



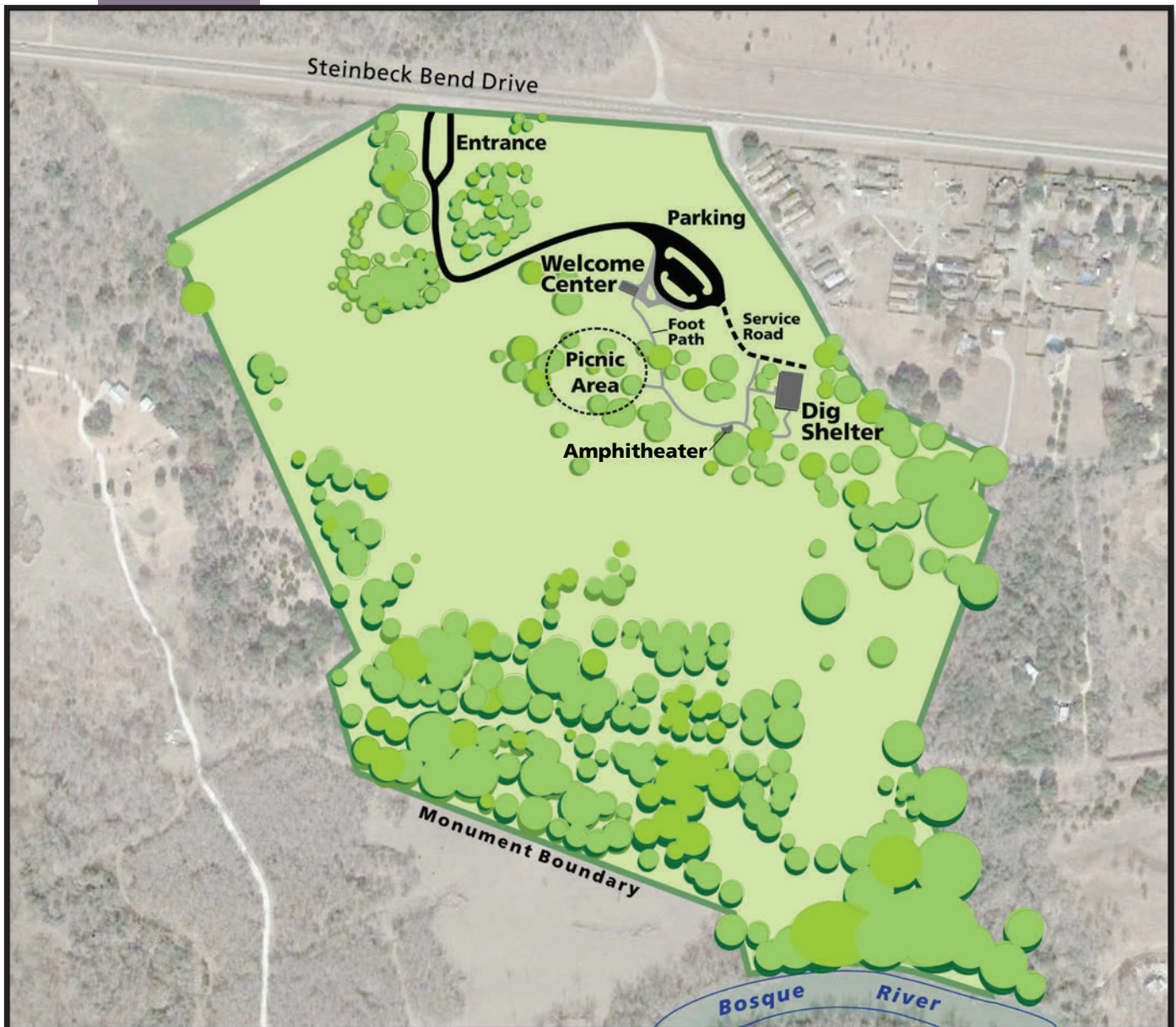
Foundation Document

Waco Mammoth National Monument

Texas

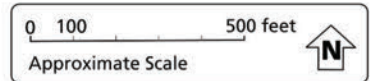
September 2016





Waco Mammoth National Monument

National Park Service
U.S. Department of the Interior



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Mission of the National Park Service

The National Park Service (NPS) preserves unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. The National Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

The NPS core values are a framework in which the National Park Service accomplishes its mission. They express the manner in which, both individually and collectively, the National Park Service pursues its mission. The NPS core values are:

- **Shared stewardship:** We share a commitment to resource stewardship with the global preservation community.
- **Excellence:** We strive continually to learn and improve so that we may achieve the highest ideals of public service.
- **Integrity:** We deal honestly and fairly with the public and one another.
- **Tradition:** We are proud of it; we learn from it; we are not bound by it.
- **Respect:** We embrace each other's differences so that we may enrich the well-being of everyone.

The National Park Service is a bureau within the Department of the Interior. While numerous national park system units were created prior to 1916, it was not until August 25, 1916, that President Woodrow Wilson signed the National Park Service Organic Act formally establishing the National Park Service.

The national park system continues to grow and comprises more than 400 park units covering more than 84 million acres in every state, the District of Columbia, American Samoa, Guam, Puerto Rico, and the Virgin Islands. These units include, but are not limited to, national parks, monuments, battlefields, military parks, historical parks, historic sites, lakeshores, seashores, recreation areas, scenic rivers and trails, and the White House. The variety and diversity of park units throughout the nation require a strong commitment to resource stewardship and management to ensure both the protection and enjoyment of these resources for future generations.



The arrowhead was authorized as the official National Park Service emblem by the Secretary of the Interior on July 20, 1951. The sequoia tree and bison represent vegetation and wildlife, the mountains and water represent scenic and recreational values, and the arrowhead represents historical and archeological values.

Introduction

Every unit of the national park system will have a foundational document to provide basic guidance for planning and management decisions—a foundation for planning and management. The core components of a foundation document include a brief description of the park as well as the park’s purpose, significance, fundamental resources and values, other important resources and values, and interpretive themes. The foundation document also includes special mandates and administrative commitments, an assessment of planning and data needs that identifies planning issues, planning products to be developed, and the associated studies and data required for park planning. Along with the core components, the assessment provides a focus for park planning activities and establishes a baseline from which planning documents are developed.

A primary benefit of developing a foundation document is the opportunity to integrate and coordinate all kinds and levels of planning from a single, shared understanding of what is most important about the park. The process of developing a foundation document begins with gathering and integrating information about the park. Next, this information is refined and focused to determine the most important attributes of the park. The process of preparing a foundation document aids park managers, staff, and the public in identifying and clearly stating in one document the essential information that is necessary for park management to consider when determining future planning efforts, outlining key planning issues, and protecting resources and values that are integral to park purpose and identity.

While not included in this document, a park atlas is also part of a foundation project. The atlas is a series of maps compiled from available geographic information system (GIS) data on natural and cultural resources, visitor use patterns, facilities, and other topics. It serves as a GIS-based support tool for planning and park operations. The atlas is published as a (hard copy) paper product and as geospatial data for use in a web mapping environment. The park atlas for Waco Mammoth National Monument can be accessed online at: <http://insideparkatlas.nps.gov/>.



Part 1: Core Components

The core components of a foundation document include a brief description of the park, park purpose, significance statements, fundamental resources and values, other important resources and values, and interpretive themes. These components are core because they typically do not change over time. Core components are expected to be used in future planning and management efforts.

Brief Description of the Site

Waco Mammoth National Monument was designated a unit of the national park system on July 10, 2015, an act that brought the National Park Service into partnership with the City of Waco, Texas, and Baylor University. The purpose of this partnership is to preserve and interpret the discovery site of an exceptionally well-preserved herd of Columbian mammoths and other Pleistocene-EPOCH animals. The site's designation as a national monument represents a culmination of nearly four decades of scientific research and community support.

The site is located within the city limits of Waco, Texas, near the confluence of the Brazos and Bosque Rivers. The first mammoth fossils at the site were found in 1978 by two Waco residents, Paul Barron and Eddie Bufkin, who noticed a bone protruding from the sidewall while hiking through a ravine (now within the monument). Scientists at the Strecker Museum at Baylor University examined the bone and identified it as an upper leg bone from a Columbian mammoth (*Mammuthus columbi*). Subsequent excavations led by Baylor University have identified no fewer than 24 Columbian mammoth individuals, including 19 members of a nursery herd (a herd consisting of female and young mammoths) which is thought to have perished in a catastrophic natural event more than 65,000 years ago.

Mammoths lived in North America during the Pleistocene epoch (more commonly known as the Ice Age) and are thought to have migrated across the Bering Land Bridge from northeastern Siberia approximately 1.7 million years ago. The Columbian mammoth evolved from these ancestral mammoths by the end of the middle Pleistocene, approximately 126,000 years ago. The Columbian mammoth ranged over much of North America, including most of today's contiguous United States and reached as far south as Costa Rica. Standing more than 14 feet tall and weighing up to 20,000 pounds, the Columbian mammoth was the largest of three known mammoth species of that epoch and were larger than modern-day elephants. The Columbian mammoth and all other mammoth species in North America became extinct approximately 10,000 years ago.

The site offers a unique opportunity to view and study both excavated and *in situ* (i.e., still in their original position within the bone bed) fossil specimens of Columbian mammoths and other extinct species. Excavated specimens and associated documentation are curated at Baylor University's Mayborn Museum (formerly the Strecker Museum). The *in situ* specimens at the discovery site are protected by a state-of-the-art dig shelter, constructed by the City of Waco with funding provided by the City of Waco, Baylor University, and the Waco Mammoth Foundation. Unlike most other fossil discoveries whose specimens have been distributed among many different museums, universities, and research facilities, the fossils discovered within the monument as well as the associated archival records are all located within the city limits of Waco, which will facilitate future scientific research.

The site consists of 108 acres within its authorized boundary, of which a 4.93-acre parcel around the discovery site is owned by the National Park Service. The remaining land is owned by the City of Waco. For the purposes of this document, the 4.93-acre parcel owned by the National Park Service is referred to as the "monument," and the entire 108 acres within the authorized boundary (including the monument) is referred to as "the site." The National Park Service will collaborate with the City of Waco, Baylor University, and the Waco Mammoth Foundation on the protection of the paleontological resources at both the site and the Mayborn Museum, the support of future scientific research, interpretation and the further development of visitor services, educational programs, and exhibits at the site. The site's location within the city limits of Waco allows for easy access to this unique scientific resource for schools, community groups, and residents of the large metropolitan areas to the north (Dallas and Fort Worth) and to the south (Austin and San Antonio).

Site Purpose

The purpose statement identifies the specific reason(s) for establishment of a particular NPS unit. The purpose statement for Waco Mammoth National Monument was drafted through a careful analysis of its enabling legislation and the legislative history that influenced its development. The monument was established by presidential proclamation on July 10, 2015 (see appendix A for presidential proclamation and previous legislation directing the study of the site as a potential NPS unit). The purpose statement lays the foundation for understanding what is most important about the monument.

The purpose of WACO MAMMOTH NATIONAL MONUMENT is to protect and conserve the remains of a nursery herd of Pleistocene Columbian mammoths and related resources of scientific importance and to inspire visitors, foster a learning environment, and support ongoing research. Building on the visionary support of the communities of central Texas, the site is managed through continued collaborative partnerships.



Site Significance

Significance statements express why a park unit's resources and values are important enough to merit designation as a unit of the national park system. These statements are linked to the purpose of Waco Mammoth National Monument, and are supported by data, research, and consensus. Statements of significance describe the distinctive nature of the site and why an area is important within a global, national, regional, and systemwide context. They focus on the most important resources and values that will assist in NPS unit planning and management.

The following significance statements have been identified for Waco Mammoth National Monument. (Please note that the sequence of the statements does not reflect the level of significance.)

1. The paleontological resources of Waco Mammoth National Monument, both *in situ* and excavated specimens, represent the nation's first and only recorded evidence of a nursery herd of Pleistocene Columbian mammoths. The arrangement of the fossils of adult female and juvenile mammoths provides an exceptional opportunity for the study and interpretation of the behavior and herd structure of this extinct species.
2. The nursery herd of Columbian mammoths discovered at the site is unique and scientifically notable, not only because of a large number of nearly intact mammoth specimens of different ages present, but also due to the indication that the herd perished in a single catastrophic natural event. The discovery of additional mammoth fossils at the site from different points in time suggests that they returned to this site repeatedly over many millennia.
3. Waco Mammoth National Monument maintains high paleontological integrity. The *in situ* specimens remain in their undisturbed geological context, and are sheltered by a state-of-the-art facility. The collected specimens were excavated and documented by Baylor University and have been placed under the curatorial care of a single nearby institution, Mayborn Museum at Baylor University. The larger site's undisturbed condition provides the potential for continuing scientific study.
4. The environment created by the confluence of the Bosque and Brazos Rivers provided food and water that repeatedly drew mammoths and other Pleistocene fauna to the site, including western camel, saber-toothed cat, dwarf antelope, American alligator, and giant tortoise. By studying faunal and floral remains, researchers are able to construct an important snapshot of the rich diversity of life that existed along the interface of the Great Plains and the Gulf Coastal Plains physiographic provinces during the late Pleistocene.
5. The site provides an exceptional opportunity to foster public understanding of the science of paleontology and the scientific method. Future scientific studies will continue to inform the interpretation of the site for the benefit of the scientific community as well as the visiting public.
6. The culmination of more than 30 years of community efforts and investments led to the 2015 designation of the site as a unit of the national park system. The site will continue to be collaboratively managed by the National Park Service, City of Waco, Baylor University, and the Waco Mammoth Foundation for the benefit of present and future generations.

Fundamental Resources and Values

Fundamental resources and values (FRVs) are those features, systems, processes, experiences, stories, scenes, sounds, smells, or other attributes determined to warrant primary consideration during planning and management processes because they are essential to achieving the purpose of the site and maintaining its significance. Fundamental resources and values are closely related to a NPS unit's legislative purpose and are more specific than significance statements.

Fundamental resources and values help focus planning and management efforts on what is truly significant about the site. One of the most important responsibilities of NPS managers is to ensure the conservation and public enjoyment of those qualities that are essential (fundamental) to achieving the purpose of the site and maintaining its significance. If fundamental resources and values are allowed to deteriorate, the site purpose and/or significance could be jeopardized.

The following fundamental resources and values have been identified for Waco Mammoth National Monument:

- Geologic Context of the Discovery Site** – Waco Mammoth National Monument sits within 108 acres of wooded parkland composed of oak, mesquite, and cedar trees along the Bosque River. The initial discovery locality has only been partially excavated and continues to provide the important geologic context for understanding the mammoths' lives and deaths in this area. Located on one of three terraces composed of different sediments, derived from the Bosque River and the Brazos River the site also documents the geological history of these river systems. Documenting the sequence of terrace deposits in the future may potentially reveal an earlier confluence position of the Brazos and Bosque Rivers, and provide important clues to comparing and contrasting environmental conditions between the Ice Age and modern day. Additionally, preservation of the site will provide protection to any future specimens which when excavated may be left *in situ* as well.
- In Situ Specimens (Known and Unknown)** – Protected at the site are six *in situ* Columbian mammoth specimens: an almost complete skeleton of an adult bull, parts of a juvenile, an almost complete female, two partial skeletons, and one mammoth known from only a single bone. In addition, there is an almost complete skeleton of the western camel (*Camelop hesternus*), a deciduous canine tooth from a juvenile saber-toothed cat (cf. *Smilodon*), and the remains of an unidentified animal. Erosion prior to the construction of the dig shelter exposed two floater bones, a toe bone, and a piece of tusk along the western edge of the excavation that may belong to another mammoth. During construction of the dig shelter, another mammoth was located approximately 10 feet below the ground surface under the northwest wall. The presence of yet-to-be-excavated mammoths and integrity of the entire site point to the potential for additional discoveries of Pleistocene fauna both inside and outside the dig shelter.
- Previously Removed Specimens and Associated Documentation** – Prior to construction of the dig shelter, many of the excavated specimens had to be removed in order to prevent damage due to fluctuating temperatures and humidity and stormwater runoff. The removed specimens include the remains of 18 articulated or semi-articulated Columbian mammoths, the skull of a western camel (*Camelops hesternus*), two molars of a dwarf antelope (cf. *Capromeryx*), and a giant land tortoise (species not yet identified). The majority of the mammoths were removed in 1990 from the area immediately south of the dig shelter. An additional female was removed in 2001. Parts of the juvenile bull's tusks were removed as part of molding and casting efforts in the mid-1990s. These specimens are still the property of Baylor University and are housed within the Mayborn Museum. The archival records include slides and photographs of the excavation efforts, field notes and maps, stratigraphic cross-sections, research files, correspondence, grant proposals, and other records pertaining to the site.

- **Access to the Site and Its Stories** – The site provides visitors a variety of educational and recreational opportunities that foster invaluable connections to this place and its stories. The monument provides popular and intimate guided tours of the dig shelter and the *in situ* specimens, targeted educational programs for school and other groups, and the ability to explore the trails and enjoy the picnic area. These educational and interpretive experiences are enhanced by the past and ongoing scientific research at the site, which helps paint a robust picture of life in this region 65,000 years ago.
- **Past, Ongoing, and Future Scientific Research** – Scientific research has played a vital role in understanding and protecting the site’s resources, and establishing Waco Mammoth National Monument as a unit of the national park system. Scientists from Baylor University and many other institutions have studied and continue to study a variety of topics at the site. Fostering and facilitating continued scientific research bolsters the ability to understand, interpret, and protect the resources of the site.
- **Collaborative Partnerships** – The site is managed through a collaborative partnership between the National Park Service, City of Waco, and Baylor University, with the support of the Waco Mammoth Foundation, and local community members. Specified as a requirement for the establishment of Waco Mammoth National Monument by Presidential Proclamation 9299, this collaboration ensures the ongoing preservation of the site’s resources and provides for an outstanding visitor experience. Each partner, based upon expertise and capacity, has a specific responsibility for the site. Without this vital division of responsibility, the national monument could not meet its mission.



Other Important Resources and Values

Waco Mammoth National Monument contains other resources and values that are not fundamental to the purpose of the site and may be unrelated to its significance, but are important to consider in planning processes. These are referred to as “other important resources and values” (OIRV). These resources and values have been selected because they are important in the operation and management of the site and warrant special consideration in site planning.

The following other important resources and values have been identified for Waco Mammoth National Monument:

- **Dig Shelter** – The partially excavated *in situ* specimens at the site have been protected in recent years by a state-of-the-art, climate-controlled dig shelter. This dig shelter allows for both public viewing via an elevated walkway over the specimens and further scientific study.



Interpretive Themes

Interpretive themes are often described as the key stories or concepts that visitors should understand after visiting a site—they define the most important ideas or concepts communicated to visitors about a park unit. Themes are derived from, and should reflect, site purpose, significance, resources, and values. The set of interpretive themes is complete when it provides the structure necessary for site staff to develop opportunities for visitors to explore and relate to all site significance statements and fundamental and other important resources and values.

Interpretive themes are an organizational tool that reveal and clarify meaning, concepts, contexts, and values represented by site resources. Sound themes are accurate and reflect current scholarship and science. They encourage exploration of the context in which events or natural processes occurred and the effects of those events and processes. Interpretive themes go beyond a mere description of the event or process to foster multiple opportunities to experience and consider the site and its resources. These themes help explain why a site story is relevant to people who may otherwise be unaware of connections they have to an event, time, or place associated with the site.

The following interpretive themes have been identified for Waco Mammoth National Monument:

- Waco Mammoth National Monument’s paleontological resources, and the potential for more discoveries, inspire us to explore, appreciate, and ponder the mystery and diversity of life on Earth.
- The group dynamics of Waco Mammoth National Monument’s nursery herd, dying together in a natural event, provoke exploration of familial and community bonds in times of crisis.
- Building on the visionary support and perseverance of central Texas communities, Waco Mammoth National Monument is the embodiment of successful advocacy and collaboration to preserve and share America’s heritage.



Part 2: Dynamic Components

The dynamic components of a foundation document include special mandates and administrative commitments and an assessment of planning and data needs. These components are dynamic because they will change over time. New special mandates can be established and new administrative commitments made. As conditions and trends of fundamental and other important resources and values change over time, the analysis of planning and data needs will need to be revisited and revised, along with key issues. Therefore, this part of the foundation document will be updated accordingly.

Special Mandates and Administrative Commitments

Many management decisions for an NPS unit are directed or influenced by special mandates and administrative commitments with other federal agencies, state and local governments, utility companies, partnering organizations, and other entities. Special mandates are requirements specific to a site that must be fulfilled. Mandates can be expressed in enabling legislation, in separate legislation following the establishment of the NPS unit, or through a judicial process. They may expand on site purpose or introduce elements unrelated to the purpose of the site. Administrative commitments are, in general, agreements that have been reached through formal, documented processes, often through memorandums of agreement. Examples include easements, rights-of-way, arrangements for emergency service responses, etc. Special mandates and administrative commitments can support, in many cases, a network of partnerships that help fulfill the objectives of the site and facilitate working relationships with other organizations. They are an essential component of managing and planning for Waco Mammoth National Monument.

For more information about the existing special mandates and administrative commitments for Waco Mammoth National Monument, please see appendix B.

Assessment of Planning and Data Needs

Once the core components of part 1 of the foundation document have been identified, it is important to gather and evaluate existing information about the site's fundamental and other important resources and values, and develop a full assessment of the site's planning and data needs. The assessment of planning and data needs section presents planning issues, the planning projects that will address these issues, and the associated information requirements for planning, such as resource inventories and data collection, including GIS data.

There are three sections in the assessment of planning and data needs:

1. analysis of fundamental and other important resources and values
2. identification of key issues and associated planning and data needs
3. identification of planning and data needs (including spatial mapping activities or GIS maps)

The analysis of fundamental and other important resources and values and identification of key issues leads up to and supports the identification of planning and data collection needs.

Analysis of Fundamental Resources and Values

The fundamental resource or value analysis table includes current conditions, potential threats and opportunities, planning and data needs, and selected laws and NPS policies related to management of the identified resource or value.

Fundamental Resource or Value	Geologic Context of the Discovery Site
Related Significance Statements	Significance statement 4.
Current Conditions and Trends	<p>Conditions</p> <ul style="list-style-type: none"> • The site consists of nearly 108 acres within the authorized boundary of the monument. • The National Park Service owns 4.93 acres surrounding and including the dig shelter plus deeded rights-of-way. To date, this area has yielded the vast majority of the fossils identified at the site. • The site is located on the second terrace above the Bosque River within partially excavated wooded ravine containing highly erodible silt/clay sediments and paleosols (fossil soils). It appears the sediments are 4–5 meters thick before encountering bedrock. There is currently some erosion in areas outside of the dig shelter, specifically along the creek. Heavy rains in spring 2016 have caused erosion of a hillside outside the dig shelter, exposing fossil remains. • The site is a freely drained environment without a high water table. • The site is unusual in that it is at the contact or border between two ecosystems represented on each side of the drainage. The three terraces present within the site are composed of different sediments derived from two different sources: the Bosque and Brazos Rivers. The Bosque River only drains black land prairie soils, which are clay rich and contain mostly calcareous alluvium exclusively from limestone source. In contrast, the Brazos River drains some black land prairie soils but mostly siliceous-based sediments containing quartzite and chert. • The site is mostly covered with vegetation (oak, mesquite, cedar, and other trees and grasses). • The Baylor University geology faculty is well-versed in site geology. <p>Trends</p> <ul style="list-style-type: none"> • Erosion continues to occur at the site, particularly along the creek and in drainage ditches. Periods of intense rainfall may result in additional bones being exposed. • Site development (roadway, parking areas, and trails) continues to impact natural drainage patterns and volume. • The site has seen large increases in visitation since its designation as a unit of the national park system.
Threats and Opportunities	<p>Threats</p> <ul style="list-style-type: none"> • Increased resource impacts as a result of the effects of increased visitation (i.e., social trails, trampling of vegetation, littering, vandalism, etc.). • Lack of local watershed management can leave resources increasingly vulnerable to detrimental erosion activities as site development continues. • Encroachment by development on adjacent lands could negatively affect the geologic context of the site. • Minimal staff monitoring of the land area within the authorized boundary, not including the parcel owned by the National Park Service. • Projected increased storm frequency/intensity may increase erosion. • Invasive species, such as feral hogs, may damage the vegetation and soils. Climate change may result in new plant communities, including an increase in invasive plants. <p>Opportunities</p> <ul style="list-style-type: none"> • Identify other areas on the site that possess the same strata as current fossil locations, in order to identify areas likely to contain additional fossil resources. • Recruit graduate students from Baylor University or elsewhere to survey the geology, vegetation, and other natural resources within the authorized boundary.

Fundamental Resource or Value	Geologic Context of the Discovery Site
Threats and Opportunities	<p>Opportunities (continued)</p> <ul style="list-style-type: none"> • Develop a formal, guided trail system to site attractions, key geologic features, and the Bosque River. • Ensure future design incorporates bioretention cells (rain gardens) or other features to minimize stormwater runoff and resulting erosion. • Conduct a geologic resources inventory scoping session to discern status of geologic mapping and significant geologic resource management issues related to the site's features, issues, and processes. Baylor University's geology department would like to conduct research as soon as permitting can be arranged.
Data and/or GIS Needs	<ul style="list-style-type: none"> • Digitize geologic map of the site and obtain more detailed geologic information. • Get/locate LiDAR fossil data from the dig shelter. • Conduct complete survey of 108 acres for factors such as slope, erodibility index, and hydrology to inform analysis of overall site drainage patterns. • Record GIS information for sites of concern related to sensitive fossil resources. • Collect refined GIS information for soils of site. • Collect GIS information for vegetation of site. • Prepare report to contrast geology and biota of the site area between Pleistocene era and modern day. • Track down geologic core data, as completed as part of a Master's thesis. • Perform ground penetrating radar scans, if deemed effective and appropriate, in areas of interest in order to identify fossil resources.
Planning Needs	<ul style="list-style-type: none"> • Development concept plan for site. • Natural resource management plan. • Integrated pest management plan.
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	<p>Laws, Executive Orders, and Regulations That Apply to the FRV</p> <ul style="list-style-type: none"> • Clean Water Act of 1972 • Clean Air Act (42 USC 7470(2)) • Endangered Species Act of 1973, as amended • National Environmental Policy Act • National Parks Omnibus Management Act of 1998 • Paleontological Resources Preservation Act of 2009 • Texas Natural Resources Code Chapter 191 • Texas Local Government Code Chapter 280.001 • "Parks, Forests, and Public Property" (36 CFR 36) • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and other Natural and Cultural Resources" <p>NPS Policy-level Guidance (NPS Management Policies 2006 and Director's Orders)</p> <ul style="list-style-type: none"> • NPS Management Policies 2006 (§4.6.1) "Protection of Surface Waters and Groundwaters" • NPS Management Policies 2006 (§4.6.2) "Water Rights" • NPS Management Policies 2006 (§4.6.4) "Floodplains" • NPS Management Policies 2006 (§9.5) "Dams and Reservoirs" • Director's Order 77: <i>Natural Resource Management</i> • Director's Order 77-1: <i>Wetland Protection</i> • NPS Natural Resource Management Reference Manual 77



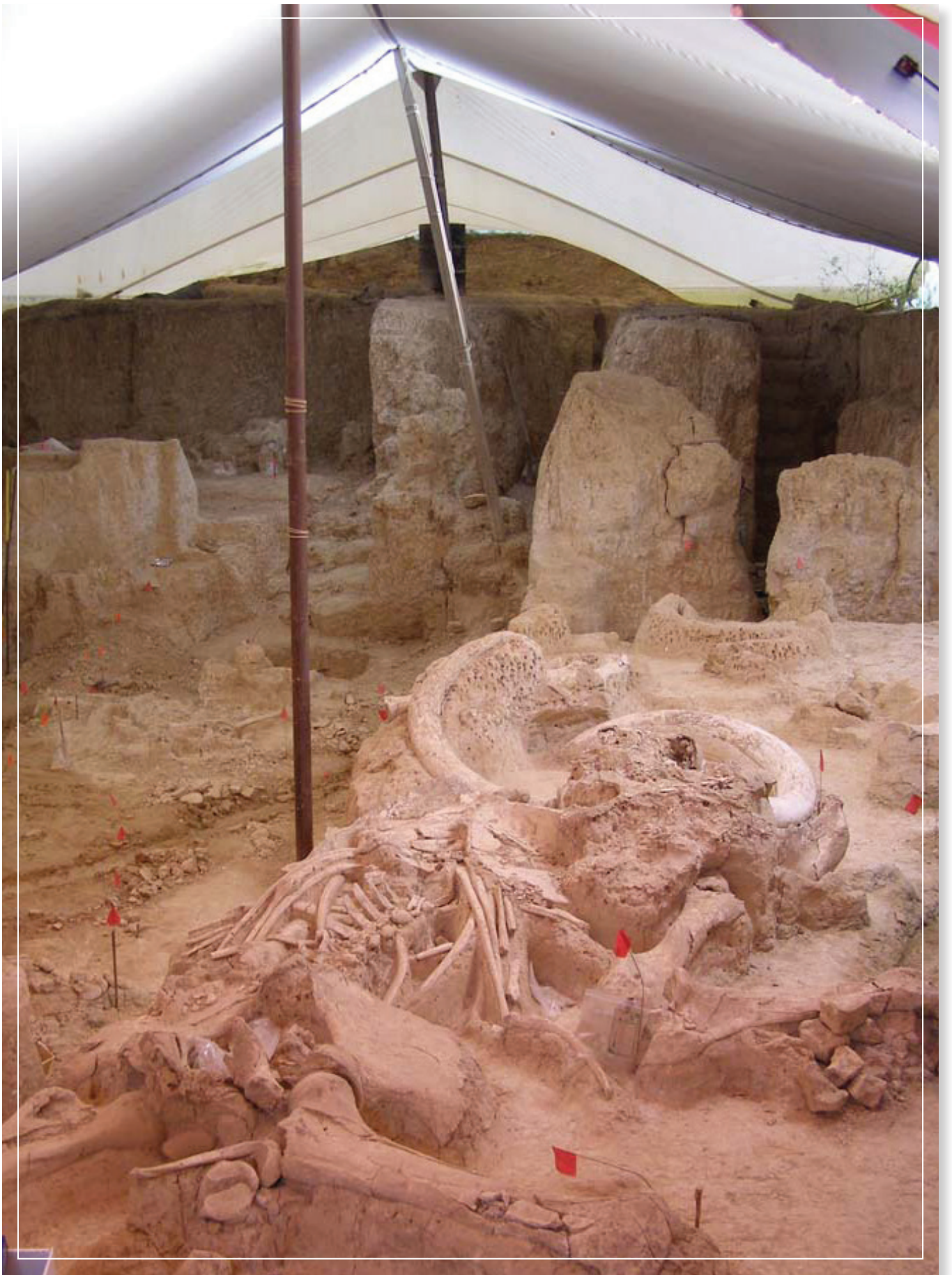
Fundamental Resource or Value	<i>In Situ</i> Specimens (Known and Unknown)
Related Significance Statements	Significance statements 1, 2, 3, 4, and 5.
Current Conditions and Trends	<p>Conditions</p> <ul style="list-style-type: none"> • The excavated <i>in situ</i> specimens are in good condition, having been stabilized and consolidated (i.e., use of chemical consolidants to stabilize the fossil material) in the past. They are stored in a secure, stable, climate-controlled dig shelter structure. These specimens have been well documented. • Unexcavated <i>in situ</i> specimens exist on site, but their condition is unknown. More than 100 acres of the site have not yet been surveyed for fossils, and experience at the site suggests the presence of significantly more fossils yet to be discovered. • Visitors are discouraged by staff from traveling off-trail in order to avoid disturbing unexcavated <i>in situ</i> remains or specimens recently exposed by a rainstorm. • Additionally, only one-third of the sediments in the dig shelter have been excavated so far, with two-thirds remaining. • The relative humidity within the dig shelter structure is below desired specifications. <p>Trends</p> <ul style="list-style-type: none"> • The condition of known and unknown <i>in situ</i> specimens is mostly stable, due to their preservation within the dig shelter (for known specimens), or within the soil strata of the larger site (for unknown specimens); however the active erosion along “Mammoth Creek” continues to expose additional fossils to the elements.

Fundamental Resource or Value	<i>In Situ</i> Specimens (Known and Unknown)
Threats and Opportunities	<p>Threats</p> <ul style="list-style-type: none"> Continued increases in visitation to the dig shelter could threaten environmental control and specimen preservation. For example, there is currently no entry and exit foyer space in the dig shelter structure, which makes internal climate control more challenging as large groups of people pass through the doorways, particularly during the summer. Additionally, visitor debris can clutter and damage the bone bed. <i>In situ</i> specimens throughout the larger site are left vulnerable to weather, fire, looting, and vandalism. There has been a lack of documentation on the past use of chemical consolidants to stabilize the fossil material at the site. <p>Opportunities</p> <ul style="list-style-type: none"> Hire a full-time NPS paleontologist to be stationed at the monument to provide scientific research and resource protection expertise. Hire a paleontologist/bone preparer to demonstrate research, recording, and assembly of bone parts on site for public viewing. Work with interested universities and organizations to conduct additional research on specimens, using new scientific techniques. Involve the local community by conducting a “bone blitz” to provide cursory surface scouting of the entire site to locate other fossil material. One such event took place on the site on February 20, 2016. Use state-of-the-art technology, such as ground-penetrating radar, to locate and unearth <i>in situ</i> specimens and facilitate scientific research. Construct a defined fence around the full authorized boundary perimeter of 108 acres. If funding and opportunities become available, investigate the purchase of additional neighboring properties, particularly those that have been identified as having a high likelihood of additional fossil discoveries. Continue to monitor active erosion along what is referred to as “Mammoth Creek.” NPS paleontologists would create standard operating procedures for collecting exposed fossils. Permanent scientific staff would continue research with partners and would further develop standard operating procedures for the site.
Data and/or GIS Needs	<ul style="list-style-type: none"> Map all existing and new fossil localities in a standardized form.
Planning Needs	<ul style="list-style-type: none"> Develop agreement for the transfer of ownership of newly discovered specimens from City of Waco to the National Park Service. Paleontological resource management plan. Scope of collections statement.
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	<p>Laws, Executive Orders, and Regulations That Apply to the FRV</p> <ul style="list-style-type: none"> National Environmental Policy Act Paleontological Resources Preservation Act of 2009 Museum Properties Management Act of 1955, as amended Secretarial Order 3289, “Addressing the Impacts of Climate Change on America’s Water, Land, and Other Natural and Cultural Resources” <p>NPS Policy-level Guidance (NPS Management Policies 2006 and Director’s Orders)</p> <ul style="list-style-type: none"> Director’s Order 24: <i>NPS Museum Collections Management</i> <i>NPS Management Policies 2006</i> (§4.8.2.1) “Paleontological Resources and Their Contexts” <i>NPS Natural Resource Management Reference Manual 77</i>



Fundamental Resource or Value	Previously Removed Specimens and Associated Documentation
Related Significance Statements	Significance statements 1, 2, 3, 4, and 5.
Current Conditions and Trends	<p>Conditions</p> <ul style="list-style-type: none"> • The extracted mammoth fossil collections are still the property of Baylor University and are housed within the Mayborn Museum. • The collections are stored in a secured area with appropriate environmental conditions, controlling for temperature, relative humidity, and pest infestation. • A majority of the larger parts of the specimens are encased in 93 plaster field jackets and have not been prepared. Currently, many jackets occupy 18 four-foot by eight-foot shelves on open shelving or on nearby pallets. • Based on field photos the bones tend to be highly fragmented, and reassembly and gluing of pieces could add significantly to the estimated time for preparation. • There is a basic inventory of the remains. • Ninety percent of the photographs of the excavation efforts and excavated specimens have been digitized. • After ownership of the fossil collection is transferred to the National Park Service it needs to be cataloged into the Interior Collection Management System database. • There is currently one entire cabinet available for additional storage of specimens after they have been prepared and removed from field jackets. <p>Trends</p> <ul style="list-style-type: none"> • The collected specimens continue to be stored at the Mayborn Museum, with ongoing environmental monitoring of the fossil storage room. Therefore, the specimens are typically in stable condition.

Fundamental Resource or Value	Previously Removed Specimens and Associated Documentation
<p>Threats and Opportunities</p>	<p>Threats</p> <ul style="list-style-type: none"> • Preparation of a large portion of the collection will require laboratory space beyond what is currently available. • Change in management personnel could result in the loss of institutional knowledge related to the fossil collection. • Specimens stored in areas with no environmental controls can result in the inevitable deterioration of fossils or loss of links to their associated field data. <p>Opportunities</p> <ul style="list-style-type: none"> • Record the Baylor University’s Mayborn Museum institutional knowledge of the collection and combine it with staff, financial, and technical resources of the National Park Service to create greater opportunities for research, education, and preservation. • Hire a full-time NPS paleontologist to be stationed at the monument to assist with these activities, in addition to on-site research and resource protection functions. • Establish preparation protocols to ensure that potential paleoecological information, such as dermestid beetle marks and bone weathering, are not lost during the preparation process. • House some or all of the collection in rotating displays at the national monument to provide a more comprehensive visitor experience. • Continue scientific research on the collected specimens.
<p>Data and/or GIS Needs</p>	<ul style="list-style-type: none"> • Scan and geo-reference maps for remains (point of excavation) for entire off-site collection and the mammoth site. • Record and refine existing standard operating procedures for preservation and collection of materials. • Continued preparation and collection of data from collected fossils.
<p>Planning Needs</p>	<ul style="list-style-type: none"> • Plan to formally transfer museum collections to the National Park Service. • Develop formal museum collection repository agreement. • Scope of collections statement. • Collections management plan / collections storage plan. • Plan for expansion space for new excavations / emergency response.
<p>Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance</p>	<p>Laws, Executive Orders, and Regulations That Apply to the FRV</p> <ul style="list-style-type: none"> • National Environmental Policy Act • Paleontological Resources Preservation Act of 2009 • Museum Properties Management Act of 1955, as amended • Secretarial Order 3289, “Addressing the Impacts of Climate Change on America’s Water, Land, and Other Natural and Cultural Resources” <p>NPS Policy-level Guidance (NPS Management Policies 2006 and Director’s Orders)</p> <ul style="list-style-type: none"> • Director’s Order 24: <i>NPS Museum Collections Management</i> • <i>NPS Management Policies 2006</i> (§4.8.2.1) “Paleontological Resources and Their Contexts” • <i>NPS Management Policies 2006</i> (§5.3.5.5) “Museum Collections” • <i>NPS Management Policies 2006</i> (§9.4.2) “Museum Collections Management Facilities” • <i>NPS Natural Resource Management Reference Manual 77</i> • <i>NPS Museum Handbook</i>, parts I, II, and III



Fundamental Resource or Value	Access to the Site and Its Stories
Related Significance Statements	Significance statements 5 and 6.
Current Conditions and Trends	<p>Conditions</p> <ul style="list-style-type: none"> • The site is currently open five days per week (closed on Sunday and Monday), and charges only for tickets to participate in a guided tour. • City of Waco and NPS staff conduct guided tours and offer educational programs. City of Waco staff run the gift shop. • The site hosts two annual special events: the “Fall Fossil Festival” held in conjunction with National Fossil Day, and “Mammoths on the March” held each spring. • The entire facility is accessible via wheelchair and motorized scooter. If a visitor needs assistance making the 300 yard walk to the dig shelter, wheelchairs are available at the site and tour guides can drive a limited number of visitors in a golf cart, if necessary. • The site offers targeted educational programs and activities that are aligned with the Texas Essential Knowledge and Skills program. • Interpretation of the site is also provided off-site within the Mayborn Museum. A full-room interpretive exhibit of the site is presented in the Hall of Natural History, including a dynamic walk-in diorama featuring a cast of the skeletal remains of the herd’s bull with a juvenile cradled in its tusks. A continuous loop film is played and static and interactive interpretive displays on mammoths are presented as well. • The site currently exchanges information with other paleontological sites in order to build interpretive and educational programming. • Presently, it is difficult to see the sign for the monument when approaching the site from the airport. • The visitor contact building has quickly become inadequate to handle visitation. The city sets up tents and shade shelter to allow a place for visitors to wait for a tour. • Wayside signs or interpretive panels enhance visitors’ experiences on guided tours of the <i>in situ</i> bone bed. There is one display case within the dig shelter that is used for changing exhibits. <p>Trends</p> <ul style="list-style-type: none"> • Visitation has increased since designation of the site as a unit of the national park system. • Participation has increased in educational programs, primarily school groups of pre-K through college. • As more resources are discovered and as scientific research continues at the site, additional information is available for use in educational and interpretive programming. For example, historical research is ongoing at Baylor that is providing more information about the site and its discovery, such as oral histories. • Increased interpretive staff provided by the National Park Service will augment the City of Waco staff to expand operations.
Threats and Opportunities	<p>Threats</p> <ul style="list-style-type: none"> • The site is currently closed two days per week, concentrating visitation to the other five days of the week and potentially turning away visitors who seek to visit when the site is closed. • The current welcome center is inadequate to provide space for operations and visitor services, and is overwhelmed during periods of high visitation. Other site facilities such as restrooms, parking lot, trail, and picnic area are also inadequate to accommodate increasing visitation. • The site does not have a classroom or break room. • There may be periodic closures of the dig shelter due to inclement weather. • There is limited advertising of the site along Interstate 35, and few wayfinding signs throughout Waco. • There is a risk from not having a sufficient diversity of visitor experiences to help generate repeat visitation.

Fundamental Resource or Value	Access to the Site and Its Stories
<p>Threats and Opportunities</p>	<p>Opportunities</p> <ul style="list-style-type: none"> • Much of the site remains essentially undeveloped for visitor use at this time (i.e., the visitor center, dig shelter, short trail, and picnic area are all concentrated in a small area of the site). • Additional staff would allow for increased tours and educational programs at the site, and facilitate operations seven days per week. • Construct an indoor classroom. • Increase outreach through NPS public relations efforts. • Sustain cooperation among the City of Waco, the Mayborn Museum, and the National Park Service for interpretive and educational opportunities. • Investigate funding opportunities to provide distance learning services (videoconferencing, etc.) to underserved audiences who may not be able to travel due to lack of resources. • Develop a research or reference library onsite. • Develop an on-site laboratory to demonstrate fossil preparation techniques for visitors. Locate a bone preparer on site in the dig shelter in order to enhance interpretation of excavation and preparation of paleontological resources. • Expand visibility of existing special events and investigate opportunities for an expanded events calendar. • Develop a membership program with a friends support group, which could reciprocate with the Mayborn Museum. • Publish a periodic newsletter, possibly being led by a friends support group. • Develop additional interactive exhibits at the site that include specimens from the collection, as well as online exhibits. • Develop additional interactive interpretive exhibits. Include audio of camel and mammoth sounds to engage multiple senses. • Develop interpretive programs and waysides regarding climate change, with a focus on what the study of paleoclimates and the fossil record can tell us about current climate change. • Produce a new video to include specimens found in the dig shelter. • Produce a new, updated interpretive video to orient guests upon arrival at the site. • Provide more opportunities for students of Baylor University's Museum Studies Department to study, help develop educational materials, and volunteer at the site. • Establish Volunteers-In-Parks sites on property to facilitate longer-term volunteer opportunities. • Facilitate public involvement in development decisions made for the site. • Develop multilingual tour-enhancement services. • Increase visibility of the monument sign when approaching from the road by collaborating with the landowner of the nearby parcel to prune trees/shrubs, or investigate potential purchase of the parcel or easements by the City of Waco as this parcel is not within the monument's authorized boundary.
<p>Data and/or GIS Needs</p>	<ul style="list-style-type: none"> • Conduct public focus groups prior to development of visitor facilities and services. • Continued collection of visitor use data. • Visitor surveys. • Gather, develop, organize, and catalog the administrative history files, and coordinate transfer of documents and records to the National Park Service.

Fundamental Resource or Value	Access to the Site and Its Stories
<p>Planning Needs</p>	<ul style="list-style-type: none"> • Development concept plan for site. • Comprehensive interpretive plan. • Visitor use management plan.
<p>Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance</p>	<p>Laws, Executive Orders, and Regulations That Apply to the FRV</p> <ul style="list-style-type: none"> • Americans with Disabilities Act of 1990 • Architectural Barriers Act of 1968 • "Accessibility Guidelines" (36 CFR 1191.1) • Rehabilitation Act of 1973 • NPS Concessions Management Improvement Act of 1998 • Clean Air Act (42 USC 7470(2)) • Texas Natural Resources Code Chapter 191 • Texas Local Government Code Chapter 280.001 <p>NPS Policy-level Guidance (NPS Management Policies 2006 and Director's Orders)</p> <ul style="list-style-type: none"> • Director's Order 6: <i>Interpretation and Education</i> • Director's Order 42: <i>Accessibility for Visitors with Disabilities in National Park Service Programs and Services</i> • NPS Management Policies 2006 (§4.7) "Air Resource Management" • NPS Management Policies 2006 (chapter 7) "Interpretation and Education" • NPS Management Policies 2006 (chapter 8) "Use of the Parks" • NPS Management Policies 2006 (chapter 9) "Park Facilities" • NPS Management Policies 2006 (chapter 10) "Commercial Visitor Services" • NPS Transportation Planning Guidebook



Fundamental Resource or Value	Past, Ongoing, and Future Scientific Research
Related Significance Statements	Significance statement 1, 2, 3, 4, 5, and 6.
Current Conditions and Trends	<p>Conditions</p> <ul style="list-style-type: none"> • Approximately three research studies studying the resources of the site are currently underway. • The site currently lacks an on-site paleontologist, fossil preparation facilities at either the site or Baylor University, or a fossil preparer. • There are a limited number of peer-reviewed scientific papers on paleontology or geology related to the resources at the site. • The large number of unprepared jackets limits scientific investigation of fossil specimens including the bulk of the nursery herd that makes the site scientifically significant and was the primary reason for the site's designation. <p>Trends</p> <ul style="list-style-type: none"> • The number of research requests has increased in the past year. • New technology such as stable isotope analysis is available for future research activities. • There is a greater diversity of institutions conducting research at the site.
Threats and Opportunities	<p>Threats</p> <ul style="list-style-type: none"> • Limited funding is available to conduct scientific research. • Future site development, natural causes, or deterioration with the passage of time could impact unknown <i>in situ</i> resources, thereby reducing their scientific integrity. • Destructive sampling of specimens may negatively impact their scientific integrity. <p>Opportunities</p> <ul style="list-style-type: none"> • Develop standard operating procedures for site research and access permits, and integrate with the NPS Research Permit and Reporting System. The National Park Service will ensure that any newly discovered specimens and associated field records are cataloged appropriately. • Deploy new technology to study the site, such as ground penetrating radar to spot <i>in situ</i> remains. • Consider hiring an intern from the Geoscientists-in-the-Parks program in upcoming fiscal years. • Institute Cooperative Ecosystem Studies Units Network agreements with Baylor University and other institutions. • Strategically identify specific research topics or areas that need further investigation at the site and advertise these opportunities with universities and partners. • Request assistance on special subject matters from experts. • Develop a public science program with the National Park Service, Baylor University, and the City of Waco. • Continue to assist and fund research that will result in scholarly papers, in order to bring more recognition to the site. • Support Baylor University to become part of the Cooperative Ecosystem Studies Units program.
Data and/or GIS Needs	<ul style="list-style-type: none"> • Catalogue of research needs for site. • Collect references to build research library for site.
Planning Needs	<ul style="list-style-type: none"> • Formalize the research permit approval process through the NPS Research Permit and Reporting System. • Record and refine existing standard operating procedures for research, access to site and resources, and ownership of research results.

Fundamental Resource or Value	Past, Ongoing, and Future Scientific Research
<p>Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance</p>	<p>Laws, Executive Orders, and Regulations That Apply to the FRV</p> <ul style="list-style-type: none"> • Museum Properties Management Act of 1955, as amended • National Historic Preservation Act of 1966, as amended (54 USC 300101 et seq.) • National Environmental Policy Act • Paleontological Resources Preservation Act of 2009 • National Invasive Species Act • Lacey Act, as amended • Federal Noxious Weed Act of 1974, as amended • Clean Water Act • Clean Air Act • Executive Order 13112, "Invasive Species" <p>NPS Policy-level Guidance (NPS Management Policies 2006 and Director's Orders)</p> <ul style="list-style-type: none"> • Director's Order 24: <i>NPS Museum Collections Management</i> • <i>NPS Management Policies 2006</i> (§2.3.1.4) "Science and Scholarship" • <i>NPS Management Policies 2006</i> (§4.2) "Studies and Collections" • <i>NPS Management Policies 2006</i> (§5.1) "Research" • <i>NPS Management Policies 2006</i> (§8.10) "Natural and Cultural Studies, Research, and Collection Activities" • <i>NPS Museum Handbook</i>, parts I, II, and III • <i>NPS-75 Natural Resources Inventory and Monitoring Guideline</i> • <i>NPS Natural Resource Management Reference Manual 77</i>



Fundamental Resource or Value	Collaborative Partnerships
Related Significance Statements	Significance statement 6.
Current Conditions and Trends	<p>Conditions</p> <ul style="list-style-type: none"> • There is an established operations agreement between the National Park Service, the City of Waco, and Baylor University for operation of the site and protection of its resources. There is open communication among the partners through regular meetings, e-mails, and other means. • Upon designation as a unit of the national park system, some administrative documents have been shared with the National Park Service. • There is documented history of the creation of the site. • The National Park Service and Baylor University continue to work on collections-related issues. • The site is strongly supported by other partners, such as the Waco Mammoth Foundation, which raise funds and increases awareness about the site. <p>Trends</p> <ul style="list-style-type: none"> • Upon designation as a unit of the national park system, there has been growing NPS involvement in site management and operations. • The partners will continue to act on opportunities for progress and improvements provided by the strong partnership and collaboration with other entities. • There has been increased visitor desire to become involved as volunteers, donors, etc.
Threats and Opportunities	<p>Threats</p> <ul style="list-style-type: none"> • Working within the confines of existing policy and regulations for all partner entities increases complexity. This can also lead to conflicts in goals, priorities, management expectations, and deadlines. • Changes in administration of the partners (city, National Park Service, Baylor, Waco Mammoth Foundation), especially in leadership roles, can lead to changes in priorities. • Retirements have led to a loss of involvement and institutional knowledge. • Maintaining interest and support over time among all partners. • Sharing of information among partners is difficult due to different records management systems, technological systems, and government or security firewalls. <p>Opportunities</p> <ul style="list-style-type: none"> • The City of Waco, Baylor University, and the Waco Mammoth Foundation can use their respective abilities and authorities to accomplish what the other entities cannot. • Restructure the current Waco Mammoth Foundation, with a focus on development of a larger membership base and pool of financial donors. • Identify, recruit, and develop additional partner groups. • Develop strategies to increase donor contributions (online, etc.) and track contributions over time. • Increase funding for the site through the pooling of resources and successfully targeting programs that offer matching funds. • Develop and conduct capital campaigns to support site improvements. • Develop a continuation of operations plan, based on the existing plan. • Develop concepts for the best uses of remaining site acreage. • Explore new collaborative opportunities between Baylor University's Mayborn Museum, whose mammoth site exhibit is one of its most popular attractions, and Waco Mammoth National Monument that would increase visitation to both destinations. • Explore exhibit techniques that would allow visitors to the site to experience Mayborn Museum's mammoth exhibit and collections, and Mayborn visitors to experience Waco Mammoth National Monument.

Fundamental Resource or Value	Collaborative Partnerships
Data and/or GIS Needs	<ul style="list-style-type: none"> • Gather, develop, organize, and catalog the administrative history files, and coordinate transfer of documents and records to the National Park Service. • Ongoing inventory and assessment of the built environment.
Planning Needs	<ul style="list-style-type: none"> • Development concept plan for site. • Develop a strategic plan to facilitate the restructuring of the Waco Mammoth Foundation into a larger “friends” group.
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	<p>Laws, Executive Orders, and Regulations That Apply to the FRV</p> <ul style="list-style-type: none"> • Museum Properties Management Act of 1955, as amended • “Cooperative Action and Sharing of Resources by Secretaries of the Interior and Agriculture” (USC 43 1703) <p>NPS Policy-level Guidance (NPS Management Policies 2006 and Director’s Orders)</p> <ul style="list-style-type: none"> • Director’s Order 6: <i>Interpretation and Education</i> • Director’s Order 24: <i>NPS Museum Collections Management</i> • NPS Management Policies 2006 (§1.6) “Cooperative Conservation Beyond Park Boundaries” • NPS Management Policies 2006 (§1.10) “Partnerships” • NPS Management Policies 2006 (§2.3.1.4) “Science and Scholarship” • NPS Management Policies 2006 (§5.1) “Research” • NPS Management Policies 2006 (chapter 7) “Interpretation and Education”



Analysis of Other Important Resources and Values

Other Important Resource or Value	Dig Shelter
<p>Current Conditions and Trends</p>	<p>Conditions</p> <ul style="list-style-type: none"> • The dig structure is in good condition and well-maintained, though some wear and tear on the railings needs to be repaired. • The heating, ventilation, and air-conditioning (HVAC) system is five years old and maintains appropriate climate inside the dig shelter, though excessive entering and exiting by visitors can cause issues. • There are rotating exhibits on display within the dig shelter using specimens on loan from other scientific institutions. • Some unexcavated space has been preserved for future study. • There is backfill and berm over the natural surface and fossil material. • There is a housekeeping plan for public- and staff-accessible spaces. <p>Trends</p> <ul style="list-style-type: none"> • Increased visitation, as well as the return of specimens to the building, has increased activity inside and places more demand on the HVAC system. • Visitors continue to voice support for adding more exhibits and information in the dig shelter, such as articulated or standing skeletons. • New excavations could expose more material inside the dig shelter.
<p>Threats and Opportunities</p>	<p>Threats</p> <ul style="list-style-type: none"> • The dig shelter and associated systems (such as the HVAC system) require recurring maintenance and funding over time, which may be overshadowed as enthusiasm grows for other site improvements. • There is no foyer and entry incorporated into the dig shelter structure, which makes climate control more challenging. • The demand for more room inside the dig shelter for more visitor activities will increase crowding by both objects and people, adversely affecting the visitor experience. It is possible to overburden the space. <p>Opportunities</p> <ul style="list-style-type: none"> • Expand the dig shelter footprint to encapsulate <i>in situ</i> resources known to exist in the vicinity of current fossils, but just outside the existing structure, in order to create a controlled environment for excavation. • Install solar panels on the roof to lower utility costs and the carbon footprint of the dig shelter. • Use land around the dig shelter owned by the National Park Service for more interpretation. • Develop a plan for scheduling of rotating exhibits and topics to be presented. • Install a backup generator and potentially create double doors for entry and exit to the shelter in order to minimize climate control problems.
<p>Data and/or GIS Needs</p>	<ul style="list-style-type: none"> • Compile and analyze energy consumption data to improve knowledge of dig shelter operating costs. • Continued monitoring of the HVAC system for the dig shelter. Ensure that a proper system for monitoring performance and recording system data is in place. • Maintain federal real property data for the dig shelter. • Comparative conversations and surveys of other paleontological sites in order to benchmark site operations and management and identify relevant best management practices. • Conduct soil studies and other studies to determine the feasibility of dig shelter expansion. • Collect data for 3D structure of soils.

Other Important Resource or Value	Dig Shelter
<p>Planning Needs</p>	<ul style="list-style-type: none"> • Emergency operations plan for dig shelter. • Review and update housekeeping procedures into a housekeeping plan. • Conduct necessary architectural design for any future dig shelter expansions. • Integrated pest management plan. • Structural fire management plan.
<p>Laws, Executive Orders, and Regulations That Apply to the OIRV, and NPS Policy-level Guidance</p>	<p>Laws, Executive Orders, and Regulations That Apply to the OIRV</p> <ul style="list-style-type: none"> • Americans with Disabilities Act of 1990 • Architectural Barriers Act of 1968 • "Accessibility Guidelines" (36 CFR 1191.1) • Rehabilitation Act of 1973 (29 USC §701 et seq.) <p>NPS Policy-level Guidance (NPS Management Policies 2006 and Director's Orders)</p> <ul style="list-style-type: none"> • Director's Order 6: <i>Interpretation and Education</i> • Director's Order 42: <i>Accessibility for Visitors with Disabilities in National Park Service Programs and Services</i> • NPS Management Policies 2006 (chapter 7) "Interpretation and Education" • NPS Management Policies 2006 (chapter 9) "Park Facilities"



Identification of Key Issues and Associated Planning and Data Needs

This section considers key issues to be addressed in planning and management and therefore takes a broader view over the primary focus of part 1. A key issue focuses on a question that is important for an NPS unit. Key issues often raise questions regarding site purpose and significance and fundamental and other important resources and values. For example, a key issue may pertain to the potential for a fundamental or other important resource or value in a site to be detrimentally affected by discretionary management decisions. A key issue may also address crucial questions that are not directly related to purpose and significance, but that still affect them indirectly. Usually, a key issue is one that a future planning effort or data collection needs to address and requires a decision by NPS managers.

The following are key issues for Waco Mammoth National Monument and the associated planning and data needs to address them:

- **Increasing visitation and associated resource and operational issues.** Visitation at Waco Mammoth National Monument has grown dramatically since the designation of the site as a unit of the national park system in July 2015. This positive trend is expected to continue in the near term, though it is unknown if it will persist over time as it is unknown how many visitors to the site are likely to make repeat visits. Strong population growth is expected in the surrounding communities of Waco and central Texas, which could increase visitation to the site. The site is readily accessible due to its location within the Waco city limits and proximity to Interstate 35. Opening the site seven days per week and implementing a seasonal schedule that features extended operating hours, currently under consideration by the National Park Service and its partners, could further expand visitation in the future.

Recent visitation trends have demonstrated the need for a larger visitor facility, more bathrooms, and more parking, which is noted in the city's original master plan for the site. As the dig shelter and grounds are accessible by guided tour only, the visitor contact station frequently fills to capacity with waiting visitors, forcing some to wait outside in inclement weather. A true visitor center, with theater, sales area, information and interpretive displays, and a working paleontology lab, has been envisioned by site planners and operators since 2007. A visitor contact station expansion could include the addition of a multipurpose room, more bathrooms, exhibit space, as well as offices and a break room for site employees. Employee offices are currently located in a modular office space in the restricted access parking lot behind the dig shelter. Continued growth in visitation and sustained interest and requests by schools merits planning for a visitor center be initiated as soon as possible.

Additionally, expansions or improvements to visitor parking are needed. The visitor parking lot not only fills to capacity on a regular basis, but there is also a need for designated spaces for buses for school groups and recreational vehicles.

Any future facility development will need to include considerations of the impact of the development and its associated infrastructure (i.e., utilities, sewage, water, etc.) on the site and its resources. A staff paleontologist would need to be on site to monitor potential impacts on paleontological resources from any construction activities.

Growing visitation presents challenges for site operations, including increased custodial requirements and general wear and tear on buildings, grounds, and trails. An expanded operating schedule and more intensive monitoring of the site grounds to ensure fossil resource protection would require more staff. There is also concern that a larger number of visitors circulating through the dig shelter would negatively impact the fossil resources, as the building HVAC system may not be able to maintain specified temperature and humidity due to additional body heat and repeated door openings.

Associated planning needs:

- Visitor use management plan
- Unit management plan
- Comprehensive personnel management plan
- Structural fire management plan
- Paleontological resource management plan
- Development concept plan for site

Associated data needs:

- Visitor surveys
- Continued collection of visitor use data
- Congestion assessment

- **Need for development and expansion of appropriate visitor experiences.** In comparison to other NPS units, the average duration of a visit to Waco Mammoth National Monument is a relatively short 75 minutes. Many visitors have expressed an interest in new or expanded activities, and as a new unit of the national park system, recreation options should be explored and evaluated that are compatible with the protection of the fossil resources within the site, both known and unknown, to encourage longer and repeated visits.

Many visitors arrive expecting a more primitive hiking experience as one might find in other national park units, while others merely wish for the opportunity to explore the site’s grounds on foot. The site does not have any trail system beyond the 300-foot paved path that connects the visitor contact center to the dig shelter. Much of the site has not been surveyed for paleontological resources. An expanded trail network might attract more unguided visitors into nonsurveyed areas of the site, which might increase the risk of damage or looting of undiscovered fossil resources. However, along with expanding the trail network, the creation of new parking spaces at other points of the site could alleviate crowding in the main parking lot by providing access for visitors with interests in the site’s existing flora and fauna.

Visitors have expressed an interest in being able to choose from a variety of programs during their visit. Desired improvements to visitor programs include offering the four additional programs currently limited to student groups to all visitors, completing the development of a Junior Ranger program, and the construction of the proposed children’s discovery area. Other modifications to interpretive waysides and other materials could improve the effectiveness of the site’s interpretive program, such as life-sized replicas of Columbian mammoths.

There is potential to provide access to the site through nonvehicular modes. Due to its location near the Bosque River, a water taxi providing service to a large number of waterfront destinations in Waco could be developed with a stop at the site, though some new infrastructure would be required. A mixed-use pathway that parallels the Bosque and Brazos Rivers, part of a long-term city plan, could provide access from the downtown area to the site.

Associated planning needs:

- Visitor use management plan
- Unit management plan
- Comprehensive interpretive plan

Associated data needs:

- Visitor surveys
- Continued collection of visitor use data

- **Accessibility of facilities and interpretive and educational materials.** Future development of facilities and interpretive and educational programs should embrace universal access design standards to eliminate architectural barriers. Publications, exhibits, audiovisual programs and tours, wayside exhibits, signage, and web-based media provide site visitors with information and context and should be made accessible to those who have physical, sensory, or cognitive disabilities.

Thus far, international visitors from 90 countries have toured the site, and international visitation could increase as the site becomes increasingly well known globally with the NPS designation. There are printed self-guided tour brochures available in several languages, but an alternative is needed for brochures in additional languages not yet translated.

Associated data needs:

- Comparative conversations and surveys of other paleontological sites in order to benchmark site operations and management
 - Have the National Center on Accessibility conduct an accessibility assessment and review upcoming planning efforts
- **Climate change.** Mean annual temperature for the region is projected to increase 3.6°F to 4.7°F by 2050, with minimal change projected in mean annual precipitation. Increased storm frequency/intensity and droughts are also projected. Water and water-dependent ecosystems are scarce resources in the arid and semi-arid southwest and are generally regarded as biodiversity hotspots. It is anticipated that climate change will alter ground and surface water quantity, runoff and erosion ranges, as well as seasonal patterns of availability, including flooding and drought. Climate change may also impact the presence and abundance of invasive species, such as feral hogs and kudzu. These changes would in turn affect resource management, visitor use, and operations.

Associated planning needs:

- Incorporation of climate change adaptation considerations into planning documents
- Wildland fire management plan
- Climate Friendly Park action plan



- **Federally owned boundary.** While the authorized boundary of Waco Mammoth National Monument includes the full 108 acres of the site, the current federally owned boundary of 4.93 acres does not include several city-owned parcels that could aid in the operations of the monument and reduce management complexity. The City of Waco and the National Park Service will work cooperatively using cooperative agreements, easements, or additional land transfers as necessary to correct any ownership issues that interfere with the efficient operation of the monument.

Associated planning and data needs:

- None identified

- **Adjacent land uses and development.** Waco Mammoth National Monument is a rural area in a currently underdeveloped area of Waco. It is likely that in the near future, residential development surrounding the site and along the river will increase, and the vegetative buffer between the parking lot and nearby residential development will continue to thin. Key viewsheds from the site need to be identified in order to protect and manage viewsheds in the future. Additionally, adjacent development may displace wildlife from the neighboring parcels onto the site, and potentially alter the site’s natural resource composition. The City of Waco and the National Park Service are desirous of cutting and marking the boundary of the entire authorized acreage to ensure neighbors and others know when they have reached the boundary of the site. A well designated and marked boundary would further protect fossils and other park resources.

Associated planning and data needs:

- Visual resource inventory
- Visual resource management plan
- Natural resource management plan

Planning and Data Needs

To maintain connection to the core elements of the foundation and the importance of these core foundation elements, the planning and data needs listed here are directly related to protecting fundamental resources and values, site significance, and site purpose, as well as addressing key issues. To successfully undertake a planning effort, information from sources such as inventories, studies, research activities, and analyses may be required to provide adequate knowledge of site resources and visitor information. Such information sources have been identified as data needs. Geospatial mapping tasks and products are included in data needs.

Items considered of the utmost importance were identified as high priority, and other items identified, but not rising to the level of high priority, were listed as either medium- or low-priority needs. These priorities inform site management efforts to secure funding and support for planning projects.

Please note that any planning or data need where the National Park Service is not identified as the “lead partner” would be a non-NPS document. If the National Park Service is to assist in any non-NPS documents, the National Park Service would follow proper procedures to assist as a cooperating agency.

Planning Needs – Where A Decision-making Process Is Needed				
Related to an FRV, OIRV, or Key Issue?	Planning Needs	Lead Partner(s)	Priority (H, M, L)	Notes
Previously Removed Specimens and Associated Documentation	Plan to formally transfer museum collections to the National Park Service	Baylor University / NPS	High	Catalog the collection into NPS Interior Collections Management System following the transfer.
Previously Removed Specimens and Associated Documentation	Develop formal museum collection repository agreement	NPS / Baylor University	High	
Geologic Context; Collaborative Partnerships; Access to the Site and Its Stories; Key Issue	Development concept plan for site	City of Waco / NPS	High	This plan would carefully determine where future development projects should be sited based on the existing City of Waco long-term master plan for the site. This effort may pinpoint which recommendations from the master plan can be accomplished in the near term, versus those that may be developed in phases as time and money become available. Some of the more immediate needs could include a children's discovery area, an expansion of the visitor contact station, outdoor classroom, and a paleontological laboratory. The plan could consider the use of temporary structures and responsive renovations. This plan would help communicate with the public and with partners about the proposed activities, costs, and the potential phasing of activities. It would also address the accessibility of facilities. Involvement by representatives of all partners would be essential in this effort.
<i>In Situ</i> Specimens	Develop agreement for the transfer of ownership of newly discovered specimens from City of Waco to the National Park Service	City of Waco / NPS	High	An agreement (or addendum to the operating agreement) is needed to clarify how any new material discovered on site outside the federally owned property would be transferred to the National Park Service.
Collaborative Partnerships	Develop a strategic plan to facilitate the restructuring of the Waco Mammoth Foundation into a larger "friends" group	Waco Mammoth Foundation / NPS	High	This effort would define bylaws, roles / responsibilities, communication among members, etc. It could be developed by reviewing models from other NPS unit's friends groups.

Planning Needs – Where A Decision-making Process Is Needed				
Related to an FRV, OIRV, or Key Issue?	Planning Needs	Lead Partner(s)	Priority (H, M, L)	Notes
Scientific Research	Formalize the research permit approval process through the NPS Research Permit and Reporting System	NPS	High	This effort would include guidelines for the use of the NPS Research Permit and Reporting System. It is particularly important to define this process as the collections transition from Baylor University to the National Park Service.
Scientific Research	Record and refine existing standard operating procedures for research, access to site and resources, and ownership of research results	NPS	High	This plan would streamline the process by which external individuals or entities could gain access to the site as well as curated specimens for research purposes.
Access to the Site and Its Stories; Key Issue	Comprehensive interpretive plan	NPS	High	This plan would identify interpretive themes, intended audiences, and visitor experience goals to inform development of personal and nonpersonal (media) visitor services. This plan would also include consideration of programmatic accessibility.
Key Issue	Unit management plan	NPS	High	A completed unit management plan is mandated by the 2015 presidential proclamation designating the site as Waco Mammoth National Monument. This plan would need to include budget considerations for future site operations.
Key Issue	Comprehensive personnel management plan	City of Waco / NPS	High	This plan could include considerations for assistance from the Volunteers in Parks program. It could also include budget considerations for future site operations, if completed prior to the completion of a unit management plan. A budget request to support positions identified in the <i>Waco Mammoth Site Special Resource Study / Environmental Assessment</i> (2008) was submitted for fiscal year 2017.
<i>In Situ</i> Specimens; Previously Removed Specimens and Associated Documentation	Scope of collections statement	NPS	Medium	This would define the scope of the monument's collection activities, define the purpose of the collection, and ensure the collections are relevant to, and support the site's mission. It should be prepared in preparation for or upon completion of transfer of collections from Baylor University to the National Park Service.
Dig Shelter	Emergency operations plan for dig shelter	NPS / City of Waco	Medium	This plan would develop a set of responses to ensure an effective response to emergency situations, such as severe weather, fire, flood, to ensure adequate protection of the resources protected by the dig shelter. This plan is required under <i>NPS Management Policies 2006</i> , 8.2.5.2.

Planning Needs – Where A Decision-making Process Is Needed				
Related to an FRV, OIRV, or Key Issue?	Planning Needs	Lead Partner(s)	Priority (H, M, L)	Notes
Dig Shelter	Review and update housekeeping procedures into a housekeeping plan	Baylor University / City of Waco / NPS	Medium	A housekeeping plan is required for every space that houses museum collections. This plan identifies preventive treatments, schedule, responsible parties, and necessary equipment and materials for the consistent care of museum objects.
<i>In Situ</i> Specimens; Key Issue	Paleontological resource management plan	NPS	Medium	This plan is needed to prescribe how to survey resources, standard operating procedures for paleontological surveys prior to any ground-breaking activities, how to pursue future excavations, use of state-of-the-art technology in excavations, and guidelines for long-term management of resources.
Dig Shelter; Key Issue	Structural fire management plan	NPS	Medium	A structural fire plan would be developed after an assessment of the required protection and suppression capabilities for the park, with focus on code compliance, early warning detection, suppression systems, and employee training. This plan would include a museum protection plan and recovery strategy as an appendix.
Access to the Site and Its Stories; Key Issue	Visitor use management plan	City of Waco / NPS	Medium	This plan would develop a collaborative vision for providing for and management of visitor use by aligning visitor opportunities and experiences with the site's purpose.
Key Issue	Climate Friendly Park action plan	NPS	Medium	This plan would help detail needed actions in order to improve sustainability and environmental leadership.
Previously Removed Specimens and Associated Documentation	Collections management plan / collections storage plan	NPS / Baylor University	Low	A collection management plan is required of each park unit. The plan would assess a park's museum collection management program to identify problems and develop recommendations to improve its management.
Previously Removed Specimens and Associated Documentation	Plan for expansion space for new excavations / emergency response	NPS	Low	To be completed once collections are transferred to the National Park Service from Baylor University.
Dig Shelter	Conduct necessary architectural design for any future dig shelter expansions	NPS / City of Waco	Low	To include enclosed entry / foyer / exits in order to provide a climate-controlled environment for resource preservation in the dig shelter. Would also include analysis of building to install a backup generator for the shelter.

Planning Needs – Where A Decision-making Process Is Needed				
Related to an FRV, OIRV, or Key Issue?	Planning Needs	Lead Partner(s)	Priority (H, M, L)	Notes
Geologic Context; Key Issue	Natural resource management plan	NPS	Low	This would help inform management of the vegetation, soils, wildlife, etc., in part to help protect the potential undiscovered paleontological resources at the site.
Geologic Context; Dig Shelter	Integrated pest management plan	NPS	Low	This effort would also include management strategies for invasive species.
Key Issue	Visual resource management plan	City of Waco / NPS	Low	This plan would use the visual resource inventory as a baseline for developing goals, objectives, and strategies for protecting the desired characteristics of important views within and beyond the site boundaries and serve as a source of information for collaboration with partners and stakeholders.
Key Issue	Incorporation of climate change adaptation considerations into planning documents	NPS	Low	
Key Issue	Wildland fire management plan	NPS	Low	A park unit that uses fire as a resource management tool and has a potential for fire must have a fire management plan, which addresses issues such as firefighter and public safety, protection of resources, cooperation with neighboring land owners, and in wildland-urban interface issues.



Data Needs – Where Information Is Needed Before Decisions Can Be Made				
Related to an FRV, OIRV, or Key Issue?	Data and GIS Needs	Lead Partner(s)	Priority (H, M, L)	Notes, Including Which Planning Need This Data Need Relates To
Previously Removed Specimens and Associated Documentation	Scan and geo-reference maps for remains (point of excavation) for entire off-site collection and mammoth site	Baylor University	High	
Previously Removed Specimens and Associated Documentation	Record and refine existing standard operating procedures for preservation and collection of materials	Baylor University / NPS	High	
Dig Shelter	Compile and analyze energy consumption data to understand how much it costs to operate the dig shelter	City of Waco / NPS	High	This effort would include converting the data collected since 2009 to a format usable by and accessible to partners. This information will be entered as federal real property data.
Dig Shelter	Continued monitoring of the HVAC system for the dig shelter and ensure proper system for monitoring performance and recording system data is in place	City of Waco	High	These data would help inform whether or not the HVAC system is functioning correctly and if it needs to be updated in the future. The data would need to be shared with the National Park Service and Baylor University. The partners would continue a dialog regarding whose responsibility it is to upgrade the system or purchase new equipment. Presently, the City is maintaining the system, but there is an assumption that in the future this will become an NPS duty.
Geologic Context	Digitize geologic map of the site and obtain more detailed geologic information	City of Waco / Baylor University	High	
Geologic Context	Get/locate LiDAR fossil data from the dig shelter	Baylor University	High	
Access to the Site and Its Stories; Collaborative Partnerships	Gather, develop, and organize administrative history files, and coordinate transfer of documents and records to the National Park Service	NPS	High	Administrative history files should include archives, oral history / interviews, etc. Gathering oral histories may be time-sensitive. This process could involve assistance from the NPS Western Archeological and Conservation Center.
Previously Removed Specimens and Associated Documentation	Continued preparation and collection of data from collected fossils	NPS / Baylor University	High	This effort would involve accessing the fossils in plaster jackets, currently in museum collections.

Data Needs – Where Information Is Needed Before Decisions Can Be Made				
Related to an FRV, OIRV, or Key Issue?	Data and GIS Needs	Lead Partner(s)	Priority (H, M, L)	Notes, Including Which Planning Need This Data Need Relates To
Access to the Site and Its Stories	Conduct public focus groups prior to development of visitor facilities and services	City of Waco	High	This “front end evaluation” would help determine whether the site is pursuing development of visitor facilities and services that match visitor needs and expectations. These data could be collected with the assistance of Baylor University staff or students.
Key Issue	Visual resource inventory	NPS	High	The inventory would identify the scenic quality and visitor values of important views and serve as the baseline for development of a visual resource management plan.
Dig Shelter	Maintain federal real property data for the dig shelter	NPS	Medium	
Geologic Context	Conduct complete survey of 108 acres for factors such as slope, erodibility index, and hydrology to inform analysis of overall site drainage patterns	City of Waco / NPS	Medium	This would help inform monitoring priorities and be a precursor to future development activities.
Geologic Context	Record GIS information for sites of concern related to sensitive fossil resources	NPS	Medium	This information would be a precursor to future development activities.
<i>In Situ</i> Specimens	Map all existing and new fossil localities in a standardized form	NPS	Medium	This effort would be contingent upon arrival of an NPS paleontologist. These data should be included in a GIS database for the monument.
Collaborative Partnerships	Ongoing inventory and assessment of the built environment	NPS / City of Waco	Medium	This information would be included in the administrative history documentation.
Dig Shelter; Key Issue	Comparative conversations and surveys of other paleontological sites in order to benchmark site operations and management and identify best management practices	City of Waco / NPS	Low	Continued research of other site’s dig shelter conditions and procedures is needed in order to benchmark the site’s own dig shelter management. These conversations could also include surveying other paleontological parks regarding how they address accessibility.
Dig Shelter	Conduct soil studies and other studies to determine feasibility of dig shelter expansion	NPS	Low	Any future discoveries on site may require an expansion of the dig shelter. Conducting soil studies early on would ensure that this information is available for use if/when new discoveries are made.
Dig Shelter	Collect data for 3D structure of soils	NPS	Low	

Data Needs – Where Information Is Needed Before Decisions Can Be Made				
Related to an FRV, OIRV, or Key Issue?	Data and GIS Needs	Lead Partner(s)	Priority (H, M, L)	Notes, Including Which Planning Need This Data Need Relates To
Geologic Context	Collect refined GIS information for soils of site	NPS	Low	
Geologic Context	Collect GIS information for vegetation of site	NPS	Low	This effort could be pursued through the NPS Inventory & Monitoring program.
Geologic Context	Prepare report to contrast geology and biota of the site area between Pleistocene era and modern day	NPS / City of Waco	Low	This information could serve as an educational/interpretive tool.
Geologic Context	Track down geologic core data, as completed as part of a Master's thesis	Baylor University	Low	
Geologic Context	Perform ground penetrating radar scans in areas of interest in order to identify fossil resources	Baylor University / NPS	Low	
Key Issue	Have the National Center on Accessibility conduct an accessibility assessment and review upcoming planning efforts	NPS	Low	
Scientific Research	Catalogue of research needs for site	NPS	Low	This catalogue would help the monument advertise research needs to universities or other researchers. This could be recorded on the NPS Research Permitting and Reporting System.
Scientific Research	Collect references to build research library for site	NPS / City of Waco	Low	Research library could be available both online and in hardcopy at the site.
Access to the Site and Its Stories; Key Issue	Continued collection of visitor use data	City of Waco	Low	These data are needed in order to inform understanding visitor use trends. These data could be collected with the assistance of Baylor University staff or students.
Access to the Site and Its Stories; Key Issue	Visitor surveys	City of Waco	Low	Visitor surveys need to be tailored to both the general public and teachers of school groups, for both prior to and after visit to the site. The surveys could also include questions to assess primary and secondary languages of visitors, in order to inform development of interpretive programs and materials. These data could be collected with the assistance of Baylor University staff or students.

Part 3: Contributors

Baylor University

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Ellie Caston, Museum Studies Lecturer and Retired Mayborn Museum Director

Charlie Walter, Director, Mayborn Museum

City of Waco, Texas

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Waco Mammoth Foundation

Gayle Lacy, Board President

Alice Starr, Board Member

Photo and Art Credits

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Appendixes

Appendix A: Presidential Proclamation and Legislative Acts for Waco Mammoth National Monument

Congressional Act to direct the Secretary of the Interior to study the suitability and feasibility of designating the site as a unit of the National Park Service (PL 107-341, 116 stat. 2890) (December 16, 2002)

116 STAT. 2890

PUBLIC LAW 107-341—DEC. 16, 2002

Public Law 107-341
107th Congress

An Act

Dec. 16, 2002
[H.R. 1925]

To direct the Secretary of the Interior to study the suitability and feasibility of designating the Waco Mammoth Site Area in Waco, Texas, as a unit of the National Park System, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. STUDY AND REPORT REGARDING WACO MAMMOTH SITE AREA.

(a) **STUDY.**—The Secretary of the Interior, in consultation with the State of Texas, the city of Waco, and other appropriate organizations, shall carry out a special resource study regarding the national significance, suitability, and feasibility of designating the Waco Mammoth Site Area located in the city of Waco, Texas, as a unit of the National Park System.

Applicability.

(b) **STUDY PROCESS AND COMPLETION.**—Section 8(c) of Public Law 91-383 (16 U.S.C. 1a-5(c)) shall apply to the conduct and completion of the study required by this section.

Deadline.

SEC. 2. SUBMISSION OF STUDY RESULTS.

Not later than 3 years after funds are first made available for this Act, the Secretary shall submit to the Committee on Resources of the House of Representatives and the Committee on Energy and Natural Resources of the Senate a report describing the results of the study.

Approved December 16, 2002.

LEGISLATIVE HISTORY—H.R. 1925:

HOUSE REPORTS: No. 107-317 (Comm. on Resources).

SENATE REPORTS: No. 107-264 (Comm. on Energy and Natural Resources).

CONGRESSIONAL RECORD, Vol. 148 (2002):

May 14, considered and passed House.

Nov. 19, considered and passed Senate.

Presidential Proclamation to establish Waco Mammoth National Monument (Proclamation 9299) (July 10, 2015)

Federal Register / Vol. 80, No. 135 / Wednesday, July 15, 2015 / Presidential Documents

41983

Presidential Documents

Proclamation 9299 of July 10, 2015

Establishment of the Waco Mammoth National Monument

By the President of the United States of America

A Proclamation

In 1978, two young fossil hunters found a large bone protruding from an eroded ravine near the Bosque River about 4.5 miles north of the center of Waco, Texas. They took the bone to nearby Baylor University, where it was identified as part of the femur (upper leg bone) of a Columbian Mammoth (*Mammuthus columbi*), a dominant species in North America during the Pleistocene Epoch. The Columbian Mammoth, the largest of all mammoth species, stood with a shoulder height reaching 12 to 14 feet and weighed an estimated 7 to 8 tons. Over the next 20 years, Baylor University oversaw the excavation of the site, where the remains of 24 Columbian Mammoths were found, along with the remains of associated animals of the late Pleistocene, including Western Camel (*Camelops hesternus*), saber-toothed cat (*Homotherium*), dwarf antelope (cf. *Capromeryx*), American Alligator (*Alligator mississippiensis*), and giant tortoise (*Hesperotestudo*).

These remains contain the Nation's only recorded discovery of a nursery herd (females and offspring) of Pleistocene mammoths, comprising at least 18 of the unearthed mammoths. The nursery herd appears to have drowned in a single natural event near the confluence of the ancient Bosque and Brazos Rivers between 65,000 and 72,000 years ago. Because the nursery herd was buried rapidly in the mud associated with the rising waters, the remains of the herd include nearly intact skeletons apparently positioned as at the moment of death. The herd's preservation in this manner provides unparalleled evidence of the group's age structure and behavior during a natural catastrophe. For example, the herd apparently formed a circular defensive position with the adults attempting to rescue the offspring. In two cases, the bones of a juvenile lay across the tusks of an adult, suggesting that these adults were trying to lift the juveniles to safety.

Including the nursery herd, the remains of 22 Columbian Mammoths have been documented in the excavation area, and evidence of 2 more was discovered during construction of the Dig Shelter that protects the excavation area. One of the skeletons discovered in sediments above the nursery herd is a large bull mammoth with a broken but healed rib, suggesting a fight with another bull during the mammoth equivalent of modern elephants' musth, or rutting season. The presence of mammoths in the excavation area at sediment levels representing a span of several thousands of years suggests that the species had an affinity for this area at the interface of two ecosystems, the Great Plains and the Gulf Coastal Plains.

The excavation area, as well as the land extending beyond it toward the Brazos and Bosque Rivers, offer excellent opportunities for further exploration and research. More than half of the area protected by the Dig Shelter remains unexcavated, and virtually all the acreage outside the Dig Shelter remains unsurveyed for paleontological resources. Future discoveries are anticipated both within and outside the Dig Shelter.

While Baylor University oversaw the excavation, study, and preservation of the fossils, the City of Waco acquired the parcels of land containing and surrounding the excavation area and assembled a city park known

as the Waco Mammoth Site, which opened to the public in 2009. Although most of the excavated bones of the mammoths and associated fauna are now at Baylor University's Mayborn Museum awaiting preparation and curation, some exposed bones remain at the Site, protected by the climate-controlled Dig Shelter, which facilitates public viewing, interpretation, and study.

WHEREAS, section 320301 of title 54, United States Code (known as the "Antiquities Act"), authorizes the President, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Federal Government to be national monuments, and to reserve as a part thereof parcels of land, the limits of which shall be confined to the smallest area compatible with the proper care and management of the objects to be protected;

WHEREAS, the City of Waco has been operating the approximately 108.5 acre Waco Mammoth Site (including the excavation area and surrounding lands) as a park since 2009, in partnership with Baylor University and with support from the nonprofit Waco Mammoth Foundation, Inc.;

WHEREAS, the City of Waco, Baylor University, the Waco Mammoth Foundation, Inc., and other members of the Waco community have demonstrated support for the establishment of a national monument to be administered by the National Park Service;

WHEREAS, the National Park Service conducted a special resource study of the Waco Mammoth Site, pursuant to Public Law 107-341, and determined that the Site met the criteria for inclusion in the National Park System;

WHEREAS, in support of the establishment of a national monument to be administered by the National Park Service, the City has donated certain lands and appurtenant easements to the Federal Government;

WHEREAS, the City of Waco and Baylor University have also indicated their intent to transfer ownership of the excavated specimens and archival records to the Federal Government for monument purposes;

WHEREAS, the City of Waco intends that the partnership between the City of Waco, Baylor University, and the Waco Mammoth Foundation, Inc., continue to cooperatively manage, oversee, and maintain the Waco Mammoth Site and expand the partnership to include the National Park Service;

WHEREAS, it is in the public interest to preserve and protect the scientific objects at the Waco Mammoth Site;

NOW, THEREFORE, I, BARACK OBAMA, President of the United States of America, by the authority vested in me by section 320301 of title 54, United States Code, hereby proclaim the objects identified above that are situated upon lands and interests in lands owned or controlled by the Federal Government to be the Waco Mammoth National Monument (monument) and, for the purpose of protecting those objects, reserve as a part thereof all lands and interests in lands owned or controlled by the Federal Government within the boundaries described on the accompanying map entitled, "Waco Mammoth National Monument," which is attached to and forms a part of this proclamation. The reserved Federal lands and interests in lands encompass approximately 7.11 acres, including appurtenant easements for all necessary purposes. The boundaries described on the accompanying map are confined to the smallest area compatible with the proper care and management of the objects to be protected.

All Federal lands and interests in lands within the boundaries described on the accompanying map are hereby appropriated and withdrawn from all forms of entry, location, selection, sale, or other disposition under the public land laws, from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing.

The establishment of the monument is subject to valid existing rights. Lands and interests in lands not owned or controlled by the Federal Government within the boundaries described on the accompanying map shall be reserved as a part of the monument, and objects identified above that are situated upon those lands and interests in lands shall be part of the monument, upon acquisition of ownership or control by the Federal Government.

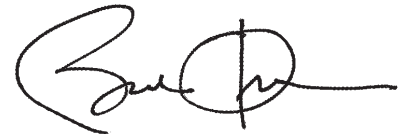
The Secretary of the Interior (Secretary) shall manage the monument through the National Park Service, pursuant to applicable legal authorities, consistent with the purposes and provisions of this proclamation. The Secretary shall prepare a management plan for the monument, with full public involvement, within 3 years of the date of this proclamation. The management plan shall ensure that the monument fulfills the following purposes for the benefit of present and future generations: (1) to preserve and protect the objects of scientific interest associated with the monument; (2) to foster and facilitate appropriate research; (3) to promote understanding and stewardship of the monument's resources and values through interpretive and educational opportunities; and (4) to provide for the enjoyment of the monument's resources and values in a manner that is compatible with their preservation. The management plan shall address the desired relationship of the monument to other sites with paleontological resources both within and outside the National Park System.

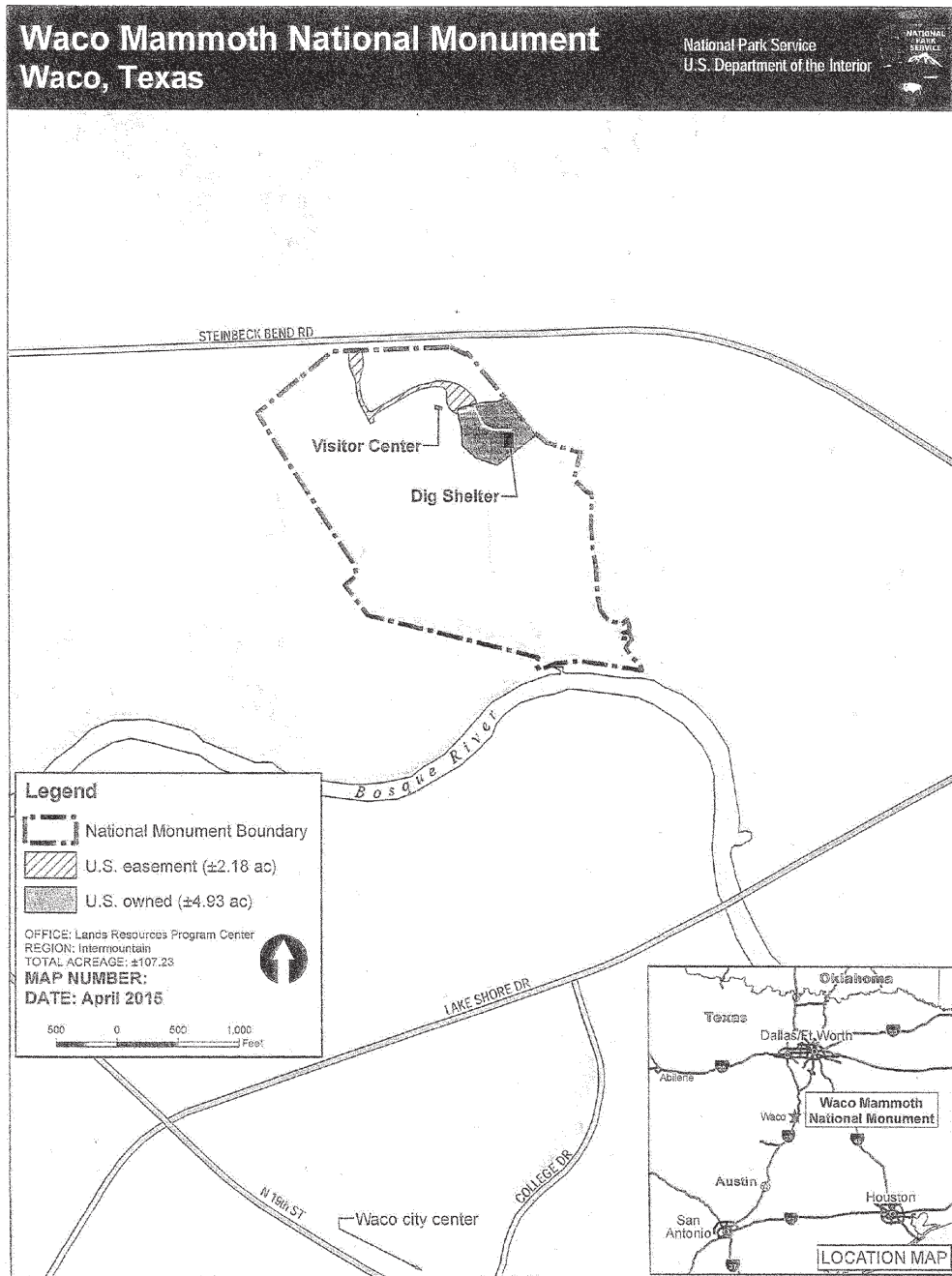
The National Park Service shall use available authorities, as appropriate, to enter into agreements with governmental and nongovernmental organizations, including the City of Waco, Baylor University, the Waco Mammoth Foundation, Inc., to further the purposes of the monument, address common interests, and promote management efficiencies.

Nothing in this proclamation shall be deemed to revoke any existing withdrawal, reservation, or appropriation; however, the monument shall be the dominant reservation.

Warning is hereby given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of this monument and not to locate or settle upon any of the lands thereof.

IN WITNESS WHEREOF, I have hereunto set my hand this tenth day of July, in the year of our Lord two thousand fifteen, and of the Independence of the United States of America the two hundred and fortieth.





[FR Doc. 2015-17564
Filed 7-14-15; 11:15 am]
Billing code 4310-10-C

Appendix B: Inventory of Special Mandates and Administrative Commitments

Special Mandates

Cooperative management (Presidential Proclamation 9299). The National Park Service shall use available authorities, as appropriate, to enter into agreements with governmental and nongovernmental organizations, including the City of Waco, Baylor University, the Waco Mammoth Foundation, Inc., to further the purposes of the site, address common interests, and promote management efficiencies.

Transfer of excavated specimens and archival records (Presidential Proclamation 9299). The City of Waco and Baylor University will transfer ownership of the excavated specimens and archival records to the federal government for monument purposes.

Valid existing rights (Presidential Proclamation 9299). The establishment of the monument is subject to valid existing rights. Lands and interests in lands not owned or controlled by the federal government within the boundaries shall be reserved as a part of the monument, and objects identified above that are situated upon those lands and interests in lands shall be part of the monument.

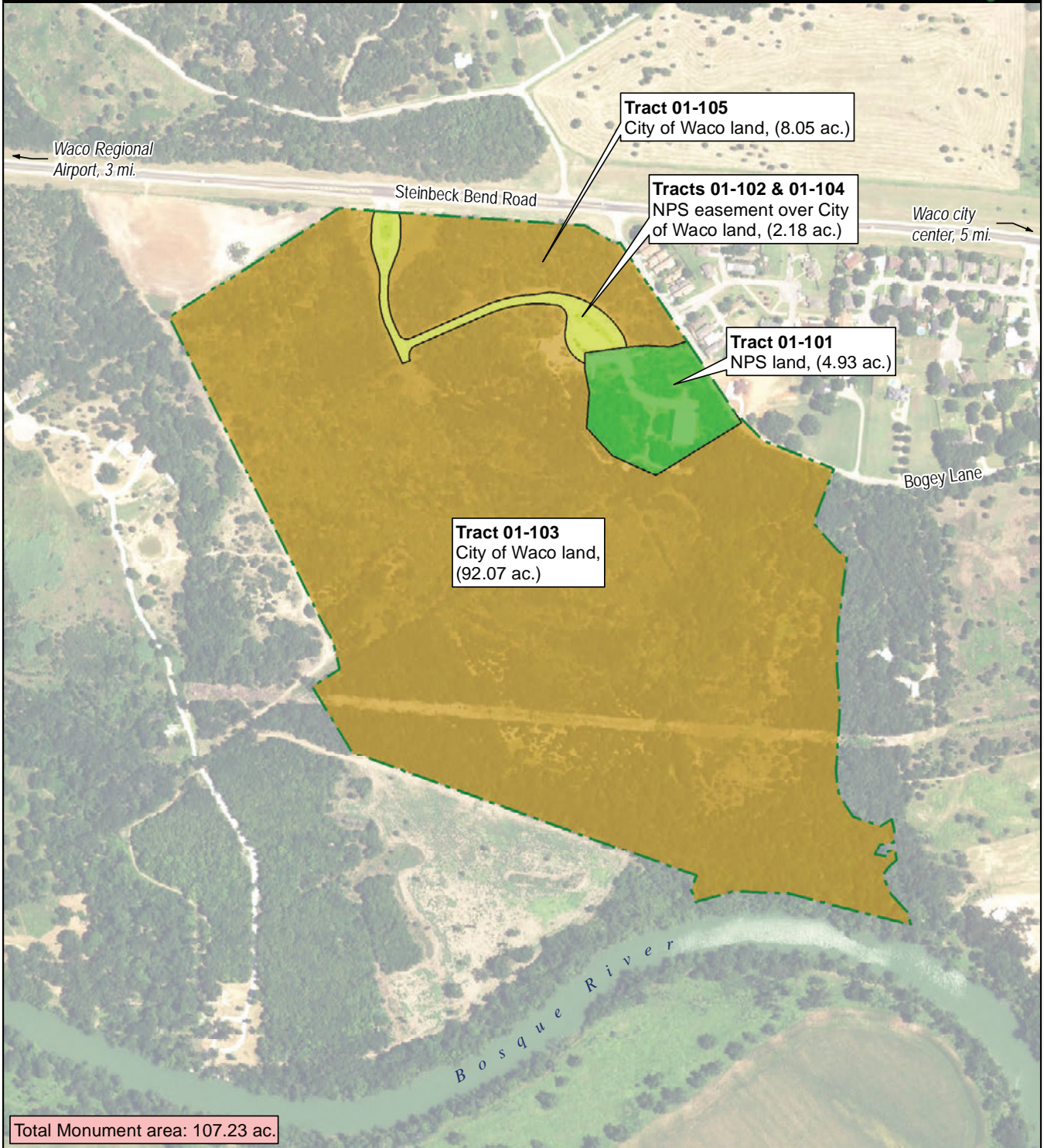
Preparation of a management plan (Presidential Proclamation 9299). A management plan for the monument should be prepared, with full public involvement, by July 10, 2018. The management plan shall ensure that the monument fulfills the following purposes for the benefit of present and future generations: (1) to preserve and protect the objects of scientific interest associated with the monument; (2) to foster and facilitate appropriate research; (3) to promote understanding and stewardship of the monument's resources and values through interpretive and educational opportunities; and (4) to provide for the enjoyment of the monument's resources and values in a manner that is compatible with their preservation. The management plan shall address the desired relationship of the monument to other sites with paleontological resources both within and outside the national park system.

Relinquishment and easement of land (City of Waco Resolution 2015-238). The City of Waco has approved the relinquishment, transfer, and conveyance of 4.93 acres to the National Park Service together with such easements and licenses necessary for the efficient continued operation of the site. City owned adjoining land totaling approximately 102 acres (the remainder of the Waco Mammoth Site except for a river corridor buffer) shall remain under the ownership, authority, control, and jurisdiction of the City of Waco to be managed for the continuing preservation and protection of paleontological resources, conducting scientific study, and providing for onsite visitor enjoyment and understanding unless and until such time as the City and National Park Service mutually agree that the City-owned land or any part of it should be transferred to the National Park Service.

Waco Mammoth National Monument

Current Land Ownership

National Park Service
U.S. Department of the Interior



Total Monument area: 107.23 ac.

Lands Resources Program Center
Intermountain Region
Internal Map Exhibit
February 2016



SCALE: 1" = 500'
0 125 250 500
Feet

- NPS land (fee)
- NPS easement
- City of Waco land
- Legislated boundary
- NPS tract boundary

Property ownership data shown is compiled from deeds, plats, surveys, and other source data. This is not a surveying quality drawing and should be used for general scaling purposes only. Acreages have been derived from surveys and office compilations. Aerial photography: 2014 NAIP

Texas State Plane Coordinate System, Central Zone, NAD83, US Foot.

Administrative Commitments

Title / Agency / Organization	Purpose / Description	Expiration Date	Responsible Party
General Agreements			
Agreement between the National Park Service, the City of Waco, Texas, and Baylor University	Establish an initial framework under which the parties will cooperate to protect, preserve, interpret, and maintain the paleontological and associated resources of Waco Mammoth National Monument. Agreement No. NPS-LYJO-2015-03.	7/18/2018	National Park Service; City of Waco, Texas; Baylor University
Operations agreement	Cooperation regarding Waco Mammoth National Monument, related to visitor services, site operations, resources management, law enforcement, fire and emergency services, and publicity / partnerships. Sub-agreement to Agreement No. NPS-LYJO-2015-03.	7/18/2018	National Park Service; City of Waco, Texas; Baylor University
Agreement for transfer of collections and archival records	Researchers must seek approval from Mayborn Museum (Baylor University) to perform collections-based research. Work on land outside of the NPS-owned parcel requires City of Waco approval.	Pending transfer of ownership	National Park Service; City of Waco, Texas; Baylor University
Conservation Easement			
Grant from the Land and Water Conservation Fund	Protect items of paleontological significance, specifically certain exposed bones and <i>in situ</i> specimens.	7/17/2057	Texas Historical Commission
Special Park Uses			
Special use permit for fire lane	There is a need for a future special use permit for the fire lane within the NPS-owned 4.93 acres.	Not yet in place; needs renewal every 5 years	City of Waco
Right-of-way for water line	There is a need for a future right-of-way permit for the water line within the NPS-owned 4.93 acres.	Not yet in place; needs renewal every 5 years	City of Waco



Appendix C: Roles and Responsibilities of Partner Organizations

Baylor University

Visitor Services

- Supports requests for assistance from National Park Service and the City of Waco that lead to enhanced interpretive services, including development of brochures, wayside exhibits, websites, and social media outlets.

Site Operations

- Work as a partner in the management of the entire site. Representatives of the parties will consult and coordinate prior to any development on the site.
- Meet regularly with representatives of the other parties to discuss issues related to site operations.

Resource Management

- Share any data concerning natural or cultural resources related to the site.
- Participate in further paleontological surveys led by the National Park Service throughout the site in order to identify areas for regular monitoring and further study.
- Until such time as Baylor and the National Park Service have executed appropriate agreements with regard to the specimens taken from the site, Baylor will
 - continue to house all fossil specimens removed from the site and its associated archival data
 - provide work space for NPS scientists to become familiar with the specimens in storage, conduct research and conduct curatorial activities
 - work with NPS staff on the cataloging, curation and preparation of the fossil specimens and the associated archival data
 - support requests from NPS scientists for on- and off-site research if the need is deemed immediate for preservation of fossil specimens
 - work with the National Park Service, as requested, to review and evaluate on- and off-site research permit requests from non-NPS researchers
- Baylor University independently monitors the environmental conditions within the dig shelter. Baylor University will continue to perform this activity until the National Park Service receives sufficient funding and personnel, at which time this responsibility will be renegotiated.

Publicity / Partnerships

- In cooperation with the National Park Service, communicates regularly with all support groups and non-profit organizations regarding activities at the site.
- Submit all materials that are intended for public distribution and that refer to the partnership or each other, to one another for advance review and approval. The parties agree that they may develop standard language that does not require approval beyond the initial approval. Where standard language has not been developed, the parties will use best efforts to review, approve, or deny such materials within seven (7) business days of receipt.
- Provides a meeting venue for events.
- Appoints members to the Waco Mammoth Foundation board of directors until such time that the Foundation board is reorganized to a membership-based elected or self-renewing board.

City of Waco, Texas (The City)

- Has final authority regarding City-owned lands (which include the Administrative Lands and the river corridor buffer as those areas are described in City of Waco Resolution Number 2015-238).

Visitor Services

- Provide interpretive and educational services for site visitors and for school and other groups visiting the site, in coordination with the National Park Service.
- Support requests for off-site educational programs, in coordination with the National Park Service.
- In coordination with the National Park Service, schedule to operate the site seven days per week and will close only on Thanksgiving, Christmas, and New Year's Day. After evaluation of visitation on other federal holidays, however, the National Park Service and the City may decide to close additional days.
- Work with the interpretive staffs of the National Park Service to ensure cohesive and complementary operations and will jointly plan activities such as interpretive training, development of educational programs, special events, outreach, and demonstrations.

Site Operations

- Furnish qualified personnel and/or equipment for site operational needs, upon request of the City or the National Park Service.
- Provide day-to-day direction and guidance to City and NPS employees assigned to the site.
- Provide recommendations for annual work goals and feedback on performance to the Chief of Interpretation and Resources Management, Lyndon B. Johnson National Historical Park (LYJO).
- Continue to collect fees for admission, guided tours, and educational programs until such time as a general management plan is complete or the City and the National Park Service mutually agree to terminate this right, as provided by the reservation of right in the deed transferring the 4.93 acre parcel to the federal government.
- Continue to provide staffing and financial support to the site at the 2015 level or higher throughout the term of the Operations Agreement, with the understanding that the National Park Service intends to provide personnel and financial support to the site as funds become available for this purpose.
- Coordinate volunteer recruitment and involvement.
- Collect visitor statistics.
- Work as a partner in the management of the entire Waco Mammoth Site. Representatives of the parties will consult and coordinate prior to any development on the site.
- Meet regularly with representatives of the other parties to discuss issues related to site operations.
- Continue to provide law enforcement patrols, fire suppression, and other responses for assistance.

- Cooperate with the National Park Service to re-key the Dig Shelter to NPS standards, and provide the National Park Service with keys to entry gates and other appropriate structures and areas as requested by the National Park Service. Additionally, provide keys to specified personnel, including first responders who may respond to alarms generated by the security system.
- Continue to provide utility services to the site (e.g., electrical, water, and sewer services) until the National Park Service receives funding for this purpose. The parties may enter into further agreements to replace the utility services currently provided by the City.
- The City currently operates, maintains, and monitors the humidity, ventilation, and air conditioning system at the Dig Shelter, and Baylor independently monitors the environmental conditions within the Dig Shelter. The City and Baylor will continue to perform those respective activities until the National Park Service receives sufficient funding and personnel, at which time the parties intend for the National Park Service to assume these responsibilities.
- The City currently operates and maintains the federally owned properties including the Dig Shelter, new office building, trails, trail bridges, road, and landscape.

Resource Management

- Share any data concerning natural or cultural resources related to the site.
- Participate in further paleontological surveys led by the National Park Service throughout the site in order to identify areas for regular monitoring and further study.

Publicity / Partnerships

- In cooperation with the National Park Service, produce informational literature and publicity materials related to the site.
- May continue to maintain a separate website for the entire site. The City will consult with the National Park Service (Lyndon B. Johnson National Historical Park) concerning the information on both the City and NPS websites.
- Coordinates the social media presence for the site.
- Lead cooperative efforts and outreach activities with chambers of commerce, tourism industry representatives, heritage tourism groups, and others to further information and knowledge of the site.
- Communicates regularly with all support groups and nonprofit organizations regarding activities at the site.
- Submit all materials that are intended for public distribution and that refer to the partnership or each other, to one another for advance review and approval. The parties agree that they may develop standard language that does not require approval beyond the initial approval. Where standard language has not been developed, the parties will use best efforts to review, approve, or deny such materials within seven (7) business days of receipt.
- Appoints members to the Waco Mammoth Foundation board of directors until such time that the Foundation board is reorganized to a membership-based elected or self-renewing board.

National Park Service (NPS)

- Has final authority regarding federally owned lands.

Visitor Services

- Provide interpretive and educational services for site visitors and for school and other groups visiting the site, in coordination with the City.
- Support requests for off-site educational programs, in coordination with the City.
- In coordination with the City, schedule to operate the site seven days per week and will close only on Thanksgiving, Christmas, and New Year's Day. After evaluation of visitation on other federal holidays, however, the National Park Service and the City may decide to close additional days.
- Work with the interpretive staff of the City to ensure cohesive and complementary operations and will jointly plan activities such as interpretive training, development of educational programs, special events, outreach, and demonstrations.

Site Operations

- Furnish qualified personnel and/or equipment for site operational needs, upon request of the City or the National Park Service.
- Provide full time and seasonal on-site personnel and financial support to the site as funds become available for this purpose.
- Complete NPS employee annual evaluations.
- Work as a partner in the management of the entire site. Representatives of the parties will consult and coordinate prior to any development on the site.
- Meet regularly with representatives of the other parties to discuss issues related to site operations.
- Develop real property inventory and baseline budget.

Resource Management

- Share any data concerning natural or cultural resources related to the site.
- Provide personnel on short- and long-term assignments to provide scientific and other expertise to the parties with respect to natural and cultural resources associated with the site.
- Lead further paleontological surveys with participation by the City and Baylor throughout the site in order to identify areas for regular monitoring and further study.

Publicity / Partnerships

- Publicly recognize the City and Baylor as NPS partner organizations.
- In cooperation with the City, produce informational literature and publicity materials related to the site.
- Maintain the NPS website for the site.
- Communicates regularly with all support groups and non-profit organizations regarding activities at the site.
- Submit all materials that are intended for public distribution and that refer to the partnership or each other, to one another for advance review and approval. The parties agree that they may develop standard language that does not require approval beyond the initial approval. Where standard language has not been developed, the parties will use best efforts to review, approve, or deny such materials within seven (7) business days of receipt.
- Develop NPS grant applications.

Waco Mammoth Foundation

Publicity / Partnerships

- The Waco Mammoth Foundation is not a signatory to the Operations Agreement, but functions as a supporting partner, similar to a Friends group.
- Conduct fundraising activities and provides a donation box at the site, in accordance with NPS policies in Director's Order 21.
- In cooperation with the National Park Service, act as an advocate for the site both regionally and nationally, building relationships and awareness for the site.
- Assist in development non-NPS grant applications in order to garner funds for the site.
- Serve as a bridge between the City of Waco, Baylor University, and the National Park Service.



Appendix D: Ownership of Assets within Authorized Boundary

FMSS Location	Location Description	Asset Category	Ownership	Occupant	Year Built
Waco Mammoth National Monument (NPS Owned, 4.93 Acres)					
246302	Maintenance Road	Paved Roads	NPS	SHARED	2008
246309	Maintenance Area Landscape	All Others	NPS	SHARED	2008
246311	Dig Shelter Landscape	All Others	NPS	SHARED	2008
246328	Dig Shelter Building	Buildings	NPS	SHARED	2008
246323	Shared Office Building	Buildings	NPS	SHARED	2015
246321	Interp. Media WACO Exhibits	All Others	NPS	SHARED	2008
246322	Interp. Media WACO Waysides	All Others	NPS	SHARED	2008
246613	Dig Shelter Bldg. Trail	Trails	NPS	SHARED	2008
246610	NPS Boundary Fence	All Others	NPS	SHARED	2006
Waco Mammoth Site (City Owned)					
246304	Water System Trail	Trails	City	CITY GOV	2008
246306	Lift Station Trail	Trails	City	CITY GOV	2008
246308	Welcome Center Landscape	All Others	City	SHARED	2008
246310	Picnic Area Landscape	All Others	City	SHARED	2008
246317	Welcome Center Building	Buildings	City	SHARED	2008
246319	Storage Building G	Buildings	City	SHARED	2015
246324	WACO Site Irrigation System	Water Systems	City	SHARED	2008
246325	WACO City Sewer	Waste Water Systems	City	SHARED	2008
246298	Main Entrance Road	Paved Roads	City	SHARED	2008
246303	Welcome Center Parking Lot	Paved Roads	City	SHARED	2008
246307	Main Entrance Landscape	All Others	City	SHARED	2008
246305	Dig Shelter Trail	Trails	City	SHARED	2008
246313	City Boundary Fence	All Others	City	SHARED	2006
246316	Waco Mammoth Park (Shared)	Area	City & NPS	SHARED	N/A
246326	WACO City Water	Water Systems	City & NPS	SHARED	2008
246327	Dig Shelter Amphitheater	All Others	City & NPS	SHARED	2008

Source: NPS Facility Management Software System, accessed 3/7/2016.

Appendix E: Traditionally Associated Tribes

Traditionally associated tribes refer to those groups that have had a significant connection to a place that has endured for two generations or more. The following list was derived from the NPS Intermountain Region's tribal contact database and other sources.

Comanche Nation, Oklahoma

Comanche Tribal Business Committee
PO Box 908
Lawton, OK 73507

Tonkawa Tribe of Indians of Oklahoma

Tonkawa Business Committee
1 Rush Buffalo Road
Tonkawa, OK 74653

Wichita and Affiliated Tribes (Wichita, Waco, Keechi, Tawakonie), Oklahoma

Wichita Executive Committee
PO Box 729
Anadarko, OK 73005





Intermountain Region Foundation Document Recommendation
Waco Mammoth National Monument
August 2016

This Foundation Document has been prepared as a collaborative effort between NPS park and regional staff, Baylor University, City of Waco, Texas, and the Waco Mammoth Foundation.



8-22-2016

Russ Whitlock, Superintendent, Waco Mammoth National Monument

Date



9/13/16

Sue E. Masica, Regional Director, NPS Intermountain Region

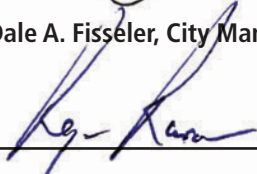
Date



9/1/16

Dale A. Fisseler, City Manager, City of Waco, Texas

Date

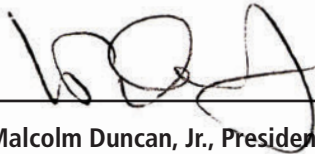


CW4

8/29/2016

Reagan Ramsower, Senior Vice President and Chief Operating Officer, Baylor University

Date



8/22/16

Malcolm Duncan, Jr., President, Waco Mammoth Foundation

Date



As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historic places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

WACO 218/134393
September 2016

Foundation Document • Waco Mammoth National Monument

