Carpals**	Left	(N)		(f)		Right	(N)		(f)		
Metacarpals**	Left	(N)		(f)		Right	(N)		(f)		
Hand Phalanges**	Left	(N)		(f)		Right	(N)		(f)		
Innominate	Left	(N)	1	(f)		Right	(N)	1	(f)		
Femur	Left	(N)	1	(f)		Right	(N)	1	(f)		
Patella	Left	(N)	1	(f)		Right	(N)	1	(f)		
Tibia	Left	(N)	1	(f)	2	Right	(N)	1	(f)	2	
Fibula	Left	(N)	1	(f)		Right	(N)	1	(f)	2	
Tarsals**	Left	(N)		(f)		Right	(N)		(f)		
Metatarsals**	Left	(N)		(f)		Right	(N)		(f)		
Foot Phalanges**	Left	(N)		(f)		Right	(N)		(f)		

* Elements in x fragments

** Further explaination present

Total (N):	77

Digital inventory completed by: JB

Comments				
**Further Explaination:				
Maxilla (unsided)	(N)		(f)	>15
Carpals (unsided)	(N)	1	(f)	
Metacarpals (unsided)	(N)	6	(f)	7
Hand Phalanges (unsided)	(N)	6	(f)	
Tarsals (unsided)	(N)	4	(f)	
Metatarsals (unsided)	(N)	10	(f)	
Foot Phalanges (unsided)	(N)	1	(f)	
Phalanx (unknown location)	(N)	1	(f)	

Misc. Bags:				
Misc. Mandible and Maxilla	(N)		(f)	>25
Misc. Maxilla	(N)		(f)	5
Misc. Maxilla (separate bag)	(N)		(f)	>10
Misc. Cranial	(N)		(f)	>10
Misc. Vertebrae	(N)		(f)	>18
Misc. Scapula	(N)		(f)	1
Misc. Humeri	(N)		(f)	4
Misc. Long Bone and Pectoral	(N)		(f)	>25
Misc. Hand	(N)		(f)	>5
Misc. Innominate	(N)		(f)	>10
Misc. Innominate (separate)	(N)		(f)	13
Misc. Innominate and Sacrum	(N)		(f)	>25
Misc. Femur	(N)		(f)	4
Misc. Tibia	(N)		(f)	1
Misc. Fibula	(N)		(f)	4
Misc. Long Bone (Lower)	(N)		(f)	>50
Misc. Feet	(N)		(f)	>25
Ossified Cartilage	(N)		(f)	>11
Misc. Fragments	(N)		(f)	>100
Misc. Earth	(N)		(f)	>5

Notes:
Complete cranium

Female (Cotter, 2004), age >60 years according to pdf document "Beard, Burton".

1 tooth is bagged separately.

Articulated cranial pieces include: Frontal, Left and Right Parietals, Left and Right Temporals, and Fragments of Occipital.

One element may have fragments in multiple bags. Fragment totals listed encompass all bags.
This inventory was checked against the 1988, 1989, and 2004 inventories.
Initial inventory completed by: AJ, JB, DS, EL

CU 584 BOZ 0009 Altenburg	
Burial #	**8**
Individual	**N/A**
(Individual = N/A if one)	

Burial Inventory Elements Present

N = Number of elements f = Number of Fragments*

CU 584	
BOZ 0009	
Altenburg	
Burial #	**9**
Individual	**N/A**

(Individual = N/A if one)

CRANIAL											
Frontal	(N)	1	(f)								
Occipital	(N)	1	(f)								
Sphenoid	(N)	1	(f)								
Mandible	(N)	1	(f)								
Ethmoid	(N)	1	(f)								
Vomer	(N)	1	(f)								
Hyoid	(N)		(f)								
Parietal	Left	(N)	1	(f)		Right	(N)	1	(f)		
Temporal	Left	(N)	1	(f)		Right	(N)	1	(f)		
Maxilla	Left	(N)	1	(f)		Right	(N)	1	(f)		
Nasal	Left	(N)	1	(f)		Right	(N)	1	(f)		
Zygomatic	Left	(N)	1	(f)		Right	(N)	1	(f)		
Lacrimal	Left	(N)	1	(f)		Right	(N)	1	(f)		
Palate	Left	(N)	1	(f)		Right	(N)	1	(f)		
Inf. Nas. Conhc.	Left	(N)	1	(f)		Right	(N)	1	(f)		
Maleus	Left	(N)		(f)		Right	(N)		(f)		
Incus	Left	(N)		(f)		Right	(N)		(f)		
Stapes	Left	(N)		(f)		Right	(N)		(f)		
Maxillary Teeth	(N)	3	(f)								
Mandibular Teeth	(N)	5	(f)								
Unclassified Teeth	(N)	16	(f)								
Wormian Bones	(N)		(f)								

POSTCRANIAL											
Cervical Vertebrae	(N)	7	(f)								
Thoracic Vertabrae	(N)	12	(f)	15							
Lumbar Vertabrae	(N)	6	(f)								
Unclassified Vertabrae	(N)		(f)								
Sacrum	(N)	1	(f)								
Coccyx	(N)		(f)								
Sternum	(N)	1	(f)	6							
Ribs	(N)		(f)	>1000							
Scapula	Left	(N)	1	(f)	4	Right	(N)	1	(f)		
Clavicle	Left	(N)	1	(f)		Right	(N)	1	(f)		
Humerus	Left	(N)	1	(f)		Right	(N)	1	(f)	4	
Radius	Left	(N)	1	(f)		Right	(N)	1	(f)		
Ulna	Left	(N)	1	(f)		Right	(N)	1	(f)		
Carpals**	Left	(N)		(f)		Right	(N)		(f)		
Metacarpals**	Left	(N)		(f)		Right	(N)		(f)		
Hand Phalanges**	Left	(N)		(f)		Right	(N)		(f)		
Innominate	Left	(N)	1	(f)	2	Right	(N)	1	(f)	2	
Femur	Left	(N)	1	(f)		Right	(N)	1	(f)		
Patella	Left	(N)	1	(f)		Right	(N)	1	(f)		
Tibia	Left	(N)	1	(f)		Right	(N)	1	(f)		
Fibula	Left	(N)	1	(f)	2	Right	(N)	1	(f)		
Tarsals**	Left	(N)		(f)		Right	(N)		(f)		
Metatarsals**	Left	(N)		(f)		Right	(N)		(f)		
Foot Phalanges**	Left	(N)		(f)		Right	(N)		(f)		

* Elements in x fragments

** Further explaination present

Total (N):	169

Digital inventory completed by: JB

CU 584	
BOZ 0009	
Altenburg	
Burial #	**9**
Individual	**N/A**
(Individual = N/A if one)	

Comments

**Further Explaination:				
Carpals (unsided)	(N)	11	(f)	
Metacarpals (unsided)	(N)	10	(f)	11
Hand Phalanges (unsided)	(N)	24	(f)	
Tarsals (unsisded)	(N)	14	(f)	
Metatarsals (unsided)	(N)	9	(f)	
5th Right Metatarsal Found in fill above casket	(N)	1	(f)	2
Foot Phalanges (unsided)	(N)	7	(f)	

Misc. Bags:				
Misc. Vertebrae	(N)		(f)	2
Misc. Scapula	(N)		(f)	1
Misc. Long Bone	(N)		(f)	2
Misc. Fragments	(N)		(f)	>70
Earth				

Notes:
Complete cranium

Female, age 30-40 years (Cotter, 2004).
1st right metacarpal noted in Wade 1988 (p. 38)and Rusch 1989 was not present at re-inventory (with extensive osteoarthritis).
Left Scapula misplaced in Burial 7 was reassociated with this burial after confirmation from original inventory.

This burial may be secondary burial per Rusch 1989 (p. 11).

The original bag that contained 5th metatarsal has extra fragment that does not appear to be part of the metatarsal. They are bagged together as originally found.

Misplaced items:
Humeri misplaced in Burial 7 was reassociated with this burial after confirmation from original inventory.
Right Ulna and Radius misplaced in Burial 3 was reassociated with this burial.
Right Humerus misplaced in this burial (Burial 9) was reassociated with Burial 6.
Right Humerus misplaced in Burial 3 was reassociated with this burial.
All misplaced items are thought to be from class use (likely 2009).

One element may have fragments in multiple bags. Fragment totals listed encompass all bags.
This inventory was checked against the 1988, 1989, and 2004 inventories.
Initial inventory completed by: AJ, JB, DS, EL

Burial Inventory Elements Present

N = Number of elements f = Number of Fragments*

CU 584	
BOZ 0009	
Altenburg	
Burial #	**10**
Individual	**N/A**

(Individual = N/A if one)

CRANIAL										
Frontal	(N)	1	(f)							
Occipital	(N)	1	(f)	4						
Sphenoid	(N)	1	(f)	5						
Mandible	(N)	1	(f)	>5						
Ethmoid	(N)		(f)							
Vomer	(N)		(f)							
Hyoid	(N)		(f)							
Parietal	Left	(N)	1	(f)	5	Right	(N)	1	(f)	3
Temporal	Left	(N)	1	(f)	2	Right	(N)	1	(f)	4
Maxilla	Left	(N)	1	(f)	2	Right	(N)	1	(f)	2
Nasal	Left	(N)		(f)		Right	(N)		(f)	
Zygomatic	Left	(N)	1	(f)		Right	(N)	1	(f)	
Lacrimal	Left	(N)		(f)		Right	(N)		(f)	
Palate	Left	(N)		(f)		Right	(N)		(f)	
Inf. Nas. Conhc.	Left	(N)		(f)		Right	(N)		(f)	
Maleus	Left	(N)		(f)		Right	(N)		(f)	
Incus	Left	(N)		(f)		Right	(N)		(f)	
Stapes	Left	(N)		(f)		Right	(N)		(f)	
Maxillary Teeth	(N)	2	(f)							
Mandibular Teeth	(N)	26	(f)							
Unclassified Teeth	(N)		(f)							
Wormian Bones	(N)		(f)							

POSTCRANIAL										
Cervical Vertebrae	(N)		(f)							
Thoracic Vertabrae	(N)		(f)							
Lumbar Vertabrae	(N)		(f)							
Unclassified Vertabrae	(N)		(f)	>80						
Sacrum	(N)		(f)							
Coccyx	(N)		(f)							
Sternum	(N)		(f)							
Ribs	(N)		(f)	71						
Scapula**	Left	(N)	1	(f)		Right	(N)	1	(f)	
Clavicle	Left	(N)	1	(f)		Right	(N)	1	(f)	
Humerus	Left	(N)	1	(f)		Right	(N)	1	(f)	
Radius	Left	(N)	1	(f)		Right	(N)	1	(f)	
Ulna	Left	(N)	1	(f)		Right	(N)	1	(f)	
Carpals	Left	(N)		(f)		Right	(N)		(f)	
Metacarpals	Left	(N)		(f)		Right	(N)		(f)	
Hand Phalanges	Left	(N)		(f)		Right	(N)		(f)	
Innominate	Left	(N)	1	(f)	2	Right	(N)	1	(f)	
Femur	Left	(N)	1	(f)		Right	(N)	1	(f)	
Patella	Left	(N)		(f)		Right	(N)		(f)	
Tibia	Left	(N)	1	(f)		Right	(N)	1	(f)	
Fibula**	Left	(N)	1	(f)		Right	(N)	1	(f)	
Tarsals	Left	(N)		(f)		Right	(N)		(f)	
Metatarsals	Left	(N)		(f)		Right	(N)		(f)	
Foot Phalanges**	Left	(N)		(f)		Right	(N)		(f)	

* Elements in x fragments

** Further explaination present

Total (N):	60

Digital inventory completed by: JB

Comments				
**Further Explaination:				
Scapula (unsided)	(N)		(f)	5
Fibula (unsided)	(N)		(f)	5
Foot Phalanges	(N)	2	(f)	4

Misc. Bags:				
Misc. Vertebral Column	(N)		(f)	>40
Misc. Innominate	(N)		(f)	>30
Misc. Long Bone (lower)	(N)		(f)	>44
Misc. Metacarpals, Phalanges	(N)		(f)	13
Misc. Cranial	(N)		(f)	>75
Misc. Fragments	(N)		(f)	>25

Notes:
Fragmented cranium

Aged to 5-9 years based on tooth eruption and cranial size (Cotter, 2004).

Mandibular teeth thought to be labelled correctly, as they are
from original bag labelled mandible.

Could not identify sacral vertebrae as described on 2004
inventory. Possibly in Misc. Vertebral Column bag.

2004 inventory only identified one individual with no age
approximated. During 2011-2012 reboxing, two individuals
were identified. Individual 1 was approximated to be
5-9 years. Individual 2 was approximated to be
Less than 1 year. This was determined to be false.
Only one individual is present.

One element may have fragments in multiple bags. Fragment totals
listed encompass all bags.
This inventory was checked against the 1988, 1989, and 2004 inventories.
Initial inventory completed by: AJ, JB, DS, EL

CU 584 BOZ 0009 Altenburg	
Burial #	**10**
Individual	**N/A**
(Individual = N/A if one)	

Burial Inventory Elements Present

N = Number of elements f = Number of Fragments*

CU 584	
BOZ 0009	
Altenburg	
Burial #	**11**
Individual	**N/A**

(Individual = N/A if one)

CRANIAL										
Frontal	(N)	1	(f)	2						
Occipital	(N)	1	(f)	2						
Sphenoid	(N)	1	(f)	3						
Mandible	(N)	1	(f)	3						
Ethmoid	(N)		(f)							
Vomer	(N)		(f)							
Hyoid	(N)		(f)							
Parietal	Left	(N)		(f)		Right	(N)		(f)	
Temporal**	Left	(N)	1	(f)		Right	(N)	1	(f)	
Maxilla	Left	(N)	1	(f)		Right	(N)	1	(f)	
Nasal	Left	(N)		(f)		Right	(N)		(f)	
Zygomatic	Left	(N)	1	(f)		Right	(N)	1	(f)	
Lacrimal	Left	(N)		(f)		Right	(N)		(f)	
Palate	Left	(N)		(f)		Right	(N)		(f)	
Inf. Nas. Conhc.	Left	(N)		(f)		Right	(N)		(f)	
Maleus	Left	(N)		(f)		Right	(N)		(f)	
Incus	Left	(N)		(f)		Right	(N)		(f)	
Stapes	Left	(N)		(f)		Right	(N)		(f)	
Maxillary Teeth	(N)		(f)							
Mandibular Teeth	(N)		(f)							
Unclassified Teeth	(N)	1	(f)							
Wormian Bones	(N)		(f)							

POSTCRANIAL										
Cervical Vertebrae	(N)		(f)							
Thoracic Vertabrae	(N)		(f)							
Lumbar Vertabrae	(N)		(f)							
Unclassified Vertabrae	(N)		(f)	70						
Sacrum	(N)	1	(f)	3						
Coccyx	(N)		(f)							
Sternum	(N)		(f)							
Ribs	(N)		(f)	31						
Scapula	Left	(N)	1	(f)		Right	(N)	1	(f)	
Clavicle	Left	(N)	1	(f)		Right	(N)	1	(f)	
Humerus	Left	(N)	1	(f)		Right	(N)	1	(f)	
Radius**	Left	(N)	1	(f)		Right	(N)	1	(f)	
Ulna	Left	(N)	1	(f)		Right	(N)	1	(f)	
Carpals	Left	(N)		(f)		Right	(N)		(f)	
Metacarpals	Left	(N)		(f)		Right	(N)		(f)	
Hand Phalanges	Left	(N)		(f)		Right	(N)		(f)	
Innominate**	Left	(N)	1	(f)		Right	(N)	1	(f)	
Femur	Left	(N)	1	(f)		Right	(N)	1	(f)	
Patella	Left	(N)		(f)		Right	(N)		(f)	
Tibia	Left	(N)	1	(f)		Right	(N)	1	(f)	
Fibula	Left	(N)	1	(f)		Right	(N)	1	(f)	
Tarsals	Left	(N)		(f)		Right	(N)		(f)	
Metatarsals	Left	(N)		(f)		Right	(N)		(f)	
Foot Phalanges	Left	(N)		(f)		Right	(N)		(f)	

* Elements in x fragments

** Further explaination present

Total (N):	31

Digital inventory completed by: JB

Comments				
**Further Explaination:				
Temporal (unsided)	(N)		(f)	3
Radius (unsided)	(N)		(f)	1
Ishium (unsided)	(N)		(f)	1

Misc. Bags:				
Misc. Cranial	(N)		(f)	>50
Phalanx (unknown location)	(N)	1	(f)	
Misc. Fragments	(N)		(f)	>40

Notes:
Fragmented cranium

Aged at 7.5-8 fetal lunar months according to pdf document "Beard, Burton".

One element may have fragments in multiple bags. Fragment totals listed encompass all bags.
This inventory was checked against the 1988, 1989, and 2004 inventories.
Initial inventory completed by: AJ, JB, DS, EL

CU 584 BOZ 0009 Altenburg	
Burial #	**11**
Individual	**N/A**
(Individual = N/A if one)	

Burial Inventory Elements Present

N = Number of elements f = Number of Fragments*

CU 584	
BOZ 0009	
Altenburg	
Burial #	**12**
Individual	**N/A**

(Individual = N/A if one)

CRANIAL											
Frontal	(N)	1	(f)								
Occipital	(N)	1	(f)	5							
Sphenoid	(N)	1	(f)	4							
Mandible	(N)	1	(f)	3							
Ethmoid	(N)		(f)								
Vomer	(N)		(f)								
Hyoid	(N)		(f)								
Parietal**	Left	(N)	1	(f)		Right	(N)	1	(f)		
Temporal	Left	(N)	1	(f)		Right	(N)	1	(f)		
Maxilla**	Left	(N)	1	(f)		Right	(N)	1	(f)		
Nasal	Left	(N)		(f)		Right	(N)		(f)		
Zygomatic	Left	(N)	1	(f)		Right	(N)	1	(f)		
Lacrimal	Left	(N)		(f)		Right	(N)		(f)		
Palate	Left	(N)		(f)		Right	(N)		(f)		
Inf. Nas. Conhc.	Left	(N)		(f)		Right	(N)		(f)		
Maleus	Left	(N)		(f)		Right	(N)		(f)		
Incus	Left	(N)		(f)		Right	(N)		(f)		
Stapes	Left	(N)		(f)		Right	(N)		(f)		
Maxillary Teeth	(N)		(f)								
Mandibular Teeth	(N)	12	(f)								
Unclassified Teeth	(N)		(f)								
Wormian Bones	(N)		(f)								

POSTCRANIAL											
Cervical Vertebrae	(N)	1	(f)								
Thoracic Vertabrae	(N)		(f)								
Lumbar Vertabrae	(N)		(f)								
Unclassified Vertabrae	(N)		(f)								
Sacrum	(N)	1	(f)	>30							
Coccyx	(N)		(f)								
Sternum	(N)		(f)								
Ribs	(N)		(f)	94							
Scapula	Left	(N)	1	(f)		Right	(N)	1	(f)		
Clavicle	Left	(N)	1	(f)		Right	(N)		(f)		
Humerus	Left	(N)	1	(f)	2	Right	(N)	1	(f)		
Radius	Left	(N)	1	(f)		Right	(N)	1	(f)		
Ulna	Left	(N)	1	(f)	2	Right	(N)	1	(f)	3	
Carpals**	Left	(N)		(f)		Right	(N)		(f)		
Metacarpals**	Left	(N)		(f)		Right	(N)		(f)		
Hand Phalanges**	Left	(N)		(f)		Right	(N)		(f)		
Innominate	Left	(N)	1	(f)	3	Right	(N)	1	(f)	4	
Femur	Left	(N)	1	(f)	3	Right	(N)	1	(f)	3	
Patella	Left	(N)	1	(f)	2	Right	(N)	1	(f)		
Tibia	Left	(N)	1	(f)		Right	(N)	1	(f)	4	
Fibula**	Left	(N)	1	(f)	2	Right	(N)	1	(f)	2	
Tarsals**	Left	(N)		(f)		Right	(N)		(f)		
Metatarsals**	Left	(N)		(f)		Right	(N)		(f)		
Foot Phalanges**	Left	(N)		(f)		Right	(N)		(f)		

* Elements in x fragments

** Further explaination present

Total (N):	127

Digital inventory completed by: JB

Comments				
**Further Explaination:				
Parietal (unsided)	(N)		(f)	9
Maxilla (unsided)	(N)		(f)	10
Carpals (unsided)	(N)	10	(f)	
Metacarpals (unsided)	(N)	8	(f)	11
Hand Phalanges (unsided)	(N)	20	(f)	22
Fibula (unsided)	(N)		(f)	1
Tarsals (unsided)	(N)	14	(f)	
Metatarsals (unsided)	(N)	10	(f)	
Foot Phalanges (unsided)	(N)	12	(f)	
Vertebrae	(N)	6	(f)	13

Misc. Bags:				
Misc. Cranial	(N)		(f)	>100
Misc. Vertebrae	(N)		(f)	17
Misc. Scapula	(N)		(f)	6
Misc. Pectoral Girdle	(N)		(f)	>100
Misc. Humerus	(N)		(f)	3
Misc. Arm and Earth	(N)		(f)	>10
Misc. Hand and Earth	(N)		(f)	>10
Right 4th Phalanx	(N)	1	(f)	
Misc. Innominate	(N)		(f)	>25
Misc. Long Bone (lower)	(N)		(f)	>20
Misc. Feet and Earth	(N)		(f)	>3
Misc. Bone from Disturbances	(N)		(f)	>25
Misc. Fragments	(N)		(f)	>6
Phalanx (unknown location) with cloth	(N)	1	(f)	
Hair on skull (bag)	(N)		(f)	

Notes:
Female (Cotter, 2004), age 42-47 years according to pdf document "Beard, Burton".

Frontal/Left Parietal misplaced in this burial (Burial 12) was reassociated with Burial 7.

Misc. Fibula proximal end bagged separately.

One element may have fragments in multiple bags. Fragment totals listed encompass all bags.
This inventory was checked against the 1988, 1989, and 2004 inventories.
Initial inventory completed by: AJ, JB, DS, EL

CU 584 BOZ 0009 Altenburg	
Burial #	**12**
Individual	**N/A**
(Individual = N/A if one)	

Burial Inventory Elements Present

N = Number of elements f = Number of Fragments*

CU 583	
BOZ 0048	
Stolz	
Burial #	**1**
Individual	**N/A**
(Individual = N/A if one)	

CRANIAL										
Frontal	(N)	1	(f)							
Occipital	(N)	1	(f)							
Sphenoid	(N)	1	(f)	5						
Mandible	(N)	1	(f)							
Ethmoid	(N)	1	(f)							
Vomer	(N)	1	(f)							
Hyoid	(N)	1	(f)							
Parietal	Left	(N)	1	(f)		Right	(N)	1	(f)	
Temporal	Left	(N)	1	(f)		Right	(N)	1	(f)	
Maxilla	Left	(N)	1	(f)		Right	(N)	1	(f)	
Nasal	Left	(N)	1	(f)		Right	(N)	1	(f)	
Zygomatic	Left	(N)	1	(f)		Right	(N)	1	(f)	
Lacrimal	Left	(N)	1	(f)		Right	(N)	1	(f)	
Palate	Left	(N)	1	(f)		Right	(N)	1	(f)	
Inf. Nas. Conhc.	Left	(N)	1	(f)		Right	(N)	1	(f)	
Maleus	Left	(N)	1	(f)		Right	(N)	1	(f)	
Incus	Left	(N)	1	(f)		Right	(N)	1	(f)	
Stapes	Left	(N)	1	(f)		Right	(N)		(f)	
Mandibular Teeth	(N)	3	(f)							
Maxillary Teeth	(N)	1	(f)							
Unclassified Teeth	(N)		(f)							
Wormian Bones	(N)		(f)							

POSTCRANIAL										
Cervical Vertebrae	(N)	7	(f)							
Thoracic Vertabrae**	(N)	12	(f)							
Lumbar Vertabrae	(N)	5	(f)							
Unclassified Vertabrae	(N)		(f)							
Sacrum	(N)	1	(f)	5						
Coccyx	(N)	1	(f)							
Sternum	(N)	1	(f)	>3						
Ribs	(N)	24	(f)							
Scapula	Left	(N)	1	(f)	2	Right	(N)	1	(f)	3
Clavicle	Left	(N)	1	(f)		Right	(N)	1	(f)	
Humerus	Left	(N)	1	(f)		Right	(N)	1	(f)	
Radius	Left	(N)	1	(f)		Right	(N)	1	(f)	
Ulna	Left	(N)	1	(f)		Right	(N)	1	(f)	
Carpals	Left	(N)	8	(f)		Right	(N)	7	(f)	
Metacarpals	Left	(N)	5	(f)		Right	(N)	5	(f)	
Hand Phalanges	Left	(N)	13	(f)		Right	(N)	14	(f)	
Innominate	Left	(N)	1	(f)	>2	Right	(N)	1	(f)	>4
Femur	Left	(N)	1	(f)		Right	(N)	1	(f)	
Patella	Left	(N)	1	(f)		Right	(N)	1	(f)	
Tibia	Left	(N)	1	(f)		Right	(N)	1	(f)	
Fibula	Left	(N)	1	(f)		Right	(N)	1	(f)	
Tarsals	Left	(N)	7	(f)		Right	(N)	6	(f)	7
Metatarsals	Left	(N)	5	(f)		Right	(N)	4	(f)	
Foot Phalanges	Left	(N)	3	(f)		Right	(N)	2	(f)	

* Elements in x fragments

** Further explaination present

Total (N):	182

Digital inventory completed by: JB

Comments				
**Further Explaination:				
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	

Misc. Bags:				
Misc. Cranial	(N)		(f)	>25
Misc. Facial Fragments	(N)		(f)	>25
Misc. Hand (left)	(N)		(f)	>10
Misc. Hand Fragments (right)	(N)		(f)	>10
Misc. Innominate (left)	(N)		(f)	>20
Misc. Long bones, Scapula, Innominate, Patella (all left)	(N)		(f)	>50
Misc. Long bones, Scapula, Innominate, Patella (all right)	(N)		(f)	>50
Misc. Leg (left)	(N)		(f)	>10
Misc. Foot Fragments (left)	(N)		(f)	>10
Misc. Foot Fragments (right)	(N)		(f)	>20
Misc. Fragments	(N)		(f)	>20
Misc. Soil and Debris	(N)		(f)	
Misc. Box of Soft Tissue	(N)		(f)	

Notes:
Female, age 65-75+ years according to Meer 1990

8th Thoracic vertebra bagged separately.
Manubrium bagged separately.
Ribs bagged separately.

Hyoid and Ossified loryngeal cartilage were unable to be separated into individual bags.

Right Maleus and Incus were mislabeled on original bag. Confirmed by inventory records from 1989.

Discrepancies between 1989 inventory and 2013 inventory:
Foot phalanges (left) N=3, 1989 N=4
Could not locate seismoid bones for carpals and tarsals in 2013.

One element may have fragments in multiple bags. Fragment totals listed encompass all bags.
This inventory was checked against the 1989 inventories
Initial inventory completed by: AJ, JB, DS, EL

CU 583 BOZ 0048 Stolz	
Burial #	**1**
Individual	**N/A**
(Individual = N/A if one)	

Burial Inventory Elements Present

N = Number of elements f = Number of Fragments*

CU	**583**
BOZ	**0048**
Stolz	
Burial #	**2**
Individual	**N/A**

(Individual = N/A if one)

CRANIAL										
Frontal	(N)	1	(f)							
Occipital	(N)	1	(f)							
Sphenoid	(N)	1	(f)							
Mandible	(N)	1	(f)							
Ethmoid	(N)	1	(f)							
Vomer	(N)	1	(f)							
Hyoid	(N)	1	(f)							
Parietal	Left	(N)	1	(f)		Right	(N)	1	(f)	
Temporal	Left	(N)	1	(f)		Right	(N)	1	(f)	
Maxilla	Left	(N)	1	(f)		Right	(N)	1	(f)	
Nasal	Left	(N)	1	(f)		Right	(N)	1	(f)	
Zygomatic	Left	(N)	1	(f)		Right	(N)	1	(f)	
Lacrimal	Left	(N)	1	(f)		Right	(N)	1	(f)	
Palate	Left	(N)	1	(f)		Right	(N)	1	(f)	
Inf. Nas. Conhc.	Left	(N)	1	(f)		Right	(N)	1	(f)	
Maleus	Left	(N)		(f)		Right	(N)		(f)	
Incus	Left	(N)		(f)		Right	(N)		(f)	
Stapes	Left	(N)		(f)		Right	(N)		(f)	
Mandibular Teeth	(N)	7	(f)							
Maxillary Teeth	(N)	8	(f)							
Unclassified Teeth	(N)		(f)							
Wormian Bones	(N)		(f)							

POSTCRANIAL										
Cervical Vertebrae	(N)	7	(f)							
Thoracic Vertabrae**	(N)	12	(f)							
Lumbar Vertabrae	(N)	5	(f)							
Unclassified Vertabrae	(N)		(f)							
Sacrum	(N)	1	(f)							
Coccyx	(N)		(f)							
Sternum	(N)	1	(f)	3						
Ribs	(N)	24	(f)	46						
Scapula	Left	(N)	1	(f)		Right	(N)	1	(f)	
Clavicle	Left	(N)	1	(f)		Right	(N)	1	(f)	
Humerus	Left	(N)	1	(f)		Right	(N)	1	(f)	
Radius	Left	(N)	1	(f)		Right	(N)	1	(f)	
Ulna	Left	(N)	1	(f)		Right	(N)	1	(f)	
Carpals	Left	(N)	7	(f)		Right	(N)	8	(f)	
Metacarpals	Left	(N)	5	(f)		Right	(N)	5	(f)	
Hand Phalanges	Left	(N)	13	(f)		Right	(N)	11	(f)	
Innominate	Left	(N)	1	(f)		Right	(N)	1	(f)	
Femur	Left	(N)	1	(f)		Right	(N)	1	(f)	
Patella	Left	(N)	1	(f)		Right	(N)	1	(f)	
Tibia	Left	(N)	1	(f)		Right	(N)	1	(f)	
Fibula	Left	(N)	1	(f)		Right	(N)	1	(f)	
Tarsals	Left	(N)	7	(f)		Right	(N)	6	(f)	
Metatarsals	Left	(N)	5	(f)		Right	(N)	4	(f)	
Foot Phalanges	Left	(N)	14	(f)		Right	(N)	1	(f)	

* Elements in x fragments

** Further explaination present

Total (N):	198

Digital inventory completed by: JB

Comments				
**Further Explaination:				
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	

Misc. Bags:				
Misc. General debris associated with skull	(N)		(f)	>50
Misc. Vertebra	(N)		(f)	>10
Misc. Soil and bone fragments	(N)		(f)	>3
Misc. Fragments associated with leg (left)	(N)		(f)	>12
Misc. Leg (right)	(N)		(f)	>10
Misc. Fragments associated with femur (right)	(N)		(f)	>10
Misc. Unidentified bone fragments	(N)		(f)	>7
Misc. Arm (right)	(N)		(f)	>10
Sesamoid bones foot (left)	(N)	2	(f)	
Sesamoid bones foot (right)	(N)	2	(f)	

Notes:
Male, age 55-65+ years according to Meer 1990

Ossified soft tissue tumor = 1 box

Tissue found with cranial cavity = 1 box

Ossified cartilage (thyroid and acicoid) = 1 box

Meer notes N=1 Medial first cuneiform (right) and N=1 First metatarsal (right). Not found in 2013 re-boxing.

One element may have fragments in multiple bags. Fragment totals listed encompass all bags.
This inventory was checked against the 1989 inventories
Initial inventory completed by: AJ, JB, DS, EL

CU 583 BOZ 0048 Stolz	
Burial #	**2**
Individual	**N/A**
(Individual = N/A if one)	

Burial Inventory Elements Present

N = Number of elements f = Number of Fragments*

CU	**583**
BOZ	**0048**
Stolz	
Burial #	**3**
Individual	**N/A**

(Individual = N/A if one)

CRANIAL											
Frontal	(N)	1	(f)								
Occipital	(N)	1	(f)	4							
Sphenoid	(N)	1	(f)								
Mandible	(N)	1	1								
Ethmoid	(N)	1	(f)	2							
Vomer	(N)	1	(f)								
Hyoid	(N)		(f)								
Parietal**	Left	(N)		(f)		Right	(N)		(f)		
Temporal	Left	(N)	1	(f)		Right	(N)	1	(f)		
Maxilla	Left	(N)	1	(f)		Right	(N)	1	(f)		
Nasal	Left	(N)	1	(f)		Right	(N)	1	(f)		
Zygomatic	Left	(N)	1	(f)		Right	(N)	1	(f)		
Lacrimal	Left	(N)	1	(f)		Right	(N)	1	(f)		
Palate	Left	(N)	1	(f)		Right	(N)	1	(f)		
Inf. Nas. Conhc.	Left	(N)	1	(f)		Right	(N)	1	(f)		
Maleus**	Left	(N)		(f)		Right	(N)		(f)		
Incus**	Left	(N)		(f)		Right	(N)		(f)		
Stapes	Left	(N)		(f)		Right	(N)		(f)		
Mandibular Teeth	(N)	10	(f)								
Maxillary Teeth	(N)	10	(f)								
Unclassified Teeth	(N)		(f)								
Wormian Bones	(N)		(f)								

POSTCRANIAL											
Cervical Vertebrae	(N)	7	(f)	21							
Thoracic Vertabrae**	(N)	12	(f)	36							
Lumbar Vertabrae	(N)	5	(f)	15							
Unclassified Vertabrae	(N)		(f)								
Sacrum	(N)	1	(f)	12							
Coccyx	(N)		(f)								
Sternum	(N)	1	(f)								
Ribs	(N)	24	(f)								
Scapula	Left	(N)	1	(f)	2	Right	(N)	1	(f)	2	
Clavicle	Left	(N)	1	(f)		Right	(N)	1	(f)		
Humerus	Left	(N)	1	(f)		Right	(N)	1	(f)		
Radius	Left	(N)	1	(f)		Right	(N)	1	(f)		
Ulna	Left	(N)	1	(f)		Right	(N)		(f)		
Carpals	Left	(N)	2	(f)		Right	(N)	2	(f)		
Metacarpals	Left	(N)	5	(f)		Right	(N)	5	(f)		
Hand Phalanges	Left	(N)	12	(f)		Right	(N)	10	(f)		
Innominate	Left	(N)	1	(f)	3	Right	(N)	1	(f)	2	
Femur	Left	(N)	1	(f)	2	Right	(N)	1	(f)	2	
Patella	Left	(N)		(f)		Right	(N)		(f)		
Tibia	Left	(N)	1	(f)	2	Right	(N)	1	(f)		
Fibula	Left	(N)	1	(f)		Right	(N)	1	(f)		
Tarsals	Left	(N)		(f)		Right	(N)		(f)		
Metatarsals	Left	(N)	4	(f)		Right	(N)	5	(f)		
Foot Phalanges	Left	(N)	2	(f)		Right	(N)	3	(f)		

* Elements in x fragments

** Further explaination present

Total (N):	161

Digital inventory completed by: JB

Comments				
**Further Explaination:				
Maleus (unsided)	(N)	1	(f)	
Incus (unsided)	(N)	1	(f)	
Parietals (unsided)	(N)	2	(f)	3
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	

Misc. Bags:				
Misc. Cranial vault	(N)		(f)	>50
Misc. Fragments	(N)		(f)	

Notes:
Age 9-12 fetal lunar months according to Meer 1990

Cervical vertebrae bagged in 3 bags.

Distal femur (right and left) and proximal tibia epiphyses bagged together (as per original bagging).

One element may have fragments in multiple bags. Fragment totals listed encompass all bags.
This inventory was checked against the 1989 inventories
Initial inventory completed by: AJ, JB, DS, EL

CU 583 BOZ 0048 Stolz	
Burial #	**3**
Individual	**N/A**
(Individual = N/A if one)	

Burial Inventory Elements Present

N = Number of elements f = Number of Fragments*

CU	**583**
BOZ	**0048**
Stolz	
Burial #	**4**
Individual	**N/A**

(Individual = N/A if one)

CRANIAL											
Frontal	(N)	1	(f)								
Occipital	(N)	1	(f)								
Sphenoid	(N)	1	(f)								
Mandible	(N)		(f)								
Ethmoid	(N)	1	(f)								
Vomer	(N)	1	(f)								
Hyoid	(N)		(f)								
Parietal	Left	(N)	1	(f)	2	Right	(N)	1	(f)		
Temporal	Left	(N)		(f)		Right	(N)		(f)		
Maxilla	Left	(N)	1	(f)		Right	(N)	1	(f)		
Nasal	Left	(N)	1	(f)		Right	(N)	1	(f)		
Zygomatic	Left	(N)	1	(f)		Right	(N)	1	(f)		
Lacrimal	Left	(N)	1	(f)		Right	(N)	1	(f)		
Palate	Left	(N)	1	(f)		Right	(N)	1	(f)		
Inf. Nas. Conhc.	Left	(N)	1	(f)		Right	(N)	1	(f)		
Maleus	Left	(N)		(f)		Right	(N)		(f)		
Incus	Left	(N)		(f)		Right	(N)		(f)		
Stapes	Left	(N)		(f)		Right	(N)		(f)		
Mandibular Teeth	(N)		(f)								
Maxillary Teeth	(N)	13	(f)								
Unclassified Teeth	(N)		(f)								
Wormian Bones	(N)		(f)								

POSTCRANIAL											
Cervical Vertebrae	(N)		(f)								
Thoracic Vertabrae	(N)	4	(f)								
Lumbar Vertabrae	(N)		(f)								
Unclassified Vertabrae	(N)		(f)								
Sacrum	(N)	1	(f)								
Coccyx	(N)		(f)								
Sternum	(N)		(f)								
Ribs	(N)	8	(f)								
Scapula	Left	(N)	1	(f)	2	Right	(N)		(f)		
Clavicle	Left	(N)	1	(f)		Right	(N)		(f)		
Humerus	Left	(N)	1	(f)		Right	(N)	1	(f)		
Radius	Left	(N)		(f)		Right	(N)		(f)		
Ulna	Left	(N)		(f)		Right	(N)		(f)		
Carpals	Left	(N)		(f)		Right	(N)		(f)		
Metacarpals**	Left	(N)		(f)		Right	(N)		(f)		
Hand Phalanges**	Left	(N)		(f)		Right	(N)		(f)		
Innominate	Left	(N)		(f)		Right	(N)	1	(f)		
Femur	Left	(N)	1	(f)		Right	(N)		(f)		
Patella	Left	(N)		(f)		Right	(N)		(f)		
Tibia	Left	(N)		(f)		Right	(N)		(f)		
Fibula	Left	(N)		(f)		Right	(N)		(f)		
Tarsals	Left	(N)		(f)		Right	(N)		(f)		
Metatarsals	Left	(N)		(f)		Right	(N)		(f)		
Foot Phalanges	Left	(N)		(f)		Right	(N)		(f)		

* Elements in x fragments

** Further explaination present

Total (N):	56

Digital inventory completed by: JB

Comments				
**Further Explaination:				
Metacarpals (unsided)	(N)	3	(f)	
Hand phalanx (unsided)	(N)	1	(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	

Misc. Bags:				
Misc. Cranial	(N)		(f)	3
Misc. Epiphysis	(N)	1	(f)	
Misc. Dirt	(N)		(f)	>25
Misc. Fragments	(N)		(f)	>5
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	

Notes:
Age 5.5-6.5 years according to Meer 1990

Glue present on cranium.

Lacrimals and Inf. Nas. Conch. bagged separate from cranium.

One element may have fragments in multiple bags. Fragment totals listed encompass all bags.
This inventory was checked against the 1989 inventories
Initial inventory completed by: AJ, JB, DS, EL

CU 583 BOZ 0048 Stolz	
Burial #	**4**
Individual	**N/A**
(Individual = N/A if one)	

Burial Inventory Elements Present

N = Number of elements f = Number of Fragments*

CU	**583**
BOZ	**0048**
Stolz	
Burial #	**5**
Individual	**N/A**

(Individual = N/A if one)

CRANIAL									
Frontal	(N)		(f)						
Occipital	(N)		(f)						
Sphenoid	(N)		(f)						
Mandible	(N)		(f)						
Ethmoid	(N)		(f)						
Vomer	(N)		(f)						
Hyoid	(N)		(f)						
Parietal	Left	(N)		(f)		Right	(N)		(f)	
Temporal	Left	(N)		(f)		Right	(N)		(f)	
Maxilla	Left	(N)		(f)		Right	(N)		(f)	
Nasal	Left	(N)		(f)		Right	(N)		(f)	
Zygomatic	Left	(N)		(f)		Right	(N)		(f)	
Lacrimal	Left	(N)		(f)		Right	(N)		(f)	
Palate	Left	(N)		(f)		Right	(N)		(f)	
Inf. Nas. Conhc.	Left	(N)		(f)		Right	(N)		(f)	
Maleus	Left	(N)		(f)		Right	(N)		(f)	
Incus	Left	(N)		(f)		Right	(N)		(f)	
Stapes	Left	(N)		(f)		Right	(N)		(f)	
Mandibular Teeth	(N)		(f)						
Maxillary Teeth	(N)		(f)						
Unclassified Teeth	(N)		(f)						
Wormian Bones	(N)		(f)						

POSTCRANIAL									
Cervical Vertebrae	(N)		(f)						
Thoracic Vertabrae	(N)		(f)						
Lumbar Vertabrae	(N)		(f)						
Unclassified Vertabrae	(N)		(f)						
Sacrum	(N)		(f)						
Coccyx	(N)		(f)						
Sternum	(N)		(f)						
Ribs	(N)		(f)						
Scapula	Left	(N)		(f)		Right	(N)		(f)	
Clavicle	Left	(N)		(f)		Right	(N)		(f)	
Humerus	Left	(N)	1	(f)		Right	(N)		(f)	
Radius	Left	(N)		(f)		Right	(N)	1	(f)	
Ulna	Left	(N)		(f)		Right	(N)		(f)	
Carpals	Left	(N)		(f)		Right	(N)		(f)	
Metacarpals	Left	(N)		(f)		Right	(N)		(f)	
Hand Phalanges	Left	(N)		(f)		Right	(N)		(f)	
Innominate	Left	(N)		(f)		Right	(N)		(f)	
Femur	Left	(N)		(f)		Right	(N)		(f)	
Patella	Left	(N)		(f)		Right	(N)		(f)	
Tibia	Left	(N)		(f)		Right	(N)		(f)	
Fibula	Left	(N)	1	(f)		Right	(N)		(f)	
Tarsals	Left	(N)		(f)		Right	(N)		(f)	
Metatarsals	Left	(N)		(f)		Right	(N)		(f)	
Foot Phalanges	Left	(N)		(f)		Right	(N)		(f)	

* Elements in x fragments

** Further explaination present

Total (N):	3

Digital inventory completed by: JB

Comments				
**Further Explaination:				
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	

Misc. Bags:				
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	

Notes:
Age 2.5-3.5 years according to Meer 1990

One element may have fragments in multiple bags. Fragment totals listed encompass all bags.
This inventory was checked against the 1989 inventories
Initial inventory completed by: AJ, JB, DS, EL

CU 583 BOZ 0048 Stolz	
Burial #	**5**
Individual	**N/A**
(Individual = N/A if one)	

Burial Inventory Elements Present

N = Number of elements f = Number of Fragments*

CU	**583**
BOZ	**0048**
Stolz	
Burial #	**6**
Individual	**N/A**

(Individual = N/A if one)

CRANIAL										
Frontal	(N)	1	(f)							
Occipital	(N)	1	(f)							
Sphenoid	(N)	1	(f)							
Mandible	(N)	1	(f)							
Ethmoid	(N)	1	(f)							
Vomer	(N)	1	(f)							
Hyoid	(N)		(f)							
Parietal	Left	(N)	1	(f)		Right	(N)	1	(f)	
Temporal	Left	(N)	1	(f)		Right	(N)	1	(f)	
Maxilla	Left	(N)		(f)		Right	(N)		(f)	
Nasal	Left	(N)	1	(f)		Right	(N)	1	(f)	
Zygomatic	Left	(N)	1	(f)		Right	(N)		(f)	
Lacrimal	Left	(N)	1	(f)		Right	(N)		(f)	
Palate	Left	(N)		(f)		Right	(N)		(f)	
Inf. Nas. Conhc.	Left	(N)	1	(f)		Right	(N)		(f)	
Maleus	Left	(N)		(f)		Right	(N)	1	(f)	
Incus	Left	(N)		(f)		Right	(N)	1	(f)	
Stapes	Left	(N)		(f)		Right	(N)		(f)	
Mandibular Teeth	(N)	15	(f)							
Maxillary Teeth	(N)		(f)							
Unclassified Teeth	(N)		(f)							
Wormian Bones	(N)		(f)							

POSTCRANIAL										
Cervical Vertebrae	(N)		(f)							
Thoracic Vertabrae	(N)		(f)							
Lumbar Vertabrae	(N)		(f)							
Unclassified Vertabrae	(N)		(f)							
Sacrum	(N)		(f)							
Coccyx	(N)		(f)							
Sternum	(N)	1	(f)	2						
Ribs	(N)	19	(f)							
Scapula	Left	(N)	1	(f)	4	Right	(N)	1	(f)	
Clavicle	Left	(N)		(f)		Right	(N)	1	(f)	
Humerus	Left	(N)	1	(f)		Right	(N)	1	(f)	
Radius	Left	(N)		(f)		Right	(N)	1	(f)	
Ulna	Left	(N)		(f)		Right	(N)	1	(f)	
Carpals	Left	(N)		(f)		Right	(N)		(f)	
Metacarpals	Left	(N)		(f)		Right	(N)	2	(f)	
Hand Phalanges	Left	(N)		(f)		Right	(N)	2	(f)	
Innominate	Left	(N)	1	(f)		Right	(N)	1	(f)	
Femur	Left	(N)	1	(f)		Right	(N)	1	(f)	
Patella	Left	(N)	1	(f)		Right	(N)		(f)	
Tibia	Left	(N)	1	(f)		Right	(N)		(f)	
Fibula	Left	(N)	1	(f)		Right	(N)		(f)	
Tarsals	Left	(N)	1	(f)		Right	(N)		(f)	
Metatarsals	Left	(N)	5	(f)		Right	(N)		(f)	
Foot Phalanges	Left	(N)	10	(f)		Right	(N)		(f)	

* Elements in x fragments

** Further explaination present

Total (N):	86

Digital inventory completed by: JB

Comments				
**Further Explaination:				
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	

Misc. Bags:				
Misc. Cranial	(N)		(f)	>2
Misc. Scapulae	(N)		(f)	2
Misc. Wood and bone frags associated with Sternum	(N)		(f)	>10
Misc. Fragments	(N)		(f)	>5
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	

Notes:
Male, age 30-34 years according to Meer 1990

Tarsal (left, cuneiform 3) bagged with metatarsals (left).

Discrepancy between 1989 inventory and original bag for foot elements.

One element may have fragments in multiple bags. Fragment totals listed encompass all bags.
This inventory was checked against the 1989 inventories
Initial inventory completed by: AJ, JB, DS, EL

CU 583 BOZ 0048 Stolz	
Burial #	**6**
Individual	**N/A**
(Individual = N/A if one)	

Burial Inventory Elements Present

N = Number of elements f = Number of Fragments*

CU	**583**
BOZ	**0048**
Stolz	
Burial #	**7**
Individual	**N/A**

(Individual = N/A if one)

CRANIAL										
Frontal	(N)		(f)							
Occipital	(N)		(f)							
Sphenoid	(N)		(f)							
Mandible	(N)		(f)							
Ethmoid	(N)		(f)							
Vomer	(N)		(f)							
Hyoid	(N)		(f)							
Parietal	Left	(N)		(f)		Right	(N)		(f)	
Temporal	Left	(N)		(f)		Right	(N)		(f)	
Maxilla	Left	(N)		(f)		Right	(N)		(f)	
Nasal	Left	(N)		(f)		Right	(N)		(f)	
Zygomatic	Left	(N)		(f)		Right	(N)		(f)	
Lacrimal	Left	(N)		(f)		Right	(N)		(f)	
Palate	Left	(N)		(f)		Right	(N)		(f)	
Inf. Nas. Conhc.	Left	(N)		(f)		Right	(N)		(f)	
Maleus	Left	(N)		(f)		Right	(N)		(f)	
Incus	Left	(N)		(f)		Right	(N)		(f)	
Stapes	Left	(N)		(f)		Right	(N)		(f)	
Mandibular Teeth	(N)		(f)							
Maxillary Teeth	(N)		(f)							
Unclassified Teeth	(N)		(f)							
Wormian Bones	(N)		(f)							

POSTCRANIAL										
Cervical Vertebrae	(N)		(f)							
Thoracic Vertabrae	(N)	4	(f)							
Lumbar Vertabrae	(N)		(f)							
Unclassified Vertabrae	(N)	1	(f)							
Sacrum	(N)	1	(f)							
Coccyx	(N)		(f)							
Sternum	(N)		(f)							
Ribs	(N)	2	(f)							
Scapula	Left	(N)	1	(f)		Right	(N)		(f)	
Clavicle	Left	(N)		(f)		Right	(N)		(f)	
Humerus	Left	(N)		(f)		Right	(N)		(f)	
Radius	Left	(N)	1	(f)		Right	(N)	1	(f)	
Ulna	Left	(N)		(f)		Right	(N)	1	(f)	
Carpals	Left	(N)		(f)		Right	(N)		(f)	
Metacarpals	Left	(N)		(f)		Right	(N)		(f)	
Hand Phalanges	Left	(N)		(f)		Right	(N)		(f)	
Innominate	Left	(N)	1	(f)		Right	(N)	1	(f)	
Femur	Left	(N)		(f)		Right	(N)	1	(f)	
Patella	Left	(N)		(f)		Right	(N)		(f)	
Tibia	Left	(N)		(f)		Right	(N)		(f)	
Fibula	Left	(N)		(f)		Right	(N)		(f)	
Tarsals	Left	(N)		(f)		Right	(N)		(f)	
Metatarsals	Left	(N)		(f)		Right	(N)		(f)	
Foot Phalanges	Left	(N)		(f)		Right	(N)		(f)	

* Elements in x fragments

** Further explaination present

Total (N):	15

Digital inventory completed by: JB

Comments				
**Further Explaination:				
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	

Misc. Bags:				
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	

Notes:
Male, age 50-65 years according to Meer 1990

One element may have fragments in multiple bags. Fragment totals listed encompass all bags.
This inventory was checked against the 1989 inventories
Initial inventory completed by: AJ, JB, DS, EL

CU 583 BOZ 0048 Stolz	
Burial #	**7**
Individual	**N/A**
(Individual = N/A if one)	

Burial Inventory Elements Present

N = Number of elements f = Number of Fragments*

CU 583	
BOZ 0048	
Stolz	
Burial #	**8**
Individual	**N/A**

(Individual = N/A if one)

CRANIAL										
Frontal	(N)		(f)							
Occipital	(N)		(f)							
Sphenoid	(N)		(f)							
Mandible	(N)		(f)							
Ethmoid	(N)		(f)							
Vomer	(N)		(f)							
Hyoid	(N)		(f)							
Parietal	Left	(N)	1	(f)		Right	(N)		(f)	
Temporal	Left	(N)		(f)		Right	(N)		(f)	
Maxilla	Left	(N)		(f)		Right	(N)		(f)	
Nasal	Left	(N)		(f)		Right	(N)		(f)	
Zygomatic	Left	(N)		(f)		Right	(N)		(f)	
Lacrimal	Left	(N)		(f)		Right	(N)		(f)	
Palate	Left	(N)		(f)		Right	(N)		(f)	
Inf. Nas. Conhc.	Left	(N)		(f)		Right	(N)		(f)	
Maleus	Left	(N)		(f)		Right	(N)		(f)	
Incus	Left	(N)		(f)		Right	(N)		(f)	
Stapes	Left	(N)		(f)		Right	(N)		(f)	
Mandibular Teeth	(N)		(f)							
Maxillary Teeth	(N)		(f)							
Unclassified Teeth	(N)		(f)							
Wormian Bones	(N)		(f)							

POSTCRANIAL										
Cervical Vertebrae	(N)	1	(f)							
Thoracic Vertabrae	(N)	4	(f)							
Lumbar Vertabrae	(N)		(f)							
Unclassified Vertabrae	(N)		(f)							
Sacrum	(N)		(f)							
Coccyx	(N)		(f)							
Sternum	(N)	1	(f)							
Ribs	(N)	15	(f)							
Scapula	Left	(N)		(f)		Right	(N)	1	(f)	
Clavicle	Left	(N)	1	(f)		Right	(N)	1	(f)	
Humerus	Left	(N)	1	(f)		Right	(N)	1	(f)	
Radius	Left	(N)	1	(f)		Right	(N)		(f)	
Ulna	Left	(N)		(f)		Right	(N)		(f)	
Carpals	Left	(N)		(f)		Right	(N)		(f)	
Metacarpals	Left	(N)		(f)		Right	(N)		(f)	
Hand Phalanges	Left	(N)		(f)		Right	(N)		(f)	
Innominate	Left	(N)	1	(f)		Right	(N)		(f)	
Femur	Left	(N)		(f)		Right	(N)		(f)	
Patella	Left	(N)		(f)		Right	(N)		(f)	
Tibia	Left	(N)	1	(f)		Right	(N)		(f)	
Fibula	Left	(N)		(f)		Right	(N)		(f)	
Tarsals	Left	(N)		(f)		Right	(N)		(f)	
Metatarsals	Left	(N)		(f)		Right	(N)		(f)	
Foot Phalanges	Left	(N)		(f)		Right	(N)		(f)	

* Elements in x fragments

** Further explaination present

Total (N):	30

Digital inventory completed by: JB

Comments				
**Further Explaination:				
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	

Misc. Bags:				
Misc. Fragments	(N)		(f)	>10
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	

Notes:
Female, age 40-58 years according to Meer 1990

Left parietal likely has taphonomic changes

Parietal is glued

One element may have fragments in multiple bags. Fragment totals listed encompass all bags.
This inventory was checked against the 1989 inventories
Initial inventory completed by: AJ, JB, DS, EL

CU 583 BOZ 0048 Stolz	
Burial #	**8**
Individual	**N/A**
(Individual = N/A if one)	

Burial Inventory Elements Present

N = Number of elements f = Number of Fragments*

CU	**583**
BOZ	**0048**
Stolz	
Burial #	**9**
Individual	**N/A**

(Individual = N/A if one)

CRANIAL										
Frontal	(N)	1	(f)							
Occipital	(N)	1	(f)							
Sphenoid	(N)		(f)							
Mandible	(N)		(f)							
Ethmoid	(N)		(f)							
Vomer	(N)		(f)							
Hyoid	(N)		(f)							
Parietal	Left	(N)	1	(f)		Right	(N)	1	(f)	
Temporal	Left	(N)		(f)		Right	(N)		(f)	
Maxilla	Left	(N)		(f)		Right	(N)		(f)	
Nasal	Left	(N)		(f)		Right	(N)		(f)	
Zygomatic	Left	(N)		(f)		Right	(N)		(f)	
Lacrimal	Left	(N)		(f)		Right	(N)		(f)	
Palate	Left	(N)		(f)		Right	(N)		(f)	
Inf. Nas. Conhc.	Left	(N)		(f)		Right	(N)		(f)	
Maleus	Left	(N)		(f)		Right	(N)		(f)	
Incus	Left	(N)		(f)		Right	(N)		(f)	
Stapes	Left	(N)		(f)		Right	(N)		(f)	
Mandibular Teeth	(N)		(f)							
Maxillary Teeth	(N)		(f)							
Unclassified Teeth	(N)		(f)							
Wormian Bones	(N)		(f)							

POSTCRANIAL										
Cervical Vertebrae	(N)		(f)							
Thoracic Vertabrae	(N)		(f)							
Lumbar Vertabrae	(N)		(f)							
Unclassified Vertabrae	(N)		(f)							
Sacrum	(N)		(f)							
Coccyx	(N)		(f)							
Sternum	(N)		(f)							
Ribs	(N)		(f)							
Scapula	Left	(N)		(f)		Right	(N)		(f)	
Clavicle	Left	(N)		(f)		Right	(N)		(f)	
Humerus	Left	(N)		(f)		Right	(N)		(f)	
Radius	Left	(N)		(f)		Right	(N)		(f)	
Ulna	Left	(N)		(f)		Right	(N)		(f)	
Carpals	Left	(N)		(f)		Right	(N)		(f)	
Metacarpals	Left	(N)		(f)		Right	(N)		(f)	
Hand Phalanges	Left	(N)		(f)		Right	(N)		(f)	
Innominate	Left	(N)		(f)		Right	(N)		(f)	
Femur	Left	(N)		(f)		Right	(N)		(f)	
Patella	Left	(N)		(f)		Right	(N)		(f)	
Tibia	Left	(N)		(f)		Right	(N)		(f)	
Fibula	Left	(N)		(f)		Right	(N)		(f)	
Tarsals	Left	(N)		(f)		Right	(N)		(f)	
Metatarsals	Left	(N)		(f)		Right	(N)		(f)	
Foot Phalanges	Left	(N)		(f)		Right	(N)		(f)	

* Elements in x fragments

** Further explaination present

Total (N):	4

Digital inventory completed by: JB

Comments				
**Further Explaination:				
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	

Misc. Bags:				
Misc. Cranial Vault	(N)		(f)	4
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	

Notes:
Age 9-11 fetal lunar months according to Meer 1990

One element may have fragments in multiple bags. Fragment totals listed encompass all bags.
This inventory was checked against the 1989 inventories
Initial inventory completed by: AJ, JB, DS, EL

CU 583 BOZ 0048 Stolz	
Burial #	**9**
Individual	**N/A**
(Individual = N/A if one)	

Burial Inventory Elements Present

N = Number of elements f = Number of Fragments*

CU	**583**
BOZ	**0048**
Stolz	
Burial #	**10**
Individual	**N/A**

(Individual = N/A if one)

CRANIAL										
Frontal	(N)	1	(f)							
Occipital	(N)		(f)							
Sphenoid	(N)		(f)							
Mandible	(N)		(f)							
Ethmoid	(N)		(f)							
Vomer	(N)		(f)							
Hyoid	(N)		(f)							
Parietal	Left	(N)		(f)		Right	(N)	1	(f)	3
Temporal	Left	(N)		(f)		Right	(N)		(f)	
Maxilla	Left	(N)		(f)		Right	(N)		(f)	
Nasal	Left	(N)		(f)		Right	(N)		(f)	
Zygomatic	Left	(N)		(f)		Right	(N)		(f)	
Lacrimal	Left	(N)		(f)		Right	(N)		(f)	
Palate	Left	(N)		(f)		Right	(N)		(f)	
Inf. Nas. Conhc.	Left	(N)		(f)		Right	(N)		(f)	
Maleus	Left	(N)		(f)		Right	(N)		(f)	
Incus	Left	(N)		(f)		Right	(N)		(f)	
Stapes	Left	(N)		(f)		Right	(N)		(f)	
Mandibular Teeth	(N)		(f)							
Maxillary Teeth	(N)		(f)							
Unclassified Teeth	(N)		(f)							
Wormian Bones	(N)		(f)							

POSTCRANIAL										
Cervical Vertebrae	(N)		(f)							
Thoracic Vertabrae	(N)		(f)							
Lumbar Vertabrae	(N)		(f)							
Unclassified Vertabrae	(N)		(f)							
Sacrum	(N)		(f)							
Coccyx	(N)		(f)							
Sternum	(N)		(f)							
Ribs	(N)		(f)							
Scapula	Left	(N)		(f)		Right	(N)		(f)	
Clavicle	Left	(N)		(f)		Right	(N)		(f)	
Humerus	Left	(N)		(f)		Right	(N)		(f)	
Radius	Left	(N)		(f)		Right	(N)		(f)	
Ulna	Left	(N)		(f)		Right	(N)		(f)	
Carpals	Left	(N)		(f)		Right	(N)		(f)	
Metacarpals	Left	(N)		(f)		Right	(N)		(f)	
Hand Phalanges	Left	(N)		(f)		Right	(N)		(f)	
Innominate	Left	(N)		(f)		Right	(N)		(f)	
Femur	Left	(N)		(f)		Right	(N)		(f)	
Patella	Left	(N)		(f)		Right	(N)		(f)	
Tibia	Left	(N)		(f)		Right	(N)		(f)	
Fibula	Left	(N)		(f)		Right	(N)		(f)	
Tarsals	Left	(N)		(f)		Right	(N)		(f)	
Metatarsals	Left	(N)		(f)		Right	(N)		(f)	
Foot Phalanges	Left	(N)		(f)		Right	(N)		(f)	

* Elements in x fragments

** Further explaination present

Total (N):	2

Digital inventory completed by: JB

Comments				
**Further Explaination:				
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	

Misc. Bags:				
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	
	(N)		(f)	

Notes:
Age 9-11 fetal lunar months according to Meer 1990

One element may have fragments in multiple bags. Fragment totals listed encompass all bags.
This inventory was checked against the 1989 inventories
Initial inventory completed by: AJ, JB, DS, EL

CU 583 BOZ 0048 Stolz	
Burial #	**10**
Individual	**N/A**
(Individual = N/A if one)	

Altenburg Cemetery Burial: 1*	Completed by: AMJ and JIB

Skeletal Pathology & Trauma Recording Form		
Pathology	**Present**	**Elements**
Unidentified Lesions		
Blastic	☐	
Lytic	☐	
Growth & Developmental Stress		
Cribra orbitalia	☐	
Porotic hyperostosis	☐	
Spina bifida	☐	
Other:	☐	
Joint Pathology		
Anklyosis	☐	
Eburnation	☐	
Schmorls nodes	☐	
Osteophytic lipping	☐	
Joint degeneration	☐	
Other:	☐	
Non-specific Infections		
Periostitis	☐	
Osteomyelitis	☐	
Other:	☐	
Neoplastic Conditions		
Osteoma	☐	
Neoplasm	☐	
Other:	☐	
Trauma		
Healed fracture	☐	
Other:	☐	

Dental Pathology	**Present**	**Elements**
Growth & Developmental Stress		
Enamel Hypoplasia	☐	
Other:	☐	
Periodontal disease		
Calculus	☐	
Caries	☐	
Abscess	☐	
Remodeled alveolus/tooth loss	☐	
Other:	☐	
Anomolous Conditions		
Peg tooth	☐	
Supernumerary tooth	☐	
Other:	☐	
Cultural / Occupational Modification		
Pipestem grooves	☐	
Other:	☐	

*no pathology or trauma present

Altenburg Cemetery Burial: 2	Completed by: AMJ and JIB

Skeletal Pathology & Trauma Recording Form		
Pathology	**Present**	**Elements**
Unidentified Lesions		
Blastic	☐	
Lytic	☐	
Growth & Developmental Stress		
Cribra orbitalia	☑	Frontal
Porotic hyperostosis	☐	
Spina bifida	☐	
Other:	☐	
Joint Pathology		
Anklyosis	☐	
Eburnation	☐	
Schmorls nodes	☐	
Osteophytic lipping	☐	
Joint degeneration	☐	
Other:	☐	
Non-specific Infections		
Periostitis	☐	
Osteomyelitis	☐	
Other:	☐	
Neoplastic Conditions		
Osteoma	☐	
Neoplasm	☐	
Other:	☐	
Trauma		
Healed fracture	☐	
Other:	☐	

Dental Pathology	**Present**	**Elements**
Growth & Developmental Stress		
Enamel Hypoplasia	☐	
Other:	☐	
Periodontal disease		
Calculus	☐	
Caries	☐	
Abscess	☐	
Remodeled alveolus/tooth loss	☐	
Other:	☐	
Anomolous Conditions		
Peg tooth	☐	
Supernumerary tooth	☐	
Other:	☐	
Cultural / Occupational Modification		
Pipestem grooves	☐	
Other:	☐	

Altenburg Cemetery Burial: 3	Completed by: AMJ and JIB

Skeletal Pathology & Trauma Recording Form		
Pathology	**Present**	**Elements**
Unidentified Lesions		
Blastic	☑	R Humerus
Lytic	☐	
Growth & Developmental Stress		
Cribra orbitalia	☐	
Porotic hyperostosis	☐	
Spina bifida	☐	
Other:	☐	
Joint Pathology		
Anklyosis	☐	
Eburnation	☑	R Humerus, R Radius
Schmorls nodes	☐	
Osteophytic lipping	☑	Mandible, R Humerus, R Radius, R Ulna, C and L Vertebrae
Joint degeneration	☑	R Humerus
Other:	☐	
Non-specific Infections		
Periostitis	☐	
Osteomyelitis	☐	
Other:	☐	
Neoplastic Conditions		
Osteoma	☐	
Neoplasm	☐	
Other:	☐	
Trauma		
Healed fracture	☑	R Humerus
Other:	☐	

Dental Pathology	**Present**	**Elements**
Growth & Developmental Stress		
Enamel Hypoplasia	☐	
Other:	☐	
Periodontal disease		
Calculus	☑	L and R Maxillae, L and R Mandible
Caries	☑	L and R Maxillae, L Mandible
Abscess	☐	
Remodeled alveolus/tooth loss	☑	L and R Maxillae, L and R Mandible
Other:	☐	
Anomolous Conditions		
Peg tooth	☐	
Supernumerary tooth	☐	
Other:	☐	
Cultural / Occupational Modification		
Pipestem grooves	☐	
Other:	☐	

Altenburg Cemetery Burial: 4	Completed by: AMJ and JIB

Skeletal Pathology & Trauma Recording Form		
Pathology	**Present**	**Elements**
Unidentified Lesions		
Blastic	☐	
Lytic	☑	Frontal, Temporals, Occipital, C and T Vertebrae
Growth & Developmental Stress		
Cribra orbitalia	☑	Frontal
Porotic hyperostosis	☐	
Spina bifida	☐	
Other:	☐	
Joint Pathology		
Anklyosis	☐	
Eburnation	☐	
Schmorls nodes	☐	
Osteophytic lipping	☑	C Vertebrae
Joint degeneration	☑	C and T Vertebrae
Other:	☐	
Non-specific Infections		
Periostitis	☐	
Osteomyelitis	☐	
Other:	☐	
Neoplastic Conditions		
Osteoma	☐	
Neoplasm	☐	
Other:	☐	
Trauma		
Healed fracture	☐	
Other:	☐	

Dental Pathology	Present	Elements
Growth & Developmental Stress		
Enamel Hypoplasia	☐	
Other:	☐	
Periodontal disease		
Calculus	☑	3 loose teeth
Caries	☑	1 loose tooth
Abscess	☐	
Remodeled alveolus/tooth loss	☑	L and R Mandible
Other:	☐	
Anomolous Conditions		
Peg tooth	☐	
Supernumerary tooth	☐	
Other:	☐	
Cultural / Occupational Modification		
Pipestem grooves	☐	
Other:	☐	

Altenburg Cemetery Burial: 5	Completed by: AMJ and JIB

Skeletal Pathology & Trauma Recording Form		
Pathology	**Present**	**Elements**
Unidentified Lesions		
Blastic	☑	R Tibia
Lytic	☑	Frontal
Growth & Developmental Stress		
Cribra orbitalia	☑	Frontal
Porotic hyperostosis	☐	
Spina bifida	☐	
Other:	☐	
Joint Pathology		
Anklyosis	☐	
Eburnation	☐	
Schmorls nodes	☐	
Osteophytic lipping	☐	
Joint degeneration	☐	
Other:	☐	
Non-specific Infections		
Periostitis	☐	
Osteomyelitis	☐	
Other:	☐	
Neoplastic Conditions		
Osteoma	☐	
Neoplasm	☐	
Other:	☐	
Trauma		
Healed fracture	☐	
Other:	☐	

Dental Pathology	**Present**	**Elements**
Growth & Developmental Stress		
Enamel Hypoplasia	☐	
Other:	☐	
Periodontal disease		
Calculus	☑	R Mandible, 2 loose teeth (likely Maxillary), 9 loose teeth (likely Mandibular)
Caries	☑	8 loose teeth (likely Maxillary), 3 loose teeth (likely Mandibular)
Abscess	☐	
Remodeled alveolus/tooth loss	☑	L Mandible
Other:	☐	
Anomolous Conditions		
Peg tooth	☐	
Supernumerary tooth	☐	
Other:	☐	
Cultural / Occupational Modification		
Pipestem grooves	☐	
Other:	☐	

Altenburg Cemetery Burial: 6	Completed by: AMJ and JIB

Skeletal Pathology & Trauma Recording Form		
Pathology	**Present**	**Elements**
Unidentified Lesions		
Blastic	☐	
Lytic	☐	
Growth & Developmental Stress		
Cribra orbitalia	☐	
Porotic hyperostosis	☐	
Spina bifida	☐	
Other:	☐	
Joint Pathology		
Anklyosis	☐	
Eburnation	☐	
Schmorls nodes	☐	
Osteophytic lipping	☑	R and L Ilia
Joint degeneration	☐	
Other:	☐	
Non-specific Infections		
Periostitis	☐	
Osteomyelitis	☐	
Other:	☐	
Neoplastic Conditions		
Osteoma	☐	
Neoplasm	☐	
Other:	☐	
Trauma		
Healed fracture	☐	
Other:	☐	

Dental Pathology	**Present**	**Elements**
Growth & Developmental Stress		
Enamel Hypoplasia	☐	
Other:	☐	
Periodontal disease		
Calculus	☑	L and R Maxillae, L and R Mandible
Caries	☑	L and R Maxillae, L and R Mandible
Abscess	☐	
Remodeled alveolus/tooth loss	☐	
Other:	☐	
Anomolous Conditions		
Peg tooth	☐	
Supernumerary tooth	☐	
Other:	☐	
Cultural / Occupational Modification		
Pipestem grooves	☐	
Other:	☐	

Altenburg Cemetery Burial: 7	Completed by: AMJ and JIB

Skeletal Pathology & Trauma Recording Form		
Pathology	**Present**	**Elements**
Unidentified Lesions		
Blastic	☑	L Pelvis, L Femur
Lytic	☑	Frontal, L Pelvis
Growth & Developmental Stress		
Cribra orbitalia	☐	
Porotic hyperostosis	☐	
Spina bifida	☐	
Other:	☐	
Joint Pathology		
Anklyosis	☐	
Eburnation	☑	L Pelvis, L Femur
Schmorls nodes	☐	
Osteophytic lipping	☑	L and R Femurs, C Vertebrae
Joint degeneration	☐	
Other:	☐	
Non-specific Infections		
Periostitis	☐	
Osteomyelitis	☐	
Other:	☐	
Neoplastic Conditions		
Osteoma	☐	
Neoplasm	☐	
Other:	☐	
Trauma		
Healed fracture	☐	
Other:	☐	

Dental Pathology	Present	Elements
Growth & Developmental Stress		
Enamel Hypoplasia	☐	
Other:	☐	
Periodontal disease		
Calculus	☑	L and R Maxillae
Caries	☑	L and R Maxillae, 4 loose teeth
Abscess	☐	
Remodeled alveolus/tooth loss	☑	L and R Mandible
Other:	☐	
Anomolous Conditions		
Peg tooth	☐	
Supernumerary tooth	☐	
Other:	☐	
Cultural / Occupational Modification		
Pipestem grooves	☐	
Other:	☐	

Altenburg Cemetery Burial: 8	Completed by: AMJ and JIB

Skeletal Pathology & Trauma Recording Form		
Pathology	**Present**	**Elements**
Unidentified Lesions		
Blastic	☐	
Lytic	☑	Frontal, L Vertebrae
Growth & Developmental Stress		
Cribra orbitalia	☐	
Porotic hyperostosis	☐	
Spina bifida	☐	
Other: Congenital anomaly	☑	L and R Parietals
Joint Pathology		
Anklyosis	☐	
Eburnation	☐	
Schmorls nodes	☐	
Osteophytic lipping	☑	L Vertebrae, L and R Pelvis
Joint degeneration	☐	
Other:	☐	
Non-specific Infections		
Periostitis	☐	
Osteomyelitis	☐	
Other:	☐	
Neoplastic Conditions		
Osteoma	☐	
Neoplasm	☐	
Other:	☐	
Trauma		
Healed fracture	☐	
Other:	☐	

Dental Pathology	Present	Elements
Growth & Developmental Stress		
Enamel Hypoplasia	☐	
Other:	☐	
Periodontal disease		
Calculus	☑	3 loose teeth
Caries	☐	
Abscess	☐	
Remodeled alveolus/tooth loss	☑	L and R Mandible
Other:	☐	
Anomolous Conditions		
Peg tooth	☐	
Supernumerary tooth	☐	
Other:	☐	
Cultural / Occupational Modification		
Pipestem grooves	☐	
Other:	☐	

Altenburg Cemetery Burial: 9	Completed by: AMJ and JIB

Skeletal Pathology & Trauma Recording Form		
Pathology	**Present**	**Elements**
Unidentified Lesions		
Blastic	☐	
Lytic	☐	
Growth & Developmental Stress		
Cribra orbitalia	☐	
Porotic hyperostosis	☐	
Spina bifida	☐	
Other: congental anomaly	☑	L Vertebra
Joint Pathology		
Anklyosis	☐	
Eburnation	☐	
Schmorls nodes	☑	T Vertebrae
Osteophytic lipping	☐	
Joint degeneration	☐	
Other:	☐	
Non-specific Infections		
Periostitis	☐	
Osteomyelitis	☐	
Other:	☐	
Neoplastic Conditions		
Osteoma	☐	
Neoplasm	☐	
Other:	☐	
Trauma		
Healed fracture	☐	
Other:	☐	

Dental Pathology	Present	Elements
Growth & Developmental Stress		
Enamel Hypoplasia	☐	
Other:	☐	
Periodontal disease		
Calculus	☑	L and R Maxillae, L and R Mandible
Caries	☑	L Mandible
Abscess	☐	
Remodeled alveolus/tooth loss	☑	R Maxilla, L Mandible
Other:	☐	
Anomolous Conditions		
Peg tooth	☐	
Supernumerary tooth	☐	
Other:	☐	
Cultural / Occupational Modification		
Pipestem grooves	☐	
Other:	☐	

Altenburg Cemetery Burial: 10*	Completed by: AMJ and JIB

Skeletal Pathology & Trauma Recording Form		
Pathology	**Present**	**Elements**
Unidentified Lesions		
Blastic	☐	
Lytic	☐	
Growth & Developmental Stress		
Cribra orbitalia	☐	
Porotic hyperostosis	☐	
Spina bifida	☐	
Other:	☐	
Joint Pathology		
Anklyosis	☐	
Eburnation	☐	
Schmorls nodes	☐	
Osteophytic lipping	☐	
Joint degeneration	☐	
Other:	☐	
Non-specific Infections		
Periostitis	☐	
Osteomyelitis	☐	
Other:	☐	
Neoplastic Conditions		
Osteoma	☐	
Neoplasm	☐	
Other:	☐	
Trauma		
Healed fracture	☐	
Other:	☐	

Dental Pathology	**Present**	**Elements**
Growth & Developmental Stress		
Enamel Hypoplasia	☐	
Other:	☐	
Periodontal disease		
Calculus	☐	
Caries	☐	
Abscess	☐	
Remodeled alveolus/tooth loss	☐	
Other:	☐	
Anomolous Conditions		
Peg tooth	☐	
Supernumerary tooth	☐	
Other:	☐	
Cultural / Occupational Modification		
Pipestem grooves	☐	
Other:	☐	

*no pathology or trauma present

Altenburg Cemetery Burial: 11*	Completed by: AMJ and JIB

Skeletal Pathology & Trauma Recording Form		
Pathology	**Present**	**Elements**
Unidentified Lesions		
Blastic	☐	
Lytic	☐	
Growth & Developmental Stress		
Cribra orbitalia	☐	
Porotic hyperostosis	☐	
Spina bifida	☐	
Other:	☐	
Joint Pathology		
Anklyosis	☐	
Eburnation	☐	
Schmorls nodes	☐	
Osteophytic lipping	☐	
Joint degeneration	☐	
Other:	☐	
Non-specific Infections		
Periostitis	☐	
Osteomyelitis	☐	
Other:	☐	
Neoplastic Conditions		
Osteoma	☐	
Neoplasm	☐	
Other:	☐	
Trauma		
Healed fracture	☐	
Other:	☐	

Dental Pathology	**Present**	**Elements**
Growth & Developmental Stress		
Enamel Hypoplasia	☐	
Other:	☐	
Periodontal disease		
Calculus	☐	
Caries	☐	
Abscess	☐	
Remodeled alveolus/tooth loss	☐	
Other:	☐	
Anomolous Conditions		
Peg tooth	☐	
Supernumerary tooth	☐	
Other:	☐	
Cultural / Occupational Modification		
Pipestem grooves	☐	
Other:	☐	

*no pathology or trauma present

Altenburg Cemetery Burial: 12	Completed by: AMJ and JIB

Skeletal Pathology & Trauma Recording Form		
Pathology	**Present**	**Elements**
Unidentified Lesions		
Blastic	☐	
Lytic	☑	L Vertebrae
Growth & Developmental Stress		
Cribra orbitalia	☐	
Porotic hyperostosis	☐	
Spina bifida	☐	
Other:	☐	
Joint Pathology		
Anklyosis	☐	
Eburnation	☐	
Schmorls nodes	☐	
Osteophytic lipping	☐	
Joint degeneration	☐	
Other:	☐	
Non-specific Infections		
Periostitis	☑	L and R Tibias, R Fibula
Osteomyelitis	☐	
Other:	☐	
Neoplastic Conditions		
Osteoma	☑	Frontal
Neoplasm	☐	
Other:	☐	
Trauma		
Healed fracture	☐	
Other:	☐	

Dental Pathology	**Present**	**Elements**
Growth & Developmental Stress		
Enamel Hypoplasia	☐	
Other:	☐	
Periodontal disease		
Calculus	☑	11 loose teeth
Caries	☑	6 loose teeth
Abscess	☐	
Remodeled alveolus/tooth loss	☑	L and R Mandible
Other:	☐	
Anomolous Conditions		
Peg tooth	☑	2 loose teeth
Supernumerary tooth	☐	
Other:	☐	
Cultural / Occupational Modification		
Pipestem grooves	☐	
Other:	☐	

Stolz Cemetery Burial: 1	Completed by: AMJ and JIB

Skeletal Pathology & Trauma Recording Form		
Pathology	**Present**	**Elements**
Unidentified Lesions		
Blastic	☑	L Ulna, L and R Ilia, L and R Tarsals
Lytic	☑	L and R Ribs, C and T Vertebrae, L and R Ilia, L and R Tarsals
Growth & Developmental Stress		
Cribra orbitalia	☐	
Porotic hyperostosis	☐	
Spina bifida	☐	
Other:	☐	
Joint Pathology		
Anklyosis	☐	
Eburnation	☐	
Schmorls nodes	☐	
Osteophytic lipping	☑	C Vertebrae
Joint degeneration	☐	
Other:	☐	
Non-specific Infections		
Periostitis	☑	L Rib
Osteomyelitis	☐	
Other:	☐	
Neoplastic Conditions		
Osteoma	☐	
Neoplasm	☐	
Other:	☐	
Trauma		
Healed fracture	☑	R Ribs
Other:	☐	

Dental Pathology	**Present**	**Elements**
Growth & Developmental Stress		
Enamel Hypoplasia	☐	
Other:	☐	
Periodontal disease		
Calculus	☑	L and R Mandible
Caries	☑	L Maxilla, L and R Mandible
Abscess	☐	
Remodeled alveolus/tooth loss	☑	L and R Maxillae, L and R Mandible
Other:	☐	
Anomolous Conditions		
Peg tooth	☐	
Supernumerary tooth	☐	
Other:	☐	
Cultural / Occupational Modification		
Pipestem grooves	☐	
Other:	☐	

Stolz Cemetery Burial: 2	Completed by: AMJ and JIB

Skeletal Pathology & Trauma Recording Form		
Pathology	**Present**	**Elements**
Unidentified Lesions		
Blastic	☑	R Humerus
Lytic	☑	C, T, L, and S Vertebrae, R Humerus, L and R Radii, R Ulna, L Metacarpal, L and R Tibia, L Metatarsal
Growth & Developmental Stress		
Cribra orbitalia	☐	
Porotic hyperostosis	☐	
Spina bifida	☐	
Other:	☐	
Joint Pathology		
Anklyosis	☑	T Vertebrae
Eburnation	☑	C Vertebrae, R Humerus, R and L Radii, R Ulna, L Metatarsal
Schmorls nodes	☐	
Osteophytic lipping	☑	C, T, L Vertebrae, L and R Ulnae, L and R Carpals, L and R Metacarpals
Joint degeneration	☐	
Other: Kyphosis	☑	T, L Vertebrae
Other: Vertebra Collapse	☑	L Vertebrae
Non-specific Infections		
Periostitis	☑	R Femur
Osteomyelitis	☐	
Other: Unknown	☑	R Femur
Neoplastic Conditions		
Osteoma	☑	L Parietal
Neoplasm	☐	
Other:	☐	
Trauma		
Healed fracture	☑	L Ulna, L Metacarpal, R Parietal
Other: Possible	☑	Frontal

Dental Pathology	Present	Elements
Growth & Developmental Stress		
Enamel Hypoplasia	☐	
Other:	☐	
Periodontal disease		
Calculus	☑	L and R Maxillae
Caries	☑	L Maxilla, L and R Mandible
Abscess	☐	
Remodeled alveolus/tooth loss	☑	L and R Maxillae, L and R Mandible
Other:	☐	
Anomolous Conditions		
Peg tooth	☐	
Supernumerary tooth	☐	
Other:	☐	
Cultural / Occupational Modification		
Pipestem grooves	☐	
Other: Unidentified wear	☑	L and R Maxillae

Stolz Cemetery Burial: 3*	Completed by: AMJ and JIB

Skeletal Pathology & Trauma Recording Form		
Pathology	**Present**	**Elements**
Unidentified Lesions		
Blastic	☐	
Lytic	☐	
Growth & Developmental Stress		
Cribra orbitalia	☐	
Porotic hyperostosis	☐	
Spina bifida	☐	
Other:	☐	
Joint Pathology		
Anklyosis	☐	
Eburnation	☐	
Schmorls nodes	☐	
Osteophytic lipping	☐	
Joint degeneration	☐	
Other:	☐	
Non-specific Infections		
Periostitis	☐	
Osteomyelitis	☐	
Other:	☐	
Neoplastic Conditions		
Osteoma	☐	
Neoplasm	☐	
Other:	☐	
Trauma		
Healed fracture	☐	
Other:	☐	

Dental Pathology	**Present**	**Elements**
Growth & Developmental Stress		
Enamel Hypoplasia	☐	
Other:	☐	
Periodontal disease		
Calculus	☐	
Caries	☐	
Abscess	☐	
Remodeled alveolus/tooth loss	☐	
Other:	☐	
Anomolous Conditions		
Peg tooth	☐	
Supernumerary tooth	☐	
Other:	☐	
Cultural / Occupational Modification		
Pipestem grooves	☐	
Other:	☐	

*no pathology or trauma present

Stolz Cemetery Burial: 4*	Completed by: AMJ and JIB

Skeletal Pathology & Trauma Recording Form		
Pathology	**Present**	**Elements**
Unidentified Lesions		
Blastic	☐	
Lytic	☐	
Growth & Developmental Stress		
Cribra orbitalia	☐	
Porotic hyperostosis	☐	
Spina bifida	☐	
Other:	☐	
Joint Pathology		
Anklyosis	☐	
Eburnation	☐	
Schmorls nodes	☐	
Osteophytic lipping	☐	
Joint degeneration	☐	
Other:	☐	
Non-specific Infections		
Periostitis	☐	
Osteomyelitis	☐	
Other:	☐	
Neoplastic Conditions		
Osteoma	☐	
Neoplasm	☐	
Other:	☐	
Trauma		
Healed fracture	☐	
Other:	☐	

Dental Pathology	**Present**	**Elements**
Growth & Developmental Stress		
Enamel Hypoplasia	☐	
Other:	☐	
Periodontal disease		
Calculus	☐	
Caries	☐	
Abscess	☐	
Remodeled alveolus/tooth loss	☐	
Other:	☐	
Anomolous Conditions		
Peg tooth	☐	
Supernumerary tooth	☐	
Other:	☐	
Cultural / Occupational Modification		
Pipestem grooves	☐	
Other:	☐	

*no pathology or trauma present

Stolz Cemetery Burial: 5*	Completed by: AMJ and JIB

Skeletal Pathology & Trauma Recording Form		
Pathology	**Present**	**Elements**
Unidentified Lesions		
Blastic	☐	
Lytic	☐	
Growth & Developmental Stress		
Cribra orbitalia	☐	
Porotic hyperostosis	☐	
Spina bifida	☐	
Other:	☐	
Joint Pathology		
Anklyosis	☐	
Eburnation	☐	
Schmorls nodes	☐	
Osteophytic lipping	☐	
Joint degeneration	☐	
Other:	☐	
Non-specific Infections		
Periostitis	☐	
Osteomyelitis	☐	
Other:	☐	
Neoplastic Conditions		
Osteoma	☐	
Neoplasm	☐	
Other:	☐	
Trauma		
Healed fracture	☐	
Other:	☐	

Dental Pathology	**Present**	**Elements**
Growth & Developmental Stress		
Enamel Hypoplasia	☐	
Other:	☐	
Periodontal disease		
Calculus	☐	
Caries	☐	
Abscess	☐	
Remodeled alveolus/tooth loss	☐	
Other:	☐	
Anomolous Conditions		
Peg tooth	☐	
Supernumerary tooth	☐	
Other:	☐	
Cultural / Occupational Modification		
Pipestem grooves	☐	
Other:	☐	

*no pathology or trauma present

Stolz Cemetery Burial: 6	Completed by: AMJ and JIB

Skeletal Pathology & Trauma Recording Form		
Pathology	**Present**	**Elements**
Unidentified Lesions		
Blastic	☑	R Femur
Lytic	☐	
Growth & Developmental Stress		
Cribra orbitalia	☐	
Porotic hyperostosis	☑	L and R Parietals
Spina bifida	☐	
Other:	☐	
Joint Pathology		
Anklyosis	☐	
Eburnation	☐	
Schmorls nodes	☐	
Osteophytic lipping	☑	L Pelvis
Joint degeneration	☐	
Other:	☐	
Non-specific Infections		
Periostitis	☐	
Osteomyelitis	☐	
Other:	☐	
Neoplastic Conditions		
Osteoma	☐	
Neoplasm	☐	
Other:	☐	
Trauma		
Healed fracture	☑	Nasal bones
Other:	☐	

Dental Pathology	**Present**	**Elements**
Growth & Developmental Stress		
Enamel Hypoplasia	☑	L and R Mandible
Other:	☐	
Periodontal disease		
Calculus	☑	L and R Mandible
Caries	☑	L Mandible
Abscess	☐	
Remodeled alveolus/tooth loss	☐	
Other:	☐	
Anomolous Conditions		
Peg tooth	☐	
Supernumerary tooth	☐	
Other:	☐	
Cultural / Occupational Modification		
Pipestem grooves	☐	
Other:	☐	

Stolz Cemetery Burial: 7	Completed by: AMJ and JIB

Skeletal Pathology & Trauma Recording Form		
Pathology	**Present**	**Elements**
Unidentified Lesions		
Blastic	☑	L and R Pelvis
Lytic	☑	L and R Pelvis
Growth & Developmental Stress		
Cribra orbitalia	☐	
Porotic hyperostosis	☐	
Spina bifida	☐	
Other:	☐	
Joint Pathology		
Anklyosis	☐	
Eburnation	☑	L Pelvis
Schmorls nodes	☑	T Vertebrae
Osteophytic lipping	☑	L Rib, L and R Radii, R Ulna, L and R Pelvis, R Femur
Joint degeneration	☐	
Other:	☐	
Non-specific Infections		
Periostitis	☐	
Osteomyelitis	☐	
Other:	☐	
Neoplastic Conditions		
Osteoma	☐	
Neoplasm	☐	
Other:	☐	
Trauma		
Healed fracture	☑	L Vertebra
Other:	☐	

Dental Pathology	Present	Elements
Growth & Developmental Stress		
Enamel Hypoplasia	☐	
Other:	☐	
Periodontal disease		
Calculus	☐	
Caries	☐	
Abscess	☐	
Remodeled alveolus/tooth loss	☐	
Other:	☐	
Anomolous Conditions		
Peg tooth	☐	
Supernumerary tooth	☐	
Other:	☐	
Cultural / Occupational Modification		
Pipestem grooves	☐	
Other:	☐	

Stolz Cemetery Burial: 8	Completed by: AMJ and JIB

Skeletal Pathology & Trauma Recording Form		
Pathology	**Present**	**Elements**
Unidentified Lesions		
Blastic	☐	
Lytic	☑	L and R Humerii
Growth & Developmental Stress		
Cribra orbitalia	☐	
Porotic hyperostosis	☐	
Spina bifida	☐	
Other:	☐	
Joint Pathology		
Anklyosis	☐	
Eburnation	☐	
Schmorls nodes	☐	
Osteophytic lipping	☑	C and T Vertebrae, L Ribs
Joint degeneration	☐	
Other:	☐	
Non-specific Infections		
Periostitis	☐	
Osteomyelitis	☐	
Other:	☐	
Neoplastic Conditions		
Osteoma	☐	
Neoplasm	☐	
Other:	☐	
Trauma		
Healed fracture	☐	
Other:	☐	

Dental Pathology	Present	Elements
Growth & Developmental Stress		
Enamel Hypoplasia	☐	
Other:	☐	
Periodontal disease		
Calculus	☐	
Caries	☐	
Abscess	☐	
Remodeled alveolus/tooth loss	☐	
Other:	☐	
Anomolous Conditions		
Peg tooth	☐	
Supernumerary tooth	☐	
Other:	☐	
Cultural / Occupational Modification		
Pipestem grooves	☐	
Other:	☐	

Stolz Cemetery Burial: 9*	Completed by: AMJ and JIB

Skeletal Pathology & Trauma Recording Form		
Pathology	**Present**	**Elements**
Unidentified Lesions		
Blastic	☐	
Lytic	☐	
Growth & Developmental Stress		
Cribra orbitalia	☐	
Porotic hyperostosis	☐	
Spina bifida	☐	
Other:	☐	
Joint Pathology		
Anklyosis	☐	
Eburnation	☐	
Schmorls nodes	☐	
Osteophytic lipping	☐	
Joint degeneration	☐	
Other:	☐	
Non-specific Infections		
Periostitis	☐	
Osteomyelitis	☐	
Other:	☐	
Neoplastic Conditions		
Osteoma	☐	
Neoplasm	☐	
Other:	☐	
Trauma		
Healed fracture	☐	
Other:	☐	

Dental Pathology	**Present**	**Elements**
Growth & Developmental Stress		
Enamel Hypoplasia	☐	
Other:	☐	
Periodontal disease		
Calculus	☐	
Caries	☐	
Abscess	☐	
Remodeled alveolus/tooth loss	☐	
Other:	☐	
Anomolous Conditions		
Peg tooth	☐	
Supernumerary tooth	☐	
Other:	☐	
Cultural / Occupational Modification		
Pipestem grooves	☐	
Other:	☐	

*no pathology or trauma present

Stolz Cemetery Burial: 10*	Completed by: AMJ and JIB

Skeletal Pathology & Trauma Recording Form		
Pathology	**Present**	**Elements**
Unidentified Lesions		
Blastic	☐	
Lytic	☐	
Growth & Developmental Stress		
Cribra orbitalia	☐	
Porotic hyperostosis	☐	
Spina bifida	☐	
Other:	☐	
Joint Pathology		
Anklyosis	☐	
Eburnation	☐	
Schmorls nodes	☐	
Osteophytic lipping	☐	
Joint degeneration	☐	
Other:	☐	
Non-specific Infections		
Periostitis	☐	
Osteomyelitis	☐	
Other:	☐	
Neoplastic Conditions		
Osteoma	☐	
Neoplasm	☐	
Other:	☐	
Trauma		
Healed fracture	☐	
Other:	☐	

Dental Pathology	**Present**	**Elements**
Growth & Developmental Stress		
Enamel Hypoplasia	☐	
Other:	☐	
Periodontal disease		
Calculus	☐	
Caries	☐	
Abscess	☐	
Remodeled alveolus/tooth loss	☐	
Other:	☐	
Anomolous Conditions		
Peg tooth	☐	
Supernumerary tooth	☐	
Other:	☐	
Cultural / Occupational Modification		
Pipestem grooves	☐	
Other:	☐	

*no pathology or trauma present

Juvenile Age Assessment Part I – FUSION Prenatal to Childhood Altenburg Lutheran Church Society Cemetery BOZ0009/CU584/Collection's Location: UWM–ARL	**Burial No.** 1
Observer Name: A.M.J. + J.L.B.	Date Started: 10/12/14 Date Completed: 10/12/14
SUMMARY AGE Category: ☒ Prenatal (Prenatal – 2.49 y) ☐ Early Childhood (2.5 – 5.9 y) ☐ Late Childhood (6-12.9 y) ☐ Indeterminate **AGE RANGE:** ≤8 fm ~~fm~~ / pn m/ pn y *to* _____ fw / pn m/ pn y ☐ Indeterminate * 'fw' fetal weeks; 'pn m' postnatal months; 'pn y' postnatal years.	

FUSION OF OSSIFICATION CENTERS

Use the Manual when completing this form. Record fusion data using the following codes: O = open, U = Fusion underway, or F = fusion complete, though not obliterated. Slash the box when the feature is not observable.

Element	Primary Elements	Observation Code:	Fusion Complete
Sphenoid	Lesser Wings to Sphenoid Body	–	5 fm
	Pre Sphenoid to Post Sphenoid Body	O / –	8 fm
	Greater Wings to Sphenoid Body	O / –	1 y
	Foramen Ovale (Greater Wing)	–	1 y
Temporal	Tympanic Ring to Temporal Squamous	–	35 fw
	Petromastoid to Squamotympanic	–	1 y
Occipital	Supra-occipital to Interparietal Squama	–	5 fm
	Superior Median Fissure	–	1 y
	Sutura Mendosa	–	1 y
	Partes Laterales to Squama	–	1 – 3 y
	Hypoglossal Canal (Pars Laterales)	O/O	2 – 4 y
	Partes Laterales to Pars Basilaris	O/O	5 – 7 y
Mandible	Mandibular Symphysis	–	1 y
	Coronoid to main mass	–	By 8 f wks
Frontal	Fusion of L and R frontals	–	9 fm - 2 y
	Metopic Suture obliterated (generally)	–	2 – 4 y
Vertebrae	C1 – R & L Posterior arches (to one another)	O	4 – 5 y
	C1- Anterior arch to anterior bars	O	5 – 6 y
	C2- Intradental union (becomes Dens)	–	Full term
	C2- R & L Neural Arches (to one another)	O/O	3 – 4 y
	C2- Dens to Neural Arch	O/O	3 – 4 y
	C2- Centrum to Neural Arch	O/O	4 – 6 y
	C2- Ossiculum Terminale of dens	–	12 y
	C3-L5 Neural Arches (to one another)	O	1 – 2 y
	C3-L5 Neural Arches to Centra	O	2 – 5 y
Sacrum (S1 and S2)	Lateral Elements to Neural Arches → 'Wings'	–	2 – 5 y
	Wings to Centra	–	2 – 6 y
Os coxa	Ischiopubic ramus	–	5 – 11 y
Humerus	Greater and Lesser Tubercles to Head	O	2 – 6 y

*'f m' indicates 'fetal month'; 'f wks' indicates 'fetal weeks'; 'm' indicates post natal months; and 'y' indicates postnatal years.

Estimated Age

Step 1) Age Range.

Indicate the estimated age range of your individual in the fields below after referring to the fusion table above. In the first field, indicate the youngest age associated with 'O' or 'U' fusion observations. In the second field, indicate the oldest age associated with 'F' fusion observations.

8 fm fetal weeks / postnatal months / postnatal years (circle unit)

to

_____ fetal weeks / postnatal months / postnatal years (circle unit)

* Remember to indicate the age range in the summary section on the top of page 1 of this form.

☐ Indeterminate; i.e. no evidence to allow you to assign the individual to an age category. Procede to step 3.

Step 2) If you were able to provide an age range in step 1, skip this step and procede to step 3.
If you selected 'indeterminate' in step 1 but your individual includes other evidence to allow you to assign the individual to an age category, indicate the information and the estimated age below. (e.g. petros portion compares favorably to individual 20 fetal weeks old). Then, use this information to select a categorical age in step 3.

Step 3) Age Category:

If you provided an age range in step 1, calculate the mean from of the ages and use the value to select an age category below.
Alternatively, if you arrived at step 3 following the directions in step 2, to proceed to assign your individual to an age category below based on the data you provided in step 2.

- Prenatal – 2.5 years (Prenatal – 2.49 years)
- Early Childhood (2.5 – 5 years)
- Late Childhood (6 – 12 years)
- Indeterminate; i.e. no evidence to allow you to assign the individual to an age category.

Comments:

≤ 8 fm

2 co-mingled individuals, twins, combined on this form

JUVENILE AGE ASSESSMENT PART II form:

☒ Prenatal – 2.5 years (LMP – 2.5 years)
☐ Early Childhood (2.5 – 5 years)
☐ Late Childhood (6 – 12 years)
☐ Indeterminate; i.e. no evidence to allow you to assign the individual to an age category.

Juvenile Age Assessment Part II- Prenatal – 2.49 years Altenburg Lutheran Church Society Cemetery BOZ0009/CU584/Collection's Location: UWM–ARL	**Burial No.** 1
Observer Name: A.M.J. + J.I.B. Date Started: 10/12/14 Date Completed: " "	

SUMMARY DATA:

Dental Age: Age range: ____ - ____ fw/pn m / pn y ☐ Indeterminate

Sub-age Category: ☐ Embryo ☐ Fetus ☐ Neonate ☐ Infant ☐ Toddler ☐ Indeterminate

Osteometric Age: Age range: 28 - 34 (fw)/pn m / pn y ☐ Indeterminate

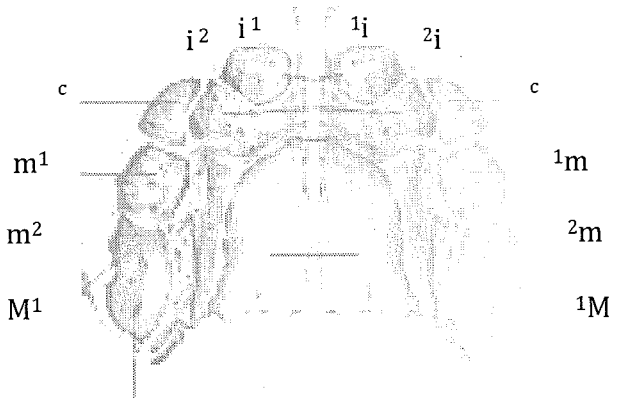
Sub-age Category: ☐ Embryo ☐ Fetus ☐ Neonate ☐ Infant ☐ Toddler ☐ Indeterminate

* 'fw' fetal weeks; 'pn m' postnatal months; and 'pn y' postnatal years.

NON-METRIC DENTAL AGE ASSESSMENT

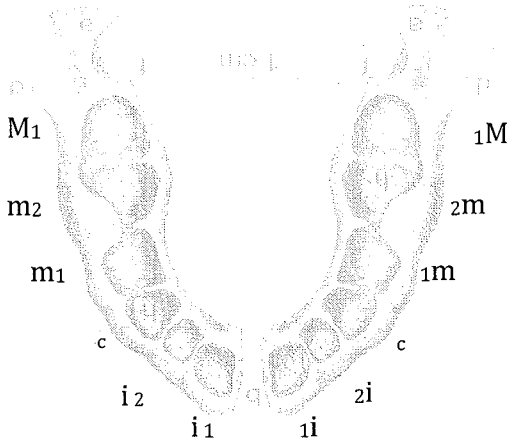
Use and attach a Juvenile mixed dentition outline if that form is more appropriate for your subject lot.

☐ Mandible not present. ☐ Maxilla not present. ☐ Mandible and Maxilla not present.



Right Maxilla, occlusal view Left

Illustration Key:
● Articulated Tooth
○ Loose Tooth
X Missing Tooth



Right Mandibular, occlusal view Left

Formation and Eruption Assessments

Complete all assessments unless you are absolutely certain that your individual presents demonstrative evidence of prenatal or postnatal age. If you have *any uncertainty* about the individual's age, complete all assessments. Refer to the manual as you complete this form.

Mineralization Stages (Sunderland et al. 1987) *Applied to prenatal individuals only.*
Use the table below to assign a fetal age to the individual based on the oldest age in weeks post fertilization (wpf) for mineralized teeth that are recorded as "Present." Indicate your answers in the fields below.

	Presence/Absence		Tooth	15th % (wpf):	Range (wpf):
	LEFT	RIGHT			
Maxilla			di1	15	13 – 17
			di2	17	14 – 19
			dc	19	17 – 20
			dm1	16	14 – 17
			dm2	19	18 - 20
Mandible			di1	15	13 – 17
			di2	17	14 – 19
			dc	19	17 – 20
			dm1	16	14 – 17
			dm2	19	18 - 20

15th percentile age: ____weeks post fertilization. Age Range: _____ - _____wpf.
Unable to make assessment due to: ☐ Lack of evidence (missing) ☐ Fragmentation
☐ Age is likely postnatal; evidence: _____
☐ Other:_____

Tooth formation stages (Moorrees et al. 1963) *Applies to postnatal individuals.*
Evaluate the crown and root development status of the mandibular canines, first molar, and second molar from postnatal individuals. Indicate the appropriate code and corresponding age in the appropriate fields within the table below.

Mandibular Tooth	Formation Stage Code		Estimated Age (years)	
	Left	Right	Left	Right
c				
1m				
2m				

Indicate the *oldest age of the teeth you were able to score:* _____ years
Unable to make assessment due to: ☐ Missing ☐ Fragmentation ☐ Unable to observe complete tooth in profile ☐ Age likely fetal; evidence: _____
☐ Other:_____

Formation and eruption sequence following Ubelaker (1989)
Instructions: Estimate the age of your subject lot by finding the image within the MANUAL that best matches your individual's. Indicate the age estimation in the line below:

Estimated Age:_____ mths Estimated Age Range:_____-_____mths
Unable to make assessment due to:
☐ Missing ☐ Fragmentation ☐ Other:_____

Eruption times (After Lysell et al. 1962, as presented in Scheuer & Black 2000:153)
Instructions: In the fields below, indicate whether a deciduous tooth is present or absent. Beneath the table, indicate the oldest mean age and age range given the teeth present.

	Tooth	Emerged past alveolar crest? (yes/no)	Mean (months)	Age Range +/- 1 SD (months)
Maxilla	Central Incisor		10	8-12
	Lateral Incisor		11	9-13
	Canine		19	16-22
	First Molar		16	13-19*
	Second Molar		29	25-33
Mandible	Central incisor		8	6-10
	Lateral incisor		13	10-16
	Canine		20	17-23
	First molar		16	14-18
	Second molar		27	23-31*

Mean Age: _____ mths Age range: _____ - _____ +/- 1 SD

Unable to make assessment due to:
☐ Missing ☐ Fragmentation ☐ Unable to observe tooth above alveolar crest. ☐ Other:

Estimated Age, Combined Nonmetric Dental Assessment

1) Age Range: The final estimated age range is the youngest mean age or the youngest age of a given range and the oldest mean age or the oldest age of a given age range derived from any of the non-metric dental age assessment methods above.
   a. Do results from one assessment disagree markedly from others and other extant osteological evidence? If so, indicate the age range, the assessment, and contrary evidence with your supervisor (e.g., 18 – 20 week mineralization age range, but neonatal petrosa*).
      i. Age range: _____ - _____ derived from the _____Method.
      ii. Contradictory osteological evidence: _____
   b. Indicate age range in fields below and in the summary section on page one of your form. If you provided information in a. (immediately above), *do not use it for the age range (below).*
      *Don't use data besides that collected within the non-metric dental assessment for the age range.

   Age range _____ Unit: fetal weeks/postnatal months/postnatal year (circle).
   to
   _____ Unit: fetal weeks/postnatal months/postnatal year (circle).

2) *Mean Age.* Calculate the average of the oldest and youngest mean age scores or provide a single mean score from above when only one exists.
   Mean Age: _____ Unit: fetal weeks / postnatal months / postnatal year (circle one).

3) *Age Category.* Select the age category (below) into which the value you generate following step 2) fits. Select the same category in the summary section on page one of your form.

   ☐ Embryo (0-8 weeks or two lunar months)
   ☐ Fetus (9 – 40 weeks)
   ☐ Neonate (Birth – 28 days)
   ☐ Infant (Birth – 11.9 months)
   ☐ Toddler (1 – 2.49 years)
   ☐ Indeterminate Lot: _____ Date: _____

OSTEOMETRIC AGE ASSESSMENT - FETAL

Note: The following osteometric assessments are applicable only to individuals determined to be prenatal based on forgoing fusion and dental assessments. See MANUAL for instructions on collecting measurements as well as deriving age estimations.

Cranial Measurements

Occipital: Pars lateralis and Pars basilaris (Frazekas and Kosa 1978)

Element	Measurement name	Left (mm)	(mm)	Right (mm)	Age:
Pars lateralis	Maximum length		N/A		
Pars Basilaris	Maximum Width (MW)	N/A	11.29	N/A	32 fw
	Sagittal Length (SL)	N/A	10.98	N/A	32 fw

*If you were unable to collect any measurements, indicate the reason below:

Age estimation from pars basilaris (Scheuer and MacLauighlin-Black 1994).

The Pars Basilaris MW measurement value (above) is

☐ Larger than the SL measurement value → then ≥ 30 fetal weeks
☐ Smaller than the SL measurement value → then ≤ 28 fetal weeks
☐ Not applicable; unable to collect data due to:

Sphenoid (Fazekas & Kosa 1978)

Measurement name	*Left* (mm)	Centerline (mm)	*Right (mm)*	*Fetal Age*	**Not measured?*
Body –Length (BL)	N/A	7.82	N/A	28 fw	
Body – Width (BW)	N/A		N/A		
Lesser Wing- Length (LWL)		N/A			
Lesser Wing- Width (LWW)		N/A			
Greater Wing –Length (GWL)		N/A			
Greater Wing – Width (GWW)		N/A			

Temporal (Fazekas & Kosa 1978)

	Left (mm)	*Right (mm)*	*Fetal Age*	**Not measured?*
Petrous - Length	28.39/26.72	28.75	L 32-3Y / 32 fw	
Petrous - Width	14.86/ –	15.15	34 fw	

Mandible, Maxilla, and Zygoma (Fazekas & Kosa 1978)

	Left (mm)	*Right (mm)*	*Fetal Age*	**Not measured?*
Mandible –Length				
Mandible – Width				
Mandible – Oblique length				
Maxilla –Length				
Maxilla – Height				
Maxilla – Width				
Zygomatic- Length				
Zygomatic – Oblique Height				

**Place a '✓' in the far right columns of tables to indicate any measurements you were unable to collect. If you need more writing space, please use the comments section on p. 5*

Lot:_____ Date: _____

Postcranial Measurements

Shoulder elements and upper limbs (Fazekas & Kosa 1978)

Measurement name	*Left (mm)*	Right (mm)	*Fetal Age*	**Not measured?*
Clavicle- Length				
Scapula –Length (height)				
Scapula – Width				
Scapula – Length of the Spine				
Humerus – Length (height)	49.72		30 fw	
Humerus – Distal Width	12.28		30 fw	
Radius – Length				
Ulna – Length				

same element <

Pelvic elements and lower limbs (Fazekas & Kosa 1978)

Measurement name	*Left (mm)*	Right (mm)	*Fetal Age*	**Not measured?*
Maximum iliac length		25.80	32 fw	
Maximum iliac width		23.26	32 fw	
Maximum ischium length				
Maximum ischium width				
Maximum length of pubis				
Femur maximum length	53.82		30 fw	
Femur distal width				
Tibia maximum length		48.05	30-32 fw	
Fibula maximum length				

same element <

**Place a '✓' in the far right columns of tables to indicate any measurements you were unable to collect. If you need more writing space, please use the comments section below*

COMMENTS:

complete sphenoid post body

OSTEOMETRIC AGE ASSESSMENT – POSTNATAL through 2.49 years

Note: The following osteometric assessments are applicable only to individuals with ages determined via fusion and dental assessments to be postnatal through 2.49 years of age. Methods follow Maresh (1970).

Element	*Left (mm)*	*Epiphysis included?*	*Age:*	*NM**	*Right (mm)*	*Epiphysis included?*	*Age:*	*NM**
Humerus								
Radius								
Ulna								
Femur								
Tibia								
Fibula								

**NM indicates Not measured. Place a '✓' in the far right columns of tables to indicate any measurements you were unable to collect. If you need more writing space, please use the comments section below*

Comments:

Estimated Age, Combined osteometric

1) Age Range:
The final estimated age range is the youngest mean age or the youngest age of a given range and the oldest mean age or the oldest age of a given age range derived from the osteometric assessments above. Indicate this data in the fields below and in the summary section on page one of your form.

28 Unit: fetal weeks/postnatal months/postnatal year (circle).

to

34 Unit: fetal weeks/postnatal months/postnatal year (circle).

2) Mean Age:
Calculate the mean of the ages you provided in the age range (above) or provide a single mean age when only one exists.

31 Unit: fetal weeks/postnatal months/postnatal year (circle).

3) Select the age category (below) into which the value you generated following step 2) fits. Select the same category in the summary section on page one of your form.

- ☐ Embryo (0-8 weeks or two lunar months)
- ☒ Fetus (9 – 40 weeks)
- ☐ Neonate (Birth – 28 days)
- ☐ Infant (Birth – 1 year)
- ☐ Toddler (1 – 2.49 years)
- ☐ Indeterminate

Juvenile Age Assessment Part I – FUSION Prenatal to Childhood Altenburg Lutheran Church Society Cemetery BOZ0009/CU584/Collection's Location: UWM–ARL	**Burial No.** 2
Observer Name: A.M.J. + J.I.B.	Date Started: 10/12/14 Date Completed: 10/12/14
SUMMARY AGE Category: ☒ Prenatal (Prenatal – 2.49 y) ☐ Early Childhood (2.5 – 5.9 y) ☐ Late Childhood (6-12.9 y) ☐ Indeterminate **AGE RANGE:** 1 fw / pn m/ pn y *to* 2 fw / pn m/ pn y ☐ Indeterminate * 'fw' fetal weeks; 'pn m' postnatal months; 'pn y' postnatal years.	

FUSION OF OSSIFICATION CENTERS

Use the Manual when completing this form. Record fusion data using the following codes: O = open, U = Fusion underway, or F = fusion complete, though not obliterated. Slash the box when the feature is not observable.

Element	Primary Elements	Observation Code:	Fusion Complete
Sphenoid	Lesser Wings to Sphenoid Body	F	5 fm
	Pre Sphenoid to Post Sphenoid Body	F	8 fm
	Greater Wings to Sphenoid Body	F	1 y
	Foramen Ovale (Greater Wing)	F	1 y
Temporal	Tympanic Ring to Temporal Squamous	F	35 fw
	Petromastoid to Squamotympanic	F	1 y
Occipital	Supra-occipital to Interparietal Squama	–	5 fm
	Superior Median Fissure	–	1 y
	Sutura Mendosa	–	1 y
	Partes Laterales to Squama	–	1 – 3 y
	Hypoglossal Canal (Pars Laterales)	U	2 – 4 y
	Partes Laterales to Pars Basilaris	O	5 – 7 y
Mandible	Mandibular Symphysis	F	1 y
	Coronoid to main mass	F	By 8 f wks
Frontal	Fusion of L and R frontals	F	9 fm - 2 y
	Metopic Suture obliterated (generally)	U	2 – 4 y
Vertebrae	C1 – R & L Posterior arches (to one another)	O	4 – 5 y
	C1- Anterior arch to anterior bars	O	5 – 6 y
	C2- Intradental union (becomes Dens)	F	Full term
	C2- R & L Neural Arches (to one another)	O	3 – 4 y
	C2- Dens to Neural Arch	O	3 – 4 y
	C2- Centrum to Neural Arch	O	4 – 6 y
	C2- Ossiculum Terminale of dens	O	12 y
	C3-L5 Neural Arches (to one another)	F	1 – 2 y
	C3-L5 Neural Arches to Centra	O	2 – 5 y
Sacrum (S1 and S2)	Lateral Elements to Neural Arches → 'Wings'	O	2 – 5 y
	Wings to Centra	O	2 – 6 y
Os coxa	Ischiopubic ramus	O	5 – 11 y
Humerus	Greater and Lesser Tubercles to Head	O	2 – 6 y

*'f m' indicates 'fetal month'; 'f wks' indicates 'fetal weeks'; 'm' indicates post natal months; and 'y' indicates postnatal years.

Estimated Age

Step 1) Age Range.

Indicate the estimated age range of your individual in the fields below after referring to the fusion table above. In the first field, indicate the youngest age associated with 'O' or 'U' fusion observations. In the second field, indicate the oldest age associated with 'F' fusion observations.

2-5 fetal weeks / postnatal months / postnatal years (circle unit)

to

1-2 fetal weeks / postnatal months / postnatal years (circle unit)

* Remember to indicate the age range in the summary section on the top of page 1 of this form.

☐ Indeterminate; i.e. no evidence to allow you to assign the individual to an age category. Procede to step 3.

Step 2) If you were able to provide an age range in step 1, skip this step and procede to step 3.
If you selected 'indeterminate' in step 1 but your individual includes other evidence to allow you to assign the individual to an age category, indicate the information and the estimated age below. (e.g. petros portion compares favorably to individual 20 fetal weeks old). Then, use this information to select a categorical age in step 3.

Step 3) Age Category:

If you provided an age range in step 1, calculate the mean from of the ages and use the value to select an age category below.
Alternatively, if you arrived at step 3 following the directions in step 2, to proceed to assign your individual to an age category below based on the data you provided in step 2.

- Prenatal – 2.5 years (Prenatal – 2.49 years)
- Early Childhood (2.5 – 5 years)
- Late Childhood (6 – 12 years)
- Indeterminate; i.e. no evidence to allow you to assign the individual to an age category.

Comments:

w 1-2

JUVENILE AGE ASSESSMENT PART II form:

☒ Prenatal – 2.5 years (LMP – 2.5 years)
☐ Early Childhood (2.5 – 5 years)
☐ Late Childhood (6 – 12 years)
☐ Indeterminate; i.e. no evidence to allow you to assign the individual to an age category.

Juvenile Age Assessment Part II- Prenatal – 2.49 years Altenburg Lutheran Church Society Cemetery BOZ0009/CU584/Collection's Location: UWM–ARL	**Burial No.** 2
Observer Name: A.M.J. + J.I.B. Date Started: 10/12/14 Date Completed: " "	

SUMMARY DATA:

Dental Age: Age range: ____ - ____ fw/pn m / pn y ☐ Indeterminate

Sub-age Category: ☐ Embryo ☐ Fetus ☐ Neonate ☐ Infant ☐ Toddler ☐ Indeterminate

Osteometric Age: Age range: 2 - 1 fw/pn m / pn y ☐ Indeterminate

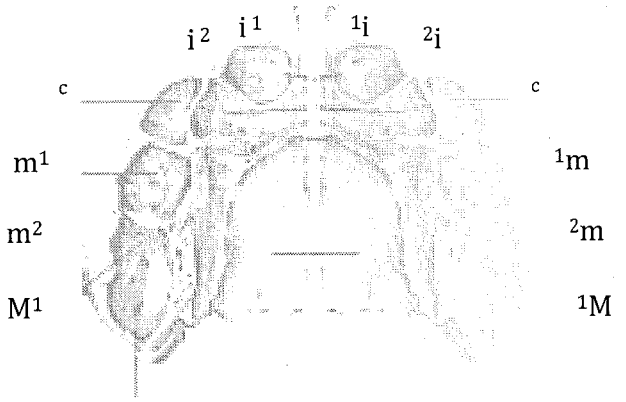
Sub-age Category: ☐ Embryo ☐ Fetus ☐ Neonate ☒ Infant ☒ Toddler ☐ Indeterminate

* 'fw' fetal weeks; 'pn m' postnatal months; and 'pn y' postnatal years.

NON-METRIC DENTAL AGE ASSESSMENT

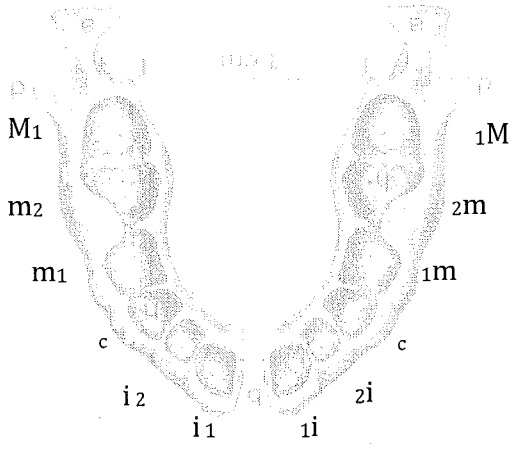
Use and attach a Juvenile mixed dentition outline if that form is more appropriate for your subject lot.

☐ Mandible not present. ☐ Maxilla not present. ☐ Mandible and Maxilla not present.



Right Maxilla, occlusal view Left

Illustration Key:
● Articulated Tooth
○ Loose Tooth
X Missing Tooth



Right Mandibular, occlusal view Left

Formation and Eruption Assessments

Complete all assessments unless you are absolutely certain that your individual presents demonstrative evidence of prenatal or postnatal age. If you have *any uncertainty* about the individual's age, complete all assessments. Refer to the manual as you complete this form.

Mineralization Stages (Sunderland et al. 1987) *Applied to prenatal individuals only.*
Use the table below to assign a fetal age to the individual based on the oldest age in weeks post fertilization (wpf) for mineralized teeth that are recorded as "Present." Indicate your answers in the fields below.

	Presence/Absence		Tooth	15th % (wpf):	Range (wpf):
	LEFT	RIGHT			
Maxilla			di1	15	13 – 17
			di2	17	14 – 19
			dc	19	17 – 20
			dm1	16	14 – 17
			dm2	19	18 - 20
Mandible			di1	15	13 – 17
			di2	17	14 – 19
			dc	19	17 – 20
			dm1	16	14 – 17
			dm2	19	18 - 20

15th percentile age: ____weeks post fertilization. Age Range: _____ - _____wpf.
Unable to make assessment due to: ☐ Lack of evidence (missing) ☐ Fragmentation
☐ Age is likely postnatal; evidence: _____
☐ Other:_____

Tooth formation stages (Moorrees et al. 1963) *Applies to postnatal individuals.*
Evaluate the crown and root development status of the mandibular canines, first molar, and second molar from postnatal individuals. Indicate the appropriate code and corresponding age in the appropriate fields within the table below.

Mandibular Tooth	Formation Stage Code		Estimated Age (years)	
	Left	Right	Left	Right
c				
1m				
2m				

Indicate the *oldest age of the teeth you were able to score:* _____ years
Unable to make assessment due to: ☐ Missing ☐ Fragmentation ☐ Unable to observe complete tooth in profile ☐ Age likely fetal; evidence: _____
☐ Other:_____

Formation and eruption sequence following Ubelaker (1989)
Instructions: Estimate the age of your subject lot by finding the image within the MANUAL that best matches your individual's. Indicate the age estimation in the line below:

Estimated Age:_____ mths Estimated Age Range:_____-_____mths
Unable to make assessment due to:
☐ Missing ☐ Fragmentation ☐ Other:_____

Eruption times (After Lysell et al. 1962, as presented in Scheuer & Black 2000:153)
Instructions: In the fields below, indicate whether a deciduous tooth is present or absent. Beneath the table, indicate the oldest mean age and age range given the teeth present.

	Tooth	Emerged past alveolar crest? (yes/no)	Mean (months)	Age Range +/- 1 SD (months)
Maxilla	Central Incisor		10	8-12
	Lateral Incisor		11	9-13
	Canine		19	16-22
	First Molar		16	13-19*
	Second Molar		29	25-33
Mandible	Central incisor		8	6-10
	Lateral incisor		13	10-16
	Canine		20	17-23
	First molar		16	14-18
	Second molar		27	23-31*

Mean Age: _____ mths Age range: _____ - _____ +/- 1 SD

Unable to make assessment due to:
☐ Missing ☐ Fragmentation ☐ Unable to observe tooth above alveolar crest. ☐ Other:

Estimated Age, Combined Nonmetric Dental Assessment

1) Age Range: The final estimated age range is the youngest mean age or the youngest age of a given range and the oldest mean age or the oldest age of a given age range derived from any of the non-metric dental age assessment methods above.
   a. Do results from one assessment disagree markedly from others and other extant osteological evidence? If so, indicate the age range, the assessment, and contrary evidence with your supervisor (e.g., 18 – 20 week mineralization age range, but neonatal petrosa*).
      i. Age range: _____ - _____ derived from the _____Method.
      ii. Contradictory osteological evidence: _____
   b. Indicate age range in fields below and in the summary section on page one of your form. If you provided information in a. (immediately above), *do not use it for the age range (below).*
      *Don't use data besides that collected within the non-metric dental assessment for the age range.

   Age range _____ Unit: fetal weeks/postnatal months/postnatal year (circle).
   to
   _____ Unit: fetal weeks/postnatal months/postnatal year (circle).

2) *Mean Age.* Calculate the average of the oldest and youngest mean age scores or provide a single mean score from above when only one exists.
   Mean Age: _____ Unit: fetal weeks / postnatal months / postnatal year (circle one).

3) *Age Category.* Select the age category (below) into which the value you generate following step 2) fits. Select the same category in the summary section on page one of your form.

   ☐ Embryo (0-8 weeks or two lunar months)
   ☐ Fetus (9 – 40 weeks)
   ☐ Neonate (Birth – 28 days)
   ☐ Infant (Birth – 11.9 months)
   ☐ Toddler (1 – 2.49 years)
   ☐ Indeterminate Lot: _____ Date: _____

OSTEOMETRIC AGE ASSESSMENT - FETAL

Note: The following osteometric assessments are applicable only to individuals determined to be prenatal based on forgoing fusion and dental assessments. See MANUAL for instructions on collecting measurements as well as deriving age estimations.

Cranial Measurements

Occipital: Pars lateralis and Pars basilaris (Frazekas and Kosa 1978)

Element	Measurement name	Left (mm)	(mm)	Right (mm)	Age:
Pars lateralis	Maximum length		N/A		
Pars Basilaris	Maximum Width (MW)	N/A		N/A	
	Sagittal Length (SL)	N/A		N/A	

*If you were unable to collect any measurements, indicate the reason below:

Age estimation from pars basilaris (Scheuer and MacLauighlin-Black 1994).

The Pars Basilaris MW measurement value (above) is

☐ Larger than the SL measurement value → then ≥ 30 fetal weeks
☐ Smaller than the SL measurement value → then ≤ 28 fetal weeks
☐ Not applicable; unable to collect data due to:

Sphenoid (Fazekas & Kosa 1978)

Measurement name	*Left* (mm)	Centerline (mm)	*Right (mm)*	*Fetal Age*	**Not measured?*
Body –Length (BL)	N/A		N/A		
Body – Width (BW)	N/A		N/A		
Lesser Wing- Length (LWL)		N/A			
Lesser Wing- Width (LWW)		N/A			
Greater Wing –Length (GWL)		N/A			
Greater Wing – Width (GWW)		N/A			

Temporal (Fazekas & Kosa 1978)

	Left (mm)	*Right (mm)*	*Fetal Age*	**Not measured?*
Petrous - Length				
Petrous - Width				

Mandible, Maxilla, and Zygoma (Fazekas & Kosa 1978)

	Left (mm)	*Right (mm)*	*Fetal Age*	**Not measured?*
Mandible –Length				
Mandible – Width				
Mandible – Oblique length				
Maxilla –Length				
Maxilla – Height				
Maxilla – Width				
Zygomatic- Length				
Zygomatic – Oblique Height				

**Place a '✓' in the far right columns of tables to indicate any measurements you were unable to collect. If you need more writing space, please use the comments section on p. 5*

Lot:_____ Date: _____

Postcranial Measurements

Shoulder elements and upper limbs (Fazekas & Kosa 1978)

Measurement name	*Left (mm)*	Right (mm)	*Fetal Age*	**Not measured?*
Clavicle- Length				
Scapula –Length (height)				
Scapula – Width				
Scapula – Length of the Spine				
Humerus – Length (height)				
Humerus – Distal Width				
Radius – Length				
Ulna – Length				

Pelvic elements and lower limbs (Fazekas & Kosa 1978)

Measurement name	*Left (mm)*	Right (mm)	*Fetal Age*	**Not measured?*
Maximum iliac length				
Maximum iliac width				
Maximum ischium length				
Maximum ischium width				
Maximum length of pubis				
Femur maximum length				
Femur distal width				
Tibia maximum length				
Fibula maximum length				

**Place a '✓' in the far right columns of tables to indicate any measurements you were unable to collect. If you need more writing space, please use the comments section below*

COMMENTS:

OSTEOMETRIC AGE ASSESSMENT – POSTNATAL through 2.49 years

Note: The following osteometric assessments are applicable only to individuals with ages determined via fusion and dental assessments to be postnatal through 2.49 years of age. Methods follow Maresh (1970).

Element	*Left (mm)*	*Epiphysis included?*	*Age:*	*NM**	*Right (mm)*	*Epiphysis included?*	*Age:*	*NM**
Humerus								
Radius								
Ulna								
Femur					147.96	N	1 Y	
Tibia								
Fibula								

**NM indicates Not measured. Place a '✓' in the far right columns of tables to indicate any measurements you were unable to collect. If you need more writing space, please use the comments section below*

Comments:

Estimated Age, Combined osteometric

1) Age Range:
The final estimated age range is the youngest mean age or the youngest age of a given range and the oldest mean age or the oldest age of a given age range derived from the osteometric assessments above. Indicate this data in the fields below and in the summary section on page one of your form.

≥ _____ Unit: fetal weeks/postnatal months/postnatal year (circle).

to

1 _____ Unit: fetal weeks/postnatal months/postnatal year (circle).

2) Mean Age:
Calculate the mean of the ages you provided in the age range (above) or provide a single mean age when only one exists.

_____ Unit: fetal weeks/postnatal months/postnatal year (circle).

3) Select the age category (below) into which the value you generated following step 2) fits. Select the same category in the summary section on page one of your form.

- ☐ Embryo (0-8 weeks or two lunar months)
- ☐ Fetus (9 – 40 weeks)
- ☐ Neonate (Birth – 28 days)
- ☒ Infant (Birth – 1 year)
- ☒ Toddler (1 – 2.49 years)
- ☐ Indeterminate

Age, Sex, and Stature Recording Form – ADULT	**Burial No.** 3
Altenburg Lutheran Church Society Cemetery	
BOZ0009/CU584/Collection's Location: UWM –ARL&Curatorial Facility	
Observer Name: A.M.J. + J.I.B Date: 3/6/14	

SUMMARY DATA: **Sex (non-metric):** ☐ Female ☐ Probable F emale ☒ Ind.Sex ☐ Probable Male ☐ Male
Sex (osteometric): ☐Female ☐ Ind.Sex ☒Male
Cat. Age: ☐Juvenile (<20 yrs) ☐Young Adult (20-35 yrs) ☒Mid. Adult (35-50 yrs) ☐Old Adult (50+ yrs) ☐Indeter. Adult
Age Range: 24 - 82 years **Max Femur Length:** _____mm **Max Tibia Length:** _____mm

Estimated Sex

Non-metric cranial and postcranial observations: Complete while following instructions listed in The Manual).

Pelvis	L	R	*Skull*	L	M	R
Ventral Arc (1-3 or -)	-	-	Nuchal Crest (1-5 or -)		4	
Subpubic Concavity (1-3 or -)	-	-	Mastoid Process (1-5 or -)	2		3
Ischiopubic Ramus Ridge (1-3 or -)	-	-	Supraorbital Margin (1-5 or -)	4		3
Greater Sciatic Notch (1-5 or -)	5	5	Glabella (1-5 or -)		4	
Preauricular Sulcus (0-4 or -)	-	-	Mental Eminence (1-5 or -)		3	

Estimated Sex, Pelvis (0-5): 0 *Estimated Sex, Skull (0-5):* 3

See p.p. 23-24 for instructions on estimating sex of the pelvis.
See p. 28 for instructions on estimating sex of Skull.
See p. 29 for instructions to derive Estimated Sex, Combined score based on non-metric observations.

Estimated Sex, Combined score based on non-metric observations (0-5): 3

Indicate the estimated (non-metric) sex in the summary section on the top of this page.
0-Indeterminate 1-female 2-probably female 3-ambiguous 4-probable male 5-male

Osteometric data:

Maximum length of Talus: 58.5 mm (Accuracy 80 % following Gentry-Steele (1978))
Side measured: ☒Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☐ Unable to score left or right due to: _____

Estimated Sex: ☐ Female (Max length ≤ 51 mm)
☒ Male (Max length ≥ 52 mm)

Vertical diameter of the humeral head 48.5 mm (Accuracy of 73 – 82% (Spradley & Jantz 2011:294))
Side measured: ☒Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☐ Unable to score left or right due to: _____

Estimated Sex: ☐Female (<43 mm)
☐ Indeterminate (44 – 46 mm)
☒Male (>47 mm)

Maximum diameter of the femoral head _____ mm (Accuracy of 88% (Spradley & Jantz 2011:294))
Side measured: ☐Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐fragmentation ☐ pathology
☒Unable to score left or right due to: fragmentation

Estimated Sex: ☐ Female (<42.5 mm) ☐ Indeterminate (43.5 – 46.5 mm) ☐Probable Male (46.5 – 47.5 mm)
☐ Probable female (42.5 – 43.5 mm) ☐Male (>47.5 mm)

Estimated Sex, Combined Osteometric: Combined estimated is sex is based on osteometric data recorded in dashed boxes above. Given incongruous results, consider the rank order of accuracy: 1) max diameter of femoral head, 2) Max length of talus, and 3) vertical diameter of humeral head. Indicate the estimated (metric) sex in the summary data area on the top of this page.

Estimated Sex: ☐Female ☐Indeterminate ☒Male

Estimated Age

Pubic Symphysis (Score left and right sides by indicate score in lines following 'L' and 'R' fields, respectively)

Suchey-Brooks (0-6) [Scores for ☐Female OR ☐Male]
L:____ R:_____ Based on Stage table in, Average Age: _____ Range: _____
☐Check box if casts used. ☐Unable to score due to pelvis of indeterminate sex
☒Unable to score due to: fragmentation

Todd (1-10) [use ONLY for illiae of indeterminate sex]
L:____ R:_____ Based on Stage table in SOP, Average Age: _____ Range: _____
☐Unable to score due to: _____

Auricular Surface (Score left side only except* in cases where right side is absent, fragmented, pathological, etc.)
Stage: 5 Mean Age: 53.1 Range: 24-82
☒ *Scored Right side because left is: ☐ absent ☒fragmented ☐pathological ☐other:_____
☐Unable to score left or right because both are ☐absent ☐fragmented ☐ pathological ☐other:_____

*Cranial Suture Closure (Use left side when possible**)*
– = Unobservable 0 = Open 1 = Minimal Closure 2 = Significant Closure 3 = Complete Obliteration
For any region where *all* cranial sutures are unobservable, check the box next to region heading.

External Cranial Vault ☐ Unobservable

1. Midlambdoid	1	<···
2. Lambda	0	
3. Obelion	3	
4. Anterior Sagittal	2	
5. Bregma	1	
6. Midcoronal	1	
7. Pterion	3	<···
8. Sphenofrontal	3	
9. Inferior Sphenotemporal	1	
10. Superior Sphenotemporal	0	

Stage: 3 Avg: 39.4
Vault Composite Score
28-44 Y

Stage: 5 Avg: 45
Lateral-anterior Composite Score
33-57 Y

Palate ☐ Unobservable

11. Incisive	3
12. Anterior Median Palatine	1
13. Posterior Median Palatine	3
14. Transverse Palatine	1

Endocranial (Internal) Vault ☒Unobservable

15. Sagittal	___
16. Left Lambdoid	___
17. Left Coronal	___

**Indicate sutures (by number) you scored on the right side when scoring left was not possible: 10
Indicate sutures (by number) you were unable to observe and why: _____

Estimated Age, Combined: (indicate the estimated age category in the summary section on page 1 of this form).
Select the most appropriate age category based on all age data collected. *However, when pubic symphysis and cranial suture scores provide divergent age estimates, defer to the pubic symphysis age estimate.*
Estimated Age:
☐ Juvenile (<20 years) ☐ Young Adult (20-35 years) ☒ Middle Adult (35-50 years)
☐ Old Adult (50+ years) ☐ Indeterminate adult

Individual's estimated age is based on ...
☐ all cranial and pelvic data points.
☐ pubic symphysis; results conflicted with cranial suture scores.
☒ cranial suture and auricular surface scores due to missing pubic symphyses.
☐ only cranial suture scores due to missing pelvis.
☐ other: _____

Estimated Stature

When possible, measure the left side. In addition to recording your scores in millimeters in the appropriate fields below, record the measurements in the Summary Data section on page one of the ADULT AGE, SEX, AND STATURE RECORDING FORM.

Maximum length of the femur 470 mm
Side measured: ☒ Left ← Preferred standard
☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology
☐ Unable to score left or right due to: _____

Maximum length of the tibia 364.5 mm
Side measured: ☒ Left ← Preferred standard
☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology
☐ Unable to score left or right due to: _____

Comments Section:

1988 inventory lists partial R symphyseal face. This was not located in 2014.

Age, Sex, and Stature Recording Form – ADULT
Altenburg Lutheran Church Society Cemetery
BOZ0009/CU584/Collection's Location: UWM –ARL&Curatorial Facility
Observer Name: A.M.J. + J.I.B. Date: 3/12/14

Burial No. 4

SUMMARY DATA: **Sex (non-metric):** ☐ Female ☐ Probable Female ☒ Ind.Sex ☐ Probable Male ☐ Male
Sex (osteometric): ☐Female ☒ Ind.Sex ☐Male
Cat. Age: ☐Juvenile (<20 yrs) ☐Young Adult (20-35 yrs) ☐Mid. Adult (35-50 yrs) ☐Old Adult (50+ yrs) ☒Indeter. Adult
Age Range: NA- ____ years **Max Femur Length:** NA mm **Max Tibia Length:** NA mm

Estimated Sex

Non-metric cranial and postcranial observations: Complete while following instructions listed in The Manual).

Pelvis	L	R	*Skull*	L	M	R
Ventral Arc (1-3 or -)	-	-	Nuchal Crest (1-5 or -)		3	
Subpubic Concavity (1-3 or -)	-	-	Mastoid Process (1-5 or -)	2		3
Ischiopubic Ramus Ridge (1-3 or -)	-	-	Supraorbital Margin (1-5 or -)	3		3
Greater Sciatic Notch (1-5 or -)	2		Glabella (1-5 or -)		-	
Preauricular Sulcus (0-4 or -)	-	-	Mental Eminence (1-5 or -)		-	

Estimated Sex, Pelvis (0-5): 0 *Estimated Sex, Skull (0-5):* 3

See p.p. 23-24 for instructions on estimating sex of the pelvis.
See p. 28 for instructions on estimating sex of Skull.
See p. 29 for instructions to derive Estimated Sex, Combined score based on non-metric observations.

Estimated Sex, Combined score based on non-metric observations (0-5): 3

Indicate the estimated (non-metric) sex in the summary section on the top of this page.
0-Indeterminate 1-female 2-probably female 3-ambiguous 4-probable male 5-male

Osteometric data:

Maximum length of Talus: _____mm (Accuracy 80 % following Gentry-Steele (1978))
Side measured: ☐ Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☒ Unable to score left or right due to: fragmentation
Estimated Sex: ☐ Female (Max length ≤ 51 mm)
☐ Male (Max length ≥ 52 mm)

Vertical diameter of the humeral head _____ mm (Accuracy of 73 – 82% (Spradley & Jantz 2011:294))
Side measured: ☐ Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☒ Unable to score left or right due to: fragmentation
Estimated Sex: ☐Female (<43 mm)
☐ Indeterminate (44 – 46 mm)
☐Male (>47 mm)

Maximum diameter of the femoral head _____ mm (Accuracy of 88% (Spradley & Jantz 2011:294))
Side measured: ☐Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐fragmentation ☐ pathology
☒Unable to score left or right due to: fragmentation
Estimated Sex: ☐ Female (<42.5 mm) ☐ Indeterminate (43.5 – 46.5 mm) ☐Probable Male (46.5 – 47.5 mm)
☐ Probable female (42.5 – 43.5 mm) ☐Male (>47.5 mm)

Estimated Sex, Combined Osteometric: Combined estimated is sex is based on osteometric data recorded in dashed boxes above. Given incongruous results, consider the rank order of accuracy: 1) max diameter of femoral head, 2) Max length of talus, and 3) vertical diameter of humeral head. Indicate the estimated (metric) sex in the summary data area on the top of this page.

Estimated Sex: ☐Female ☒Indeterminate ☐ Male

Estimated Age

Pubic Symphysis (Score left and right sides by indicate score in lines following 'L' and 'R' fields, respectively)

Suchey-Brooks (0-6) [Scores for ☐Female OR ☐Male]
L:____ R:_____ Based on Stage table in, Average Age: _____ Range: _____
☐Check box if casts used. ☐Unable to score due to pelvis of indeterminate sex
☒Unable to score due to: fragmentation

Todd (1-10) [use ONLY for illiae of indeterminate sex]
L:____ R:_____ Based on Stage table in SOP, Average Age: _____ Range: _____
☒Unable to score due to: fragmentation

Auricular Surface (Score left side only except* in cases where right side is absent, fragmented, pathological, etc.)
Stage: _____ Mean Age:_____ Range:_____
☐ *Scored Right side because left is: ☐ absent ☐fragmented ☐pathological ☐other:_____
☒Unable to score left or right because both are ☒absent ☐fragmented ☐ pathological ☐other:_____

*Cranial Suture Closure (Use left side when possible**)*
– = Unobservable 0 = Open 1 = Minimal Closure 2 = Significant Closure 3 = Complete Obliteration
For any region where *all* cranial sutures are unobservable, check the box next to region heading.

External Cranial Vault ☒Unobservable
1. Midlambdoid ____
2. Lambda ____
3. Obelion ____
4. Anterior Sagittal ____
5. Bregma ____
6. Midcoronal ____
7. Pterion ____
8. Sphenofrontal ____
9. Inferior Sphenotemporal ____
10. Superior Sphenotemporal ____

Stage: Avg:
Vault Composite Score

Stage: Avg:
Lateral-anterior Composite Score

Palate ☒Unobservable
11. Incisive ____
12. Anterior Median Palatine ____
13. Posterior Median Palatine ____
14. Transverse Palatine ____

Endocranial (Internal)
Vault ☒Unobservable
15. Sagittal ____
16. Left Lambdoid ____
17. Left Coronal ____

**Indicate sutures (by number) you scored on the right side when scoring left was not possible: _____
Indicate sutures (by number) you were unable to observe and why: cranium completely fragmented

Estimated Age, Combined: (indicate the estimated age category in the summary section on page 1 of this form).
Select the most appropriate age category based on all age data collected. *However, when pubic symphysis and cranial suture scores provide divergent age estimates, defer to the pubic symphysis age estimate.*
Estimated Age:
☐ Juvenile (<20 years) ☐ Young Adult (20-35 years) ☐ Middle Adult (35-50 years)
☐ Old Adult (50+ years) ☒ Indeterminate adult

Individual's estimated age is based on ...
☐ all cranial and pelvic data points.
☐ pubic symphysis; results conflicted with cranial suture scores.
☐ cranial suture and auricular surface scores due to missing pubic symphyses.
☐ only cranial suture scores due to missing pelvis.
☒ other: none

Estimated Stature

When possible, measure the left side. In addition to recording your scores in millimeters in the appropriate fields below, record the measurements in the Summary Data section on page one of the ADULT AGE, SEX, AND STATURE RECORDING FORM.

Maximum length of the femur _____ mm
Side measured: ☐ Left ← Preferred standard
☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology
☒ Unable to score left or right due to: fragmentation

Maximum length of the tibia _____ mm
Side measured: ☐ Left ← Preferred standard
☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology
☒ Unable to score left or right due to: fragmentation

Comments Section:

Remains very fragmented.

Greater sciatic notch fragment unable to be sided.

Age, Sex, and Stature Recording Form – ADULT Altenburg Lutheran Church Society Cemetery BOZ0009/CU584/Collection's Location: UWM –ARL&Curatorial Facility	**Burial No.** 5
Observer Name: A.M.J. + J.I.B. Date: 3/12/14	

SUMMARY DATA: **Sex (non-metric):** ☐ Female ☒ Probable F emale ☐ Ind.Sex ☐ Probable Male ☐ Male
Sex (osteometric): ☐Female ☒Ind.Sex ☐Male
Cat. Age: ☐Juvenile (<20 yrs) ☐Young Adult (20-35 yrs) ☐Mid. Adult (35-50 yrs) ☐Old Adult (50+ yrs) ☒Indeter. Adult
Age Range: NA years **Max Femur Length:** NA mm **Max Tibia Length:** NA mm

Estimated Sex

Non-metric cranial and postcranial observations: Complete while following instructions listed in The Manual).

Pelvis	L	R	*Skull*	L	M	R
Ventral Arc (1-3 or -)	-	-	Nuchal Crest (1-5 or -)		2	
Subpubic Concavity (1-3 or -)	-	-	Mastoid Process (1-5 or -)	2		1
Ischiopubic Ramus Ridge (1-3 or -)	-	-	Supraorbital Margin (1-5 or -)	1		1
Greater Sciatic Notch (1-5 or -)	1	1	Glabella (1-5 or -)		2	
Preauricular Sulcus (0-4 or -)	-	-	Mental Eminence (1-5 or -)		2	

Estimated Sex, Pelvis (0-5): 0 *Estimated Sex, Skull (0-5):* 1

See p.p. 23-24 for instructions on estimating sex of the pelvis.
See p. 28 for instructions on estimating sex of Skull.
See p. 29 for instructions to derive Estimated Sex, Combined score based on non-metric observations.

Estimated Sex, Combined score based on non-metric observations (0-5): 2

Indicate the estimated (non-metric) sex in the summary section on the top of this page.
0-Indeterminate 1-female 2-probably female 3-ambiguous 4-probable male 5-male

Osteometric data:

Maximum length of Talus: - mm (Accuracy 80 % following Gentry-Steele (1978))
Side measured: ☐ Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☒ Unable to score left or right due to: fragmentation
Estimated Sex: ☐ Female (Max length ≤ 51 mm)
☐ Male (Max length ≥ 52 mm)

Vertical diameter of the humeral head _____ mm (Accuracy of 73 – 82% (Spradley & Jantz 2011:294))
Side measured: ☐ Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☒ Unable to score left or right due to: fragmentation
Estimated Sex: ☐Female (<43 mm)
☐ Indeterminate (44 – 46 mm)
☐Male (>47 mm)

Maximum diameter of the femoral head _____ mm (Accuracy of 88% (Spradley & Jantz 2011:294))
Side measured: ☐Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐fragmentation ☐ pathology
☒ Unable to score left or right due to: fragmentation
Estimated Sex: ☐ Female (<42.5 mm) ☐ Indeterminate (43.5 – 46.5 mm) ☐Probable Male (46.5 – 47.5 mm)
☐ Probable female (42.5 – 43.5 mm) ☐Male (>47.5 mm)

Estimated Sex, Combined Osteometric: Combined estimated is sex is based on osteometric data recorded in dashed boxes above. Given incongruous results, consider the rank order of accuracy: 1) max diameter of femoral head, 2) Max length of talus, and 3) vertical diameter of humeral head. Indicate the estimated (metric) sex in the summary data area on the top of this page.

Estimated Sex: ☐Female ☒Indeterminate ☐ Male

Estimated Age

Pubic Symphysis (Score left and right sides by indicate score in lines following 'L' and 'R' fields, respectively)

Suchey-Brooks (0-6) [Scores for ☐Female OR ☐Male]
L:____ R:____ Based on Stage table in, Average Age: _____ Range: _____
☐Check box if casts used. ☐Unable to score due to pelvis of indeterminate sex
☒Unable to score due to: fragmentation

Todd (1-10) [use ONLY for illiae of indeterminate sex]
L:____ R:____ Based on Stage table in SOP, Average Age: _____ Range: _____
☒Unable to score due to: fragmentation

Auricular Surface (Score left side only except* in cases where right side is absent, fragmented, pathological, etc.)
Stage: _____ Mean Age:_____ Range:_____
☐ *Scored Right side because left is: ☐ absent ☐fragmented ☐pathological ☐other:_____
☒Unable to score left or right because both are ☐absent ☒fragmented ☐ pathological ☐other:_____

*Cranial Suture Closure (Use left side when possible**)*
– = Unobservable 0 = Open 1 = Minimal Closure 2 = Significant Closure 3 = Complete Obliteration
For any region where *all* cranial sutures are unobservable, check the box next to region heading.

External Cranial Vault ☐ Unobservable

1. Midlambdoid	–
2. Lambda	–
3. Obelion	2
4. Anterior Sagittal	–
5. Bregma	2
6. Midcoronal	–
7. Pterion	–
8. Sphenofrontal	–
9. Inferior Sphenotemporal	–
10. Superior Sphenotemporal	–

Stage: Avg:
Vault Composite Score

Stage: Avg:
Lateral-anterior Composite Score

Palate ☐ Unobservable

11. Incisive	–
12. Anterior Median Palatine	–
13. Posterior Median Palatine	–
14. Transverse Palatine	–

Endocranial (Internal)
Vault ☐Unobservable

15. Sagittal	–
16. Left Lambdoid	–
17. Left Coronal	–

**Indicate sutures (by number) you scored on the right side when scoring left was not possible: _____
Indicate sutures (by number) you were unable to observe and why: fragmentation

Estimated Age, Combined: (indicate the estimated age category in the summary section on page 1 of this form).
Select the most appropriate age category based on all age data collected. *However, when pubic symphysis and cranial suture scores provide divergent age estimates, defer to the pubic symphysis age estimate.*
Estimated Age:
☐ Juvenile (<20 years) ☐ Young Adult (20-35 years) ☐ Middle Adult (35-50 years)
☐ Old Adult (50+ years) ☒ Indeterminate adult

Individual's estimated age is based on ...
☐ all cranial and pelvic data points.
☐ pubic symphysis; results conflicted with cranial suture scores.
☐ cranial suture and auricular surface scores due to missing pubic symphyses.
☒ only cranial suture scores due to missing pelvis.
☐ other: _____

Estimated Stature

When possible, measure the left side. In addition to recording your scores in millimeters in the appropriate fields below, record the measurements in the Summary Data section on page one of the ADULT AGE, SEX, AND STATURE RECORDING FORM.

Maximum length of the femur _____ mm

Side measured: ☐ Left ← Preferred standard

☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology

☒ Unable to score left or right due to: fragmentation

Maximum length of the tibia _____ mm

Side measured: ☐ Left ← Preferred standard

☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology

☒ Unable to score left or right due to: fragmentation

Comments Section:

Age, Sex, and Stature Recording Form – ADULT	**Burial No.** 10
Altenburg Lutheran Church Society Cemetery	
BOZ0009/CU584/Collection's Location: UWM –ARL&Curatorial Facility	
Observer Name: A.M.J. + J.I.B Date: 3/12/14	

SUMMARY DATA: **Sex (non-metric):** ☐ Female ☒ Probable F emale ☐ Ind.Sex ☐ Probable Male ☐ Male
Sex (osteometric): ☐Female ☒ Ind.Sex ☐Male
Cat. Age: ☐Juvenile (<20 yrs) ☒Young Adult (20-35 yrs) ☐Mid. Adult (35-50 yrs) ☐Old Adult (50+ yrs) ☐Indeter. Adult
Age Range: ≤ - 27 years **Max Femur Length:** 427 mm **Max Tibia Length:** 363 mm

Estimated Sex

Non-metric cranial and postcranial observations: Complete while following instructions listed in The Manual).

Pelvis	L	R	*Skull*	L	M	R
Ventral Arc (1-3 or -)	-	-	Nuchal Crest (1-5 or -)		1	
Subpubic Concavity (1-3 or -)	-	-	Mastoid Process (1-5 or -)	-		2
Ischiopubic Ramus Ridge (1-3 or -)	-	-	Supraorbital Margin (1-5 or -)	1		2
Greater Sciatic Notch (1-5 or -)	2	1	Glabella (1-5 or -)		1	
Preauricular Sulcus (0-4 or -)	0	0	Mental Eminence (1-5 or -)		-	

Estimated Sex, Pelvis (0-5): 3 *Estimated Sex, Skull (0-5):* 1

See p.p. 23-24 for instructions on estimating sex of the pelvis.
See p. 28 for instructions on estimating sex of Skull.
See p. 29 for instructions to derive Estimated Sex, Combined score based on non-metric observations.

Estimated Sex, Combined score based on non-metric observations (0-5): 2

Indicate the estimated (non-metric) sex in the summary section on the top of this page.
0-Indeterminate 1-female 2-probably female 3-ambiguous 4-probable male 5-male

Osteometric data:

Maximum length of Talus: _____mm (Accuracy 80 % following Gentry-Steele (1978))
Side measured: ☐ Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☒ Unable to score left or right due to: fragmentation
Estimated Sex: ☐ Female (Max length ≤ 51 mm)
☐ Male (Max length ≥ 52 mm)

Vertical diameter of the humeral head _____ mm (Accuracy of 73 – 82% (Spradley & Jantz 2011:294))
Side measured: ☐ Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☒ Unable to score left or right due to: fragmentation
Estimated Sex: ☐Female (<43 mm)
☐ Indeterminate (44 – 46 mm)
☐Male (>47 mm)

Maximum diameter of the femoral head _____ mm (Accuracy of 88% (Spradley & Jantz 2011:294))
Side measured: ☐Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐fragmentation ☐ pathology
☒Unable to score left or right due to: fragmentation
Estimated Sex: ☐ Female (<42.5 mm) ☐ Indeterminate (43.5 – 46.5 mm) ☐Probable Male (46.5 – 47.5 mm)
☐ Probable female (42.5 – 43.5 mm) ☐Male (>47.5 mm)

Estimated Sex, Combined Osteometric: Combined estimated is sex is based on osteometric data recorded in dashed boxes above. Given incongruous results, consider the rank order of accuracy: 1) max diameter of femoral head, 2) Max length of talus, and 3) vertical diameter of humeral head. Indicate the estimated (metric) sex in the summary data area on the top of this page.

Estimated Sex: ☐Female ☒Indeterminate ☐ Male

Estimated Age

Pubic Symphysis (Score left and right sides by indicate score in lines following 'L' and 'R' fields, respectively)

Suchey-Brooks (0-6) [Scores for ☐Female OR ☐Male]
L:____ R:____ Based on Stage table in, Average Age: _____ Range: _____
☐Check box if casts used. ☐Unable to score due to pelvis of indeterminate sex
☒Unable to score due to: fragmentation

Todd (1-10) [use ONLY for illiae of indeterminate sex]
L:____ R:____ Based on Stage table in SOP, Average Age: _____ Range: _____
☒Unable to score due to: fragmentation

Auricular Surface (Score left side only except* in cases where right side is absent, fragmented, pathological, etc.)
Stage: 1 Mean Age: 21.1 Range: ≤ 27
☐ *Scored Right side because left is: ☐ absent ☐fragmented ☐pathological ☐other:_____
☐Unable to score left or right because both are ☐absent ☐fragmented ☐ pathological ☐other:_____

*Cranial Suture Closure (Use left side when possible**)*
– = Unobservable 0 = Open 1 = Minimal Closure 2 = Significant Closure 3 = Complete Obliteration
For any region where *all* cranial sutures are unobservable, check the box next to region heading.

External Cranial Vault ☒Unobservable
1. Midlambdoid ____
2. Lambda ____
3. Obelion ____
4. Anterior Sagittal ____
5. Bregma ____
6. Midcoronal ____
7. Pterion ____
8. Sphenofrontal ____
9. Inferior Sphenotemporal ____
10. Superior Sphenotemporal ____

Stage: Avg:
Vault Composite Score

Stage: Avg:
Lateral-anterior Composite Score

Palate ☒Unobservable
11. Incisive ____
12. Anterior Median Palatine ____
13. Posterior Median Palatine ____
14. Transverse Palatine ____

Endocranial (Internal)
Vault ☒Unobservable
15. Sagittal ____
16. Left Lambdoid ____
17. Left Coronal ____

**Indicate sutures (by number) you scored on the right side when scoring left was not possible: _____
Indicate sutures (by number) you were unable to observe and why: fragmentation

Estimated Age, Combined: (indicate the estimated age category in the summary section on page 1 of this form).
Select the most appropriate age category based on all age data collected. *However, when pubic symphysis and cranial suture scores provide divergent age estimates, defer to the pubic symphysis age estimate.*
Estimated Age:
☐ Juvenile (<20 years) ☒ Young Adult (20-35 years) ☐ Middle Adult (35-50 years)
☐ Old Adult (50+ years) ☐ Indeterminate adult

Individual's estimated age is based on ...
☐ all cranial and pelvic data points.
☐ pubic symphysis; results conflicted with cranial suture scores.
☐ cranial suture and auricular surface scores due to missing pubic symphyses.
☐ only cranial suture scores due to missing pelvis.
☒ other: auricular surface

Estimated Stature

When possible, measure the left side. In addition to recording your scores in millimeters in the appropriate fields below, record the measurements in the Summary Data section on page one of the ADULT AGE, SEX, AND STATURE RECORDING FORM.

Maximum length of the femur 427 mm
Side measured: ☒ Left ← Preferred standard
☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology
☐Unable to score left or right due to:_____

Maximum length of the tibia 363 mm
Side measured: ☐ Left ← Preferred standard
☒ Right. unable to score left due to: ☐ absence ☒ fragmentation ☐pathology
☐ Unable to score left or right due to:_____

Comments Section:

Age, Sex, and Stature Recording Form – ADULT
Altenburg Lutheran Church Society Cemetery
BOZ0009/CU584/Collection's Location: UWM –ARL&Curatorial Facility

Burial No. 7

Observer Name: A.M.J. + J.I.B. Date: 3/19/14

SUMMARY DATA: **Sex (non-metric):** ☐ Female ☒ Probable Female ☐ Ind.Sex ☐ Probable Male ☐ Male
Sex (osteometric): ☐Female ☒ Ind.Sex ☐Male
Cat. Age: ☐Juvenile (<20 yrs) ☐Young Adult (20-35 yrs) ☐Mid. Adult (35-50 yrs) ☐Old Adult (50+ yrs) ☒Indeter. Adult
Age Range: 24 - 82 years **Max Femur Length:** NA mm **Max Tibia Length:** NA mm

Estimated Sex

Non-metric cranial and postcranial observations: Complete while following instructions listed in The Manual).

Pelvis	L	R	*Skull*	L	M	R
Ventral Arc (1-3 or -)	-	-	Nuchal Crest (1-5 or -_)		2	
Subpubic Concavity (1-3 or -)	-	-	Mastoid Process (1-5 or -)	3		4
Ischiopubic Ramus Ridge (1-3 or -)	-	-	Supraorbital Margin (1-5 or -)	4		4
Greater Sciatic Notch (1-5 or -)	1	1	Glabella (1-5 or -)		-	
Preauricular Sulcus (0-4 or -)	2	4	Mental Eminence (1-5 or -)		-	

Estimated Sex, Pelvis (0-5): 2 *Estimated Sex, Skull (0-5):* 4

See p.p. 23-24 for instructions on estimating sex of the pelvis.
See p. 28 for instructions on estimating sex of Skull.
See p. 29 for instructions to derive Estimated Sex, Combined score based on non-metric observations.

Estimated Sex, Combined score based on non-metric observations (0-5): 2

Indicate the estimated (non-metric) sex in the summary section on the top of this page.
0-Indeterminate 1-female 2-probably female 3-ambiguous 4-probable male 5-male

Osteometric data:

Maximum length of Talus: _____mm (Accuracy 80 % following Gentry-Steele (1978))
Side measured: ☐ Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☒ Unable to score left or right due to: fragmentation
Estimated Sex: ☐ Female (Max length ≤ 51 mm)
☐ Male (Max length ≥ 52 mm)

Vertical diameter of the humeral head _____ mm (Accuracy of 73 – 82% (Spradley & Jantz 2011:294))
Side measured: ☐ Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☒ Unable to score left or right due to: fragmentation
Estimated Sex: ☐Female (<43 mm)
☐ Indeterminate (44 – 46 mm)
☐Male (>47 mm)

Maximum diameter of the femoral head _____ mm (Accuracy of 88% (Spradley & Jantz 2011:294))
Side measured: ☐Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐fragmentation ☐ pathology
☒Unable to score left or right due to: pathology
Estimated Sex: ☐ Female (<42.5 mm) ☐ Indeterminate (43.5 – 46.5 mm) ☐Probable Male (46.5 – 47.5 mm)
☐ Probable female (42.5 – 43.5 mm) ☐Male (>47.5 mm)

Estimated Sex, Combined Osteometric: Combined estimated is sex is based on osteometric data recorded in dashed boxes above. Given incongruous results, consider the rank order of accuracy: 1) max diameter of femoral head, 2) Max length of talus, and 3) vertical diameter of humeral head. Indicate the estimated (metric) sex in the summary data area on the top of this page.

Estimated Sex: ☐Female ☒Indeterminate ☐ Male

Estimated Age

Pubic Symphysis (Score left and right sides by indicate score in lines following 'L' and 'R' fields, respectively)

Suchey-Brooks (0-6) [Scores for ☐Female OR ☐Male]
L:____ R:_____ Based on Stage table in, Average Age: _____ Range: _____
☐Check box if casts used. ☐Unable to score due to pelvis of indeterminate sex
☒Unable to score due to: absent

Todd (1-10) [use ONLY for illiae of indeterminate sex]
L:____ R:_____ Based on Stage table in SOP, Average Age: _____ Range: _____
☒Unable to score due to: absent

Auricular Surface (Score left side only except* in cases where right side is absent, fragmented, pathological, etc.)
Stage: 5 Mean Age: 53.1 Range: 24-82
☐ *Scored Right side because left is: ☐ absent ☐fragmented ☐pathological ☐other:_____
☐Unable to score left or right because both are ☐absent ☐fragmented ☐ pathological ☐other:_____

*Cranial Suture Closure (Use left side when possible**)*
– = Unobservable 0 = Open 1 = Minimal Closure 2 = Significant Closure 3 = Complete Obliteration
For any region where *all* cranial sutures are unobservable, check the box next to region heading.

External Cranial Vault ☐ Unobservable

1. Midlambdoid	1
2. Lambda	2
3. Obelion	3
4. Anterior Sagittal	–
5. Bregma	–
6. Midcoronal	1
7. Pterion	–
8. Sphenofrontal	–
9. Inferior Sphenotemporal	–
10. Superior Sphenotemporal	–

Stage: – Avg: –
Vault Composite Score

Stage: – Avg: –
Lateral-anterior Composite Score

Palate ☐ Unobservable

11. Incisive	3
12. Anterior Median Palatine	1
13. Posterior Median Palatine	3
14. Transverse Palatine	–

Endocranial (Internal)
Vault ☐Unobservable

15. Sagittal	3
16. Left Lambdoid	3
17. Left Coronal	3

**Indicate sutures (by number) you scored on the right side when scoring left was not possible: 6,17
Indicate sutures (by number) you were unable to observe and why: 4,5,7,8,9,10 fragmentation

Estimated Age, Combined: (indicate the estimated age category in the summary section on page 1 of this form).
Select the most appropriate age category based on all age data collected. *However, when pubic symphysis and cranial suture scores provide divergent age estimates, defer to the pubic symphysis age estimate.*
Estimated Age:
☐ Juvenile (<20 years) ☐ Young Adult (20-35 years) ☐ Middle Adult (35-50 years)
☐ Old Adult (50+ years) ☒ Indeterminate adult

Individual's estimated age is based on ...
☐ all cranial and pelvic data points.
☐ pubic symphysis; results conflicted with cranial suture scores.
☐ cranial suture and auricular surface scores due to missing pubic symphyses.
☐ only cranial suture scores due to missing pelvis.
☒ other: only auricular surface has score.

Estimated Stature

When possible, measure the left side. In addition to recording your scores in millimeters in the appropriate fields below, record the measurements in the Summary Data section on page one of the ADULT AGE, SEX, AND STATURE RECORDING FORM.

Maximum length of the femur _____ mm

Side measured: ☐ Left ← Preferred standard

☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology

☒ Unable to score left or right due to: fragmentation

Maximum length of the tibia _____ mm

Side measured: ☐ Left ← Preferred standard

☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology

☒ Unable to score left or right due to: fragmentation

Comments Section:

Age, Sex, and Stature Recording Form – ADULT Altenburg Lutheran Church Society Cemetery BOZ0009/CU584/Collection's Location: UWM –ARL&Curatorial Facility	**Burial No.** 8
Observer Name: C.J. + A.M.J. Date: 5/1/14	

SUMMARY DATA: **Sex (non-metric):** ☐ Female ☒ Probable F emale ☐ Ind.Sex ☐ Probable Male ☐ Male
Sex (osteometric): ☐Female ☒ Ind.Sex ☐Male
Cat. Age: ☐Juvenile (<20 yrs) ☐Young Adult (20-35 yrs) ☐Mid. Adult (35-50 yrs) ☐Old Adult (50+ yrs) ☒Indeter. Adult
Age Range: 20 - 75 years **Max Femur Length:** NA mm **Max Tibia Length:** NA mm

Estimated Sex

Non-metric cranial and postcranial observations: Complete while following instructions listed in The Manual).

Pelvis	L	R	*Skull*	L	M	R
Ventral Arc (1-3 or -)	-	-	Nuchal Crest (1-5 or -)		2	
Subpubic Concavity (1-3 or -)	-	-	Mastoid Process (1-5 or -)	2		3
Ischiopubic Ramus Ridge (1-3 or -)	-	-	Supraorbital Margin (1-5 or -)	2		2
Greater Sciatic Notch (1-5 or -)	3	4	Glabella (1-5 or -)		1	
Preauricular Sulcus (0-4 or -)	1	3	Mental Eminence (1-5 or -)		2	

Estimated Sex, Pelvis (0-5): 3 *Estimated Sex, Skull (0-5):* 2

See p.p. 23-24 for instructions on estimating sex of the pelvis.
See p. 28 for instructions on estimating sex of Skull.
See p. 29 for instructions to derive Estimated Sex, Combined score based on non-metric observations.

Estimated Sex, Combined score based on non-metric observations (0-5): 2

Indicate the estimated (non-metric) sex in the summary section on the top of this page.
0-Indeterminate 1-female 2-probably female 3-ambiguous 4-probable male 5-male

Osteometric data:

Maximum length of Talus: _____mm (Accuracy 80 % following Gentry-Steele (1978))
Side measured: ☐ Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☒ Unable to score left or right due to: fragmentation
Estimated Sex: ☐ Female (Max length ≤ 51 mm)
☐ Male (Max length ≥ 52 mm)

Vertical diameter of the humeral head _____ mm (Accuracy of 73 – 82% (Spradley & Jantz 2011:294))
Side measured: ☐ Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☒ Unable to score left or right due to: fragmentation
Estimated Sex: ☐Female (<43 mm)
☐ Indeterminate (44 – 46 mm)
☐Male (>47 mm)

Maximum diameter of the femoral head _____ mm (Accuracy of 88% (Spradley & Jantz 2011:294))
Side measured: ☐Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐fragmentation ☐ pathology
☒Unable to score left or right due to: fragmentation
Estimated Sex: ☐ Female (<42.5 mm) ☐ Indeterminate (43.5 – 46.5 mm) ☐Probable Male (46.5 – 47.5 mm)
☐ Probable female (42.5 – 43.5 mm) ☐Male (>47.5 mm)

Estimated Sex, Combined Osteometric: Combined estimated is sex is based on osteometric data recorded in dashed boxes above. Given incongruous results, consider the rank order of accuracy: 1) max diameter of femoral head, 2) Max length of talus, and 3) vertical diameter of humeral head. Indicate the estimated (metric) sex in the summary data area on the top of this page.

Estimated Sex: ☐Female ☒Indeterminate ☐ Male

Estimated Age

Pubic Symphysis (Score left and right sides by indicate score in lines following 'L' and 'R' fields, respectively)

Suchey-Brooks (0-6) [Scores for ☐Female OR ☐Male]
L:____ R:_____ Based on Stage table in, Average Age: _____ Range: _____
☐Check box if casts used. ☐Unable to score due to pelvis of indeterminate sex
☒Unable to score due to: absent

Todd (1-10) [use ONLY for illiae of indeterminate sex]
L:____ R:_____ Based on Stage table in SOP, Average Age: _____ Range: _____
☒Unable to score due to: absent

Auricular Surface (Score left side only except* in cases where right side is absent, fragmented, pathological, etc.)
Stage: 4 Mean Age: 47.8 Range: 20-75
☐ *Scored Right side because left is: ☐ absent ☐fragmented ☐pathological ☐other:_____
☐Unable to score left or right because both are ☐absent ☐fragmented ☐ pathological ☐other:_____

*Cranial Suture Closure (Use left side when possible**)*
– = Unobservable 0 = Open 1 = Minimal Closure 2 = Significant Closure 3 = Complete Obliteration
For any region where *all* cranial sutures are unobservable, check the box next to region heading.

External Cranial Vault ☒Unobservable
1. Midlambdoid ____
2. Lambda ____
3. Obelion ____
4. Anterior Sagittal ____
5. Bregma ____
6. Midcoronal ____
7. Pterion ____
8. Sphenofrontal ____
9. Inferior Sphenotemporal ____
10. Superior Sphenotemporal ____

Stage: Avg:
Vault Composite Score

Stage: Avg:
Lateral-anterior Composite Score

Palate ☒Unobservable
11. Incisive ____
12. Anterior Median Palatine ____
13. Posterior Median Palatine ____
14. Transverse Palatine ____

Endocranial (Internal)
Vault ☒Unobservable
15. Sagittal ____
16. Left Lambdoid ____
17. Left Coronal ____

**Indicate sutures (by number) you scored on the right side when scoring left was not possible: _____
Indicate sutures (by number) you were unable to observe and why: all = pathology, biparietal thinning, depression

Estimated Age, Combined: (indicate the estimated age category in the summary section on page 1 of this form).
Select the most appropriate age category based on all age data collected. *However, when pubic symphysis and cranial suture scores provide divergent age estimates, defer to the pubic symphysis age estimate.*
Estimated Age:
☐ Juvenile (<20 years) ☐ Young Adult (20-35 years) ☐ Middle Adult (35-50 years)
☐ Old Adult (50+ years) ☒ Indeterminate adult

Individual's estimated age is based on ...
☐ all cranial and pelvic data points.
☐ pubic symphysis; results conflicted with cranial suture scores.
☐ cranial suture and auricular surface scores due to missing pubic symphyses.
☐ only cranial suture scores due to missing pelvis.
☒ other: auricular surface

Estimated Stature

When possible, measure the left side. In addition to recording your scores in millimeters in the appropriate fields below, record the measurements in the Summary Data section on page one of the ADULT AGE, SEX, AND STATURE RECORDING FORM.

Maximum length of the femur _____ mm

Side measured: ☐ Left ← Preferred standard

☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology

☒ Unable to score left or right due to: fragmentation

Maximum length of the tibia _____ mm

Side measured: ☐ Left ← Preferred standard

☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology

☒ Unable to score left or right due to: fragmentation

Comments Section:

Age, Sex, and Stature Recording Form – ADULT	**Burial No.** 9
Altenburg Lutheran Church Society Cemetery	
BOZ0009/CU584/Collection's Location: UWM –ARL&Curatorial Facility	
Observer Name: A.M.J. + J.I.B. Date: 3/19/14	

SUMMARY DATA: **Sex (non-metric):** ☐ Female ☒ Probable Female ☐ Ind.Sex ☐ Probable Male ☐ Male
Sex (osteometric): ☒Female ☐ Ind.Sex ☐Male
Cat. Age: ☐Juvenile (<20 yrs) ☐Young Adult (20-35 yrs) ☒Mid. Adult (35-50 yrs) ☐Old Adult (50+ yrs) ☐Indeter. Adult
Age Range: 24 - 82 years **Max Femur Length:** 379 mm **Max Tibia Length:** 315 mm

Estimated Sex

Non-metric cranial and postcranial observations: Complete while following instructions listed in The Manual).

Pelvis	L	R	*Skull*	L	M	R
Ventral Arc (1-3 or -)	-	-	Nuchal Crest (1-5 or -)		3	
Subpubic Concavity (1-3 or -)	-	-	Mastoid Process (1-5 or -)	2		1
Ischiopubic Ramus Ridge (1-3 or -)	-	-	Supraorbital Margin (1-5 or -)	2		2
Greater Sciatic Notch (1-5 or -)	4	4	Glabella (1-5 or -)		2	
Preauricular Sulcus (0-4 or -)	2	2	Mental Eminence (1-5 or -)		4	

Estimated Sex, Pelvis (0-5): 3 *Estimated Sex, Skull (0-5):* 2

See p.p. 23-24 for instructions on estimating sex of the pelvis.
See p. 28 for instructions on estimating sex of Skull.
See p. 29 for instructions to derive Estimated Sex, Combined score based on non-metric observations.

Estimated Sex, Combined score based on non-metric observations (0-5): 2
Indicate the estimated (non-metric) sex in the summary section on the top of this page.
0-Indeterminate 1-female 2-probably female 3-ambiguous 4-probable male 5-male

Osteometric data:

Maximum length of Talus: 47 mm (Accuracy 80 % following Gentry-Steele (1978))
Side measured: ☒ Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☐ Unable to score left or right due to: _____
Estimated Sex: ☒ Female (Max length ≤ 51 mm)
☐ Male (Max length ≥ 52 mm)

Vertical diameter of the humeral head 40.5 mm (Accuracy of 73 – 82% (Spradley & Jantz 2011:294))
Side measured: ☒Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☐ Unable to score left or right due to: _____
Estimated Sex: ☒Female (<43 mm)
☐ Indeterminate (44 – 46 mm)
☐Male (>47 mm)

Maximum diameter of the femoral head 40.7 mm (Accuracy of 88% (Spradley & Jantz 2011:294))
Side measured: ☒Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐fragmentation ☐ pathology
☐Unable to score left or right due to: _____
Estimated Sex: ☒ Female (<42.5 mm) ☐ Indeterminate (43.5 – 46.5 mm) ☐Probable Male (46.5 – 47.5 mm)
☐ Probable female (42.5 – 43.5 mm) ☐Male (>47.5 mm)

Estimated Sex, Combined Osteometric: Combined estimated is sex is based on osteometric data recorded in dashed boxes above. Given incongruous results, consider the rank order of accuracy: 1) max diameter of femoral head, 2) Max length of talus, and 3) vertical diameter of humeral head. Indicate the estimated (metric) sex in the summary data area on the top of this page.

Estimated Sex: ☒Female ☐Indeterminate ☐ Male

Estimated Age

Pubic Symphysis (Score left and right sides by indicate score in lines following 'L' and 'R' fields, respectively)

Suchey-Brooks (0-6) [Scores for ☐Female OR ☐Male]
L:____ R:_____ Based on Stage table in, Average Age: _____ Range: _____
☐Check box if casts used. ☐Unable to score due to pelvis of indeterminate sex
☒Unable to score due to: absent

Todd (1-10) [use ONLY for illiae of indeterminate sex]
L:____ R:_____ Based on Stage table in SOP, Average Age: _____ Range: _____
☒Unable to score due to: absent

Auricular Surface (Score left side only except* in cases where right side is absent, fragmented, pathological, etc.)
Stage: 5 Mean Age: 53.1 Range: 24-82
☐ *Scored Right side because left is: ☐ absent ☐fragmented ☐pathological ☐other:_____
☐Unable to score left or right because both are ☐absent ☐fragmented ☐ pathological ☐other:_____

*Cranial Suture Closure (Use left side when possible**)*
– = Unobservable 0 = Open 1 = Minimal Closure 2 = Significant Closure 3 = Complete Obliteration
For any region where *all* cranial sutures are unobservable, check the box next to region heading.

External Cranial Vault ☐ Unobservable

1. Midlambdoid	0	<···
2. Lambda	1	
3. Obelion	2	
4. Anterior Sagittal	2	
5. Bregma	1	
6. Midcoronal	2	<—
7. Pterion	2	<···
8. Sphenofrontal	2	
9. Inferior Sphenotemporal	0	
10. Superior Sphenotemporal	0	<—

Stage: 3 Avg: 39.4
Vault Composite Score 28-44

Stage: 4 Avg: 43.4
Lateral-anterior Composite Score 30-54

Palate ☐ Unobservable

11. Incisive	3
12. Anterior Median Palatine	0
13. Posterior Median Palatine	1
14. Transverse Palatine	0

Endocranial (Internal)
Vault ☒Unobservable

15. Sagittal	___
16. Left Lambdoid	___
17. Left Coronal	___

**Indicate sutures (by number) you scored on the right side when scoring left was not possible: _____
Indicate sutures (by number) you were unable to observe and why: 15, 16, 17 cranium complete

Estimated Age, Combined: (indicate the estimated age category in the summary section on page 1 of this form).
Select the most appropriate age category based on all age data collected. *However, when pubic symphysis and cranial suture scores provide divergent age estimates, defer to the pubic symphysis age estimate.*
Estimated Age:
☐ Juvenile (<20 years) ☐ Young Adult (20-35 years) ☒ Middle Adult (35-50 years)
☐ Old Adult (50+ years) ☐ Indeterminate adult

Individual's estimated age is based on ...
☐ all cranial and pelvic data points.
☐ pubic symphysis; results conflicted with cranial suture scores.
☒ cranial suture and auricular surface scores due to missing pubic symphyses.
☐ only cranial suture scores due to missing pelvis.
☐ other: _____

Estimated Stature

When possible, measure the left side. In addition to recording your scores in millimeters in the appropriate fields below, record the measurements in the Summary Data section on page one of the ADULT AGE, SEX, AND STATURE RECORDING FORM.

Maximum length of the femur 379 mm
Side measured: ☒ Left ← Preferred standard
☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology
☐ Unable to score left or right due to: _____

Maximum length of the tibia 315 mm
Side measured: ☒ Left ← Preferred standard
☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology
☐ Unable to score left or right due to: _____

Comments Section:

macroporosity on both aricular surfaces
robust muscle attachment in retroaricular area on both.

Juvenile Age Assessment Part I – FUSION Prenatal to Childhood Altenburg Lutheran Church Society Cemetery BOZ0009/CU584/Collection's Location: UWM–ARL	**Burial No.** 10
Observer Name: A.M.J. + J.I.B.	Date Started: 10/12/14 Date Completed: 10/12/14
SUMMARY AGE Category: ☐ Prenatal (Prenatal – 2.49 y) ☒ Early Childhood (2.5 – 5.9 y) ☐ Late Childhood (6-12.9 y) ☐ Indeterminate **AGE RANGE:** 2 fw / pn m/ pn y *to* 5 fw / pn m/ pn y ☐ Indeterminate * 'fw' fetal weeks; 'pn m' postnatal months; 'pn y' postnatal years.	

FUSION OF OSSIFICATION CENTERS

Use the Manual when completing this form. Record fusion data using the following codes: O = open, U = Fusion underway, or F = fusion complete, though not obliterated. Slash the box when the feature is not observable.

Element	Primary Elements	Observation Code:	Fusion Complete
Sphenoid	Lesser Wings to Sphenoid Body	F	5 fm
	Pre Sphenoid to Post Sphenoid Body	F	8 fm
	Greater Wings to Sphenoid Body	–	1 y
	Foramen Ovale (Greater Wing)	F	1 y
Temporal	Tympanic Ring to Temporal Squamous	–	35 fw
	Petromastoid to Squamotympanic	F	1 y
Occipital	Supra-occipital to Interparietal Squama	F	5 fm
	Superior Median Fissure	F	1 y
	Sutura Mendosa	F	1 y
	Partes Laterales to Squama	–	1 – 3 y
	Hypoglossal Canal (Pars Laterales)	F	2 – 4 y
	Partes Laterales to Pars Basilaris	O	5 – 7 y
Mandible	Mandibular Symphysis	F	1 y
	Coronoid to main mass	–	By 8 f wks
Frontal	Fusion of L and R frontals	F	9 fm - 2 y
	Metopic Suture obliterated (generally)	U	2 – 4 y
Vertebrae	C1 – R & L Posterior arches (to one another)	–	4 – 5 y
	C1- Anterior arch to anterior bars	–	5 – 6 y
	C2- Intradental union (becomes Dens)	–	Full term
	C2- R & L Neural Arches (to one another)	–	3 – 4 y
	C2- Dens to Neural Arch	–	3 – 4 y
	C2- Centrum to Neural Arch	–	4 – 6 y
	C2- Ossiculum Terminale of dens	–	12 y
	C3-L5 Neural Arches (to one another)	F	1 – 2 y
	C3-L5 Neural Arches to Centra	–	2 – 5 y
Sacrum (S1 and S2)	Lateral Elements to Neural Arches → 'Wings'	–	2 – 5 y
	Wings to Centra	–	2 – 6 y
Os coxa	Ischiopubic ramus	–	5 – 11 y
Humerus	Greater and Lesser Tubercles to Head	–	2 – 6 y

*'f m' indicates 'fetal month'; 'f wks' indicates 'fetal weeks'; 'm' indicates post natal months; and 'y' indicates postnatal years.

Estimated Age

Step 1) Age Range.

Indicate the estimated age range of your individual in the fields below after referring to the fusion table above. In the first field, indicate the youngest age associated with 'O' or 'U' fusion observations. In the second field, indicate the oldest age associated with 'F' fusion observations.

5-7 fetal weeks / postnatal months / postnatal years (circle unit)

to

2-4 fetal weeks / postnatal months / postnatal years (circle unit)

* Remember to indicate the age range in the summary section on the top of page 1 of this form.

☐ Indeterminate; i.e. no evidence to allow you to assign the individual to an age category. Procede to step 3.

Step 2) If you were able to provide an age range in step 1, skip this step and procede to step 3.
If you selected 'indeterminate' in step 1 but your individual includes other evidence to allow you to assign the individual to an age category, indicate the information and the estimated age below. (e.g. petros portion compares favorably to individual 20 fetal weeks old). Then, use this information to select a categorical age in step 3.

Step 3) Age Category:

If you provided an age range in step 1, calculate the mean from of the ages and use the value to select an age category below.
Alternatively, if you arrived at step 3 following the directions in step 2, to proceed to assign your individual to an age category below based on the data you provided in step 2.

- Prenatal – 2.5 years (Prenatal – 2.49 years)
- Early Childhood (2.5 – 5 years)
- Late Childhood (6 – 12 years)
- Indeterminate; i.e. no evidence to allow you to assign the individual to an age category.

Comments:

ca 2-5 y

JUVENILE AGE ASSESSMENT PART II form:

☐ Prenatal – 2.5 years (LMP – 2.5 years)
☒ Early Childhood (2.5 – 5 years)
☐ Late Childhood (6 – 12 years)
☐ Indeterminate; i.e. no evidence to allow you to assign the individual to an age category.

Juvenile Age Recording Form Part II Early Childhood - Adolescence Altenburg Lutheran Church Society Cemetery BOZ0009/CU584/Collection's Location: UWM–ARL	Burial No. 10
Observer Name: A.M.J. - J.I.B. Date Started: 10/12/14 Date Completed: " "	

SUMMARY DATA:

Dental **Age Range:** 4 - 10.9 years **Category:** ☐ Early Childhood (2.5 – 5.9 y) ☐ Late Childhood (6 – 12.9 y) ☐ Adolescent (13 – 19.9 y) ☐ Indeterminate Juvenile

Osteometric **Age Range:** ____ - ____ years **Category:** ☐ Early Childhood (2.5 – 5.9 y) ☐ Late Childhood (6 – 12.9 y) ☐ Adolescent (13 – 19.9 y) ☐ Indeterminate Juvenile

NON-METRIC DENTAL AGE ASSESSMENT

Permanent teeth encircle line drawings of the deciduous dentition. See manual for tooth guide.

Dentition ☐ No Dentition

Maxilla (Labial)

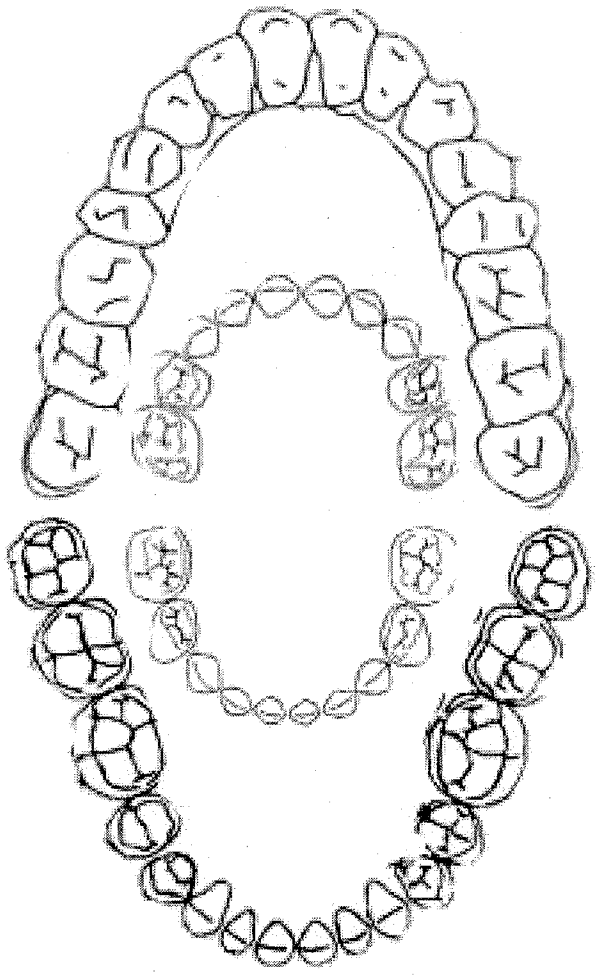


Illustration Key:
● Articulated Tooth
○ Loose Tooth
X Missing Tooth

Right **Left**

Mandible (Labial)

Moorres Tooth Formation and Resorption Assessments (1963a,b)

Deciduous tooth formation stages (Moorrees et al. 1963a)

Deciduous **mandibular tooth**	Formation Stage Code (Use Table in Manual)		Not Scored*	Estimated Age (Use tables in Manual)		Not Scored*
	Left	Right		Left	Right	
Canine						
1st Molar	Ac	Ac		1.83		
2nd Molar	Ac	Ac		2.93		

*Indicate reason tooth not assessed by checking the appropriate boxes below.
Unable to make assessments due to: ☐Missing Tooth/Teeth ☐Fragmented Tooth/Teeth
☐ Tooth/Teeth articulated with alveolar bone.
Comments: _____

Deciduous tooth resorption stages, if applicable (Moorrees et al. 1963a)

Deciduous **mandibular tooth**	Formation Stage Code (Use Table in Manual)		Not scored*	Estimated Age (Use table in Manual)		Not scored*
	Left	Right		Left	Right	
Canine						
1st Molar - mesial root						
1st Molar – distal root						
2nd Molar – mesial root						
2nd Molar – distal root						

*Indicate reason tooth not assessed by checking the appropriate boxes below.
Unable to make assessments due to: ☐Missing Tooth/Teeth ☐Fragmented Tooth/Teeth
☐ Tooth/Teeth articulated with alveolar bone.
Comments: _____

Permanent Tooth formation stages (Moorrees et al. 1963b)

Permanent Tooth	Formation Stage Code (Use Table in Manual)		Mean Age (Use tables in Manual)	
	Left	Right	Left	Right
1st Incisor (Maxilla)				
2nd Incisor (Maxilla)				
1st Incisor (Mandible)				
2nd Incisor (Mandible)				
Canine (Mandible)				
1st Premolar (Mandible)				
2nd Premolar (Mandible)				
1st Molar (Mandible)	R 1/2	R 1/2	10.9	10.9
2nd Molar (Mandible)				
3rd Molar (Mandible)				

*Indicate reason tooth not assessed by checking the appropriate boxes below.
Unable to make assessments due to: ☐Missing Tooth/Teeth ☐Fragmented Tooth/Teeth
☐ Tooth/Teeth articulated with alveolar bone.
Comments: _____

Formation and eruption sequence following Ubelaker (1989)

Instructions: Estimate the age of your subject lot by finding the image within the MANUAL that best matches your individual's dentition. Indicate the age estimation in the fields below:

Estimated Age: 6 years Estimated Age Range: 4 - 8 years

Unable to make assessment due to:

☐Missing ☐Fragmentation ☐Other: _____

Comments: _____

Non-metric Dental Age Assessment, Combined Results

1) Age Range:

The final estimated age range is the youngest mean age or the youngest age of a given range and the oldest mean age or the oldest age of a given age range derived from any of the non-metric dental age assessment methods above. Indicate this data in the fields below and in the summary section on page one of your form.

Age range: 4 - 10.9 years.

2) *Mean Age.* Calculate the average of the oldest and youngest mean age scores or provide a single mean score from above when only one exists.

Mean Age: 7.45 years

3) *Age Category.* Select the age category (below) into which the value you generate following step 2) fits. Select the same category in the summary section on page one of your form.

☐ Early Childhood (2.5 – 5.9 years)
☒ Late Childhood (6 – 12.9 years)
☐ Adolescent (13 – 19.9 years)
☐ Indeterminate

Lot: _____ Date: _____

w/o morress et. al. 1963 mean would be 6

late childhood

OSTEOMETRIC AGE ASSESSMENT

Measure the maximum length of complete limbbones following Maersh (1970)

Element	*Left (mm)*	*Epiphysis included?*	*Age:*	*NM**	*Right (mm)*	*Epiphysis included?*	*Age:*	*NM**
Humerus								
Radius								
Ulna								
Femur								
Tibia								
Fibula								

**NM indicates Not measured. Place a '✓' in the far right columns of tables to indicate any measurements you were unable to collect. If you need more writing space, please use the comments section below*

Estimated Age, Combined osteometric

1) The final estimated age range is the youngest mean age or the youngest age of a given range and the oldest mean age or the oldest age of a given age range derived from the osteometric assessments above. Indicate this data in the fields below and in the summary section on page one of your form.
   Age range: _____-_____ Unit: fetal weeks/postnatal months/postnatal year (circle).

2) Calculate the mean of the ages you provided in the age range (above) or provide a single mean age when only one exists.
   Mean Age: _____Unit: fetal weeks/postnatal months/postnatal year (circle one).

3) *Age Category.* Select the age category (below) into which the value you generate following step 2) fits. Select the same category in the summary section on page one of your form.

   ☐ Early Childhood (2.5 – 5.9 years)
   ☐ Late Childhood (6 – 12.9 years)
   ☐ Adolescent (13 – 19.9 years)
   ☐ Indeterminate Juvenile

Juvenile Age Assessment Part I – FUSION Prenatal to Childhood Altenburg Lutheran Church Society Cemetery BOZ0009/CU584/Collection's Location: UWM–ARL	**Burial No.** 11
Observer Name: A.M.J. + J.I.B.	Date Started: 10/12/14 Date Completed: 10/12/14
SUMMARY AGE Category: ☒ Prenatal (Prenatal – 2.49 y) ☐ Early Childhood (2.5 – 5.9 y) ☐ Late Childhood (6-12.9 y) ☐ Indeterminate **AGE RANGE:** 8 fm fw / pn m/ pn y *to* 2 fw / pn m/ pn y ☐ Indeterminate * 'fw' fetal weeks; 'pn m' postnatal months; 'pn y' postnatal years.	

FUSION OF OSSIFICATION CENTERS

Use the Manual when completing this form. Record fusion data using the following codes: O = open, U = Fusion underway, or F = fusion complete, though not obliterated. Slash the box when the feature is not observable.

Element	Primary Elements	Observation Code:	Fusion Complete
Sphenoid	Lesser Wings to Sphenoid Body	F	5 fm
	Pre Sphenoid to Post Sphenoid Body	F	8 fm
	Greater Wings to Sphenoid Body	–	1 y
	Foramen Ovale (Greater Wing)	–	1 y
Temporal	Tympanic Ring to Temporal Squamous	–	35 fw
	Petromastoid to Squamotympanic	–	1 y
Occipital	Supra-occipital to Interparietal Squama	–	5 fm
	Superior Median Fissure	–	1 y
	Sutura Mendosa	–	1 y
	Partes Laterales to Squama	–	1 – 3 y
	Hypoglossal Canal (Pars Laterales)	O	2 – 4 y
	Partes Laterales to Pars Basilaris	O	5 – 7 y
Mandible	Mandibular Symphysis	–	1 y
	Coronoid to main mass	–	By 8 f wks
Frontal	Fusion of L and R frontals	–	9 fm - 2 y
	Metopic Suture obliterated (generally)	–	2 – 4 y
Vertebrae	C1 – R & L Posterior arches (to one another)	–	4 – 5 y
	C1- Anterior arch to anterior bars	–	5 – 6 y
	C2- Intradental union (becomes Dens)	–	Full term
	C2- R & L Neural Arches (to one another)	O	3 – 4 y
	C2- Dens to Neural Arch	O	3 – 4 y
	C2- Centrum to Neural Arch	O	4 – 6 y
	C2- Ossiculum Terminale of dens	–	12 y
	C3-L5 Neural Arches (to one another)	O	1 – 2 y
	C3-L5 Neural Arches to Centra	O	2 – 5 y
Sacrum (S1 and S2)	Lateral Elements to Neural Arches → 'Wings'	–	2 – 5 y
	Wings to Centra	–	2 – 6 y
Os coxa	Ischiopubic ramus	–	5 – 11 y
Humerus	Greater and Lesser Tubercles to Head	O	2 – 6 y

*'f m' indicates 'fetal month'; 'f wks' indicates 'fetal weeks'; 'm' indicates post natal months; and 'y' indicates postnatal years.

Estimated Age

Step 1) Age Range.

Indicate the estimated age range of your individual in the fields below after referring to the fusion table above. In the first field, indicate the youngest age associated with 'O' or 'U' fusion observations. In the second field, indicate the oldest age associated with 'F' fusion observations.

2-4 fetal weeks / postnatal months / postnatal years (circle unit)

to

8 fm fetal weeks / postnatal months / postnatal years (circle unit)

* Remember to indicate the age range in the summary section on the top of page 1 of this form.

☐ Indeterminate; i.e. no evidence to allow you to assign the individual to an age category. Procede to step 3.

Step 2) If you were able to provide an age range in step 1, skip this step and procede to step 3.
If you selected 'indeterminate' in step 1 but your individual includes other evidence to allow you to assign the individual to an age category, indicate the information and the estimated age below. (e.g. petros portion compares favorably to individual 20 fetal weeks old). Then, use this information to select a categorical age in step 3.

Step 3) Age Category:

If you provided an age range in step 1, calculate the mean from of the ages and use the value to select an age category below.
Alternatively, if you arrived at step 3 following the directions in step 2, to proceed to assign your individual to an age category below based on the data you provided in step 2.

- Prenatal – 2.5 years (Prenatal – 2.49 years)
- Early Childhood (2.5 – 5 years)
- Late Childhood (6 – 12 years)
- Indeterminate; i.e. no evidence to allow you to assign the individual to an age category.

Comments:

8 fm - 2y

JUVENILE AGE ASSESSMENT PART II form:

☒ Prenatal – 2.5 years (LMP – 2.5 years)
☐ Early Childhood (2.5 – 5 years)
☐ Late Childhood (6 – 12 years)
☐ Indeterminate; i.e. no evidence to allow you to assign the individual to an age category.

Juvenile Age Assessment Part II- Prenatal – 2.49 years Altenburg Lutheran Church Society Cemetery BOZ0009/CU584/Collection's Location: UWM–ARL	**Burial No.** 11
Observer Name: A.M.J. + J.I.B. Date Started: 10/12/14 Date Completed: "	

SUMMARY DATA:

Dental Age: Age range: ____ - ____ fw/pn m / pn y ☐ Indeterminate

Sub-age Category: ☐ Embryo ☐ Fetus ☐ Neonate ☐ Infant ☐ Toddler ☐ Indeterminate

Osteometric Age: Age range: 28 - 34 fw/pn m / pn y ☐ Indeterminate

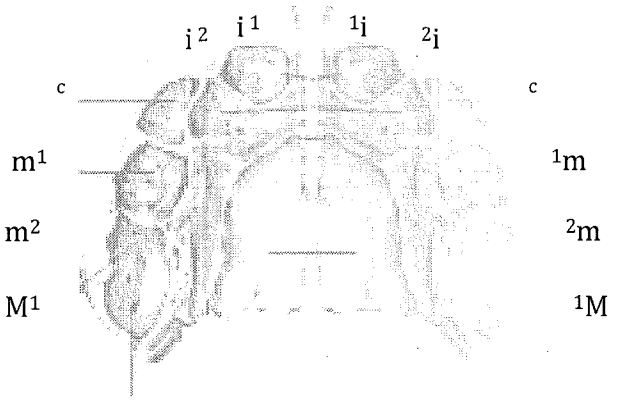
Sub-age Category: ☐ Embryo ☐ Fetus ☐ Neonate ☐ Infant ☐ Toddler ☐ Indeterminate

* 'fw' fetal weeks; 'pn m' postnatal months; and 'pn y' postnatal years.

NON-METRIC DENTAL AGE ASSESSMENT

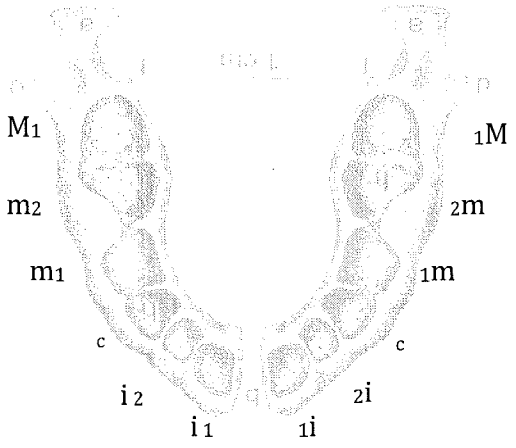
Use and attach a Juvenile mixed dentition outline if that form is more appropriate for your subject lot.

☐ Mandible not present. ☐ Maxilla not present. ☐ Mandible and Maxilla not present.



Right Maxilla, occlusal view Left

Illustration Key:
● Articulated Tooth
○ Loose Tooth
X Missing Tooth



Right Mandibular, occlusal view Left

Formation and Eruption Assessments

Complete all assessments unless you are absolutely certain that your individual presents demonstrative evidence of prenatal or postnatal age. If you have *any uncertainty* about the individual's age, complete all assessments. Refer to the manual as you complete this form.

Mineralization Stages (Sunderland et al. 1987) *Applied to prenatal individuals only.*
Use the table below to assign a fetal age to the individual based on the oldest age in weeks post fertilization (wpf) for mineralized teeth that are recorded as "Present." Indicate your answers in the fields below.

	Presence/Absence		Tooth	15th % (wpf):	Range (wpf):
	LEFT	RIGHT			
Maxilla			di1	15	13 – 17
			di2	17	14 – 19
			dc	19	17 – 20
			dm1	16	14 – 17
			dm2	19	18 - 20
Mandible			di1	15	13 – 17
			di2	17	14 – 19
			dc	19	17 – 20
			dm1	16	14 – 17
			dm2	19	18 - 20

15th percentile age: ____weeks post fertilization. Age Range: _____ - _____wpf.
Unable to make assessment due to: ☐ Lack of evidence (missing) ☐ Fragmentation
☐ Age is likely postnatal; evidence: _____
☐ Other:_____

Tooth formation stages (Moorrees et al. 1963) *Applies to postnatal individuals.*
Evaluate the crown and root development status of the mandibular canines, first molar, and second molar from postnatal individuals. Indicate the appropriate code and corresponding age in the appropriate fields within the table below.

Mandibular Tooth	Formation Stage Code		Estimated Age (years)	
	Left	Right	Left	Right
c				
1m				
2m				

Indicate the *oldest age of the teeth you were able to score:* _____ years
Unable to make assessment due to: ☐ Missing ☐ Fragmentation ☐ Unable to observe complete tooth in profile ☐ Age likely fetal; evidence: _____
☐ Other:_____

Formation and eruption sequence following Ubelaker (1989)
Instructions: Estimate the age of your subject lot by finding the image within the MANUAL that best matches your individual's. Indicate the age estimation in the line below:

Estimated Age:_____ mths Estimated Age Range:_____-_____mths
Unable to make assessment due to:
☐ Missing ☐ Fragmentation ☐ Other:_____

Eruption times (After Lysell et al. 1962, as presented in Scheuer & Black 2000:153)
Instructions: In the fields below, indicate whether a deciduous tooth is present or absent. Beneath the table, indicate the oldest mean age and age range given the teeth present.

	Tooth	Emerged past alveolar crest? (yes/no)	Mean (months)	Age Range +/- 1 SD (months)
Maxilla	Central Incisor		10	8-12
	Lateral Incisor		11	9-13
	Canine		19	16-22
	First Molar		16	13-19*
	Second Molar		29	25-33
Mandible	Central incisor		8	6-10
	Lateral incisor		13	10-16
	Canine		20	17-23
	First molar		16	14-18
	Second molar		27	23-31*

Mean Age: _____ mths Age range: _____ - _____ +/- 1 SD

Unable to make assessment due to:
☐ Missing ☐ Fragmentation ☐ Unable to observe tooth above alveolar crest. ☐ Other:

Estimated Age, Combined Nonmetric Dental Assessment

1) Age Range: The final estimated age range is the youngest mean age or the youngest age of a given range and the oldest mean age or the oldest age of a given age range derived from any of the non-metric dental age assessment methods above.
   a. Do results from one assessment disagree markedly from others and other extant osteological evidence? If so, indicate the age range, the assessment, and contrary evidence with your supervisor (e.g., 18 – 20 week mineralization age range, but neonatal petrosa*).
      i. Age range: _____ - _____ derived from the _____Method.
      ii. Contradictory osteological evidence: _____
   b. Indicate age range in fields below and in the summary section on page one of your form. If you provided information in a. (immediately above), *do not use it for the age range (below).*
      *Don't use data besides that collected within the non-metric dental assessment for the age range.

   Age range _____ Unit: fetal weeks/postnatal months/postnatal year (circle).
   to
   _____ Unit: fetal weeks/postnatal months/postnatal year (circle).

2) *Mean Age.* Calculate the average of the oldest and youngest mean age scores or provide a single mean score from above when only one exists.
   Mean Age: _____ Unit: fetal weeks / postnatal months / postnatal year (circle one).

3) *Age Category.* Select the age category (below) into which the value you generate following step 2) fits. Select the same category in the summary section on page one of your form.

   ☐ Embryo (0-8 weeks or two lunar months)
   ☐ Fetus (9 – 40 weeks)
   ☐ Neonate (Birth – 28 days)
   ☐ Infant (Birth – 11.9 months)
   ☐ Toddler (1 – 2.49 years)
   ☐ Indeterminate Lot: _____ Date: _____

OSTEOMETRIC AGE ASSESSMENT - FETAL

Note: The following osteometric assessments are applicable only to individuals determined to be prenatal based on forgoing fusion and dental assessments. See MANUAL for instructions on collecting measurements as well as deriving age estimations.

Cranial Measurements

Occipital: Pars lateralis and Pars basilaris (Frazekas and Kosa 1978)

Element	Measurement name	Left (mm)	(mm)	Right (mm)	Age:
Pars lateralis	Maximum length	–	N/A	18.18	32 fw
Pars Basilaris	Maximum Width (MW)	N/A	9.94	N/A	28 fw
	Sagittal Length (SL)	N/A	11.43	N/A	34 fw

*If you were unable to collect any measurements, indicate the reason below:

Age estimation from pars basilaris (Scheuer and MacLauighlin-Black 1994).

The Pars Basilaris MW measurement value (above) is

☐ Larger than the SL measurement value → then ≥ 30 fetal weeks
☐ Smaller than the SL measurement value → then ≤ 28 fetal weeks
☐ Not applicable; unable to collect data due to:

Sphenoid (Fazekas & Kosa 1978)

Measurement name	*Left* (mm)	Centerline (mm)	*Right (mm)*	*Fetal Age*	**Not measured?*
Body –Length (BL)	N/A		N/A		
Body – Width (BW)	N/A		N/A		
Lesser Wing- Length (LWL)		N/A			
Lesser Wing- Width (LWW)		N/A			
Greater Wing –Length (GWL)		N/A			
Greater Wing – Width (GWW)		N/A			

Temporal (Fazekas & Kosa 1978)

	Left (mm)	*Right (mm)*	*Fetal Age*	**Not measured?*
Petrous - Length				
Petrous - Width				

Mandible, Maxilla, and Zygoma (Fazekas & Kosa 1978)

	Left (mm)	*Right (mm)*	*Fetal Age*	**Not measured?*
Mandible –Length				
Mandible – Width				
Mandible – Oblique length				
Maxilla –Length				
Maxilla – Height				
Maxilla – Width				
Zygomatic- Length				
Zygomatic – Oblique Height				

**Place a '✓' in the far right columns of tables to indicate any measurements you were unable to collect. If you need more writing space, please use the comments section on p. 5*

Lot:_____ Date: _____

Postcranial Measurements

Shoulder elements and upper limbs (Fazekas & Kosa 1978)

Measurement name	*Left (mm)*	Right (mm)	*Fetal Age*	**Not measured?*
Clavicle- Length				
Scapula –Length (height)				
Scapula – Width				
Scapula – Length of the Spine				
Humerus – Length (height)				
Humerus – Distal Width				
Radius – Length				
Ulna – Length				

Pelvic elements and lower limbs (Fazekas & Kosa 1978)

Measurement name	*Left (mm)*	Right (mm)	*Fetal Age*	**Not measured?*
Maximum iliac length				
Maximum iliac width				
Maximum ischium length				
Maximum ischium width				
Maximum length of pubis				
Femur maximum length	57.44	-	32 fw	
Femur distal width				
Tibia maximum length				
Fibula maximum length				

**Place a '✓' in the far right columns of tables to indicate any measurements you were unable to collect. If you need more writing space, please use the comments section below*

COMMENTS:

OSTEOMETRIC AGE ASSESSMENT – POSTNATAL through 2.49 years

Note: The following osteometric assessments are applicable only to individuals with ages determined via fusion and dental assessments to be postnatal through 2.49 years of age. Methods follow Maresh (1970).

Element	*Left (mm)*	*Epiphysis included?*	*Age:*	*NM**	*Right (mm)*	*Epiphysis included?*	*Age:*	*NM**
Humerus								
Radius								
Ulna								
Femur								
Tibia								
Fibula								

**NM indicates Not measured. Place a '✓' in the far right columns of tables to indicate any measurements you were unable to collect. If you need more writing space, please use the comments section below*

Comments:

Estimated Age, Combined osteometric

1) Age Range:
The final estimated age range is the youngest mean age or the youngest age of a given range and the oldest mean age or the oldest age of a given age range derived from the osteometric assessments above. Indicate this data in the fields below and in the summary section on page one of your form.

28 Unit: fetal weeks/postnatal months/postnatal year (circle).

to

34 Unit: fetal weeks/postnatal months/postnatal year (circle).

2) Mean Age:
Calculate the mean of the ages you provided in the age range (above) or provide a single mean age when only one exists.

31 Unit: fetal weeks/postnatal months/postnatal year (circle).

3) Select the age category (below) into which the value you generated following step 2) fits. Select the same category in the summary section on page one of your form.

- ☐ Embryo (0-8 weeks or two lunar months)
- ☒ Fetus (9 – 40 weeks)
- ☐ Neonate (Birth – 28 days)
- ☐ Infant (Birth – 1 year)
- ☐ Toddler (1 – 2.49 years)
- ☐ Indeterminate

Age, Sex, and Stature Recording Form – ADULT
Altenburg Lutheran Church Society Cemetery
BOZ0009/CU584/Collection's Location: UWM –ARL&Curatorial Facility
Observer Name: AMJ. + J.I.B. Date: 3/27/14

Burial No. 12

SUMMARY DATA: **Sex (non-metric):** ☒ Female ☐ Probable Female ☐ Ind.Sex ☐ Probable Male ☐ Male
Sex (osteometric): ☐Female ☒Ind.Sex ☐Male
Cat. Age: ☐Juvenile (<20 yrs) ☐Young Adult (20-35 yrs) ☐Mid. Adult (35-50 yrs) ☐Old Adult (50+ yrs) ☒Indeter. Adult
Age Range: 6 - 40 years **Max Femur Length:** NA mm **Max Tibia Length:** 327 mm

Estimated Sex

Non-metric cranial and postcranial observations: Complete while following instructions listed in The Manual).

Pelvis	L	R	*Skull*	L	M	R
Ventral Arc (1-3 or -)	-	-	Nuchal Crest (1-5 or -_)		-	
Subpubic Concavity (1-3 or -)	-	-	Mastoid Process (1-5 or -)	2		2
Ischiopubic Ramus Ridge (1-3 or -)	-	-	Supraorbital Margin (1-5 or -)	1		1
Greater Sciatic Notch (1-5 or -)	2	3	Glabella (1-5 or -)		2	
Preauricular Sulcus (0-4 or -)	1	1	Mental Eminence (1-5 or -)		2	

Estimated Sex, Pelvis (0-5): 2 *Estimated Sex, Skull (0-5):* 1

See p.p. 23-24 for instructions on estimating sex of the pelvis.
See p. 28 for instructions on estimating sex of Skull.
See p. 29 for instructions to derive Estimated Sex, Combined score based on non-metric observations.

Estimated Sex, Combined score based on non-metric observations (0-5): 1

Indicate the estimated (non-metric) sex in the summary section on the top of this page.
0-Indeterminate 1-female 2-probably female 3-ambiguous 4-probable male 5-male

Osteometric data:

Maximum length of Talus: _____mm (Accuracy 80 % following Gentry-Steele (1978))
Side measured: ☐ Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☒ Unable to score left or right due to: fragmentation + pathology
Estimated Sex: ☐ Female (Max length ≤ 51 mm)
☐ Male (Max length ≥ 52 mm)

Vertical diameter of the humeral head _____ mm (Accuracy of 73 – 82% (Spradley & Jantz 2011:294))
Side measured: ☐ Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☒ Unable to score left or right due to: fragmentation
Estimated Sex: ☐Female (<43 mm)
☐ Indeterminate (44 – 46 mm)
☐Male (>47 mm)

Maximum diameter of the femoral head 43.81 mm (Accuracy of 88% (Spradley & Jantz 2011:294))
Side measured: ☐Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐fragmentation ☐ pathology
☐Unable to score left or right due to: _____
Estimated Sex: ☐ Female (<42.5 mm) ☒Indeterminate (43.5 – 46.5 mm) ☐Probable Male (46.5 – 47.5 mm)
☐ Probable female (42.5 – 43.5 mm) ☐Male (>47.5 mm)

Estimated Sex, Combined Osteometric: Combined estimated is sex is based on osteometric data recorded in dashed boxes above. Given incongruous results, consider the rank order of accuracy: 1) max diameter of femoral head, 2) Max length of talus, and 3) vertical diameter of humeral head. Indicate the estimated (metric) sex in the summary data area on the top of this page.

Estimated Sex: ☐Female ☒Indeterminate ☐ Male

Estimated Age

Pubic Symphysis (Score left and right sides by indicate score in lines following 'L' and 'R' fields, respectively)

Suchey-Brooks (0-6) [Scores for ☐Female OR ☐Male]
L:____ R:____ Based on Stage table in, Average Age: _____ Range: _____
☐Check box if casts used. ☐Unable to score due to pelvis of indeterminate sex
☒Unable to score due to: absent

Todd (1-10) [use ONLY for illiae of indeterminate sex]
L:____ R:____ Based on Stage table in SOP, Average Age: _____ Range: _____
☒Unable to score due to: absent

Auricular Surface (Score left side only except* in cases where right side is absent, fragmented, pathological, etc.)
Stage: 2 Mean Age: 29.5 Range: ≤ 46
☐ *Scored Right side because left is: ☐ absent ☐fragmented ☐pathological ☐other:_____
☐Unable to score left or right because both are ☐absent ☐fragmented ☐ pathological ☐other:_____

*Cranial Suture Closure (Use left side when possible**)*
– = Unobservable 0 = Open 1 = Minimal Closure 2 = Significant Closure 3 = Complete Obliteration
For any region where *all* cranial sutures are unobservable, check the box next to region heading.

External Cranial Vault ☐ Unobservable

1. Midlambdoid	–	<···
2. Lambda	–	
3. Obelion	3	
4. Anterior Sagittal	2	
5. Bregma	2	
6. Midcoronal	1	
7. Pterion	–	<···
8. Sphenofrontal	–	
9. Inferior Sphenotemporal	–	
10. Superior Sphenotemporal	–	

Stage: Avg:
Vault Composite Score

Stage: Avg:
Lateral-anterior Composite Score

Palate ☒ Unobservable

11. Incisive	___
12. Anterior Median Palatine	___
13. Posterior Median Palatine	___
14. Transverse Palatine	___

Endocranial (Internal)
Vault ☐Unobservable

15. Sagittal	3
16. Left Lambdoid	–
17. Left Coronal	3

**Indicate sutures (by number) you scored on the right side when scoring left was not possible: 17
Indicate sutures (by number) you were unable to observe and why: 1-2, 7-10, 11-14 fragmentation

Estimated Age, Combined: (indicate the estimated age category in the summary section on page 1 of this form).
Select the most appropriate age category based on all age data collected. *However, when pubic symphysis and cranial suture scores provide divergent age estimates, defer to the pubic symphysis age estimate.*
Estimated Age:
☐ Juvenile (<20 years) ☐ Young Adult (20-35 years) ☐ Middle Adult (35-50 years)
☐ Old Adult (50+ years) ☒ Indeterminate adult

Individual's estimated age is based on ...
☐ all cranial and pelvic data points.
☐ pubic symphysis; results conflicted with cranial suture scores.
☒ cranial suture and auricular surface scores due to missing pubic symphyses.
☐ only cranial suture scores due to missing pelvis.
☐ other: _____

Estimated Stature

When possible, measure the left side. In addition to recording your scores in millimeters in the appropriate fields below, record the measurements in the Summary Data section on page one of the ADULT AGE, SEX, AND STATURE RECORDING FORM.

Maximum length of the femur _____ mm

Side measured: ☐ Left ← Preferred standard

☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology

☒ Unable to score left or right due to: fragmentation

Maximum length of the tibia 327 mm

Side measured: ☒ Left ← Preferred standard

☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology

☐ Unable to score left or right due to: _____

Comments Section:

Age, Sex, and Stature Recording Form – ADULT
German Evangelical Lutheran Cemetery (Stolz Site)
BOZ0048/CU583/Collection's Location: UWM –ARL&Curatorial Facility

Burial No. 1

Observer Name: A.M.J. + J.L.B. Date: 3/27/14

SUMMARY DATA: **Sex (non-metric):** ☐ Female ☐ Probable Female ☐ Ind.Sex ☒ Probable Male ☐ Male
Sex (osteometric): ☒Female ☐ Ind.Sex ☐Male
Cat. Age: ☐Juvenile (<20 yrs) ☐Young Adult (20-35 yrs) ☐Mid. Adult (35-50 yrs) ☐Old Adult (50+ yrs) ☒Indeter. Adult
Age Range: — - — years **Max Femur Length:** 381 mm **Max Tibia Length:** 317 mm

Estimated Sex

Non-metric cranial and postcranial observations: Complete while following instructions listed in The Manual).

Pelvis	L	R	*Skull*	L	M	R
Ventral Arc (1-3 or -)	-	3	Nuchal Crest (1-5 or -)		1	
Subpubic Concavity (1-3 or -)	-	-	Mastoid Process (1-5 or -)	2		2
Ischiopubic Ramus Ridge (1-3 or -)	-	3	Supraorbital Margin (1-5 or -)	4		4
Greater Sciatic Notch (1-5 or -)	4	4	Glabella (1-5 or -)		2	
Preauricular Sulcus (0-4 or -)	4	0	Mental Eminence (1-5 or -)		-	

Estimated Sex, Pelvis (0-5): 5 *Estimated Sex, Skull (0-5):* 2

See p.p. 23-24 for instructions on estimating sex of the pelvis.
See p. 28 for instructions on estimating sex of Skull.
See p. 29 for instructions to derive Estimated Sex, Combined score based on non-metric observations.

Estimated Sex, Combined score based on non-metric observations (0-5): 4

Indicate the estimated (non-metric) sex in the summary section on the top of this page.
0-Indeterminate 1-female 2-probably female 3-ambiguous 4-probable male 5-male

Osteometric data:

Maximum length of Talus: 55 mm (Accuracy 80 % following Gentry-Steele (1978))
Side measured: ☒Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☐ Unable to score left or right due to: _____
Estimated Sex: ☐ Female (Max length ≤ 51 mm)
☒Male (Max length ≥ 52 mm)

Vertical diameter of the humeral head 40.62 mm (Accuracy of 73 – 82% (Spradley & Jantz 2011:294))
Side measured: ☒ Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☐ Unable to score left or right due to: _____
Estimated Sex: ☒Female (<43 mm)
☐ Indeterminate (44 – 46 mm)
☐Male (>47 mm)

Maximum diameter of the femoral head 41.31 mm (Accuracy of 88% (Spradley & Jantz 2011:294))
Side measured: ☒Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐fragmentation ☐ pathology
☐Unable to score left or right due to: _____
Estimated Sex: ☒ Female (<42.5 mm) ☐ Indeterminate (43.5 – 46.5 mm) ☐Probable Male (46.5 – 47.5 mm)
☐ Probable female (42.5 – 43.5 mm) ☐Male (>47.5 mm)

Estimated Sex, Combined Osteometric: Combined estimated is sex is based on osteometric data recorded in dashed boxes above. Given incongruous results, consider the rank order of accuracy: 1) max diameter of femoral head, 2) Max length of talus, and 3) vertical diameter of humeral head. Indicate the estimated (metric) sex in the summary data area on the top of this page.

Estimated Sex: ☒Female ☐Indeterminate ☐ Male

Estimated Age

Pubic Symphysis (Score left and right sides by indicate score in lines following 'L' and 'R' fields, respectively)

Suchey-Brooks (0-6) [Scores for ☐Female OR ☐Male]
L:____ R:____ Based on Stage table in, Average Age: _____ Range: _____
☐Check box if casts used. ☐Unable to score due to pelvis of indeterminate sex
☒Unable to score due to: pathology

Todd (1-10) [use ONLY for illiae of indeterminate sex]
L:____ R:____ Based on Stage table in SOP, Average Age: _____ Range: _____
☒Unable to score due to: _____

Auricular Surface (Score left side only except* in cases where right side is absent, fragmented, pathological, etc.)
Stage: _____ Mean Age:_____ Range:_____
☐ *Scored Right side because left is: ☐ absent ☐fragmented ☐pathological ☐other:_____
☒Unable to score left or right because both are ☐absent ☐fragmented ☒pathological ☐other:_____

*Cranial Suture Closure (Use left side when possible**)*
– = Unobservable 0 = Open 1 = Minimal Closure 2 = Significant Closure 3 = Complete Obliteration
For any region where *all* cranial sutures are unobservable, check the box next to region heading.

External Cranial Vault ☐ Unobservable

1. Midlambdoid	–
2. Lambda	–
3. Obelion	–
4. Anterior Sagittal	3
5. Bregma	3
6. Midcoronal	3
7. Pterion	–
8. Sphenofrontal	–
9. Inferior Sphenotemporal	–
10. Superior Sphenotemporal	–

Stage: Avg:
Vault Composite Score

Stage: Avg:
Lateral-anterior Composite Score

Palate ☐ Unobservable

11. Incisive	3
12. Anterior Median Palatine	1
13. Posterior Median Palatine	–
14. Transverse Palatine	–

Endocranial (Internal)
Vault ☒Unobservable

15. Sagittal	____
16. Left Lambdoid	____
17. Left Coronal	____

**Indicate sutures (by number) you scored on the right side when scoring left was not possible: _____
Indicate sutures (by number) you were unable to observe and why: 1-3, 7-10 pathology; 13-14 fragmentation; 15-17 mostly complete cranium

Estimated Age, Combined: (indicate the estimated age category in the summary section on page 1 of this form).
Select the most appropriate age category based on all age data collected. *However, when pubic symphysis and cranial suture scores provide divergent age estimates, defer to the pubic symphysis age estimate.*
Estimated Age:
☐ Juvenile (<20 years) ☐ Young Adult (20-35 years) ☐ Middle Adult (35-50 years)
☐ Old Adult (50+ years) ☒ Indeterminate adult

Individual's estimated age is based on ...
☐ all cranial and pelvic data points.
☐ pubic symphysis; results conflicted with cranial suture scores.
☐ cranial suture and auricular surface scores due to missing pubic symphyses.
☒ only cranial suture scores due to missing pelvis.
☐ other: _____

Estimated Stature

When possible, measure the left side. In addition to recording your scores in millimeters in the appropriate fields below, record the measurements in the Summary Data section on page one of the ADULT AGE, SEX, AND STATURE RECORDING FORM.

Maximum length of the femur 381 mm
Side measured: ☐ Left ← Preferred standard
☒ Right. unable to score left due to: ☐ absence ☒ fragmentation ☐ pathology
☐ Unable to score left or right due to:_____

Maximum length of the tibia 317 mm
Side measured: ☒ Left ← Preferred standard
☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology
☐ Unable to score left or right due to:_____

Comments Section:

extreme macroporsity and disorganized ridges on auricular surface

Age, Sex, and Stature Recording Form – ADULT
German Evangelical Lutheran Cemetery (Stolz Site)
BOZ0048/CU583/Collection's Location: UWM –ARL&Curatorial Facility

Burial No. 2

Observer Name: A.M.J. + J.L.B. Date: 3/27/14

SUMMARY DATA: **Sex (non-metric):** ☐ Female ☐ Probable F emale ☐ Ind.Sex ☒ Probable Male ☐ Male
Sex (osteometric): ☐Female ☒Ind.Sex ☐Male
Cat. Age: ☐Juvenile (<20 yrs) ☐Young Adult (20-35 yrs) ☐Mid. Adult (35-50 yrs) ☐Old Adult (50+ yrs) ☐Indeter. Adult
Age Range: 24 - 82 years **Max Femur Length:** 445 mm **Max Tibia Length:** 369 mm

Estimated Sex

Non-metric cranial and postcranial observations: Complete while following instructions listed in The Manual).

Pelvis	L	R	*Skull*	L	M	R
Ventral Arc (1-3 or -)	3	3	Nuchal Crest (1-5 or -_)		3	
Subpubic Concavity (1-3 or -)	-	3	Mastoid Process (1-5 or -)	4		4
Ischiopubic Ramus Ridge (1-3 or -)	3	3	Supraorbital Margin (1-5 or -)	2		2
Greater Sciatic Notch (1-5 or -)	4	5	Glabella (1-5 or -)		3	
Preauricular Sulcus (0-4 or -)	0	0	Mental Eminence (1-5 or -)		3	

Estimated Sex, Pelvis (0-5): 5 *Estimated Sex, Skull (0-5):* 3

See p.p. 23-24 for instructions on estimating sex of the pelvis.
See p. 28 for instructions on estimating sex of Skull.
See p. 29 for instructions to derive Estimated Sex, Combined score based on non-metric observations.

Estimated Sex, Combined score based on non-metric observations (0-5): 4
Indicate the estimated (non-metric) sex in the summary section on the top of this page.
0-Indeterminate 1-female 2-probably female 3-ambiguous 4-probable male 5-male

Osteometric data:

Maximum length of Talus: _____mm (Accuracy 80 % following Gentry-Steele (1978))
Side measured: ☐ Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☒ Unable to score left or right due to: pathology + fragmentation
Estimated Sex: ☐ Female (Max length ≤ 51 mm)
☐ Male (Max length ≥ 52 mm)

Vertical diameter of the humeral head 45.31 mm (Accuracy of 73 – 82% (Spradley & Jantz 2011:294))
Side measured: ☒ Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☐ Unable to score left or right due to: _____
Estimated Sex: ☐Female (<43 mm)
☒ Indeterminate (44 – 46 mm)
☐Male (>47 mm)

Maximum diameter of the femoral head 45.64 mm (Accuracy of 88% (Spradley & Jantz 2011:294))
Side measured: ☒Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐fragmentation ☐ pathology
☐Unable to score left or right due to: _____
Estimated Sex: ☐ Female (<42.5 mm) ☒Indeterminate (43.5 – 46.5 mm) ☐Probable Male (46.5 – 47.5 mm)
☐ Probable female (42.5 – 43.5 mm) ☐Male (>47.5 mm)

Estimated Sex, Combined Osteometric: Combined estimated is sex is based on osteometric data recorded in dashed boxes above. Given incongruous results, consider the rank order of accuracy: 1) max diameter of femoral head, 2) Max length of talus, and 3) vertical diameter of humeral head. Indicate the estimated (metric) sex in the summary data area on the top of this page.
Estimated Sex: ☐Female ☒Indeterminate ☐ Male

Estimated Age

Pubic Symphysis (Score left and right sides by indicate score in lines following 'L' and 'R' fields, respectively)

Suchey-Brooks (0-6) [Scores for ☐Female OR ☒Male]
L: 5 R: 5 Based on Stage table in, Average Age: 48.1 Range: 25-83
☐Check box if casts used. ☐Unable to score due to pelvis of indeterminate sex
☐Unable to score due to: _____

Todd (1-10) [use ONLY for illiae of indeterminate sex]
L:____ R:____ Based on Stage table in SOP, Average Age: _____ Range: _____
☐Unable to score due to: _____

Auricular Surface (Score left side only except* in cases where right side is absent, fragmented, pathological, etc.)
Stage: 5 Mean Age: 53.1 Range: 24-82
☒*Scored Right side because left is: ☐ absent ☐fragmented ☐pathological ☒other: developmental gap
☐Unable to score left or right because both are ☐absent ☐fragmented ☐ pathological ☐other:_____

*Cranial Suture Closure (Use left side when possible**)*
– = Unobservable 0 = Open 1 = Minimal Closure 2 = Significant Closure 3 = Complete Obliteration
For any region where *all* cranial sutures are unobservable, check the box next to region heading.

External Cranial Vault ☐ Unobservable

1. Midlambdoid 2 <…
2. Lambda 3
3. Obelion 3
4. Anterior Sagittal 2
5. Bregma 3
6. Midcoronal 2
7. Pterion 3 <…
8. Sphenofrontal 3
9. Inferior Sphenotemporal 1
10. Superior Sphenotemporal 1

Stage: 5 Avg: 48.8
Vault Composite Score
35-60

Stage: 6 Avg: 51.9
Lateral-anterior Composite Score 39-69

Palate ☐ Unobservable

11. Incisive 3
12. Anterior Median Palatine 2
13. Posterior Median Palatine 3
14. Transverse Palatine 3

Endocranial (Internal)
Vault ☒Unobservable

15. Sagittal ____
16. Left Lambdoid ____
17. Left Coronal ____

**Indicate sutures (by number) you scored on the right side when scoring left was not possible: _____
Indicate sutures (by number) you were unable to observe and why: 15-17 cranium complete

Estimated Age, Combined: (indicate the estimated age category in the summary section on page 1 of this form).
Select the most appropriate age category based on all age data collected. *However, when pubic symphysis and cranial suture scores provide divergent age estimates, defer to the pubic symphysis age estimate.*
Estimated Age:
☐ Juvenile (<20 years) ☐ Young Adult (20-35 years) ☒ Middle Adult (35-50 years)
☐ Old Adult (50+ years) ☐ Indeterminate adult

Individual's estimated age is based on ...
☒ all cranial and pelvic data points. except 15-17
☐ pubic symphysis; results conflicted with cranial suture scores.
☐ cranial suture and auricular surface scores due to missing pubic symphyses.
☐ only cranial suture scores due to missing pelvis.
☐ other: _____

Estimated Stature

When possible, measure the left side. In addition to recording your scores in millimeters in the appropriate fields below, record the measurements in the Summary Data section on page one of the ADULT AGE, SEX, AND STATURE RECORDING FORM.

Maximum length of the femur 445 mm
Side measured: ☒ Left ← Preferred standard
☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology
☐ Unable to score left or right due to:_____

Maximum length of the tibia 369 mm
Side measured: ☒ Left ← Preferred standard
☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology
☐ Unable to score left or right due to:_____

Comments Section:

pubis + ishium have been glued

Juvenile Age Assessment Part I – FUSION Prenatal to Childhood German Evangelical Lutheran Cemetery (Stolz Site) BOZ0048/CU583/Collection's Location: UWM–ARL	**Burial No.** 3
Observer Name: A.M.J. + J.I.B.	Date Started: 10/9/14 Date Completed: 10/9/14
SUMMARY AGE Category: ☐ Prenatal (Prenatal – 2.49 y) ☐ Early Childhood (2.5 – 5.9 y) ☐ Late Childhood (6-12.9 y) ☐ Indeterminate **AGE RANGE:** 1 fw / pn m/ pn y *to* 1 fw / pn m/ pn y ☐ Indeterminate * 'fw' fetal weeks; 'pn m' postnatal months; 'pn y' postnatal years.	

FUSION OF OSSIFICATION CENTERS

Use the Manual when completing this form. Record fusion data using the following codes: O = open, U = Fusion underway, or F = fusion complete, though not obliterated. Slash the box when the feature is not observable.

Element	Primary Elements	Observation Code:	Fusion Complete
Sphenoid	Lesser Wings to Sphenoid Body	F	5 fm
	Pre Sphenoid to Post Sphenoid Body	F	8 fm
	Greater Wings to Sphenoid Body	–	1 y
	Foramen Ovale (Greater Wing)	F	1 y
Temporal	Tympanic Ring to Temporal Squamous	F	35 fw
	Petromastoid to Squamotympanic	–	1 y
Occipital	Supra-occipital to Interparietal Squama	–	5 fm
	Superior Median Fissure	–	1 y
	Sutura Mendosa	U	1 y
	Partes Laterales to Squama	O	1 – 3 y
	Hypoglossal Canal (Pars Laterales)	O/U	2 – 4 y
	Partes Laterales to Pars Basilaris	O	5 – 7 y
Mandible	Mandibular Symphysis	–	1 y
	Coronoid to main mass	F	By 8 f wks
Frontal	Fusion of L and R frontals	–	9 fm - 2 y
	Metopic Suture obliterated (generally)	–	2 – 4 y
Vertebrae	C1 – R & L Posterior arches (to one another)	O	4 – 5 y
	C1- Anterior arch to anterior bars	O	5 – 6 y
	C2- Intradental union (becomes Dens)	F	Full term
	C2- R & L Neural Arches (to one another)	O	3 – 4 y
	C2- Dens to Neural Arch	O	3 – 4 y
	C2- Centrum to Neural Arch	O	4 – 6 y
	C2- Ossiculum Terminale of dens	O	12 y
	C3-L5 Neural Arches (to one another)	O	1 – 2 y
	C3-L5 Neural Arches to Centra	O	2 – 5 y
Sacrum (S1 and S2)	Lateral Elements to Neural Arches → 'Wings'	O	2 – 5 y
	Wings to Centra	O	2 – 6 y
Os coxa	Ischiopubic ramus	–	5 – 11 y
Humerus	Greater and Lesser Tubercles to Head	O	2 – 6 y

*'f m' indicates 'fetal month'; 'f wks' indicates 'fetal weeks'; 'm' indicates post natal months; and 'y' indicates postnatal years.

Estimated Age

Step 1) Age Range.

Indicate the estimated age range of your individual in the fields below after referring to the fusion table above. In the first field, indicate the youngest age associated with 'O' or 'U' fusion observations. In the second field, indicate the oldest age associated with 'F' fusion observations.

1-3 fetal weeks / postnatal months / postnatal years (circle unit)

to

1 fetal weeks / postnatal months / postnatal years (circle unit)

* Remember to indicate the age range in the summary section on the top of page 1 of this form.

☐ Indeterminate; i.e. no evidence to allow you to assign the individual to an age category. Procede to step 3.

Step 2) If you were able to provide an age range in step 1, skip this step and procede to step 3.
If you selected 'indeterminate' in step 1 but your individual includes other evidence to allow you to assign the individual to an age category, indicate the information and the estimated age below. (e.g. petros portion compares favorably to individual 20 fetal weeks old). Then, use this information to select a categorical age in step 3.

Step 3) Age Category:

If you provided an age range in step 1, calculate the mean from of the ages and use the value to select an age category below.
Alternatively, if you arrived at step 3 following the directions in step 2, to proceed to assign your individual to an age category below based on the data you provided in step 2.

- Prenatal – 2.5 years (Prenatal – 2.49 years)
- Early Childhood (2.5 – 5 years)
- Late Childhood (6 – 12 years)
- Indeterminate; i.e. no evidence to allow you to assign the individual to an age category.

Comments:

JUVENILE AGE ASSESSMENT PART II form:

☒ Prenatal – 2.5 years (LMP – 2.5 years)
☐ Early Childhood (2.5 – 5 years)
☐ Late Childhood (6 – 12 years)
☐ Indeterminate; i.e. no evidence to allow you to assign the individual to an age category.

Juvenile Age Assessment Part II- Prenatal – 2.49 years German Evangelical Lutheran Cemetery (Stolz Site) BOZ0048/CU583/Collection's Location: UWM–ARL	**Burial No.** 3
Observer Name: A.M.J. + J.I.B. Date Started: 10/9/14 Date Completed: " "	

SUMMARY DATA:

Dental Age: Age range: ____ - ____ fw/pn m / pn y ☐ Indeterminate

Sub-age Category: ☐ Embryo ☐ Fetus ☐ Neonate ☐ Infant ☐ Toddler ☐ Indeterminate

Osteometric Age: Age range: 2 - 1.5m fw/pn m / pn y ☐ Indeterminate

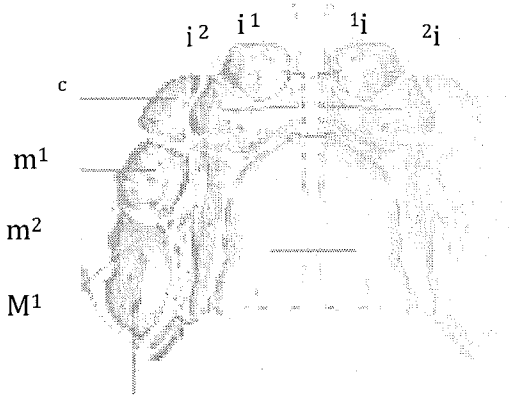
Sub-age Category: ☐ Embryo ☐ Fetus ☒ Neonate ☐ Infant ☐ Toddler ☐ Indeterminate

* 'fw' fetal weeks; 'pn m' postnatal months; and 'pn y' postnatal years.

NON-METRIC DENTAL AGE ASSESSMENT

Use and attach a Juvenile mixed dentition outline if that form is more appropriate for your subject lot.

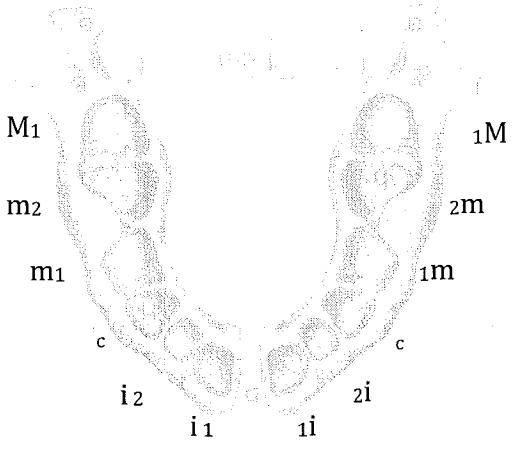
☐ Mandible not present. ☐ Maxilla not present. ☐ Mandible and Maxilla not present.



teeth glued

Right Maxilla, occlusal view Left

Illustration Key:
● Articulated Tooth
○ Loose Tooth
X Missing Tooth



Right Mandibular, occlusal view Left

Formation and Eruption Assessments

Complete all assessments unless you are absolutely certain that your individual presents demonstrative evidence of prenatal or postnatal age. If you have *any uncertainty* about the individual's age, complete all assessments. Refer to the manual as you complete this form.

Mineralization Stages (Sunderland et al. 1987) *Applied to prenatal individuals only.*
Use the table below to assign a fetal age to the individual based on the oldest age in weeks post fertilization (wpf) for mineralized teeth that are recorded as "Present." Indicate your answers in the fields below.

	Presence/Absence		Tooth	15th % (wpf):	Range (wpf):
	LEFT	RIGHT			
Maxilla			di1	15	13 – 17
			di2	17	14 – 19
			dc	19	17 – 20
			dm1	16	14 – 17
			dm2	19	18 - 20
Mandible			di1	15	13 – 17
			di2	17	14 – 19
			dc	19	17 – 20
			dm1	16	14 – 17
			dm2	19	18 - 20

15th percentile age: ____weeks post fertilization. Age Range: _____ - _____wpf.
Unable to make assessment due to: ☐ Lack of evidence (missing) ☐ Fragmentation
☐ Age is likely postnatal; evidence: _____
☐ Other:_____

Tooth formation stages (Moorrees et al. 1963) *Applies to postnatal individuals.*
Evaluate the crown and root development status of the mandibular canines, first molar, and second molar from postnatal individuals. Indicate the appropriate code and corresponding age in the appropriate fields within the table below.

Mandibular Tooth	Formation Stage Code		Estimated Age (years)	
	Left	Right	Left	Right
c				
1m				
2m				

Indicate the *oldest age of the teeth you were able to score:* _____ years
Unable to make assessment due to: ☐ Missing ☐ Fragmentation ☐ Unable to observe complete tooth in profile ☐ Age likely fetal; evidence: _____
☐ Other:_____Teeth glued profile not visible_____

Formation and eruption sequence following Ubelaker (1989)
Instructions: Estimate the age of your subject lot by finding the image within the MANUAL that best matches your individual's. Indicate the age estimation in the line below:

Estimated Age:_____ mths Estimated Age Range:_____-_____mths
Unable to make assessment due to:
☐ Missing ☐ Fragmentation ☐ Other:_____

Eruption times (After Lysell et al. 1962, as presented in Scheuer & Black 2000:153)
Instructions: In the fields below, indicate whether a deciduous tooth is present or absent. Beneath the table, indicate the oldest mean age and age range given the teeth present.

	Tooth	Emerged past alveolar crest? (yes/no)	Mean (months)	Age Range +/- 1 SD (months)
Maxilla	Central Incisor		10	8-12
	Lateral Incisor		11	9-13
	Canine		19	16-22
	First Molar		16	13-19*
	Second Molar		29	25-33
Mandible	Central incisor		8	6-10
	Lateral incisor		13	10-16
	Canine		20	17-23
	First molar		16	14-18
	Second molar		27	23-31*

Mean Age: _____ mths Age range: _____ - _____ +/- 1 SD

Unable to make assessment due to:
☐ Missing ☐ Fragmentation ☐ Unable to observe tooth above alveolar crest. ☒ Other: glued

Estimated Age, Combined Nonmetric Dental Assessment

1) Age Range: The final estimated age range is the youngest mean age or the youngest age of a given range and the oldest mean age or the oldest age of a given age range derived from any of the non-metric dental age assessment methods above.
   a. Do results from one assessment disagree markedly from others and other extant osteological evidence? If so, indicate the age range, the assessment, and contrary evidence with your supervisor (e.g., 18 – 20 week mineralization age range, but neonatal petrosa*).
      i. Age range: _____ - _____ derived from the _____Method.
      ii. Contradictory osteological evidence: _____
   b. Indicate age range in fields below and in the summary section on page one of your form. If you provided information in a. (immediately above), *do not use it for the age range (below).*
      *Don't use data besides that collected within the non-metric dental assessment for the age range.

   Age range _____ Unit: fetal weeks/postnatal months/postnatal year (circle).
   to
   _____ Unit: fetal weeks/postnatal months/postnatal year (circle).

2) *Mean Age.* Calculate the average of the oldest and youngest mean age scores or provide a single mean score from above when only one exists.
   Mean Age: _____ Unit: fetal weeks / postnatal months / postnatal year (circle one).

3) *Age Category.* Select the age category (below) into which the value you generate following step 2) fits. Select the same category in the summary section on page one of your form.

   ☐ Embryo (0-8 weeks or two lunar months)
   ☐ Fetus (9 – 40 weeks)
   ☐ Neonate (Birth – 28 days)
   ☐ Infant (Birth – 11.9 months)
   ☐ Toddler (1 – 2.49 years)
   ☐ Indeterminate Lot: _____ Date: _____

OSTEOMETRIC AGE ASSESSMENT - FETAL

Note: The following osteometric assessments are applicable only to individuals determined to be prenatal based on forgoing fusion and dental assessments. See MANUAL for instructions on collecting measurements as well as deriving age estimations.

Cranial Measurements

Occipital: Pars lateralis and Pars basilaris (Frazekas and Kosa 1978)

Element	Measurement name	Left (mm)	(mm)	Right (mm)	Age:
Pars lateralis	Maximum length	28.06	N/A	28.35	40+ fw
Pars Basilaris	Maximum Width (MW)	N/A	16.32	N/A	40+ fw
	Sagittal Length (SL)	N/A	16.03	N/A	40 + fw

*If you were unable to collect any measurements, indicate the reason below:

Age estimation from pars basilaris (Scheuer and MacLauighlin-Black 1994).

The Pars Basilaris MW measurement value (above) is

☐ Larger than the SL measurement value → then ≥ 30 fetal weeks
☐ Smaller than the SL measurement value → then ≤ 28 fetal weeks
☐ Not applicable; unable to collect data due to:

Sphenoid (Fazekas & Kosa 1978)

Measurement name	*Left* (mm)	Centerline (mm)	*Right (mm)*	*Fetal Age*	**Not measured?*
Body –Length (BL)	N/A		N/A		
Body – Width (BW)	N/A		N/A		
Lesser Wing- Length (LWL)		N/A			
Lesser Wing- Width (LWW)		N/A			
Greater Wing –Length (GWL)		N/A			
Greater Wing – Width (GWW)		N/A			

Temporal (Fazekas & Kosa 1978)

	Left (mm)	*Right (mm)*	*Fetal Age*	**Not measured?*
Petrous - Length		38.71	40 + fw	
Petrous - Width				

Mandible, Maxilla, and Zygoma (Fazekas & Kosa 1978)

	Left (mm)	*Right (mm)*	*Fetal Age*	**Not measured?*
Mandible –Length				
Mandible – Width				
Mandible – Oblique length				
Maxilla –Length				
Maxilla – Height				
Maxilla – Width				
Zygomatic- Length				
Zygomatic – Oblique Height				

**Place a '✓' in the far right columns of tables to indicate any measurements you were unable to collect. If you need more writing space, please use the comments section on p. 5*

Lot:_____ Date: _____

Postcranial Measurements

Shoulder elements and upper limbs (Fazekas & Kosa 1978)

Measurement name	*Left (mm)*	Right (mm)	*Fetal Age*	**Not measured?*
Clavicle- Length				
Scapula –Length (height)				
Scapula – Width				
Scapula – Length of the Spine				
Humerus – Length (height)				
Humerus – Distal Width				
Radius – Length				
Ulna – Length				

Pelvic elements and lower limbs (Fazekas & Kosa 1978)

Measurement name	*Left (mm)*	Right (mm)	*Fetal Age*	**Not measured?*
Maximum iliac length				
Maximum iliac width				
Maximum ischium length				
Maximum ischium width				
Maximum length of pubis				
Femur maximum length				
Femur distal width				
Tibia maximum length				
Fibula maximum length				

**Place a '✓' in the far right columns of tables to indicate any measurements you were unable to collect. If you need more writing space, please use the comments section below*

COMMENTS:

OSTEOMETRIC AGE ASSESSMENT – POSTNATAL through 2.49 years

Note: The following osteometric assessments are applicable only to individuals with ages determined via fusion and dental assessments to be postnatal through 2.49 years of age. Methods follow Maresh (1970).

Element	*Left (mm)*	*Epiphysis included?*	*Age:*	*NM**	*Right (mm)*	*Epiphysis included?*	*Age:*	*NM**
Humerus	66.69	N	<1.5m		66.17	N	<1.5m	
Radius	52.14	N	<1.5m		52.18	N	<1.5m	
Ulna	58.71	N	<1.5m		–	–	–	
Femur	–	–	–		79.32	N	<1.5m	
Tibia	68.51	N	<1.5m		68.91	N	<1.5m	
Fibula	–	–	–		63.74	N	<1.5m	

**NM indicates Not measured. Place a '✓' in the far right columns of tables to indicate any measurements you were unable to collect. If you need more writing space, please use the comments section below*

Comments:

Estimated Age, Combined osteometric

1) Age Range:
The final estimated age range is the youngest mean age or the youngest age of a given range and the oldest mean age or the oldest age of a given age range derived from the osteometric assessments above. Indicate this data in the fields below and in the summary section on page one of your form.

<1.5 m _____ Unit: fetal weeks/postnatal months/postnatal year (circle).
to
_____ Unit: fetal weeks/postnatal months/postnatal year (circle).

2) Mean Age:
Calculate the mean of the ages you provided in the age range (above) or provide a single mean age when only one exists.
_____ Unit: fetal weeks/postnatal months/postnatal year (circle).

3) Select the age category (below) into which the value you generated following step 2) fits. Select the same category in the summary section on page one of your form.

- ☐ Embryo (0-8 weeks or two lunar months)
- ☐ Fetus (9 – 40 weeks)
- ☒ Neonate (Birth – 28 days)
- ☐ Infant (Birth – 1 year)
- ☐ Toddler (1 – 2.49 years)
- ☐ Indeterminate

– because all max lengths of elements were less than 1.5 post natal months

Juvenile Age Assessment Part I – FUSION Prenatal to Childhood German Evangelical Lutheran Cemetery (Stolz Site) BOZ0048/CU583/Collection's Location: UWM–ARL	**Burial No.** 4
Observer Name: A.M.J. + J.I.B.	Date Started: 10/12/14 Date Completed: 10/12/14
SUMMARY AGE Category: ☒ Prenatal (Prenatal – 2.49 y) ☒ Early Childhood (2.5 – 5.9 y) ☐ Late Childhood (6-12.9 y) ☐ Indeterminate **AGE RANGE:** _____ fw / pn m/ pn y *to* _____ fw / pn m/ pn y ☐ Indeterminate * 'fw' fetal weeks; 'pn m' postnatal months; 'pn y' postnatal years.	

FUSION OF OSSIFICATION CENTERS

Use the Manual when completing this form. Record fusion data using the following codes: O = open, U = Fusion underway, or F = fusion complete, though not obliterated. Slash the box when the feature is not observable.

Element	Primary Elements	Observation Code:	Fusion Complete
Sphenoid	Lesser Wings to Sphenoid Body	F	5 fm
	Pre Sphenoid to Post Sphenoid Body	F	8 fm
	Greater Wings to Sphenoid Body	F	1 y
	Foramen Ovale (Greater Wing)	F	1 y
Temporal	Tympanic Ring to Temporal Squamous	–	35 fw
	Petromastoid to Squamotympanic	–	1 y
Occipital	Supra-occipital to Interparietal Squama	F	5 fm
	Superior Median Fissure	F	1 y
	Sutura Mendosa	F	1 y
	Partes Laterales to Squama	F	1 – 3 y
	Hypoglossal Canal (Pars Laterales)	–	2 – 4 y
	Partes Laterales to Pars Basilaris	–	5 – 7 y
Mandible	Mandibular Symphysis	–	1 y
	Coronoid to main mass	–	By 8 f wks
Frontal	Fusion of L and R frontals	F	9 fm - 2 y
	Metopic Suture obliterated (generally)	U	2 – 4 y
Vertebrae	C1 – R & L Posterior arches (to one another)	–	4 – 5 y
	C1- Anterior arch to anterior bars	–	5 – 6 y
	C2- Intradental union (becomes Dens)	–	Full term
	C2- R & L Neural Arches (to one another)	–	3 – 4 y
	C2- Dens to Neural Arch	–	3 – 4 y
	C2- Centrum to Neural Arch	–	4 – 6 y
	C2- Ossiculum Terminale of dens	–	12 y
	C3-L5 Neural Arches (to one another)	F	1 – 2 y
	C3-L5 Neural Arches to Centra	O	2 – 5 y
Sacrum (S1 and S2)	Lateral Elements to Neural Arches → 'Wings'	U	2 – 5 y
	Wings to Centra	U	2 – 6 y
Os coxa	Ischiopubic ramus	–	5 – 11 y
Humerus	Greater and Lesser Tubercles to Head	O	2 – 6 y

*'f m' indicates 'fetal month'; 'f wks' indicates 'fetal weeks'; 'm' indicates post natal months; and 'y' indicates postnatal years.

Estimated Age

Step 1) Age Range.

Indicate the estimated age range of your individual in the fields below after referring to the fusion table above. In the first field, indicate the youngest age associated with 'O' or 'U' fusion observations. In the second field, indicate the oldest age associated with 'F' fusion observations.

2-6 fetal weeks / postnatal months / postnatal years (circle unit)

to

1-3 fetal weeks / postnatal months / postnatal years (circle unit)

* Remember to indicate the age range in the summary section on the top of page 1 of this form.

☐ Indeterminate; i.e. no evidence to allow you to assign the individual to an age category. Procede to step 3.

Step 2) If you were able to provide an age range in step 1, skip this step and procede to step 3.
If you selected 'indeterminate' in step 1 but your individual includes other evidence to allow you to assign the individual to an age category, indicate the information and the estimated age below. (e.g. petros portion compares favorably to individual 20 fetal weeks old). Then, use this information to select a categorical age in step 3.

Step 3) Age Category:

If you provided an age range in step 1, calculate the mean from of the ages and use the value to select an age category below.
Alternatively, if you arrived at step 3 following the directions in step 2, to proceed to assign your individual to an age category below based on the data you provided in step 2.

- Prenatal – 2.5 years (Prenatal – 2.49 years)
- Early Childhood (2.5 – 5 years)
- Late Childhood (6 – 12 years)
- Indeterminate; i.e. no evidence to allow you to assign the individual to an age category.

Comments:

Individual must be ≥ 1 but ≤ 4 based on fusion centers examined. Greatest overlap in 2-3 range.

JUVENILE AGE ASSESSMENT PART II form:

☐ Prenatal – 2.5 years (LMP – 2.5 years)
☐ Early Childhood (2.5 – 5 years)
☐ Late Childhood (6 – 12 years)
☐ Indeterminate; i.e. no evidence to allow you to assign the individual to an age category.

Juvenile Age Assessment Part I – FUSION Childhood - Adolescence German Evangelical Lutheran Cemetery (Stolz Site) BOZ0048/ CU583/Collection's Location: UWM–ARL	**Burial No.** 4
Observer Name: A.M.J. + J.I.B.	Date Started: 10/12/14 Date Completed: 10/12/14
SUMMARY: [X] Late Childhood (6-12.9 years) [ ] Adolescent (13-19.9 years) [ ] Young Adult (≥ 20 years) [ ] Indeterminate	

FUSION ASSESSMENT

Complete all boxes with the following codes: O = open, U = Fusion underway, or F = fusion complete, though not obliterated. Slash the box when feature is not observable and data cannot be recorded.

		Observation Code:	Union Begins	Fusion Complete
Humerus	Proximal	O	14	21
	Medial	O	13	18
	Distal	O	11	18
Radius	Proximal	–	12	18
	Distal	–	14	20
Ulna	Proximal	–	12	18
	Distal	–	15	20
Hand	Metacarpals & Phalanges	O	11	18
Femur	Head	–	14	19
	Greater Trochanter	–	14	19
	Lesser Trochanter	–	14	19
	Distal	–	14	20
Tibia	Proximal	–	14	20
	Distal	–	14	18
Fibula	Proximal	–	14	20
	Distal	–	14	20
Foot	Calcaneus	–	10	20
	Metacarpals & Phalanges	–	11	16
Scapula	Coracoid-Glenoid Complex*	O	11	18
	Acromion	O	14	20
	Inferior Angle	O	15	23
	Medial Border	O	15	23
Pelvis	Tri-radiate Complex**	O	10	18
	Anterior Inferior Iliac Spine	O	10	18
	Ischial Tuberosity	–	13	20
	Iliac Crest	O	14	22
Sacrum	Auricular Surface	O	15	21
	S1-S2 Bodies	O	14	25+
	S1-S2 Alae	O	11	27
	S2-S5 Bodies	O	12	28
	S2-S5 Alae	O	14	21
Vertebrae	Bodies	O	13	23
Ribs	Heads	O	17	22
Clavicle	Medial	O	12	29+
Manubrium	1st Costal Notch	–	18	25

Juvenile Age Recording Form Part II Early Childhood - Adolescence German Evangelical Lutheran Cemetery (Stolz Site) BOZ0048/CU583/Collection's Location: UWM–ARL	Burial No. 4
Observer Name: A.M.J. + J.I.B. Date Started: 10|12|14 Date Completed: " "	

SUMMARY DATA:

Dental **Age Range:** 3.667 – 6.333 years **Category:** ☒ Early Childhood (2.5 – 5.9 y)
☐ Late Childhood (6 – 12.9 y) ☐ Adolescent (13 – 19.9 y) ☐ Indeterminate Juvenile

Osteometric **Age Range:** ____ - ____ years **Category:** ☐ Early Childhood (2.5 – 5.9 y)
☐ Late Childhood (6 – 12.9 y) ☐ Adolescent (13 – 19.9 y) ☐ Indeterminate Juvenile

NON-METRIC DENTAL AGE ASSESSMENT

Permanent teeth encircle line drawings of the deciduous dentition. See manual for tooth guide.

Dentition ☐ No Dentition

Maxilla (Labial)

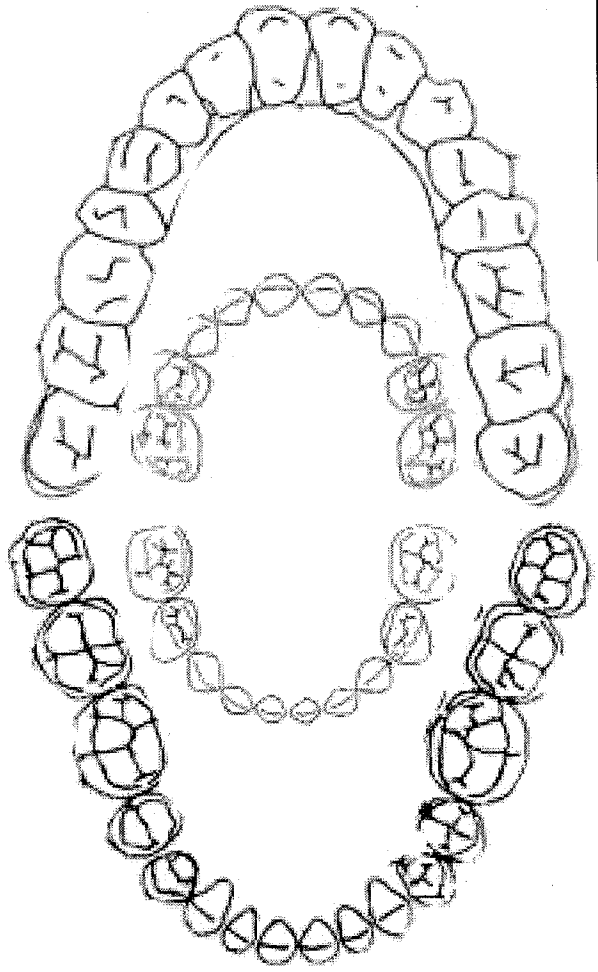


Illustration Key:
● Articulated Tooth
○ Loose Tooth
X Missing Tooth

Right **Left**

Mandible (Labial)

Moorres Tooth Formation and Resorption Assessments (1963a,b)

Deciduous tooth formation stages (Moorrees et al. 1963a)

Deciduous **mandibular tooth**	Formation Stage Code (Use Table in Manual)		Not Scored*	Estimated Age (Use tables in Manual)		Not Scored*
	Left	Right		Left	Right	
Canine						
1st Molar						
2nd Molar						

*Indicate reason tooth not assessed by checking the appropriate boxes below.
Unable to make assessments due to: ☐Missing Tooth/Teeth ☐Fragmented Tooth/Teeth
☐ Tooth/Teeth articulated with alveolar bone.
Comments: _____

Deciduous tooth resorption stages, if applicable (Moorrees et al. 1963a)

Deciduous **mandibular tooth**	Formation Stage Code (Use Table in Manual)		Not scored*	Estimated Age (Use table in Manual)		Not scored*
	Left	Right		Left	Right	
Canine						
1st Molar - mesial root						
1st Molar – distal root						
2nd Molar – mesial root						
2nd Molar – distal root						

*Indicate reason tooth not assessed by checking the appropriate boxes below.
Unable to make assessments due to: ☐Missing Tooth/Teeth ☐Fragmented Tooth/Teeth
☐ Tooth/Teeth articulated with alveolar bone.
Comments: _____

Permanent Tooth formation stages (Moorrees et al. 1963b)

Permanent Tooth	Formation Stage Code (Use Table in Manual)		Mean Age (Use tables in Manual)	
	Left	Right	Left	Right
1st Incisor (Maxilla)				
2nd Incisor (Maxilla)				
1st Incisor (Mandible)				
2nd Incisor (Mandible)				
Canine (Mandible)				
1st Premolar (Mandible)				
2nd Premolar (Mandible)				
1st Molar (Mandible)				
2nd Molar (Mandible)				
3rd Molar (Mandible)				

*Indicate reason tooth not assessed by checking the appropriate boxes below.
Unable to make assessments due to: ☐Missing Tooth/Teeth ☐Fragmented Tooth/Teeth
☐ Tooth/Teeth articulated with alveolar bone.
Comments: _____

Formation and eruption sequence following Ubelaker (1989)

Instructions: Estimate the age of your subject lot by finding the image within the MANUAL that best matches your individual's dentition. Indicate the age estimation in the fields below:

Estimated Age: 5y + 16 mo years Estimated Age Range: 3y 8mo - 6y 4mo years

Unable to make assessment due to:

☐Missing ☐Fragmentation ☐Other:_____

Comments: _____

Non-metric Dental Age Assessment, Combined Results

1) Age Range:

The final estimated age range is the youngest mean age or the youngest age of a given range and the oldest mean age or the oldest age of a given age range derived from any of the non-metric dental age assessment methods above. Indicate this data in the fields below and in the summary section on page one of your form.

Age range: 3y 8mo - 6y 4 mo years.

3.667 6.333

2) *Mean Age.* Calculate the average of the oldest and youngest mean age scores or provide a single mean score from above when only one exists.

Mean Age: 5 years

3) *Age Category.* Select the age category (below) into which the value you generate following step 2) fits. Select the same category in the summary section on page one of your form.

☒ Early Childhood (2.5 – 5.9 years)
☐ Late Childhood (6 – 12.9 years)
☐ Adolescent (13 – 19.9 years)
☐ Indeterminate

Lot: _____ Date: _____

OSTEOMETRIC AGE ASSESSMENT

Measure the maximum length of complete limbbones following Maersh (1970)

Element	*Left (mm)*	*Epiphysis included?*	*Age:*	*NM**	*Right (mm)*	*Epiphysis included?*	*Age:*	*NM**
Humerus	191.51	N	6Y		187.63	N	5.5Y	
Radius								
Ulna								
Femur								
Tibia								
Fibula								

**NM indicates Not measured. Place a '✓' in the far right columns of tables to indicate any measurements you were unable to collect. If you need more writing space, please use the comments section below*

Estimated Age, Combined osteometric

1) The final estimated age range is the youngest mean age or the youngest age of a given range and the oldest mean age or the oldest age of a given age range derived from the osteometric assessments above. Indicate this data in the fields below and in the summary section on page one of your form.
   Age range: 5.5 - 10 Unit: fetal weeks/postnatal months/postnatal year (circle).

2) Calculate the mean of the ages you provided in the age range (above) or provide a single mean age when only one exists.
   Mean Age: 5.75 Unit: fetal weeks/postnatal months/postnatal year (circle one).

3) *Age Category.* Select the age category (below) into which the value you generate following step 2) fits. Select the same category in the summary section on page one of your form.

   - ☒ Early Childhood (2.5 – 5.9 years)
   - ☐ Late Childhood (6 – 12.9 years)
   - ☐ Adolescent (13 – 19.9 years)
   - ☐ Indeterminate Juvenile

Juvenile Age Assessment Part I – FUSION Childhood - Adolescence German Evangelical Lutheran Cemetery (Stolz Site) BOZ0048/ CU583/Collection's Location: UWM–ARL	**Burial No.** 5
Observer Name: A.M.J. + J.I.B.	Date Started: 10/9/14 Date Completed: 10/9/14
SUMMARY: ☒ Late Childhood (6-12.9 years) ☐ Adolescent (13-19.9 years) ☐ Young Adult (≥ 20 years) ☐ Indeterminate	

FUSION ASSESSMENT

Complete all boxes with the following codes: O = open, U = Fusion underway, or F = fusion complete, though not obliterated. Slash the box when feature is not observable and data cannot be recorded.

		Observation Code:	Union Begins	Fusion Complete
Humerus	Proximal	O	14	21
	Medial	O	13	18
	Distal	O	11	18
Radius	Proximal	O	12	18
	Distal	O	14	20
Ulna	Proximal	-	12	18
	Distal	-	15	20
Hand	Metacarpals & Phalanges	-	11	18
Femur	Head	-	14	19
	Greater Trochanter	-	14	19
	Lesser Trochanter	-	14	19
	Distal	-	14	20
Tibia	Proximal	-	14	20
	Distal	-	14	18
Fibula	Proximal	O	14	20
	Distal	-	14	20
Foot	Calcaneus	-	10	20
	Metacarpals & Phalanges	-	11	16
Scapula	Coracoid-Glenoid Complex*	-	11	18
	Acromion	-	14	20
	Inferior Angle	-	15	23
	Medial Border	-	15	23
Pelvis	Tri-radiate Complex**	-	10	18
	Anterior Inferior Iliac Spine	-	10	18
	Ischial Tuberosity	-	13	20
	Iliac Crest	-	14	22
Sacrum	Auricular Surface	-	15	21
	S1-S2 Bodies	-	14	25+
	S1-S2 Alae	-	11	27
	S2-S5 Bodies	-	12	28
	S2-S5 Alae	-	14	21
Vertebrae	Bodies	-	13	23
Ribs	Heads	-	17	22
Clavicle	Medial	-	12	29+
Manubrium	1st Costal Notch	-	18	25

Estimated Age based on Fusion

1) Indicate the estimated age range of your individual in the fields below after referring to the fusion table above. In the first field, indicate the youngest age associated with 'O' or 'U' fusion observations. In the second field, indicate the oldest age associated with 'F' fusion observations.

< - 13 years

2) Use the mean of the ages you provided for your estimated age range, to assign the individual to an age category below:

o Late Childhood (6-12.9 y)
o Adolescent (13 – 19.9 y)
o Young Adult (≥ 20 years)

Comments:

Juvenile Age Recording Form Part II Early Childhood - Adolescence German Evangelical Lutheran Cemetery (Stolz Site) BOZ0048/CU583/Collection's Location: UWM–ARL	Burial No. 5
Observer Name: A.M.J. + J.I.B. Date Started: 10/9/14 Date Completed: " "	

SUMMARY DATA:

Dental **Age Range:** ___ - ___ years **Category:** ☐ Early Childhood (2.5 – 5.9 y)
☐ Late Childhood (6 – 12.9 y) ☐ Adolescent (13 – 19.9 y) ☐ Indeterminate Juvenile

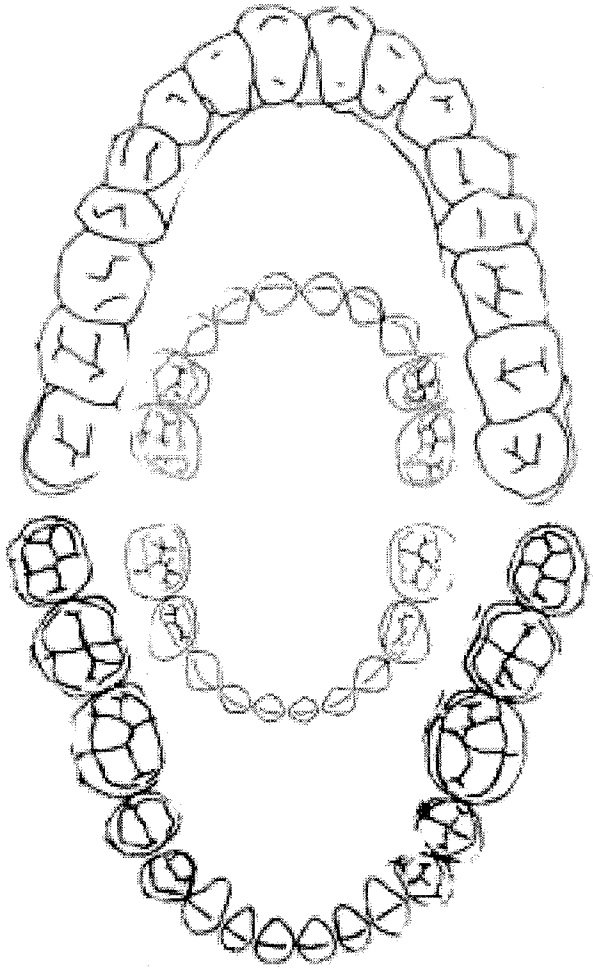
Osteometric **Age Range:** – - 2.5 years **Category:** ☒ Early Childhood (2.5 – 5.9 y)
☐ Late Childhood (6 – 12.9 y) ☐ Adolescent (13 – 19.9 y) ☐ Indeterminate Juvenile

NON-METRIC DENTAL AGE ASSESSMENT

Permanent teeth encircle line drawings of the deciduous dentition. See manual for tooth guide.

Dentition ☐ No Dentition

Maxilla (Labial)



Right **Left**

Mandible (Labial)

Moorres Tooth Formation and Resorption Assessments (1963a,b)

Deciduous tooth formation stages (Moorrees et al. 1963a)

Deciduous **mandibular tooth**	Formation Stage Code (Use Table in Manual)		Not Scored*	Estimated Age (Use tables in Manual)		Not Scored*
	Left	Right		Left	Right	
Canine						
1st Molar						
2nd Molar						

*Indicate reason tooth not assessed by checking the appropriate boxes below.
Unable to make assessments due to: ☐Missing Tooth/Teeth ☐Fragmented Tooth/Teeth
☐ Tooth/Teeth articulated with alveolar bone.
Comments: _____

Deciduous tooth resorption stages, if applicable (Moorrees et al. 1963a)

Deciduous **mandibular tooth**	Formation Stage Code (Use Table in Manual)		Not scored*	Estimated Age (Use table in Manual)		Not scored*
	Left	Right		Left	Right	
Canine						
1st Molar - mesial root						
1st Molar – distal root						
2nd Molar – mesial root						
2nd Molar – distal root						

*Indicate reason tooth not assessed by checking the appropriate boxes below.
Unable to make assessments due to: ☐Missing Tooth/Teeth ☐Fragmented Tooth/Teeth
☐ Tooth/Teeth articulated with alveolar bone.
Comments: _____

Permanent Tooth formation stages (Moorrees et al. 1963b)

Permanent Tooth	Formation Stage Code (Use Table in Manual)		Mean Age (Use tables in Manual)	
	Left	Right	Left	Right
1st Incisor (Maxilla)				
2nd Incisor (Maxilla)				
1st Incisor (Mandible)				
2nd Incisor (Mandible)				
Canine (Mandible)				
1st Premolar (Mandible)				
2nd Premolar (Mandible)				
1st Molar (Mandible)				
2nd Molar (Mandible)				
3rd Molar (Mandible)				

*Indicate reason tooth not assessed by checking the appropriate boxes below.
Unable to make assessments due to: ☐Missing Tooth/Teeth ☐Fragmented Tooth/Teeth
☐ Tooth/Teeth articulated with alveolar bone.
Comments: _____

Formation and eruption sequence following Ubelaker (1989)

Instructions: Estimate the age of your subject lot by finding the image within the MANUAL that best matches your individual's dentition. Indicate the age estimation in the fields below:

Estimated Age:_____years Estimated Age Range: _____-_____years

Unable to make assessment due to:

☐Missing ☐Fragmentation ☐Other:_____

Comments: _____

Non-metric Dental Age Assessment, Combined Results

1) Age Range:

   The final estimated age range is the youngest mean age or the youngest age of a given range and the oldest mean age or the oldest age of a given age range derived from any of the non-metric dental age assessment methods above. Indicate this data in the fields below and in the summary section on page one of your form.

   Age range: _____-_____ years.

2) *Mean Age.* Calculate the average of the oldest and youngest mean age scores or provide a single mean score from above when only one exists.

   Mean Age: _____ years

3) *Age Category.* Select the age category (below) into which the value you generate following step 2) fits. Select the same category in the summary section on page one of your form.

   ☐ Early Childhood (2.5 – 5.9 years)
   ☐ Late Childhood (6 – 12.9 years)
   ☐ Adolescent (13 – 19.9 years)
   ☐ Indeterminate

Lot: _____ Date: _____

OSTEOMETRIC AGE ASSESSMENT

Measure the maximum length of complete limbbones following Maersh (1970)

Element	*Left (mm)*	*Epiphysis included?*	*Age:*	*NM**	*Right (mm)*	*Epiphysis included?*	*Age:*	*NM**
Humerus	143.99	N	2.5 Y					
Radius					104.12	N	2.5 Y	
Ulna								
Femur								
Tibia								
Fibula								

**NM indicates Not measured. Place a '✓' in the far right columns of tables to indicate any measurements you were unable to collect. If you need more writing space, please use the comments section below*

Estimated Age, Combined osteometric

1) The final estimated age range is the youngest mean age or the youngest age of a given range and the oldest mean age or the oldest age of a given age range derived from the osteometric assessments above. Indicate this data in the fields below and in the summary section on page one of your form.
   Age range: __ - 2.5 __ Unit: fetal weeks/postnatal months/postnatal year (circle).

2) Calculate the mean of the ages you provided in the age range (above) or provide a single mean age when only one exists.
   Mean Age: _____Unit: fetal weeks/postnatal months/postnatal year (circle one).

3) *Age Category.* Select the age category (below) into which the value you generate following step 2) fits. Select the same category in the summary section on page one of your form.

   - [X] Early Childhood (2.5 – 5.9 years)
   - [ ] Late Childhood (6 – 12.9 years)
   - [ ] Adolescent (13 – 19.9 years)
   - [ ] Indeterminate Juvenile

Age, Sex, and Stature Recording Form – ADULT
German Evangelical Lutheran Cemetery (Stolz Site)
BOZ0048/CU583/Collection's Location: UWM –ARL&Curatorial Facility

Burial No. 60

Observer Name: A.M.J. + J.I.B. Date: 4/10/14

SUMMARY DATA: **Sex (non-metric):** ☐ Female ☐ Probable F emale ☐ Ind.Sex ☐ Probable Male ☒ Male
Sex (osteometric): ☐Female ☐ Ind.Sex ☒Male
Cat. Age: ☐Juvenile (<20 yrs) ☐Young Adult (20-35 yrs) ☒Mid. Adult (35-50 yrs) ☐Old Adult (50+ yrs) ☐Indeter. Adult
Age Range: 23 - ≤69 years **Max Femur Length:** 477 mm **Max Tibia Length:** 384 mm

Estimated Sex

Non-metric cranial and postcranial observations: Complete while following instructions listed in The Manual).

Pelvis	L	R	*Skull*	L	M	R
Ventral Arc (1-3 or -)	2	2	Nuchal Crest (1-5 or -)		3	
Subpubic Concavity (1-3 or -)	3	3	Mastoid Process (1-5 or -)	3		4
Ischiopubic Ramus Ridge (1-3 or -)	3	3	Supraorbital Margin (1-5 or -)	4		4
Greater Sciatic Notch (1-5 or -)	4	4	Glabella (1-5 or -)		5	
Preauricular Sulcus (0-4 or -)	4	4	Mental Eminence (1-5 or -)		4	

Estimated Sex, Pelvis (0-5): 4 *Estimated Sex, Skull (0-5):* 4

See p.p. 23-24 for instructions on estimating sex of the pelvis.
See p. 28 for instructions on estimating sex of Skull.
See p. 29 for instructions to derive Estimated Sex, Combined score based on non-metric observations.

Estimated Sex, Combined score based on non-metric observations (0-5): 5

Indicate the estimated (non-metric) sex in the summary section on the top of this page.
0-Indeterminate 1-female 2-probably female 3-ambiguous 4-probable male 5-male

Osteometric data:

Maximum length of Talus: _____ mm (Accuracy 80 % following Gentry-Steele (1978))
Side measured: ☐ Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☒ Unable to score left or right due to: absent
Estimated Sex: ☐ Female (Max length ≤ 51 mm)
☐ Male (Max length ≥ 52 mm)

Vertical diameter of the humeral head 49.72 mm (Accuracy of 73 – 82% (Spradley & Jantz 2011:294))
Side measured: ☐ Left ← Preferred standard
☒ Right. unable to score left due to: ☐absence ☒ fragmentation ☐ pathology
☐ Unable to score left or right due to: _____
Estimated Sex: ☐Female (<43 mm)
☐ Indeterminate (44 – 46 mm)
☒Male (>47 mm)

Maximum diameter of the femoral head 52.0 mm (Accuracy of 88% (Spradley & Jantz 2011:294))
Side measured: ☒Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐fragmentation ☐ pathology
☐Unable to score left or right due to: _____
Estimated Sex: ☐ Female (<42.5 mm) ☐ Indeterminate (43.5 – 46.5 mm) ☐Probable Male (46.5 – 47.5 mm)
☐ Probable female (42.5 – 43.5 mm) ☐Male (>47.5 mm)

Estimated Sex, Combined Osteometric: Combined estimated is sex is based on osteometric data recorded in dashed boxes above. Given incongruous results, consider the rank order of accuracy: 1) max diameter of femoral head, 2) Max length of talus, and 3) vertical diameter of humeral head. Indicate the estimated (metric) sex in the summary data area on the top of this page.

Estimated Sex: ☐Female ☐Indeterminate ☒Male

Estimated Age

Pubic Symphysis (Score left and right sides by indicate score in lines following 'L' and 'R' fields, respectively)

Suchey-Brooks (0-6) [Scores for ☐Female OR ☒Male]
L: 4 R: 4 Based on Stage table in, Average Age: 38.2 Range: 26-70
☐Check box if casts used. ☐Unable to score due to pelvis of indeterminate sex
☐Unable to score due to: _____

Todd (1-10) [use ONLY for illiae of indeterminate sex]
L:____ R:____ Based on Stage table in SOP, Average Age: _____ Range: _____
☐Unable to score due to: _____

Auricular Surface (Score left side only except* in cases where right side is absent, fragmented, pathological, etc.)
Stage: 3 Mean Age: 42 Range: ≤ 69
☐ *Scored Right side because left is: ☐ absent ☐fragmented ☐pathological ☐other:_____
☐Unable to score left or right because both are ☐absent ☐fragmented ☐ pathological ☐other:_____

*Cranial Suture Closure (Use left side when possible**)*
– = Unobservable 0 = Open 1 = Minimal Closure 2 = Significant Closure 3 = Complete Obliteration
For any region where *all* cranial sutures are unobservable, check the box next to region heading.

External Cranial Vault ☐ Unobservable

1. Midlambdoid	1
2. Lambda	2
3. Obelion	1
4. Anterior Sagittal	0
5. Bregma	0
6. Midcoronal	1
7. Pterion	1
8. Sphenofrontal	1
9. Inferior Sphenotemporal	0
10. Superior Sphenotemporal	1

Stage: 2 Avg: 34.7
Vault Composite Score
23-45

Stage: 3 Avg: 41.1
Lateral-anterior Composite Score
28-52

Palate ☒ Unobservable

11. Incisive	____
12. Anterior Median Palatine	____
13. Posterior Median Palatine	____
14. Transverse Palatine	____

Endocranial (Internal)
Vault ☒Unobservable

15. Sagittal	____
16. Left Lambdoid	____
17. Left Coronal	____

**Indicate sutures (by number) you scored on the right side when scoring left was not possible: 10
Indicate sutures (by number) you were unable to observe and why: 11-17 no maxillae + rest of cranium complete

Estimated Age, Combined: (indicate the estimated age category in the summary section on page 1 of this form).
Select the most appropriate age category based on all age data collected. *However, when pubic symphysis and cranial suture scores provide divergent age estimates, defer to the pubic symphysis age estimate.*
Estimated Age:
☐ Juvenile (<20 years) ☐ Young Adult (20-35 years) ☒ Middle Adult (35-50 years)
☐ Old Adult (50+ years) ☐ Indeterminate adult

Individual's estimated age is based on ...
☐ all cranial and pelvic data points.
☐ pubic symphysis; results conflicted with cranial suture scores.
☐ cranial suture and auricular surface scores due to missing pubic symphyses.
☐ only cranial suture scores due to missing pelvis.
☒ other: All pelvis, some cranial

Estimated Stature

When possible, measure the left side. In addition to recording your scores in millimeters in the appropriate fields below, record the measurements in the Summary Data section on page one of the ADULT AGE, SEX, AND STATURE RECORDING FORM.

Maximum length of the femur 477 mm
Side measured: ☒ Left ← Preferred standard
☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology
☐ Unable to score left or right due to:_____

Maximum length of the tibia 384 mm
Side measured: ☒ Left ← Preferred standard
☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology
☐ Unable to score left or right due to:_____

Comments Section:

Age, Sex, and Stature Recording Form – ADULT
German Evangelical Lutheran Cemetery (Stolz Site)
BOZ0048/CU583/Collection's Location: UWM –ARL&Curatorial Facility

Burial No. 7

Observer Name: A.M.J. + J.I.B. Date: 4/10/14

SUMMARY DATA: **Sex (non-metric):** ☐ Female ☐ Probable Female ☐ Ind.Sex ☐ Probable Male ☒ Male
Sex (osteometric): ☐Female ☐ Ind.Sex ☒Male
Cat. Age: ☐Juvenile (<20 yrs) ☐Young Adult (20-35 yrs) ☒Mid. Adult (35-50 yrs) ☐Old Adult (50+ yrs) ☐Indeter. Adult
Age Range: 25 - 83 years **Max Femur Length:** 480 mm **Max Tibia Length:** – mm

Estimated Sex

Non-metric cranial and postcranial observations: Complete while following instructions listed in The Manual).

Pelvis	L	R	*Skull*	L	M	R
Ventral Arc (1-3 or -)	–	–	Nuchal Crest (1-5 or -)		–	
Subpubic Concavity (1-3 or -)	3	–	Mastoid Process (1-5 or -)			
Ischiopubic Ramus Ridge (1-3 or -)	–	3	Supraorbital Margin (1-5 or -)			
Greater Sciatic Notch (1-5 or -)	4	3	Glabella (1-5 or -)		–	
Preauricular Sulcus (0-4 or -)	–	0	Mental Eminence (1-5 or -)		–	

Estimated Sex, Pelvis (0-5): 4 *Estimated Sex, Skull (0-5):* –

See p.p. 23-24 for instructions on estimating sex of the pelvis.
See p. 28 for instructions on estimating sex of Skull.
See p. 29 for instructions to derive Estimated Sex, Combined score based on non-metric observations.

Estimated Sex, Combined score based on non-metric observations (0-5): 5

Indicate the estimated (non-metric) sex in the summary section on the top of this page.
0-Indeterminate 1-female 2-probably female 3-ambiguous 4-probable male 5-male

Osteometric data:

Maximum length of Talus: _____ mm (Accuracy 80 % following Gentry-Steele (1978))
Side measured: ☐ Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☒ Unable to score left or right due to: absent
Estimated Sex: ☐ Female (Max length ≤ 51 mm)
☐ Male (Max length ≥ 52 mm)

Vertical diameter of the humeral head _____ mm (Accuracy of 73 – 82% (Spradley & Jantz 2011:294))
Side measured: ☐ Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☒ Unable to score left or right due to: absent
Estimated Sex: ☐Female (<43 mm)
☐ Indeterminate (44 – 46 mm)
☐Male (>47 mm)

Maximum diameter of the femoral head 52.3 mm (Accuracy of 88% (Spradley & Jantz 2011:294))
Side measured: ☐Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐fragmentation ☐ pathology
☐Unable to score left or right due to: _____
Estimated Sex: ☐ Female (<42.5 mm) ☐ Indeterminate (43.5 – 46.5 mm) ☐Probable Male (46.5 – 47.5 mm)
☐ Probable female (42.5 – 43.5 mm) ☒Male (>47.5 mm)

Estimated Sex, Combined Osteometric: Combined estimated is sex is based on osteometric data recorded in dashed boxes above. Given incongruous results, consider the rank order of accuracy: 1) max diameter of femoral head, 2) Max length of talus, and 3) vertical diameter of humeral head. Indicate the estimated (metric) sex in the summary data area on the top of this page.

Estimated Sex: ☐Female ☐Indeterminate ☒Male

Estimated Age

Pubic Symphysis (Score left and right sides by indicate score in lines following 'L' and 'R' fields, respectively)

Suchey-Brooks (0-6) [Scores for ☐Female OR ☒Male]
L:- R:5 Based on Stage table in, Average Age: 48.1 Range: 25-83
☒Check box if casts used. ☐Unable to score due to pelvis of indeterminate sex
☐Unable to score due to: _____

Todd (1-10) [use ONLY for illiae of indeterminate sex]
L:____ R:____ Based on Stage table in SOP, Average Age: _____ Range: _____
☒Unable to score due to: _____

Auricular Surface (Score left side only except* in cases where right side is absent, fragmented, pathological, etc.)
Stage: _____ Mean Age:_____ Range:_____
☐ *Scored Right side because left is: ☐ absent ☐fragmented ☐pathological ☐other:_____
☒Unable to score left or right because both are ☐absent ☐fragmented ☒pathological ☐other:_____

*Cranial Suture Closure (Use left side when possible**)*
– = Unobservable 0 = Open 1 = Minimal Closure 2 = Significant Closure 3 = Complete Obliteration
For any region where *all* cranial sutures are unobservable, check the box next to region heading.

External Cranial Vault ☒ Unobservable
1. Midlambdoid ____
2. Lambda ____
3. Obelion ____
4. Anterior Sagittal ____
5. Bregma ____
6. Midcoronal ____
7. Pterion ____
8. Sphenofrontal ____
9. Inferior Sphenotemporal ____
10. Superior Sphenotemporal ____

Stage: Avg:
Vault Composite Score

Stage: Avg:
Lateral-anterior Composite Score

Palate ☒ Unobservable
11. Incisive ____
12. Anterior Median Palatine ____
13. Posterior Median Palatine ____
14. Transverse Palatine ____

Endocranial (Internal)
Vault ☒Unobservable
15. Sagittal ____
16. Left Lambdoid ____
17. Left Coronal ____

**Indicate sutures (by number) you scored on the right side when scoring left was not possible: _____
Indicate sutures (by number) you were unable to observe and why: absent

Estimated Age, Combined: (indicate the estimated age category in the summary section on page 1 of this form).
Select the most appropriate age category based on all age data collected. *However, when pubic symphysis and cranial suture scores provide divergent age estimates, defer to the pubic symphysis age estimate.*
Estimated Age:
☐ Juvenile (<20 years) ☐ Young Adult (20-35 years) ☒Middle Adult (35-50 years)
☐ Old Adult (50+ years) ☐ Indeterminate adult

Individual's estimated age is based on ...
☐ all cranial and pelvic data points.
☐ pubic symphysis; results conflicted with cranial suture scores.
☐ cranial suture and auricular surface scores due to missing pubic symphyses.
☐ only cranial suture scores due to missing pelvis.
☒ other: pubic symphyses + aricular surface

Estimated Stature

When possible, measure the left side. In addition to recording your scores in millimeters in the appropriate fields below, record the measurements in the Summary Data section on page one of the ADULT AGE, SEX, AND STATURE RECORDING FORM.

Maximum length of the femur 480 mm

Side measured: ☐ Left ← Preferred standard

☒ Right. unable to score left due to: ☒ absence ☐ fragmentation ☐ pathology

☐ Unable to score left or right due to: _____

Maximum length of the tibia _____ mm

Side measured: ☐ Left ← Preferred standard

☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology

☒ Unable to score left or right due to: absent

Comments Section:

Age, Sex, and Stature Recording Form – ADULT
German Evangelical Lutheran Cemetery (Stolz Site)
BOZ0048/CU583/Collection's Location: UWM –ARL&Curatorial Facility

Burial No. B

Observer Name: A.M.J. + J.I.B. Date: 4/10/14

SUMMARY DATA: **Sex (non-metric):** ☐ Female ☐ Probable Female ☐ Ind.Sex ☐ Probable Male ☒ Male
Sex (osteometric): ☒Female ☐ Ind.Sex ☐Male
Cat. Age: ☐Juvenile (<20 yrs) ☐Young Adult (20-35 yrs) ☒Mid. Adult (35-50 yrs) ☐Old Adult (50+ yrs) ☐Indeter. Adult
Age Range: 20 - 75 years **Max Femur Length:** NA mm **Max Tibia Length:** 350 mm

Estimated Sex

Non-metric cranial and postcranial observations: Complete while following instructions listed in The Manual).

Pelvis	L	R	*Skull*	L	M	R
Ventral Arc (1-3 or -)	-	-	Nuchal Crest (1-5 or -_)			
Subpubic Concavity (1-3 or -)	-	-	Mastoid Process (1-5 or -)			
Ischiopubic Ramus Ridge (1-3 or -)	-	-	Supraorbital Margin (1-5 or -)			
Greater Sciatic Notch (1-5 or -)	4	-	Glabella (1-5 or -)			
Preauricular Sulcus (0-4 or -)	0	-	Mental Eminence (1-5 or -)			

Estimated Sex, Pelvis (0-5): 5 *Estimated Sex, Skull (0-5):* 0

See p.p. 23-24 for instructions on estimating sex of the pelvis.
See p. 28 for instructions on estimating sex of Skull.
See p. 29 for instructions to derive Estimated Sex, Combined score based on non-metric observations.

Estimated Sex, Combined score based on non-metric observations (0-5): 5

Indicate the estimated (non-metric) sex in the summary section on the top of this page.
0-Indeterminate 1-female 2-probably female 3-ambiguous 4-probable male 5-male

Osteometric data:

Maximum length of Talus: _____mm (Accuracy 80 % following Gentry-Steele (1978))
Side measured: ☐ Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☒ Unable to score left or right due to: absent
Estimated Sex: ☐ Female (Max length ≤ 51 mm)
☐ Male (Max length ≥ 52 mm)

Vertical diameter of the humeral head 41.83 mm (Accuracy of 73 – 82% (Spradley & Jantz 2011:294))
Side measured: ☒ Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐ fragmentation ☐ pathology
☐ Unable to score left or right due to: _____
Estimated Sex: ☒Female (<43 mm)
☐ Indeterminate (44 – 46 mm)
☐Male (>47 mm)

Maximum diameter of the femoral head _____ mm (Accuracy of 88% (Spradley & Jantz 2011:294))
Side measured: ☐Left ← Preferred standard
☐ Right. unable to score left due to: ☐absence ☐fragmentation ☐ pathology
☒Unable to score left or right due to: absent
Estimated Sex: ☐ Female (<42.5 mm) ☐ Indeterminate (43.5 – 46.5 mm) ☐Probable Male (46.5 – 47.5 mm)
☐ Probable female (42.5 – 43.5 mm) ☐Male (>47.5 mm)

Estimated Sex, Combined Osteometric: Combined estimated is sex is based on osteometric data recorded in dashed boxes above. Given incongruous results, consider the rank order of accuracy: 1) max diameter of femoral head, 2) Max length of talus, and 3) vertical diameter of humeral head. Indicate the estimated (metric) sex in the summary data area on the top of this page.

Estimated Sex: ☒Female ☐Indeterminate ☐ Male

Estimated Age

Pubic Symphysis (Score left and right sides by indicate score in lines following 'L' and 'R' fields, respectively)

Suchey-Brooks (0-6) [Scores for ☐Female OR ☐Male]
L:____ R:____ Based on Stage table in, Average Age: _____ Range: _____
☐Check box if casts used. ☐Unable to score due to pelvis of indeterminate sex
☒Unable to score due to: absent

Todd (1-10) [use ONLY for illiae of indeterminate sex]
L:____ R:____ Based on Stage table in SOP, Average Age: _____ Range: _____
☐Unable to score due to: _____

Auricular Surface (Score left side only except* in cases where right side is absent, fragmented, pathological, etc.)
Stage: 4 Mean Age: 47.8 Range: 20-75
☐ *Scored Right side because left is: ☐ absent ☐fragmented ☐pathological ☐other:_____
☐Unable to score left or right because both are ☐absent ☐fragmented ☐ pathological ☐other:_____

*Cranial Suture Closure (Use left side when possible**)*
– = Unobservable 0 = Open 1 = Minimal Closure 2 = Significant Closure 3 = Complete Obliteration
For any region where *all* cranial sutures are unobservable, check the box next to region heading.

External Cranial Vault ☒ Unobservable
1. Midlambdoid ____
2. Lambda ____
3. Obelion ____
4. Anterior Sagittal ____
5. Bregma ____
6. Midcoronal ____
7. Pterion ____
8. Sphenofrontal ____
9. Inferior Sphenotemporal ____
10. Superior Sphenotemporal ____

Stage: Avg:
Vault Composite Score

Stage: Avg:
Lateral-anterior Composite Score

Palate ☒ Unobservable
11. Incisive ____
12. Anterior Median Palatine ____
13. Posterior Median Palatine ____
14. Transverse Palatine ____

Endocranial (Internal)
Vault ☒Unobservable
15. Sagittal ____
16. Left Lambdoid ____
17. Left Coronal ____

**Indicate sutures (by number) you scored on the right side when scoring left was not possible: _____
Indicate sutures (by number) you were unable to observe and why: all absent

Estimated Age, Combined: (indicate the estimated age category in the summary section on page 1 of this form).
Select the most appropriate age category based on all age data collected. *However, when pubic symphysis and cranial suture scores provide divergent age estimates, defer to the pubic symphysis age estimate.*
Estimated Age:
☐ Juvenile (<20 years) ☐ Young Adult (20-35 years) ☒ Middle Adult (35-50 years)
☐ Old Adult (50+ years) ☐ Indeterminate adult

Individual's estimated age is based on ...
☐ all cranial and pelvic data points.
☐ pubic symphysis; results conflicted with cranial suture scores.
☐ cranial suture and auricular surface scores due to missing pubic symphyses.
☐ only cranial suture scores due to missing pelvis.
☒ other: auricular surface

Estimated Stature

When possible, measure the left side. In addition to recording your scores in millimeters in the appropriate fields below, record the measurements in the Summary Data section on page one of the ADULT AGE, SEX, AND STATURE RECORDING FORM.

Maximum length of the femur _____ mm

Side measured: ☐ Left ← Preferred standard

☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology

☒ Unable to score left or right due to: absent

Maximum length of the tibia 350 mm

Side measured: ☒ Left ← Preferred standard

☐ Right. unable to score left due to: ☐ absence ☐ fragmentation ☐ pathology

☐ Unable to score left or right due to: _____

Comments Section:

Juvenile Age Assessment Part I – FUSION Prenatal to Childhood German Evangelical Lutheran Cemetery (Stolz Site) BOZ0048/CU583/Collection's Location: UWM–ARL	**Burial No.** 9
Observer Name: A.M.J. + J.I.B.	Date Started: 10/9/14 Date Completed: 10/9/14

SUMMARY AGE Category:
☒ Prenatal (Prenatal – 2.49 y) ☐ Early Childhood (2.5 – 5.9 y) ☐ Late Childhood (6-12.9 y) ☐ Indeterminate
AGE RANGE: < fw / pn m/ pn y *to* 9fm - 2 fw / pn m/ pn y ☐ Indeterminate
* 'fw' fetal weeks; 'pn m' postnatal months; 'pn y' postnatal years.

FUSION OF OSSIFICATION CENTERS

Use the Manual when completing this form. Record fusion data using the following codes: O = open, U = Fusion underway, or F = fusion complete, though not obliterated. Slash the box when the feature is not observable.

Element	Primary Elements	Observation Code:	Fusion Complete
Sphenoid	Lesser Wings to Sphenoid Body	-	5 fm
	Pre Sphenoid to Post Sphenoid Body	-	8 fm
	Greater Wings to Sphenoid Body	-	1 y
	Foramen Ovale (Greater Wing)	-	1 y
Temporal	Tympanic Ring to Temporal Squamous	-	35 fw
	Petromastoid to Squamotympanic	-	1 y
Occipital	Supra-occipital to Interparietal Squama	-	5 fm
	Superior Median Fissure	-	1 y
	Sutura Mendosa	-	1 y
	Partes Laterales to Squama	-	1 – 3 y
	Hypoglossal Canal (Pars Laterales)	-	2 – 4 y
	Partes Laterales to Pars Basilaris	-	5 – 7 y
Mandible	Mandibular Symphysis	-	1 y
	Coronoid to main mass	-	By 8 f wks
Frontal	Fusion of L and R frontals	-	9 fm - 2 y
	Metopic Suture obliterated (generally)	O	2 – 4 y
Vertebrae	C1 – R & L Posterior arches (to one another)	O	4 – 5 y
	C1- Anterior arch to anterior bars	-	5 – 6 y
	C2- Intradental union (becomes Dens)	-	Full term
	C2- R & L Neural Arches (to one another)	-	3 – 4 y
	C2- Dens to Neural Arch	-	3 – 4 y
	C2- Centrum to Neural Arch	-	4 – 6 y
	C2- Ossiculum Terminale of dens	-	12 y
	C3-L5 Neural Arches (to one another)	-	1 – 2 y
	C3-L5 Neural Arches to Centra	-	2 – 5 y
Sacrum (S1 and S2)	Lateral Elements to Neural Arches → 'Wings'	-	2 – 5 y
	Wings to Centra	-	2 – 6 y
Os coxa	Ischiopubic ramus	-	5 – 11 y
Humerus	Greater and Lesser Tubercles to Head	-	2 – 6 y

*'f m' indicates 'fetal month'; 'f wks' indicates 'fetal weeks'; 'm' indicates post natal months; and 'y' indicates postnatal years.

Estimated Age

Step 1) Age Range.

Indicate the estimated age range of your individual in the fields below after referring to the fusion table above. In the first field, indicate the youngest age associated with 'O' or 'U' fusion observations. In the second field, indicate the oldest age associated with 'F' fusion observations.

2 fetal weeks / postnatal months / postnatal years (circle unit)

to

9fm-2Y fetal weeks / postnatal months / postnatal years (circle unit)

* Remember to indicate the age range in the summary section on the top of page 1 of this form.

☐ Indeterminate; i.e. no evidence to allow you to assign the individual to an age category. Procede to step 3.

Step 2) If you were able to provide an age range in step 1, skip this step and procede to step 3.
If you selected 'indeterminate' in step 1 but your individual includes other evidence to allow you to assign the individual to an age category, indicate the information and the estimated age below. (e.g. petros portion compares favorably to individual 20 fetal weeks old). Then, use this information to select a categorical age in step 3.

Step 3) Age Category:

If you provided an age range in step 1, calculate the mean from of the ages and use the value to select an age category below.
Alternatively, if you arrived at step 3 following the directions in step 2, to proceed to assign your individual to an age category below based on the data you provided in step 2.

- Prenatal – 2.5 years (Prenatal – 2.49 years)
- Early Childhood (2.5 – 5 years)
- Late Childhood (6 – 12 years)
- Indeterminate; i.e. no evidence to allow you to assign the individual to an age category.

Comments:

No visible fusion of any markers.
Gave range of youngest open suture.

JUVENILE AGE ASSESSMENT PART II form: NA

☐ Prenatal – 2.5 years (LMP – 2.5 years)
☐ Early Childhood (2.5 – 5 years)
☐ Late Childhood (6 – 12 years)
☐ Indeterminate; i.e. no evidence to allow you to assign the individual to an age category.

Juvenile Age Assessment Part I – FUSION Prenatal to Childhood German Evangelical Lutheran Cemetery (Stolz Site) BOZ0048/CU583/Collection's Location: UWM–ARL	**Burial No.** 10

Observer Name: A.M.J. + J.L.B Date Started: 10/9/14 Date Completed: 10/9/14

SUMMARY AGE Category:

☒ Prenatal (Prenatal – 2.49 y) ☐ Early Childhood (2.5 – 5.9 y) ☐ Late Childhood (6-12.9 y) ☐ Indeterminate

AGE RANGE: < fw / pn m/ pn y *to* 9 fm - 2 fw / pn m/ pn y ☐ Indeterminate

* 'fw' fetal weeks; 'pn m' postnatal months; 'pn y' postnatal years.

FUSION OF OSSIFICATION CENTERS

Use the Manual when completing this form. Record fusion data using the following codes: O = open, U = Fusion underway, or F = fusion complete, though not obliterated. Slash the box when the feature is not observable.

Element	Primary Elements	Observation Code:	Fusion Complete
Sphenoid	Lesser Wings to Sphenoid Body	–	5 fm
	Pre Sphenoid to Post Sphenoid Body	–	8 fm
	Greater Wings to Sphenoid Body	–	1 y
	Foramen Ovale (Greater Wing)	–	1 y
Temporal	Tympanic Ring to Temporal Squamous	–	35 fw
	Petromastoid to Squamotympanic	–	1 y
Occipital	Supra-occipital to Interparietal Squama	–	5 fm
	Superior Median Fissure	–	1 y
	Sutura Mendosa	–	1 y
	Partes Laterales to Squama	–	1 – 3 y
	Hypoglossal Canal (Pars Laterales)	–	2 – 4 y
	Partes Laterales to Pars Basilaris	–	5 – 7 y
Mandible	Mandibular Symphysis	–	1 y
	Coronoid to main mass	–	By 8 f wks
Frontal	Fusion of L and R frontals	O	9 fm - 2 y
	Metopic Suture obliterated (generally)	O	2 – 4 y
Vertebrae	C1 – R & L Posterior arches (to one another)	–	4 – 5 y
	C1- Anterior arch to anterior bars	–	5 – 6 y
	C2- Intradental union (becomes Dens)	–	Full term
	C2- R & L Neural Arches (to one another)	–	3 – 4 y
	C2- Dens to Neural Arch	–	3 – 4 y
	C2- Centrum to Neural Arch	–	4 – 6 y
	C2- Ossiculum Terminale of dens	–	12 y
	C3-L5 Neural Arches (to one another)	–	1 – 2 y
	C3-L5 Neural Arches to Centra	–	2 – 5 y
Sacrum (S1 and S2)	Lateral Elements to Neural Arches → 'Wings'	–	2 – 5 y
	Wings to Centra	–	2 – 6 y
Os coxa	Ischiopubic ramus	–	5 – 11 y
Humerus	Greater and Lesser Tubercles to Head	–	2 – 6 y

*'f m' indicates 'fetal month'; 'f wks' indicates 'fetal weeks'; 'm' indicates post natal months; and 'y' indicates postnatal years.

Estimated Age

Step 1) Age Range.

Indicate the estimated age range of your individual in the fields below after referring to the fusion table above. In the first field, indicate the youngest age associated with 'O' or 'U' fusion observations. In the second field, indicate the oldest age associated with 'F' fusion observations.

2 fetal weeks / postnatal months / postnatal years (circle unit)

to

9fm-2y fetal weeks / postnatal months / postnatal years (circle unit)

* Remember to indicate the age range in the summary section on the top of page 1 of this form.

☐ Indeterminate; i.e. no evidence to allow you to assign the individual to an age category. Procede to step 3.

Step 2) If you were able to provide an age range in step 1, skip this step and procede to step 3.
If you selected 'indeterminate' in step 1 but your individual includes other evidence to allow you to assign the individual to an age category, indicate the information and the estimated age below. (e.g. petros portion compares favorably to individual 20 fetal weeks old). Then, use this information to select a categorical age in step 3.

Step 3) Age Category:

If you provided an age range in step 1, calculate the mean from of the ages and use the value to select an age category below.
Alternatively, if you arrived at step 3 following the directions in step 2, to proceed to assign your individual to an age category below based on the data you provided in step 2.

- Prenatal – 2.5 years (Prenatal – 2.49 years)
- Early Childhood (2.5 – 5 years)
- Late Childhood (6 – 12 years)
- Indeterminate; i.e. no evidence to allow you to assign the individual to an age category.

Comments:

No visible fusion of any markers
Gave range of youngest open suture

JUVENILE AGE ASSESSMENT PART II form: NA

☐ Prenatal – 2.5 years (LMP – 2.5 years)
☐ Early Childhood (2.5 – 5 years)
☐ Late Childhood (6 – 12 years)
☐ Indeterminate; i.e. no evidence to allow you to assign the individual to an age category.