



# Mesa Verde National Park Entrance Area Improvements Environmental Assessment/Assessment of Effect

March 2009



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ENTRANCE AREA IMPROVEMENTS  
Environmental Assessment/Assessment of Effect  
Mesa Verde National Park  
Colorado

Prepared for:  
National Park Service  
US Department of the Interior



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# Entrance Area Improvements Environmental Assessment/Assessment of Effect

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## Mesa Verde National Park Colorado

### ABSTRACT

#### Summary

Mesa Verde National Park (park) proposes improvements to the park's entrance area including a wastewater system, new location for an access road, a ground-source heat pump system at the planned Curatorial Facility and Visitor Information Center (VIC), and a sand shed located near the entrance to the park. The National Park Service (NPS) also proposes to construct a new staff office/storage building, upgrade utilities, and provide public restrooms at the Entrance Station Complex located at the park's entrance.

This Environmental Assessment/Assessment of Effects (EA) will evaluate four alternatives: a No Action Alternative and three action alternatives. The No Action alternative describes the current condition of the project site which consists of two segments: 1) Entrance Station Complex and 2) Planned Curatorial Facility and VIC. Action alternatives address the construction of a wastewater system and ground-source heat pump system, relocating the access road to the Curatorial Facility and VIC, and the addition of a sand shed placed near the park entrance. The action alternatives also address construction of a new park office/storage building, addition of restroom facilities, as well upgrading utilities at the Entrance Station Complex.

This EA has been prepared in compliance with the National Environmental Policy Act (NEPA) to provide the decision-making framework that 1) analyzes a reasonable range of alternatives to meet objectives of the proposal, 2) evaluates potential issues and impacts to the park's resources and values, and 3) identifies mitigation measures to lessen the degree or extent of these impacts. Resource topics are included in this document because the resultant impacts may be greater-than-minor include soils, vegetation, water resources, archeological resources, cultural landscape, visual resource, visitor use and experience, and park operations. All other resource topics have been dismissed because the project would result in negligible or minor effects to those resources. No major effects are anticipated as a result of this project.

#### Public Comment

If you wish to comment on the EA, you may post comments online at <http://parkplanning.nps.gov/> or mail comments to Superintendent; Mesa Verde National Park; P.O. Box 8; Mesa Verde, Colorado 81330. This EA will be on public review for 30 days. It is the practice of the NPS to make all comments, including names and addresses of respondents who provide that information, available for public review following the conclusion of the environmental assessment process. Individuals may request that the NPS withhold their name and/or address from public disclosure. If you wish to do this, you must state this prominently at the beginning of your comment. Commentators using the website can make such a request by checking the box "keep my contact information private." NPS will honor such requests to the extent allowable by law, but you should be aware that NPS may still be required to disclose your name and address pursuant to the Freedom of Information Act. We will make all submissions from organizations,

businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses available for public inspection in their entirety.

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# 1 PURPOSE AND NEED

## Introduction

Mesa Verde National Park is located midway between Cortez and Mancos, Colorado, south of U.S. Highway 160. Figure 1 shows the location of the park and the approximate location of the project area. Since its establishment in 1906, Mesa Verde National Park's mission has been to preserve the cultural, natural, and scientific resources of the area. Its purpose also includes providing the public with opportunities to experience the park and to appreciate the way of life of the Ancestral Puebloan people who occupied the mesa from about 400 A.D. to about 1300 A.D. To improve the visitor experience and park employee's working environment, the park proposes to upgrade the facilities located at the entrance area.

This Environmental Assessment/Assessment of Effect (EA) will examine the environmental impacts associated with the proposed new design alterations to the wastewater system, utility corridors and access road to the new Curatorial Facility and Visitor Information Center (VIC) as well as constructing a sand shed and construction of a new staff office/storage building in the vicinity of the entrance area at Mesa Verde National Park. This EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, regulations of the Council on Environmental Quality (CEQ) (40 CFR 1508.9), and the National Park Service Director's Order (DO)-12 (*Conservation Planning, Environmental Impact Analysis, and Decision-making*).

## Background

The project study area consists of two components, the Curatorial Facility and VIC site and the Entrance Station Complex, which are located approximately half a mile south of the entrance to Mesa Verde National Park on the main Entrance Road. Planned facilities at the Curatorial Facility and VIC site were discussed in a prior Environmental Assessment prepared in 2002 (Cultural Center EA, 2002), which consisted of construction of a new research and storage facility, administration building, a visitor center, as well as 9.5 acres that would contain evaporative wastewater lagoons and constructed grey water wetland. These facilities currently have not been constructed on the site. The Entrance Station Complex is one of several locations providing visitor services at Mesa Verde National Park. The facilities at the Entrance Station Complex include two entrance station kiosks, a staff office/storage trailer, two temporary storage facilities, a portable toilet, and visitor parking located north of the kiosks.

Since 2002, the National Park Service (NPS) has considered several design changes and reconsidered facility functions for the currently proposed Curatorial Facility and VIC. Proposed facilities at the Curatorial Facility and VIC will be discussed in this EA and will be in addition to the planned facilities approved in the 2002 EA. Design changes and facility functionality along with other proposed actions at the entrance area of the park prompted the NPS to consider changes to the entrance area of the park holistically. Most of the impacts related to the Curatorial Facility and VIC construction were addressed in the 2002 decision document. Although the built footprint would remain similar to that described in 2002, the current undertaking differs from the original project in the construction of a wastewater system, new access road, and enhancing sustainable improvements by including a ground-source heat pump system (GSHP). The previously planned sewage treatment facility would not be adequate to support the future needs at the entrance area and may have limited capacity during winter months. The previously planned access road would generate traffic issues when vehicles attempt to re-enter the Entrance Road.

Entrance station kiosks at the Entrance Station Complex are located in the median of the roadway, which services two inbound lanes and one outbound lane of traffic. Park fees are collected and park information is provided to visitors at the entrance station kiosks year round. The existing underground utilities that support the kiosks are deteriorating and inadequate. Currently, a portable toilet is located south of the

entrance station kiosks for park employee use. However, park visitors also use the portable toilet because there is no other such facility located near the entrance station kiosks.

The staff office/storage trailer, located at the Entrance Station Complex, is approximately 14-feet by 50-feet and is located west of the entrance station kiosks. The trailer with associated parking is used for park employee offices and storage. The trailer does not meet current building code requirements and is not ADA accessible. Electrical, sewer, and septic systems are outdated and deteriorated in the trailer.

The NPS does not have a sand shed at the entrance area. Sand is used to increase traction on the slippery and icy roadways during the winter months. Currently, the closest sand storage is 18 miles to the south, causing inefficiencies for the maintenance staff. The road leading to Point Lookout is steep and there is not a stockpile of sand available near the north entrance area.

## Purpose and Need

At Mesa Verde National Park, the NPS proposes several elements to improve facilities at the park's entrance area. These elements include improvements at the planned Curatorial Facility and VIC site and improvements at the entrance station kiosks and associated office/storage building area.

The purpose of the improvements at the planned Curatorial Facility and VIC site are to provide wastewater treatment with year-round functionality to service entrance area, provide adequate access to the site, and enhance sustainable improvements to the entrance area including the construction of a GSHP. The improvements at the entrance area will enhance increased efficiency of road and facility maintenance (especially during the snowy winter season) by the construction of sand shed, improve park management of invasive species, and enhance native vegetation consistent with the park's exotic plant management plan by controlling and eradicating cheatgrass and brome at the entrance area.

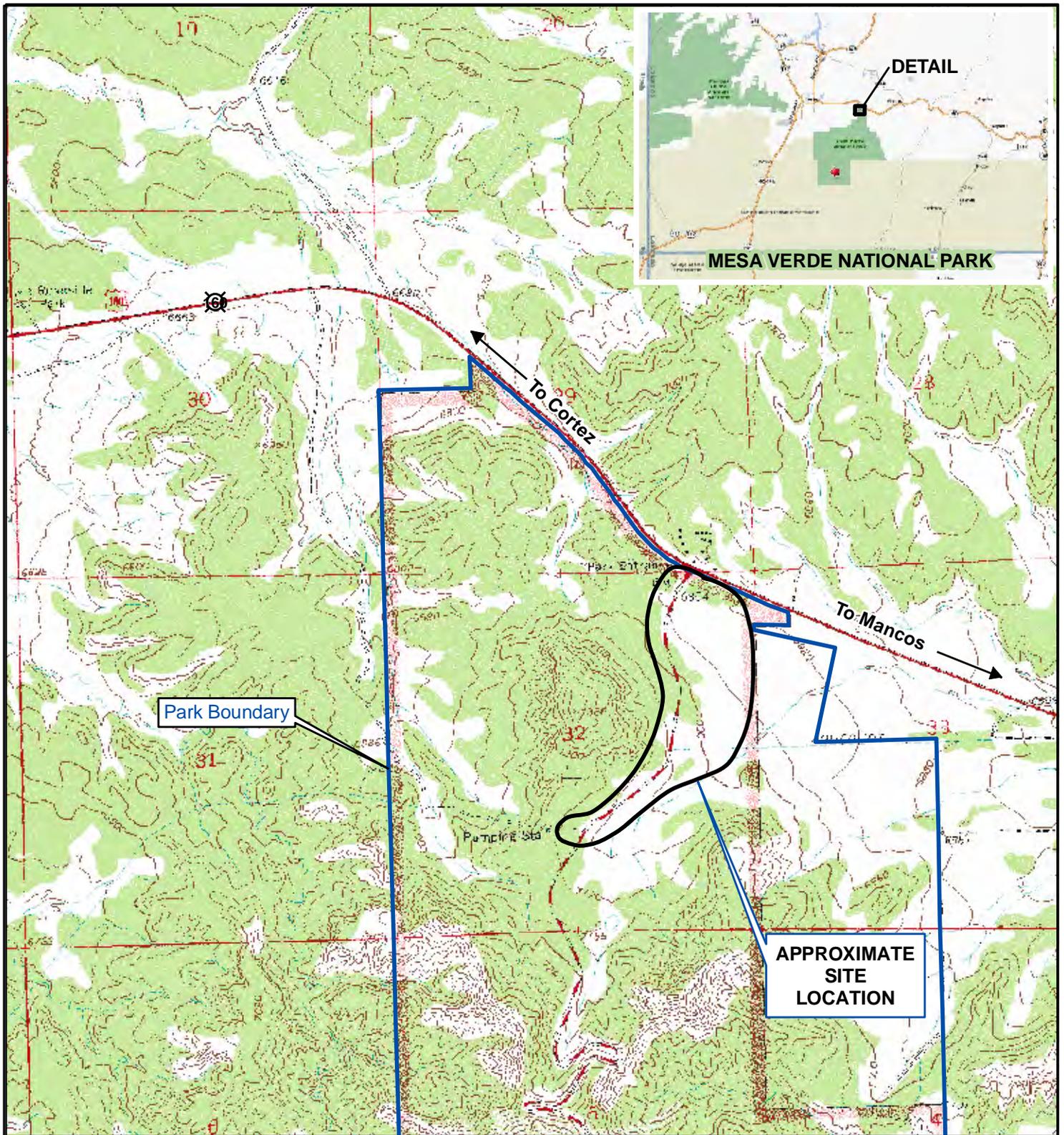
The purpose of the improvements at the entrance station kiosk area is to construct a new office/storage building, which will provide an adequate and safe working environment for staff, as well as allowing for better entrance station operations and visitor service. The improvements eliminate aging unreliable utilities service and bury utility lines to upgrade service utilities to the entrance area, improve aesthetic quality and minimizing impacts to park resources by implementing architecturally compatible design, and provide sustainable development at the park's entrance area that is sympathetic to the park's entrance landscape. Additionally, visitor orientation and turn around space will be accommodated through design and operation of the entire entrance area. Under current operations, visitors who mistakenly enter the park have limited area to turn around. During high visitor use times this can result in considerable delays and inconvenience to the staff and visitors.

The project is needed to address the following needs:

- The previously planned wastewater system for the Curatorial Facility and VIC may not provide adequate capacity during the winter and has a very large impact area.
- The previously planned access route generates a traffic issue when vehicles attempt to re-enter the Entrance Road. The planned access route has a larger impact area with large amounts of fill needed to connect the planned access road to the main road.
- Currently, there is not an adequate source of road sand in the vicinity of the entrance area. Sand must be transported on an as-needed basis over relatively long distances during severe weather because there is a limited amount of open storage area on which sand can be stockpiled.
- The planned Curatorial Facility and VIC site is heavily infested with invasive species due to previous ground disturbance from agricultural use. Invasive species need to be eliminated or controlled.

- Maximum use of sustainable technology would be beneficial in reducing energy needs and maintenance at the proposed facilities.
- Current support buildings at the entrance station kiosk area are degraded and in need of replacement with appropriate accessible structures.
- Some utility lines in portions of the entrance area are over 30 years old and some are much older. Overhead utility lines at the entrance area are unsightly. Continued degradation and exposure to the elements will result in loss of service for vital utilities.
- Current operations and facilities at the entrance area need to be improved to provide an adequate safe working environment for staff, as well as allowing for better entrance station operations and visitor service. Under current operations, visitors who mistakenly enter the park have a limited area to turn around. During high visitor use times, this can result in considerable delays and inconvenience to the staff and visitors. Visitor orientation and turn-around space needs to be accommodated through design and operation of the entire entrance area.

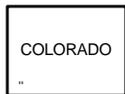
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Base:  
 7.5 min. Quadrangle  
 Digital Raster Graphic  
 Point Lookout, CO



1:24,000



QUADRANGLE LOCATION

SLC8A047.mxd



**MESA VERDE ENTRANCE AREA**

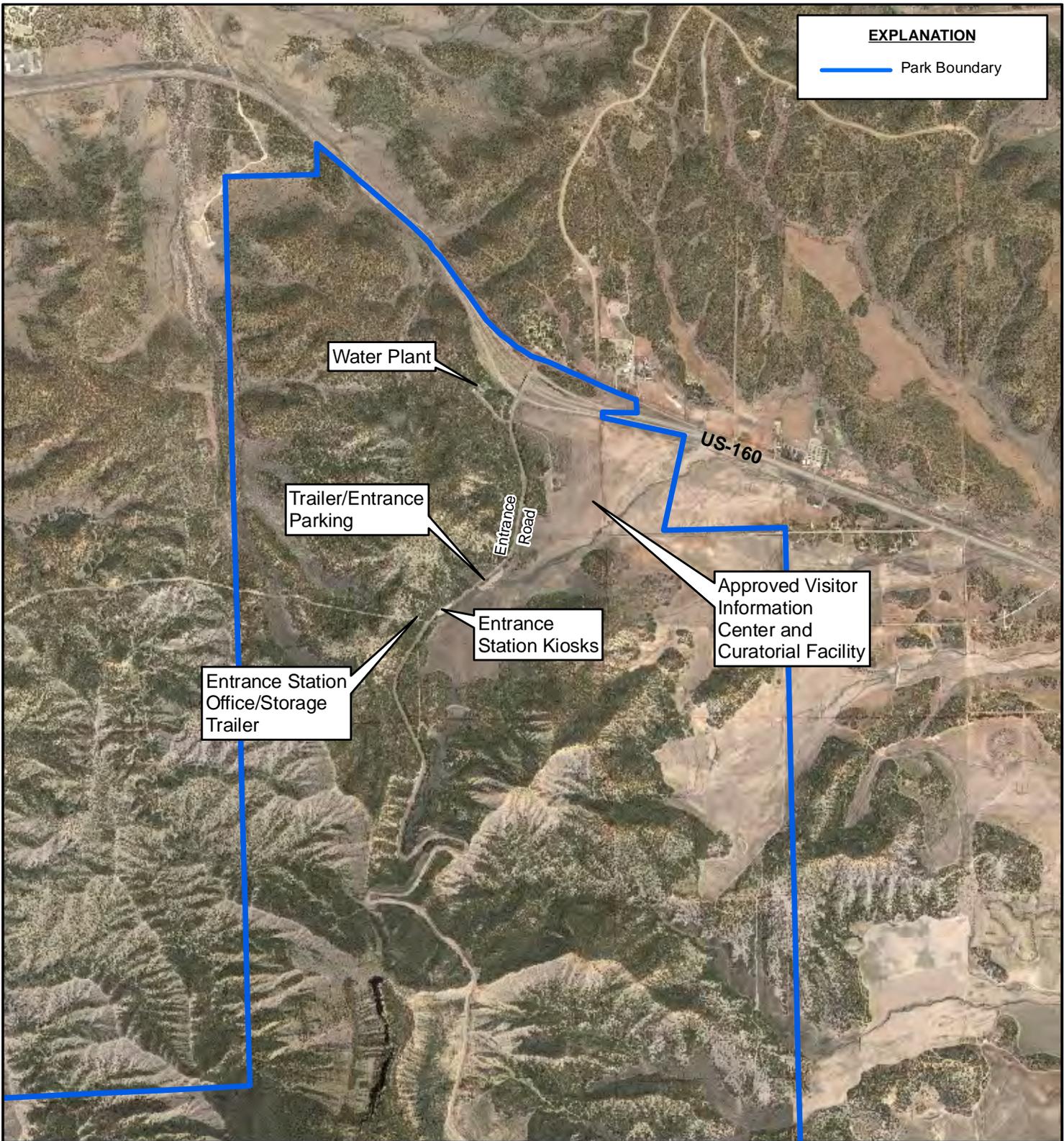
**MESA VERDE NATIONAL PARK COLORADO**

UNITED STATES DEPARTMENT OF INTERIOR NATIONAL PARK SERVICE

FIGURE 1

SITE VICINITY MAP

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Base:  
2007 Google Earth Image



1:24,000

COLORADO

QUADRANGLE LOCATION

SLC8A048.mxd



**MESA VERDE ENTRANCE AREA**

**MESA VERDE NATIONAL PARK COLORADO**

UNITED STATES DEPARTMENT OF INTERIOR NATIONAL PARK SERVICE

**FIGURE 2**

**SITE MAP**

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## Relationship to Other Plans and Policies

Current plans and policy that pertain to this proposal include the 1979 Mesa Verde Master Plan (1979), park construction projects, the Fire Management Plan, and the 2006 National Park Service Management Policies (NPS 2006). Following is more information pertaining to how this proposal meets the goals and objectives of these plans and policies:

- *Construction of the remainder of the Curatorial Facility and VIC.* Components of the Curatorial Facility and VIC were discussed and analyzed in an Environmental Assessment prepared in 2002 (Cultural Center EA, 2002), which consisted of construction of a new research and storage oriented facility, administration building, a visitor center, as well as 9.5 acres that would contain evaporative wastewater lagoons and constructed grey water wetland. Since 2002, the NPS has considered several design changes and reconsidered facility functions to be incorporated in the proposed Curatorial Facility and VIC site.
- *Mesa Verde Master Plan.* A park's master plan describes the general approach the NPS intends to follow in managing that park unit over the next several years. Mesa Verde National Park's master plan was approved in 1979 (NPS 1979). Since then, park visitation has increased and the buildings and utilities have aged, which has led to a need to upgrade the entrance station area facilities.
- *Fire Management Plan.* Mesa Verde National Park has experienced six major wildfires since 1989. As part of the response to these fires, the NPS is preparing a new Fire Management Plan for the park. The plan will support efforts to maintain a healthy ecosystem while protecting the park's cultural resources and infrastructure. The plan will consider multiple management techniques for fuels reduction, fire suppression, and resource protection. The Fire Management Plan EA will be available for public review in 2009.
- *Park Construction Projects.* There are several other current or upcoming park construction projects, including replacement of the park's water supply pipeline, upgrades of fire hydrants, and roadway improvement projects.
- The proposal is consistent with the goals and objectives of the *2006 National Park Service Management Policies* (NPS 2006) which states that major park facilities within park boundaries should be located so as to minimize impacts to park resources. The proposed site for the entrance area facilities was identified to minimize harm to all park resources, particularly significant archeological resources.

## Appropriate Use

Sections 1.4 and 1.5 of *Management Policies* 2006 direct that the National Park Service must ensure that park uses that are allowed would not cause impairment of, or unacceptable impacts on, park resources and values. A new form of park use may be allowed within a park only after a determination has been made in the professional judgment of the park manager that it will not result in unacceptable impacts.

Section 8.1.2 of *Management Policies* 2006, *Process for Determining Appropriate Uses*, provides evaluation factors for determining appropriate uses. All proposals for park uses are evaluated for the following:

- Consistency with applicable laws, executive orders, regulations, and policies;
- Consistency with existing plans for public use and resource management;
- Actual and potential effects on park resources and values;
- Total costs to the service; and
- Whether the public interest will be served.

Park managers must continually monitor all park uses to prevent unanticipated and unacceptable impacts. If unanticipated and unacceptable impacts emerge, the park manager must engage in a thoughtful, deliberate process to further manage or constrain the use, or discontinue it. More information on the definition of unacceptable impacts as cited in Section 1.4.7.1 of *Management Policies 2006* can be found in the “Environmental Consequences” chapter.

Proposed improvement to the facilities at the park’s entrance area are common and vital in most park units. Proper location, sizing, as well as construction materials and methods would ensure that unacceptable impacts to park resources and values would not occur. The proposed improvements to facilities at the park’s entrance area are consistent with the park’s general management plan and other related park plans. With this in mind, the NPS finds that improvements to the facilities at the entrance area are acceptable at Mesa Verde National Park.

## Public Scoping

Scoping is a process to identify the resources that may be affected by a project proposal and to explore possible alternative ways of achieving the proposal while minimizing adverse impacts. Mesa Verde National Park conducted both internal scoping with appropriate National Park Service staff and external scoping with the public and interested/affected groups and agencies. The park received two public responses that did not include any substantive comments on the proposed action. Annual consultation meetings with Mesa Verde’s 24 associated tribes included a review of the proposals for the Curatorial Facility and VIC. Additionally, a scoping letter was sent to the Colorado State Historic Preservation Office on July 9, 2008 and a press release was sent to local and state news agencies on June 30, 2008.

Internal scoping was conducted by an interdisciplinary team of professionals from Mesa Verde National Park and the Denver Service Center. Interdisciplinary team members met during the Spring of 2006 through the end of 2007 to discuss the purpose and need for the project; various alternatives; potential environmental impacts; past, present, and reasonably foreseeable projects that may have cumulative effects; and possible mitigation measures. Over the course of the project, team members also conducted two site visits to view and evaluate the proposed sites for the facilities at the park entrance area.

## Impact Topics Retained for Further Analysis

Impact topics for this project have been identified on the basis of federal laws, regulations, and orders; NPS *Management Policies 2006* and NPS knowledge of resources at Mesa Verde National Park. Impact topics that are carried forward for further analysis in this EA are listed below along with the reasons why the impact topic is further analyzed. For each of these topics, the following text also describes the existing setting or baseline conditions (i.e. affected environment) within the project area. This information will be used to analyze impacts against the current conditions of the project area in the *Environmental Consequences* chapter. Figure 3 shows the Area of Potential Effect (APE), which is the area that would be affected physically and/or visually by the undertaking of the project.

### Soils

The NPS *Management Policies 2006* states that the National Park Service will strive to understand and preserve the soil resources of park units and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil, or its contamination of other resources. The study area is dominated by light brownish-gray to brown clay overlain by 0 to 3 inches of light brownish-gray to brown silty clay loam to very channery (flat fragments of sandstone, shale, and limestone) clay loam. Additionally, the shale soil on the slopes above and at the Entrance Station Complex area is vulnerable to erosion and debris flows during strong rain even when fully vegetated.

The soils within the study area are a mix of exposed, covered, and compacted surface conditions. Exposed soils are located in areas where flooding occurs during heavy rain episodes. These soils are naturally exposed, as the flood streams keep substantial vegetation from developing. In undisturbed areas, soils exhibit natural characteristics including the ability to support naturally occurring vegetation and absorb water. Developed lands are unable to support vegetation or absorb water. This is due to either an impervious cover or highly compacted soils. Non-exposed soils in the project area are compacted soils that are covered by pavement or buildings. Because land disturbances associated with some construction activities could affect soils at the entrance area the impact topic is retained for further analysis.

## Vegetation

According to the NPS *Management Policies 2006*, the NPS strives to maintain all components and processes of naturally evolving park unit ecosystems, including the natural abundance, diversity, and ecological integrity of plants (NPS 2006). Two important native plant communities are found within the entrance area. These communities include the pinyon-juniper/mountain shrub ecotone uplands and the grasslands/rabbitbrush/sagebrush valley community. An ancient stand of pinyon pine and juniper trees containing large specimen trees, some are 800 to 1,000 years old, are located on the west side of the Entrance Road next to the entrance station kiosks. The area on the east side of the Entrance Road is occupied by a meadow that was previously used as crop and pasture land. This meadow is primarily covered by non-native smooth brome (*Bromus inermis*) and cheatgrass (*Bromus tectorum*) as well as native rabbitbrush and sagebrush (*Artemisia tridentata*), and some native understory species, including New Mexico groundsel (*Packera neomexicana*), Arizona gumweed (*Grindelia arizonica*), meadow needle-and-thread grass (*Hesperostipa comata*), prostrate low penstemon (*Penstemon* sp.), and yarrow (*Achillea millefolium*) may be found in the more southerly portions of the meadow. An abrupt transition from the grass and shrubs of the open meadow occurs at the base of the shale slopes where the pinyon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*) ecotone community begins.

Rare plant species in the vicinity of the entrance area include wild hollyhock (*Iliamna rivularis*), western wallflower (*Erysimum inconspicuum*), littlehead (hollyleaf) clover (*Trifolium gymnocarpon*), red elderberry (*Sambucus racemosa*), purple (blue) elderberry (*S. cerulea*), and Indian-apple (*Podophyllum peltatum*) (Colyer, 2000). Wild hollyhock is quite rare and two known populations are in the entrance area. One population is located about 200 yards southeast of the existing entrance station and the other is on the west side of the Entrance Road near the Mesa Verde National Park sign. This species is likely to be present in the soil seed bank in many other sites within the entrance area. Efforts are made to provide all plant species of special concern with an extra level of protection to ensure the continued presence of those populations within the park. Although there are rare plant species in the vicinity of the entrance area, most of the rare plant species are located outside our area of construction. However the wild hollyhock at the access road junction with the main park road and many Indian-apple shrubs will be removed or relocated during access road construction.

Currently there are 22 species of non-native flora in the entrance area, more than anywhere else in the park, except along the Mancos River where seeds readily float from the Mancos Valley down the river. Twelve of the non-native species in the entrance area are known to have come from highway and waterline re-vegetation programs, two of the species are known to have come with road gravel and the rest are of unknown origin. The presence of vehicular traffic, livestock, and residential, commercial, and other developments in the vicinity of the entrance area also contribute to high numbers of invasive alien species (Colyer, 2000).

Efforts to control non-native plants began in 1994 when park staff applied herbicides on musk thistle along the newly installed waterline in the entrance area. The control efforts have expanded to include spraying of Canada thistle, diffuse knapweed, Dalmatian toadflax, and perennial pepperweed. This ongoing plant control program provides a long range proactive strategy for control and eventual eradication of non-native invasive species. Construction on the west side of the Entrance Road has the potential to impact the ancient trees in the area. Thus the impact topic is retained for further analysis.

## Water Resources

The NPS *Management Policies 2006*, NPS Director's Order (DO) 77: *Natural Resources Management*, along with the Clean Water Act and other federal, state, and local regulations provide general direction for the protection of surface water and groundwater. The purpose of the Clean Water Act is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." To enact this goal, the U.S. Army Corps of Engineers has been charged with evaluating federal actions that result in potential degradation of waters of the United States and issuing permits for actions consistent with the Clean Water Act. The U.S. Environmental Protection Agency also has responsibility for oversight and review of permits and actions that affect waters of the United States. Because water quality could be affected by this project it has been retained for further analysis.

## Archeological Resources

Archeological resources are defined by the NPS as any material remains or physical evidence of past human life or activities which are of archeological interest, including the record of the effects of human activities on the environment. They are capable of revealing scientific or humanistic information through archeological research (NPS Director's Order 28 Cultural Resource Management Guideline, 1998).

The APE is approximately three acres and would encompass about one mile of the Entrance Road corridor at the northern entrance to Mesa Verde National Park. In addition to the Entrance Road corridor, two short segments of existing graded roads intersecting with the Entrance Road would be improved. The first road segment would be constructed to improve access to the approved Curatorial Facility and VIC. This road segment is an existing service road located near the intersection of the Entrance Road and Highway 160. The second road segment is located southwest of the entrance station kiosks that would be improved to provide parking and access to the park staff office/storage building. In addition the APE includes a pipeline utility corridor, to accommodate water and sewer lines, extending from the existing water storage tank to the approved Curatorial Facility and VIC; and an approximately 600 foot long utility corridor from Highway 160 to the approved Curatorial Facility and VIC to bury electrical lines.

Portions of the APE have been surveyed for archeological resources several times over the past 30 years. A list of archeological surveys in the APE is provided below.

- 1977 University of Colorado archeological survey in the vicinity of the northern entrance to the park (Smith 1987). This survey focused on an area to the east of the Entrance Road and identified two sites within the APE. The first site consists of eight to 10 roughly shaped sandstone blocks, three primary flakes, and a lithic core that may be associated with a prehistoric habitation. The second site located south and west of the first site is a historic trash dump, which is associated with a Navajo sweat lodge, consisting of rusted cans, glass shards, and miscellaneous metal fragments.
- 1994, Mesa Verde National Park cultural resources survey, in support of the installation of the park's Phase III waterline replacement project, recorded two sites. The first site, located just to the east of the existing Entrance Station Complex, is identified as the Mallet Homestead. The site consists of structural and other remains associated with a historical ranch and dates from the 1880s to the 1940s. The site may meet National Register eligibility Criteria D because it may be likely to yield information important in the history of the area. The second site, located near the first is a trash dump associated with the Mallet Homestead.
- 1998, Mesa Verde National Park conducted an intensive survey of the location of the approved Curatorial Facility and VIC located to the north and east of the Entrance Station Complex and formerly known as the Mesa Verde Foundation property. Remnants of a wooden dam across a water drainage or arroyo were identified at the eastern edge of this property. The survey also located a capped gas well.

- 2000, Mesa Verde National Park conducted a Class III cultural resource inventory for the proposed cultural center at the park entrance area. This survey re-recorded the trash dump associated with a Navajo sweat lodge mentioned above. The survey also identified four isolated finds that do not meet eligibility criteria for listing in the National Register of Historic Places.

As described in the list above, known archeological resources occur near, but not within construction limits for the project and impacts to archeological resources with the implementation of the project are not anticipated. Most of the park's archeological sites are unexcavated, and are fairly well protected from further deterioration by the dry climate and the layer of soil that has accumulated over them. Although impacts to archeological resources are not expected, Mesa Verde National Park is well known for its archeological resources therefore archeological resources are retained for analysis in this environmental assessment.

## Cultural Landscapes

Cultural landscapes are defined by the NPS as "a reflection of human adaptation and use of natural resources often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by use reflecting cultural values and traditions" (NPS, DO 28: Cultural Resource Management Guideline 1998).

The APE would be approximately three acres and would encompass about one mile of the Entrance Road corridor at the northern entrance to Mesa Verde National Park. In addition to the Entrance Road corridor, two short segments of existing graded roads intersecting with the Entrance Road would be improved. The first road segment would be constructed to improve access to the approved Curatorial Facility and VIC. This road segment is an existing service road located near the intersection of the Entrance Road and Highway 160. The second road segment is located southwest of the entrance station kiosks that would be improved to provide parking and access to the park staff office/storage building. In addition the APE includes a pipeline utility corridor, to accommodate water and sewer lines, extending from the existing water storage tank to the approved Curatorial Facility and VIC; and an approximately 600 foot long utility corridor from Highway 160 to the approved Curatorial Facility and VIC to bury electrical lines.

A cultural landscape inventory (CLI) completed in December 2004 investigated elements and features of Mesa Verde National Park's early development, including the northern entrance into the park. The CLI describes the park entrance road, and the mesa top loop/cliff palace road loop as important resources. The CLI identifies the period of significance for the park's northern entrance area from 1931 to 1938, a period of time corresponding with development of vehicular accessibility to the park with the extension of Mesa Verde National Park's Entrance Road to Highway 160. The design and features of the park entrance area are important for their association with the developmental history of the park and for their association with Superintendent Jesse Nusbaum who facilitated the connection of the park's entrance to a regionally important automobile route (Highway 160).

Historic American Engineering Record (HAER) CO-79 identifies Mesa Verde National Park's main entrance road as an important designed feature (HAER 1994). The HAER report describes the entrance road as largely developed from the alignment of the earliest surveyed wagon route into the park (1907-1908). In the 1930s NPS acquisition of a 260 foot right-of-way road corridor at the park's northern entrance enabled the NPS to extend the entrance road to U.S. Highway 160. The designed road extends from the north to the south park boundaries and covers a range of elevation, natural communities, and areas with significant historic and prehistoric features. Over the early years of the 20th century the Entrance Road evolved into a standard roadway as a result of NPS and Bureau of Public Roads aesthetic and engineering collaboration. Working with NPS landscape architects, Superintendent Nussbaum conceptualized a park entrance that captured the openness of the landscape and capitalized on picturesque views of Point Lookout, which remain intact today. In 1931, to preserve Superintendent

Nusbaum's vision, legislation was passed to protect the scenery of the park entrance (46 Stat. 1422, February 28, 1931). The intersection of the park's Entrance Road with Highway 160 was completed in 1939. In the 1930s, Civilian Conservation Corps (CCC) contributions to road repair and maintenance, including constructed drainage elements (headwalls and drop inlets) assisted in preserving the landscape qualities so that the road was built to lie "lightly on the land."

Near the Area of Potential Effect for the undertaking there are four stone drop inlets and two stone headwalls on the west side of the existing entrance road. Two stone headwalls are located on the east side of the entrance road near the Area of Potential Effect for the undertaking. Although these CCC built features are located near the construction limits for the proposed undertaking the project would be designed to avoid impacts to these features.

Because the cultural landscape at the park entrance area is identified as a cultural resource that may meet National Register eligibility criteria, the impact topic cultural landscapes is retained for further analysis.

## Visual Resources

NPS *Management Policies 2006* notes that the enjoyment of the park resources and values by the people of the United States is part of the fundamental purpose of all parks (NPS 2006). The Organic Act also states that the NPS units are charged with conserving park scenery along with all the natural and cultural resources that contribute to important views. As such, the NPS strives to provide opportunities for the forms of enjoyment that are uniquely suited and appropriate to the natural and cultural resources found in parks. In evaluation of visual resources, both the visual character of the project area and the quality of the viewshed within the project area are considered. A viewshed comprises the limits of the visual environment associated with the proposed action including the viewsheds within, into, and out of the project area.

The development of the park, including the park entrance and the Entrance Road, are considered historic cultural landscapes. As such, the park entrance area and the Entrance Road currently afford the visiting public several vistas. The positioning of the entrance kiosks and the alignment of the Entrance Road were designed to maximize these vistas, most notably the view of Point Lookout, a prominent feature rising approximately 8500 feet above sea level located approximately one mile south-southwest of the entrance kiosks. Development of the park entrance area also considered existing vegetation and natural landscaping. Today, that consideration is best represented by an area of old-growth pinyon-juniper woodland located south and west of the existing kiosks, adjacent to the road. During the scoping phase of this project, the presence of particular large pinyon and juniper trees at the edge of this pinyon-juniper woodland was considered a high value component of the visual and aesthetic atmosphere of the park entrance area. The park entrance area was designed to maximize visual and aesthetic resources such as the view of Point Lookout and old-growth pinyon-juniper environment. Thus the impact topic is retained for further analysis.

## Visitor Use and Experience

According to NPS *Management Policies 2006*, the enjoyment of park resources and values by people is part of the fundamental purpose of all park units (NPS 2006). The NPS is committed to providing appropriate, high quality opportunities for visitors to enjoy the parks, and will maintain within the parks an atmosphere that is open, inviting, and accessible to every segment of society. Further, the NPS will provide opportunities for forms of enjoyment that are uniquely suited and appropriate to the superlative natural and cultural resources found in the parks. The NPS *Management Policies 2006* also state that scenic views and visual resources are considered highly valued associated characteristics that the NPS should strive to protect (NPS 2006).

Approximately 560,000 visitors come to Mesa Verde National Park each year, both from the United States and from foreign countries, with the heaviest visitation in the summer months. Visitors come to see

the World Heritage Site archeological features found in Mesa Verde, dating from A.D. 400 to A.D. 1300, which are among the most notable and best-preserved in the United States. Many of these visitors come long distances to enjoy the park and to learn about the lives of the Ancestral Puebloan people. Positive visitor experiences and understanding fosters a sense of resource stewardship and support for the mission of the park and the NPS. Upon arriving at Mesa Verde, one of the visitor's first experiences is at the Entrance Station Complex.

The previously planned access route to the Curatorial Facility and VIC would generate traffic issues when vehicles attempt to re-enter the Entrance Road. Under current operations, visitors who mistakenly enter the park have limited area to turn around. During high visitor use times this can result in considerable delays and inconvenience to visitors.

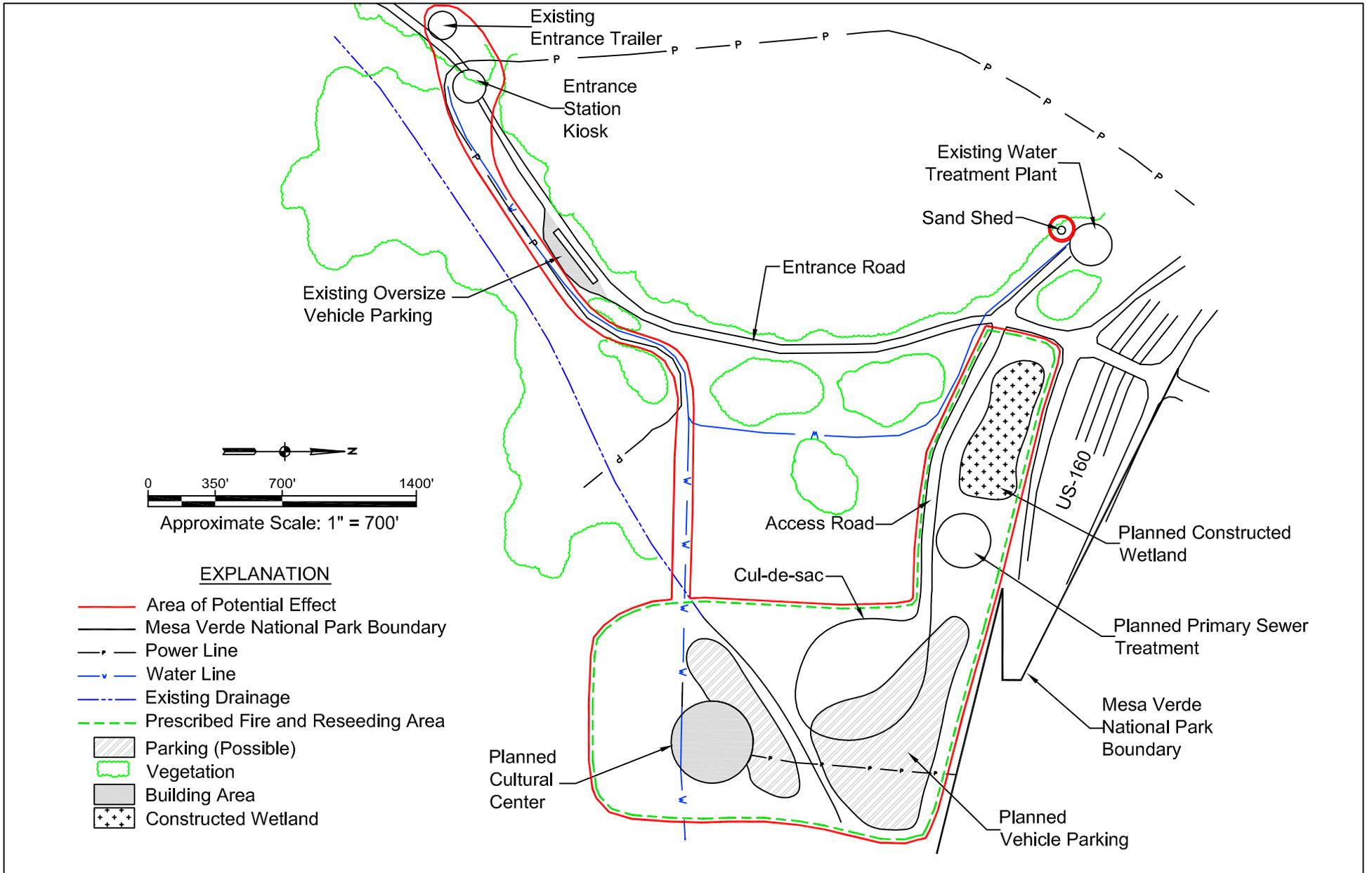
The visitor experience encompasses interpretation, understanding, enjoyment, safety, and circulation. Because the proposed action includes changes to circulation and enhancements to the visitor experience, the impact topic of visitor use and experience is retained for further analysis.

## **Park Operations**

The superintendent of Mesa Verde National Park is responsible for managing the park, its staff and residents, all of its programs, and its interactions with persons, agencies, and organizations interested in the park. The park staff provides the full scope of functions and activities to accomplish management objectives and meet requirements of law enforcement, emergency services, public health and safety, science, resource protection and management, visitor services, interpretation and education, utilities, and management support.

Construction of a new staff/office building, updating worn utilities, construction of a sand shed, and providing a fire protection system would require a change in allocation of maintenance resources. For these reasons, the topic of park operations has been carried forward for further analysis in this document.

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MESA VERDE ENTRANCE AREA

MESA VERDE NATIONAL PARK COLORADO  
 UNITED STATES DEPARTMENT OF INTERIOR NATIONAL PARK SERVICE

FIGURE 3  
**ALL ACTION ALTERNATIVES  
 AREA OF POTENTIAL EFFECT**

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## Impact Topics Dismissed From Further Analysis

Some impact topics have been dismissed from further consideration, as listed below. During internal scoping, the park's interdisciplinary team conducted a preliminary analysis of resources to determine the context, duration, and intensity of effects that the proposal may have on those resources. If the magnitude of effects was determined to be at the negligible or minor level, there is no potential for significant impact and further impact analysis is unnecessary, therefore the resource is dismissed as an impact topic. If however, during internal scoping and further investigation, resource effects still remain unknown, or are more at the minor to moderate level of intensity, and the potential for significant impacts is likely, then the analysis of that resource as an impact topic is carried forward.

For purposes of this section, an impact of negligible intensity is one that is "at the lowest levels of detection, barely perceptible, and not measurable." An impact of minor intensity is one that is "measurable or perceptible, but is slight, localized, and would result in a limited alteration or a limited area." The rationale for dismissing these specific topics is stated for each resource.

### Geology

According to the NPS *Management Policies 2006*, the National Park Service will preserve and protect geologic resources and features from adverse effects of human activity, while allowing natural processes to continue (NPS 2006). These policies also state that the National Park Service will strive to understand and preserve the geological resources of park units and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil, or its contamination of other resources.

The proposed construction and upgrades in the entrance area would be located in an area of Mesa Verde National Park that does not contain significant geologic features. Further, the general location for the new facilities has been previously disturbed by past agricultural activities, construction of utilities, the temporary office/storage trailer, and the future construction of the Curatorial Facility and VIC facilities.

Given that there are no significant geologic features in the project area and that the area has been previously disturbed, the proposed actions would result in negligible to minor, temporary and permanent adverse effects to geology. Because these effects are minor or less in degree, this topic has been dismissed from further analysis in this document.

### Wildlife

According to the NPS *Management Policies 2006*, the NPS strives to maintain all components and processes of naturally evolving park unit ecosystems, including the natural abundance, diversity, and ecological integrity of animals (NPS 2006). Wildlife commonly found at the entrance area is listed in the table below:

**Table 1**  
**Common Wildlife Species of Mesa Verde National Park**

Amphibians	
Woodhouse toad	
Reptiles	
Plateau lizard	Short-horned lizard
Sagebrush lizard	Western rattlesnake
Birds	
Golden eagle	Western scrub-jay
Great horned owl	Gray flycatcher
Northern harrier	Blue-gray gnatcatcher
Red-tailed hawk	Mountain bluebird

Cooper's hawk	Black-throated gray warbler
Wild turkey	Mountain chickadee
Pinyon jay	Spotted towhee
Black-billed magpie	Violet-green swallow
Common raven	Rosy finch
Mourning dove	
Mammals	
Deer mouse	Coyote
Pinyon mouse	Gray fox
Least chipmunk	Black bear
Abert's squirrel	Mountain lion
Black-tailed jackrabbit	Mule deer
Desert cottontail	

Wildlife and wildlife habitat at the entrance area encompass an abundance of species. However, the proposed action is limited to the study area, which consists of a managed landscape that is heavily used throughout the day by visitors and park staff. Any disturbance within the entrance area due to construction would be temporary, lasting only as long as construction activities. Any permanent loss or gain of vegetation would result in negligible alterations of the existing habitats or carrying capacity. Because any potential adverse impacts to wildlife and wildlife habitat would be short-term and no more than minor in intensity, the impact topic of wildlife has been dismissed from further analysis in this document.

### Special Status Species

The Endangered Species Act of 1973 requires examination of impacts on all federally-listed threatened, endangered, and candidate species. Section 7 of the Endangered Species Act requires all federal agencies to consult with the U.S. Fish and Wildlife Service (or designated representative) to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of listed species or critical habitats. In addition, the NPS *Management Policies 2006* and Director's Order 77 *Natural Resources Management Guidelines* require the National Park Service to examine the impacts on federal candidate species, as well as state-listed threatened, endangered, candidate, rare, declining, and sensitive species.

For the purposes of this analysis, the U.S. Fish and Wildlife Service, Colorado Division of Wildlife website (<http://www.fws.gov/mountain-prairie/endspp/CountyLists/Colorado.pdf>) was reviewed with regards to federally- and state-listed species to determine those species that could potentially occur on or near the project area. Mesa Verde National Park indicated that there are no records of currently federal listed threatened or endangered species in the project area. There are two federally listed threatened plant species, Mancos milkvetch (*Astragalus humillimus*) and Mesa Verde cactus (*Sclerocactus mesae-verdae*) that can be found in the vicinity of Mesa Verde National Park, but neither of these species is known to grow anywhere in the park. As a result, the impact topic of special status species was dismissed.

### Wetlands

For regulatory purposes under the Clean Water Act, the term wetlands means "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas."

Executive Order 11990 *Protection of Wetlands* requires federal agencies to avoid, where possible, adversely impacting wetlands. Further, Section 404 of the Clean Water Act authorizes the U.S. Army Corps of Engineers to prohibit or regulate (through a permitting process) discharge or dredged or fill material or excavation within waters of the United States. NPS policies for wetlands as stated in NPS

*Management Policies 2006* and *DO 77-1 Wetlands Protection*, strive to prevent the loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. In accordance with *DO 77-1 Wetlands Protection*, proposed actions that have the potential to adversely impact wetlands must be addressed in a Statement of Findings for wetlands. However, no wetlands are located in the project area; therefore, a Statement of Findings for wetlands will not be prepared and the impact topic of wetlands has been dismissed.

## **Floodplains**

Executive Order 11988 *Floodplain Management* requires all federal agencies to avoid construction within the 100-year floodplain unless no other practicable alternative exists. The NPS under *Management Policies 2006* and *DO 77-2 Floodplain Management* will strive to preserve floodplain values and minimize hazardous floodplain conditions. According to *DO 77-2 Floodplain Management*, certain construction within a 100-year floodplain requires preparation of a Statement of Findings for floodplains. The project area is not located within a 100-year floodplain. Therefore a Statement of Findings for floodplains will not be prepared and the topic of floodplains has been dismissed.

## **Air Quality**

The Clean Air Act of 1963 (42 U.S.C. 7401 *et seq.*) was established to promote the public health and welfare by protecting and enhancing the nation's air quality. The act establishes specific programs that provide special protection for air resources and air quality related values associated with National Park Service units. Section 118 of the Clean Air Act requires a park unit to meet all federal, state, and local air pollution standards. Mesa Verde National Park is designated as a Class I air quality area under the Clean Air Act. A Class I designation indicates the maximum allowable increase in concentrations of pollutants over baseline concentrations of sulfur dioxide and particulate matter as specified in Section 163 of the Clean Air Act. Further, the Clean Air Act provides that the federal land manager has an affirmative responsibility to protect air quality related values (including visibility, plants, animals, soils, water quality, cultural resources, and visitor health) from adverse pollution impacts (EPA 2000).

Construction activities such as hauling materials and operating heavy equipment could result in temporary increases of vehicle exhaust, emissions, and fugitive dust in the general project area. Any exhaust, emissions, and fugitive dust generated from construction activities would be temporary and localized, and would likely dissipate rapidly because air stagnation at Mesa Verde National Park is rare. Overall, the project could result in a negligible degradation of local air quality and such effects would be temporary, lasting only as long as construction. The Class I air quality designation for Mesa Verde National Park would not be affected by the proposal. Therefore, air quality has been dismissed as an impact topic.

## **Soundscape Management**

In accordance with NPS *Management Policies 2006* and *DO 47 Sound Preservation and Noise Management*, an important component of the National Park Service's mission is the preservation of natural soundscapes associated with National Park units (NPS 2006). Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in the park, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials. The frequencies, magnitudes, and durations of human-caused sound considered acceptable varies among parks as well as potentially throughout each park unit, being generally greater in developed areas and less in undeveloped areas. At the project area, natural soundscapes generally do not exist because of the continual flow of vehicular traffic on the Entrance Road and Highway 160. The park does make an effort to minimize the impact of human-caused sounds, where possible.

During construction, human-caused sounds would likely increase due to construction activities, equipment, vehicular traffic, and construction crews. Any sounds generated from construction would be temporary, lasting only as long as the construction activity is generating the sounds, and would have a negligible to minor adverse impact on visitors and employees. Therefore, the topic of soundscape management was dismissed as an impact topic.

## **Ethnographic Resources**

The NPS defines an ethnographic resource as a site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it (DO-28). The NPS regularly consults with tribes affiliated with and interested in Mesa Verde National Park and is committed to minimizing impacts to cultural resources. No ethnographic resources have been identified within the APE for the undertaking to upgrade entrance area facilities.

The APE includes approximately three acres at the northern entrance to Mesa Verde National Park and encompasses about one mile of the Entrance Road corridor. In addition, two short segments of existing graded roads intersecting with the Entrance Road would be improved. The first road segment would be constructed to improve access to the approved Curatorial Facility and VIC. This road segment is an existing service road located near the intersection of the Entrance Road and Highway 160. The second road segment is located southwest of the entrance station kiosks that would be improved to provide parking and access to the park staff office/storage building. The APE also includes a pipeline utility corridor to accommodate water and sewer lines extending from the existing water storage tank to the approved Curatorial Facility and VIC, and an approximately 600 foot long utility corridor from Highway 160 to the approved Curatorial Facility and VIC to bury electrical lines.

Twenty-four (24) tribes are culturally affiliated or associated with Mesa Verde National Park. A list of affiliated and associated tribes is included in the Consultation and Coordination section of this document. Since September 1993, the NPS has consulted with affiliated and associated tribes at least once a year. Annual meetings with the tribes generally focus on Native American Graves Protection and Repatriation Act (NAGPRA) issues, but the NPS also discusses other park management topics including Mesa Verde National Park entrance facilities and improvements. Specific meeting dates, agendas, participant lists, and meeting minutes are on file at Mesa Verde National Park. Tribes expressing an interest in the park have discussed the entrance improvement project and have identified no traditional cultural properties within the APE (Personal Communication MEVE staff 2-19-08). Because there are no known ethnographic resources within the APE, this topic is dismissed from further analysis in this EA.

The NPS will continue to consult with affiliated and interested tribes throughout the planning process for this project and will keep the tribes informed should there be any change in the preferred alternative. Tribes are always welcome to contact the park to arrange for a site visit should this be desired. Affiliated and associated tribes will receive a copy of the Entrance Area Improvements EA and will have an opportunity to comment on the proposed undertaking when the EA is available for public review.

## **Historic Structures**

Historic structures are defined by the NPS as “a constructed work, usually immovable by nature or design, consciously created to serve human activity” (NPS, DO 28: Cultural Resource Management Guideline 1998).

The APE for historic structures includes approximately three acres and encompasses about one mile of the Entrance Road corridor at the northern entrance to Mesa Verde National Park. Two short segments of existing graded roads intersecting with the Entrance Road would be improved and a pipeline utility corridor, accommodating water and sewer lines, to and from the approved Curatorial Facility and VIC to the existing water storage tank would be constructed. Approximately 600 feet of electrical lines would be buried.

The 1994 Mesa Verde National Park cultural resources survey prior to installation of the park's waterline replacement project recorded structural and other remains, including a trash dump associated with the Mallet Homestead. The Mallet Homestead, addressed in this environmental assessment under archeological resources, is outside of the area of potential effect for the project.

The park entrance station residence is listed on the park's list of classified structures as structure HS0041. The park Entrance Residence is eligible for listing in the National Register due to its association with the establishment of early NPS facilities and Depression Era park development as well as its association with Superintendent Nusbaum. The residence is significant at the state level; its period of significance is 1931 through 1942. The park residence is outside the APE for the project.

Implementation of the project to improve park facilities at the park's northern entrance would not impact either the Mallet Homestead or park residence HS0041; therefore, historic structures are dismissed as an impact topic.

## **Indian Trust Resources**

Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by the Department of Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. There are no Indian trust resources at Mesa Verde National Park. The lands comprising the park are not held in trust by the Secretary of the Interior for the benefit of Indians due to their status as Indians. Therefore, the project would have no effects on Indian trust resources and this topic was dismissed as an impact topic.

## **Museum Collections**

Museum collections (prehistoric and historic objects, artifacts, works of art, archival documents, and natural history specimens) are generally ineligible for listing in the National Register. Most of the park's collection of artifacts and archives will be housed in the planned curatorial facility and at the Archeological Museum on Chapin Mesa. Although the Curatorial Facility has not yet been built, the NPS anticipates no changes in conditions or in impacts to museum collections with the implementation of any of the action alternatives analyzed in this EA. Therefore, the impact topic museum collections are not carried forward in this EA for additional analysis.

## **Prime and Unique Farmlands**

The Farmland Protection Policy Act of 1981, as amended, requires federal agencies to consider adverse effects to prime and unique farmlands that would result in the conversion of these lands to non-agricultural uses. Prime or unique farmland is classified by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) and is defined as soil that particularly produces general crops such as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. Lands within Mesa Verde National Park are not available for farming. Therefore, the topic of prime and unique farmlands has been dismissed.

## **Environmental Justice**

Presidential Executive Order 12898, *General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high and/or adverse human

health or environmental effects of their programs and policies on minorities and low-income populations and communities. According to the Environmental Protection Agency, environmental justice is the:

*“...fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.”*

The goal of “fair treatment” is not to shift risks among populations, but to identify potentially disproportionately high and adverse effects and identify alternatives that may mitigate these impacts. Implementation of the proposed alternatives would not result in any identifiable adverse human health, minority, or low-income community effects. Any impacts to the socioeconomic environment would not appreciably alter the physical and social structure of the nearby communities. Because the new office/storage building would be available for use by all park staff regardless of race or income, and the construction workforces would not be hired based on their race or income, the proposed alternatives would not have disproportionate health or environmental effects on minorities or low income populations or communities. Because there would be no disproportionate effects, this topic is dismissed from further analysis.

## 2 ALTERNATIVES CONSIDERED

From 2005 through 2007, an interdisciplinary team of National Park employees and Denver Service Center employees met for the purpose of developing project alternatives. These meetings resulted in the definition of project objectives as described in the Purpose and Need chapter and a list of alternatives that could potentially meet these objectives. A total of three action alternatives and the No Action Alternative were identified for this project for further evaluation in this Environmental Assessment/Assessment of Effect. A summary table comparing alternative components is presented at the end of this chapter.

### Alternatives Carried Forward

#### Alternative A – No Action

The existing Entrance Station Complex consists of two entrance station kiosks, an office/storage trailer, two storage facilities, and a portable toilet. The existing office/storage trailer would remain in place and continue to provide employee office space and storage for the park. Supporting electrical, sewer, and septic systems would remain in the existing configuration. The existing entrance station kiosks installed in 2007 would remain in their current location and continue to welcome visitors to the park, sell park passes, provide maps, and information. Ingress and egress roads to the Curatorial Facility and VIC intersections with the existing Entrance Road would remain as planned in the 2002 EA.

The planned wastewater system described in the 2002 EA would remain and consist of 9.5 acres of evaporative wastewater lagoons and constructed gray water wetlands. The wetland treatment system through evapotranspiration and infiltration is used to limit the discharge of excess water from the system and, as a result, no wastewater generated at the curatorial center is transported offsite as surface flow. The planned constructed wetland may freeze up during winter months, limiting the system use. The treatment plant and the associated wetland would continue to be planned for construction northwest of the Mesa Verde Foundation property on land within the park. There are surface discharge permits for each of the wastewater treatment facilities in existences inside the park. All of the park's water comes from Mancos River withdrawals. See Figures 4a and 4b for the existing plans and conditions. The planned access route to the Curatorial Facility and VIC has a large impact area with large fill needed to connect the planned access road to the main road.

### Elements Common to the Action Alternatives

Several elements are common to Action Alternatives B, C, and D. Common elements located at the planned Curatorial Facility and VIC site include construction of a new access road, stockpiles of construction materials, and installation of a ground-source heat pump system. Common elements to the entrance area include updating and adding utility corridors, constructing a new sand shed, control of invasive species, and re-vegetation.

#### Access Road to the Curatorial Facility and VIC

Access to the Curatorial Facility and VIC would be via a new access road that would intersect the Entrance Road in one location. A portion of the new access road would be constructed on an existing service road located near the intersection of the Entrance Road and Highway 160. The new alignment of the access road starts out on the existing service road but then it travels east across the field that was previously cultivated and grazed. Construction of the access road would result in the removal of numerous pinyon and juniper trees, Indian-apple shrubs, and the loss of one small population of wild hollyhock.

## Utility Corridors

Under the Action Alternatives, a utility corridor to accommodate water and sewer lines includes a pipeline extending from the existing water storage tank to the Curatorial Facility and VIC. Additionally, an approximately 600-foot long utility corridor from Highway 160 to the Curatorial Facility and VIC site would be excavated to bury existing overhead electrical lines.

New utility lines would be placed where the existing utilities for the Entrance Station Complex are already located. New utility lines include water, sewer, electric, and gas. The sewer line would be located adjacent to the shoulder of the Entrance Road and parallel to the existing waterline utility corridor. Connecting the sewer line to the office/storage building would likely entail excavation and placement of additional underground piping to connect with the sewer system located at the Curatorial Facility and VIC.

## Sand Shed

The sand shed would be located on the asphalt pad near the Water Treatment Plant north of the entrance station kiosk area. The modular construction rough dimensions would be 20-feet by 25-feet and would be constructed in an already disturbed area.

## Control of Invasive Species

Several non-native invasive species in the project area such as smooth brome and cheatgrass are very resilient and can grow back from seed or roots after a fire event. The strategy for control is to use a prescribed burn to stress the invasive species followed by treatment with herbicides to eliminate the plants as they begin to reemerge from the root stock that is undamaged by fire. Herbicide treatment also can prevent seed germination in the topsoil that is scraped and stockpiled in the project area or kill plants as they begin to sprout and help prevent the re-establishment of the invasive species population. Control of non-native exotic plants in the project area would consist of phased treatment actions including:

- Prescribed burning of approximately 30 acres of the site to stress the invasive species such as smooth brome and cheatgrass.
- Application of herbicides at intervals following the burn to eliminated re-emerging invasive species.
- Scraping, stockpiling, and multiple herbicide treatment of site soils moved during the construction process to eliminate the invasive species.
- Re-vegetation of the area with native species via seed drilling and other plantings.

Construction of the facilities as well as road work and intersection realignment would impact an area of approximately 4 to 5 acres. Soils stockpiled during these activities would also need to be treated for invasive species.

## Re-vegetation

The existing trees in the project area would be preserved to the extent possible. All areas disturbed by construction of the new office/storage building or access road to the Curatorial Facility and VIC would be re-vegetated and re-contoured to the style of the native landscape. Native vegetation, rocks, or other natural features would be used, as appropriate.

## Stockpiled Materials

Under the Action Alternatives, road construction materials and road base will be stockpiled in the Curatorial Facility and VIC area. Soil removed from the construction site will also be stockpiled at this location during construction. This soil will need to be treated for invasive species with herbicide. There will be visual impact from the stockpiles because the stockpiles will be visible from the Entrance Road and this work will take place before the facilities would be completed.

## Ground-Source Heat Pump System

A ground-source heat pump is one option to assist with heating and cooling of the new facility. The system would be installed within the disturbed area of the Curatorial Facility and VIC area if soil and geological conditions permit.

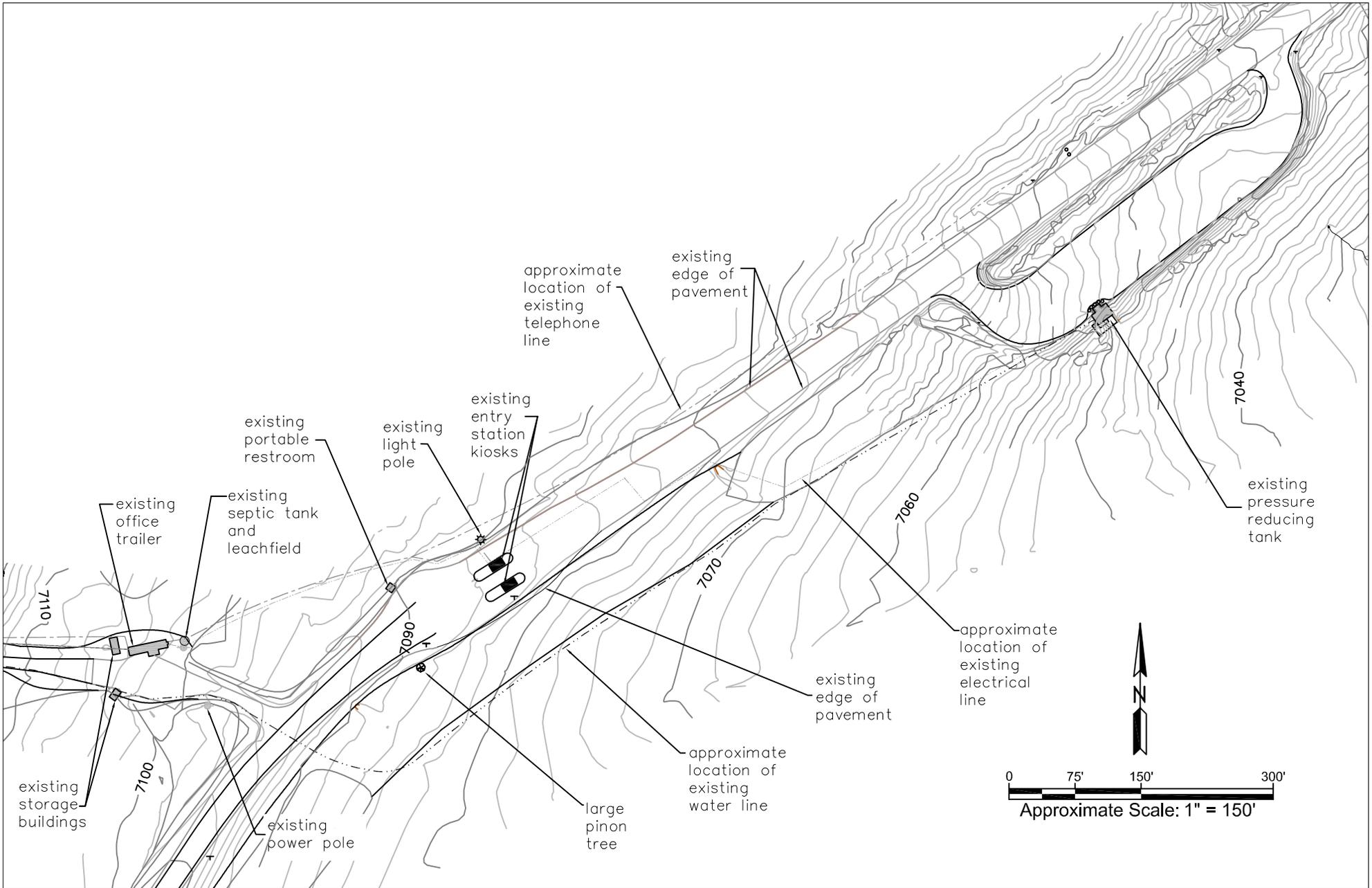
Ground-source heat pumps use electricity to heat and cool buildings just like a conventional heat pump. However, unlike a conventional heat pump, a ground-source heat pump system uses the relatively constant temperature of the earth as a source of heat in the winter and as a repository for heat in the summer. In the winter, the fluid passing through the underground loops of piping is warmed by the earth's heat. The collected heat is extracted and concentrated by the heat pump, and distributed through the building's piping or ductwork. To cool the building in the summer, this process is reversed – the heat pump moves heat from the indoor air into the underground loops, where it is transferred to the relatively cooler ground.

The ground-source heat pump system would consist of the following basic elements:

- Ground-source heat pump and earth connection subsystem is a system of fluid-filled plastic pipes buried in the ground near the building;
- Ground-source heat pump subsystem removes heat from the fluid in the pipes, concentrates it, and transfers it to the building. For cooling, this process is reversed.
- Ground-source heat pump system heat distribution subsystem is constructed from conventional ductwork or piping used to distribute heated or cooled air or water throughout the building. (U.S. Department of Energy 2008).

Impacts from the installation of the ground loop would take place in the construction zone of the Curatorial Facility and VIC site and would include installation of approximately 12 borings between 200- to 400-feet deep each. The borings would be approximately 4 to 6 inches in diameter. Each boring would enclose a self-contained heat transfer loop assembly that would circulate liquid through the ground to provide for a heating and cooling of the facility. The borings would be connected by a piping system to the heat pump. The heat pump would transfer the heat or cooling effect to the building through conventional piping or duct work.

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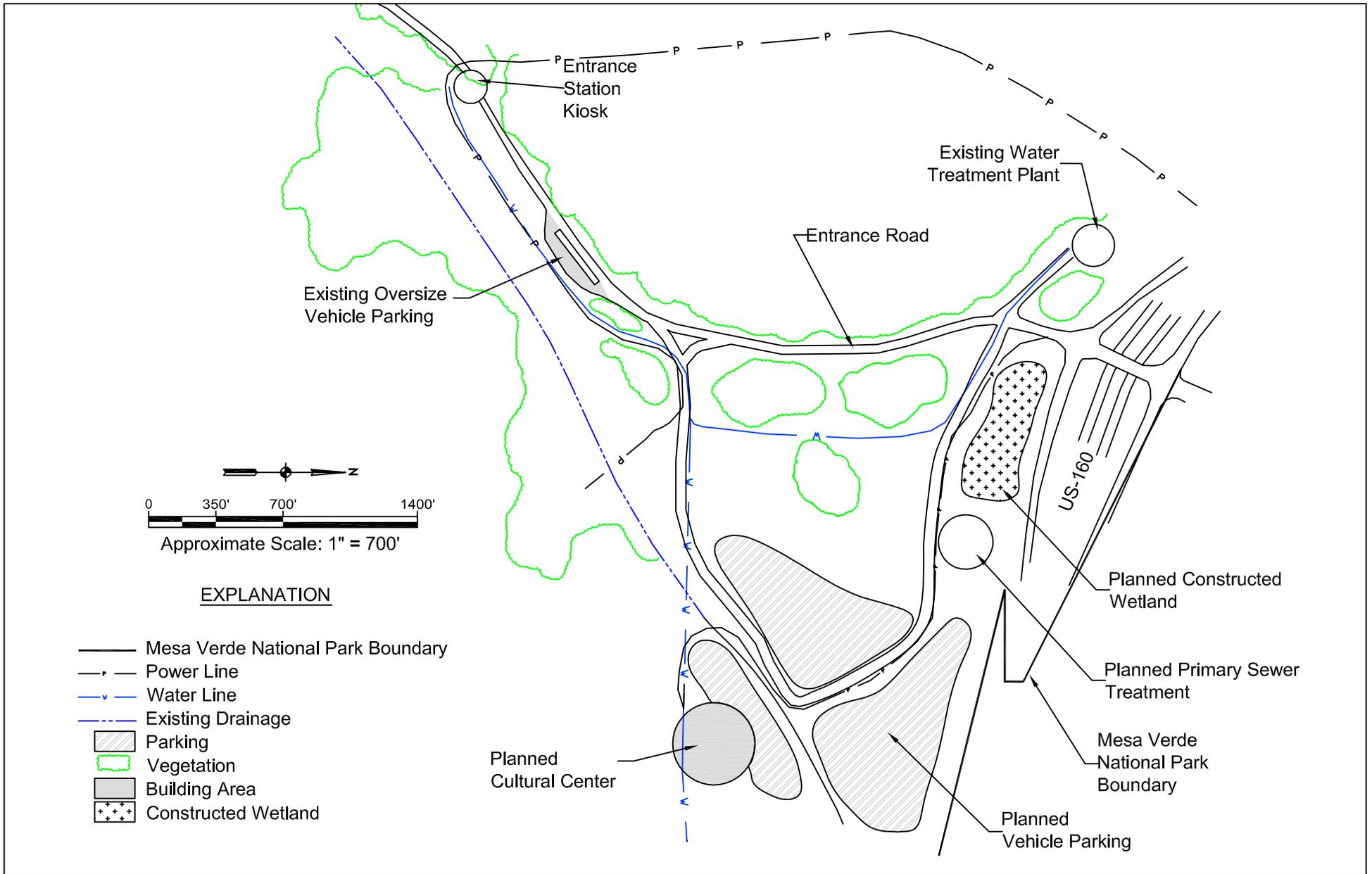
## MESA VERDE ENTRANCE AREA

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FIGURE 4a

**ALTERNATIVE A - NO ACTION  
 ENTRANCE STATION COMPLEX**

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MESA VERDE ENTRANCE AREA

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FIGURE 4b

**ALTERNATIVE A - NO ACTION  
 VIC SEGMENT**



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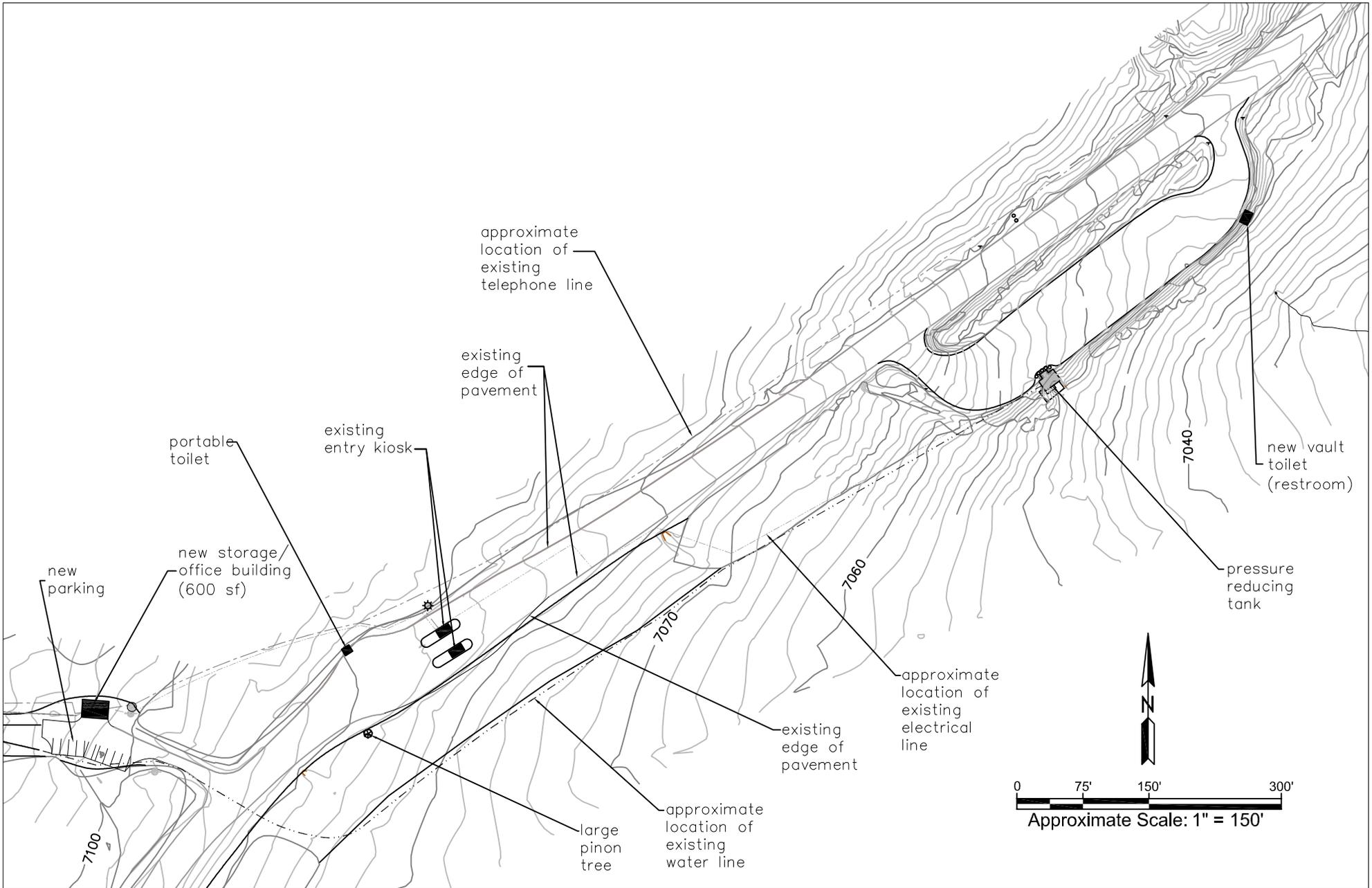
## **Alternative B – Preferred Alternative Westside Entrance Area Office/Storage and SBR or Engineered Sand Wastewater System**

Alternative B would retain the current entrance station kiosks and construct a new staff office/storage building with additional parking in the existing footprint of the current office/storage trailer area. Furthermore, a vault toilet would be placed in the visitor trailer parking lot for visitor use and the wastewater system at the Curatorial Facility and VIC would be changed from an engineered wetland to a more conventional treatment plant and leachfield. Figures 5a, b, and c show the plans for Alternative B and the following text further describes the components:

- **Entrance Station Kiosks Features** – Under a Categorical Exclusion, in 2007 the park installed two prefabricated steel kiosks in close proximity to the previously existing kiosks. The new prefabricated steel kiosks at the park entrance replaced unsafe and damaged kiosks originally installed in the 1970s. The kiosks meet the Americans with Disability Act (ADA) requirements and one of the kiosk islands has a cut out for wheelchair access. In the interest of added safety, the eastern island, which holds one kiosk, was removed and reinstalled 5 feet to the east to allow for large vehicle traffic to pass between the two kiosks. For additional safety, two heavy planters of native vegetation were installed on the inbound section of each island as vehicle barriers. To accommodate traffic, the pavement edge was widened by 7 feet to the east.
- **Staff Office/Storage Building** – The new entrance station office/storage building would be built to be visually and architecturally compatible with the surrounding landscape and the existing park architectural style. The interior of the building would include park employee offices, general work space, a break room, restroom, and storage space. Additionally, the building would be handicapped accessible. Upgrades to utilities for the new office/storage building would include water, sewer, and power. The current septic and leach field by the office/storage building would be abandoned in place and be replaced by connecting the piping for the effluent down to the new sewage treatment system at the curatorial center. The office/storage building would be equipped with a modern climate control system, which would include heating, ventilation, and air conditioning (HVAC).
- **Wastewater Treatment Discharge**
  - **Option One:** Engineered Sands with drain field (ground discharge) – This option consists of a sewer line from the curatorial center to a septic tank. The septic tank, filter beds (20 feet by 60 feet), and drain field (50 feet by 250 feet) would be located north of the Curatorial Facility and VIC. The basic components of the engineered sands system are pretreatment, recirculation tank, and open filter. Wastewater flows into a septic tank for primary treatment, and then the partially clarified effluent flows from the pretreatment tank into a recirculation tank. In the recirculation tank, raw effluent from the septic tank and the sand filter filtrate are mixed and pumped back to the filter bed. A portion of the mixture (septic tank effluent and sand filtrate) is dosed by a submersible pump through a distribution system that applies it evenly over the sand media. The dosing frequency is controlled by a programmable timer in the control panel. The filtrate is collected by under drains that are located at the bottom of the bed. The filtrate is either discharged or recycled back to the recirculation tank. The treatment system would be placed in an area previously disturbed by cultivation and grazing. Additionally, the treatment system would be designed to produce low visual impact.
  - **Option Two:** Sequencing Batch Reactor (SBR) with drain field (ground discharge) – This option consists of a sewer line from the curatorial center to the SBR and drain field (50 feet by 250 feet) located north of the curatorial center. The SBR system requires three tanks: a 15 foot diameter pre-equalization tank, a 15 foot diameter SBR processing tank, and a 30 foot diameter post equalization tank (all tanks are 18 feet tall). Wastewater

flows into a tank and is processed once the tank is full. The six-phase process takes five hours to treat one batch. The water is treated to a secondary level. Sludge is generated and will have to be treated. The sludge could be hauled to an off-site treatment plant or could be treated in an on-site sludge digester. The wastewater operation is automated. However, a certified operator would need to check the operation intermittently. The treatment system would be placed in an area previously disturbed by cultivation and grazing. Additionally, the treatment system would be designed to produce low visual impact.

This alternative is based on preliminary designs and best information available at the time of this writing. Specific distances, areas, and layouts used to describe the alternative are only estimates and could change during final site design. If changes during final site design are not consistent with the intent and effects of the selected alternative, then additional compliance would be completed, as appropriate.



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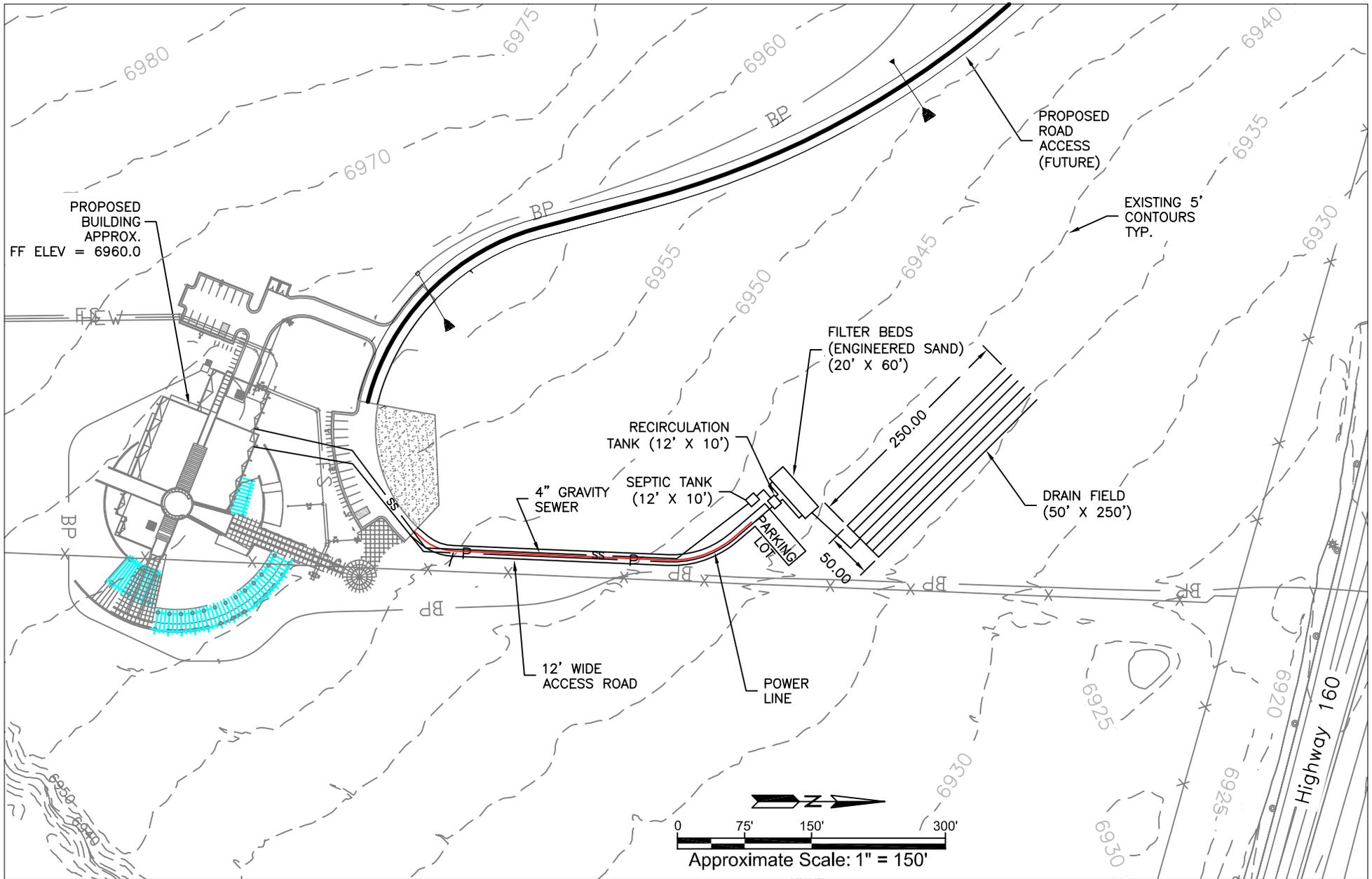
## MESA VERDE ENTRANCE AREA

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FIGURE 5a

**ALTERNATIVE B - PREFERRED ALTERNATIVE  
 ENTRANCE STATION COMPLEX**

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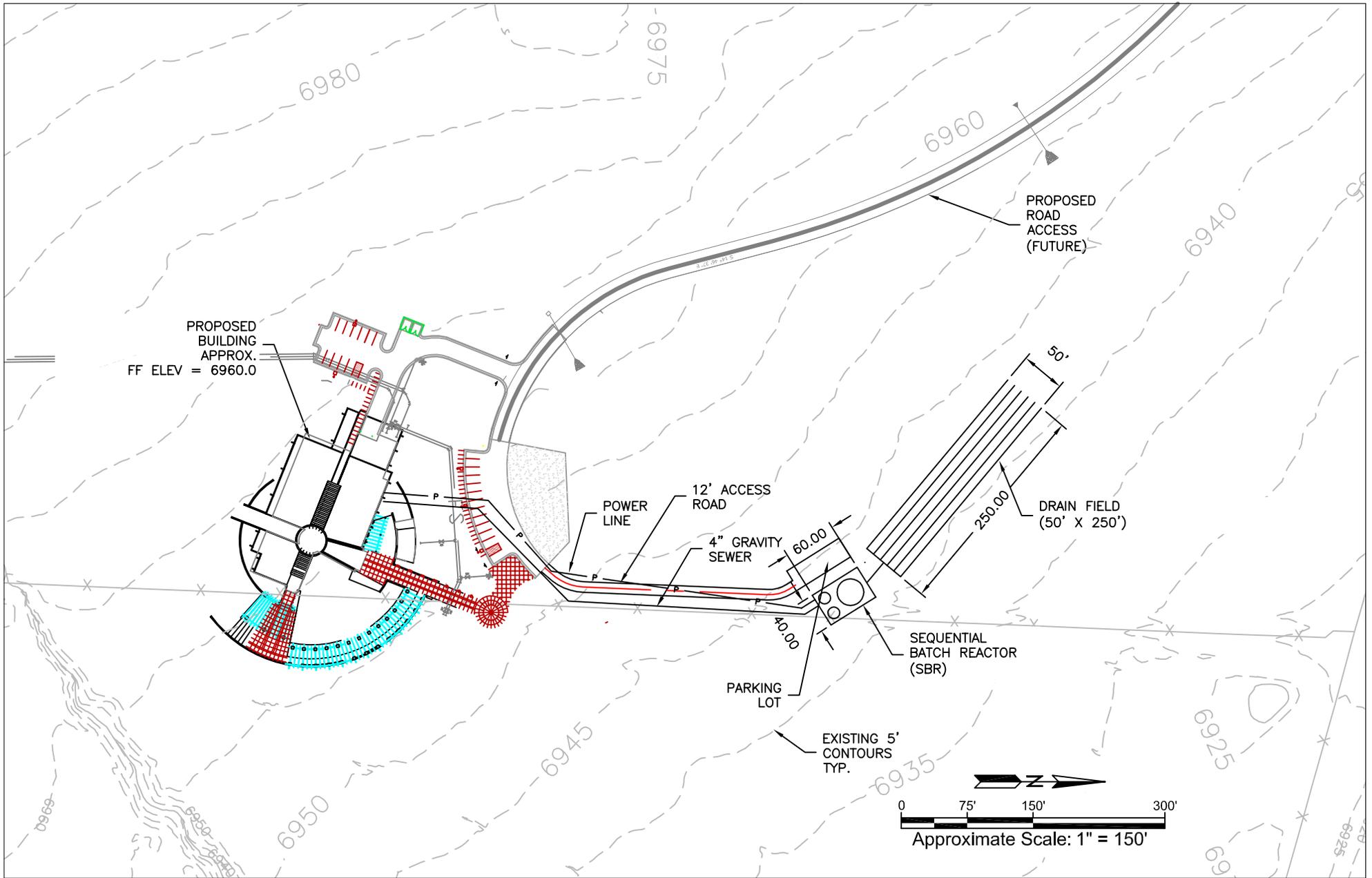
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FIGURE 5b

**ALTERNATIVE B - PREFERRED VIC SEGMENT  
 WITH LEACH FIELD WITH ENGINEERED SANDS**

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FIGURE 5c

**ALTERNATIVE B  
 VIC SEGMENT WITH SBR SYSTEM**

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## **Alternative C**

### **Eastside Entrance Area Office/Storage and Facilitative Lagoons Wastewater System**

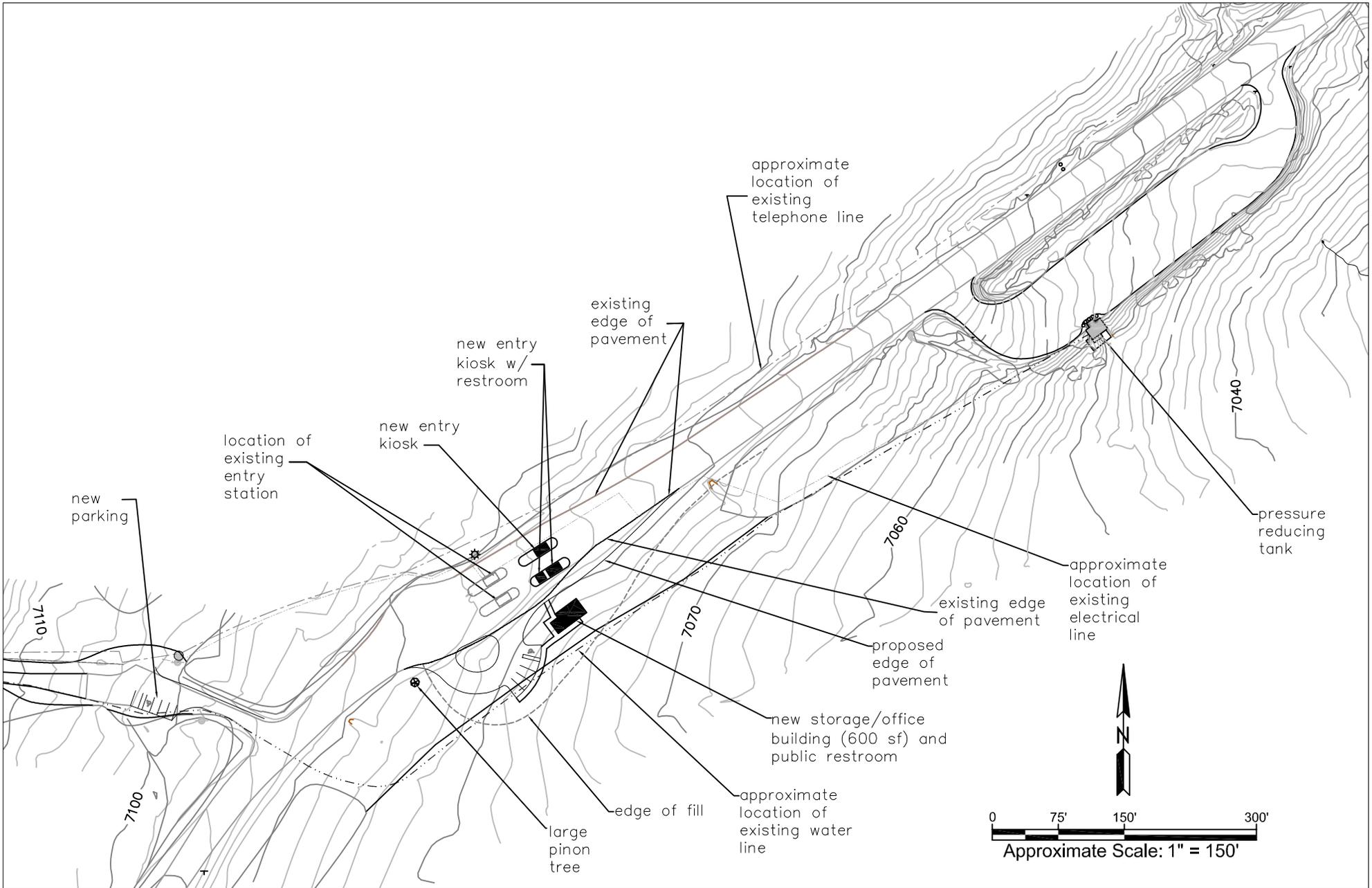
Alternative C would consist of relocating the entrance station kiosks approximately 75 feet northeast of the existing kiosk's location, a new storage/office building, additional parking, and a turn around area. The storage/office building and additional parking would be located on the east side of the Entrance Road within currently disturbed and undisturbed areas. Figures 6a and 6b show the plans for Alternative C and the following text further describes the components:

- **Relocate Entrance Station Kiosks** - The relocation of the kiosks would also include curb and gutter improvements and an employee restroom located behind one of the kiosks.
- **Staff Office/Storage Building** – The office/storage building is the same as described in Alternative B with the exception of the addition of a public restroom. A vehicle turn around area and staff parking would be located next to the office/storage building. Additional staff parking would be located at the office/storage trailer's previous location.
- **Wastewater Treatment Discharge** – Treatment and evaporation lagoons would be designed to produce lower visual impact. The wastewater would flow into a series of three lined wastewater treatment lagoons. Therefore, no ground discharge would occur. Each lagoon would be approximately 176 feet by 176 feet and occupy a total of 2.13 acres for all three lagoons (approximately 0.71 acre for each lagoon). The lagoons could be variable in shape so as to appear natural and would be fenced and located north of the Curatorial Facility and VIC. There would be the potential to add a chlorinator to the water discharge to the final lagoon to create an "eco-pond" environment. The "eco-pond" would sufficiently meet water quality standards so as to not require fencing of the final pond and allow for human contact and interpretation opportunities if desired. No groundwater discharge would occur with the "eco-pond" system. The treatment system would be placed in an area previously disturbed by cultivation and grazing.

The concept of an eco-pond with possible chlorinator would be a compatible substitute for subsurface discharge with any of the other wastewater treatment techniques described in Alternatives B, C, and D. In such a case the requirement would only be for a single-fenced 0.71-acre evaporation pond with the same possibilities as mentioned above for a chlorinator, without fencing, and with subsequent interpretive potential as an "eco-pond."

This alternative is based on preliminary designs and best information available at the time of this writing. Specific distances, areas, and layouts used to describe the alternative are only estimates and could change during final site design. If changes during final site design are not consistent with the intent and effects of the selected alternative, then additional compliance would be completed, as appropriate.

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MESA VERDE ENTRANCE AREA

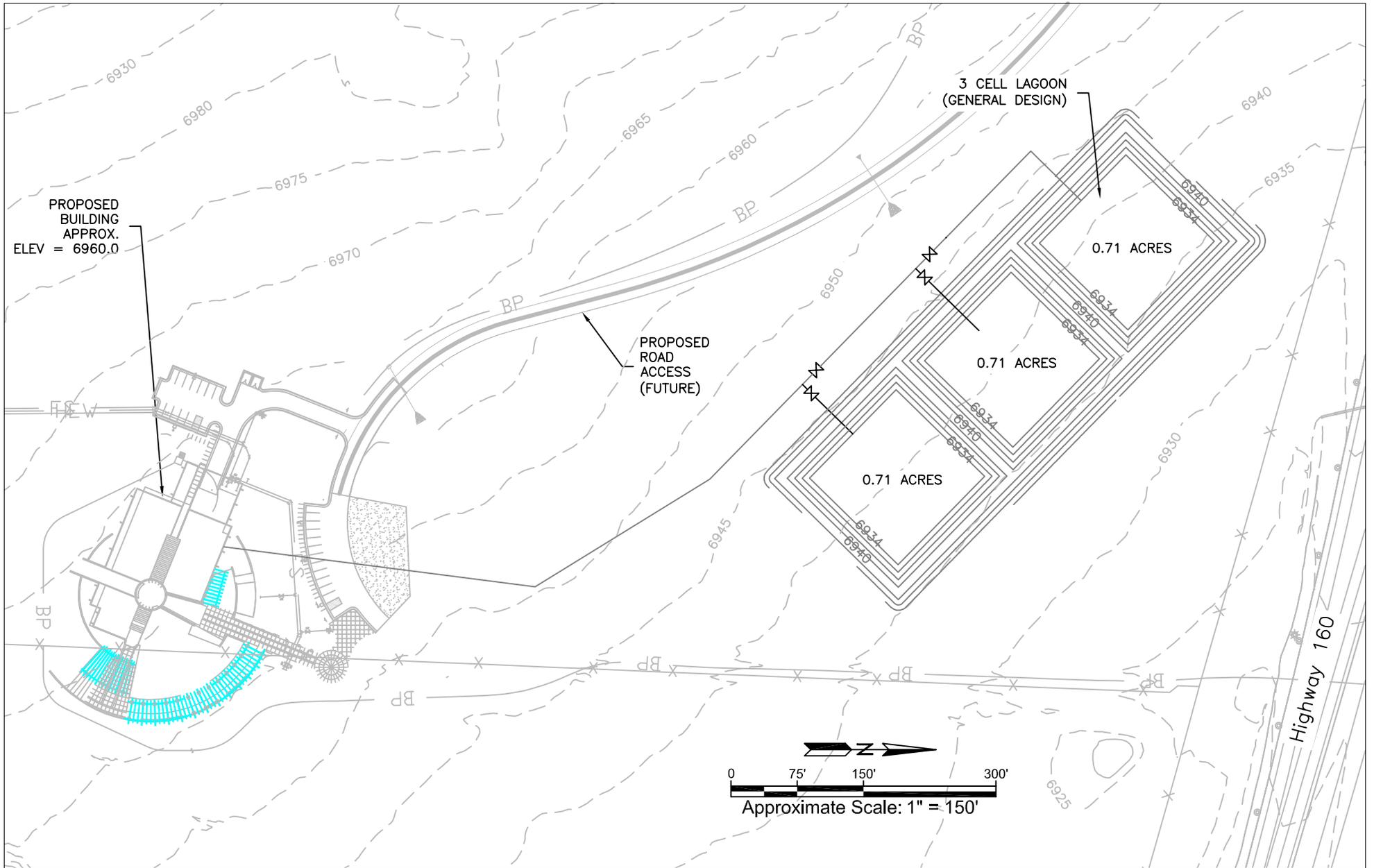
FIGURE 6a

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**ALTERNATIVE C  
 ENTRANCE STATION COMPLEX**



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FIGURE 6b

**ALTERNATIVE C**  
**VIC SEGMENT WITH FACULTATIVE LAGOON**

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## **Alternative D**

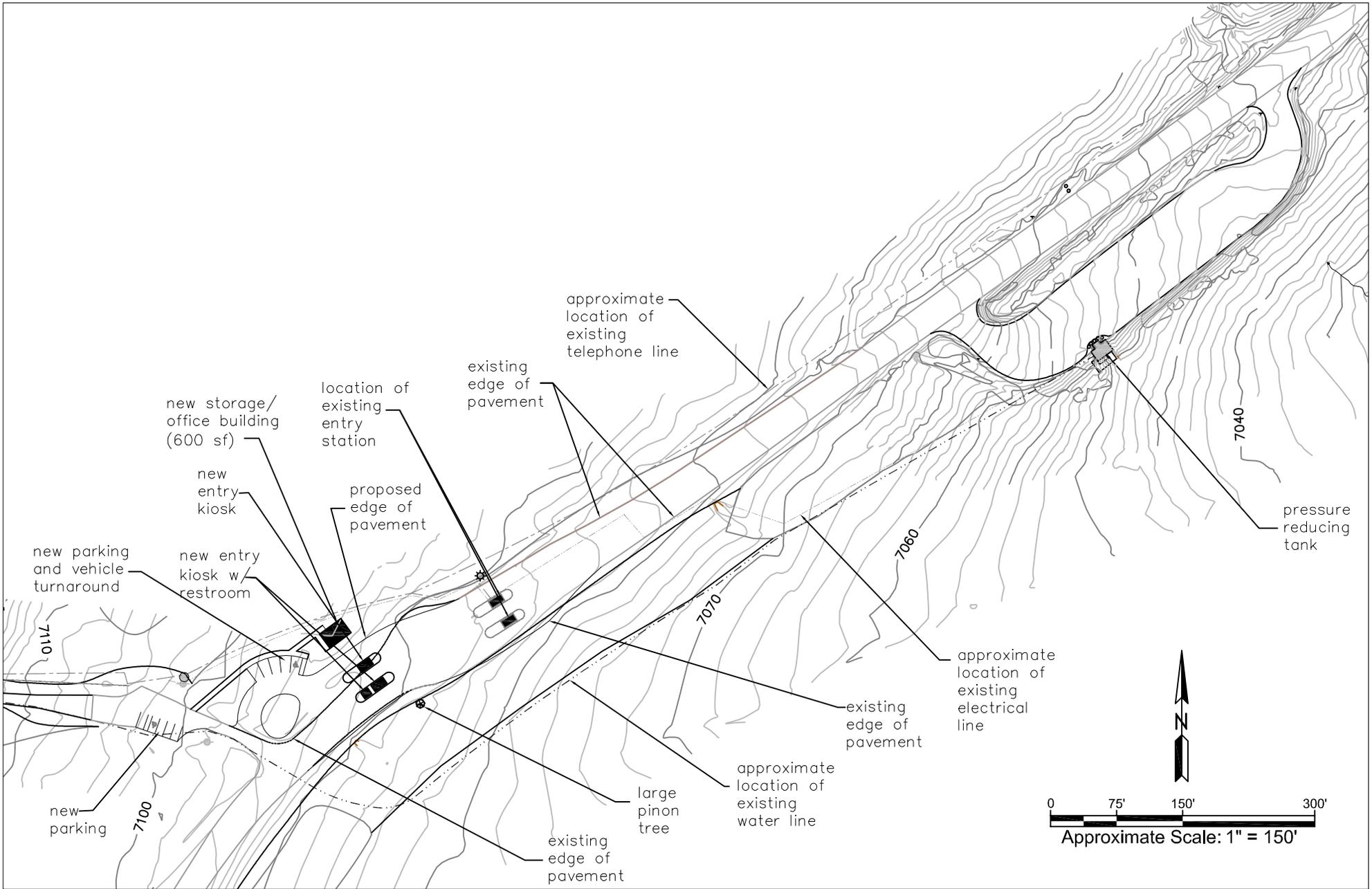
### **Westside Entrance Area Office/Storage and STM Aerotor Wastewater System**

Alternative D would consist of relocating the entrance station kiosks approximately 150 feet southwest of the existing kiosks and updating facilities at the park entrance area. Figures 7a and 7b show the plans for Alternative D and the following text further describes the components:

- **Entrance Station Kiosks** – The relocation of the kiosks would also include curb and gutter improvements and an employee restroom located behind one of the kiosks for park staff.
- **Staff Office/Storage Building** - The office/storage building is the same as described in Alternative B with the exception that the storage/office building, vehicle turn around, and additional parking would be located on the west side of the Entrance Road within currently disturbed and undisturbed areas. A vehicle turn around area and staff parking would be located next to the office/storage building. Additional staff parking would be located at the office/storage trailer's previous location.
- **Wastewater Treatment Discharge** – STM aerotor with leach field that consists of sewer lift station, sewer line, STM aerotor and drain field. STM aerotor is a biological reactor plant that does not require membranes. The system combines aeration, activated sludge and a fixed film process in one tank. The tank design allows for the development of anoxic and anaerobic zones. These zones provide increased nutrient removal rates and result in a high-quality effluent. This system can achieve much faster degradation rates than a SBR system and will achieve a cleaner effluent. The STM aerotor and drain field would be located north of the Curatorial Facility and VIC site in a previously disturbed area.

This alternative is based on preliminary designs and best information available at the time of this writing. Specific distances, areas, and layouts used to describe the alternative are only estimates and could change during final site design. If changes during final site design are not consistent with the intent and effects of the selected alternative, then additional compliance would be completed, as appropriate.

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## MESA VERDE ENTRANCE AREA

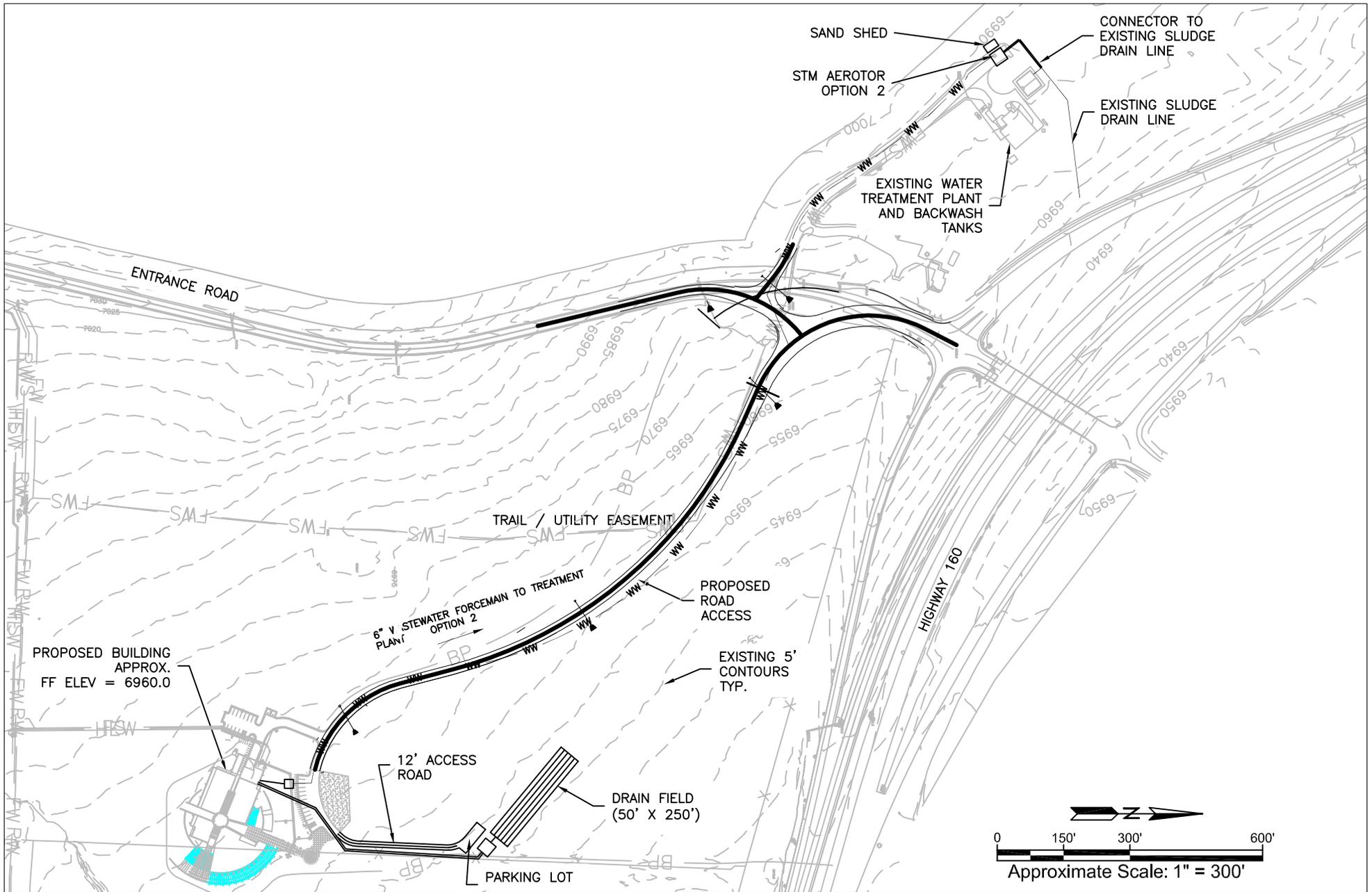
FIGURE 7a

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### ALTERNATIVE D ENTRANCE STATION COMPLEX



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## MESA VERDE ENTRANCE AREA

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FIGURE 7b

**ALTERNATIVE D - VIC SEGMENT WITH  
 STM AEROTOR AND LEACH FIELD**

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## Alternatives Considered and Dismissed

The following options were considered during the planning process, but were rejected based on their inability to meet the purpose of the proposed action. These options do not encompass an entire alternative, but rather various elements of the alternatives. No full alternatives were considered other than the three action alternatives, as the elements of each alternative were examined independently and then compiled to form alternatives.

- **Discharge water to McElmo watershed** – This option was dismissed as it was too great an environmental impact to downstream wetlands. The volume of discharge would exceed current discharge levels and the withdraw of water from one watershed (Mancos) and discharge to another watershed (McElmo) was not acceptable.
- **Discharge water to Mancos watershed** – This option was dismissed because of the State-designated “Outstanding Natural Resource Waters” for all NPS lands in the Mancos River watershed.
- **Access road to Curatorial Facility and VIC site from the south** – This option was dismissed as the fill work to support the access road created too much of an environmental impact.

## Mitigation Measures

The following mitigation measures have been developed to minimize the degree and/or severity of adverse effects and would be implemented during construction of the action alternative as needed:

- To minimize the amount of ground disturbance, staging and stockpiling areas would be located in previously disturbed sites away from visitor-use areas to the extent possible. All staging and stockpiling areas would be restored to native vegetation conditions following construction.
- Construction zones would be identified and fenced with construction fencing or some similar material prior to any construction activity. The fencing would define the construction zone and confine activity to the minimum area required for construction. All protection measures would be clearly stated in the construction specifications and workers would be instructed to avoid conducting activities beyond the construction zone as defined by the construction zone fencing.
- Re-vegetation and re-contouring of disturbed areas would take place following construction and would be designed to minimize the visual intrusion of the structure. Re-vegetation efforts would strive to reconstruct the natural spacing, abundance, and diversity of native plant species using native species. All disturbed areas would be restored as nearly as possible to natural conditions shortly after construction activities are completed. Weed control methods would be implemented to minimize the introduction of noxious weeds. Some trees and shrub will be removed, but other existing vegetation at the site would not be disturbed to the extent possible.
- Weed control of the disturbed areas would be addressed by initiating a controlled burn followed by application of herbicide to control smooth brome and cheatgrass in the area. Additionally, the stockpiled soil during construction would be sprayed with herbicide. Post-construction control of any and all invasive plants will be a long-term commitment by the park.
- Because disturbed soils are susceptible to erosion until re-vegetation takes hold, standard erosion control measures such as silt fences and/or sand bags would be used to minimize any potential soil erosion.

- Fugitive dust generated by construction would be controlled by spraying water on the construction site, if necessary.
- To reduce noise and emissions, construction equipment would not be permitted to idle for long periods of time.
- To minimize possible petrochemical leaks from construction equipment, the contractor would regularly monitor and check construction equipment to identify and repair any leaks.
- Construction workers and supervisors would be informed about special status species. Contract provisions would require the cessation of construction activities if a special status species were discovered in the project area and until park staff re-evaluates the project. This would allow modification of the contract for any protection measures determined necessary to protect the discovery.
- Should construction unearth previously undiscovered cultural resources, work would be stopped in the area of any discovery and the park would consult with the State Historic Preservation Officer and the Advisory Council on Historic Preservation, as necessary, according to §36 CFR 800.13, Post Review Discoveries. In the unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (1990) would be followed.
- The National Park Service would ensure that all contractors and subcontractors are informed of the penalties for illegally collecting artifacts or intentionally damaging paleontological materials, archeological sites, or historic properties. Contractors and subcontractors would also be instructed on procedures to follow in case previously unknown paleontological or archeological resources are uncovered during construction.
- To minimize the potential for impacts to park visitors, variations on construction timing may be considered. One option includes conducting the majority of the work in the off-season (winter) or shoulder seasons. Another option includes implementing daily construction activity curfews such as not operating construction equipment between the hours of 6 PM to 7 AM in summer (May – September), and 6 PM to 8 AM in the winter (October – April). The National Park Service would determine this in consultation with the contractor.
- Construction workers and supervisors would be informed about the special sensitivity of park's values, regulations, and appropriate housekeeping.
- According to *Management Policies 2006*, the NPS would strive to construct facilities with sustainable designs and systems to minimize potential environmental impacts. Development would not compete with or dominate Mesa Verde's features. To the extent possible, the design and management of facilities would emphasize environmental sensitivity in construction, use of nontoxic materials, resource conservation, recycling, and integration of visitors with natural and cultural settings. The NPS also reduces energy costs, eliminates waste, and conserves energy resources by using energy-efficient and cost-effective technology. Energy efficiency is incorporated into the decision-making process during the design of buildings, facilities, and transportation systems that emphasize the use of renewable energy sources.

## Alternative Summaries

Table 2 summarizes the major components of all the Alternatives, and compares the ability of these alternatives to meet the project objectives (the objectives for this project are identified in the Purpose and Need chapter). As shown in the following table, Alternative B meets each of the objectives identified for this project, while the No Action Alternative does not address all of the objectives.

Table 3 summarizes the anticipated environmental impacts for Alternatives A, B, C, and D. Only those impact topics that have been carried forward for further analysis are included in this table. The Environmental Consequences chapter provides a more detailed explanation of these impacts.

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**Table 2**  
**Alternatives Summary and Extent to Which Each Alternative Meets Project Objectives**

<b>Alternative A – No Action</b>	<b>Alternative B – Preferred Alternative</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>New staff office/storage building would not be constructed. The office/storage trailer would not meet current building code requirements, current health and safety standards nor would it be ADA compliant. Utilities at the Entrance Station Complex would not be updated. The access road alignment would not change and the planned wastewater system would not be redesigned at the planned Curatorial Facility and VIC.</p>	<p>New staff office/storage building would be constructed and would meet building code and health and safety requirements. The building would be ADA compliant and be constructed in the office/storage trailer footprint. Utilities would be updated and placed in the existing utility corridor. The access road to the Curatorial Facility and VIC would be designed to direct traffic in and out on one road and the wastewater system would be modified from the 2002 proposal.</p>	<p>Entrance station kiosks would be relocated. New staff office/storage building would be the same as in Alternative B except it would be constructed on the east side of the Entrance Road. The access road to the Curatorial Facility and VIC would be designed to direct traffic in and out on one road and the wastewater system would be modified from the 2002 proposal.</p>	<p>Entrance station kiosks would be relocated. New staff office/storage building would be the same as in Alternative B except it would be constructed on the west side of the Entrance Road outside of the trailer footprint. The access road to the Curatorial Facility and VIC would be designed to direct traffic in and out on one road and the wastewater system would be modified from the 2002 proposal.</p>
<p><b>Meets Project Objectives?</b></p>	<p><b>Meets Project Objectives?</b></p>	<p><b>Meets Project Objectives?</b></p>	<p><b>Meets Project Objectives?</b></p>
<p>No. Continuing the existing conditions would not provide for an employee work area that meets current health and safety recommendations in terms of the existing building's structural deficiencies and worn utilities. The planned wastewater system at the planned Curatorial Facility and VIC may not be adequate during cold winter months and it has a very large impact area, which is not visually appealing. The planned access road has a large impact area with large amounts of fill material needed to connect the planned access road to the main road.</p>	<p>Yes. Constructing a new staff office/storage building would provide a work area that meets current health and safety standards and building code requirements. The new building would be visually and architecturally compatible with the existing park architecture and be ADA compliant. A public toilet would be located at the north trailer parking lot. At the Curatorial Facility and VIC, the access road would be modified to minimize impacts to park resources and the wastewater system would better serve park needs. Additionally, a sand shed would be located at the park entrance area. This alternative minimizes environmental impacts to the extent possible, and would not result in impairment to any park resources.</p>	<p>Yes. A new staff office/storage building would be constructed and provide a work area that meets current health and safety standards and building code requirements. The new building would be visually and architecturally compatible with the existing park architecture and be ADA compliant. A public toilet would be located at the staff office/storage building. At the Curatorial Facility and VIC, the access road would be modified to minimize impacts to park resources and the wastewater system would better serve park needs. Additionally, a sand shed would be located at the park entrance area. This alternative minimizes environmental impacts to the extent possible, and would not result in impairment to any park resources.</p>	<p>The same objectives would be met as in Alternative C.</p>

**Table 3  
Environmental Impact Summary by Alternative**

<b>Impact Topic</b>	<b>Alternative A – No Action</b>	<b>Alternative B – Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Soil</b>	Effects from the No Action Alternative would be minor, adverse, and long-term due to no additional disturbance to soil.	Effects from construction of new facilities, compaction, and excavation activities are anticipated to be minor, adverse, and long-term.	Effects from construction of new facilities, compaction, imported fill, and excavation activities are anticipated to be minor, adverse, and long-term.	Effects from construction of new facilities, compaction, and excavation activities in previously undisturbed and disturbed areas are anticipated to be minor to moderate, adverse, and long-term.
<b>Vegetation</b>	Effects from the No Action Alternative would be negligible, adverse, and long-term due to no additional disturbance to vegetation.	Effect on vegetation from construction and excavation activities at the Entrance Station Complex and Curatorial Facility and VIC are anticipated to be moderate, adverse, and short-term due to the intensive rehabilitation activities it would require to ensure successful re-vegetation. In the long-term the effects would be minor and primarily beneficial as the result of native species being used for re-vegetation. No impairment.	Effects from construction, imported fill and excavation activities are anticipated to be moderate, adverse, and short-term due to the intensive rehabilitation activities that would be required to ensure successful re-vegetation. In the long-term the effects would be minor and primarily beneficial as the result of native species being used for re-vegetation. No impairment.	Effect on vegetation from construction and excavation activities at the Entrance Station Complex and Curatorial Facility and VIC are anticipated to be moderate, adverse, and short-term and minor to moderate, adverse in the long-term due to construction in previously undisturbed area and intensive rehabilitation activities. Long-term beneficial effects would result as native species would be used for re-vegetation. No impairment.
<b>Water Resources</b>	Effects from the No Action Alternative would be negligible, adverse, and long-term due to no additional disturbance to water resources.	Overall, there would be a minor, adverse, and long-term effect on water resources at the park entrance area due to unlined leach field associated with the wastewater system.	Overall, there would be a negligible beneficial effect on water resources at the park entrance area due to lined lagoons with no ground discharge associated with the wastewater system.	Effects would be the same as Alternative B.
<b>Archeological</b>	Effects to archeological resources are not anticipated. Therefore, there would be no effects to archeological resources.	Effects to archeological resources are not anticipated. Therefore, there would be no effects to archeological resources in the short- and long-term. No impairment.	Effects to archeological resources are not anticipated. Therefore, there would be no to negligible effects to archeological resources in the short- and long-term. No impairment.	Effects would be the same as Alternative C.

Impact Topic	Alternative A – No Action	Alternative B – Preferred	Alternative C	Alternative D
<b>Cultural Landscape</b>	Effects to Cultural Landscape resources are not anticipated. Therefore, there would be no or negligible effects to archeological resources.	The position of the new staff office/storage building would be built in the existing office trailer footprint. Therefore, there would be minor effects to cultural landscape resources. No impairment.	The position of the new staff office/storage building would have the effect of blocking the view of the park and, most notable, Point Lookout from incoming visitors and employees stationed at the park entrance. Therefore, there would be a moderate, adverse, long-term effect to cultural landscape resources. No impairment.	Since the staff office/storage building would be placed in an existing pinyon-juniper forest and only a portion of the pinyon-juniper forest would be displaced, there would be moderate, adverse, and long-term effect to the cultural landscape. No impairment.
<b>Visual Resource</b>	Effects from the No Action Alternative would be negligible, adverse, and long-term because the current conditions would not change.	The new staff/office building would be shielded from visitor view by ancient pinyon-juniper stand located on the west side of the Entrance Road. Therefore, there would be a minor, adverse, long-term effect to visual and aesthetic resources. No impairment.	There would be a moderate, adverse, long-term effect to visual and aesthetic resources due to the placement of the staff office/storage building on the east side of the Entrance Road. No impairment.	Since the staff office/storage building would be architecturally compatible with the surrounding landscape and would blend into the surrounding landscape and only a portion of the pinyon-juniper forest would be removed, there would be minor, adverse, and long-term effects to the visual resource. No impairment.
<b>Visitor Use and Experience</b>	Effects from the No Action Alternative would be minor, adverse, and long-term because the current conditions would not change.	There would be a minor beneficial long-term effect on the visitor use and experience due to upgrades to facilities and the addition of public restroom at the park entrance area. Minor, temporary, adverse effect to visitor-use and experience would result from construction activities.	Same as Alternative B.	Same as Alternative B.

Impact Topic	Alternative A – No Action	Alternative B – Preferred	Alternative C	Alternative D
<b>Park Operation</b>	The No Action Alternative would not measurably change current park operations because the existing facilities at the park entrance area would continue their functions. Minor adverse long-term effects to health and safety to park employees.	Alternative B would have long-term beneficial effects on the health and safety of employees and park operations even with the increased support required for new systems. Disturbances from construction will result in the need for a long-term commitment to rehabilitated areas by promoting growth of native species and the control of non-native species.	Effects would be similar to Alternative B.	Effects would be similar to Alternative B.

## Identification of the Environmentally Preferred Alternative

The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act of 1969 (NEPA), which guides the Council on Environmental Quality (CEQ). The CEQ provides direction that the environmentally preferable alternative is the alternative that would promote the national environmental policy as expressed in NEPA's Section 101:

- Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- Assure for all generations safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
- Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
- Preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
- Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
- Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Alternative A, No Action, only minimally meets the above evaluation factors because it retains facilities at the Entrance Station Complex that do not meet health and safety standards in terms of structural deficiencies, worn utility lines, and a septic system that does not meet current standards. The wastewater system initially envisioned for the Curatorial Facility and VIC would have difficulty meeting the demands required of the facility. While it minimizes potential impacts to significant park resources such as archeological sites and cultural landscapes, it does not achieve a balance between these resources and the health and safety of park staff. Originally intended for use as an interim office facility, the office/storage trailer has exceeded its usable lifespan. This alternative also does not meet the criteria for improving renewable resources because the existing office/storage trailer is inefficient with regards to energy and water use.

Although each of the alternatives meets the above criteria to some degree, Alternative B, Westside Entrance Area Office/Storage and SBR or Engineered Sand Wastewater System, best addresses these six evaluation factors. Alternative B would provide a working environment for park staff that meets health and safety recommendations, while minimizing environmental impacts to the extent possible. As a permanent facility, the new staff office/storage building would be used by future generations. The new building would also be more energy efficient and more environmentally friendly than the existing office/storage building. Alternative B would also provide upgraded utility lines for the facilities at the Entrance Station Complex and a wastewater system for the Curatorial Facility and VIC that would better meet the demands required of the system to support the facilities.

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### 3 ENVIRONMENTAL CONSEQUENCES

This chapter analyzes the potential environmental consequences, or impacts, that would occur as a result of implementing the proposed project. Topics analyzed in this chapter include soil, vegetation, water resources, archeological resource, historic cultural landscape, visual resource, visitor use and experience, and park operations. Direct, indirect, and cumulative effects, as well as impairment are analyzed for each resource topic carried forward. Potential impacts are described in terms of type, context, duration, and intensity. General definitions are defined as follows, while more specific impact thresholds are given for each resource at the beginning of each resource section.

- **Type** describes the classification of the impact as either beneficial or adverse, direct or indirect:
  - Beneficial: A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.
  - Adverse: A change that moves the resource away from a desired condition or detracts from its appearance or condition.
  - Direct: An effect that is caused by an action and occurs in the same time and place.
  - Indirect: An effect that is caused by an action but is later in time or farther removed in distance, but is still reasonably foreseeable.
- **Context** describes the area or location in which the impact will occur. Are the effects site-specific, local, regional, or even broader?
- **Duration** describes the length of time an effect will occur, either short-term or long-term:
  - Short-term impacts generally last only during construction, and the resources resume their pre-construction conditions following construction.
  - Long-term impacts last beyond the construction period, and the resources may not resume their pre-construction conditions for a longer period of time following construction.
- **Intensity** describes the degree, level, or strength of an impact. For this analysis, intensity has been categorized into negligible, minor, moderate, and major. Because definitions of intensity vary by resource topic, intensity definitions are provided separately for each impact topic analyzed in this Environmental Assessment / Assessment of Effect.

**Cumulative Effects:** The Council on Environmental Quality (CEQ) regulations, which implement the National Environmental Policy Act of 1969 (42 USC 4321 et seq.), require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for each alternative, including both the No Action and Preferred Alternatives.

Cumulative impacts were determined by combining the impacts of the alternatives with other past, present, and reasonably foreseeable future actions, or assessing the cumulative impact scenario, or identifying cumulative actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects at Mesa Verde National Park and, if applicable, the surrounding region. The geographic scope for this analysis includes elements mostly within Mesa Verde National Park's boundaries, while the temporal scope includes projects within a range of approximately 10 years. Given

this, the following projects were identified for the purpose of conducting the cumulative effects analysis, listed from past to future:

- **Fire Management Plan.** Mesa Verde National Park has experienced six major wildfires since 1989. As part of the response to these fires, the NPS is preparing a new Fire Management Plan for the park. The plan will support efforts to maintain a healthy ecosystem while protecting the park's cultural resources and infrastructure. The plan will consider multiple management techniques for fuels reduction, fire suppression, and resource protection. The Fire Management Plan EA will be available for public review in 2009.
- **Park Construction Projects.** There are several other current or upcoming park construction projects including replacement of the park's water supply pipeline, upgrades of fire hydrants, and roadway improvement projects.
- **Construction of the remainder of the Curatorial Facility and VIC.** Components of the Curatorial Facility and VIC were discussed in a prior Environmental Assessment (AE) prepared in 2002 (Cultural Center EA, 2002), which consisted of construction of a new research and storage oriented facility, administration building, a visitor center, as well as 9.5 acres that would contain evaporative wastewater lagoons and constructed grey water wetland.

**Impairment:** NPS *Management Policies 2006* require analysis of potential effects to determine whether or not actions would impair park resources (NPS 2006). The fundamental purpose of the National Park System, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values. However, the laws do give the NPS the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values.

Although Congress has given the NPS the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the NPS must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values. An impact to any park resource or value may constitute impairment, but an impact would be more likely to constitute impairment to the extent that it has a major or severe adverse effect upon a resource or value whose conservation is:

1. Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
2. Key to the natural or cultural integrity of the park; or
3. Identified as a goal in the park's master plan or other relevant NPS planning documents.

Impairment may result from NPS activities in managing the park, visitor activities, or activities undertaken by concessionaires, contractors, and others operating in the park. A determination on impairment is made in the Conclusion section for each of the resource topics carried forward in this chapter.

**Unacceptable Impacts:** The impact threshold at which impairment occurs is not always readily apparent. Therefore, the NPS applies a standard that offers greater assurance that impairment will not occur by avoiding unacceptable impacts. These are impacts that fall short of impairment, but are still not acceptable within a particular park's environment. Park managers must not allow uses that would cause unacceptable impacts; they must evaluate existing or proposed uses and determine whether the associated impacts on park resources and values are acceptable.

Virtually every form of human activity that takes place within a park has some degree of effect on park resources or values, but that does not mean the impact is unacceptable or that a particular use must be disallowed. Therefore, for the purposes of these policies, unacceptable impacts are impacts that, individually or cumulatively, would:

- Be inconsistent with a park's purposes or values;
- Impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process;
- Create an unsafe or unhealthful environment for visitors or employees;
- Diminish opportunities for current or future generations to enjoy, learn about, or be inspired by park resources or values; or
- Unreasonably interfere with:
  - Park programs or activities,
  - An appropriate use,
  - The atmosphere of peace and tranquility, or the natural soundscape maintained in wilderness and natural, historic, or commemorative locations within the park, or
  - NPS concessionaire or contractor operations or services. (NPS 2006).

In accordance with *Management Policies 2006*, park managers must not allow uses that would cause unacceptable impacts to park resources. To determine if unacceptable impact could occur to the resources and values of Mesa Verde National Park, the impacts of proposed actions in this environmental assessment were evaluated based on the above criteria. A determination on unacceptable impacts is made in the Conclusion section for each of the physical resource topics carried forward in this chapter.

**Impacts to Cultural Resources and Section 106 of the National Historic Preservation Act:** In this Environmental Assessment/Assessment of Effect, impacts to historic properties are described in terms of type, context, duration, and intensity, as described above, which is consistent with the regulations of the Council on Environmental Quality (CEQ) that implement the National Environmental Policy Act (NEPA). This Environmental Assessment/Assessment of Effect is intended, however, to comply with the requirements of both NEPA and §106 of the National Historic Preservation Act (NHPA). To achieve this, a §106 summary is included under the Preferred Alternative for each of the cultural resource topics carried forward including Historic Structures. The topics of ethnographic resources, and museum collections were dismissed from further consideration in Impacts Dismissed from Further Consideration because none were identified in the project area. The §106 summary is intended to meet the requirements of §106 and is an assessment of the effect of the undertaking (implementation of the alternative) on cultural resources, based upon the criterion of effect and criteria of adverse effect found in the Advisory Council's regulations. A letter was sent on July 9, 2008 to the State Historic Preservation Office informing them of using a combined document to meet §106 obligations.

Under the Advisory Council's regulations, a determination of either *adverse effect* or *no adverse effect* must be made for affected historic properties that are eligible for or listed on the National Register of Historic Places. An *adverse effect* occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualify it for inclusion in the National Register (e.g. diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association). *Adverse effects* also include reasonably foreseeable effects caused by an alternative that would occur later in time; be farther removed in distance; or be cumulative (36 CFR Part 800.5, Assessment of Adverse Effects). A determination of *no adverse effect* means there is an effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the National Register of Historic Places.

CEQ regulations and the National Park *Service's Conservation Planning, Environmental Impact Analysis and Decision-Making* (DO #12) also call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact (e.g. reducing the intensity of an impact from major to moderate or minor). Any resultant reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation under NEPA only. It does not suggest that the level of effect as defined by §106 is similarly reduced. Although adverse effects under §106 may be mitigated, the effect remains adverse.

## Soils

### Intensity Level Definitions

Soils are resources that are considered necessary and appropriate to fulfill the purposes of Mesa Verde National Park. Information on soils potentially impacted in the entrance area of the park was compiled and reviewed by park staff. Locations of sensitive soils were compared with locations of proposed development and modifications of existing facilities. The methodology used for assessing impacts to soils are based on how the construction of a new office/storage building and relocation of the current entrance station kiosks, upgrading utilities, new location of an access road to the Curatorial Facility and VIC, and construction of the wastewater system at Curatorial Facility and VIC would affect soils in the area. The thresholds for this impact assessment are as follows:

- Negligible:** Soils features would not be affected or effects would not be measurable. Any effects on soil productivity or fertility would be slight and would occur in a relatively small area.
- Minor:** Effects on soils would be detectable, but would affect a small area. If mitigation was needed to offset adverse effects, it would be relatively simple to implement and would likely be successful.
- Moderate:** Effects on soils would be readily apparent, and would occur over a relatively large area. Mitigation would probably be necessary to offset adverse effects and would likely be successful.
- Major:** Effects on soils would be readily apparent, and would substantially change the soil or ecologic characteristics over a large area. Extensive mitigation would be needed to offset adverse effects, and its success would not be assured.
- Impairment:** A permanent adverse change would occur to soils in a large portion of the park, affecting the resource to the point that the park's purpose could not be fulfilled and enjoyment by future generations of the resources supported by soils would be precluded.

The APE evaluated for impacts on soils includes about one mile of the Entrance Road corridor at the northern entrance to Mesa Verde National Park. Included in the Entrance Road corridor is a utility corridor to accommodate electricity, telephone, sewer, and culinary water lines that extends from the storage/office area to the Curatorial Facility and VIC area. Placement of the office/storage building APE would include up to 2.0 acres located southwest or approximately 0.70 acres located southeast of the entrance station kiosks, depending on the alternative. The APE for the access road from the Entrance Road to the Curatorial Facility and VIC would include approximately three acres from the Entrance Road to the Curatorial Facility and VIC. In addition, the APE includes a pipeline utility corridor, to accommodate water and sewer lines, extending from the existing water storage tank to the approved Curatorial Facility and VIC; and an approximately 600 yard long utility corridor from Highway 160 to the approved Curatorial Facility and VIC to bury electrical lines.

## **Alternative A – No Action Alternative**

### **Analysis**

The No Action Alternative would continue current patterns of soil disturbance around the Entrance Station Complex and the currently planned or expected impacts to soils at the Curatorial Facility and VIC site. This disturbance would include compacting soils along social trails and poor drainage during run-off due to heavy rain events. Effects would be limited to a relatively small area; no additional impermeable surfaces would be created. As such, effects of the No Action Alternative on soils would be considered minor, adverse, long-term and local.

### **Cumulative Effects**

The Entrance Station Complex is an established use area, and has been used for many years. The planned Curatorial Facility and VIC will be built in a previously disturbed area. Continuation of existing or already planned future conditions would have minor effects on soils. The absence of additional disturbance by this alternative would limit the potential for contributing to regional soil perturbation. Regionally, soil disturbance would have minor adverse effects due to soil erosion, heavy visitor use, and construction of new facilities and roads. Cumulatively, the No Action Alternative would only have an inconsequential incremental change in existing soil conditions when considered with other past, present, and reasonably foreseeable future actions.

### **Conclusion**

The No Action Alternative would continue current use patterns and involve no new construction at the Entrance Station Complex and Curatorial Facility and VIC beyond what has already been approved. As such, this alternative would have only minor, adverse, long-term effects to soils. This alternative would not contribute to any cumulative disturbance of the soil when considered with other past, present, and reasonably foreseeable future actions. Since there would be no effect, there would be no impairment of resources.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

## **Alternative B – Preferred Alternative**

### **Westside Entrance Area Office/Storage and SBR or Engineered Sand Wastewater System**

#### **Analysis**

Alternative B would continue current patterns of soil disturbance around the Entrance Station Complex. The office/storage building and staff parking would be located in the currently disturbed area around the existing office/storage trailer. Included in Alternative B is excavating in the existing utility corridor and extending it to accommodate new electricity, telephone, sewer, and culinary water lines that would extend from the storage/office area to the Curatorial Facility and VIC area. The soil disturbance would also include the continued compaction of soils along the existing trail from kiosks to the office/storage building. The addition of the office/storage building and associated parking areas would create approximately one acre or less of new impermeable surfaces. Additionally, poor drainage at the Entrance Station Complex

during run-off due to heavy rain events may cause erosion of soils in the area. Best Management Practices (BMP) during construction would reduce soil erosion.

Alternative B would continue approved future patterns of soil disturbance around the approved Curatorial Facility and VIC with the addition of a new location for the access road from the Entrance Road to the Curatorial Facility and VIC. The new access road area would encompass approximately three acres and it would be constructed along an existing service road that intersects with the Entrance Road near Highway 160. Additionally, the wastewater system construction at the Curatorial Facility and VIC would be constructed in the existing approved Curatorial Facility and VIC footprint. The sand shed would be built on existing asphalt located near the water treatment plant and would not impact soil in the area.

Effects from construction, compaction, and excavation activities are anticipated to be minor, adverse, and long-term.

## **Cumulative Effects**

The Entrance Station Complex is in an established use area, and has been used for many years. The planned Curatorial Facility and VIC and access road would be built in an area previously disturbed by agricultural activity near the entrance to the park. The new wastewater system would be constructed in the Curatorial Facility and VIC footprint. New and existing corridors would be used for the new utilities. Therefore, the minimal disturbance by this alternative would limit the potential for contributing to regional soil perturbation. Regionally, soil disturbance would have minor adverse effects due to soil erosion, heavy visitor use, and construction of new facilities and roads. Cumulatively, this Alternative would only have an inconsequential incremental change in existing soil conditions when considered with other past, present, and reasonably foreseeable future actions,

## **Conclusion**

Alternative B would include new construction at the Entrance Station Complex and Curatorial Facility and VIC area in mostly disturbed areas. As such this alternative would have only minor, adverse, long-term effect to soils resulting from the addition of new staff office/storage building, upgrading utilities, additional parking, new access road to the approved Curatorial Facility and VIC, with construction of a Curatorial Facility and VIC wastewater system and new sand shed, and continued compaction of soils along the trail from the kiosks to the office/storage building. Poor drainage during run-off due to heavy rain events would also have minor, adverse, long-term effects on soils.

Alternative B would result in minor effect on soil because ground disturbance would occur mostly in already disturbed areas. As such, this alternative would not contribute to any cumulative effect on soil, when considered with other past, present, and reasonably foreseeable future actions. Considering these minor effects, this alternative would not impair soil resources.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

## **Alternative C Eastside Entrance Area Office/Storage and Facilitative Lagoons Wastewater System**

### **Analysis**

Alternative C would generate new soil disturbance at the Entrance Station Complex on the east side of the Entrance Road where the new staff office/storage building, vehicle turnaround, and additional parking would be constructed. Imported fill would be placed on top of native soil on the east side of the Entrance Road to meet construction needs. Soil disturbance would also occur on the south side of the access road that leads to the existing storage/office trailer, where additional parking would be constructed. The area of soil disturbance east of the Entrance Road would encompass an approximate 0.70 acres. The additional parking on the south side of the access road and the removal of the existing structures would encompass approximately 0.22 acres of disturbed and undisturbed soil. Included in Alternative C, is excavating in the existing utility corridor to upgrade the telephone, water, and sewer lines. The utility corridor would continue from the new staff office/storage facility to the approved Curatorial Facility and VIC area. Additionally, impermeable surfaces would be created with the addition of the staff office/storage building footprint, vehicle turnaround, and parking areas. Additionally, poor drainage during run-off due to heavy rain events may cause erosion of soils in the area. BMP during construction would reduce soil erosion.

Alternative C would continue current and approved future patterns of soil disturbance around the approved Curatorial Facility and VIC with the addition of a new location of the access road from the Entrance Road to the Curatorial Facility and VIC. The new access road would be constructed along an existing service road that intersects with the Entrance Road near Highway 160. An additional section of new road from the service road to the Curatorial Facility and VIC would be constructed to improve access to the facilities. The access road would be graded in a previously disturbed area. Additionally, the wastewater system construction would occur in the planned Curatorial Facility and VIC footprint. The sand shed would be built on existing asphalt located near the water treatment plant

Effects from construction, compaction, imported fill and excavation activities are anticipated to be minor, adverse, and long-term.

### **Cumulative Effects**

As described under Alternative B, the Entrance Station Complex is in an established use area and has been used for many years. The approved Curatorial Facility and VIC and access road would be built in a previously disturbed area near the entrance to the park. Construction of a wastewater system would occur in the planned Curatorial Facility and VIC footprint. New and existing utility corridors would be used for the upgrades to utilities. Therefore, the minimal disturbance by this alternative would limit the potential for contributing to regional soil perturbation. Regionally, soil disturbance would have minor adverse effects due to soil erosion, heavy visitor use, and construction of new facilities and roads. Cumulatively, this Alternative would only have an inconsequential incremental change in existing soil conditions when considered with other past, present, and reasonably foreseeable future actions.

### **Conclusion**

Alternative C would include new construction and placement of imported fill at the Entrance Station Complex and new construction at the Curatorial Facility and VIC. Effects at the Entrance Station Complex would be limited to the area on the east side of the Entrance Road and in the area where the existing office/storage trailer is located. Effects at the Curatorial Facility and VIC would be limited to areas already disturbed by historic agricultural uses. As such this alternative would have minor, adverse, long-term effects on soils resulting from the new office/storage building construction, new vehicle turn

around and parking, utility corridor, Curatorial Facility and VIC access road, Curatorial Facility and VIC wastewater system construction, and sand shed construction.

Alternative C would result in minor effect on soil because ground disturbance would occur mostly in already disturbed areas. As such, this alternative would not contribute to any cumulative effect to soil, when considered with other past, present, and reasonably foreseeable future actions. Considering these minor effects, this alternative would not impair soil resources.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

## **Alternative D**

### **Westside Entrance Area Office/Storage and STM Aerotor Wastewater System**

#### **Analysis**

Alternative D would generate new soil disturbance at the Entrance Station Complex on the west side of The Entrance Road. New staff office/storage building, vehicle turnaround, and additional parking would be constructed on the west side of the Entrance Road in an area that has not been previously disturbed. The western-most kiosk would also be located in the currently undisturbed area located west of the Entrance Road. This area of soil disturbance west of the Entrance Road would encompass an approximate 0.46 acre section. Soil disturbance would also occur in a previously disturbed area west of the Entrance Road and south of the undisturbed area where additional parking will be constructed. The addition of parking spaces and the removal of the existing office/storage structures would encompass approximately 0.23 acres of previously disturbed soil. The Entrance Road would also be widened from approximately 50 feet to 80 feet at the location of the kiosks. Included in Alternative D, is excavating in the existing utility corridor to upgrade the telephone, water, and sewer lines. The utility corridor would continue from the new staff office/storage facility to the approved Curatorial Facility and VIC area.

Additionally, impermeable surfaces would be created with the addition of the staff office/storage building footprint, vehicle turnaround, and parking areas. Additionally, poor drainage during run-off due to heavy rain events may cause erosion of soils in the area. BMP during construction would reduce soil erosion.

Alternative D would continue current and approved future patterns of soil disturbance around the planned Curatorial Facility and VIC with the addition of a new location of the access road from the Entrance Road to the facilities. The new access road would be constructed along an existing service road that intersects with the Entrance Road near Highway 160. An additional section of the new road alignment would be from the service road to the Curatorial Facility and VIC would be constructed to improve access to the approved facilities. The access road would be graded in a previously disturbed area. Additionally, the wastewater system would be constructed in the planned Curatorial Facility and VIC footprint. The sand shed would be built on existing asphalt located near the water treatment plant.

Effects from construction, compaction, and excavation activities in previously undisturbed and disturbed areas are anticipated to be minor to moderate, adverse, and long-term.

#### **Cumulative Effects**

As described under Alternative B, the Entrance Station Complex is in an established use area, and has been used for many years. The staff office/storage building and associated parking would be located in a previously undisturbed area of approximately 0.46 acres at the Entrance Station Complex. The planned

Curatorial Facility and VIC will be built in a previously disturbed area near the entrance to the park. Construction of the wastewater system and new access road would be constructed in the Curatorial Facility and VIC footprint. New and existing utility corridors would be used for the upgrades to utilities. Therefore, the minor disturbance by this alternative would limit the potential for contributing to regional soil perturbation. Regionally, soil disturbance would have minor adverse effects due to soil erosion, heavy visitor use, and construction of new facilities and roads. Cumulatively, this Alternative would only have a noticeable incremental change in existing soil conditions when considered with other past, present, and reasonably foreseeable future actions.

## Conclusion

Alternative D would include new construction at the Entrance Station Complex and at the approved Curatorial Facility and VIC. Effects at the Entrance Station Complex would include undisturbed and disturb areas west of the Entrance Road. Effects at the Curatorial Facility and VIC would be limited to areas currently disturbed. As such this alternative would have moderate to minor, adverse, long-term effect to soils resulting from the new office/storage building construction, new vehicle turn around and parking, utility corridor, Curatorial Facility and VIC access road, Curatorial Facility and VIC wastewater system upgrade, and sand shed.

Alternative D would result in minor to moderate effect on soil because ground disturbance would occur in previously undisturbed and disturbed areas. As such, this alternative would contribute a noticeable cumulative effect to soil when considered with other past, present, and reasonably foreseeable future actions. Considering these minor to moderate effects, this alternative would not impair soil resources.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

## Vegetation

### Intensity Level Definitions

Two important native plant communities are found within Mesa Verde National Park's entrance area. These communities include the pinyon-juniper/mountain shrub ecotone uplands and grasslands/rabbit brush/sagebrush valley. An ancient stand of pinyon pine and junipers trees containing large specimen trees, some are 800 to 1,000 years old, are located on the west side of the Entrance Road next to the entrance station kiosks. The area on the east side of the Entrance Road is occupied by a meadow that was ploughed, planted with non-native forage plants, and grazed into the 1960s. The thresholds for this impact assessment are as follows:

- Negligible:** Individual native plants may occasionally be affected, but measurable or perceptible changes in plant community size, integrity, or continuity would not occur.
- Minor:** Effects on native plants would be measurable or perceptible, but would affect a small area. The viability of the plant community would not be affected and the community, if left alone, would recover.
- Moderate:** A change would occur over a relatively large area in the native plant community that would be readily measurable in terms of abundance, distribution, quantity, or quality.

Mitigation measures would probably be necessary to offset adverse effects and would likely be successful.

**Major:** Effects on native plant communities would be readily apparent, and would substantially change vegetation community types over a large area in and out of the park. Extensive mitigation would be needed to offset adverse effects, and its success would not be assured.

**Impairment:** A permanent change in native plant communities would occur in a large portion of the park. The change would be highly noticeable, could not be mitigated, and would affect vegetation to the point that the park's purpose could not be fulfilled and enjoyment of the vegetation resource by future generations would be precluded.

The APE evaluated for impacts on vegetation is similar to the area described in the Soils section.

## **Alternative A – No Action Alternative**

### **Analysis**

The No Action Alternative would continue current patterns of vegetation disturbance around the Entrance Station Complex and the expected impacts to vegetation at the planned Curatorial Facility and VIC. Disturbance around the Entrance Station Complex includes trampling of vegetation along the park employee trail. Other activities such as routine maintenance, utilities excavation, fuel reduction by mechanical and prescribed fire techniques, and trimming also would continue as they have in the past. The No Action Alternative would result in negligible, adverse, long-term, local effects on vegetation at the Entrance Station Complex and the planned Curatorial Facility and VIC.

### **Cumulative Effects**

The Entrance Station Complex has been established in the park for many years and the planned Curatorial Facility and VIC will occur in a previously disturbed area. This Alternative would continue current vegetation disturbance, which would result in negligible, adverse, long-term, and local effects. The absence of additional disturbance by the No Action Alternative would limit the contribution to cumulative regional losses of vegetation. The park plans to initiate vegetation alteration in the area using fuel management methods described in the Fire Management Plan. Regionally, vegetation disturbance would have minor adverse effects due to heavy visitor use, fire management, and construction activities. Cumulatively, this Alternative would only have an inconsequential incremental change when considered with other past, present, and reasonably foreseeable future actions.

### **Conclusion**

The No Action Alternative would continue current use patterns and involve no new construction at the Entrance Station Complex or the planned Curatorial Facility and VIC. As such this alternative would have only negligible, adverse, long-term effect to vegetation resulting from trampling of vegetation along the park employee trail, social trails and maintaining existing facilities. As such, this alternative would not contribute to any cumulative disturbance of vegetation when considered with other past, present, and reasonably foreseeable future actions. Since there would be no effect, there would be no impairment of resources.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not

result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

## **Alternative B – Preferred Alternative Westside Entrance Area Office/Storage and SBR or Engineered Sand Wastewater System**

### **Analysis**

Alternative B would continue current patterns of vegetation disturbance around the Entrance Station Complex. Most vegetation affected in Alternative B was previously disturbed by the construction, occupation, and management of existing Entrance Station Complex facilities. The new staff office/storage building would be constructed in the currently disturbed area of the existing office/storage trailer footprint. Additionally, excavating in the existing utility corridor and extending it to the Curatorial Facility and VIC area would take place in currently disturbed areas. The Entrance Road would be widened by approximately 8 feet on the west side of road just south of the entrance station kiosks. The widening of the road would result in the removal of some pinyon and juniper trees in the undisturbed area west of the road. The vegetation disturbance would continue along the exiting trail from the kiosks to office/storage building.

Alternative B would continue current patterns of vegetation disturbance planned around the approved Curatorial Facility and VIC with the exception of a new location for the access road from the Entrance Road to the Facility. The approved Curatorial Facility and VIC will be constructed in a meadow previously disturbed by agricultural use. The new access road would be constructed along a previously disturbed area including an existing service road that intersects with the Entrance Road near Highway 160. Construction of the access road would impact several pinyon and juniper trees, Indian-apple shrubs, and the wild hollyhock population in the area. Additionally, the wastewater system construction at the Curatorial Facility and VIC would be located in the existing approved Curatorial Facility and VIC footprint. The sand shed would be built on existing asphalt located near the water treatment plant and would not impact vegetation in the area.

Native species would be used for all landscaping and re-vegetation, although newly re-vegetated areas would likely have lower densities and less diverse species composition than native plant communities. To protect against invasive non-native plants, the park would be responsible for maintaining a long-term weed monitoring and control effort. The park plans to initiate a controlled burn on about 30 acres in the area, followed by the application of herbicide to remove invasive species such as smooth brome, cheatgrass and others, followed by reseeding with native species.

Effects on vegetation from construction and excavation activities at the park entrance area are anticipated to be moderate, adverse in the short-term due to the intensive rehabilitation activities it would require to ensure successful re-vegetation. In the long-term the effects would be minor and primarily beneficial as a result of native species re-establishment. However, some currently forested areas would be permanently lost.

### **Cumulative Effects**

The Entrance Station Complex is in an established use area, and has been used for many years. The approved Curatorial Facility and VIC and access road would be built in a previously disturbed area near the entrance to the park. Construction of the wastewater system would be located in the Curatorial Facility and VIC footprint. Re-vegetation would have a moderate, adverse effect in the short-term due to intensive rehabilitation activities and beneficial effects in the long-term as native species replace the non-native species. The latest Fire Management Plan, currently in preparation, would likely have both beneficial in the long-term and adverse in the short-term effects on native vegetation at and near the Entrance Station Complex and Curatorial Facility and VIC, since invasive vegetation would be destroyed

through prescribed burns and herbicide application. Additionally, fuels management would remove some trees in the area to reduce the fire danger for buildings. The minimal disturbance by this alternative would limit the potential for contributing to regional vegetation perturbation. Therefore, the affects of this alternative combined with the planned invasive species control and fire danger mitigation would have a minor, local, long-term and mostly beneficial effect on the native vegetative community. Therefore, this alternative would contribute a noticeable, beneficial increment when considered other past, present, and reasonably foreseeable future actions.

## **Conclusion**

Alternative B would include new construction at the Entrance Station Complex and Curatorial Facility and VIC area in mostly disturbed areas. Intensive rehabilitation activities would be required to ensure successful re-vegetation. Some old-growth pinyon-juniper forest would be permanently lost along with some special-concern species (the Indian-apple and wild hollyhock) due to the construction of the new access road. This alternative would have moderate, adverse, short-term effects to vegetation resulting from the addition of a new staff office/storage building, upgrading utilities, additional parking, new access road to the approved Curatorial Facility and VIC, construction of the Curatorial Facility and VIC wastewater system and new sand shed, and continued impacted vegetation along the trail from the kiosks to the office/storage building. In the long-term the effects would be minor and mostly beneficial as the result of native species being used for re-vegetation.

Alternative B would result in minor benefit after controlled burning and herbicide application to remove invasive species. Additionally, fuels management would remove some trees in the area to reduce the fire danger for buildings. As such, this alternative would contribute to cumulative benefit to native vegetation when considered with the cumulative impact scenario. Considering these beneficial effects, this alternative would not impair vegetation.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

## **Alternative C**

### **Eastside Entrance Area Office/Storage and Facilitative Lagoons Wastewater System**

#### **Analysis**

Alternative C would generate a new vegetation disturbance at the Entrance Station Complex on the east side of the Entrance Road where the new staff office/storage building, vehicle turnaround, and additional parking would be constructed. Imported fill would be placed on top of the vegetation on the east side of the Entrance Road to meet construction needs. The area east of the Entrance Road was historically used for farm animal grazing; as such the vegetation in this meadow is mostly non-native. The area of disturbance east of the Entrance Road would encompass an approximate 0.70 acres. Vegetation of concern is the large pinyon pine tree located on the east side of the Entrance Road and approximately 25 feet south of the proposed vehicle turnaround. Disturbing the area around this tree could have an adverse affect on the large pinyon pine and the younger trees in the area as well. Other than the one large pinyon-pine, Alternative C would have the least affect on the pinyon pine and juniper trees at the Entrance Station Complex compared to Alternative B and D.

Vegetation disturbance would also occur on the south side of the access road that leads to the existing storage/office trailer, where additional parking would be constructed. The additional parking on the south side of the access road and the removal of the existing structures would encompass approximately 0.22 acres of disturbed and undisturbed soil. Included in Alternative C is excavating in the existing utility corridor to upgrade the telephone, water, and sewer lines. The utility corridor would continue from the new staff office/storage facility to the approved Curatorial Facility and VIC area on the east side of the Entrance Road.

Alternative C would continue current patterns of vegetation disturbance planned for around the approved Curatorial Facility and VIC with the exception of a new location for the access road from the Entrance Road to the facilities. The approved Curatorial Facility and VIC will be constructed in a previously disturbed meadow once used for grazing. The new access road would be constructed along previously disturbed area including an existing service road that intersects with the Entrance Road near Highway 160. Construction of the access road would impact several pinyon and juniper trees, Indian-apple shrubs, and the wild hollyhock population in the area. Additionally, the wastewater system would be constructed in the existing approved Curatorial Facility and VIC footprint. The sand shed would be built on existing asphalt located near the water treatment plant and would not impact vegetation in the area.

Native species would be used for all landscaping and re-vegetation, although re-vegetated areas would likely have lower densities and less diverse species composition than native plant communities. To protect against invasive non-native plants, the park would be responsible for maintaining a long-term weed monitoring and control effort. The park plans to initiate a controlled burn in the area, followed by the application of herbicide to remove invasive species such as smooth brome and cheatgrass.

Effect on vegetation from construction and excavation activities at the park entrance area are anticipated to be moderate and adverse in the short-term due to the intensive rehabilitation activities it would require to ensure successful re-vegetation. In the long-term the effects would be minor and beneficial as the result of native species being used for re-vegetation.

## **Cumulative Effects**

Cumulative effects of Alternative C on vegetation would be similar to those described for Alternative B.

## **Conclusion**

Alternative C would include new construction at the Entrance Station Complex and Curatorial Facility and VIC area in mostly disturbed areas. As such this alternative would have only moderate, adverse, short-term effect to vegetation resulting from the addition of new staff office/storage building, upgrading utilities, additional parking, and new access road to the approved Curatorial Facility and VIC, construction of the Curatorial Facility and VIC wastewater system and a new sand shed. Areas of pinyon-juniper forest and special-concern species would be affected by Alternative C including the old-growth pinyon-pine tree located on the east side of the Entrance Road, which even with mitigation measures would not be adequately protected from construction activities.

Alternative C would result in minor adverse in the short-term and minor beneficial effect in the long-term after control burn and herbicide application to remove invasive species. As such, this alternative would contribute to cumulative benefit to native vegetation, when considered with the cumulative impact scenario. Considering these beneficial effects, this alternative would not impair vegetation.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not

result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

## **Alternative D**

### **Westside Entrance Area Office/Storage and STM Aerotor Wastewater System**

Alternative D would generate new vegetation disturbance at the Entrance Station Complex on the west side of the Entrance Road. New staff office/storage building, vehicle turnaround, and additional parking would be constructed on the west side of the Entrance Road in an area that has not been previously disturbed. Additionally, the western-most kiosk structure would also be relocated in the currently undisturbed area located west of the Entrance Road. This area of vegetation disturbance west of the Entrance Road would encompass an approximate 0.46 acre section of old growth pinyon-juniper forest. Vegetation disturbance would also occur in a previously disturbed area west of the Entrance Road and south of the undisturbed area where additional parking will be constructed. The addition of parking spaces and the removal of the existing office/storage structures would encompass approximately 0.23 acres of previously disturbed soil. The Entrance Road would also be widened on the west side from approximately 50 feet to 80 feet at the location of the kiosks. Included in Alternative D, is excavating in the existing utility corridor to upgrade the telephone, water, and sewer lines. The utility corridor would continue from the new staff office/storage facility to the approved Curatorial Facility and VIC area. Effects from construction and excavation activities in previously undisturbed and disturbed areas at the Entrance Station Complex are anticipated to be minor to moderate, adverse, and long-term.

Alternative D would continue current plans for future vegetation disturbance around the approved Curatorial Facility and VIC with the exception of a new location for the access road from the Entrance Road to the facilities. The approved Curatorial Facility and VIC will be constructed in a previously disturbed meadow once used for grazing. The new access road would be constructed along a previously disturbed area including an existing service road that intersects with the Entrance Road near Highway 160. Construction of the access road would impact several pinyon and juniper trees, Indian-apple shrubs, and the wild hollyhock population in the area. Additionally, the wastewater system construction would be located in the existing approved Curatorial Facility and VIC footprint. The sand shed would be built on existing asphalt located near the water treatment plant and would not impact vegetation in the area.

Native species would be used for all landscaping and re-vegetation, although re-vegetated areas would likely have lower densities and less diverse species composition than native plant communities. To protect against invasive non-native plants, the park would be responsible for maintaining a long-term weed monitoring and control effort. As a result, during construction there would be minor, adverse, affects on vegetation. The park plans to initiate a controlled burn in the area, followed by the application of herbicide to remove invasive species such as smooth brome and cheatgrass.

Effect on vegetation from construction and excavation activities at the park entrance area are anticipated to be moderate, adverse in the short-term due to the intensive rehabilitation activities it would require to ensure successful re-vegetation. In the long-term the affects would be minor to moderate and adverse due to construction activities in previously undisturbed areas. There would be mostly long-term beneficial effect as a result of native species being used for re-vegetation.

## **Cumulative Effects**

The New staff office/storage building, vehicle turnaround, and additional parking would be constructed on the west side of the Entrance Road in an area that has not been previously disturbed. The planned Curatorial Facility and VIC and access road would be built in a previously disturbed area near the entrance to the park. Construction of the wastewater system would be located in the Curatorial Facility and VIC footprint. Construction and excavation activities in previously undisturbed and disturbed areas at the Entrance Station Complex are anticipated to be minor to moderate, adverse, and long-term. Re-vegetation would have a beneficial effect in the long-term as native species replace the non-native species. The latest Fire Management Plan, currently in preparation, would likely have both beneficial in

the long-term and adverse in the short-term effects on native vegetation at and near the Entrance Station Complex and Curatorial Facility and VIC, since invasive vegetation would be destroyed through prescribed burns and herbicide application. Additionally, fuels management would remove some trees in the area to reduce the fire danger for buildings. The affects of this alternative combined with the planned invasive species control and fire danger mitigation would have a minor, local, long-term and mostly beneficial effect on the native vegetative community. Overall this alternative would have a noticeable incremental change to vegetation when considered with other past, present, and reasonably foreseeable future actions.

## Conclusion

Alternative D would include new construction at the Entrance Station Complex and at the approved Curatorial Facility and VIC. Effects at the Entrance Station Complex would include undisturbed and disturbed areas west of the Entrance Road. This area of vegetation disturbance west of the Entrance Road would encompass a section of old growth pinyon-juniper forest. Of all of the alternatives, Alternative D would have the greatest affect on the pinyon pine and juniper trees at the Entrance Station Complex. Most impacts at the Curatorial Facility and VIC would be limited to areas currently disturbed. Some old-growth pinyon-juniper forest would be permanently lost along with some special-concern species, the Indian-apple and wild hollyhock due to the construction of the new access road. As such this alternative would have minor to moderate, adverse, long-term effects to vegetation resulting from the new office/storage building construction, new vehicle turn around and parking.

Alternative D would result in minor benefit after controlled burning and herbicide application to remove invasive species. As such, this alternative would contribute to cumulative benefit to native vegetation, when considered with the cumulative impact scenario. Considering these beneficial effects, this alternative would not impair vegetation.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

## Water Resources

### Intensity Level Definitions

Mesa Verde National Park strives to maintain water resources and the water quality at existing levels if it is already better than the minimum criteria set forth in 40 Code of Federal Regulations [CFR] 131.12(a)(2). The methodology used for assessing impacts to water resources is based on how the new facilities at the park entrance area would affect the visitor, particularly with the construction of a wastewater system at the Curatorial Facility and VIC. The thresholds for this impact assessment are as follows:

**Negligible:** There would be no change to groundwater recharge or water quality to the receiving drainages. Groundwater recharge and water quality would be within historical or desired conditions.

**Minor:** Changes in groundwater recharge and water quality of the receiving drainages would be measurable, although the changes would be small and local. Detections would be well below water quality standards and within historical or desirable water quality conditions.

**Moderate:** Changes in groundwater recharge and water quality of the receiving drainages would be measurable, although the changes would be relatively local. Historical baseline or desired groundwater recharge or water quality conditions would be temporarily altered.

**Major:** Changes in groundwater recharge and water quality of the receiving drainages would be readily measurable, would have substantial consequences, and would be noticed on a regional scale. Groundwater recharge or water quality would be frequently altered from historical baseline or desired conditions.

The APE encompasses the Mc Elmo Creek drainage and the Mancos River drainage.

## **Alternative A – No Action Alternative**

Under the No Action Alternative, the leach field at the office/storage trailer would continue to support the septic system at the Entrance Station Complex. This septic and leach field system is inadequate for the needs at the office/storage trailer and at times emits a foul smell. Run-off from parking areas at the entrance area would impact localized water quality. At the planned Curatorial Facility and VIC, a combination of an onsite primary wastewater/sewage treatment plant with a constructed wetland for secondary wastewater treatment will be used to treat waste discharges from the facilities. The secondary wastewater system will consist of up to 9.5 acres of evaporative wastewater lagoons and constructed gray water wetlands. The wetland treatment system through evapotranspiration and infiltration is designed to limit the discharge of excess water from the system to the Mancos River drainage. All of the park's water comes from Mancos River withdrawals. There are surface discharge permits for each of the wastewater treatment facilities in existences inside the park. Overall, there would be negligible, adverse, long-term effects on water resources at the park entrance area under Alternative A.

## **Cumulative Effects**

The septic system at the office/storage trailer and run-off from parking areas at the entrance area would impact water quality locally. The planned water treatment plant would have some surface discharge of the back-flushing waters to the McElmo Creek drainage. Alternative A would have negligible, adverse, long-term effects on water resources. Other actions such as local development to the north of the park and agricultural use that occurs in the vicinity of the entrance area would have minor to moderate, adverse effects on water resources. There would be a limited potential to contribute to regional groundwater recharge or affect water quality with Alternative A. Therefore, there would be an inconsequential incremental change in existing water resource conditions resulting from the No Action Alternative when considered with other past, present, and reasonably foreseeable future actions.

## **Conclusion**

The No Action Alternative would continue current use patterns and already approved future use patterns involving no new construction at the Entrance Station Complex or the approved Curatorial Facility and VIC. As such this alternative would have only negligible, adverse, long-term effect to water resources resulting from the wastewater system. This alternative would not contribute to any cumulative disturbance of water resources when considered with other past, present, and reasonably foreseeable future actions. Considering these effects, this alternative would not impair water resources.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

## **Alternative B – Preferred Alternative Westside Entrance Area Office/Storage and SBR or Engineered Sand Wastewater System**

Alternative B would replace the deficient septic and leach field system at the Entrance Station Complex by connecting a sewer line from the staff office/storage building to the Curatorial Facility and VIC wastewater system. Run-off from parking areas at the entrance area would impact localized water quality. Upgrading the sewer system at the Entrance Station Complex would have a negligible, beneficial effect. The initially planned wastewater system design for the approved Curatorial Facility and VIC would not serve the needs of the park staff and visitors using the facilities. Therefore, Alternative B proposes two possible wastewater systems for the Curatorial Facility and VIC. The first and the preferred system would consist of engineered sands with associated leach field. Discharge from the leach field could result in a negative impact to groundwater quality and it must be monitored to retain the discharge permit. Components for this option consist of a sewer line from the curatorial center to the septic tank, the septic tank, filter beds, and drain field which would be located north of the Curatorial Facility and VIC. The second option consists of a Sequencing Batch Reactor (SBR) with associated leach field. This option would also discharge to the subsurface. Components of this option consist of a sewer line from the Curatorial Facility to the SBR and drain field located north of the facility. In either case, the wastewater system would be placed in a previously disturbed area. Overall, there would be a minor, adverse, long-term effect on water resources at the park entrance area under Alternative B.

### **Cumulative Effects**

The Curatorial Facility and VIC wastewater system would discharge to the subsurface and would have minor, adverse, long-term effects to water resources. Other past, present and reasonably foreseeable actions including the existing water treatment plant which has some surface discharge of the back-flushing waters to the McElmo Creek drainage, run-off from parking areas at the entrance area, and other actions such as local development to the north of the park and agricultural use that have occurred in the vicinity of the entrance area which have also contributed to minor cumulative impacts to water quality. Because the Curatorial Facility and VIC wastewater system would discharge to the subsurface and not have a direct hydrological connection to the Mancos drainage, the alternative would contribute relatively small incremental adverse effects to the overall minor cumulative impacts to water resources when considered with other past, present, and reasonably foreseeable future actions.

### **Conclusion**

Alternative B would include replacing the current deficient septic and leach field system at the Entrance Station Complex and include a wastewater system at the planned Curatorial Facility and VIC. As such this alternative would have a negligible, beneficial effect at the Entrance Station Complex by upgrading the sewer system's and a minor, adverse, long-term effect on water resources due to the wastewater system with leach field and groundwater discharge. This alternative would only contribute negligibly to any cumulative effect to water resources, when considered with other past, present, and reasonably foreseeable future actions. Considering these effects, this alternative would not impair water resources.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

## **Alternative C**

### **Eastside Entrance Area Office/Storage and Facilitative Lagoons Wastewater System**

Alternative C would replace the deficient septic and leach field system at the Entrance Station Complex by connecting a sewer line from the staff office/storage building to the Curatorial Facility and VIC wastewater system. Run-off from parking areas at the entrance area would impact localized water quality. Upgrading the sewer system at the Entrance Station Complex would have a negligible, beneficial effect. The initially planned wastewater system designed for the approved Curatorial Facility and VIC would not serve the needs of the park staff and visitors using the facilities. Therefore, Alternative C proposes an improved design for the wastewater system at the Curatorial Facility and VIC that would consist of a treatment plant and evaporation lagoons. With this system, wastewater would flow into a series of three lined wastewater treatment lagoons. The lagoons would be fenced and located north of the Curatorial Facility and VIC. There would be the potential to add a chlorinator to the final water discharge to create eco-ponds. The addition of a chlorinator to the water discharge would preclude fencing the eco-pond area. Overall, there would be negligible beneficial effect on water resources at the park entrance area under Alternative C due to the lined lagoons not allowing for underground discharge.

### **Cumulative Effects**

Under Alternative C, upgrades to the sewer system at the Entrance Station Complex would have a negligible, beneficial effect to water resources due to the lined lagoons. Other actions such as local development to the north of the park and agricultural use that occurred in the vicinity of the entrance area would have minor to moderate, adverse effects on water resources. The absence of additional water resource effects by this alternative would limit the potential to contribute to regional groundwater recharge or affect water quality. Therefore, there would be an imperceptible incremental change in existing water resource conditions resulting from Alternative C when considered with other past, present, and reasonably foreseeable future actions.

### **Conclusion**

Alternative C would include replacing the current deficient septic and leach field system at the Entrance Station Complex and constructing a wastewater system at the Curatorial Facility and VIC. As such this alternative would have only a negligible, beneficial effect at the Entrance Station Complex by upgrading the sewer system and negligible long-term effect to water resources at the Curatorial Facility and VIC due to the wastewater system containing lined lagoons. As such, this alternative would contribute only a small incremental change to the cumulative effect to water resources when considered with other past, present, and reasonably foreseeable future actions. Considering these effects, this alternative would not impair water resources.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

## **Alternative D**

### **Westside Entrance Area Office/Storage and STM Aerotor Wastewater System**

As in Alternatives B and C, Alternative D would replace the deficient septic and leach field system at the Entrance Station Complex by connecting a sewer line from the staff office/storage building to the Curatorial Facility and VIC wastewater system. Run-off from parking areas at the entrance area would

impact localized water quality. Upgrading the sewer system at the Entrance Station Complex would have a negligible, beneficial effect. The initially planned wastewater system design for the approved Curatorial Facility and VIC would not serve the needs of the park staff and visitors using the facilities. Therefore with Alternative D, the planned wastewater system at the Curatorial Facility and VIC would be replaced with a STM aerotor with associated leach field. The STM system would consist of a sewer lift station, sewer line, STM aerotor and drain field. The STM aerotor and drain field would be located north of the curatorial center. Discharge from the drain field could result in a negative impact to groundwater quality and it would need to be monitored to retain the discharge permit. Overall, there would be minor, adverse, long-term effects on water resources at the park entrance area under Alternative D due to the unlined drain field.

## Cumulative Effects

Cumulative effects of Alternative D on water resources would be similar to those described for Alternative B.

## Conclusion

Alternative D would include replacing the currently deficient septic and leach field system at the Entrance Station Complex and construct a STM system for wastewater management at the Curatorial Facility and VIC site. As such this alternative would have negligible, beneficial, long-term effects at the Entrance Station Complex by upgrading the sewer system and minor, adverse, long-term effects to water resources at the Curatorial Facility and VIC due to the unlined drain field component of the wastewater system. As such, this alternative would contribute only negligibly to any cumulative effect to water resources, when considered with other past, present, and reasonably foreseeable future actions. Considering these effects, this alternative would not impair water resources.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

## Archeological

### Intensity Level Definitions

Archeological resources have the potential to answer important research questions about human history. For purposes of analyzing impacts on archeological resources, thresholds of change for the intensity of an impact are based on the potential of the site to yield information important in prehistory or history, as well as the probable historic context of the affected site. The thresholds for this impact assessment are as follows:

**Negligible:** There would be no impacts on any archeological property potentially eligible for or listed in the National Register. For purposes of Section (§)106, the determination of effect would be no adverse effect.

**Minor:** *Adverse:* disturbance of a site(s) results in little, if any, loss of significance or integrity and the National Register eligibility of the site(s) is unaffected. For purposes of §106, the determination of effect would be no adverse effect.

*Beneficial:* maintenance preservation of a site(s). For purposes of §106, the determination of effect would be no adverse effect.

**Moderate:** *Adverse:* disturbance of a site(s) does not diminish the significance or integrity of the site(s) to the extent that its National Register eligibility is jeopardized. For purposes of §106, the determination of effect would be adverse effect.

*Beneficial:* stabilization of the site(s). For purposes of §106, the determination would be no adverse effect.

**Major:** *Adverse:* disturbance of a site(s) diminishes the significance and integrity of the site(s) to the extent that it is no longer eligible to be listed in the National Register. For purposes of §106, the determination of effect would be adverse effect.

*Beneficial:* active intervention to preserve the site(s). For purposes of §106, the determination of effect would be no adverse effect.

**Impairment:** Loss, destruction, or degradation of an archeological property, resource, or value without mitigation would occur to the point that it would adversely affect the purpose and visitor experience at Mesa Verde National Park

The APE evaluated for impacts on archeological resources is similar to the area described in Soils section.

## **Alternative A – No Action Alternative**

Under the No Action Alternative, no project-related ground disturbances would occur that would result in the disturbance of known archeological resources. Continued visitor use would not impact known archeological resources in the area. Overall, there would be no effects to archeological resources under Alternative A.

## **Cumulative Effects**

Because Alternative A would have no impact on archeological resources, no cumulative impact analysis is required.

## **Conclusion**

The No Action Alternative would continue current use patterns and involve no new construction at the Entrance Station Complex and Curatorial Facility and VIC. As such this alternative would have no adverse, long-term effect to archeological resources. Considering that there are no effects, this alternative would not impair archeological resources.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

## **Alternative B – Preferred Alternative Westside Entrance Area Office/Storage and SBR or Engineered Sand Wastewater System**

Although there are known archeological resources near the project APE, no known archeological sites have been identified within the APE. Ground-breaking activities at the Entrance Station Complex would be in areas already disturbed and archeological resources are not anticipated. The office/storage building and staff parking would be located in the currently disturbed area at the existing office/storage trailer footprint. Utility excavation would occur in the existing utility corridor extending from the storage/office area to the Curatorial Facility and VIC area.

Additionally, Alternative B would change the location of the access road to the planned Curatorial Facility and VIC, construct a wastewater system, and construct a sand shed. The new access road and wastewater system would be constructed in previously disturbed areas. The sand shed would be built on existing asphalt located near the water treatment plant and would not likely impact archeological artifacts. Previous archeological surveys indicate that no known archeological sites are located within the Curatorial Facility and VIC area or Entrance Station Complex. Impacts to archeological resources are not anticipated; therefore no effects to archeological resources are expected in the short- or long-term.

### **Cumulative Effects**

Construction of facilities and access road to the Curatorial Facility and VIC site at the entrance area would have no effects due to any known archeological sites identified in the APE. Throughout the park and on other federal lands in the region, sites would continue to be protected and artifacts would continue to be preserved in accordance with federal and state requirements. However, despite this protection, moderate, adverse effects on archeological resources will continue to occur regionally. These include the deliberate disturbance of archeological sites and removal of artifacts due to unauthorized collection and the loss of archeological sites to urban and residential development, agriculture, fire, and erosion. Alternative B would contribute no increment to the cumulative impact when considered with other past, present, and reasonable foreseeable future actions.

### **Conclusion**

Alternative B would include new construction at the Entrance Station Complex and Curatorial Facility and VIC area in mostly disturbed areas. There is the possibility of inadvertently discovering archeological resources during actions associated with Alternative B; however such impacts to archeological resources are not anticipated. Therefore, there would be no effects to archeological resources in the short and long-term. As such, this alternative would contribute no increment to archeological resources, when considered with other identified actions. Considering these no effects, this alternative would not impair archeological resources.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

### **Assessment of Effect under Section 106 of the National Historic Preservation Act**

The NPS initiated consultation with the Colorado State Historic Preservation Officer (SHPO) December 8, 2000 regarding the proposed undertaking to construct a cultural center at the entrance to Mesa Verde National Park. Consultation with the Colorado SHPO continued on July 9, 2008 when the NPS contacted

Colorado SHPO to reinitiate consultation and to describe changes to the undertaking that occurred during the planning process since 2000. In addition, the NPS has consulted with and will continue to regularly consult with 24 American Indian Tribes associated with the park. A copy of this EA will be sent to the Colorado SHPO and to Tribes associated with the park during the public review of this document.

After applying the criteria of adverse effect, the NPS finds that implementation of Alternative B (the NPS preferred alternative) would result in a *no adverse effect* finding.

### **Alternative C**

#### **Eastside Entrance Area Office/Storage and Facilitative Lagoons Wastewater System**

In Alternative C, there are no known archeological sites that have been identified in the APE. Ground disturbances at the Entrance Station Complex would be in areas already disturbed and it is unlikely that archeological resources would be discovered. The office/storage building and staff parking would be located on the east side of the Entrance Road in a meadow that historically was used for livestock grazing. Utility excavation would occur in the existing utility corridor extending from the storage/office area to the Curatorial Facility and VIC area. Even though construction will take place in previously disturbed areas, the possibility of inadvertently discovering archeological resources during actions associated with Alternative B exists.

Additionally, as in Alternative B, Alternative C proposes to change the location of the access road from the Entrance Road to the Curatorial Facility and VIC, construct a wastewater system and a sand shed. The new access road and wastewater system would be constructed in previously disturbed areas. The sand shed would be built on existing asphalt located near the water treatment plant and would not likely impact archeological artifacts. Previous archeological surveys indicate that no known archeological sites are located within the Curatorial Facility and VIC area or the Entrance Station Complex. However, because the area occupies a colluvial fan, there is potential that buried archeological deposits may be located in this area.

Impacts to archeological resources are not anticipated; therefore no to negligible effects are expected in the short and long-term.

### **Cumulative Effects**

Construction of facilities and access road to the Curatorial Facility and VIC site at the entrance area would have no to negligible effects due to no known archeological sites identified in the APE. Throughout the park and on other federal lands in the region, sites would continue to be protected and artifacts would continue to be preserved in accordance with federal and state requirements. However, despite this protection, moderate, adverse effects on archeological resources will continue to occur regionally. These include the deliberate disturbance of archeological sites and removal of artifacts due to unauthorized collection and the loss of archeological sites to urban and residential development, agriculture, fire, and erosion. Alternative C would contribute imperceptible adverse increment to the cumulative impact when considered with other past, present, and reasonable foreseeable future actions.

### **Conclusion**

Alternative C would include new construction at the Entrance Station Complex and Curatorial Facility and VIC area in mostly disturbed areas. The possibility of inadvertently discovering archeological resources during actions associated with Alternative C exists. Impacts to archeological resources are not anticipated due to no known archeological sites identified in the APE. Therefore, there would be no to negligible effects to archeological resources in the short and long-term. As such, this alternative would contribute an imperceptible adverse increment to archeological resources, when considered with other

identified actions. Considering these negligible effects, this alternative would not impair archeological resources.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

## **Alternative D**

### **Westside Entrance Area Office/Storage and STM Aerotor Wastewater System**

In Alternative D, no known archeological sites have been identified in the entrance area. Ground disturbances at the Entrance Station Complex would be in previously undisturbed and disturbed areas and it is unlikely that archeological resources would be discovered. The office/storage building and staff parking would be located in the currently undisturbed area in the historic pinyon-juniper stand located west of the Entrance Road. Utility excavation would occur in the existing utility corridor extending from the storage/office area to the Curatorial Facility and VIC area.

As in Alternatives B and C, this alternative proposes to change the location of the access road from the Entrance Road to the Curatorial Facility and VIC, and construct a wastewater system and a sand shed. The new access road and wastewater system would be constructed in previously disturbed areas. The sand shed would be built on existing asphalt located near the water treatment plant and would not likely impact archeological artifacts. Previous archeological surveys indicate that no known archeological sites are located within the Curatorial Facility and VIC area. However, because the area occupies a colluvial fan, there is potential that buried archeological deposits may be located in this area.

Impacts to archeological resources are not anticipated; therefore no to negligible effects are expected in the short and long-term.

## **Cumulative Effects**

Construction of facilities and access road to the Curatorial Facility and VIC site at the entrance area would have no to negligible effects due to no known archeological sites identified in the APE. Throughout the park and on other federal lands in the region, sites would continue to be protected and artifacts would continue to be preserved in accordance with federal and state requirements. However, despite this protection, moderate, adverse effects on archeological resources will continue to occur regionally. These include the deliberate disturbance of archeological sites and removal of artifacts due to unauthorized collection and the loss of archeological sites to urban and residential development, agriculture, fire, and erosion. Alternative D would contribute imperceptible adverse increment to the cumulative impact when considered with other past, present, and reasonable foreseeable future actions.

## **Conclusion**

Alternative D would include new construction of the staff office/storage building at the Entrance Station Complex in a mostly undisturbed area west of the Entrance Road. Upgrades to the utilities would occur in mostly disturbed areas. In addition, new construction in the Curatorial Facility and VIC area would occur in mostly disturbed areas. The potential to impact archeological resources would be no to negligible in the short to long-term. As such, this alternative would contribute an imperceptible adverse increment to archeological resources, when considered with other identified actions. Considering these no to negligible effects, this alternative would not impair archeological resources.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

## Cultural Landscapes

### Intensity Level Definitions

Mesa Verde National Park was created to preserve and afford the viewing public the opportunity to experience the historic living conditions of the Ancient Puebloan, development of park facilities were designed to maximize that goal. As one enters the park from the north entrance today, the inspiring realization of this historic landscape remains intact. During the 1930s, the CCC was active in the park and made improvements to the Entrance Road. Many CCC features along the Entrance Road, including stone drop inlets and headwalls, are extant today. For purposes of analyzing impacts to cultural landscapes, thresholds of change for the intensity of an impact are based upon the potential of an impact affecting the findings of the NPS cultural landscape inventory, which may affect the landscape's eligibility to be placed on the National Register; and losing perspective on how ancient civilizations lived in this landscape. The thresholds for this impact assessment are as follows:

**Negligible:** There would be no impacts on any cultural landscape resources. The statement of significance for the resource reported in the cultural landscape inventory would not be compromised. For purposes of §106, the determination of effect would be no adverse effect.

**Minor:** *Adverse:* disturbance of the cultural landscape results in little, if any, loss of significance or integrity and the cultural landscape inventory is unaffected. For purposes of §106, the determination of effect would be no adverse effect.

*Beneficial:* maintenance preservation of the cultural landscape. For purposes of §106, the determination of effect would be no adverse effect.

**Moderate:** *Adverse:* disturbance of the cultural landscape does not diminish the significance or integrity of the cultural landscape to the extent that its National Register eligibility is jeopardized. For purposes of §106, the determination of effect would be adverse effect.

*Beneficial:* stabilization of the cultural landscape. For purposes of §106, the determination would be no adverse effect.

**Major:** *Adverse:* disturbance of the cultural landscape diminishes the significance and integrity of the cultural landscape to the extent that it may no longer be eligible to be listed in the National Register. For purposes of §106, the determination of effect would be adverse effect.

*Beneficial:* active intervention to preserve the site(s). For purposes of §106, the determination of effect would be no adverse effect.

**Impairment:** Loss, destruction, or degradation of the cultural landscape without mitigation would occur to the point that it would adversely affect the purpose and visitor experience at Mesa Verde National Park.

The APE evaluated for impacts on cultural landscape similar to the area described in Soils section with the addition of the view of Point Lookout and the historic pinyon-juniper stands along the Entrance Road.

### **Alternative A – No Action Alternative**

There would be no effects to cultural landscape resources from the No Action Alternative because no construction activities would be conducted. The cultural landscape currently encountered in the project area would persist and would afford visitors the opportunity to experience the park's entrance in its current condition.

### **Cumulative Effects**

Alternative A would have a effect on cultural landscape resource because no construction activities would be conducted. Throughout the park and on other federal lands in the region, cultural landscapes would continue to be protected in accordance with federal and state requirements. However, despite this protection, minor, adverse effects on cultural landscapes will continue to occur regionally. These include disturbance to cultural landscapes due to erosion, or other degradation because of facility maintenance actions, heavy visitor use, or unauthorized landscape alteration. Cumulatively, Alternative A would have a no incremental effect when considered with other past, present, and reasonably foreseeable future actions.

### **Conclusion**

Continuation of existing conditions would have negligible effects on cultural landscape resources because no construction activities would be conducted. Although regionally minor cumulative effects are indicated, the contribution of No Action Alternative to these cumulative effects would be negligible. As such, this alternative would not contribute to any cumulative cultural landscape effects, when applied to the cumulative impact scenario. Considering these negligible effects, this alternative would not impair the cultural landscape resources.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

### **Alternative B – Preferred Alternative**

#### **Westside Entrance Area Office/Storage and SBR or Engineered Sand Wastewater System**

Alternative B would not alter any or part of any cultural landscape nor would it alter cultural landscapes in a manner that is not consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR 68). Implementation of Alternative B would not result in a removal of a historic property from its historic location nor would it change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance. Alternative B would introduce visual elements into the cultural landscape, but these improvements to the park's entrance area would not diminish the cultural landscape's significant historic features. Alternative B would not result in the neglect of a property which causes its deterioration nor would a historic property be transferred, leased, or sold.

Alternative B would locate a new storage/office building and office parking stalls in the area now occupied by a trailer and parking (west of the Entrance Road). The entrance station kiosks would remain at their

current location on the Entrance Road. The width of the historic the Entrance Road would be increased southwest of the entrance station kiosks sufficiently to accommodate a turnaround area. The existing the Entrance Road would retain its current alignment. The location of the entrance station kiosks would not change. CCC features road improvements (stone drop inlet and headwall) and park entrance residence of the cultural landscape would not be impacted because these features are outside the APE under the implementation of Alternative B.

Construction of a new access road to the Curatorial Facility and VIC would introduce a new element into the cultural landscape. The widened turnaround area and the addition of the new Cultural Facility and VIC access road would result in minor changes to spatial relationships and circulation patterns at the northern entrance to the park. There would also be slight changes to vegetation as these features are constructed. Other than the modifications discussed, there would be no changes to the cultural landscape at the park's northern entrance. With the exception of the widened turnaround area and the addition of the access road, the Entrance Road would remain in its current alignment, as would the location of the entrance station kiosks. This alternative would slightly impact the existing perspective of the cultural landscape. Therefore, a minor adverse effect on cultural landscape resources is anticipated with implementation of Alternative B.

## **Cumulative Effects**

Locating the new storage/office building and associated parking in a previously disturbed area, increasing the width of the historic Entrance Road, construction of a new access road to the Curatorial Facility and VIC, and slight changes to vegetation would have a minor adverse effect to cultural landscape resources. Throughout the park and on other federal lands in the region, cultural landscapes would continue to be protected in accordance with federal and state requirements. However, despite this protection, minor, adverse effects on cultural landscapes will continue to occur regionally. These include the cultural landscape disturbance due to erosion, or other degradation because of facility maintenance or development actions, heavy visitor use, or unauthorized landscape or structure alteration. Alternative B would contribute a relatively small negligible adverse increment when considered with other past, present, and reasonably foreseeable future actions.

## **Conclusion**

Alternative B would have a minor effect on cultural landscape resources. Although regionally minor cumulative effects are indicated, the contribution of Alternative B to these cumulative effects would be negligible. As such, this alternative would not contribute to any cumulative disturbance of the cultural landscape when applied to the cumulative impact scenario. Considering these negligible to minor effects, this alternative would not impair the cultural landscape resources.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

## **Assessment of Effect under Section 106 of the National Historic Preservation Act**

The NPS initiated consultation with the Colorado State Historic Preservation Officer (SHPO) December 8, 2000 regarding the proposed undertaking to construct a cultural center at the entrance to Mesa Verde National Park. Consultation continued on July 9, 2008, when the NPS contacted Colorado SHPO to reinstate consultation and to describe changes to the undertaking that occurred during the planning process since 2000. In addition, the NPS has consulted with and will continue to regularly consult with

the 24 American Indian Tribes associated with the park. A copy of this EA will be sent to the Colorado SHPO and to Tribes associated with the park during the public review of this document.

After applying the criteria of adverse effect, the NPS finds that implementation of Alternative B (the NPS preferred alternative) would result in a *no adverse effect* finding.

### **Alternative C**

#### **Eastside Entrance Area Office/Storage and Facilitative Lagoons Wastewater System**

Alternative C would relocate the entry station kiosks approximately 75 feet northeast of their current location, locate a new storage/office building and office parking stalls southeast of the new kiosks, and construct a new turnaround area southwest of the new kiosks. The new storage/office building, parking, and turnaround areas would be constructed in previously disturbed areas on the southeast side of the Entrance Road. The position of the new building and parking/turnaround area could partially block the view of Point Lookout from the park entrance.

The park Entrance Road is described in the Historic American Engineering Record as an important designed feature (HAER 1994) providing visitors and staff alike a picturesque view of Point Lookout. In Alternative C, the Entrance Road would remain in its current alignment with the exception of the addition of the new access road from the historic road to the Curatorial Facility and VIC. Additionally, construction of sewage lagoons at the Curatorial Facility and VIC would introduce a new element in the landscape.

Implementation of Alternative C would not impact historic CCC stone headwalls and drop inlets located near the intersection of the park's entrance road and Highway 160. The view of Point Lookout could be compromised under the implementation of Alternative C. Spatial relationships of features within the cultural landscape would be altered resulting in a moderate, adverse, long-term effect to cultural landscapes from Alternative C.

### **Cumulative Effects**

Relocating the entrance station kiosks, locating the new storage/office building, associated parking, and new turnaround in a previously disturbed area on the east side of the historic Entrance Road, construction of a new access road to the Curatorial Facility and VIC, and construction of sewage lagoons would have moderate adverse effect to cultural landscape resources. Throughout the park and on other federal lands in the region, cultural landscapes and historic structures would continue to be protected in accordance with federal and state requirements. However, despite this protection, minor, adverse effects on landscapes will continue to occur regionally. Past impacts to cultural landscapes include disturbance due to erosion, development actions, and changes in spatial landscape relationships outside of the park. The moderate, adverse, effects of Alternative C would contribute a minor increment to the overall minor adverse cumulative effects when considered with other past, present, and reasonably foreseeable future action.

### **Conclusion**

The moderate adverse effects to cultural landscapes with the implementation of this alternative would be limited to the area around the entrance area. Additionally, Alternative C would have no impact on the CCC constructed historic structures. As such, this alternative would contribute a minor increment to the overall minor adverse cumulative effect to cultural landscapes when applied to the cumulative effect scenario. Alternative C would have a moderate, adverse, long-term effect on cultural landscape resources and would not impair these resources.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa

Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

## **Alternative D Westside Entrance Area Office/Storage and STM Aerotor Wastewater System**

Alternative D would relocate the entrance station kiosks approximately 150 feet southwest of their current location on the Entrance Road; construct a new staff storage/office building with office parking and a turnaround area west of the new kiosks. The Entrance Road would remain in its current alignment, as would the general location of the entrance station kiosks. Because CCC constructed historic road features are located outside of the area of potential effect for this alternative. The new staff storage/office building, parking, and turnaround areas would be architecturally compatible with the surrounding landscape and would blend into the surrounding landscape with only a portion of the pinyon-juniper forest being removed. Replacing some native pinyon-juniper with new structural development would change spatial relationships of the built features of the cultural landscape resulting in a moderate, adverse, long-term effect on the cultural landscape.

## **Cumulative Effects**

Relocating the entrance station kiosks, locating the new storage/office building, associated parking, and new turnaround in a previously disturbed and undisturbed area on the west side of the historic Entrance Road, construction of a new access road to the Curatorial Facility and VIC, and construction of leach field would have moderate adverse effects to cultural landscape resources. Minor adverse effects to cultural landscapes and historic structures have and will continue to occur regionally. Past impacts to cultural landscapes include disturbance due to erosion, development activity, and changes in spatial cultural landscape relationships outside of the park. Because structural additions constructed under Alternative D would blend into the surrounding area, the contribution of Alternative D to these regional cumulative effects would be a small increment to the overall minor adverse cumulative effect when considered with other past, present, and reasonably foreseeable future action.

## **Conclusion**

Alternative D would have a moderate, adverse, long-term effect to cultural landscape resources. The moderate, adverse, long-term effects of Alternative D would be limited to the area around the entrance area and would not affect the historic cultural landscape in other areas. As such, this alternative would contribute a minor increment to the overall minor adverse cumulative effects on the cultural landscape and historic structures. Alternative D would not impair the cultural landscape or historic structures.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

## Visual Resources

### Intensity Level Definitions

Mesa Verde National Park's entrance area was designed to maximize visual and aesthetic resources. An Act approved by the U.S. Congress on February 28, 1931 (46 Stat. 1422) recognized the importance of the scenic quality of the park's entrance and authorized the addition of a corridor of land 260 feet wide along the Entrance Road to be added to the park for the purpose of protecting the scenery along the road between the north boundary of Mesa Verde National Park and the junction with the Cortez-Mancos Road. Today, these resources are highly valued as necessary components of the park entrance area. For purposes of analyzing impacts on visual and aesthetic resources, thresholds of change for the intensity of an impact are based on the potential of devaluing the visual or aesthetic resource. The thresholds for this impact assessment are as follows:

- Negligible:** An action that would not result in a visible change from the majority of the viewshed. The change in the visible landscape would be so small or localized that it would have no measurable or perceivable consequence to the natural surroundings. There would be no impacts on any visual or aesthetic resource.
- Minor:** An action that would be visible from the majority of the viewshed but would have characteristics that do not contrast sharply with the surrounding landscape. The change in the visible landscape would be small or localized but it would be measurable in the natural surroundings.
- Moderate:** An action that would be visible from the majority of the viewshed and would have characteristics that contrast with the surrounding landscape.
- Major:** An action that would have a substantial impact on the viewshed and would greatly detract from the appearance and enjoyment of the natural surroundings.
- Impairment:** Loss, destruction, or degradation of a valued visual or aesthetic resource would occur to the point that it would adversely affect the purpose and visitor experience at Mesa Verde National Park.

The APE evaluated for impacts on visual resources is similar to the area described in the Soils section with the addition of the view of Point Lookout and the historic pinyon-juniper stands along the Entrance Road.

### Alternative A – No Action Alternative

No changes would be made to the project area that would impact visual and aesthetic resources from the No Action Alternative. The entrance station kiosks would remain in the middle of the Entrance Road and the planned Curatorial Facility and VIC would be visible at the entrance to the park. The existing viewshed from the park entrance would not change, nor would the view of the park entrance area from other locations. There would be a negligible, adverse, long-term effect to visual and aesthetic resources from Alternative A.

### Cumulative Effects

Alternative A would have a negligible effect on visual resources because facilities at the entrance area would not change and would remain in their current footprint. Visitor use patterns, park operations, and natural processes influence visual and aesthetic resources in the project study area. Foreseeable impacts to visual resources in the project study area include future roadway maintenance, construction of the planned Curatorial Facility and VIC, and more traffic due to increased visitation. The contribution of

the No Action Alternative to these foreseeable future effects would be negligible because that would not result in a visible change from the majority of the viewshed. Cumulatively, Alternative A would have a relatively small incremental effect when considered with other past, present, and reasonably foreseeable future actions.

## **Conclusion**

Continuation of existing conditions would have a negligible, adverse, long-term effect on visual and aesthetic resources. Cumulatively, this alternative would have a negligible effect on the visual and aesthetic resource when considered with other past, present, and reasonably foreseeable future actions. Considering these negligible effects, this alternative would not impair the visual and aesthetic resource.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

## **Alternative B – Preferred Alternative Westside Entrance Area Office/Storage and SBR or Engineered Sand Wastewater System**

Alternative B would retain the location of the entry stations kiosks, locate a new staff storage/office building and office parking stalls in the same area they now occupy (west of Entrance Road), and widen the Entrance Road southwest of the new kiosks sufficiently to accommodate a turnaround area. The new staff/office building would be shielded from visitor view by the ancient stand of pinyon and juniper trees located on the west side of the Entrance Road. With the exception of the widened turnaround area and the addition of the access road, the Entrance Road would remain in its current alignment, as would the location of the entrance station kiosks. Additionally, the new access road to the Curatorial Facility and VIC would have tapering fill slopes devoid of trees on the shoulder and the construction of the wastewater system would have minor impacts to the visual experience for park visitors. The sand shed would be visible through the clearing of the pinyon-juniper woodland on the west side of the road at the intersection. Therefore, there would be a minor, adverse, long-term effect to visual and aesthetic resources from Alternative B.

## **Cumulative Effects**

Construction activities have the potential to affect the visual resources at the entrance area. Alternative B would have a minor, adverse effect on visual resources because of construction of new facilities at the entrance area. Visitor use patterns, park operations, and natural processes influence visual and aesthetic resources in the project study area. Foreseeable impacts to visual resources in the project study area include future roadway maintenance, construction of the planned Curatorial Facility and VIC, more traffic due to increased visitation, fuel reduction, controlling non-native plants, and re-establishing native herbaceous cover from what would be bare ground. The construction of the new staff office/building, new access road, construction of the wastewater system, and the sand shed would eventually blend into the surrounding viewshed. Therefore the contribution of Alternative B to these foreseeable future effects would result in an imperceptible incremental effect when considered with other past, present, and reasonably foreseeable future actions.

## Conclusion

Alternative B would not greatly detract from the visual and aesthetic resources experienced within the project study area. Therefore, Alternative B would have a minor, adverse, long-term effect to visual and aesthetic resources. Cumulatively, this alternative would not have an incremental effect on the visual and aesthetic resource when considered with other past, present, and reasonably foreseeable future actions. Considering these effects, this alternative would not impair the visual and aesthetic resource.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

## Alternative C Eastside Entrance Area Office/Storage and Facilitative Lagoons Wastewater System

Alternative C would relocate the entry stations approximately 75 feet northeast of their current location, and construct a new staff storage/office building with office parking and turnaround area southeast of the new kiosks. The new staff office/storage building would be built to be visually and architecturally compatible with the surrounding landscape and the existing park architectural style. The Entrance Road would remain in its current alignment with the exception of the addition of the new access road from the historic road to the Curatorial Facility and VIC. The new staff storage/office building, parking, and turnaround areas would be constructed southeast of the existing the Entrance Road in a previously disturbed area containing some screening trees. The position of the new building and parking/turnaround area would have the effect of partially blocking the view of Point Lookout from incoming visitors and employees stationed at the park entrance. Additionally, the placement of the new building would expose the facilities to motorists as they descend the Entrance Road on their way out of the park. Placement of the new building, parking, and turnaround would amount to a moderate adverse effect. Additionally, the new access road to the Curatorial Facility and VIC would have tapering fill slopes devoid of trees on the shoulder and the construction of the wastewater system would have minor impacts to the visual experience for park visitors. The sand shed would be visible through the clearing of the pinyon-juniper woodland on the west side of the road at the intersection. Thus, there would be moderate, adverse, long-term effect to visual and aesthetic resources from Alternative C.

## Cumulative Effects

Construction activities have the potential to affect the visual resources at the entrance area. Alternative C would have a moderate, adverse effect on visual resources because of construction of new facilities at the entrance area. Visitor use patterns, park operations, and natural processes influence visual and aesthetic resources in the project study area. Foreseeable impacts to visual resources in the project study area include future roadway maintenance, more traffic due to increased visitation, fuel reduction, controlling non-native plants, and re-establishing native herbaceous cover from what would be bare ground. The relocation of the kiosks and the citing of the new building and the parking/turnaround area on the southeast side of the Entrance Road would partially detract from the existing highly valued vistas. Therefore, the contribution of Alternative C would have a noticeable incremental effect when compared with other past, present, and reasonably foreseeable future actions.

## Conclusion

Alternative C would partially detract from the visual and aesthetic resources experienced within the project study area. In also relocating the kiosks and constructing a new staff office/storage building and parking/turnaround area on the southeast of the road, Alternative C would have a moderate, adverse, long-term effect to visual and aesthetic resources. Cumulatively, this alternative would have a noticeable incremental effect on the visual and aesthetic resource when considered with other past, present, and reasonably foreseeable future actions. Considering these effects, this alternative would not impair the visual and aesthetic resource.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

## Alternative D

### Westside Entrance Area Office/Storage and STM Aerotor Wastewater System

Alternative D would relocate the entry stations approximately 150 feet southwest from their current location and construct a new staff storage/office building with office parking and turnaround area west of the new kiosks. The new staff storage/office building, parking, and turnaround areas would remove some native pinyon-juniper habitat on the west side of the Entrance Road. The old growth pinyon-juniper is a valued resource and also screens the view of the office/storage building in the Alternatives A and B. The design of the staff office/storage building would be visually and architecturally compatible with the surrounding landscape and existing park architectural styles. The building would be visible within an area of cleared of trees. The Entrance Road would remain in its current alignment with the exception of the addition of the new access road from the historic road to the Curatorial Facility and VIC. Additionally, the new access road to the Curatorial Facility and VIC would have tapering fill slopes devoid of trees on the shoulder and the construction of the wastewater system would have minor impacts to the visual experience for park visitors. The sand shed would be visible through the clearing of the pinyon-juniper woodland on the west side of the road at the intersection.

This alternative would impact the existing perspective of the visual and aesthetic resource by replacing some native pinyon-juniper woodland with new structural development. Since the staff office/storage building would be architecturally compatible and blend into the surrounding landscape with only a portion of the pinyon-juniper forest being removed, there would be minor, adverse, and long-term effects to the visual resource with Alternative D.

## Cumulative Effects

Construction activities have the potential to affect the visual resources at the entrance area. Alternative D would have a minor, adverse effect on visual resources because of construction of new facilities at the entrance area. Visitor use patterns, park operations, and natural processes influence visual and aesthetic resources in the project study area. Foreseeable impacts to visual resources in the project study area include future roadway maintenance, more traffic due to increased visitation, fuel reduction, controlling non-native plants, and re-establishing native herbaceous cover from what would be bare ground. The relocation of the kiosks and the construction of the new building and the parking/turnaround area would eventually blend into the surrounding viewshed and would not substantially detract from the existing highly valued vistas. However, because new structures would be cited within an existing stand of pinyon-juniper woodland, the contribution of Alternative D to these foreseeable future effects would be adverse

but minor. Therefore, the contribution of Alternative D would have an imperceptible incremental effect when compared with other past, present, and reasonably foreseeable future actions

## Conclusion

Alternative D would partially detract from the visual and aesthetic resources experienced within the project study area. In relocating the kiosks and constructing a new building and parking/turnaround area on the southwest side of the Entrance Road, Alternative D would have a minor, adverse, long-term effect to visual and aesthetic resources. Cumulatively, this alternative would have an imperceptible incremental effect on the visual and aesthetic resource when considered with other past, present, and reasonably foreseeable future actions. Considering these effects, this alternative would not impair the visual and aesthetic resource.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Mesa Verde National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with Section 1.4.7.1 of NPS *Management Policies 2006*.

## Visitor Use and Experience

### Intensity Level Definitions

*NPS Management Policies 2006* (NPS 2006) states that enjoyment of park resources and values by the people of the United States is part of the fundamental purpose of all parks and that the NPS is committed to providing appropriate, high-quality opportunities for visitors to enjoy parks. The thresholds for this impact assessment are as follows:

- Negligible:** Visitors would not be affected or changes in visitor use and/or experience would be below or at the level of detection. Any effects would be short-term. The visitor would not likely be aware of the effects associated with the alternative.
- Minor:** Changes in visitor use and/or experience would be detectable, although the changes would be slight and likely short-term. The visitor would be aware of the effects associated with the alternative, but the effects would be slight.
- Moderate:** Changes in visitor use and/or experience would be readily apparent and likely long-term. The visitor would be aware of the effects associated with the alternative, and would likely be able to express an opinion about the changes.
- Major:** Changes in visitor use and/or experience would be readily apparent and have substantial long-term consequences. The visitor would be aware of the effects associated with the alternative, and would likely express a strong opinion about the changes.

Note: Visitor experience is not considered to be resources protected by the Organic Act. Therefore, visitor experience does not warrant consideration of impairment.

The APE evaluated for impacts to visitor experience were considered both park-wide and in the specific area of the Entrance Station Complex and planned Curatorial Facility and VIC.

## **Alternative A – No Action Alternative**

Visitor experience under the No Action Alternative would not differ from current conditions at the Entrance Station Complex or planned Curatorial Facility and VIC site. The current design of the facilities at the Entrance Station Complex would retain visual and architectural characteristics that are incompatible with the surrounding landscape. The existing park architectural styles fail to incorporate sustainable design concepts and it is inconsistent with the park's *Master Plan* (NPS 1979). Alternative A provides a single chemical toilet near the entrance station kiosks, which is unsightly, discouraging, and inadequate.

Much of the visitor's experience in a National Park is based on the sense of place that may be drawn from subtle visual and auditory clues such as the relationship between man-made structures and the natural environment. It is this visual character that continues to enthrall visitors and provides them with an unobtrusive but pleasing counterpoint to the spectacular Mesa Verde setting and its fascinating human history. Many visitors' perceptions of a National Park include traditional styles in buildings and landscapes such as the park styles constructed during the 1920s and 1930s.

Continuing under current conditions these factors would have a long-term minor adverse effect on visitor's experience and appreciation of the park's significance and natural and cultural values.

## **Cumulative Effects**

In large parks such as Mesa Verde, many visitors return to the park on a regular basis. Over the long term, continuation of existing conditions would cumulatively result in long-term, minor adverse effects to visitor experience because of continued frustration over displeasure with facilities and narrow road widths that do not meet 21st century visitor expectations. The No Action Alternative would have a minor adverse effect on visitor experience and appreciation when applied to the cumulative impact scenario.

Additionally, any construction activities have the potential to affect visitor use and experience. The various stages of construction at the Curatorial Facility and VIC would likely have an adverse effect on the visitor experience as a result of noise, traffic flow delays, and dust. Projects such as road improvements have had or could have an adverse effect on visitor use and experience because of the inconvenience of construction noise, dust, and possible off-limit areas. Ultimately, however, these actions would have a beneficial effect on visitor use and experience because of long-term improvements to human health and safety. Alternative A would contribute a noticeable, adverse increment to the cumulative impact.

## **Conclusion**

The No Action Alternative would result in primarily minor adverse long-term effects to visitor use and experience because the features and visitor functions in the project area would not change. Additionally, this alternative would have a long-term, minor adverse effect on visitor experience and appreciation of the park's significance and natural and cultural values. This alternative would have a noticeable, adverse effect on visitor use and experience when applied to the cumulative impact scenario.

## **Alternative B – Preferred Alternative Westside Entrance Area Office/Storage and SBR or Engineered Sand Wastewater System**

Alternative B would retain the entrance station kiosks at the Entrance Station Complex at their current location. However, the kiosks are not consistent with the surrounding landscape and the existing park architectural style. The new staff office/storage building would be mostly hidden from the view of the public. This new building would be built to be visually and architecturally compatible with the surrounding landscape and the existing park architectural style. A public use toilet would be placed at the trailer/entrance parking lot located north of the Entrance Station Complex. Additionally, the restroom facilities at the Curatorial Facility and VIC would accommodate the needs of the public during peak times.

Thus there would be a minor beneficial long-term effect on the visitor use and experience due to the addition of public restroom facilities at the park entrance area.

Minor, temporary, adverse effect for visitor use and experience would result from construction activities. The project area is the only entrance into Mesa Verde National Park for visitors. During construction portions of this area would be limited to visitor use. Noise and dust from construction activities would also adversely affect visitor use and experience; however all construction-related impacts would be temporary and cease following the end to the construction activities.

## **Cumulative Effects**

Construction activities have the potential to affect visitor use and experience at the entrance area. When considered along with the other numerous park projects, including the planned construction of the Curatorial Facility and VIC, Alternative B would cumulatively result in a beneficial effect to visitor experience because of improvements at the Entrance Station Complex. Additionally, any construction activities have the potential to affect visitor use and experience. The various stages of construction at the Curatorial Facility and VIC would likely have an adverse effect on the visitor experience as a result of noise, delays in traffic flow, and dust. Projects such as road improvements have had or could have an adverse effect on the visitor use and experience because of the inconvenience of construction noise, dust, and possible off-limit areas. Ultimately, these actions would have a beneficial effect on visitor use and experience because of long-term improvements to human health and safety when applied to the cumulative impact scenario. Alternative B would contribute a noticeable, beneficial increment to visitor use and experience when considered with other past, present, and reasonably foreseeable future actions.

## **Conclusion**

Implementation of Alternative B would have a beneficial effect on visitor use and experience due to the addition of public restroom facilities located at the entrance area. Construction disturbances (noise, dust, limited access) would have minor, temporary adverse effect to visitor use and experience. This alternative would have a minor beneficial effect to visitor use and experience when applied to the cumulative impact scenario.

## **Alternative C**

### **Eastside Entrance Area Office/Storage and Facilitative Lagoons Wastewater System**

Alternative C would relocate and construct new entrance station kiosks at the Entrance Station Complex that would convey a clear sense of the park's character, significance, and sense of place to the visitor. The entrance station kiosks and the staff office/storage building would have the appearance of the Pueblo Revival Architectural style buildings that help to define the character of much of the built environment in Mesa Verde National Park. These new kiosks would give the visiting public a sense of entry into the park. A public use toilet would adjoin the staff office/storage building. The location of this public restroom could cause a traffic problem as vehicles entering the park would need to cross traffic to get to the facilities and cross traffic once again to continue into the park. The wastewater system at the Curatorial Facility and VIC area would include treatment lagoons. There is the possibility of odors associated with the treatment lagoons even if the pond was completely clean. The odor from the treatment lagoons could be noticeable at the facilities and would be variable, depending on wind direction. There is the possibility to add a chlorinator to the water discharge to the lagoons to create eco-ponds. These ponds could be used as an interpretive opportunity for visitors. Facilities at the entrance area along with restroom facilities at the Curatorial Facility and VIC would accommodate the needs of the public during peak times. Thus there would be a minor beneficial long-term effect on the visitor use and experience due to the upgrade to the facilities and the addition of public restrooms at the park entrance area.

Minor, temporary, adverse effect to visitor use and experience would result from construction activities. The project area is the only entrance into Mesa Verde National Park for visitors. During construction portions of this area would be limited to visitor use. Noise, traffic delays, and dust from construction activities would also adversely affect visitor use and experience; however all construction-related impacts would be temporary and cease following the end to the construction activities.

### **Cumulative Effects**

Cumulative effects of Alternative C on Visitor Use and Experience would be similar to those described for Alternative B.

### **Conclusion**

Implementation of Alternative C would have a beneficial effect on use and visitor experience due to facility upgrades and the addition of public restrooms located at the entrance area. Construction disturbances (noise, dust, limited access) would have minor, temporary adverse effect to visitor use and experience. Cumulatively, this alternative would have a beneficial effect to visitor use and experience when applied to the cumulative impact scenario.

### **Alternative D**

#### **Westside Entrance Area Office/Storage and STM Aerotor Wastewater System**

Alternative D would relocate and construct new entrance station kiosks at the Entrance Station Complex that would convey a clear sense of the park's character, significance, and sense of place to the visitor. The entrance station kiosks and the staff office/storage building would have the appearance of the Pueblo Revival Architectural style buildings that help to define the character of much of the built environment in Mesa Verde National Park. These new kiosks would give the visiting public a sense of entry into the park. Additionally, the new staff office/storage building would be located on the west side of the Entrance Road, in view of the public. The staff office/storage building would also be built to be visually and architecturally compatible with the surrounding landscape and the existing park architectural style. A public use toilet would adjoin the staff office/storage building. The location of this public restroom could cause a traffic problem as vehicles leaving the park would need to cross traffic to get to the facilities and cross traffic once again to exit the park. Additionally, the restroom facilities at the Curatorial Facility and VIC would accommodate the needs of the public during peak times. Thus there would be a beneficial effect on the visitor use and experience due to the addition of public restroom facilities at the park entrance area.

Minor, temporary, adverse effect to visitor use and experience would result from construction activities. The project area is the only entrance into Mesa Verde National Park for visitors. During construction portions of this area would be limited to visitor use. Noise, traffic flow delays, and dust from construction activities would also adversely affect visitor use and experience; however all construction-related impacts would be temporary and cease following the end to the construction activities.

### **Cumulative Effects**

Cumulative effects of Alternative D on Visitor Use and Experience would be similar to those described for Alternative B.

### **Conclusion**

Implementation of Alternative D would have a beneficial effect on use and visitor experience due to the addition of public restroom facilities located at the entrance area. Construction disturbances (noise, dust, limited access) would have minor, temporary adverse effect to visitor use and experience. Cumulatively,

this alternative would have a beneficial effect to visitor use and experience when applied to the cumulative impact scenario.

## Park Operations

### Intensity Level Definitions

Implementation of a project can effect the operations of a park such as the number of employees needed; the type of duties that need to be conducted; when/who would conduct these duties; how activities should be conducted; and administrative procedures. For the purpose of this analysis, the human health and safety of park employees is also evaluated. The thresholds for this impact assessment are as follows:

- Negligible:** Park operations would not be affected or the effect would be at or below the lower levels of detection, and would not have an appreciable effect on park operations.
- Minor:** The effect would be detectable, but would be of a magnitude that would not have an appreciable adverse or beneficial effect on park operations. If mitigation were needed to offset adverse effects, it would be relatively simple and successful.
- Moderate:** The effects would be readily apparent and would result in a substantial adverse or beneficial change in park operations in a manner noticeable to staff and the public. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful.
- Major:** The effects would be readily apparent and would result in a substantial adverse or beneficial change in park operations in a manner noticeable to staff and the public, and be markedly different from existing operations. Mitigation measures to offset adverse effects would be needed, could be expensive, and their success could not be guaranteed.

Note: Park operations are not considered a resource protected by the Organic Act. Therefore, park operations do not warrant consideration of impairment.

APE for park operations were considered both park-wide and in the specific area of the Entrance Station Complex and the planned Curatorial Facility and VIC.

### Alternative A – No Action Alternative

The No Action Alternative would not measurably change current park operations at Mesa Verde National Park. Under this alternative, the current entrance station kiosks and staff office/storage trailer would remain in place and the operation and maintenance of the existing structures would continue. The No Action Alternative would not include any substantial efforts to increase or improve office or storage space for park employees at the Entrance Station Complex. The existing trailer used for park employee office and storage is approximately 14 feet by 50 feet. The trailer was meant to be a temporary structure and does not meet current building code requirements or basic safety and security standards. Supporting electrical, sewer, and septic systems are out of date and do not meet current standards. The visually intrusive overhead phone lines need to be placed underground with the other utilities in the area.

Additionally, the trailer is not ADA accessible. To assist in the storage needs of the Entrance Station Complex, two storage facilities are located near the office/storage trailer.

Furthermore, restroom facilities for park staff working in the entrance station kiosks would not be upgraded and supplementary parking stalls would not be provided in the No Action Alternative at the Entrance Station Complex. Under this alternative, employees working at the kiosks must use the portable

latrine located southwest of the kiosks. These health and safety problems have a long-term minor adverse effect on the employees.

The No Action Alternative would not change the current proposed ingress and egress to the Curatorial Facility and VIC. The restroom facilities would not be upgraded to meet the needs of the park staff and visiting public during peak times. Additionally, a shed to house sand that would be used for road maintenance during icy road conditions would not be located at the entrance to the park.

## **Cumulative Effects**

Under Alternative A, existing facilities at the entrance area would continue their current functions. Health and safety problems associated with the existing facilities at the Entrance Station Complex would have a long-term minor adverse effect on the employees. Any project that occurs in Mesa Verde National park has an effect on park operations; therefore, most of the actions listed in the cumulative scenario in the introduction chapter would have some degree of effect on employees and park operations. Planning projects such as the development of a Fire Management Plan and park construction projects, typically involve the key members of Mesa Verde National Park staff to contribute their expertise and assistance. Prescribed burning, applying herbicide, and reseeding projects at the entrance area and elsewhere are expected to add to the workload of the park staff whether it is part of this EA or the Fire Management Plan. Under this alternative, park operations associated with the Entrance Station Complex and Curatorial Facility and VIC are not expected to change; therefore, park operations would not appreciably change when applied to the cumulative impact scenario. Alternative A would contribute noticeable adverse increment to park operations when considered with other past, present, and reasonably foreseeable future actions.

## **Conclusion**

The No Action Alternative would not measurably change current or planned park operations because the existing facilities at the park entrance area would continue their functions. The office/storage trailer would continue to not meet current building code or current health and safety requirements. Thus, there would be a long-term minor adverse effect on the employees. Cumulatively, these effects would have a noticeable adverse increment effect on park operations when applied to the cumulative impact scenario.

## **Alternative B – Preferred Alternative Westside Entrance Area Office/Storage and SBR or Engineered Sand Wastewater System**

Alternative B does not relocate the entrance station kiosks, as such; the existing kiosks are located just beyond a horizontal curve in the roadway in the outbound direction. As a result, the amount of available sight distance, while adequate for stopping, could be better. The construction of a new staff office/storage building under Alternative B would provide a working environment for park employees at the Entrance Station Complex that meets current health and safety standards. Additionally, the septic system and associated leach field does not meet current standards. Under this alternative the current septic and leach field system would be replaced with a sewer line to the planned Curatorial Facility and VIC, thus bringing the sewer system up to code. The current utilities are worn and insufficient to carry modern loads and the overhead phone line, which is visually intrusive, will to be placed underground with the other utilities in the area. This alternative would provide updated telephone, electrical, and water utility lines to the entrance station kiosks and the staff office/storage building. The new staff office/storage building would meet the requirements of the Americans with Disabilities Act for wheelchair accessibility. One of the entrance station kiosks has an island cutout to provide for wheelchair access to the kiosk.

Additionally, this alternative would change the alignment of the access road to the planned Curatorial Facility and VIC. One of the two access roads would be eliminated and the egress and ingress to the Curatorial Facility and VIC would be placed at the same location near Highway 160. Furthermore a vault

toilet would be placed in the visitor trailer parking lot for visitor use. Included in Alternative B would be the modification of the wastewater system initially planned for the Curatorial Facility and VIC that will better meet the demands required of the system. This alternative would provide a sand shed at the entrance area to house the sand needed for the park roadways during winter conditions. The sand shed would be located on the asphalt pad near the Water Treatment Plant north of the entrance station kiosk area. If feasible, a ground-source heat pump system would be installed at the Curatorial Facility and VIC. New facilities and rehabilitated landscapes would require additional commitments to maintain them.

Alternative B has two options for wastewater system plan upgrades for the Curatorial Facility and VIC. The first and the preferred system would consist of engineered sands with associated leach field. This system produces very good effluent quality, easily accessed for monitoring, significant reduction in nitrogen levels, no chemicals required, and less land is needed. Disadvantages to this system is the weekly maintenance required for the media filters, pumps, and controls, the weekly checks of the discharge head, annual flushing of the distribution manifold, and the septic tank must be pumped of sludge once a year. The second system consists of a Sequencing Batch Reactor (SBR) with associated leach field. SBR technology has been in use a long time and is a "mature" process. With this system no building structures are required. Disadvantages to this system would be this process generates sludge that requires disposal, the operator must acquire certification, and it does not produce tertiary treatment suitable for reuse of the discharged water. An additional treatment process would be required for reuse.

Alternative B would have long-term moderate beneficial effects on the health and safety of employees and park operations. This Alternative would also increase facility and landscape maintenance responsibilities for park operations.

## **Cumulative Effects**

Under Alternative B, construction of a new office/storage building, wastewater system, and sand shed would have a long-term moderate beneficial effect on the health and safety of the park employees. As described under Alternative A, any project that occurs in Mesa Verde National Park has an effect on park operations; therefore, most of the actions listed in the cumulative scenario in the introduction chapter would have some degree of effect on employees and park operations. Planning projects such as the development of a Fire Management Plan and park construction projects, typically involve the key members of Mesa Verde National Park staff to contribute their expertise and assistance. Prescribed burning, applying herbicide, and reseeding projects at the entrance area and elsewhere are expected to add to the workload of the park staff whether it is part of this EA or the Fire Management Plan. Under this alternative, park operations associated with the new facilities at the Entrance Station Complex and Curatorial Facility and VIC would be improved to a moderate degree, which would cumulatively have a beneficial effect on park operations when applied to the cumulative impact scenario. Alternative B would contribute a noticeable beneficial increment to park operations when considered with other past, present, and reasonably foreseeable future actions.

## **Conclusion**

Construction of a new staff office/storage building at the Entrance Station Complex would have a long-term moderate benefit on employees at the park because the building would provide a safer and healthier work environment. This alternative would also construct a wastewater system at the Curatorial Facility and VIC and provide a sand shed at the park entrance area. Additionally, this Alternative would increase the park operation workload. Thus, there would be a long-term moderate beneficial effect on the employee's health and safety and park operations even with the increased workload. Cumulatively, the improvements associated with this alternative would have a noticeable incremental beneficial effect on park operations when applied to the cumulative impact scenario.

## **Alternative C**

### **Eastside Entrance Area Office/Storage and Facilitative Lagoons Wastewater System**

The impacts of Alternative C would be similar to those of Alternative B, with the exception of the location of the entrance station kiosks and new staff office/storage building. These two facilities would be located relatively close together enhancing the safety for the staff working at the entrance station kiosks as the kiosks would be adjacent to the staff office/storage building. Construction of new entrance station kiosks would add an employee restroom behind one of the kiosks. Additionally, this alternative would provide adequate stopping sight distance for outbound traffic approaching the entrance station kiosks. Outbound vehicles must be prepared to stop in the event that a preceding vehicle has stopped at the kiosks.

As in Alternative B, this alternative would change the alignment of the access road to the Curatorial Facility and VIC, improve upon the initially planned wastewater system, provide a sand shed at the entrance area, and if feasible, install a ground-source heat pump system. New facilities and rehabilitated landscapes would require additional commitments to maintain them.

Additionally, the wastewater system at the Curatorial Facility and VIC would be a facultative lagoon system. With the lagoon system no building structures are required, operator and maintenance requirements are minimal, and lagoons can handle a wide range of flows and sewage concentrations. The lagoons would be lined to eliminate ground discharge. The lagoon system would need to be cleaned of solids every three to five years. These solids would need to be hauled to a disposal site, possess potential odors, encompass a large footprint and disturbed area, and can be visually unappealing. The lagoons could be variable in shape so as to appear natural and would be fenced and located north of the Curatorial Facility and VIC. There would be the potential to add a chlorinator to the water discharge to the final lagoon to create an "eco-pond" environment. The "eco-pond" would sufficiently meet water quality standards so as to not require fencing of the final pond and allow for human contact and interpretation opportunities if desired. In such a case the requirement would only be for a single-fenced, 0.71 acre evaporation pond with the same possibilities as mentioned above for a chlorinator, lack of fencing and subsequent interpretive potential as an "eco-pond." The treatment system would be placed in an area previously disturbed by cultivation and grazing. The concept of a possible eco-pond with chlorinator would be a compatible substitute for subsurface discharge with any of the other wastewater treatment techniques described in alternative B, C and D.

Alternative C would have beneficial effects on the health and safety of employees and park operations. This Alternative would also increase facility and landscape maintenance responsibilities for park operations.

### **Cumulative Effects**

Alternative C would have similar beneficial effects on the health and safety of employees and park operations as Alternative B.

### **Conclusion**

Construction of two permanent entrance station kiosks and a new staff office/storage building at the Entrance Station Complex would have a benefit on employees at the park because the buildings would provide a safer and healthier work environment. This alternative would construct a low maintenance wastewater system at the Curatorial Facility and VIC and provide a sand shed at the park entrance area. Additionally, this Alternative would increase the park operation workload. Thus, there would be a beneficial effect on the employees' health and safety and park operations even with the increased workload. Cumulatively, the improvements associated with this alternative would have a beneficial effect on park operations when applied to the cumulative impact scenario.

## **Alternative D**

### **Westside Entrance Area Office/Storage and STM Aerotor Wastewater System**

The impacts of Alternative D would be similar to those of Alternative B, with the exception of the location of the entrance station kiosks and new staff office/storage building. These two facilities would be located relatively close together enhancing safety for the staff working at the entrance station kiosks as the kiosks would be adjacent to the staff office/storage building. Construction of new entrance station kiosks would add an employee restroom behind one of the kiosks.

As in Alternative B, this alternative would change the alignment of the access road to the Curatorial Facility and VIC, improve upon the initially planned wastewater system, provide a sand shed at the entrance area, and if feasible, install a ground-source heat pump system. New facilities and rehabilitated landscapes would require additional commitments to maintain them.

Additionally, the wastewater system at the Curatorial Facility and VIC would be a STM aerotor system. This system produces a very good effluent quality, offers very good nutrient removal, produces much smaller quantities of waste sludge than the SBR system in Alternative B, and has a smaller footprint than the SBR system. Disadvantages to this system are that the operator must be certified, however this system is simpler to use than the SBR system. Also, the process generates sludge that requires disposal and a building is required over the equipment.

Alternative D would have beneficial effects on the health and safety of employees and park operations. This Alternative would also increase facility and landscape maintenance responsibilities for park operations.

### **Cumulative Effects**

Alternative D would have similar beneficial effects on the health and safety of employees and park operations as Alternative B.

### **Conclusion**

Construction of two permanent entrance station kiosks and a new staff office/storage building at the Entrance Station Complex would have a moderate benefit on employees at the park because the buildings would provide a safer and healthier work environment. This alternative would also construct a higher maintenance wastewater system at the Curatorial Facility and VIC and provide a sand shed at the park entrance area. Additionally, this Alternative would increase the park operation workload. Thus, there would be a beneficial effect on the employee's health and safety and park operations even with the increased workload. The improvements associated with this alternative would have a beneficial effect on park operations when applied to the cumulative impact scenario.

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## 4 CONSULTATION AND COORDINATION

### SHPO Consultation

The NPS initiated consultation with the Colorado State Historic Preservation Officer (SHPO) December 8, 2000 regarding the proposed undertaking to construct a cultural center at the entrance to Mesa Verde National Park. Consultation with the Colorado SHPO continued on July 9, 2008 when the NPS contacted Colorado SHPO to reinstate consultation and to describe changes to the undertaking that occurred during the planning process since 2000. The NPS will continue to consult with the SHPO regarding the *no adverse effect* determination that would result from implementation of the NPS preferred Alternative B (the undertaking). In addition, the NPS has consulted with and will continue to regularly consult with 24 American Indian Tribes associated with the park. A copy of this EA will be sent to the Colorado SHPO and to Tribes associated with the park during the public review of this document.

### Internal Scoping

Internal scoping was conducted by an interdisciplinary team of professionals from Mesa Verde National Park and the Denver Service Center Office. Interdisciplinary team members met on various occasions from Spring 2006 through December 2007 to discuss the purpose and need for the project; various alternatives; potential environmental impacts; past, present, and reasonably foreseeable projects that may have cumulative effects; and possible mitigation measures. The team also gathered background information and discussed public outreach for the project. Over the course of the project, team members have conducted individual site visits to view and evaluate the proposed construction site.

### External Scoping

During the preparation of the 2002 Cultural Center Environmental Assessment, consultation with the local communities occurred through mailings and meetings with various business organizations. Annual consultations with the park's 24 associated tribes have also included a detailed review of the status of proposals. As the details of the proposed development evolve, park management continues communication with the local community leaders. No leaders, telephone calls or personal contacts have been received indicating any concerns about the proposed development. A press release was posted on the park's website on June 30, 2008 and was sent to all of the newspapers, radio stations, and television stations in the region, discussing the proposed development. When this Environmental Assessment is released, public meetings would be held if there is significant interest.

The following agencies and Native American tribes were sent scoping information or were contacted for information regarding the project:

#### Federal Agencies

San Juan Public Lands Center (USFS and BLM)  
Dolores Public Lands Center (USFS and BLM)  
U.S. Department of the Interior – U.S. Fish and Wildlife Service  
USDA Natural Resources Conservation Service  
Cortez office of the U.S. Department of the Interior Bureau of Reclamation

#### State Agencies

Colorado Historical Society (office of the State Historic Preservation Officer)  
Colorado Division of Wildlife

#### Affiliated Native American Groups

Pueblo of Acoma	Santa Ana Pueblo
Pueblo of Cochiti	Santa Clara Pueblo
Pueblo of Isleta	Pueblo of Santo Domingo
Pueblo of Jemez	Taos Pueblo
Pueblo of Laguna	Tesuque Pueblo
Pueblo of Nambe	Pueblo of Zia
Picuris Pueblo	Pueblo of Zuni
Pueblo of Pojoaque	Ysleta del Sur Pueblo
Pueblo of Sandia	Hopi Tribe
Pueblo of San Felipe	Navajo Nation
Pueblo of San Ildefonso	Southern Ute Tribe
Ohkay Owingeh Pueblo	Ute Mountain Ute Tribe
(Pueblo of San Juan)	

## **Environmental Assessment/Assessment of Effect Review and List of Recipients**

The EA will be released for public review in March 2009. To inform the public of the availability of the EA, the National Park Service will publish and distribute a letter or press release to various agencies, tribes, and members of the public on the Mesa Verde National Park's mailing list, as well as place an ad in the local newspaper. Copies of the EA will be provided to interested individuals upon request. Copies of the document will also be available for review on the internet at [www.nps.gov/flfo](http://www.nps.gov/flfo).

The EA is subject to a 30-day public comment period ending April 2009. During this time, the public is encouraged to submit their written comments to the National Park Service address provided at the beginning of this document. Following the close of the comment period, all public comments will be reviewed and analyzed prior to the release of a decision document. The National Park Service will issue responses to substantive comments received during the public comment period and will make appropriate changes to the EA as needed.

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Jonathan Upchurch, Transportation Scholar (Former) – National Park Service  
Gay Ives, Supervisory Archeologist – National Park Service  
Allan Loy, Park Project Manager – National Park Service  
Mike Pritzlaff, Roads and Trails Foreman – National Park Service  
Scott Travis, Chief of Research and Resource Management – National Park Service  
Jodie Petersen, Project Manager – Denver Service Center  
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As the nation's principal conservation agency, the Department of the Interior has the 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.

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