

**Draft Environmental Assessment for an Air Tour  
Management Plan for  
Mount Rushmore National Memorial**

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# 1 PURPOSE AND NEED

## 1.1 Introduction

The Federal Aviation Administration (FAA) and the National Park Service (NPS) (collectively, “the agencies”) are working together to develop an air tour management plan (ATMP) pursuant to the National Parks Air Tour Management Act of 2000 (the Act) and an Environmental Assessment (EA) for Mount Rushmore National Memorial (hereafter referred to as the “Park”). The Act was signed into law on April 5, 2000. The Act applies to all commercial air tour operations over a unit of the National Park System.

The Act requires the FAA, in cooperation with the NPS, to develop an ATMP or voluntary agreement for parks and tribal lands where operators have applied to conduct commercial air tours. The Act provided for existing commercial air tour operations occurring at the time the law was enacted to continue until an ATMP for the Park was implemented by expressly requiring the FAA to grant interim operating authority (IOA) to existing operators.<sup>1,2</sup> Currently, there are two air tour operators conducting air tours over the Park with combined IOA for 5,608 commercial air tours annually. IOA includes only an annual cap on the number of commercial air tours that may be conducted by an operator, but does not designate the routes, time-of-day, altitudes, or other conditions for such tours.

The objective of the ATMP, under the Act, is to develop acceptable and effective measures to mitigate or prevent significant adverse impacts, if any, of commercial air tour operations on the Park’s natural and cultural resources, tribal sacred sites and ceremonial areas, and visitor experience, as well as Wilderness character within the ATMP planning area. The regulations implementing the Act are found in Title 14, Code of Federal Regulations (CFR), Part 136, *Commercial Air Tours and National Parks Air Tour Management* (14 CFR Part 136). This draft EA is being prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) (42 United States Code (U.S.C.), 4321 et seq.), Council on Environmental Quality (CEQ) NEPA implementing regulations (40 CFR Parts 1500-1508), the 2015 FAA 1050.1F Order, *Environmental Impacts: Policies and Procedures*, and NPS NEPA policies and procedures (2015 NPS NEPA Handbook and 2015 NPS NEPA Handbook Supplemental Guidance - *Writing Impact Analysis Sections for EAs and EISs*).

The term commercial air tour operation is defined as any flight conducted for compensation or hire in a powered aircraft, where a purpose of the flight is sightseeing over a park or within ½-

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<sup>1</sup> 49 U.S.C. § 40128(c)(2)(A)(i-ii).

<sup>2</sup> 70 FR 58,778 (Oct. 7, 2005).

mile outside the park's boundary during which the aircraft flies below 5,000 feet (ft.) above ground level (AGL). This area is referred to as the ATMP planning area (Figure 1).

## 1.2 Background

On February 14, 2019, Public Employees for Environmental Responsibility and Hawai'i Coalition Malama Pono filed a petition in the United States (U.S.) Court of Appeals for the District of Columbia Circuit requesting that the Court order the agencies to complete ATMPs for seven parks including Mount Rushmore National Memorial. On May 1, 2020, the Court granted the petition and ordered the agencies to submit a schedule for bringing 23 eligible parks (based on reported air tour data from 2018) into compliance with the Act within two years or to show specific, concrete reasons why doing so will take longer. Consistent with the Court's order, agencies submitted a proposed plan and schedule (Compliance Plan) on August 31, 2020. On June 21, 2022, the Court ordered the agencies to file a joint supplemental report and propose firm deadlines for bringing each of the parks included in the Compliance Plan into compliance with the Act. On July 21, 2022, the agencies filed their report and provided a deadline of December 31, 2023, to complete the ATMP for the Park.

In order to conduct planning processes consistent with the Court's decision, the agencies formally terminated longstanding ATMP planning processes for several parks via a September 3, 2020 Federal Register notice.<sup>3</sup> The previous planning process for an ATMP for the Park was initiated in 2003. In 2004, the FAA published a notice of the agencies' intent to prepare an EA for that ATMP.<sup>4</sup> Due to the passage of the 2012 amendments to the Act, work on the previous planning process was paused until the time it was terminated in order to initiate the current planning process.

On September 6, 2022, the FAA and the NPS initiated a 30-day NEPA public scoping process and put forth four potential ATMP alternatives for public and stakeholder review and comment. The comments received were used to further refine or dismiss alternatives as described in this draft EA and were also used to inform the environmental analysis. Refer to Appendix J, *Public Scoping Newsletter and Comment Summary Report*, for more information.

## 1.3 Proposed Action

The proposed action is to implement an ATMP for the Park. The Act defines an ATMP as a plan used to develop acceptable and effective measures to mitigate or prevent the significant

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<sup>3</sup> Termination of Previously Initiated Processes for the Development of Air Tour Management Plans and Environmental Assessments/Environmental Impact Statements for Various National Park Units and Notice of Intent to Complete Air Tour Management Plans at 23 National Park Units, 85 FR 55,060 (Sept. 3, 2020).

<sup>4</sup> Environmental Assessment for the Air Tour Management Plan Program at Mount Rushmore National Memorial, 69 FR 20660 (April 16, 2004).



adverse impacts, if any, of commercial air tour operations upon natural and cultural resources, Wilderness character, visitor experiences, and tribal lands. An ATMP describes conditions for the conduct of air tour operations over a park, including routes, altitudes, time-of-day restrictions, restrictions for particular events, maximum numbers of flights, or other provisions. The Act and implementing regulations found in 14 CFR Part 136 state that the ATMP for a park:

- May prohibit commercial air tour operations over a national park in whole or in part;
- May establish conditions for the conduct of commercial air tour operations, including, but not limited to, commercial air tour routes, maximum number of flights per unit of time, maximum and minimum altitudes, time-of-day restrictions, restrictions for particular events, intrusions on privacy on tribal lands, and mitigation of noise, visual, or other impacts;
- Shall apply to all commercial air tour operations over a national park or within ½-mile outside the park's boundary;
- Shall include incentives (such as preferred commercial air tour routes and altitudes, relief from caps and curfews) for the adoption of quiet aircraft technology by commercial air tour operators conducting commercial air tour operations at the park;
- Shall provide for the initial allocation of opportunities to conduct commercial air tour operations if the plan includes a limitation on the number of commercial air tour operations for any time period; and
- Shall justify and document the need for measures taken pursuant to the items above and include such justifications in the record of decision.

The ATMP will prescribe operating parameters to mitigate impacts from commercial air tours on Park resources. Four alternatives for the Park's ATMP are considered and evaluated in this draft EA.

## **1.4 Purpose and Need**

Purpose: The purpose of the ATMP is to comply with the Act and other applicable laws, consistent with the *Plan and Schedule for Completion of Air Tour Management Plans at Twenty-Three Parks* approved by the U.S. Court of Appeals for the District of Columbia Circuit on November 20, 2020, in Case No. 19-1044, *In Re Public Employees for Environmental Responsibility and Hawai'i Coalition Malama Pono* (Compliance Plan).

Need: The Act requires an ATMP or voluntary agreement to be developed for the Park. Air tours have the potential to impact natural and cultural resources, tribal sacred sites and ceremonial areas, Wilderness character, and visitor experience. The Act requires that the FAA and the NPS develop acceptable and effective measures to mitigate or prevent significant adverse impacts, if any, of commercial air tour operations on natural and cultural resources, tribal sacred sites and ceremonial areas, Wilderness character, and visitor experience.

## 1.5 Environmental Impact Categories Not Analyzed in Detail

The following environmental impact categories were considered but not analyzed in detail in this draft EA because:

- The topics do not exist in the analysis area, or would not be affected by the ATMP; or
- The likely impacts are not reasonably expected.

### ***Biological Resources (Fish, Invertebrates, and Plants)***

The ATMP would not result in ground disturbance or in-water activities that could affect plants or fish. The proposed minimum altitudes (900 ft. to 1,400 ft. AGL) included in both of the action alternatives under which commercial air tours would be permitted within the ATMP planning area would create sufficient separation between commercial air tours and fish such that impacts are not expected to occur, either directly or indirectly.

Noise from aircraft have been demonstrated to influence the behavior of ecologically significant pollinators and seed dispersers in natural and human altered landscapes (Francis et al., 2012; Gallardo Cruz et al., 2021). Specifically, Francis et al. (2012) studied the effect of compressor noise running continuously and generating noise at high amplitudes (greater than 95 decibels (dBA) at a distance of 1 meter). Within the study, experimental sites were established 125 to 150 meters from the noise source. Noise exposure had an indirect positive effect on pollination by hummingbirds, but an indirect negative effect on piñon pine seedling establishment by altering the composition of animals preying upon or dispersing seeds. In contrast to the experimental design of this study, commercial air tours do not generate continuous noise, and minimum altitudes considered by the alternatives (900 ft. to 1,400 ft. AGL) provide much greater spatial separation compared to the study sites. Therefore, the agencies have determined that noise associated with the ATMP is unlikely to result in impacts to plants or plant pollination.

Native invertebrates in the Park are largely restricted to areas of predominantly native vegetation, including shaded draws, open meadows, and areas with elevated moisture levels such as springs and streams. The proposed altitudes included in each of the alternatives under which air tours would be permitted (900 ft. to 1,400 ft. AGL) would create sufficient separation between commercial air tours and invertebrates such that impacts are not expected to occur, either directly or indirectly.

Air tours could result in some effects on air quality, such as emissions or the potential for low-flying aircraft to generate dust, which could indirectly affect plants. While air quality is a topic that is analyzed in detail in this draft EA, the minimum altitudes considered by the alternatives under which air tours would be permitted within the ATMP planning area (900 ft. to 1,400 ft. AGL) create sufficient separation between plants and aircraft such that it is unlikely that the dust or changes in air quality would have a meaningful effect on plants. Through tribal

consultation, tribes have conveyed to the agencies that natural resources, including plants, are considered cultural resources by the tribes. Since impacts on plant biology are not expected, plants have been dismissed from further analysis as a biological resource and are analyzed as a cultural resource (see Section 3.4, Cultural Resources). In summary, for these reasons, the agencies have dismissed this impact topic from further analysis as a biological resource.

### ***Children's Environmental Health and Safety Risks***

The ATMP would not affect products or substances that a child would be likely to come into contact with, ingest, use, or be exposed to, and would not result in environmental health and safety risks that have the potential to lead to a disproportionate health or safety risk to children. Therefore, this topic has not been analyzed in detail in this draft EA.

### ***Hazardous Materials, Solid Waste, and Pollution Prevention***

Applicable FAA air tour regulations include restrictions to protect individuals and property on the ground, and prevent collisions between aircraft, land or water vehicles, and airborne objects. The FAA has issued safety standards for safe air tour operations to reduce the potential for air tour crashes. Even so, there are various circumstances that can lead to an air tour crash or emergency landing, including but not limited to poor weather, mechanical failure, or faulty maintenance. The agencies acknowledge that in the unlikely event of an accident, there could be potential impacts to Park resources from associated debris and aircraft fuel. Consistent with 43 CFR Part 1502.21(c)(1)-(4), the agencies are disclosing that information necessary to analyze site-specific impacts from an air tour crash is not available. The agencies cannot speculate if, where, or when an air tour accident or incident may occur or the degree of Park resource damage.

In the event of an emergency landing inside the Park (regardless of whether the aircraft intended to fly over the Park), once the aircraft has safely landed and any medical or other emergency issues have been addressed, the operator would need to immediately notify the NPS through Park dispatch of the incident and location. Prior approval from the Park superintendent or designee is required for the removal or take off of the landed aircraft in order to coordinate joint resources for the safety of visitors and Park resources (36 CFR Part 2.17). Prior approval from the Park superintendent or designee is required for any non-emergency landing of aircraft within the Park boundaries, including replacement aircraft deployed to retrieve passengers who are not able to exit via ground transportation (36 CFR Part 2.17).

If an air tour crash occurs, the NPS Northern Great Plains Fire Management Office or a cooperating emergency response agency would respond as soon as possible to provide life-saving search and rescue efforts. If the crash resulted in fire or hazardous materials contamination, responding personnel would attempt to secure the area and control the fire or

contain potential contaminants while mitigating impacts to Park resources to the greatest extent possible. The Park's Fire Monitoring Handbook (NPS, 2003) would guide fire response and associated resource protection. Assessment of resource damage, initiation of restoration, and financial compensation sought would be guided by the System Unit Resource Protection Act, 54 U.S.C. § 100721 et seq.

Air tour operators must comply with all applicable federal, state, and local rules and regulations pertaining to the proper storage, handling, and use of hazardous materials. The ATMP would not result in impacts regarding hazardous materials, solid waste, and pollution prevention because it would not 1) violate laws or regulations regarding hazardous materials and/or solid waste management; 2) involve a contaminated site; 3) produce an appreciably different quantity or type of hazardous waste; 4) generate an appreciably different quantity or type of solid waste or use a different method of collection or disposal; 5) exceed local capacity; or 6) adversely affect human health and the environment. Therefore, the ATMP is not expected to result in impacts related to hazardous materials and this topic has not been analyzed in detail in this draft EA.

### ***Farmlands***

The ATMP planning area, as described in Section 2.3, The ATMP Planning Area for Development of the Alternatives does not contain soils that are designated as prime/unique farmland soils. Additionally, the ATMP would not involve ground disturbance that would have the potential to convert farmland to non-agricultural uses. Therefore, this resource has not been analyzed in detail in this draft EA.

### ***Land Use***

Land use refers to the general characteristics of how land is allocated among various administrative, preservation, recreational, and development needs. The ATMP would not result in ground disturbing activities within the ATMP planning area. The impacts to land use are not reasonably expected; therefore, land use is not analyzed in detail in this draft EA.

### ***Natural Resources and Energy Supply***

Commercial air tours have been ongoing within the ATMP planning area prior to enactment of the Act. The ATMP would not result in the extraction of resources or cause measurable increases in the consumption of energy resources that would exceed available or future supplies of natural or energy resources. Therefore, this topic is not analyzed in detail in this draft EA.

### ***Visual Effects – Light Emissions***

Commercial air tours do not fly at night as it creates safety concerns when flying in areas with little artificial light on the ground surface, and points of interest that could otherwise be seen

from an air tour are not visible at night. Any lights from commercial air tour aircraft are not likely to be noticeable during the daytime. Therefore, light emissions are not expected to occur as a result of the ATMP and this topic has not been analyzed in detail in this draft EA.

***Water Resources (Including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)***

Due to the absence of Wild and Scenic Rivers within the ATMP planning area, absence of ground disturbing activities, and the minimum altitudes in the alternatives that would permit commercial air tours within the ATMP planning area, the ATMP is unlikely to directly or indirectly adversely affect water resources. As noted above in the analysis for Hazardous Materials, Solid Waste, and Pollution Prevention, the agencies are unable to speculate if, where, or when an air tour accident or incident could occur and the Park resource damage that could result, including those related to hazardous material entering water resources within the ATMP planning area. Therefore, water resources are not expected to be impacted as a result of the ATMP and have not been analyzed in detail in this draft EA.

***Coastal Resources***

The ATMP planning area does not include coastal areas or coastal zones. Therefore, coastal resources have not been analyzed in detail in this draft EA.

## 2 ALTERNATIVES

### 2.1 Alternatives Development

Prior to public scoping, the preliminary ATMP alternatives were developed primarily by an NPS interdisciplinary team comprised of subject matter experts from the NPS's Natural Sounds and Night Skies Division, Environmental Quality Division, Midwest Regional Office, and the Park. Because land managed by the U.S. Forest Service (USFS) is inside the ATMP planning area, the USFS was invited to be a cooperating agency in accordance with 40 CFR Part 1501.8, by letter dated December 9, 2021, in the development of the alternatives and this draft EA. The USFS agreed to be a cooperating agency and has participated in the development of the draft ATMP, draft EA, and associated documents. In developing the alternatives, the team considered the noise impacts of existing routes and operations, the Park's cultural and natural resources, the Park's existing and natural acoustic environment, visitor experience, visual resources, and the Wilderness character of the adjacent Black Elk Wilderness, as well as potential protective measures that could be included in an ATMP. The alternatives identified by the interdisciplinary team and justifications for restrictions on commercial air tours were reviewed by the FAA, including the FAA's local Flight Standards District Office (FSDO) who noted any aviation safety concerns.

The agencies also conducted a preliminary environmental analysis earlier in the planning process to identify the appropriate level of NEPA review for a draft ATMP. In 2020, using routes, altitudes, reporting data provided by commercial air tour operators, and other relevant information, the agencies modeled existing air tour conditions over the Park using the FAA's Aviation Environmental Design Tool (AEDT), a software system that models aircraft performance in space and time to estimate fuel consumption, emissions, noise, and air quality. This information was then considered, in addition to acoustic monitoring information, and analyzed by the interdisciplinary planning team. The FAA, in coordination with the NPS, also initiated consultation pursuant to Section 106 of the National Historic Preservation Act (NHPA) (54 U.S.C. §§ 300101 et seq.), including consultation with Native American Tribes. The input from consultation and preliminary environmental analysis was used to further refine or dismiss potential alternatives prior to the public scoping period. Ultimately, there are four potential alternatives: Alternative 1 which serves as the No Action Alternative, Alternative 2 which would prohibit air tours within the ATMP planning area, Alternative 3 which would permit (3,657 annual and up to 25 daily) air tours with additional operational modifications in the ATMP planning area, and Alternative 4 which would permit (1,833 annual and up to 13 daily) air tours with additional operational modifications within the ATMP planning area. These alternatives were released for review and comment during the public scoping period in September 2022. Refer to the public scoping newsletter in Appendix J, *Public Scoping Newsletter and Comment Summary Report* for details on the alternatives included in public scoping.

2.4 Alternative 1 (No Action Alternative) As a result of the agencies' consideration of the comments received from the September 2022 public scoping period, the agencies advanced all four alternatives for analysis in this draft EA. As a result of the comments received from the September 2022 public scoping period, the agencies refined the annual and daily number of flights, seasonal restrictions, and time-of-day restrictions in Alternative 4. There were no changes made to Alternatives 1, 2, or 3 following public scoping. Alternatives may be further developed or modified through the NEPA process in response to public, consulting party, and agency comments on this draft EA and draft ATMP.

As part of the alternatives development process the interdisciplinary team considered other existing planning documents when developing the management objectives for the ATMP, including the Foundation Document (NPS, 2015) which states:

*The purpose of Mount Rushmore National Memorial is to commemorate the founding, expansion, preservation, and unification of the United States by preserving, protecting, and interpreting the mountain sculpture in its historic, cultural, and natural setting while providing for the education, enjoyment, and inspiration of the public.*

The following Park management objectives relate to the development of the ATMP for the Park:

- The Park's acoustic environment supports an outstanding visitor experience and opportunities to hear and enjoy natural sounds.
- Park staff are able to conduct, and visitors are able to experience, interpretive programming with minimal interference due to noise.
- Natural sounds are protected to conserve healthy and robust wildlife populations; biological and ecological processes prevail.
- Traditional and cultural resources are preserved to facilitate ongoing connection with and use of these resources by associated Tribal Nations and traditionally associated communities.

## **2.2 Alternatives Considered but Eliminated from Further Study**

### **2.2.1 Air Tours at or above Existing Levels**

The agencies considered but eliminated alternatives that would allow air tour operations at or above existing numbers. These alternatives were eliminated from further study because the NPS determined they would result in unacceptable impacts to the Park's natural and cultural resources, and visitor enjoyment (NPS Management Policies § 1.4.7.1, 2006), and do not meet the purpose and need for the ATMP. The NPS determined the existing level of air tours is

inconsistent with the Park's purpose and values, as described in its Foundation Document (NPS, 2015).

Noise and visual effects from air tours negatively impact existing cultural sites within the Park associated with Native American Tribes. The NPS Management Policies direct the NPS to avoid adversely affecting physical integrity of sacred sites to the extent practicable (NPS Management Policies § 5.3.5.3.2, 2006). Additionally, culturally appropriate sounds are important elements of the national park experience in many parks, and therefore, the NPS is directed to "prevent inappropriate or excessive types and levels of sound (noise) from unacceptably impacting the ability of the soundscape to transmit the cultural and historic resource sounds associated with park purposes" (NPS Management Policies § 5.3.1.7, 2006). Tribes and individual tribal members have consistently noted that air tours over the Park unreasonably interfere with their connections to the sacred landscape of the Black Hills, including within the ATMP planning area.

Existing air tours over the Park also directly interfere with activities such as interpretive programs and visitor activities at many sites, including the Park amphitheater, Presidential Trail, Youth Exploration Area, and Old Baldy. The existing level of air tours diminishes visitor opportunities to learn about and be inspired by the Park's resources and values, and the NPS has determined that it unreasonably interferes with the atmosphere of peace and tranquility in the Park. The interdisciplinary team also concluded that the existing levels of air tours diminishes Wilderness character due to its effects on natural soundscapes in adjacent Wilderness managed by the USFS.

Therefore, authorizing commercial air tours at or above the existing level of operations would not meet the objectives of an ATMP. The NPS has determined that the existing level of air tours cannot be mitigated to avoid or prevent unacceptable impacts and therefore any alternative that would maintain or increase the current number of air tours within the ATMP planning area does not meet the purpose and need for the ATMP. For all of these reasons, the agencies have considered but eliminated alternatives that would continue air tours at or above existing air tour numbers.

### **2.3 The ATMP Planning Area for Development of the Alternatives**

An ATMP regulates commercial air tours over a national park or within ½-mile outside the park's boundary during which the aircraft flies below 5,000 ft. AGL. This is referred to as the ATMP planning area in this draft EA and as the ATMP boundary in the ATMP itself. Air tours outside of the ATMP planning area are not subject to the Act and are therefore not regulated under the ATMP. As air tours outside of the ATMP planning area are outside the jurisdiction of the ATMP, there would be no limitations on the annual number of such air tours that could occur, and no designated routes could be set outside the ATMP planning area under any alternative. Refer to Figure 1 for a graphic depiction of the ATMP planning area. Although they may occur within the ATMP planning area, general aviation flights, overflights by commercial



airlines, and military flights would not be regulated by the ATMP because they are not commercial air tours subject to regulation under the Act.

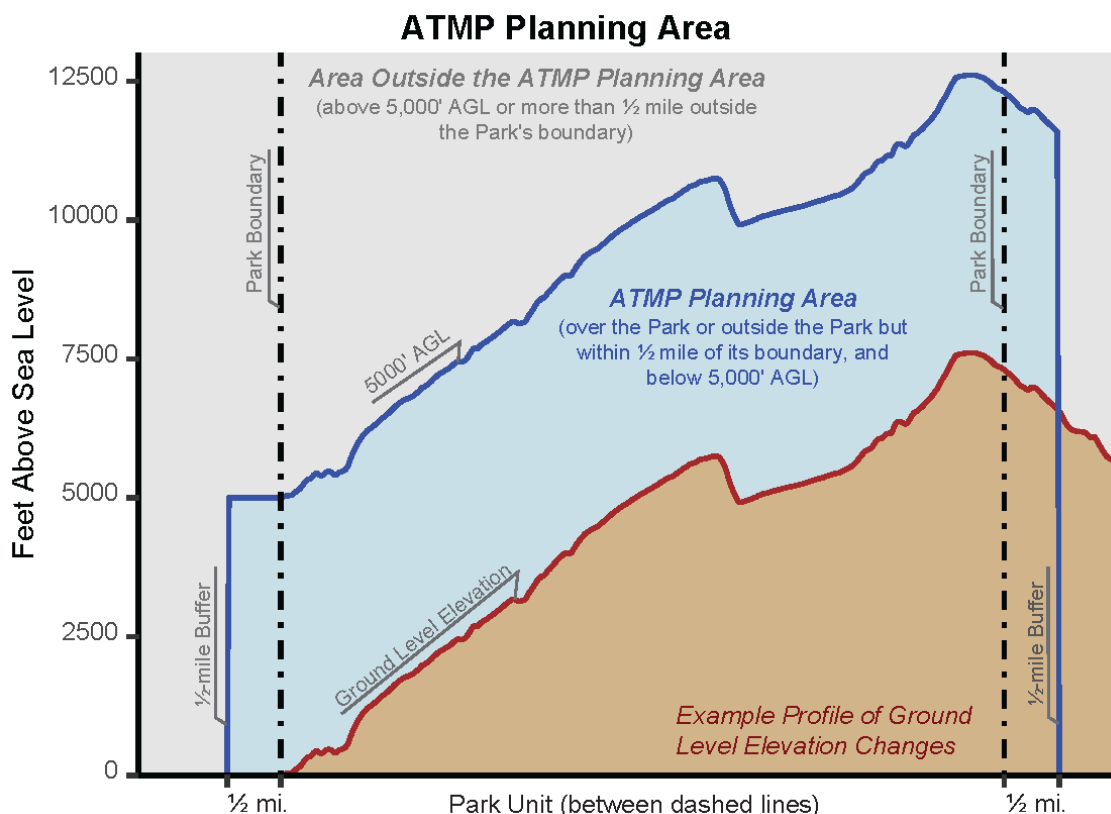


Figure 1. Graphic Depiction of the ATMP Planning Area.

## 2.4 Alternative 1 (No Action Alternative)

The No Action Alternative represents the yearly average number of commercial air tours over the Park from 2017-2019 across the two current operators, with the possibility of operators flying up to their IOA. Operators must comply with applicable regulations that govern aviation safety (14 CFR Part 136, Appendix A (formerly Special Federal Aviation Regulation 71)) and fly in accordance with FAA Advisory Circular 91-36D *Visual Flight Rules Flight Near Noise Sensitive Areas* (FAA, 2004) and the Memorandum of Understanding (MOU) between Ellsworth Airforce Base and the Park dated September 1, 2022.<sup>5</sup>

The No Action Alternative provides a basis for comparison but is not a selectable alternative because it does not meet the purpose and need for the ATMP (refer to Section 1.4, Purpose and Need).

<sup>5</sup> Department of Defense Document Number: FB4460-22XXX-002

#### **2.4.1 Commercial Air Tours per Year**

Two commercial air tour operators currently hold IOA to fly up to a combined total of 5,608 commercial air tours per year over the Park (see Table 1). The yearly average number of commercial air tours conducted over the Park from 2017-2019 across both of these operators is 3,914. The agencies consider the 2017-2019 three-year average the existing baseline for the purposes of understanding the existing number of commercial air tours over the Park. The requirement for commercial air tour operators to report annual commercial air tour operations to the agencies was implemented in 2013. Reporting data from 2013 and 2014 are considered incomplete as reporting protocols were not fully in place at that time and likely do not accurately reflect actual number of air tours conducted. Flight numbers from a single year were not chosen as the existing baseline because the three-year average accounts for both variation across years and takes into account the most recent pre-pandemic years. Reporting data from 2020 was not used because the 2020 COVID-19 pandemic resulted in abnormalities in travel patterns across the U.S., which does not represent the conditions in a typical year. The agencies also decided against using 2021 or 2022 data due to continued abnormalities associated with the COVID-19 pandemic and the unavailability of reporting data for 2021 or 2022 during most of the planning effort.

The agencies also decided against using IOA as the baseline because IOA was based on numbers reported by operators more than 20 years ago and does not represent the most current or reliable operational data. The three-year average of commercial air tours from 2017-2019 is 3,914 tours per year, which is approximately 70% of IOA. Under the No Action Alternative, operators could fly additional air tours up to their IOA, or they may fly fewer air tours. The No Action Alternative represents a continuation of existing conditions and for the purposes of analysis uses the three-year average of flights from 2017 to 2019. The impacts of IOA are not analyzed nor included as the baseline condition for this alternative, though in any given year operators could conduct additional air tours up to their IOA or they may fly fewer air tours than in the period from 2017 to 2019.

#### **2.4.2 Commercial Air Tour Routes and Altitudes**

There are no designated flight routes or no-fly zones under the No Action Alternative. The figure for this alternative (Figure 2) depicts general route information provided by current commercial air tour operators over and adjacent to the Park. Commercial air tour operations are likely dispersed around the generalized routes provided by operators depicted in Figure 2. Routes and altitudes may change, depending on an operator's preference to change routes or to fly higher or lower than they currently are flying. For purposes of defining the No Action

Alternative, the operator-provided route information depicted in Figure 2 is considered in this draft EA.<sup>6</sup>

Under the No Action Alternative, commercial air tours on routes Keystone 1, Keystone 2, Keystone 3/4/5, and Custer 4/5/6 would likely continue to be conducted at an operator-reported altitude of 900 ft. AGL, except during takeoff and landing from the privately owned and operated heliport on the boundary of the ATMP planning area, or as necessary for safe operation of an aircraft as determined under Federal Aviation Regulations. An altitude of 900 ft. AGL results in the mean sea level (MSL) altitude callouts on Figure 2 that range from 5,500 ft. to 7,000 ft. MSL.<sup>7</sup> Commercial air tours on route Eagle MRU would likely continue to be conducted at an operator-reported altitude of 6,500 ft. MSL as shown in Figure 2, which results in altitudes that range from 1,300 ft. to 2,100 ft. AGL.

All air tour operators are required to report to the FAA and the NPS, on a semi-annual basis, the number of commercial air tour operations they have conducted within the ATMP planning area.<sup>8</sup> The operators must provide the date and time each tour occurred, the make/model of aircraft used, and the route on which the tour was conducted.

### **2.4.3 Commercial Air Tour Operators and Aircraft Types**

The two commercial operators that hold IOA for the Park reported flying commercial air tours over the Park between 2013 and 2020. Dakota Rotors LLC (Black Hills Aerial Adventures, Inc., and Rushmore Helicopters) flies helicopters, and Eagle Aviation, Inc. flies fixed-wing aircraft. Table 1 summarizes each operator's aircraft type, IOA, reported tours, and 2017-2019 average number of reported tours over the Park:

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<sup>6</sup> In accordance with FAA Advisory Circular 91-36D Visual Flight Rules Flight Near Noise-Sensitive Areas, a 2022 MOU between the Park and Ellsworth Air Force Base was established with one of the main recommendations for pilots to make every effort to fly a lateral distance of 2,000 ft. AGL from noise sensitive areas.

<sup>7</sup> Altitude expressed in units AGL is a measurement of the distance between the ground surface and the aircraft, whereas altitude expressed in MSL refers to the altitude of an aircraft above sea level, regardless of the terrain below it. Aircraft flying at a constant MSL altitude would simultaneously fly at varying AGL altitudes, and vice versa, assuming uneven terrain is present below the aircraft.

<sup>8</sup> See *Air Tour Reporting Guidance*

Memo (2020), [https://www.faa.gov/about/office\\_org/headquarters\\_offices/ara/programs/air\\_tour\\_management\\_plan/program\\_information](https://www.faa.gov/about/office_org/headquarters_offices/ara/programs/air_tour_management_plan/program_information)

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Table 1. Commercial Air Tour Operators, Aircraft Type, Reported Tours, and IOA.

Operator	Aircraft Type	2013	2014	2015	2016	2017	2018	2019	2020 <sup>9</sup>	2017-2019 Avg.	IOA
Dakota Rotors LLC (Black Hills Aerial Adventures, Inc., and Rushmore Helicopters)	BHT-206B, BHT-47-G3B1, R-44-II, R-66-66 (helicopter)	0	3,639	4,348	4,002	3,730	3,782	4,202	4,860	3,905	5,563
Eagle Aviation, Inc.	Cessna 172, Cessna 206 (fixed-wing)	9	9	15	9	19	6	2	0	9	45
<b>TOTAL</b>		<b>9</b>	<b>3,648</b>	<b>4,363</b>	<b>4,011</b>	<b>3,749</b>	<b>3,788</b>	<b>4,204</b>	<b>4,860</b>	<b>3,914</b>	<b>5,608</b>

Source: 2013-2019 Annual Reports, "Reporting Information for Commercial Air Tour Operations over Units of the National Park System."  
See <https://www.nps.gov/subjects/sound/airtours.htm>.

<sup>9</sup> Based on unpublished reporting data.

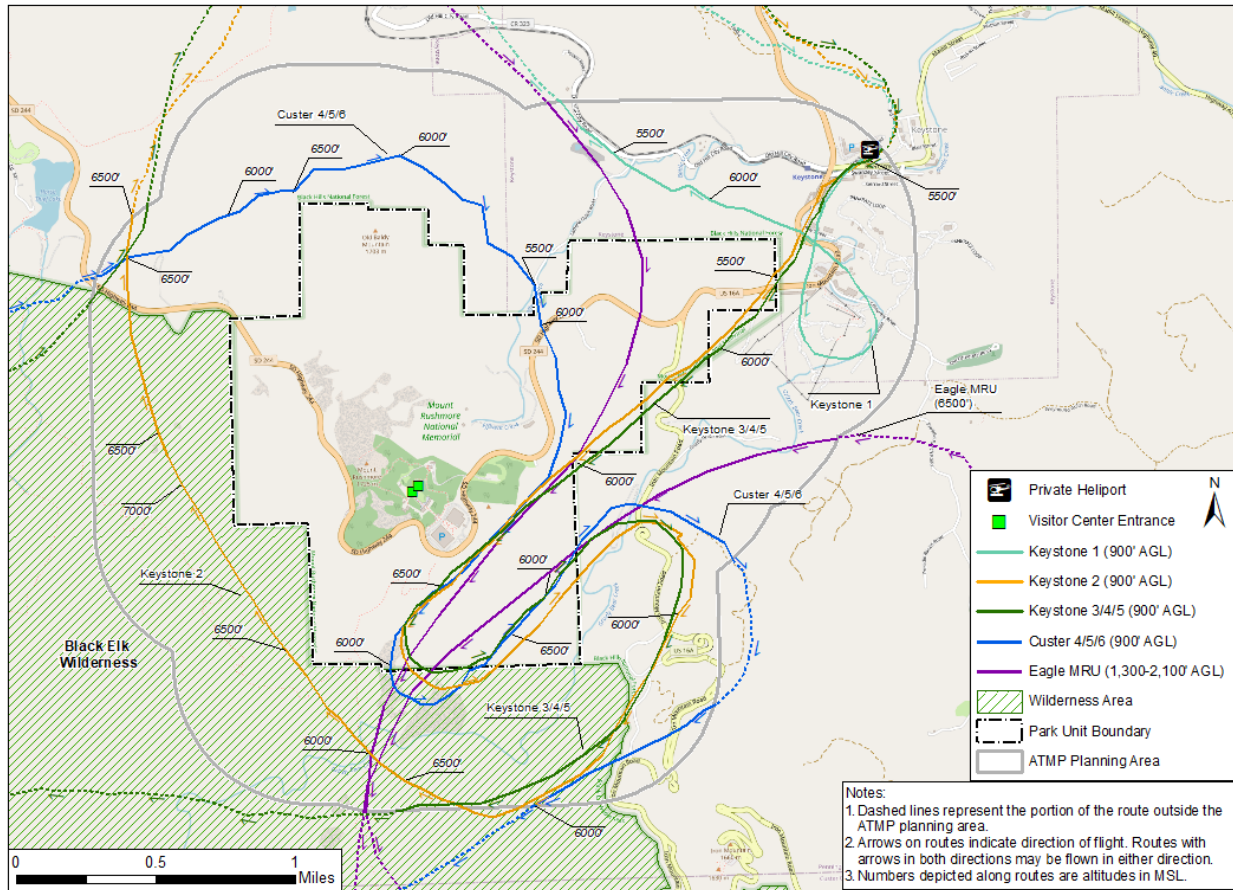


Figure 2. Alternative 1 (No Action).

## 2.5 Alternative 2 (Preferred Alternative)

Alternative 2 provides the greatest level of protection for the purpose, resources, and values of the Park.

Alternative 2 would prohibit commercial air tours within the ATMP planning area no later than 180 days after the ATMP is signed by all required signatories from both agencies (the ATMP's effective date). Except when necessary for takeoff or landing from the privately owned and operated heliport on the boundary of the ATMP planning area, or as necessary for safe operation of an aircraft as determined under Federal Aviation Regulations requiring the pilot-in-command to take action to ensure the safe operation of the aircraft, or unless otherwise authorized for a specified purpose, commercial air tours would not be allowed to enter the ATMP planning area. Operators will be permitted to continue to conduct air tours within the ATMP planning area up to the limit of their IOA until their Operations Specifications are rescinded or amended to incorporate the ATMP's operating parameters, which will occur no later than 180 days after the effective date of the ATMP. Refer to Figure 3 for a depiction of this alternative.

Air tours outside of the ATMP planning area (i.e., at or above 5,000 ft. AGL or more than ½-mile outside the Park boundary) are not subject to the Act and are therefore not regulated under the ATMP. Thus, there would be no limitations on the number of air tours that could occur outside of the ATMP planning area.

All IOA for the Park would terminate by operation of law 180 days after the establishment (effective date) of the ATMP, 49 U.S.C. § 40128(c)(2)(E), after which time no operator could continue to rely on any Operations Specifications issued under IOA as authority to conduct commercial air tours within the ATMP planning area. Operations Specifications will be rescinded or amended to incorporate the operating parameters set forth in the ATMP within 180 days after the effective date of the ATMP.

The FAA reviewed the alternative to ensure it is safe (see Section 2.1, Alternatives Development). The FAA will evaluate the establishment of an operational plan in the area to enhance safety. As noted below, the pilot-in-command is always required to take action to ensure the safe operation of the aircraft.

#### **2.5.1 Commercial Air Tour Routes and Altitudes**

Air tours could be conducted only outside the ATMP planning area. Currently, air tours outside of the ATMP planning area are known to occur. An unknown number of air tours may continue to fly more than ½-mile outside of the Park's boundary, or above the ATMP planning area at or above 5,000 ft. AGL. Because air tours outside of the ATMP planning area are not regulated by the ATMP, air tour routes outside of this area are difficult to predict with specificity. Operators may continue to fly to points of interest outside of the ATMP planning area where they already fly, or they may fly routes over or around the ATMP planning area similar to existing flights paths but outside of the ATMP planning area. Some air tour operators may choose to move their air tours just outside or above the ATMP planning area, as tours just outside the ATMP planning area still offer a good view of the sculpture. However, if operators chose to fly above the ATMP planning area, they would be required to maintain altitudes at or above 5,000 ft. AGL while over the ATMP planning area. This may be impractical due to the high elevation of the terrain because it would require operators to fly above 10,000 ft. MSL. Supplemental oxygen use is required in unpressurized aircraft flying at altitudes over 10,000 ft. MSL for more than 30 minutes (14 CFR Parts 135.89, 135.157); therefore, it is unlikely air tours would fly above the ATMP planning area for extended periods of time. Additionally, flights at 5,000 ft. AGL or higher would provide limited value to a sightseeing operation of the sculpture. The actual flight path of air tours outside the ATMP planning area would vary due to operator preference and weather conditions at the time of the air tour. Based on current air tour activity, numbers of flights displaced outside the planning area would be expected to be similar to the number of flights currently operating within the ATMP planning area. The preciseness of routes and altitudes for tours flown on alternative routes are generally subject to Visual Flight Rules, which is based on the principle of "see and avoid," and therefore may vary.

## 2.5.2 Monitoring and Enforcement

Aircraft monitoring and enforcement would occur to ensure that commercial air tour operators are complying with the terms and conditions of the ATMP. This could be conducted by using Automatic Dependent Surveillance-Broadcast aircraft monitoring when possible (and if all operators utilize the technology) or other tracking technology (e.g., radar). The NPS would work with the FAA to identify and respond to any instances of noncompliance. The agencies would both be responsible for the monitoring and oversight of the ATMP. If the NPS identifies instances of noncompliance, the NPS would report such findings to the FAA's South Dakota FSDO. The FSDO would investigate and respond to all written reports consistent with applicable FAA guidance. The public may also report allegations of noncompliance with the ATMP to the FSDO, which may result in an FAA investigation. FAA determination of noncompliance may result in legal enforcement actions. Any violation of operations specifications would be treated in accordance with FAA Order 2150.3, *FAA Compliance and Enforcement Program*.

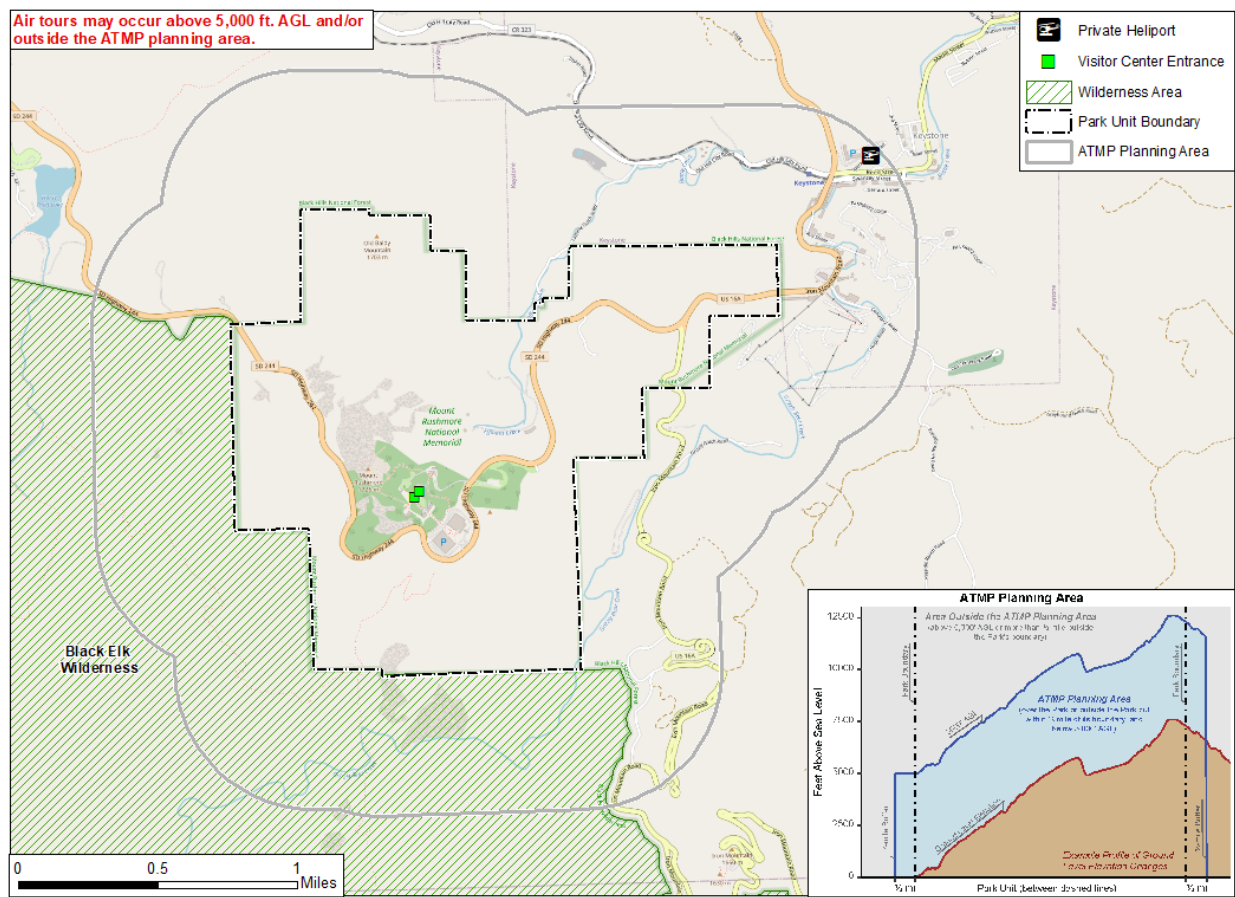


Figure 3. Alternative 2.

## **2.6 Alternative 3**

The NPS developed Alternative 3 to provide opportunities for air tours to occur within the ATMP planning area, with mitigations to avoid or minimize impacts to the Park's natural and cultural resources and visitor experience. Compared to existing conditions, Alternative 3 would restrict and reduce air tour operations within the ATMP planning area to reduce impacts on nesting birds and bighorn sheep lamb rearing. Primarily, the conditions in this alternative include annual and daily caps, designated routes, required minimal altitudes, and seasonal restrictions.

Refer to Figure 4 for a depiction of this alternative. The FAA reviewed the alternative to ensure it is safe (see Section 2.1, Alternatives Development). The FAA will evaluate the establishment of an operational plan in the area to enhance safety. As noted below, the pilot-in-command is always required to take action to ensure the safe operation of the aircraft.

### **2.6.1 Commercial Air Tours per Year**

Alternative 3 would authorize 3,657 commercial air tours per year within the ATMP planning area. Thus, it would authorize approximately 93% of the existing number of flights based on the three-year average of reporting data from 2017-2019 (see Table 2). The number of flights authorized per year was selected to avoid unacceptable impacts to the Park's cultural resources, the natural soundscape and acoustic environment, wildlife, and visitor experience as well as impacts to Wilderness character within the ATMP planning area.

The ATMP would be established and effective as of the date it is signed by all required signatories from both agencies. No later than 180 days after the effective date of the ATMP, the number of flights authorized each year would be proportionally allocated to the two operators that reported operations over the Park in the period from 2017-2019. Each operator's initial allocation would reflect the proportion of their average number of reported flights from 2017-2019 as compared to all operators that reported flying over the Park during this period. The initial allocation would remain in place until a competitive bidding process could occur.

All IOA for the Park would terminate by operation of law 180 days after the establishment (effective date) of the ATMP, 49 U.S.C. § 40128(c)(2)(E), after which time no operator could continue to rely on any Operations Specifications issued under IOA as authority to conduct commercial air tours within the ATMP planning area. Operations Specifications that incorporate the operating parameters set forth in the ATMP shall be issued within 180 days of the effective date of the ATMP.



Table 2. Initial Allocation of Air Tour Operations by Operator under Alternative 3.

<b>Air Tour Operator</b>	<b>3-year Reported Average No. of Air Tours (2017-2019)</b>	<b>Annual Operations</b>	<b>Number of Routes</b>
Dakota Rotors, LLC (Black Hills Aerial Adventures, Inc., and Rushmore Helicopters)	3,905	3,648	4
Eagle Aviation, Inc.	9	9	1
<b>TOTAL</b>	<b>3,914</b>	<b>3,657</b>	<b>5</b>

### 2.6.2 Commercial Air Tour Routes and Altitudes

Alternative 3 includes four routes for the helicopter operator (Dakota Rotors, LLC) and one route for the fixed-wing operator (Eagle Aviation, Inc.), all with varying distances and altitudes across the ATMP planning area (see Table 3). These five routes are consistent with what operators reported that they currently fly within the ATMP planning area.

Under Alternative 3, commercial air tours on routes Keystone 1, Keystone 2, Keystone 3/4/5, and Custer 4/5/6 would be conducted at the MSL altitude callouts on Figure 4 which range from 5,500 ft. to 7,000 ft. MSL and which result in a minimum altitude 900 ft. AGL. These altitudes would be required except when necessary for takeoff and landing from the privately owned and operated heliport on the boundary of the ATMP planning area, or as necessary for safe operation of an aircraft as determined under Federal Aviation Regulations requiring the pilot-in-command to take action to ensure the safe operation of the aircraft, or unless otherwise authorized for a specified purpose. Commercial air tours on route Eagle MRU would be conducted at a minimum altitude of 6,500 ft. MSL which results in minimum altitudes that range from 1,300 ft. to 2,100 ft. AGL. Refer to Figure 4 for details.

Under Alternative 3, no air tours could occur within the ATMP planning area, except air tours authorized on the designated routes and designated altitudes described above. Refer to Figure 4 for a depiction of the flight routes and altitudes. Because air tours outside of the ATMP planning area are not regulated by the ATMP, air tour routes outside of this area are difficult to predict with specificity. Operators could fly routes over the ATMP planning area at or above 5,000 ft. AGL, or outside the ATMP planning area similar to existing flight paths, or routes could vary greatly from those currently flown and would depend on operator preference and weather conditions at the time of the tour.

Table 3. Alternative 3 Operator Routes, Altitudes, and Aircraft Type and Operator.

Route Name	Altitude	Aircraft Type	Operator
Keystone 1	N/A	Helicopter	Dakota Rotors
Keystone 2	5,500 - 7,000 ft. MSL (900 ft. AGL)	Helicopter	Dakota Rotors
Keystone 3/4/5	5,500 - 7,000 ft. MSL (900 ft. AGL)	Helicopter	Dakota Rotors
Custer 4/5/6	5,500 - 7,000 ft. MSL (900 ft. AGL)	Helicopter	Dakota Rotors
Eagle MRU	6,500 ft. MSL (1,300 – 2,100 ft. AGL)	Fixed-wing	Eagle Aviation

### 2.6.3 Commercial Air Tour Aircraft Type

Each operator's aircraft types would reflect those reported in the period from 2017-2019 (see Table 1). Any new or replacement aircraft must not exceed the noise level produced by the aircraft being replaced. Operators would notify the FAA and the NPS in writing of any prospective new or replacement aircraft and obtain concurrence before initiating air tours with the new or replacement aircraft.

### 2.6.4 Commercial Air Tour Day/Time and Seasonal Restrictions

Flights would be permitted to operate one hour after sunrise until one hour before sunset, as defined by the National Oceanic and Atmospheric Administration (NOAA). Exceptions to these parameters for quiet technology aircraft are noted below. Sunrise and sunset data are available from the NOAA Solar Calculator.<sup>10</sup> Air tours would be permitted to occur between May 1 through September 30. This would mean that air tours would be allowed to occur on up to 153 total days each year. Air tours could occur any day of the week.

Additionally, to reduce the potential for disruptions to tribal ceremonies there would be designated days when no air tours would be permitted within the ATMP planning area. These days would be selected collaboratively through consultation with associated Tribal Nations.

### 2.6.5 Restrictions for Particular Events

In addition to the seasonal and time-of-day restrictions described above, the NPS would be able to establish temporary no-fly periods in one-hour increments that apply to commercial air tours for special events or planned Park management. Absent exigent circumstances or emergency operations, the NPS would provide a minimum of 30 days' notice to the operators in writing in advance of the no-fly period. Events may include naturalization ceremonies, wildlife surveys, tribal ceremonies, or other similar events.

<sup>10</sup> <https://www.esrl.noaa.gov/gmd/grad/solcalc/>

### 2.6.6 Additional Requirements

- Daily Caps: Alternative 3 would limit the number of commercial air tours within the ATMP planning area to no more than 25 tours per day across all operators and limit the number of tours each operator could conduct per day on the days when air tours are permitted. The operator-specific limits are based on the proportional number of reported total flights per year conducted by each of the two active operators compared to the total number of air tours reported from 2017-2019 and the operators' annual allocations. The maximum numbers of commercial air tours that could be conducted on a single day for each operator are as follows:
  - Dakota Rotors – 24
  - Eagle Aviation – 1
- Hovering/Circling: This alternative would prohibit hovering and circling because it could negatively impact visitors, cultural, and natural resources, including sensitive sites.
- Adaptive Management: Adaptive management is a systematic approach for improving resource management and ensuring the continued effectiveness of the ATMP over time through the monitoring of Park conditions and by learning from management actions or choices. Adaptive management is also used to address changed conditions such as if the breeding habitat of a sensitive species moves to a new area. Adaptive management of the route, frequency, and timing will be considered, analyzed, and included in this alternative for the protection of species and habitat shifts over time due to climate change, Wilderness, and cultural resource condition, and visitor experience impacted by air tours. The NPS would conduct monitoring to ensure that the terms and conditions of the ATMP remain consistent with Park management objectives. The FAA and the NPS will provide additional information for interested parties about the notice and process for adaptive management changes.
- Interpretive Training and Education: When made available by Park staff, the NPS would provide mandatory training for air tour pilots regarding Park resources. Such trainings would occur no more than once per year. The training would include the Park information that operators could use to further their own understanding of Park priorities and management objectives as well as enhance the interpretive narrative for air tour clients and increase understanding of the Park by air tour clients.
- Annual Meeting: At the request of either agency, the Park staff, the local FAA FSDO, and all operators would be required to meet once per year to discuss the implementation of the ATMP and any amendments or other changes to the ATMP.
- Monitoring and Enforcement: Operators would be required to equip all aircraft used for air tours with flight monitoring technology, to use flight monitoring technology during all air tours under the ATMP, and to report flight monitoring data as an

attachment to the operator's semi-annual reports. FAA determination of noncompliance may result in loss of authorization to conduct commercial air tours authorized by the ATMP. Any violation of operations specifications shall be treated in accordance with FAA Order 2150.3, *FAA Compliance and Enforcement Program*.

- **Bird Aircraft Strike Reporting:** Operators would report all bird strikes that occur during commercial air tours within the ATMP planning area per FAA Advisory Circular 150/5200-32B, Reporting Wildlife Aircraft Strikes, using OMB approved form No. 2120-0045, and include these reports in their semi-annual reports.

#### **2.6.7 Quiet Technology Incentives**

The Act requires that the ATMP include incentives for the adoption of quiet technology by commercial air tour operators. This alternative incentivizes the use of quiet technology aircraft by relaxing time-of-day restrictions to allow quiet technology aircraft to fly beginning at sunrise or ending at sunset on all days that flights are authorized.

#### **2.6.8 Initial Allocation and Competitive Bidding**

The Act states whenever an ATMP limits the number of commercial air tour operations during a specified time frame, a competitive bidding process must occur pursuant to the criteria set forth in 49 U.S.C. § 40128(a)(2)(B). Since the number of flights would be limited under Alternative 3, competitive bidding would be required. Initially, commercial air tour operators would be allocated a certain number of commercial air tours within the ATMP planning area, referred to as the initial allocation as described in Section 2.6.1, Commercial Air Tours per Year, until a competitive bidding process can be conducted. Based on the proportional number of reported total flights per year for each of the two operators from 2017-2019, the air tours would be allocated among the two air tour operators who have conducted air tours over the Park since 2017 as follows:

- Dakota Rotors – 3,648
- Eagle Aviation – 9

Competitive bidding may also be appropriate to address, for example, a new entrant application; a request by an existing operator for authority to conduct additional air tours per year; or consideration by the agencies of Park-specific resources, impacts, or safety concerns. The Act directs the agencies to consider various factors during the competitive bidding process including known resource issues, reporting, and compliance concerns. Competitive bidding may necessitate an amendment to the ATMP, additional environmental review, and/or the issuance of new or amended operations specifications. If operations specifications are required, they would be issued by the FAA.

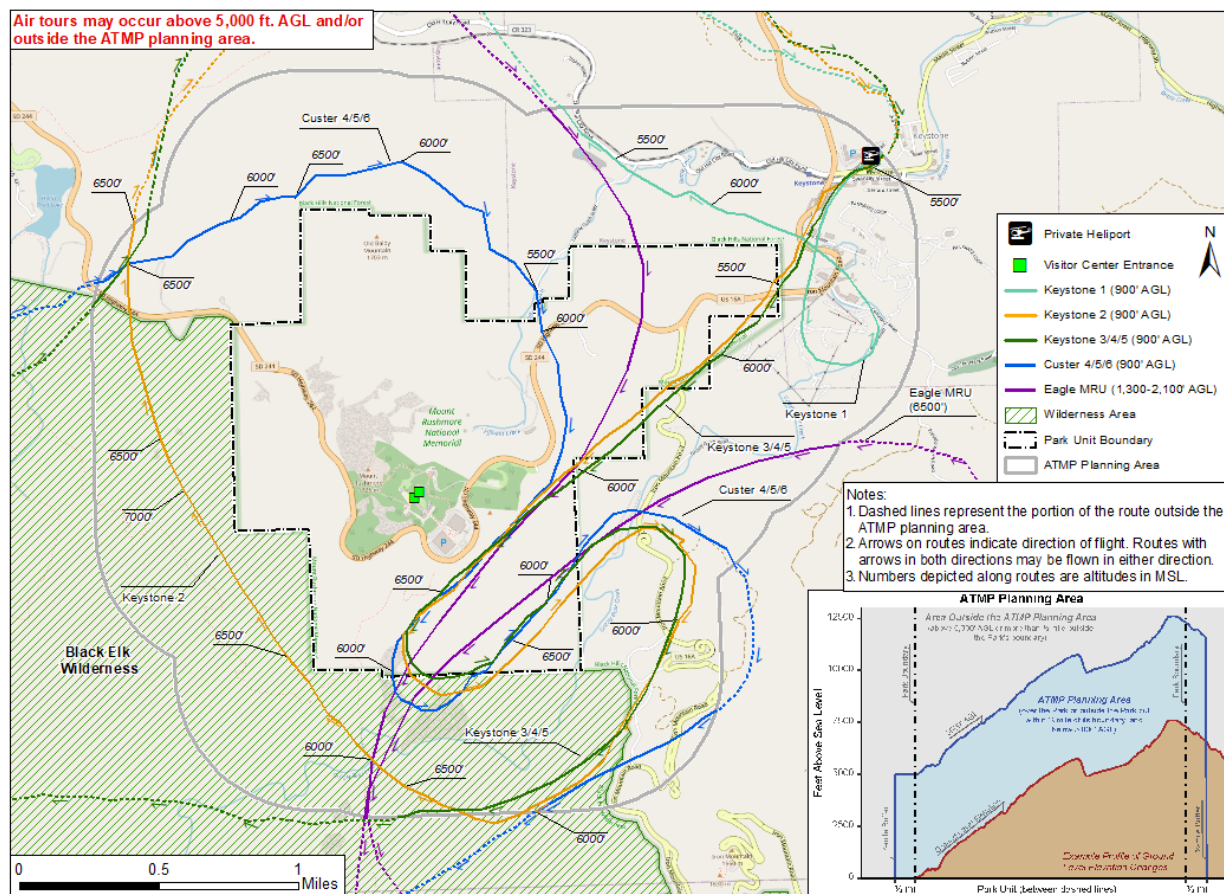


Figure 4. Alternative 3 and Alternative 4.

## 2.7 Alternative 4

The NPS developed Alternative 4 to provide opportunities for air tours to occur within the ATMP planning area, with mitigations to avoid or minimize impacts to natural and cultural resources and visitor experience. Compared to Alternative 3, Alternative 4 would further restrict and reduce the number of air tour operations within the ATMP planning area to further minimize impacts on nesting birds and bighorn sheep lamb rearing. Primarily, the conditions in this alternative include annual and daily caps, designated routes, time-of-day restrictions, required minimum altitudes, and seasonal restrictions.

Refer to Figure 4 for a depiction of this alternative. The FAA reviewed the alternative to ensure it is safe (see Section 2.1, Alternatives Development). The FAA will evaluate the establishment of an operational plan in the area to enhance safety. As noted below, the pilot-in-command is always required to take action to ensure the safe operation of the aircraft.

### 2.7.1 Commercial Air Tours per Year

Alternative 4 would authorize 751 commercial air tours per year within the ATMP planning area. Thus, it would authorize 19% of the existing number of flights based on the three-year average of reporting data from 2017-2019 (see Table 4). The number of flights authorized per

year was selected to further reduce impacts to Wilderness character, cultural resources, natural soundscape and acoustic environment, wildlife, and visitor experience.

The ATMP would be established and effective as of the date it is signed by all required signatories from both agencies. No later than 180 days after the effective date of the ATMP, the number of flights authorized each year would be proportionally allocated to each of the two operators that reported operations over the Park in the period from 2017-2019. Each operator's initial allocation would reflect the proportion of their average number of reported flights from 2017-2019 as compared to all operators that reported flying over the Park during this period. The initial allocation would remain in place until a competitive bidding process could occur.

All IOA for the Park would terminate by operation of law 180 days after the establishment (effective date) of the ATMP, 49 U.S.C. § 40128(c)(2)(E), after which time no operator could continue to rely on any Operations Specifications issued under IOA as authority to conduct commercial air tours within the ATMP planning area. Operations Specifications that incorporate the operating parameters set forth in the ATMP would be issued within 180 days of the effective date of the ATMP.

*Table 4. Initial Allocation of Air Tour Operations by Operator Under Alternative 4.*

<b>Air Tour Operator</b>	<b>3-year Reported Average No. of Air Tours (2017-2019)</b>	<b>Annual Operations</b>	<b>Number of Routes</b>
Dakota Rotors, LLC (Black Hills Aerial Adventures, Inc., and Rushmore Helicopters)	3,905	742	4
Eagle Aviation, Inc.	9	9	1
<b>TOTAL</b>	<b>3,914</b>	<b>751</b>	<b>5</b>

## 2.7.2 Commercial Air Tour Routes and Altitudes

Alternative 4 includes routes for the helicopter operator (Dakota Rotors, LLC) and one route for the fixed-wing operator (Eagle Aviation, Inc.), all with varying distance and altitudes across the ATMP planning area (see Table 5). These five routes are consistent with what the operators currently fly within the ATMP planning area.

Under Alternative 4, commercial air tours on routes Keystone 1, Keystone 2, Keystone 3/4/5, and Custer 4/5/6 would be conducted at the MSL altitude callouts on Figure 4 which range from 5,500 ft. to 7,000 ft. MSL and which result in a minimum altitude 900 ft. AGL. These altitudes would be required except when necessary for takeoff and landing from the privately owned and operated heliport on the boundary of the ATMP planning area, or as necessary for safe

operation of an aircraft as determined under Federal Aviation Regulations requiring the pilot-in-command to take action to ensure the safe operation of the aircraft, or unless otherwise authorized for a specified purpose. Commercial air tours on route Eagle MRU would be conducted at a minimum altitude of 6,500 ft. MSL which results in minimum altitudes that range from 1,300 ft. to 2,100 ft. AGL. Refer to Figure 4 for details.

Under Alternative 4, no air tours could occur within the ATMP planning area, except air tours authorized on the designated routes at the designated altitudes described above. Refer to Figure 4 for a depiction of the flight routes and altitudes. Because air tours outside of the ATMP planning area are not regulated by the ATMP, air tour routes outside of this area are difficult to predict with specificity. Operators could fly routes over the ATMP planning area at or above 5,000 ft. AGL, or outside the ATMP planning area similar to existing flight paths, or routes could vary greatly from those currently flown and would depend on operator preference and weather conditions at the time of the tour.

*Table 5. Alternative 4 Operator Routes, Altitudes, and Aircraft Type and Operator.*

Route Name	Altitude	Aircraft Type	Operator
Keystone 1	N/A	Helicopter	Dakota Rotors
Keystone 2	5,500 - 7,000 ft. MSL (900 ft. AGL)	Helicopter	Dakota Rotors
Keystone 3/4/5	5,500 - 7,000 ft. MSL (900 ft. AGL)	Helicopter	Dakota Rotors
Custer 4/5/6	5,500 - 7,000 ft. MSL (900 ft. AGL)	Helicopter	Dakota Rotors
Eagle MRU	6,500 ft. MSL (1,300 – 2,100 ft. AGL)	Fixed-wing	Eagle Aviation

### 2.7.3 Commercial Air Tour Aircraft Type

Each operator's aircraft types would reflect those reported in the period from 2017-2019 (see Table 4). Any new or replacement aircraft must not exceed the noise level produced by the aircraft being replaced. Operators would notify the FAA and the NPS in writing of any prospective new or replacement aircraft and obtain concurrence before initiating air tours with the new or replacement aircraft.

### 2.7.4 Commercial Air Tour Day/Time and Seasonal Restrictions

Flights would be permitted between the hours of 9:00 AM – 5:00 PM local time. Exceptions to these parameters for quiet technology aircraft are noted below. Air tours would be permitted to occur between June 16 through September 30. This would mean that air tours would be allowed to occur on up to 107 total days each year. Air tours could occur any day of the week.

Additionally, to reduce the potential for disruptions to tribal ceremonies there would be designated days when no air tours would be permitted within the ATMP planning area. These days would be selected collaboratively through consultation with associated Tribal Nations.

### **2.7.5 Restrictions for Particular Events**

In addition to the seasonal and time-of-day restrictions described above, the NPS would be able to establish temporary no-fly periods in one-hour increments that apply to commercial air tours for special events or planned Park management. Absent exigent circumstances or emergency operations, the NPS would provide a minimum of 30 days' notice to the operators in writing in advance of the no-fly period. Events may include naturalization ceremonies, wildlife surveys, tribal ceremonies, or other similar events.

### **2.7.6 Additional Requirements**

- Daily Caps: Alternative 4 would limit the number of commercial air tours within the ATMP planning area to no more than eight tours per day across all operators and limit the number of tours each operator could conduct on the days where air tours are permitted. The operator-specific limits are based on the proportional number of reported total flights per year conducted by each of the two active operators compared to the total number of air tours reported from 2017-2019 and the operators' annual allocations. The maximum numbers of commercial air tours that could be conducted on a single day for each operator are as follows:
  - Dakota Rotors – 7
  - Eagle Aviation – 1
- Hovering/Circling: This alternative would prohibit hovering and circling because it could negatively impact visitors, cultural, and natural resources, including sensitive sites.
- Adaptive Management: Adaptive management is a systematic approach for improving resource management and ensuring the continued effectiveness of the ATMP over time through the monitoring of Park conditions and by learning from management actions or choices. Adaptive management is also used to address changed conditions such as if the breeding habitat of a sensitive species moves to a new area. Adaptive management of the route, frequency, and timing will be considered, analyzed, and included in this alternative for the protection of species and habitat shifts over time due to climate change, Wilderness, and cultural resource condition, and visitor experience impacted by air tours. The NPS would conduct monitoring to ensure that the terms and conditions of the ATMP remain consistent with Park management objectives. The FAA and the NPS will provide additional information for interested parties about the notice and process for adaptive management changes.
- Interpretive Training and Education: When made available by Park staff, the NPS would provide mandatory training for air tour pilots regarding Park resources. Such trainings would occur no more than once per year. The training would include the Park information that operators could use to further their own understanding of Park



priorities and management objectives as well as enhance the interpretive narrative for air tour clients and increase understanding of the Park by air tour clients.

- Annual Meeting: At the request of either agency, the Park staff, the local FAA FSDO, and all operators would be required to meet once per year to discuss the implementation of the ATMP and any amendments or other changes to the ATMP.
- Monitoring and Enforcement: Operators would be required to equip all aircraft used for air tours with flight monitoring technology, to use flight monitoring technology during all air tours under the ATMP, and to report flight monitoring data as an attachment to the operator's semi-annual reports. FAA determination of noncompliance may result in loss of authorization to conduct commercial air tours authorized by the ATMP. Any violation of operations specifications shall be treated in accordance with FAA Order 2150.3, *FAA Compliance and Enforcement Program*.
- Bird Aircraft Strike Reporting: Operators would report all bird strikes that occur during commercial air tours within the ATMP planning area per FAA Advisory Circular 150/5200-32B, Reporting Wildlife Aircraft Strikes, using OMB approved form No. 2120-0045, and include these reports in their semi-annual reports.

#### **2.7.7 Quiet Technology Incentives**

The Act requires that the ATMP include incentives for the adoption of quiet technology by commercial air tour operators. This alternative incentivizes the use of quiet technology aircraft by relaxing time-of-day restrictions to allow quiet technology aircraft to fly beginning at sunrise or ending at sunset on all days that flights are authorized.

#### **2.7.8 Initial Allocation of Air Tours and Competitive Bidding**

The Act states whenever an ATMP limits the number of commercial air tour operations during a specified time frame, a competitive bidding process must occur pursuant to the criteria set forth in 49 U.S.C. § 40128(a)(2)(B). Since the number of flights would be limited under Alternative 3, competitive bidding would be required. Initially, commercial air tour operators would be allocated a certain number of commercial air tours within the ATMP planning area, referred to as the initial allocation as described in Section 2.6.1, Commercial Air Tours per Year, until a competitive bidding process can be conducted. Based on the proportional number of reported total flights per year for each of the two operators from 2017-2019, the air tours would be allocated among the two air tour operators who have conducted air tours over the Park since 2017 as follows:

- Badger Helicopters – 742
- Eagle Aviation – 9

Competitive bidding may also be appropriate to address, for example, a new entrant application; a request by an existing operator for authority to conduct additional air tours per year; or consideration by the agencies of Park-specific resources, impacts, or safety concerns. The Act directs the agencies to consider various factors during the competitive bidding process

including known resource issues, reporting, and compliance concerns. Competitive bidding may necessitate an amendment to the ATMP, additional environmental review, and/or the issuance of new or amended operations specifications. If operations specifications are required, they would be issued by the FAA.

## 2.8 Summary Comparison of the ATMP Alternatives

Table 6. Summary Comparison of the ATMP Alternatives.

Alternative Attributes	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
General Description and Objectives	Allows a continuation of air tours without implementation of an ATMP or voluntary agreement. Does not meet the purpose and need for the ATMP.	Prohibits air tours within the ATMP planning area to maximize Park resource protection. Air tours could continue to fly outside the ATMP planning area (i.e., at or above 5,000 ft. AGL or more than ½-mile outside of the Park's boundary).	Restricts air tour operations within the ATMP planning area to reduce impacts on nesting birds and bighorn sheep lamb rearing. Primarily, the conditions in this alternative include annual and daily caps, designated routes, required minimal altitudes, and no-fly periods for tribal ceremonies or special events.	Restricts and reduces air tour operations within the ATMP planning area to minimize impacts on nesting birds and bighorn sheep lamb rearing. Primarily, the conditions in this alternative include annual and daily caps, designated routes, required minimal altitudes, and no-fly periods for tribal ceremonies or special events.
Annual/Daily Number of Flights	Considers the three – year average of 3,914 flights per year (based on 2017-2019 reporting) as the existing condition.	None in ATMP planning area.	Authorizes 3,657 flights per year.  Daily limit of 25 flights per day on those days where flights are allowed.	Authorizes 751 flights per year.  Daily limit of eight flights per day on those days where flights are allowed.
Routes	No mandatory routes or no-fly zones. See Figure 2 for depiction of reported routes and actual operations.	None in ATMP planning area. Operators may continue to fly to points of interest in the area outside of the ATMP planning area where they already fly, fly around the ATMP planning area similar to existing flights, or above the ATMP planning area (above 5,000 ft. AGL).	Four routes for the helicopter operator and one route for the fixed-wing operator all with varying distances and altitudes.	Same as Alternative 3.

Alternative Attributes	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
Minimum Altitudes	No mandatory minimum altitudes. See map for depiction of reported operations. Flights range from 6,000 ft. MSL (900 ft. AGL) to 6,500 ft. MSL (1,400 ft. AGL).	No minimum altitude would be set. However, air tours above the ATMP planning area (at or above 5,000 ft. AGL) could occur. Air tours outside of the ATMP planning area (more than ½-mile outside the Park boundary) could also continue to occur.	Minimum 6,000 ft. MSL (900 ft. AGL) for helicopter aircraft, and minimum 6,500 ft. MSL (1,400 ft. AGL) for fixed-wing aircraft.	Same as Alternative 3.
Time of Day	No restrictions.	N/A	On days where air tours are permitted, non-quiet technology tours may operate from one hour after sunrise until one hour before sunset.	On days where air tours are permitted, non-quiet technology tours may operate from 9:00 AM to 5:00 PM local time.
Day of Week	No restrictions.	N/A	Air tours may operate any day of the week.	Same as Alternative 3.
Seasonal Restrictions	No restrictions.	N/A	Air tours would be permitted from May 1 through September 30 (153 total days each year).  NPS may designate no fly periods or no fly days in consultation with Tribal Nations.	Air tours would be permitted from June 16 through September 30 (107 total days each year).  NPS may designate no fly periods or no fly days in consultation with Tribal Nations.
Hovering/Circling	No restrictions.	N/A	Not Permitted.	Same as Alternative 3.
Quiet Technology Incentives	None.	N/A	Quiet technology flights may fly from sunrise until sunset.	Same as Alternative 3.
Interpretive Training and Education	None.	N/A	When made available by Park staff, the NPS would provide mandatory training for air tour pilots regarding Park resources.	Same as Alternative 3.
Annual Meeting	None.	N/A	At the request of either agency, the Park staff, the local FAA FSDO, and all operators would be	Same as Alternative 3.

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Alternative Attributes	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
			required to meet once per year.	
Restrictions for Particular Events	None.	N/A	The NPS can establish temporary no-fly periods and must provide 30 days' notice to operators of the no-fly periods. Events may include tribal ceremonies or other similar events.	Same as Alternative 3.
Adaptive Management	None.	N/A	Adaptive management actions may be taken as long as their impacts are within the impacts already analyzed by the agencies.	Same as Alternative 3.
Operators, Initial Allocation of Air Tours, and Aircraft Types	Reflects existing conditions of two operators with reported data from 2017-2019.	The establishment of the ATMP would result in the termination of IOA for the operators	<p>Dakota Rotors: 3,648 flights annually; BHT-206B, BHT-47- G3B1, R-44-II, R-66- 66</p> <p>Eagle Aviation: Nine flights annually; Cessna 172, Cessna 206</p> <p>Competitive bidding would occur and could change air tour allocations.</p> <p>The establishment of the ATMP would result in the termination of IOA for the operators.</p>	<p>Dakota Rotors: 742 flights annually; BHT-206B, BHT-47-G3B1, R-44-II, R-66- 66</p> <p>Eagle Aviation: Nine flights annually; Cessna 172, Cessna 206</p> <p>Competitive bidding would occur and could change air tour allocations.</p> <p>The establishment of the ATMP would result in the termination of IOA for the operators.</p>

### **3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

This chapter includes a description of the current condition of each environmental impact category and the existing environmental setting for each category. This chapter also includes the environmental consequences of the alternatives and evaluates how the direct, indirect, and cumulative impacts on those environmental impact categories may change by implementing the No Action Alternative or an action alternative. The analysis methodology for assessing impacts for each environmental impact category is in Appendix E, *Environmental Impact Analysis Methods*.

As described in Section 1.1, Introduction, under the Act and its implementing regulations, an ATMP regulates commercial air tours over a national park or within ½-mile outside the park's boundary during which the aircraft flies below 5,000 ft. AGL (ATMP planning area). Air tours outside of the ATMP planning area are not regulated under the ATMP. Unless otherwise noted, the study area, referred to as the ATMP planning area, for each environmental impact category includes the Park and areas outside the Park within ½-mile of its boundary. Environmental impact categories (Cultural Resources, Wilderness, Environmental Justice and Socioeconomics, Visual Effects, and Department of Transportation (DOT) Act Section 4(f) Resources) that considered a study area different from the ATMP planning area are noted as such in the respective resource section.

This draft EA analyzes the following environmental impact categories in detail: Noise and Noise-Compatible Land Use; Air Quality and Climate Change; Biological Resources; Cultural Resources; Wilderness; Visitor Use and Experience and Other Recreational Opportunities; Environmental Justice and Socioeconomics; Visual Effects; and DOT Act Section 4(f) Resources. The FAA, in cooperation with the NPS, considered the impact categories specified in FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* (FAA, 2015) and NPS Director's Order #12 Conservation Planning, Environmental Impact Analysis, and Decision-making, and other categories identified during the agency and public scoping process. See Section 1.5, Environmental Impact Categories Not Analyzed in Detail.

#### **3.1 Noise and Noise-Compatible Land Use**

FAA Order 1050.1F, Appendix B, paragraph B-1.3, Affected Environment, requires the FAA to identify the location and number of noise sensitive uses in addition to residences such as schools, hospitals, parks, and other recreation areas, that could be significantly impacted by noise. As defined in Paragraph 11-5.b(10) of FAA Order 1050.1F, a noise sensitive area is "[a]n area where noise interferes with normal activities associated with its use. Normally, noise sensitive areas include residential, educational, health, and religious structures and sites, and parks, recreational areas, areas with Wilderness characteristics, wildlife refuges, and cultural and historical sites." Noise sensitive areas within the ATMP planning area include the Park, cultural resources discussed in Section 3.4, Cultural Resources, parks and recreational areas

discussed in Section 3.9, Department of Transportation (DOT) Act Section 4(f) Resources, as well as residential areas outside of the Park boundary but within the ½ mile buffer.

Section 4.9, Soundscape Management, of NPS Management Policies (2006) directs the NPS to preserve the Park's natural soundscape and acoustic environment which refer to the combination of all the natural sounds occurring within the Park, absent the human-caused sounds, as well as the physical capacity for transmitting those natural sounds and the interrelationships among Park natural sounds of different frequencies and volumes. This management policy directs the NPS to preserve soundscapes and the acoustic environment to the greatest extent possible and restore these resources to their natural condition wherever they have become degraded by noise and unwanted sounds. The NPS defines the acoustic environment as the aggregate of all sounds within an area; it is the total acoustic environment in the Park. The soundscape is the human perception of the acoustic environment. In a national park setting, the soundscape can be composed of both natural ambient sound and a variety of human-made sounds.

### **3.1.1 Affected Environment**

The NPS defines acoustic resources as physical sound sources, including both natural sounds (wind, water, wildlife, vegetation) and cultural and historic sounds (battle reenactments, tribal ceremonies, quiet reverence) (NPS, 2006). The acoustic environment includes both natural and human generated sounds and the physical capacity for transmitting those natural sounds and the interrelationships among Park natural sounds. Within the Park, natural sounds are considered part of the biological or other physical resource components. Examples of natural sounds include:

- Sounds produced by birds, chipmunks, frogs, mountain lions, mountain goats, and bighorn sheep to define territories or aid in attracting mates;
- Sounds produced by bats to locate prey or navigate;
- Sounds received by mice or deer to detect and avoid predators or other danger; and
- Sounds produced by physical processes, such as wind in the trees, claps of thunder, or falling water.

One of the natural resources of the Park is the natural soundscape, also referred to as the natural ambient or "natural quiet." The natural ambient includes all naturally-occurring sounds, as well as the quiet associated with still nights and certain seasons. It excludes all mechanical, electrical and other human-caused sounds. An important part of the mission of the NPS is to preserve or restore the natural soundscapes associated with units of the National Park System (NPS, 2006).

The term existing ambient refers to the sound level of all sounds in a given area, and includes all natural sounds as well as all mechanical, electrical, and other human-caused sounds. Human-generated noise sources may include wheeled vehicles on roads, such as passenger vehicles and tour buses, and cyclists, and aircraft overflights consisting of high-altitude commercial jet aircraft, NPS flights for research or other purposes, commercial air tour operations, and private general aviation aircraft. On the ground, human-generated noise within the Park is typically concentrated in areas of high visitor use, such as the amphitheater and Highway 244.

To characterize the natural and existing ambient (both with and without air tours), detailed sound level measurements were conducted at two locations across the Park in 2003 (Lee et al., 2016). From the detailed data collected in 2003, an ambient “map” of the natural soundscape of the ATMP planning area was developed to be used in computer modeling (Figure 5). For more explanation for how sound is described, see the *Noise Technical Analysis* (Appendix F, Table 1). These acoustic sampling locations were chosen to be representative of the natural ecological zones or broad ecosystems of the Park and ATMP planning area. These locations were not chosen to specifically measure the amount of air tour noise. The median or  $L_{50}$  sound level (in decibels) is the sound level exceeded 50 percent of the daytime hours. Median daytime natural ambient ( $L_{50}$ ) sound levels<sup>11</sup> measured 34 decibels in both the Park Development Zone and the Historic Zone. Median existing ambient ( $L_{50}$ ) sound levels measured 48.2 decibels in the Park Development Zone and 40 decibels in the Historic Zone (Lee et al., 2016). Table 3 in the *Noise Technical Analysis* (Appendix F) contains additional breakdown of the ambient sound level data by zone.

Additional acoustic monitoring was conducted by the NPS in 2007 and 2012. The 2007 study was intended to record current conditions at a backcountry location in the Park. The natural ambient sound level at this location was approximately 22 dBA. The purpose of the 2012 study was to characterize existing sound levels during a time of unusually high Park visitation.

The contribution of aircraft noise during sound level measurements only provides a snapshot in time at a particular location and is not necessarily a representative characterization of current conditions. Current conditions were determined by adding the noise exposure due to air tours ( $L_{Aeq, 12h}$ ), based on a peak month average day and modeled using the FAA AEDT Version 3e, to

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<sup>11</sup> Natural Ambient ( $L_{50}$ ): The sound level exceeded 50 percent of the time determined from the natural sound conditions found in a study area, including all sounds of nature (i.e., wind, streams, wildlife, etc.), and excluding all human and mechanical sounds. Ambient data were based on a 12-hour, daytime, time period, 7:00 AM to 7:00 PM, typical operating hours for air tours.

the Existing Ambient without Air Tours ( $L_{50}$ )<sup>12</sup> (see Appendix F, *Noise Technical Analysis*). The result of this process is the Cumulative Existing Ambient, Figure 6.

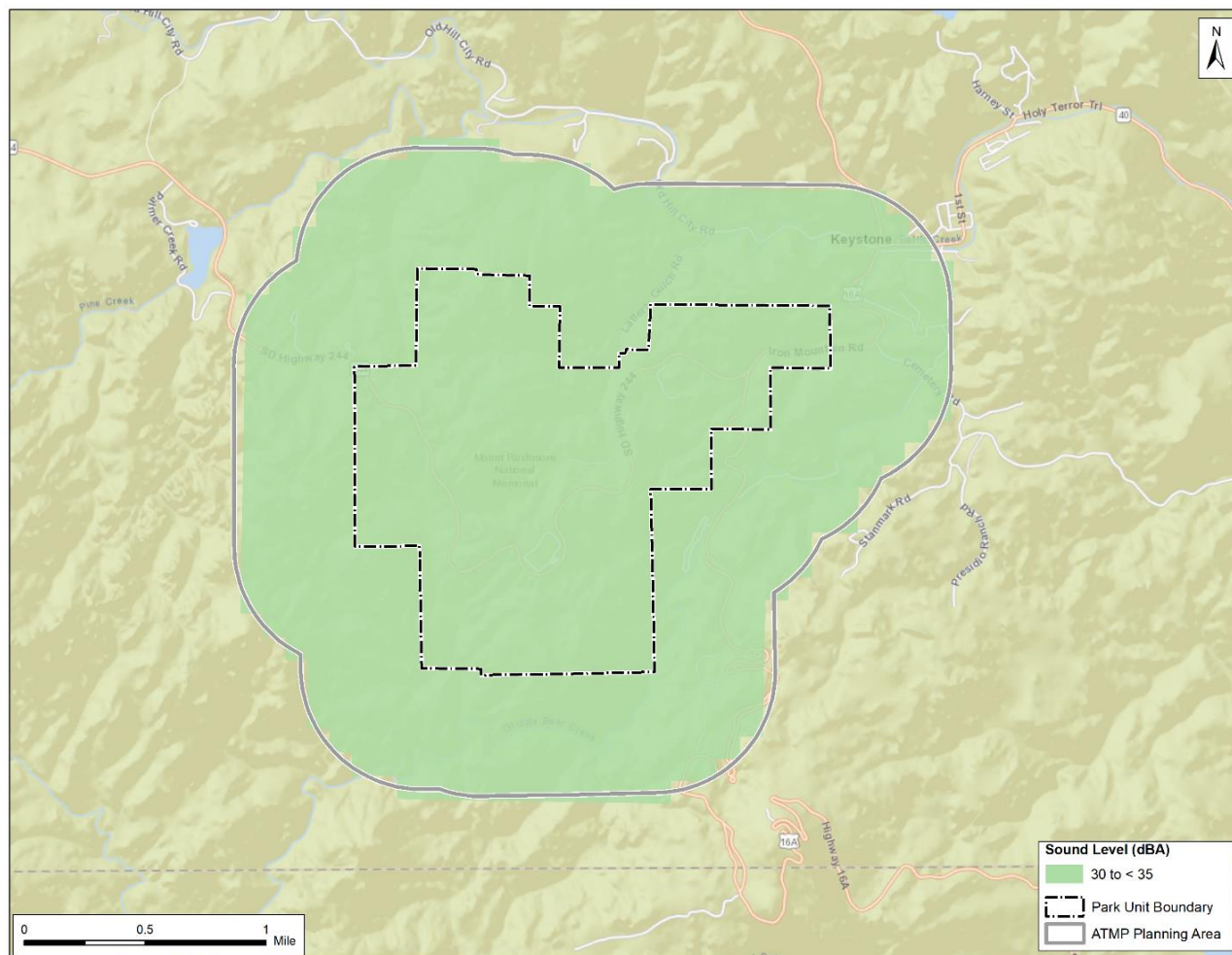


Figure 5. Natural Ambient  $L_{50}$ .

<sup>12</sup> The Existing Ambient without Air Tours ( $L_{50}$ ) is defined as the composite, all-inclusive sound associated with a given environment, excluding the sound source of interest, in this case, commercial air tour aircraft. It does include all other human-caused sound sources that were audible at the measurement site; hikers, visitor centers, commercial jets, general aviation aircraft, military aircraft, and administrative aircraft operations. Ambient data were based on a 12-hour, daytime, time period, 7:00 AM to 7:00 PM, typical operating hours for air tours.



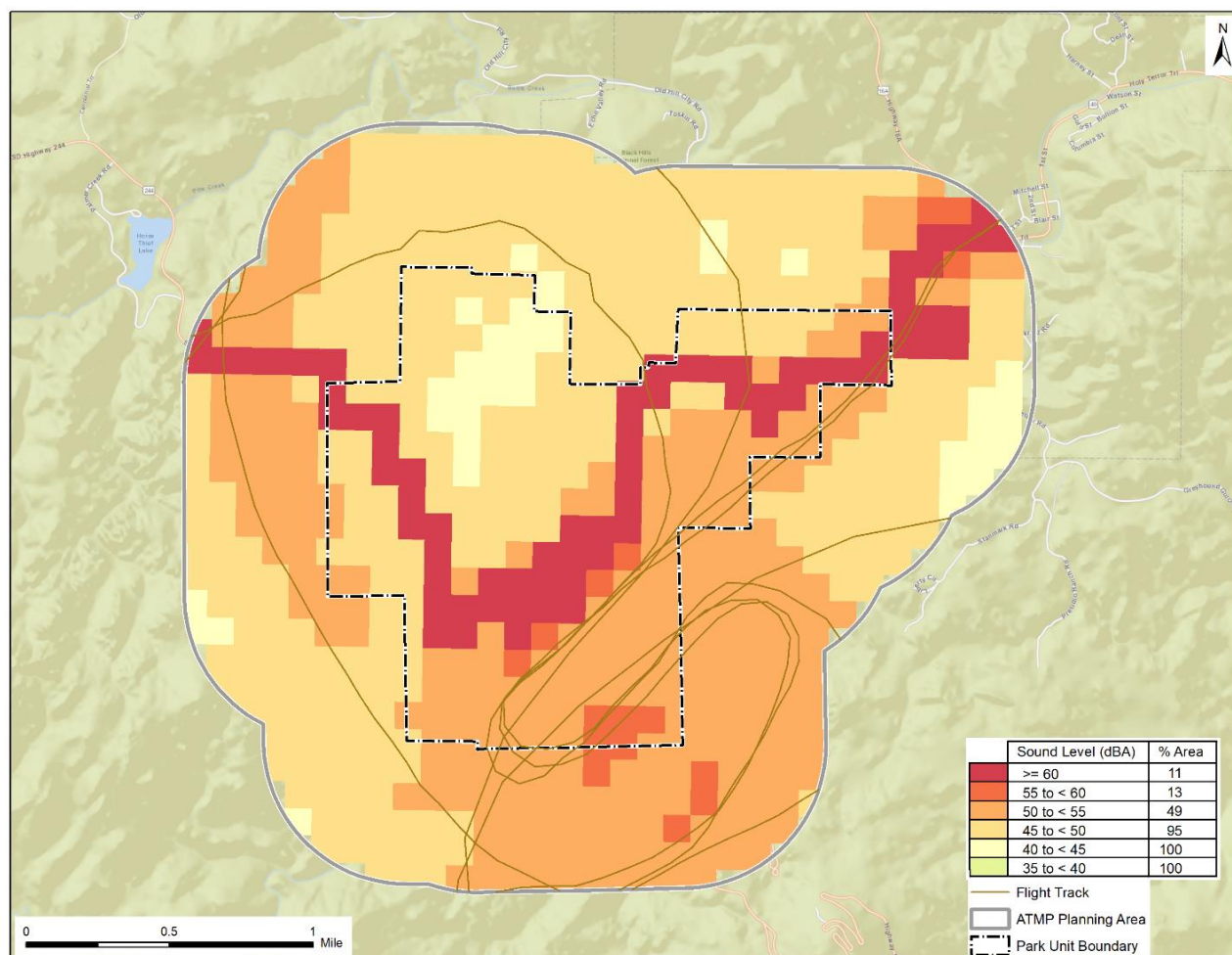


Figure 6. 12-hour Cumulative Existing Ambient Sound Level (Daytime) for Current Conditions.

### 3.1.2 Environmental Consequences

There are numerous ways to measure the potential impacts of noise from commercial air tours on the acoustic environment, including intensity, duration, and spatial footprint of the noise. The affected environment and impact analysis uses noise metrics consistent with both FAA and NPS noise guidance. The FAA's primary noise metric established in FAA Order 1050.1F is the yearly day-night average sound level (DNL, denoted by the symbol  $L_{dn}$ ) metric; the cumulative noise energy exposure from aircraft over 24 hours. The NPS considers various metrics to analyze impacts to Park resources and values from noise, including equivalent continuous sound level ( $L_{Aeq}$ ), time audible (the amount of time you can hear air tour aircraft noise), the amount of time that the noise from a commercial air tour operation would be above specific sound levels that relate to different Park management objectives (e.g., 35 dBA and 52 dBA), and maximum sound level ( $L_{max}$ ). These metrics are discussed further in Table 7; a comparison of the sound levels noted in Table 7 to values for a range of everyday sounds can be found in Figure 1 of the *Noise Technical Analysis* (Appendix F).

Table 7. Primary Metrics Used for the Noise Analysis.

Metric	Relevance and Citation
Equivalent sound level, $L_{Aeq, 12\text{ hr}}$	The logarithmic average of commercial air tour sound levels, in dBA, over a 12-hour day. The selected 12-hour period is 7:00 AM to 7:00 PM to represent typical daytime commercial air tour operating hours.
Day-night average sound level, $L_{dn}$ (or DNL)	<p>The logarithmic average of sound levels, in dBA, over a 24-hour day, DNL takes into account the increased sensitivity to noise at night by including a 10 dB penalty on noise events occurring between 10:00 PM and 7:00 AM local time.</p> <p>Note: Both <math>L_{Aeq, 12\text{ hr}}</math> and DNL characterize:</p> <ul style="list-style-type: none"> <li>• Increases in both the loudness and duration of noise events</li> <li>• The number of noise events during specific time period (12-hours for <math>L_{Aeq, 12\text{ hr}}</math> and 24-hours for DNL)</li> </ul> <p>If there are no nighttime events, then <math>L_{Aeq, 12\text{ hr}}</math> is arithmetically three dBA higher than DNL, as noise is averaged over a 24-hour, rather than a 12-hour, time period and none of the events include the 10 dB penalty.</p> <p>The FAA's (2015, Exhibit 4-1) indicators of significant impacts are for an action that would increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe.</p>
Time Audible Natural Ambient	<p>The total time (in minutes) that aircraft noise levels are audible to an attentive listener with normal hearing under natural ambient conditions.</p> <p>The natural ambient is the sound level exceeded 50 percent of the time <math>L_{50}</math>, determined from the natural sound conditions found in a ATMP planning area, including all sounds of nature (i.e., wind, streams, wildlife, etc.), and excluding all human and mechanical sounds. Time audible does not indicate how loud the event is, only if it might be heard.</p>
Time Above 35 dBA	<p>The amount of time (in minutes) that aircraft sound levels are above a given threshold (i.e., 35 dBA).</p> <p>In quiet settings, outdoor sound levels exceeding this level degrade experience in outdoor performance venues (American National Standards Institute (ANSI), 2007); blood pressure increases in sleeping humans</p>

	(Haralabidis et al., 2008); maximum background noise level inside classrooms (ANSI/Acoustical Society of America S12.60/Part 1-2010, 2007).
Time Above 52 dBA	<p>The amount of time (in minutes) that aircraft sound levels are above a given threshold (i.e., 52 dBA).</p> <p>At this background sound level, normal voice communication at five meters (two people five meters apart), or a raised voice to an audience at ten meters would result in 95% sentence intelligibility (U.S. Environmental Protection Agency, Office of Noise Abatement and Control, 1974). This metric represents the level at which one may reasonably expect interference with park interpretive programs, activities that require communication from a distance and other general visitor communication.</p>
Maximum sound level, $L_{max}$	The loudest sound level, in dBA, generated by the loudest event; it is event-based and is independent of the number of operations. $L_{max}$ does not provide any context of frequency, duration, or timing of exposure.

Acoustic metrics were modeled using the FAA's AEDT, Version 3e and results are described below for each alternative. The *Noise Technical Analysis* in Appendix F contains figures and tables showing the detailed noise results for two types of analyses: 1) contour analysis and 2) representative location point analysis. A noise contour presents a graphical illustration or "footprint" of the area potentially affected by the noise. Location point results present the metric results at specific points of interest.

The FAA's AEDT, Version 3e (Lee et al., 2022) is the FAA-approved computer program for modeling noise under Appendix A of FAA's Part 150 Airport Noise Compatibility Planning (14 CFR Part A150.103(a)). Requirements for aircraft noise modeling are defined in FAA Order 1050.1F, Environmental Impacts: Policies and Procedures, and in Federal Aviation Regulations 14 CFR Part 150, Airport Noise Compatibility Planning.

The noise model requires detailed information regarding the aircraft source, operational, and flight route information (obtained from the air tour operators), as well as other information<sup>13</sup> to compute various noise metrics that can be used to assess the potential impacts of noise from commercial air tours on the acoustic environment of a park.

<sup>13</sup> The noise model accounts for a number of effects over the propagation path between the aircraft source and receptor. Attenuation due to line-of-sight blockage from terrain features is computed utilizing terrain data obtained from the U.S. Geological Survey along with algorithms documented in Society of Automotive Engineers (SAE) Aerospace Information Report 6501. Atmospheric absorption is based on the 2012-2021 average temperature of 76 degrees Fahrenheit and 71% relative humidity and computed according to SAE-ARP-5534.

The tour aircraft types identified for modeling are the Robinson R-44 and Cessna 206 aircraft. The flight routes used for modeling the alternatives are shown in Figure 7.

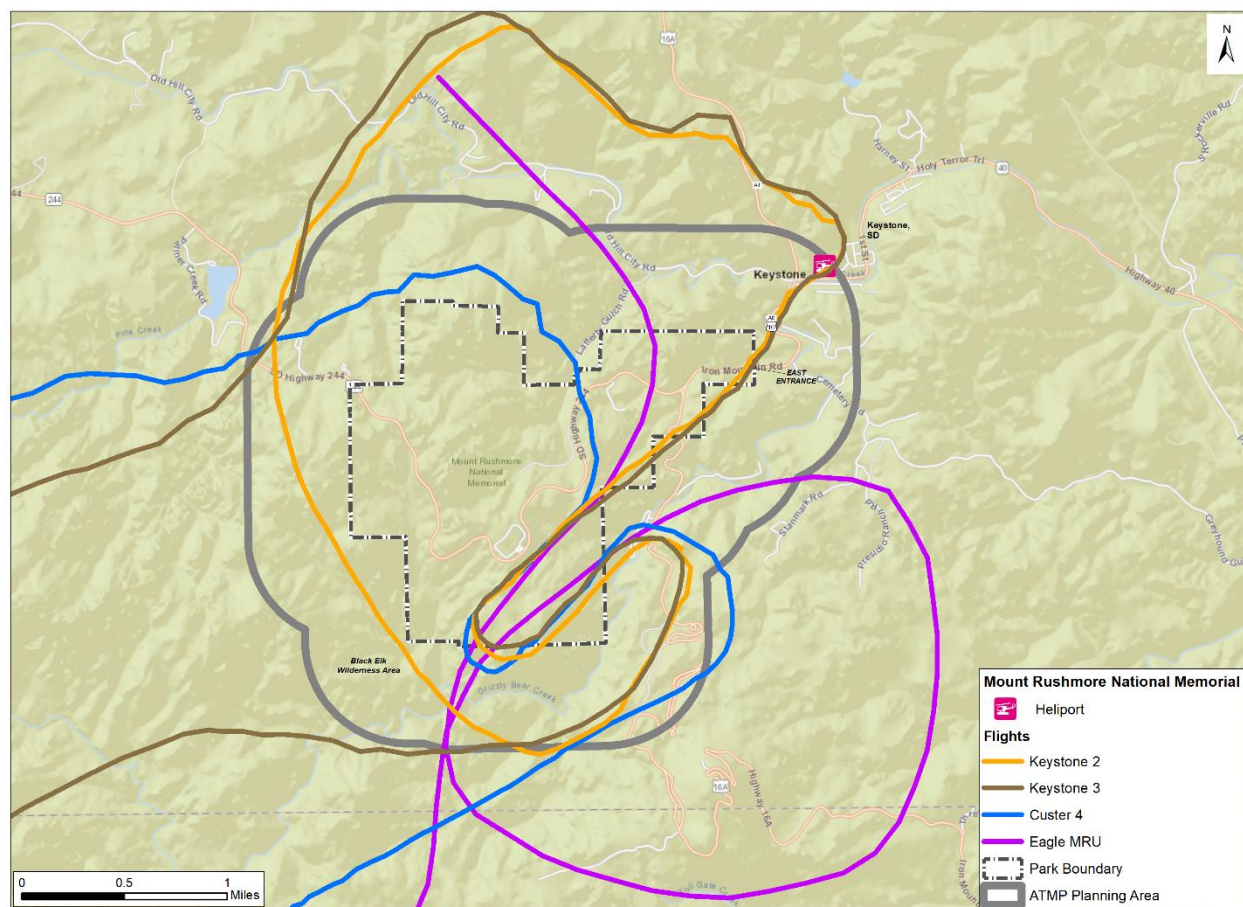


Figure 7. Air Tour Routes Modeled.

A unique noise modeling profile was developed for each modeled aircraft and route combination based on typical aircraft climb rates, descent rates, power settings and speeds during the different phases of flight (cruise, climb, and descent).

The No Action Alternative represents a continuation of existing conditions and for the purposes of analysis uses the three-year average of flights from 2017 to 2019. The analysis for the No Action Alternative is based on a peak month, average day<sup>14</sup> of commercial air tour activity. For the three-year average of commercial air tour activity from 2017-2019, the peak month average day was identified in terms of number of operations, and then further assessed for the type of aircraft and route flown to ensure it is a reasonable representation of the commercial air tour

<sup>14</sup> As required by FAA policy, the FAA typically represents yearly conditions as the Average Annual Day (AAD). However, it was determined that a peak month average day representation of the operations would more adequately allow for disclosure of any potential impacts. Peak month average day has therefore been used as a conservative representation of assessment of AAD conditions.

activity over the Park. For the ATMP planning area, the peak month average day was identified as summarized in Table 8. Altitudes were modeled based on information provided by the operators.

The analyses for Alternatives 3 and 4 are based on the number of aircraft operations for each aircraft and route combination identified and are summarized in Table 8.

Table 8. Aircraft, Routes and Number of Operations Modeled.

Route	Aircraft	No Action Alternative (2017- 2019 Peak Month Average Day)	Alternative 3	Alternative 4
<b>Keystone 2</b>	Robinson R-44	18	12	4
<b>Keystone 3</b>	Robinson R-44	12	8	2
<b>Custer 4</b>	Robinson R-44	7	4	1
<b>Eagle MRU</b>	Cessna 206	1	1	1
	<b>Total</b>	38	25	8

### **Alternative 1: No Action**

Under the No Action Alternative, the acoustic conditions described in the affected environment would be expected to continue. Air tour noise would vary depending on how many commercial air tours are flown (refer to Section 2.4, Alternative 1 (No Action Alternative), and the *Noise Technical Analysis* in Appendix F for additional details on the No Action Alternative). Modeling results for the No Action Alternative are presented in Table 9 below. See Figure 8 and Figure 9 for noise metrics results that would be experienced within the ATMP planning area under the No Action Alternative. This analysis is based on the three-year average of flights between 2017-2019. The impacts could be greater than disclosed here if air tour numbers up to IOA occur which the NPS has already found to result in unacceptable impacts.

Table 9. Summary of Noise Modeling Metric Results Under the No Action Alternative.

Metric	No Action Alternative
12-hour Equivalent Sound Level	<ul style="list-style-type: none"> <li>• Values would not exceed 60 dBA, with the exception of a very small area in the immediate vicinity of the heliport.</li> <li>• 43% of the ATMP planning area would continue to experience levels between 50 and 55 dBA.</li> <li>• The entire ATMP planning area would continue to experience levels between 40 and 45 dBA.</li> </ul>

Metric	No Action Alternative
Day-night Average Sound Level	<ul style="list-style-type: none"> <li>DNL would be 3 dB less than the 12-hour equivalent sound level, and therefore less than 60 dB.</li> </ul>
Time Audible Natural Ambient	<ul style="list-style-type: none"> <li>More than half (56%) of the ATMP planning area would continue to experience audible air tour noise for up to 345 minutes a day* (non-contiguous).</li> <li>100% of the ATMP planning area would continue to experience audible air tour noise for between 210 and 480 minutes a day (non-contiguous).</li> </ul>
Time Above 35 dBA	<ul style="list-style-type: none"> <li>70% of the ATMP planning area would experience air tour noise above 35 dBA for greater than 315 minutes a day.</li> <li>The entire ATMP planning area would experience air tour noise above 35 dBA for between 210 and 330 minutes a day.</li> </ul>
Time Above 52 dBA	<ul style="list-style-type: none"> <li>The maximum time any of the modeled points would experience noise above 52 dBA would be 104.9 minutes at Location #14 (Undeveloped Park land-goat habitat).</li> <li>For interpretive programs at the Amphitheater, noise above 52 dBA would be 49 minutes.</li> <li>For climbing areas, noise above 52 dBA would occur for between 6 and 58 minutes a day</li> </ul>
Maximum Sound Level	<ul style="list-style-type: none"> <li>The maximum sound level (i.e., the loudest sound level generated by the loudest event independent of the number of operations) within the ATMP planning area would be 73.7 dBA at Location #17 (No name pullout). At Location #33 (Keystone School), outside the ATMP planning area, the maximum sound level is estimated to be 77 dBA. See Appendix F, <i>Noise Technical Analysis</i>.</li> </ul>

\* For the noise analysis, 'day' refers to the 12-hour period 7:00 AM to 7:00 PM, selected to represent typical daytime commercial air tour operating hours.

For purposes of assessing noise impacts from commercial air tours on the acoustic environment under FAA's policy for NEPA, the analysis indicates that the resultant DNL is expected to be below 60 dB.



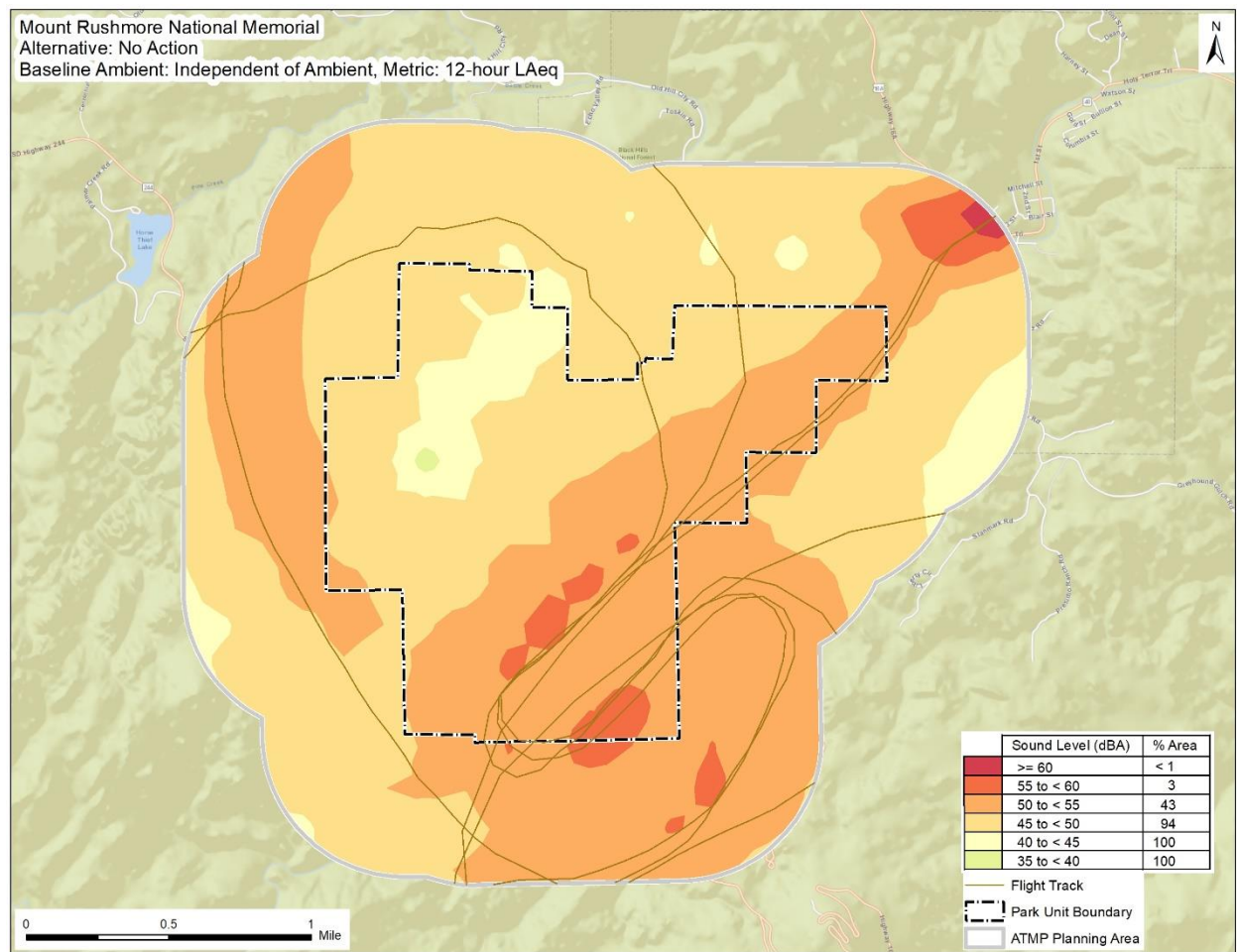


Figure 8. 12-hour Equivalent Sound Level ( $L_{Aeq,12h}$ ) for Alternative 1 (No Action).

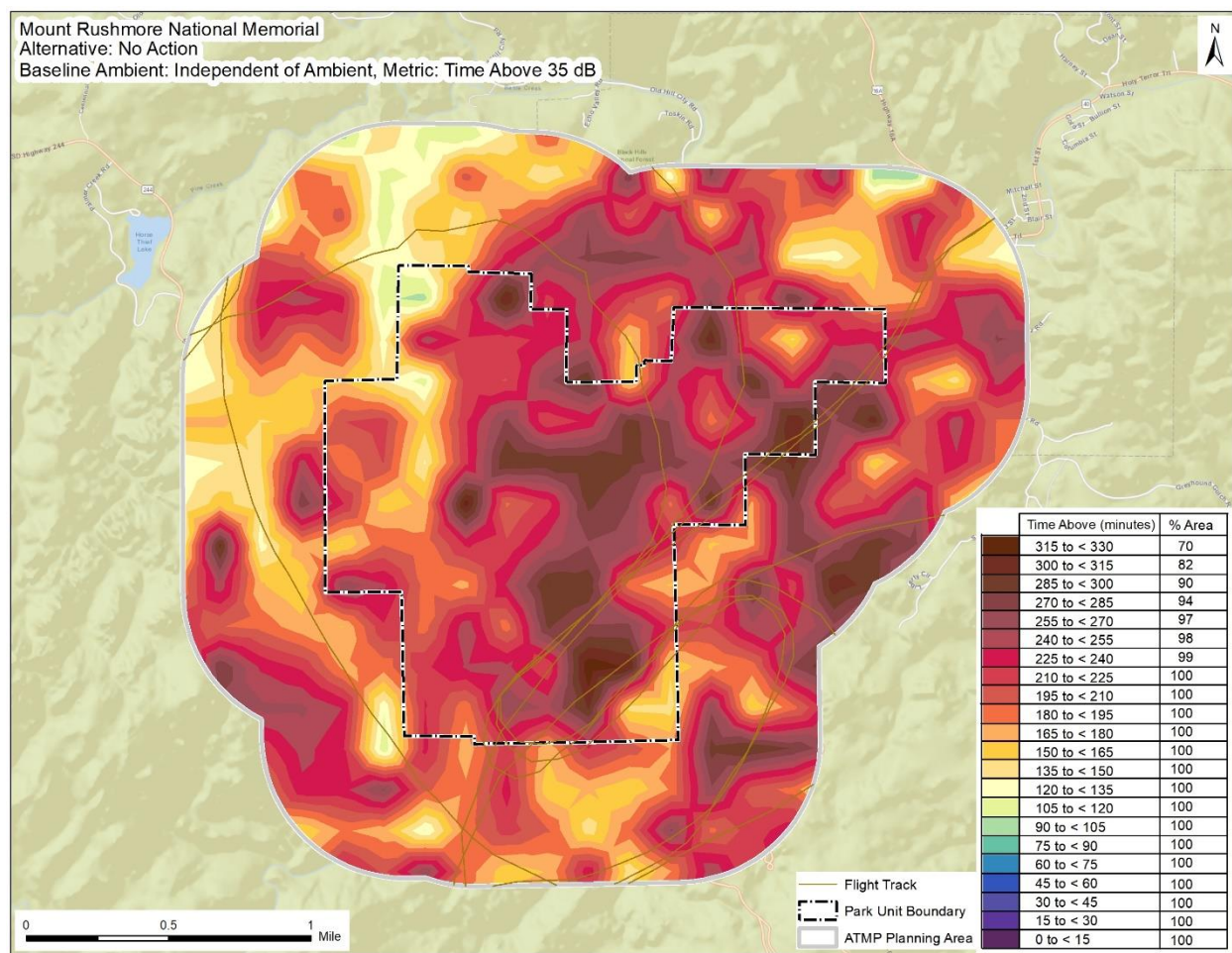


Figure 9. Time Above 35 dBA for Alternative 1 (No Action).

## Alternative 2

Under Alternative 2, commercial air tours would not be permitted within the ATMP planning area, except during takeoff and landing from the privately owned and operated heliport on the boundary of the ATMP planning area. Compared to existing conditions, Alternative 2 would result in direct beneficial effects on the Park's acoustic environment. The acoustic impacts of Alternative 2 cannot be modeled because, although some speculation about air tour routes can be made, it is unknown where air tours would fly when outside the ATMP planning area or over the ATMP planning area at or above 5,000 ft. AGL. Alternative 2 would provide 365 days per year without air tours within the ATMP planning area and would reduce noise in the most noise sensitive regions of the Park. This would result in direct beneficial effects compared to existing conditions.



**Alternative 3**

Compared to existing conditions (see Section 2.4.1, Commercial Air Tours per Year), Alternative 3 would result in direct beneficial effects on the Park's acoustic environment. This alternative would provide 212 days per year during which air tours would not be conducted within the ATMP planning area and a reduction in the overall noise footprint (average sound level over a 12-hour day) compared to existing conditions. Table 10 summarizes the modeled noise metric results and Figure 10 and Figure 11 display noise metrics results that would be experienced within the ATMP planning area under Alternative 3.

*Table 10. Summary of Noise Modeling Metric Results for Alternative 3.*

<b>Metric</b>	<b>Alternative 3</b>
12-hour Equivalent Sound Level	<ul style="list-style-type: none"> <li>• Values would not exceed 60 dBA, with the exception of a very small area in the immediate vicinity of the heliport. This area is outside the Park boundary.</li> <li>• Affected portions of the ATMP planning area would generally experience noise levels more than 45 dBA, representing 74% of the total area.</li> </ul>
Day-night Average Sound Level	<ul style="list-style-type: none"> <li>• DNL would be 3 dB less than the 12-hour equivalent sound level, and therefore less than 60 dB.</li> </ul>
Time Audible Natural Ambient	<ul style="list-style-type: none"> <li>• 66% of the ATMP planning area would experience audible air tour noise between 210 and 300 minutes a day*.</li> <li>• The entire ATMP planning area would experience audible air tour noise for between 135 and 300 minutes a day (non-contiguous).</li> </ul>
Time Above 35 dBA	<ul style="list-style-type: none"> <li>• 55% of the ATMP planning area would experience noise above 35 dBA for between 135 and 225 minutes a day (non-contiguous).</li> <li>• The entire ATMP planning area would experience air tour noise above 35 dBA for between 75 and 225 minutes a day (non-contiguous).</li> </ul>
Time Above 52 dBA	<ul style="list-style-type: none"> <li>• The maximum time any of the modeled points would experience noise above 52 dBA would be 68.1 minutes at Location #14 (Undeveloped Park land-goat habitat).</li> <li>• For interpretive programs at the Amphitheater, the time above 52 dBA would be 32 minutes.</li> </ul>

Metric	Alternative 3
	<ul style="list-style-type: none"> <li>For climbing areas, noise above 52 dBA would occur for between 4 and 38 minutes a day.</li> </ul>
Maximum Sound Level	<ul style="list-style-type: none"> <li>The maximum sound level (i.e., the loudest sound level generated by the loudest event independent of the number of operations) within the ATMP planning area would be 73.7 dBA at Location #17 (No name pullout). At Location #33 (Keystone School), outside the ATMP planning area, the maximum sound level is estimated to be 77 dBA. See Appendix F, <i>Noise Technical Analysis</i>.</li> </ul>

\* For the noise analysis, 'day' refers to the 12-hour period 7:00 AM to 7:00 PM, selected to represent typical daytime commercial air tour operating hours.

The resultant DNL within the ATMP planning area for Alternative 3 is expected to be below 60 dB. Refer to the *Noise Technical Analysis* in Appendix F for more information.

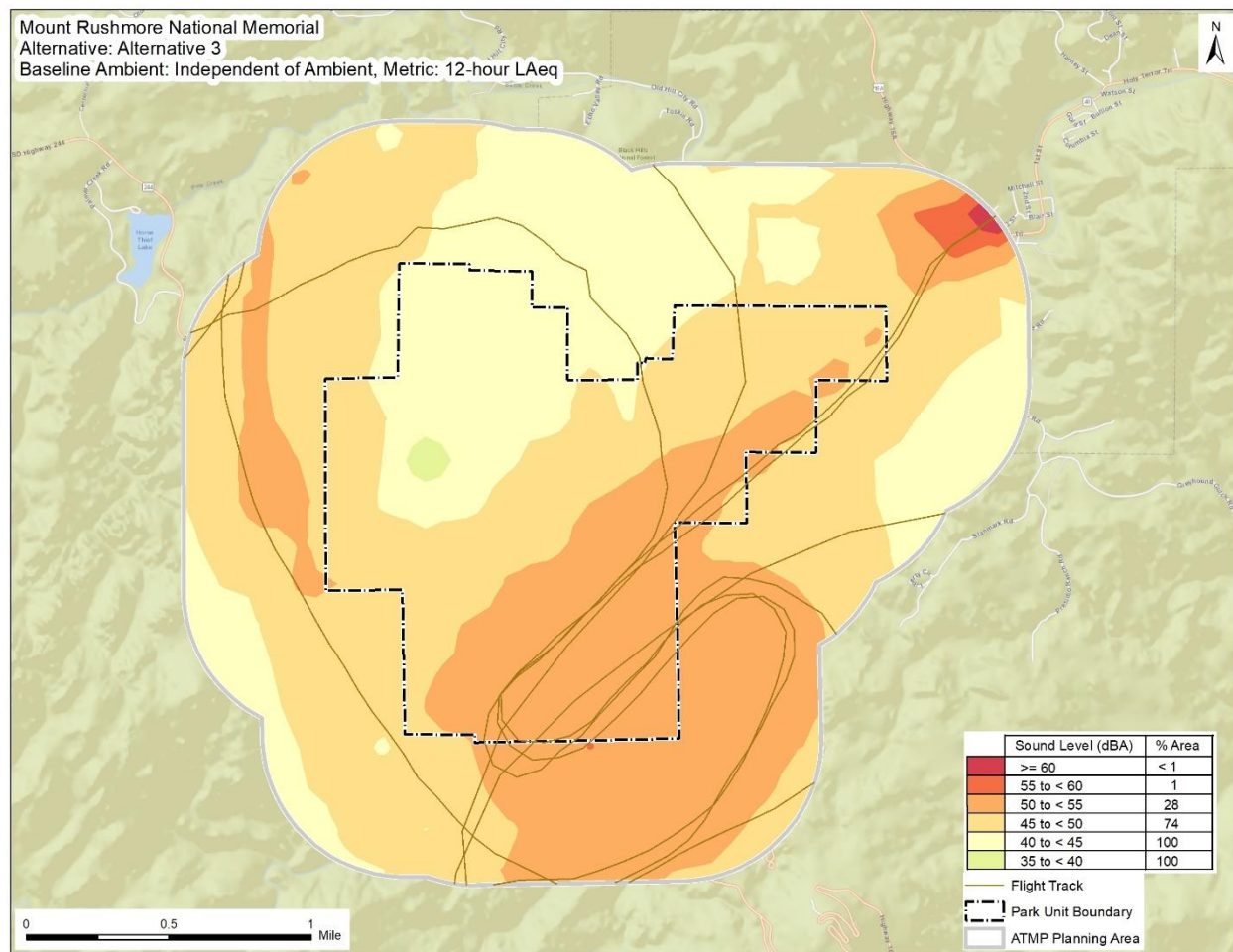


Figure 10. 12-hour Equivalent Sound Level ( $L_{Aeq,12h}$ ) for Alternative 3.

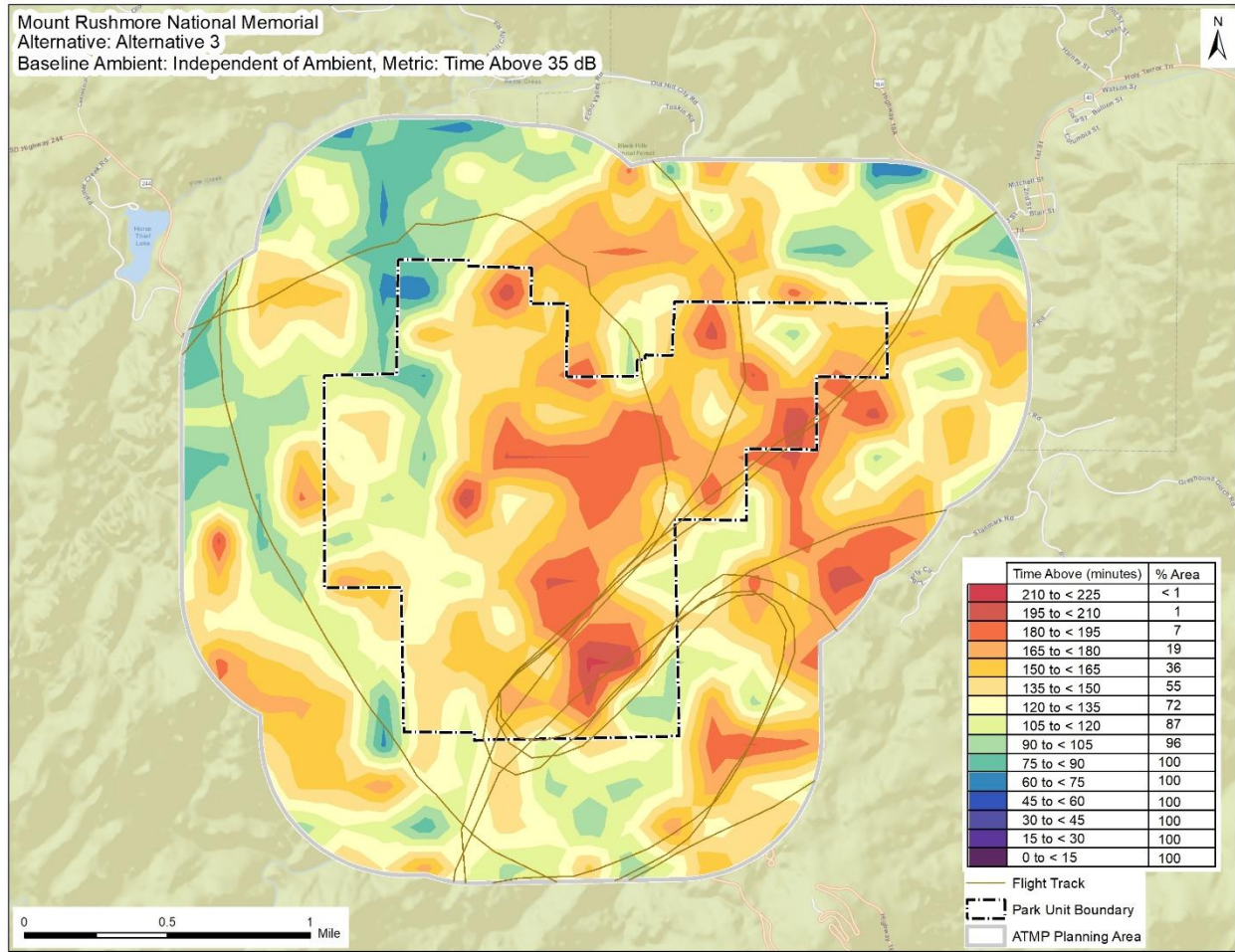


Figure 11. Time Above 35 dBA for Alternative 3.

A comparison of impacts to noise and noise-compatible land use between Alternative 3 and existing conditions is provided below:

- 12-hour Equivalent Sound Level: Compared to existing conditions, the average sound levels under Alternative 3 would be lower.
  - Compared to existing conditions, Alternative 3 would represent a 34% reduction in number of modeled daily operations, equivalent to a decrease of approximately 2 dBA.
  - With the exception of a small area (less than 1% of the ATMP planning area) within the immediate vicinity of the privately owned and operated heliport, Alternative 3 would eliminate areas with 12-hour average noise levels over 55 dBA.
- Time Audible Natural Ambient: Compared to existing conditions, under Alternative 3 the time audible number of minutes would be 34% less, equivalent to 100-120 minutes at most locations.

- **Time Above 35 dBA:** Compared to existing conditions, the time above 35 dBA under Alternative 3 would be less at all modeled locations.
  - The time above 35 dBA under Alternative 3 would range from 28 (Location 3) to 114 minutes less (Location 24).
- **Time Above 52 dBA:** Compared to existing conditions, the time above 52 dBA under Alternative 3 would be less at all modeled locations.
  - The time above 52 dBA under Alternative 3 would range from 2 (Location 3) to 37 minutes less (see Location 24).
- **Maximum Sound Level:** Since this metric represents the loudest sound level, in dBA, generated by the loudest event and is independent of the number of operations, there would be no change in the maximum sound levels between Alternative 3 and existing conditions.

#### **Alternative 4**

Compared to existing conditions, Alternative 4 would result in direct beneficial effects on the Park's acoustic environment. This alternative would provide 258 days per year during which air tours would not be conducted within the ATMP planning area and a reduction in the overall noise footprint (average sound level over a 12-hour day) compared to existing conditions. Table 11 summarizes the modeled noise metric and Figure 12 and Figure 13 display noise metrics results that would be experienced within the ATMP planning area under Alternative 4.

*Table 11. Summary of Noise Modeling Metric Results for Alternative 4.*

<b>Metric</b>	<b>Alternative 4</b>
12-hour Equivalent Sound Level	<ul style="list-style-type: none"> <li>• Values would not exceed 50 dBA, with the exception of a very small area in the immediate vicinity of the heliport where values are between 50 and 60 dBA. This area is outside the Park boundary.</li> <li>• Affected portions of the ATMP planning area would be greater than 40 dBA, representing 76% of the total area.</li> </ul>
Day-night Average Sound Level	<ul style="list-style-type: none"> <li>• DNL would be 3 dB less than the 12-hour equivalent sound level, and therefore less than 60 dB.</li> </ul>
Time Audible Natural Ambient	<ul style="list-style-type: none"> <li>• The entire ATMP planning area would experience audible air tour noise for between 45 and 90 minutes a day (non-contiguous).</li> </ul>

Metric	Alternative 4
Time Above 35 dBA	<ul style="list-style-type: none"> <li>The entire ATMP planning area would experience noise above 35 dBA for between 15 and 60 minutes a day (non-contiguous).</li> </ul>
Time Above 52 dBA	<ul style="list-style-type: none"> <li>The maximum time any of the modeled points would experience noise above 52 dBA would be 21.1 minutes at Location #14 (Undeveloped Park land-goat habitat).</li> <li>For interpretive programs at the Amphitheater, the time above 52 dBA would be 10 minutes.</li> <li>For climbing areas, noise above 52 dBA would occur for between 1 and 13 minutes a day.</li> </ul>
Maximum Sound Level	<ul style="list-style-type: none"> <li>The maximum sound level (i.e., the loudest sound level generated by the loudest event independent of the number of operations) within the ATMP planning area would be 73.7 dBA at Location #17 (No name pullout). At Location #33 (Keystone School), outside the ATMP planning area, the maximum sound level is estimated to be 77 dBA. See Appendix F, <i>Noise Technical Analysis</i>.</li> </ul>

The resultant DNL within the ATMP planning area for Alternative 4 is expected to be below 60 dB. Refer to the *Noise Technical Analysis* in Appendix F for more information.



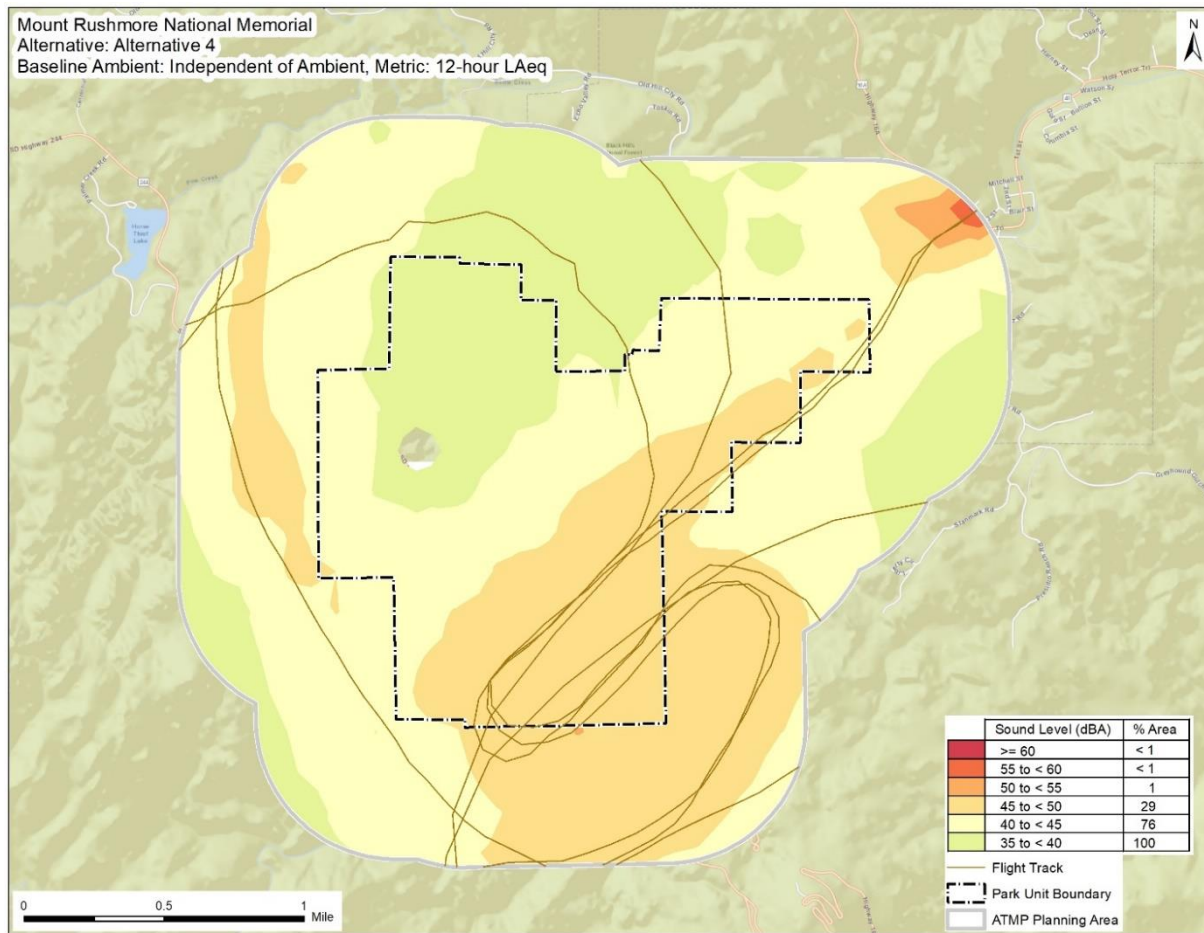


Figure 12. 12-hour Equivalent Sound Level ( $L_{Aeq,12h}$ ) for Alternative 4.

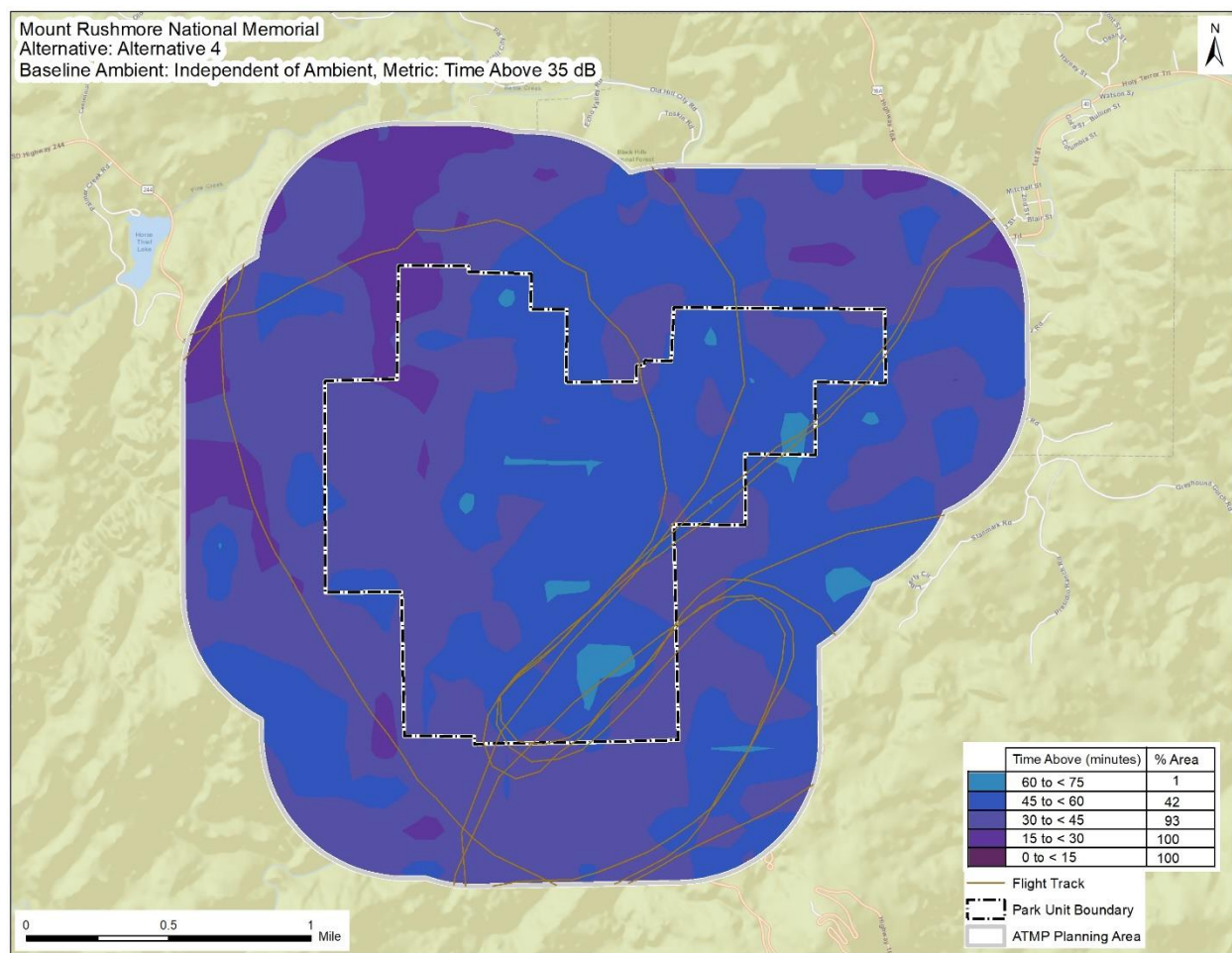


Figure 13. Time Above 35 dBA for Alternative 4.

A comparison of impacts to noise and noise-compatible land use between Alternative 4 and existing conditions is provided below:

- 12-hour Equivalent Sound Level: Compared to existing conditions, the average sound levels under Alternative 4 would be lower.
  - Compared to existing conditions, Alternative 4 would represent a 79% reduction in number of modeled daily operations, equivalent to a decrease of approximately 7 dBA. With the exception of a small area (less than 1% of the ATMP planning area) within the immediate vicinity of the heliport, Alternative 4 would eliminate areas with 12-hour average noise levels over 50 dBA.
- Time Audible Natural Ambient: Compared to existing conditions, the time audible natural ambient under Alternative 4 would be less.
  - Compared to existing conditions, under Alternative 4 the time audible number of minutes would be potentially 79% less, equivalent to 160-350 minutes at most locations.



- Time Above 35 dBA: Compared to existing conditions, the time above 35 dBA under Alternative 4 would be less at all modeled locations.
  - Under Alternative 4 the time above 35 dBA would be between 64 minutes (Location #3) and 266 minutes less (Location #24).
- Time Above 52 dBA: Compared to existing conditions, the time above 52 dBA under Alternative 4 would be less at all modeled locations.
  - Under Alternative 4, the time above 52 dBA would range from 5 (Location #3) to 84 minutes less (Location #24).
- Maximum Sound Level: Since this metric represents the loudest sound level, in dBA, generated by the loudest event and is independent of the number of operations, there would be no change in the maximum sound levels between Alternatives.

### ***Indirect and Cumulative Effects***

**Indirect Effects:** Under the No Action Alternative, commercial air tour operations within the ATMP planning area would remain consistent with existing conditions. Although the number of air tour operations could increase up to IOA, no indirect impacts would be expected to occur under this alternative.

For any alternative (Alternatives 2, 3, and 4) that limits the number of flights per year to a level below existing conditions (3,914 flights per year) and caps the number of flights per day (25 flights per day for Alternative 3 and eight flights per day for Alternative 4) within the ATMP planning area, it is reasonably foreseeable that current air tour operators could seek to make up lost revenue in other ways. While a complete discussion of the socioeconomic effects of the alternatives is provided in Section 3.7, Environmental Justice and Socioeconomics, one of the ways that operators could potentially generate revenue is by offering air tours outside of the ATMP planning area, as the areas outside this area would not be regulated by the ATMP. This type of shift in air tour activity is referred to as “air tour displacement,” and could consist of air tour operators shifting routes or altitudes to just outside the ATMP planning area, some of which could result in impacts to resources to the extent that they are present near the locations where the displaced air tours would occur.

It is difficult to predict with specificity if, where, and to what extent any air tours would be displaced to areas outside the ATMP planning area, including at altitudes at or above 5,000 ft. AGL. The preciseness of routes and altitudes for air tours flown on any possible displaced air tours around the ATMP planning area would be generally subject to Visual Flight Rules which is based on the principle of “see and avoid” and may vary. It is reasonably foreseeable that operators would continue to fly to points of interest outside of the ATMP planning area where they already fly, or fly routes around the Park similar to existing flight paths but outside of the ATMP planning area. Operators may also choose to fly just outside the perimeter of the ATMP planning area to view the sculpture. Operators, both with and without IOA for the Park,

currently conduct air tours in this area as routes in this area still afford views of the sculpture. Operators may also offer new or increased tours to other points of interest in the region such as the Crazy Horse Monument, Iron Mountain Road, Horsethief Lake, Black Elk Peak, and Sylvan Lake, which are known points of interest for current air tour clients. It is reasonably foreseeable that if operators are unable to fly within the ATMP planning area, the implementation of Alternatives 2, 3, or 4 may result in more flights in these areas as they may be able to view the sculpture or other regional points of interest. Displaced air tours could continue to take off and land at the privately owned and operated heliport that is on the boundary of the ATMP planning area. However, air tours leaving this heliport would need to depart the ATMP planning area immediately as is safe.

If operators chose to fly above the ATMP planning area, they would be required to maintain altitudes at or above 5,000 ft. AGL while over the ATMP planning area. This may be impractical due to the high elevation of the terrain because it would require operators to fly above 10,000 ft. MSL at some points. Supplemental oxygen use is required in unpressurized aircraft flying at altitudes over 10,000 ft. MSL for more than 30 minutes (14 CFR Parts 135.89, 135.157); therefore, it is unlikely air tours would fly higher for extended periods of time. Additionally, flights at 5,000 ft. AGL or higher would provide limited value to a sightseeing operation.

The exactness of routes and altitudes for displaced air tours flown at altitudes below 5,000 ft. AGL flying Visual Flight Rules could vary depending on safety, client demand, weather, fuel load, and other costs. Specific routes, altitudes and numbers would be relevant in assessing noise and other potential indirect and cumulative impacts associated with eliminating air tours within the ATMP planning area. Consistent with the CEQ regulations, the agencies are disclosing that specific air tour routes, altitudes, and numbers of tours are not available with enough specificity to assess noise and other potential indirect and cumulative impacts associated with reducing or eliminating air tours within the ATMP planning area. In addition, because specific air tour routes are not available, it is not possible to identify all the other potential noise sources that might contribute to the acoustic conditions outside the ATMP planning area where operators may fly. Agencies are not required to conduct new scientific or technical research to analyze impacts and may rely on existing information to assess impacts. See 40 CFR Part 1502.21(c). For the purposes of disclosing the potential indirect effects of these alternatives, the agencies have considered the potential noise effects of operations above or along the perimeter of the ATMP planning area.

Displaced air tours, if any, above the ATMP planning area (at or above 5,000 ft. AGL) would result in noise within the ATMP planning area. Compared to current conditions, the noise would be spread over a larger geospatial area and would be audible for a longer period, but at lower intensity. Thus, under Alternatives 2, 3, and 4 some locations within the ATMP planning area may experience less intense noise but for a longer period when compared to current conditions. Additionally, other locations within the ATMP planning area not currently

experiencing air tour noise may experience some noise under these alternatives when compared to current conditions. However, in both cases, the intensity of noise would likely be low given the aircraft altitude; any noise that might result could also be more easily masked by opportunistic sounds such as wind and various anthropogenic noise sources. In summary, while the area of noise could be greater under these alternatives, the intensity of noise, especially when compared to current conditions at locations near or directly below existing air tour routes, would be less.

Displaced air tours have the potential to affect noise sensitive locations outside the ATMP planning area. However, it is unlikely that displaced air tours would generate noise at or above DNL 65 dB. To illustrate this, the agencies conducted a conservative, screening-level noise analysis (refer to Appendix F, *Noise Technical Analysis*, Section 8 for more information). The analysis indicates that it would be highly unlikely that air tours that are displaced outside the ATMP planning area under these alternatives would generate noise at or above DNL 65 dB.

**Cumulative Effects:** The cumulative impact of an alternative is the overall acoustic condition of the environment including existing and future noise from sources other than air tours plus anticipated noise from air tours under the alternative. The existing ambient condition of the acoustic environment is disclosed in Section 3.1, Affected Environment for Noise and Noise-Compatible Land Use.

As part of the cumulative effects assessment, the FAA and the NPS considered other ongoing and planned actions. There are other ongoing uses of aircraft that contribute noise to the Park's acoustic environment. The NPS occasionally approves military flyovers for patriotic ceremonies, observances, and photo shoots in coordination with Ellsworth Air Force Base. Impacts on the Park's soundscape from military flyovers vary depending on the type of aircraft used, but usually last less than ten minutes and may occur a couple of times per year. During fire season, fire managers arrange detection flights at times of high and extreme fire danger. These fixed-wing flights routinely avoid the airspace over the Park but do fly over areas within the ATMP planning area and generally occur at an altitude greater than 2,000 ft. AGL. Firefighting aircraft are flown at lower altitudes than this when battling wildfires. South Dakota Game, Fish, and Parks also conduct aerial helicopter surveys for big game species that may include short periods of time when aircraft fly over the Park. Surveys for elk typically take place every four years in January or February, and mountain goat surveys take place every two years in June. The average amount of time spent over the Park is less than ten minutes per survey. Both surveys are planned to occur in 2024. In 2023, the Park will partner with the South Dakota National Guard to use a helicopter to remove debris from a remote, inaccessible part of the Park. The cleanup event is expected to last less than one hour. As described above for indirect effects, air tours flown just outside the ATMP planning area are currently offered by operators both with and without IOA for the Park as air tours in this area still affords views of the

sculpture. Noise from these air tours that is experienced within the ATMP planning area also contributes to the cumulative effects analysis.

In addition to aircraft noise, Park maintenance activities may contribute noise to the Park's acoustic environment. A major reconstruction project is planned for the Park's wastewater treatment plant. This is a large project that will likely take place from October 2023-2026. Earth-moving activities and heavy equipment use will result in a temporary increase in noise levels near the Park's treatment plant during the construction period.

For all planned actions, the Park and regional partners would continue current management actions and respond to future needs and conditions without major changes in the present course.

Alternatives 2, 3, and 4 would likely result in a noticeable beneficial effect on the overall acoustic environment of the Park from reducing or eliminating air tours within the ATMP planning area since the intensity of noise directly around and below existing air tour routes will decrease as described above. Alternative 2 would result in less cumulative noise in the ATMP planning area than Alternatives 3 or 4 given the reduced number of air tours authorized in the ATMP planning area. Ongoing present and future Park management actions by the NPS would continue to occur under any of the alternatives.

## **3.2 Air Quality and Climate Change**

### **3.2.1 Affected Environment**

#### ***Air Quality***

The Clean Air Act divides federal lands into different classifications based on acreage. The Park is classified as a Federal Class II Area. Under the Regional Haze Rule, Federal Class II Areas are subject to a non-degradation standard (EPA, 2003). Class II areas of the country have somewhat less stringent protection from air pollution damage than Class I areas. Historically, air quality at the Park has been considered excellent. Maintaining good air quality is of utmost importance to the NPS because it affects the visibility of the monument. Wildfires are a potential source of particulates (i.e., smoke) that affect visibility, but can also potentially violate one of the National Ambient Air Quality Standards (NAAQS) for particulate matter (PM) under certain wind conditions. The NPS has taken measures to mitigate this risk, such as creating a fire management program for the Park, and limiting sources of fuel through means like prescribed fire and pile burning (NPS, 2002).

The National Ambient Air Quality Standards (NAAQS) determine whether a region is in an air quality attainment or nonattainment area. An area is considered to be in attainment if it meets the federal standard for all criteria pollutants. Subsequently, an area is in nonattainment if it does not meet (or contributes to ambient air quality in a nearby area that does not meet) the standard. When this occurs, states must submit implementation plans to the Environmental

Protection Agency (EPA) discussing programs to improve air quality within that region. The Park is currently in an area of attainment for all NAAQS.

The Clean Air Act also requires that each state create a network of air monitoring stations, known as State and Local Air Monitoring Stations (SLAMS). SLAMS is a network of over 4,000 monitors nationwide. Data recorded by SLAMS monitors are reported and stored in the Air Quality System database and are maintained by the EPA (EPA, 2008). National Air Monitoring Systems are a subset of SLAMS, which follow stricter requirements for quality assurance criteria and equipment type. South Dakota's air quality monitoring network is maintained by the South Dakota Department of Environment and Natural Resources. While there are no monitors within the Park, monitors in proximity of the Park report levels of nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), and both PM sized 2.5 micrometers in aerodynamic diameter or less (PM<sub>2.5</sub>) and 10 micrometers in aerodynamic diameter or less (PM<sub>10</sub>) (EPA, 2022).

### ***Greenhouse Gases***

The Intergovernmental Panel on Climate Change (IPCC) estimates that aviation accounted for 4.1% of global transportation greenhouse gas (GHG) emissions (FAA, 2020). GHGs are gases that trap heat in the Earth's atmosphere. Naturally occurring and anthropogenic (human-made) GHGs include carbon dioxide (CO<sub>2</sub>), water vapor (H<sub>2</sub>O), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and ozone (O<sub>3</sub>). The EPA data indicates that commercial aviation contributed to 6.6% of CO<sub>2</sub> emissions in 2013 in the U.S. (EPA, 2016).

In response to the increasing need for understanding and action related to climate change impacts in the parks, the NPS launched the Climate Friendly Parks program in 2002, creating opportunities to educate staff about climate change issues, assess each park's contribution to GHG emissions, create short and long-term strategies for reducing emissions, determine potential effects of climate change on park resources, and develop skills and strategies for communicating these effects to the public (NPS, 2016). As a part of the Park's participation in this program, the Park staff developed a long-term Climate Action Plan (NPS, 2016) that involved analyzing the anthropogenic carbon footprint of the Park using the EPA's Greenhouse Gas Equivalencies Calculators. Data used to perform the calculations included the amount of electricity purchased, waste sent to the landfill, and fuels consumed.

Initial findings by the NPS (NPS, 2016) show that the largest single source of GHG emissions was visitor travel in the Park (vehicles), comprising approximately 27% of total emissions (NPS, 2016). These findings provide an initial overview of the carbon footprint of the Park. Further monitoring and analysis will track progress in reducing the Park's carbon footprint into the future.

### 3.2.2 Environmental Consequences

#### ***Alternative 1: No Action***

The No Action Alternative represents existing air tour conditions, which is analyzed as the three-year average number of flights from 2017-2019. The impacts could be greater than disclosed here if air tour numbers up to IOA occur. Modeling results for existing conditions are presented in Table 12 for the criteria pollutants. Note that ozone is not reported as it is not directly emitted in aircraft exhaust. Pollutant emissions are based on annual flight miles and routes for each aircraft type operating within the ATMP planning area. The emission rates (pounds of emissions per mile flown) used in modeling are aircraft engine and fuel-specific. The results in Table 12 describe baseline emissions under existing conditions; emissions under alternatives can be compared to baseline emissions to indicate potential impacts on air quality within the ATMP planning area.

*Table 12. Summary of Criteria Pollutant Annual Emissions in Tons per Year (TPY) Under Existing Conditions.*

<b>Criteria Pollutant</b>	<b>Total Annual Emissions (TPY)</b>
Carbon monoxide (CO)	53.9
Lead (Pb)	0.025
Nitrogen dioxide (NO <sub>2</sub> )	0.009
Particulate matter: Aerodynamic diameter ≤ 2.5 μm (PM <sub>2.5</sub> )	0.003
Particulate matter: Aerodynamic diameter ≤ 10 μm (PM <sub>10</sub> )	0.003
Sulfur dioxide (SO <sub>2</sub> )	0.040

Total annual GHG emissions for existing conditions are modeled to be 97.5 metric tons (MT) of CO<sub>2</sub>. The analysis for existing conditions would not cause pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed. These modeling results for existing conditions represent the impacts of the No Action Alternative, though impacts could increase if flights up to IOA occurred (see Section 2.4.1, Commercial Air Tours per Year for the No Action Alternative).

#### ***Alternative 2***

Under Alternative 2, commercial air tours would not be conducted within the ATMP planning area which would eliminate direct emissions from air tours within the planning area and would not cause pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed. Therefore, Alternative 2 would result in direct beneficial effects on air quality compared to existing conditions due to lower commercial air tour emissions within the ATMP planning area (Table 12). Direct emissions in the ATMP planning area would be expected to decrease by the amount reported under existing conditions (Table 12) and would result in zero

emissions from the elimination of commercial air tours within the ATMP planning area. The direct effects of this alternative would be the reduction of the emissions within the ATMP planning area reflected in Table 12; however, emissions could still be generated from displaced air tours (refer to indirect effects analysis below).

### **Alternative 3**

Under Alternative 3, commercial air tours would still be conducted within the ATMP planning area; however, the total number of flights per year would be reduced and required routes would be established as compared to existing conditions. Direct emissions in the ATMP planning area would be expected to decrease by the amount reported in Table 13 as compared to the No Action Alternative Table 12 and would result in reduced emissions from the reduction of commercial air tours within the ATMP planning area. The direct effects of this alternative would be the reduction of the emissions within the ATMP planning area reflected in Table 13; however, emissions could still be generated from displaced air tours (refer to indirect effects analysis below). Modeling results for Alternative 3 are presented in Table 13 for the criteria pollutants in terms of change in emissions as compared to existing conditions. Note that ozone is not reported as it is not directly emitted in aircraft exhaust. Similar to existing conditions, these results are based on annual flight miles and routes for each aircraft type and the emission rates used in modeling are aircraft engine and fuel-specific. The results in Table 13 show that emissions from air tours for all criteria pollutants would decrease or remain unchanged under Alternative 3.

*Table 13. Summary of Change in Criterial Pollutant Annual Emissions in TPY Under Alternative 3 as Compared to Existing Conditions.*

<b>Criteria Pollutant</b>	<b>Change in TPY as Compared to Existing Conditions *</b>
Carbon monoxide (CO)	-3.37
Lead (Pb)	-0.002
Nitrogen dioxide (NO <sub>2</sub> )	-0.001
Particulate matter: aerodynamic diameter ≤ 2.5 µm (PM <sub>2.5</sub> )	0.000
Particulate matter: aerodynamic diameter ≤ 10 µm (PM <sub>10</sub> )	0.000
Sulfur dioxide (SO <sub>2</sub> )	-0.002

\*Negative values represent a reduction in total emissions.

The total change in annual GHG emissions for Alternative 3 as compared to existing conditions is modeled to be a reduction of 6.09 MT CO<sub>2</sub> within the ATMP planning area. Alternative 3 would not cause pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed. Compared to existing conditions, Alternative 3 would result in beneficial impacts to air quality due to lower commercial air tour emissions within the ATMP planning

area. Alternative 3 would result in an approximately 6.3% reduction in both criteria pollutant and GHG emissions as compared to existing conditions. This represents the direct effects of this alternative within the ATMP planning area; however, emissions could still be generated from displaced air tours (refer to indirect effects analysis below).

#### **Alternative 4**

Under Alternative 4, commercial air tours would still be conducted within the ATMP planning area; however, the total number of tours per year would be reduced and establish required routes as compared to existing conditions. Direct emissions in the ATMP planning area would be expected to decrease by the amount reported in Table 14 as compared to the No Action Alternative and would result in reduced emissions from the reduction of commercial air tours within the ATMP planning area. The direct effects of this alternative would be the reduction of the emissions within the ATMP planning area reflected in Table 14; however, emissions could still be generated from displaced air tours (refer to indirect effects analysis below). Modeling results for Alternative 4 are presented in Table 14 for the criteria pollutants in terms of change in emissions as compared to existing conditions. Note that ozone is not reported as it is not directly emitted in aircraft exhaust. Similar to existing conditions, these results are based on annual flight miles and routes for each aircraft type and the emission rates used in modeling are aircraft engine and fuel-specific. The results in Table 14 show that emissions from air tours for all criteria pollutants would decrease or remain unchanged under Alternative 4.

*Table 14. Summary of Change in Criterial Pollutant Annual Emissions in TPY Under Alternative 4 as Compared to Existing Conditions.*

<b>Criteria Pollutant</b>	<b>Change in TPY as Compared to Existing Conditions*</b>
Carbon monoxide (CO)	-43.3
Lead (Pb)	-0.020
Nitrogen dioxide (NO <sub>2</sub> )	-0.007
Particulate matter: aerodynamic diameter ≤ 2.5 µm (PM <sub>2.5</sub> )	-0.003
Particulate matter: aerodynamic diameter ≤ 10 µm (PM <sub>10</sub> )	-0.003
Sulfur dioxide (SO <sub>2</sub> )	-0.032

\*Negative values represent a reduction in total emissions.

The total change in annual GHG emissions for Alternative 4 as compared to existing conditions is modeled to be a reduction of 78.4 MT CO<sub>2</sub> within the ATMP planning area. Alternative 4 would not cause pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed. Compared to existing conditions, Alternative 4 would result in beneficial impacts to air quality due to lower commercial air tour emissions within the ATMP planning area. Alternative 4 would result in an approximately 80% reduction in both criteria pollutant



and GHG emissions as compared to existing conditions. This represents the direct effects of this alternative within the ATMP planning area; however, emissions could still be generated from displaced air tours (refer to indirect effects analysis below).

### ***Indirect and Cumulative Effects***

**Indirect Effects:** For any alternative that limits the number of flights per year to a level below existing conditions (3,914 flights per year) within the ATMP planning area as described above, it is reasonably foreseeable that operators could potentially generate revenue by offering air tours outside of the ATMP planning area, or over the ATMP planning area at or above 5,000 ft. AGL, as the areas outside the ATMP planning area would not be regulated by the ATMP. Some of this displaced activity could result in impacts to air quality although it is difficult to predict with specificity if, where, and to what extent any displaced air tours would result in impacts in different and/or new areas. The preciseness of routes and altitudes for tours flown on displaced routes are generally subject to Visual Flight Rules and may vary.

Under the No Action Alternative, commercial air tour operations within the ATMP planning area would remain consistent with existing conditions. Although operations could increase up to IOA no indirect impacts would be expected to occur under this alternative.

Alternatives 2, 3, and 4 would limit the number of flights per year as compared to existing conditions and would therefore have the potential to result in some displacement of air tours outside the ATMP planning area. Air tours occurring outside the ATMP planning area, if any, would not result in direct effects from emissions within the ATMP planning area. However, prevailing winds may transport some of the emissions outside the ATMP planning area to within the ATMP planning area (i.e., indirect effects), including for air tours that utilize the heliport that is on the boundary of the ATMP planning area. Additionally, some areas that are not currently exposed to emissions from air tours (outside the ATMP planning area) may be exposed to emissions in these scenarios thus affecting the air quality in these areas.

For purposes of assessing indirect air quality and GHG impacts that would occur as a result of Alternatives 2, 3, and 4, this analysis considers whether aircraft currently operating over the Park would generate significant emissions to affect the attainment status of the Park. Based on the analysis, the emissions of all criteria pollutants (excluding ozone) and GHGs from the current number of air tours flown over the Park are minimal. Operations that may occur outside the ATMP planning area as a result of Alternatives 2, 3, or 4 may shift where emissions occur but the total annual emissions are not likely to change substantially.

Because of both the number of air tours and the likely dispersal of air tours outside the ATMP planning area, it is unlikely that air tours that are displaced to outside the ATMP planning area under these alternatives would result in air quality impacts or change the current attainment

status of the Park. Changes in air tour operations under these alternatives would also likely have minimal impact, if any, to regional air quality.

**Cumulative Effects:** The cumulative impact of an alternative is the overall air quality of the environment including existing and future emissions from sources other than air tours plus anticipated emissions from air tours under the alternative. The existing air quality in the Park is disclosed in Section 3.2.1, Affected Environment for Air Quality and Climate Change. Other ongoing actions related to air quality and GHGs include fire management activities and continued work related to the Climate Action Plan (NPS, 2016). Alternatives 2, 3, and 4 would likely result in no noticeable change to a slight improvement in overall air quality in the Park, with no change in the current NAAQS attainment status. Ongoing present and future Park management actions by the NPS, such as helicopter flights for maintenance, flyovers, and aircraft used for firefighting activities may also contribute emissions that will affect air quality within the ATMP planning area. Ongoing present and future Park management actions by the NPS would continue to occur under any of the alternatives.

### 3.3 Biological Resources

The area of analysis for biological resources, including but not limited to species listed as threatened or endangered, in this draft EA includes the ATMP planning area. This area encompasses all effects of the proposed action for biological resources. To the extent that habitat and species occurrences correlate, impacts to biological resources are expected to be similar within the ATMP planning area. Therefore, if habitat exists for a species but occurrence is unknown, the assumption is that the species could be present and will be analyzed accordingly.

The environmental effects of commercial air tour operations are evaluated for biological resources and their habitats. The analysis discloses the context of natural variability and ecosystem integrity, as well as effects on individuals and populations. Some impacts are species specific and are identified accordingly.

The Endangered Species Act (ESA) is the primary federal statute regulating federally listed threatened and endangered species and critical habitat. The U.S. Fish and Wildlife Service (USFWS) is the federal agency responsible for administration of the ESA, the Bald and Golden Eagle Protection Act, and the Migratory Bird Treaty Act (MBTA). The NPS Management Policies (2006) direct the NPS to meet its obligations under the NPS Organic Act and the ESA to both proactively conserve listed species and prevent detrimental effects on these species (NPS Management Policies § 4.4.2.3, 2006).

A threatened species is defined under the ESA as “any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” An endangered species is defined under the ESA as “any species which is in danger of

extinction throughout all or a significant portion of its range.” Species designated as threatened or endangered are collectively referred to as listed species in this draft EA.

### **3.3.1 Affected Environment**

A diversity of wildlife is native to the region surrounding the Park. The backcountry areas of the Park (wetlands, old growth forest, rock outcrops) provide a diverse and abundant habitat for many species of mammals, invertebrates, reptiles, amphibians, vegetation, and birds. Wildlife habitat in the ATMP planning area is dominated by ponderosa pine, along with common juniper and granite rock outcrops. See Figure 14 for a depiction of the affected environment for biological resources.

The biological resources analyzed in this section include both listed and non-listed wildlife most likely to be affected by the alternatives. Wildlife populations are managed through a series of Parks, wildlife preserves, and Wilderness areas in the greater region such as the Norbeck Wildlife Preserve, which was established in 1920 “for the protection of game animals and birds and to be recognized as a breeding place therefor.”<sup>15</sup> The Norbeck Wildlife Preserve is an interagency (federal, state, and local non-government) collaboration that strives to preserve wildlife in the Black Hills area across jurisdictional boundaries. No designated critical habitat for listed species occurs within the ATMP planning area. The federally listed species described in this section are also state listed species. As discussed in Section 1.5 Environmental , Environmental Impact Categories Not Analyzed in Detail, it is unlikely that fish and plant species would be affected by air tours, therefore they are not considered for further analysis under biological resources in this draft EA. Through tribal consultation, tribes have conveyed to the agencies that natural resources, including plants, are considered cultural resources by the tribes. Therefore, plants are analyzed as a cultural resource (see Section 3.4.1, Affected Environment for Cultural Resources).

#### ***Birds***

There have been over 50 species of birds documented within the Park. According to landbird surveys, the most common bird within the Park was the red crossbill (*Loxia curvirostra*), followed by the yellow-rumped warbler (*Dendroica coronate*), red-breasted nuthatch (*Sitta canadensis*), and American robin (*Turdus migratorius*) (National Park Service and Northern Great Plains Network, 2017). Important nesting periods for birds extend from mid-June to late September. See additional bird species of concern below.

#### ***Mammals***

The Park was surveyed for terrestrial mammals during the summer of 2002, and the Park conducts periodic bat surveys and monitoring. The 2002 terrestrial mammal survey

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<sup>15</sup> <https://www.fs.usda.gov/detail/blackhills/specialplaces/?cid=fseprd821462>

documented over 22 native species including bats, deer, and the bushytailed woodrat, among others (Schmidt et al., 2004). Prior to a study conducted by Schmidt et al. (2004), the mountain goat was the only mammal formally documented within the Park. Therefore, population trends of most species are unknown.

The Park supports an abundant and diverse community of bats. The species of bats that have been commonly documented in the Park include Townsend's big-eared bat (*Coryrhinus townsendii*), eastern red bat (*Lasiurus borealis*), hoary bat (*L. cinereus*), small-footed bat (*Myotis ciliolabrum*), long-eared bat (*M. evotis*), little brown bat (*M. lucifugus*), long-legged myotis (*M. volans*), fringed myotis (*M. thysanodes*), northern long-eared bat (*M. septentrionalis*), silver-haired bat (*Lasionycteris noctivagans*), big brown bat (*Eptesicus fuscus*), and the tricolored bat (*Perimyotis subglavus*) (Schmidt et al., 2004; Maddox, 2022). During winter acoustic bat monitoring, over 10,300 bat calls were detected, the most frequent of which belonged to silver-haired bats and hoary bats (Maddox, 2022). Activity levels of bats within the Park increase with warmer temperatures, and activity levels peak shortly after sunset, around 6:00 PM (Maddox, 2022). Water resources within the Park, notably the open pools in Starling Gulch, provide bats with water and foraging habitat with a sufficient prey base, while granite outcrops and old growth ponderosa pine provide suitable habitat (Schmidt et al., 2004). Bats are considered indicator species due to their habitat requirements and sensitivity to anthropogenic disturbance. Threats to bats include direct strikes, non-native plants, white nose syndrome, and wildfires.

Ungulates, or mammals with hooves, within the Park include mule deer (*Odocoileus hemionus*), white-tailed deer (*O. virginianus*), bighorn sheep (*Ovis canadensis*), and mountain goats (*Oreamnos americanus*). White tailed-deer and mule deer both forage at dusk and dawn throughout the Park. During the winter season, they become more active during warmer daylight hours (NPS, 2022a). Mule deer are one of the most populous mammals within the Park (Schmidt et al., 2004). Several locations within the Park serve as congregation areas for mountain goats and bighorn sheep; the Park has identified these areas as sensitive, and the State of South Dakota has a policy to maintain the mountain goat herd population. These congregation areas have sufficient habitat for calving, feeding, and provide a stable water source. Mountain goats occupy the granite formations of Black Hills National Forest and other Wilderness areas (see Section 3.5.1, Affected Environment for Wilderness, for additional information). Their soft hooves allow them to be excellent climbers and traverse steep terrain. In 1924, this species was introduced to the Park after six goats escaped from their pens in the nearby Custer State Park and their population within the ATMP planning area has increased to over 200 individuals (NPS, 2022a).

### ***Federally Listed Species***

A list of threatened and endangered species that may occur within the ATMP planning area was obtained through the USFWS Information Planning and Consultation tool. Based on this information, and the absence of habitat, the red knot (*Calidris canutus rufa*) and the monarch (*Danaus plexippus*) were not included in this draft EA discussion; for more information on these species, see the *Section 7 No Effect Memo* in Appendix H. The following species that are known to occur within the ATMP planning area are described below.

#### **Northern Long-eared Bat**

The northern long-eared bat (*Myotis septentrionalis*) is listed as endangered under the ESA (87 FR 73488) and is one of several bat species present within the Park. Northern long-eared bats are nocturnal and emerge at dusk to forage for insects in the understories of trees. Their breeding season occurs from late summer to fall; northern long-eared bats hibernate in caves in the winter months and reproduce in spring where they spend the remainder of the year in forested habitat. According to acoustic surveys conducted within the Park, the area of greatest winter bat activity occurs in the western region of the Park, at a clearing between two tall granite cliffs by Highway 244 near pine snags (Maddox, 2022).

The most significant threat to this species is white-nose syndrome, followed by collisions with wind turbines, climate change, and habitat loss. White nose syndrome disrupts hibernation and has caused populations of northern long-eared bats to decline 97-100% across 79% of their range, while mortality from wind turbines posed a risk northern long-eared bats across almost half of their range (USFWS, 2022a).

Stressors to this species, compounded with their low reproduction rate of one pup per year, are expected to cause a 95% decline of northern-long ear bat abundance throughout their range by 2030. As such, the USFWS uplisted this species from threatened to endangered in 2023. Although there have been no detections of white nose syndrome at the Park, it has been detected in bats at nearby Wind Cave National Park and Jewel Cave National Monument.

Anthropogenic noise has been found to reduce foraging success of bats (Siemers and Schaub, 2011; Luo et al., 2015). When exposed to played-back traffic and gas compressor station noise at 58-76 dBA and low-level amplified noise at 35 dBA, pallid bats (*Antrozous pallidus*) experienced increases in the amount of time it took to locate prey-generated sounds (Bunkley and Barber, 2015). The greater mouse-eared bat (*Myotis myotis*) had showed decreased foraging efficiency when exposed to broadband computer-generated noise at a sound pressure level of 80 dB (which corresponds to sounds occurring 10 meters to 15 meters (33 ft. to 49 ft.) away); bats will avoid foraging areas with these conditions in favor for quieter foraging areas (Schaub et al., 2008).

### Tricolored Bat

The tricolored bat (*Perimyotis subflavus*) is an insectivore that is distinguished by its tricolored fur that appears darker at the base and top of its body and lighter in the middle. The tricolored bat was one of several bat species that were relatively recently detected at the Park and is proposed to be listed as endangered under the ESA (87 FR 56381). They are nocturnal mammals that forage at treetop level or over waterways and forest edges at dusk with slow, erratic flight patterns. Similar to other bat species, the tricolored bat winters in caves or mines and roosts in forested habitats during other parts of the year. Tricolored bats mate during the fall and winter seasons, hibernate throughout the winter, and migrate to their summer habitat where females form maternity colonies to birth their young (USFWS, 2022b). Once juveniles can fly, the bats disperse and return to their winter habitats to swarm, mate, and hibernate. Tricolor bats demonstrate site fidelity to their winter and summer roost habitats (USFWS, 2022b).

Threats to tricolored bats include white nose syndrome, collisions with wind turbines, habitat loss and disturbance, and climate change. Similar to the northern long-eared bat, small colonies of tricolored bats are vulnerable to extirpations from white noise syndrome and other stressors due to their low reproduction rate of two pups per year and high philopatry (tendency to return to or remain near a particular site or area). White nose syndrome is the most prominent threat to this species, and it is estimated that abundance of tricolored bats will decrease by 81% across their range over the next ten years (USFWS, 2022b). Low abundances also increase the loss of genetic diversity which will further lessen the ability of the tricolored bat to adapt to changes in their environment.

According to acoustic surveys conducted at several locations in the Park, the area of greatest winter bat activity occurs in the western region of the Park, at a clearing between two tall granite cliffs by Highway 244 near pine snags (Maddox, 2022).

### ***Other Species of Concern***

Within the ATMP planning area, there are two other bird species of conservation concern: the bald eagle (*Haliaeetus leucocephalus*) and the peregrine falcon (*Falco peregrinus*).

### Bald Eagle

Bald eagles are birds of prey with large wingspans. They are considered carnivores, with a diet that consists primarily of rodents. Bald eagles inhabit seacoasts, forest valleys, mountain regions, lakes, and rivers, and are occasionally present within the Park and greater ATMP planning area. Bald eagles mate for life and aggressively defend nests during the breeding season. Nests are typically constructed in trees near water sources or along cliffs. The clutch size is one to three eggs, and adults will use the same nests each year. Chicks hatch and fledge throughout the spring.

In 2007, the USFWS estimated there were 9,789 breeding pairs across the southern U.S., which led to the delisting of the bald eagle from the ESA in those regions and later removed from the federal list of endangered species. The population size of this species has increased since 2007, and continues to increase, as bald eagles are provided protection under the MBTA and the Bald and Golden Eagle Protection Act.

In 2007, the USFWS prepared National Bald Eagle Management Guidelines, and in 2016 USFWS released the Final Programmatic Environmental Impact Statement for the Eagle Rule Revision<sup>16</sup>, which analyzed the effects of revised incidental take permit regulations. In 2022, USFWS published a proposed rule<sup>17</sup> and draft EA proposing additional changes to the eagle incidental take permitting program. USFWS guidelines provide landowners, land managers, and others who share public and private lands with bald eagles with guidance on when and under what circumstances the Bald and Golden Eagle Protection Act applies to project activities. Additionally, the guidelines include standoff distances of 1,000 ft. for aircraft at nests during the breeding season, foraging areas, and communal roost sites. Threats to bald eagles include habitat loss from development in coastal areas, pesticide poisoning, and illegal shooting.

### Peregrine Falcon

The peregrine falcon is a carnivorous bird with a diet that consists primarily of other birds and is augmented by rare intakes of small mammals, reptiles, or insects. This species nests along remote cliffs and ledges, where their nests, called scrapes, are just small depressions in gravel. Nesting occurs in the spring and their clutch size is two to three eggs.

Pollutants such as dichloro-diphenyl-trichloroethane (DDT) caused egg-shell thinning, resulting in the listing of this species as endangered under the ESA in 1973 (NPS, 2021a). Limiting the use of DDT allowed populations to recover, and this species was delisted in 1999, where their populations have since slowly increased and are now considered to be stable. Despite population recovery, the peregrine falcon is still listed as threatened at the state level in South Dakota (South Dakota Department of Game, Fish, and Parks, 2022). Threats to peregrine falcons include poisoning from DDT-based pesticides and illegal shooting.

This species is an uncommon migrant of South Dakota but has been observed in the Black Hills during the summer season. Surveys in 2017 documented two peregrine falcon nest locations in the northern and central Black Hills (South Dakota Department of Game, Fish, and Parks 2022). In 2020, the NPS observed a pair of nesting peregrines in the Park (though the four chicks did not survive), and in 2022, a pair was observed flying over the sculpture. Peregrine falcons have

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<sup>16</sup> <https://www.fws.gov/media/final-programmatic-environmental-impact-statement-eagle-rule-revision>

<sup>17</sup> <https://www.federalregister.gov/documents/2022/09/30/2022-21025/permits-for-incidental-take-of-eagles-and-eagle-nests>

also been observed in portions of the ATMP planning area outside the Park, but no nests have been documented in these locations.

When peregrine falcons were exposed to helicopters and fixed-wing aircraft overflights from 1,000 meters (3,281 ft.) or less, or at slant distances of 550 meters (1,804 ft.), 2-3% of individuals had in-flight responses; when active nests were approached at the same slant distances, peregrine falcons have been observed attacking these aircraft (Nordmeyer, 1999). Studies suggest that although peregrine falcons have shown reactions to aircraft, they display stronger reactions and are therefore more sensitive to disturbance from humans, other animals, and boats than they were to overflights from helicopters or fixed-wing aircraft. (Nordmeyer, 1999; Roby et al., 2002; Palmer et al., 2003). Studies recommend a standoff distance of 2,640 ft. between from active nest for human activities (Richardson and Miller, 1997; Colorado Division of Wildlife, 2020).

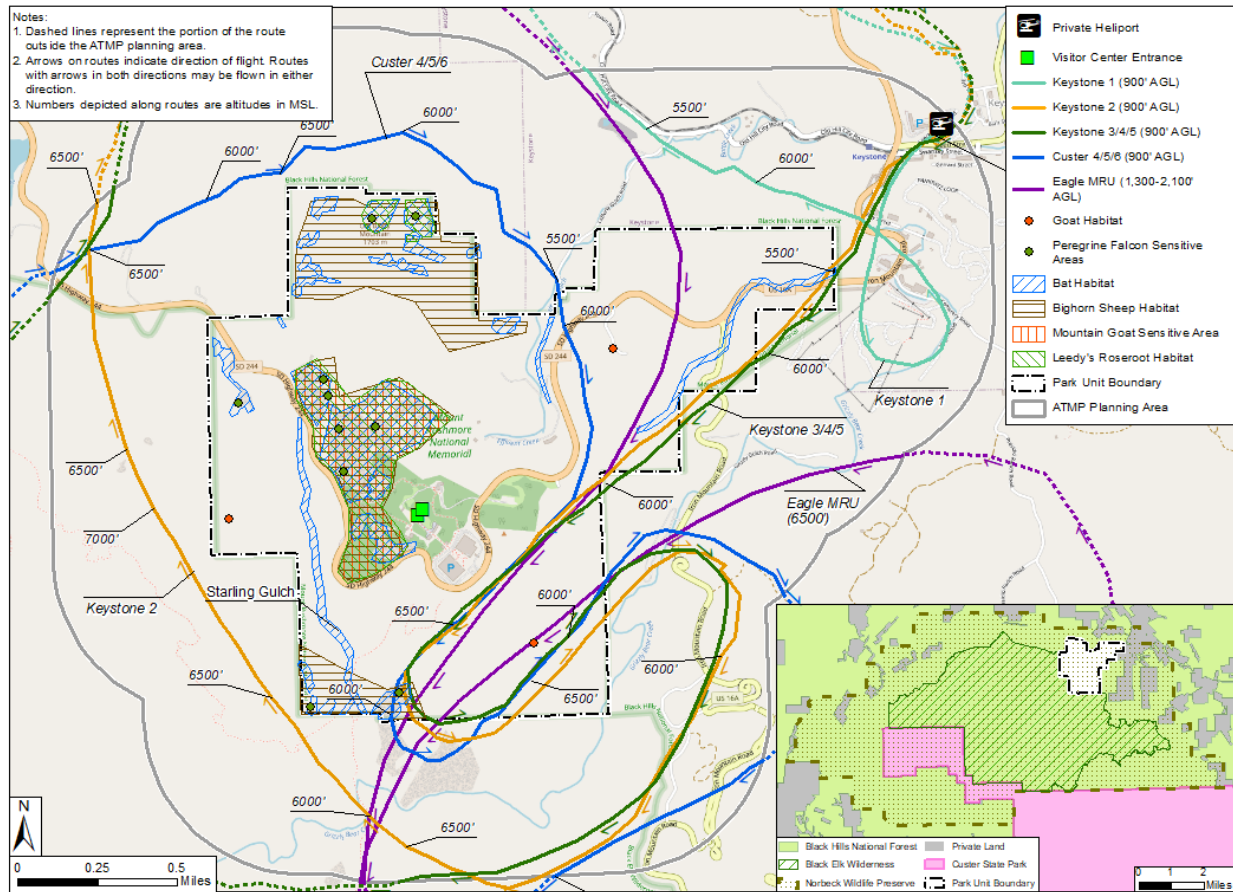


Figure 14. Affected Environment for Biological Resources and Environmental Consequences for Alternatives 1, 3 and 4.



### **3.3.2 Environmental Consequences**

Noise from commercial air tours may impact wildlife in a number of ways, including altered vocal behavior, breeding relocation, changes in vigilance and foraging behavior, and impacts on individual fitness and the structure of ecological communities to name a few (Shannon et al., 2016; Kunc et al., 2016; Kunc and Schmidt, 2019). Understanding the relationships between noise attributes (e.g., timing, intensity, duration, and location) and ecosystem responses is essential for understanding impacts to these species and developing management actions to address them (Gutzwiller et al., 2017). To capture how noise may affect quieter natural sounds or conversations, the resource impacts analysis below examines the time above 35 dBA (for quieter natural sounds and impacts to natural resources). Refer to the *Noise Technical Analysis* in Appendix F for more information.

The agencies are currently conducting analysis for those federally listed species described in Section 3.3.1, Affected Environment for Biological Resources, in accordance with 50 CFR Part 402.02. The FAA and the NPS initiated technical assistance with the USFWS on February 7, 2023 during which all four alternatives were reviewed. Based on this discussion and the agencies' ongoing analysis, the agencies have determined that the preferred alternative (Alternative 2) would have *no effect* on federally listed threatened or endangered species. See Appendix H, *Section 7 No Effect Memo* for additional analysis.

#### ***Alternative 1: No Action***

Under the No Action Alternative, noise from commercial air tours would continue to affect biological resources throughout the ATMP planning area. Noise from commercial air tours currently disturbs the Park's wildlife and could result in changes in wildlife behavior, such as vocal behavior, or other effects that cause wildlife to change their behavior or avoid an area, such as breeding relocation or changes in foraging behavior.

Existing commercial air tour routes are present over known habitat for bats and bighorn sheep within the Park (see Figure 14) which would increase the likelihood of these behavioral effects occurring. The *Noise Technical Analysis* (Appendix F) shows that on days when air tours occur, noise above 35 dBA would occur for less than 330 minutes across the majority (70%) of the ATMP planning area. This noise may interfere with wildlife behavior as described above.

Raptor species within the ATMP planning area, including bald eagles and peregrine falcons, are especially sensitive to low flying aircraft and their associated noise. In consideration of the effects of aircraft on bald eagles, when helicopters flew at altitudes from 60 meters to 120 meters (197 ft. to 394 ft.), bald eagles flushed from perching or nesting about half of the time, with juveniles flushing more often than adults, and eagles feeding or standing on the ground flushed more often than perched eagles (Stalmaster and Kaiser, 1997). Eagles rarely flushed when helicopter overflights were conducted at altitudes greater than 300 meters (984 ft.) (Stalmaster and Kaiser, 1997). Nesting eagles were more likely to flush than non-nesting eagles

during helicopter overflights (Watson, 1993), but nesting eagles rarely responded to fixed-wing aircraft at altitudes of 50 meters to 150 meters (164 ft. to 492 ft.) (Watson, 1993). Scientific and national level guidance recommends a minimum aircraft standoff of 1,000 ft. for communal roost sites and during nesting for bald eagles (USFWS, 2007) and 2,600 ft. for peregrine falcons during the nesting season to minimize noise impacts (Colorado Parks and Wildlife, 2020). The current altitudes reported by air tour operators over the ATMP planning area (minimum 900 ft. to 1,400 ft. AGL) are not in compliance with these recommended buffer zones and may impact bald eagles and peregrine falcons in the ATMP planning area in the form of nest flushing due to noise or collisions with aircraft. These effects which are currently occurring under existing conditions would continue to occur under the No Action Alternative. This analysis of existing conditions represents the impacts of the No Action Alternative to biological resources, though impacts could increase if flights up to IOA occurred (see Section 2.4.1, Commercial Air Tours per Year for the No Action Alternative).

### ***Alternative 2***

Under Alternative 2, commercial air tours would not be conducted within the ATMP planning area which would eliminate this source of noise from the ATMP planning area. Therefore, there would be a direct beneficial effect on biological resources since the intensity and likely presence of noise from commercial air tours would be less than under existing conditions. The impacts described above under the No Action Alternative would be less likely to occur as a result of air tours since they would no longer be flying within the ATMP planning area, except as necessary for takeoff and landing at the privately owned and operated heliport on the boundary of the ATMP planning area.

### ***Alternative 3***

Under Alternative 3, the types of effects to biological resources would be similar to the No Action Alternative as air tours would still be conducted within the ATMP planning area on the same routes and altitudes as existing conditions (Figure 14). However, the likelihood of these effects occurring to biological resources would decrease since Alternative 3 would authorize fewer air tours per year than existing conditions (approximately 7% reduction as compared to existing conditions). The *Noise Technical Analysis* (Appendix F) shows that on days when air tours occur, noise above 35 dBA would occur for less than 225 minutes a day across the ATMP planning area, which represents a reduction of 105 minutes a day compared to existing conditions.

Similar to the altitudes under existing conditions, the altitudes for Alternative 3 (minimum 900 ft. to 1,400 ft. AGL) are not in compliance with the recommended buffer zones for bald eagles and for peregrine falcons during the nesting season and may impact bald eagles and peregrine falcons in the ATMP planning area in the form of nest flushing due to noise or collisions with aircraft.

Alternative 3 would provide protection to species that are active during dawn and dusk, which includes listed and non-listed bat species, by restricting the time frame during which air tours could be conducted using non-quiet technology aircraft from one hour after sunrise until one hour before sunset. The requirement to report bird strikes in Alternative 3, described in Section 2.6.6, Additional Requirements, would allow the agencies to assess the effectiveness of these protections, and to modify them in the event that unanticipated impacts are observed.

#### ***Alternative 4***

Under Alternative 4, the types of effects to biological resources would be similar to the No Action Alternative as air tours would still be conducted within the ATMP planning area on the same routes and altitudes as existing conditions (Figure 14). However, the likelihood and intensity of these effects occurring to biological resources would decrease as compared to both existing conditions and Alternative 3 since Alternative 4 would authorize fewer air tours per year (approximately 81% reduction compared to existing conditions). Additionally, compared to Alternative 3, Alternative 4 would further reduce and restrict seasonal air tour operations within the ATMP planning area to minimize impacts on nesting birds and bighorn sheep lamb rearing. Air tours would be permitted to occur between June 16 through September 30 (107 total days each year). The *Noise Technical Analysis* (Appendix F) shows that on days when air tours occur, noise above 35 dBA would occur for less than 75 minutes a day across the ATMP planning area, which represents a reduction of 255 minutes a day compared to existing conditions and would be 150 minutes less than Alternative 3.

Similar to the altitudes under existing conditions, the altitudes for Alternative 4 (minimum 900 ft. to 1,400 ft. AGL) are not in compliance with the recommended buffer zones for bald eagles and for peregrine falcons during the nesting season and may impact bald eagles and peregrine falcons in the ATMP planning area in the form of nest flushing due to noise or collisions with aircraft.

Alternative 4 would provide increased protection to species that are active during dawn and dusk, which includes listed and non-listed bat species, by restricting the time frame during which air tours conducted using non-quiet technology aircraft could occur from 9:00 AM to 5:00 PM local time. In the event that operators request and are authorized to use the quiet technology incentive, those air tours would result in the possibility of noise during the sunrise/sunset time periods when bat species are more active. The requirement to report bird strikes in Alternative 4, described in Section 2.7.6, Additional Requirements, would allow the agencies to assess the effectiveness of these protections, and to modify them in the event that unanticipated impacts are observed.

### ***Indirect and Cumulative Effects***

**Indirect Effects:** Indirect effects to biological resources could occur because of noise caused by air tours flying outside of the ATMP planning area. As noted in Section 3.1.2, Indirect and Cumulative Effects for Noise and Noise-Compatible Land Use, indirect noise impacts would have the potential to occur under Alternatives 2, 3, and 4 as these alternatives could result in the displacement of air tours outside the ATMP planning area. Operators may choose to fly along existing flight paths but at or above 5,000 ft. AGL. This may be impractical due to the high elevation of the terrain because it would require operators to fly above 10,000 ft. MSL. Supplemental oxygen use is required in unpressurized aircraft flying at altitudes over 10,000 ft. MSL for more than 30 minutes (14 CFR Parts 135.89, 135.157); therefore, it is unlikely air tours would fly higher for extended periods of time. Additionally, flights at 5,000 ft. AGL or higher would provide limited value to a sightseeing operation. For air tours conducted at or above 5,000 ft. AGL, the increase in altitude would likely decrease impacts on ground level resources as compared to current conditions.

Operators could also choose to fly to points of interest elsewhere in the region outside the ATMP planning area where they already fly (such as the Crazy Horse Monument, Iron Mountain Road, Horsethief Lake, Black Elk Peak, and Sylvan Lake), or operators could fly routes just outside of the ATMP planning area that provide views of the sculpture.

Operators, both with IOA for the Park and without IOA, conduct air tours in the Black Hills area as routes just east of the Park still afford views of the sculpture and there are other locations of interest in the area for air tours. It is difficult to predict with specificity if, where, and to what extent any displaced air tours would result in impacts in different and/or new areas under Alternatives 2, 3, and 4. The preciseness of routes and altitudes for air tours flown on displaced routes are generally subject to Visual Flight Rules and may vary. However, the heliport on the boundary of the ATMP planning area is used for tours over the Park as well as other nearby parks and attractions. It is reasonably foreseeable that air tour operations displaced from flying within the ATMP planning area under Alternatives 2, 3, or 4 would continue to utilize this heliport to conduct tours over other areas that are outside the ATMP planning area. If air tour displacement occurred, the number of tours offered from this heliport could increase if operators chose to offer more tours over the other regional points of interest which could result in indirect noise effects to biological resources outside of the ATMP planning area. Alternative 2 would prohibit air tours from being conducted within the ATMP planning area, whereas Alternative 3 which would limit them to no more than 3,657 tours per year and Alternative 4 which would limit them to no more than 751 per year. Alternative 2 has the most potential to result in the displacement of air tours and could result in more indirect effects to biological resources from air tours flying outside of the ATMP planning area. Alternative 3 and Alternative 4 also have the potential for indirect impacts due to displacement of air tours.

**Cumulative Effects:** The NPS would continue current management actions and respond to future needs and conditions for biological resources without major changes in the present course. The aircraft used for Park flyovers, firefighting activities, wildlife surveys, and Park maintenance and their associated noise levels (see Section 3.1.1, Affected Environment for Noise and Noise-Compatible Land Use for more information) and wildlife disturbance risks within the ATMP planning area would likely continue at current levels. There are no anticipated changes to public access within the ATMP planning area, so ongoing impacts to wildlife from visitors would remain unchanged in the foreseeable future. As described above for indirect effects, air tours flown just outside the ATMP planning area are currently offered by operators both with and without IOA for the Park as air tours in this area still afford views of the sculpture. Noise from these air tours that is experienced within the ATMP planning area also contributes to the cumulative effects analysis.

Changes in environmental conditions in the ATMP planning area that may ensue from global climate change include increasing temperatures, decreasing precipitation, increasing storm intensities, and increasing variability in weather patterns (Thomas et al., 2004; EPA, 2006). However, it is well documented that stress from different sources is cumulative having a combined effect on the health of wildlife (Tyack et al., 2022). Alternatives 3 and 4 would result in less cumulative noise and wildlife disturbance in the ATMP planning area than the No Action Alternative, given the reduced number of flights, designated routes, and other ATMP conditions. However, these alternatives could allow for more cumulative noise and associated wildlife disturbance than Alternative 2, where flights would not be authorized in the ATMP planning area. Ongoing present and future Park management actions by the NPS would continue to occur under any of the alternatives.

### 3.4 Cultural Resources

The NHPA (54 U.S.C. §§ 300101 et seq.) is comprehensive federal preservation legislation intended to protect cultural resources. Section 106 of the NHPA (54 U.S.C. § 306108), as implemented in 36 CFR Part 800, requires federal agencies to consider the effects of undertakings on historic properties, should any such properties exist. Historic property is defined in 54 U.S.C. § 300308 and 36 CFR Part 800.16(l)(1) as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (the National Register). This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe and that meet the National Register criteria. The FAA's environmental impact category discussing Cultural Resources is titled as Historical, Architectural, Archeological and Cultural Resources in FAA Order 1050.1F. These categories include historic properties as well as any cultural resources identified that may not be eligible for listing in the National Register but are otherwise protected as tribal resources or by local and state laws. Sacred sites, for example, are considered significant cultural resources and are

also protected under the American Indian Religious Freedom Act. The methodology in Appendix E, *Environmental Impact Analysis Methods*, as well as the Section 106 documentation in Appendix G, *Cultural Resources Consultation and Summary*, further describe the identification and treatment of cultural resources for the project.

In addition to Section 106 of the NHPA, the NPS's Organic Act and Section 110 of the NHPA apply to and provide for the preservation of historic, ethnographic and cultural resources on parkland. NPS policies and directives also apply to park cultural and ethnographic resources, and provide direction for their management including the NPS Management Policies (2006), Chapter 5 and Director's Order 28: Cultural Resource Management. Executive Order (EO) 13007 (*Indian Sacred Sites*, dated May 24, 1996) provides direction regarding Indian Sacred Sites. NPS Management Policies (2006) § 5.3.1.7, Cultural Soundscape Management, also acknowledges that culturally appropriate sounds are important elements of the national park experience in many parks, and that the NPS will preserve soundscape resources and values of the parks to the greatest extent possible to protect opportunities for appropriate transmission of cultural and historic sounds that are fundamental components of the purposes and values for which the parks were established. NPS Management Policies (2006) identify and define five types of cultural resources for consideration in NEPA evaluation: Archeological Resources, Cultural Landscapes, Ethnographic Resources, Historic and Prehistoric Structures, and Museum Collections. These resource types correlate generally with the FAA categories as described further below. Museum Collections is dismissed from consideration due to the nature of the project.

Section 106 consultation with the South Dakota State Historic Preservation Office (SHPO), consulting parties, and tribes was initiated via formal letters dated April 12, 2021 and April 15, 2021. Tribal consultation meetings were held on March 30, 2021, June 14, 2021, October 19, 2021, January 28, 2022, May 12, 2022, and November 17, 2022, where participants discussed background information about ATMPs, the ATMP development process, consultation framework, and the format and times of future consultation meetings. Action items and meeting transcripts were circulated to tribes, agency members, and all meeting participants. A letter dated October 1, 2021, was sent to the Secretary of Oglala Sioux Tribe formally requesting government-to-government consultation under EO 13175 (*Consultation and Coordination with Indian Tribal Governments*, dated November 9, 2000), in accordance with the tribe's consultation procedures. The agencies initiated Section 106 consultation with consulting parties in three phases in order to include additional parties that were identified as the process moved forward (see Appendix G, *Cultural Resources Consultation and Summary*, for correspondence and list of consulting parties). These letters were dated April 12, 2021, April 15, 2021, and August 6, 2021.

The NEPA study area for cultural resources corresponds with the Area of Potential Effects (APE) identified as part of the Section 106 process and encompasses the potential effects of all

alternatives under consideration. An APE as defined at 36 CFR Part 800.16(d) is the geographic area or areas within which the undertaking may directly or indirectly cause alterations in the character or use of any historic properties, if any such properties exist. The proposed undertaking does not require land acquisition, construction, or ground disturbance, and the agencies anticipate no physical effects to historic properties. The APE therefore includes areas where any historic property present could be affected by the potential introduction of visual or audible elements that could diminish the integrity of any identified significant historic properties. The APE has been defined to include the ATMP planning area, plus a two-mile buffer around this area. Refer to Figure 15 for a depiction of the APE identified for the undertaking.

The agencies developed draft alternatives for the undertaking, which were discussed with tribes during a meeting held January 28, 2022. The agencies, in consultation with the SHPO, determined the APE and completed a preliminary identification of historic properties. An Undertaking/APE letter dated October 28, 2022, was sent to the SHPO, federally recognized tribes, and consulting parties. The APE and a preliminary list of historic properties were discussed during meetings held on October 31, 2022, and November 17, 2022.

### **3.4.1 Affected Environment**

The affected environment includes prehistoric or historic districts, sites, buildings, structures, and/or objects, as well as traditional cultural properties (TCPs) (inclusive of ethnographic resources and sacred sites), and cultural landscapes that have been previously documented in the APE or identified through consultation. Under existing conditions, based on reported routes, the heaviest concentrations of commercial air tours fly near the sculpture.

Throughout the Section 106 process, the agencies requested consulting party input to help identify historic properties within the APE. The agencies provided an initial historic property identification list to consulting parties in an October 2022 letter and at the October 31, 2022, and November 17, 2022, Section 106 Consulting Party meetings and requested further input on the identification of historic properties within the proposed APE. Consulting parties provided comments during the meeting regarding the identification of historic properties, and the agencies took into consideration the input from the consulting parties in identifying additional historic properties. A final historic properties list was provided in the March 14, 2023, finding of effects letter.

Identification of historic properties relied upon data submitted by NPS Park staff about known historic properties within the Park and from data received by the NPS Midwest Archeological Center, the Black Hills National Forest (USFS), the South Dakota SHPO's Cultural Resource Geographic Research Information Display (CR GRID) database, and the South Dakota Archaeological Research Center. Tribal consultation meetings were held in which the FAA heard from the Fort Peck Assiniboine and Sioux Tribes, Upper Sioux Community, Santee Sioux

Nation, Rosebud Sioux Tribe, Cheyenne River Sioux Tribe, Northern Arapaho, and others that the Black Hills, including Badlands National Park and the Park, are part of a continuous landscape that is sacred to them and that they view as a single landscape and TCP.

***Cultural Resources (including Ethnographic Resources, Sacred Sites and Traditional Cultural Properties)***

Ethnographic resources are resources that are associated with the customs, habits, or behaviors of a cultural group, including those that possess religious and cultural significance. A sacred site, as defined in EO 13007, is any specific location that is identified to be an appropriately authoritative representative of an indigenous religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an indigenous religion. A TCP is a property significant due to its association with past and continuous cultural practices or beliefs of a living community that are rooted in that community's history and are important in maintaining the continuing cultural identity of the community. TCPs possess traditional cultural significance derived from the role the property plays in a community's historically rooted beliefs, customs and practices (NPS, 1992). TCPs are treated as historic properties for the purpose of evaluating impacts under Section 106 and NEPA (FAA, 2020).

The Lakota and many other tribes consider the Black Hills sacred; Bear Butte at the northeast edge of the Black Hills is a popular worship site. The region was used by numerous Native American groups for resource gathering, including food, medicine, and timber, and for religious purposes. A TCP survey of the Park was conducted in 2021 by a team of Cultural Specialists and Tribal Historic Preservation Officers. Over 90 new cultural sites were identified within the Park boundary. Additional surveys are forthcoming as the 2021 survey was not comprehensive across the entire Park. For the purposes of this draft EA, the agencies assume that all lands within the Park have spiritual and sacred qualities and consider the entire Park a TCP.

Through consultation, the agencies have heard from several tribes that the natural resources within the APE are also considered to be cultural resources by the tribes, with particular emphasis on plants, animals, and the sky. The landscape and TCP are significant for the preservation of natural resources and the natural setting of the Black Hills. Many of these natural resources are contributing features to the cultural resources detailed throughout.

***Archeological Resources***

Archeological resources are the physical evidence of past human activity, including evidence of the effects of that activity on the environment. Eight archaeological sites within the Park were discovered during a 1973 archeological survey of the entire Park, and include the following: a pine, aspen, and birch log structure located just outside the Park boundaries likely dating from the 1950s; a rock shelter site on the side of the Park that formed when a boulder fell across a large drainage ditch; cultural material such as a cobble fireplace and metal grill, tin cans, and several hearth areas; and a scatter of Woodland pottery found just west of the Park, the only



piece of prehistoric evidence. Five sites are historic trash dumps associated with the creation of the sculpture, most of which contain evidence of logging operations. The final site is an abandoned mica quarry and several test holes, which are remains of a Park concessionaire that attempted to establish a claim in the area (Anderson, 1974).

Approximately 120 additional below-ground archeological sites were identified within the APE; however, these below-ground archeological resources are not further discussed because feeling and setting are not characteristics that make these properties eligible for listing on the National Register and there is no potential for the undertaking to affect these resources.

***Historical and Architectural Resources (including Cultural Landscapes and Prehistoric/Historic Structures)***

A cultural landscape is a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided. Cultural landscapes are geographic areas associated with specific cultures or historical events, and they help illustrate how humans have adapted to and altered their surroundings. The NPS recognizes four cultural landscape categories: historic designed landscapes, historic vernacular landscapes, historic sites, and ethnographic landscapes.

The primary historic architectural significance of the Park lies in the sculpture and historic structures and artifacts associated with the carving. The Mount Rushmore National Memorial Historic District (MRNMHD) was listed in the National Register in 1986 based on its significance at the national level as the Shrine of Democracy. The sculpture is significant because: 1) it commemorates an important theme in our nations' history; 2) it is associated with the lives of the four presidents represented; and 3) it represents the work of a master and possesses artistic values. As such, the Park has engineering, historical, and artistic importance.

The original idea for a massive sculpture in the Black Hills belonged to Doane Robinson, South Dakota State Historian. Robinson enlisted sculptor Gutzon Borglum, aided by his son Lincoln, who carved the sculpture in the southeastern face of the granite upthrust from 1927 to 1941. Many of the original elements of Borglum's plan, such as the Hall of Records, remained unfinished. The MRNMHD includes many contributing elements like the sculpture itself as well as structures and features associated with the creation of the sculpture, including the Hall of Records, the Sculptor's Studio, the residence, the Borglum View Terrace, and other facilities affiliated with the creation of the sculpture, as shown in Figure 15. The NPS took control of the Park in 1933 and had full administrative control by 1941.

In recognition of the historic significance of the sculpture and associated facilities, the Park created a Historic Zone for management purposes, where physical development is limited. This zone includes lands managed primarily to preserve the sculpture and historic features related to the sculptor's operations. Activities in this zone are limited to interpretation, viewing, and

study of the sculpture. Within the Historic Zone, the sculpture and immediate surrounding lands are defined as the Outstanding Historic Feature Subzone. The Outstanding Historic Feature Subzone is managed in the same way as the Historic Zone, with an emphasis on preservation and interpretation of the sculpture.

There are other historic properties within the APE for which setting and feeling may be characteristics contributing to the property's National Register eligibility (see Table 15). These include historic structures, objects, bridges, linear properties, and districts within the APE, which relate to themes associated with Depression-era recreation development, early railway design, engineering, commerce, and vernacular architecture.

### ***Cultural Resources List***

There are 17 cultural resources within the APE, listed in Table 15 and depicted in Figure 15. The locations of some sites are considered sensitive information and are therefore not included in Figure 15. Descriptions of each can be found in Appendix G, *Cultural Resources and Consultation Summary*.

*Table 15. National Register Listed, Eligible, and Potentially Eligible Properties within the APE and Section 4(f) Resources.*

<b>Property Name</b>	<b>Property Type</b>	<b>Eligibility Status</b>
Black Hills	TCP	Recommended Eligible/undetermined
Mount Rushmore Developed Area	Structures	Listed
Mount Rushmore National Memorial	Site	Listed
Burlington & Quincy Highline Hill City to Keystone Bridge	District	Eligible
Bridge 52-312-448	Structure	Eligible
Highway 16A Tunnel	Structure	Eligible
Iron Mountain Road (Highway 16A)	Structure	Eligible
Tunnels on Iron Mountain Road	Structure	Eligible
Serolod	Structure	Eligible
Keystone School	Structure	Eligible
Halley's Store	Structure	Eligible
Historic Keystone Sign	Object	Eligible
39CU3069*	Site	Eligible
39PN3239*	Site	Eligible
39CU3873*	Site	Eligible

Property Name	Property Type	Eligibility Status
Scott Family Summer Cabin (also known as Lafferty Gulch Summer Home)*	Structure	Eligible
Otho Mining District	District	Eligible

\*Location is restricted and therefore cannot be shown on figures.

Sources: NPS Cultural Resource Managers, NPS Midwest Archeological Center, the USFS Black Hills National Forest, the South Dakota SHPO's CR GRID database, and the South Dakota Archaeological Research Center.

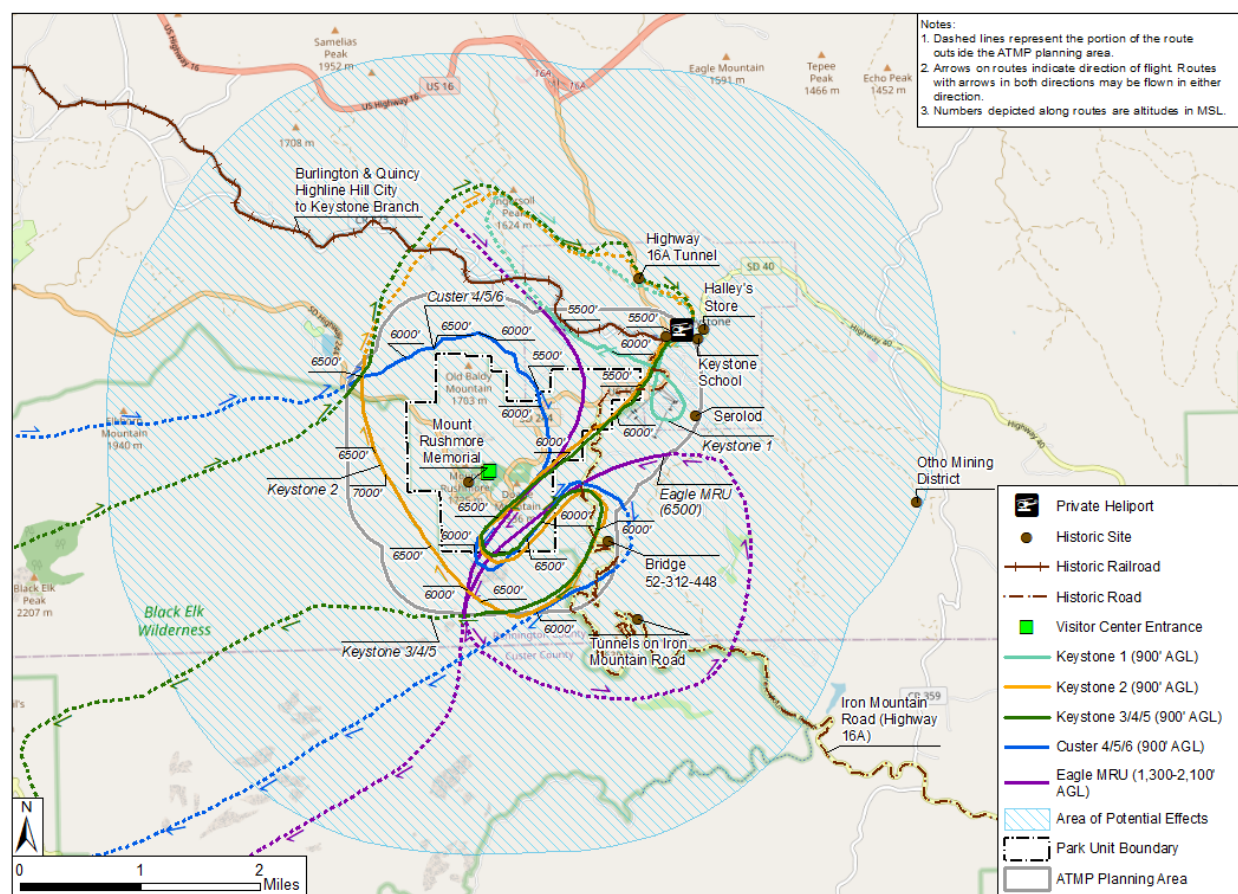


Figure 15. Affected Environment for Cultural Resources and Environmental Consequences for Alternatives 1, 3 and 4.

### 3.4.2 Environmental Consequences

Cultural resources within the APE include Historic, Architectural, Archeological and Cultural Resources, inclusive of ethnographic resources, TCPs, sacred sites, cultural landscapes, historic districts, and prehistoric and historic buildings and structures. Adverse impacts to these resources would occur if the alternative would alter the characteristics of a cultural resource that contribute to its significance in a manner that diminishes the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Commercial air tours,

by their nature, have the potential to impact resources for which feeling and setting are contributing elements.

For all alternatives, the proposed action would not limit access to or change ceremonial use of tribal sacred sites on federal lands. Sacred ceremonies or other tribal activities which occur without notice to the NPS may be interrupted by noise; however, commercial air tours have no effect on tribal access. Additionally, the proposed action would not involve any ground disturbing or other activities that would adversely affect the physical integrity of sacred sites.

The agencies requested and received consulting party input on the potential effects of the alternatives on historic properties throughout the Section 106 process, including at the October 31, 2022, and November 17, 2022, Section 106 Consulting Party meetings. Consulting parties provided comments during the meetings, and the agencies took into consideration the input from the consulting parties in evaluating the effects of the preferred alternative on historic properties.

#### ***Alternative 1: No Action***

Under the No Action Alternative, some cultural resources within the APE would continue to be impacted by air tours, as noise and visual effects would impact the feeling and setting of those resources. As described in Section 2.2.1, Air Tours at or above Existing Levels, noise and visual effects from existing air tours negatively impact cultural sites within the Park associated with Native American Tribes. Tribes and individual tribal members have consistently noted that persistent air tours over the Park unreasonably interfere with their connections to the sacred landscape of the Black Hills. Tribes and individual tribal members have emphasized that air tours over the Park have negative impacts on the ecosystem (including plants, animals, and the sky) as a cultural resource, as well as the continuous landscape, both of which are considered a sacred landscape and TCP. Air tours could result in some effects on air quality, such as emissions or low-flying aircraft could potentially generate dust, which could indirectly affect plants. However, the minimum altitudes considered by the action alternatives (900 ft. to 2,600 ft. AGL) create sufficient separation between plants and aircraft that cross into the ATMP planning area; therefore it is unlikely that the dust or changes in air quality would have a meaningful effect on plants.

Reporting data from 2017-2019 indicates that on a peak month average day, air tours fly over the APE approximately 39 times per day, creating potential for multiple audible intrusions of tribal ceremonial practices when noise from those air tours is audible. Based on the *Noise Technical Analysis* (see Appendix F, Section 6), air tour noise above 35 dBA occurs for less than 330 minutes a day across the ATMP planning area. For example, the time above 35 dBA under the No Action Alternative would be 96.9 minutes at the Highway 16A tunnel (Location #37) and 152 minutes at the Keystone School (Location #33). The 12-hour equivalent sound level would only exceed 60 dBA within the ATMP planning area near the heliport, and across the modeled

location points, the highest 12-hour equivalent sound level would be 54.2 dBA just east of the MRNMHD near State Highway 224, at Locations #17 (No name pullout) and #24 (Lot 6). These noise effects would continue to occur under the No Action Alternative, including those that interrupt tribal cultural practices and ceremonies, and connections to the sacred landscape of the Black Hills.

Air tours within the APE may also impact the Park's historical, architectural, and archeological resources, including cultural landscapes, and prehistoric and historic structures when air tour noise and visual effects detract from the feeling and setting of those resources. Under existing conditions, the cultural resources that experience the most air tours flying directly over or near them are the Historic Keystone Sign, Bridge 52-312-448, Burlington & Quincy Highline Hill City to Keystone Branch railroad, and the MRNMHD (refer to Figure 15). Based on the significant characteristics that make them eligible for the National Register, the Mount Rushmore Developed Area, Keystone School, Iron Mountain Road (Highway 16A), Highway 16A Tunnel, Mount Rushmore National Memorial, and the TCP encompassing the Park currently have their feeling or setting impacted by the noise and visual impacts of air tours. These impacts would continue to occur under the No Action Alternative. Collectively, this analysis of impacts to cultural resources based on the three-year average number of air tours flown from 2017-2019 represents the impacts of the No Action Alternative, though impacts could increase more than disclosed here if flights up to IOA occurred (see Section 2.4.1, Commercial Air Tours per Year for the No Action Alternative).

### ***Alternative 2***

Under Alternative 2, commercial air tours would not be conducted within the ATMP planning area, except during takeoff and landing from the privately owned and operated heliport on the boundary of the ATMP planning area. The elimination of commercial air tours from the ATMP planning area would reduce the direct noise and visual intrusions on feeling and setting of cultural resources within the APE and result in beneficial impacts to ethnographic resources and sacred sites, TCPs, archeological resources, cultural landscapes, historic districts, and prehistoric and historic buildings and structures compared to existing conditions.

The agencies continued consultation under Section 106 with an evaluation of the effects of Alternative 2, as the preferred alternative, on historic properties. A letter was sent on March 14, 2023, to the South Dakota SHPO and all consulting parties outlining the Section 106 process, including a description of the undertaking, delineation and justification of the APE, identification of historic properties and an evaluation and proposed finding of effects. Based on this consultation, the FAA proposes a finding that the ATMP will not adversely affect historic properties. See Appendix G, *Cultural Resources Consultation and Summary*, for more information.

### **Alternative 3**

Alternative 3 would authorize commercial air tours to be conducted on the same routes and altitudes as existing conditions, but it would authorize fewer air tours per year than existing conditions (approximately 7% reduction as compared to existing conditions), which would reduce direct noise and visual impacts that could detract from the feeling and setting of cultural resources within the APE (see Figure 15). Alternative 3 would not introduce new audible and visual elements into the APE because air tours are currently occurring in this area. The annual (3,657) and daily (25) limits on the number of air tours within the ATMP planning area would also reduce the likelihood that an air tour would interrupt tribal ceremonies or the sanctity of tribal sites.

Under Alternative 3, the *Noise Technical Analysis* (Appendix F, Section 6) indicates that on days when air tours occur, portions of the APE within the ATMP planning area would experience noise above 35 dBA for less than 225 minutes a day, which is 105 minutes less than existing conditions. The time above 35 dBA under Alternative 3 would stay the same or be reduced at all the identified cultural resources. For example, time above 35 dBA at the Highway 16A Tunnel (Location #37) would be reduced by 32 minutes and at the Keystone School (Location #33) time above 35 dBA would be reduced by 51 minutes as compared to existing conditions. Time above 52 dBA at the Highway 16A Tunnel (Location #37) would be reduced by 14 minutes and 18 minutes at the Keystone School (Location #33) as compared to existing conditions. The 12-hour equivalent sound level would only exceed 60 dBA within the ATMP planning area near the heliport. Across the modeled location points, the highest 12-hour equivalent sound level would be 52.4 dBA just east of the MRNMHD near State Highway 224, at Location #17 (No name pullout), which represents a reduction of 1.8 dBA as compared to existing conditions.

### **Alternative 4**

Similar to Alternative 3, Alternative 4 would authorize commercial air tours to be conducted on the same routes and altitudes as existing conditions. Under Alternative 4, up to eight air tours per day could be flown within the ATMP planning area, as compared to existing conditions (38 air tours on a peak month average day) as well as Alternative 3 (25 air tours per day). Alternative 4 would authorize fewer air tours per year than existing conditions as well as Alternative 3 (approximately 81% reduction as compared to the existing conditions), which would reduce direct noise and visual impacts that could detract from the feeling and setting of cultural resources within the APE (see Figure 15).

Alternative 4 would not introduce new audible and visual elements into the APE because air tours are currently occurring in this area. The annual (751) and daily (8) limits on the number of air tours within the ATMP planning area would also reduce the likelihood that an air tour would interrupt tribal ceremonies or the sanctity of tribal sites.

Under Alternative 4, the *Noise Technical Analysis* (Appendix F, Section 6) indicates that on days when air tours occur, portions of the APE within the ATMP planning area would experience noise above 35 dBA for less than 75 minutes a day, which represents a reduction of 255 minutes a day compared to existing conditions and 150 minutes less than Alternative 3. The time above 35 dBA under Alternative 4 would stay the same or be less at all identified cultural resources. For example, time above 35 dBA at the Highway 16A Tunnel (Location #37) would be reduced by 76 minutes and at the Keystone School (Location #33) time above 35 dBA would be reduced by 121 minutes as compared to existing conditions. Time above 52 dBA at the Highway 16A Tunnel (Location #37) would be reduced by 35 minutes and 42.6 minutes at the Keystone School (Location #33) as compared to existing conditions. The 12-hour equivalent sound level would only exceed 60 dBA within the ATMP planning area near the heliport. Across the modeled location points, the highest 12-hour equivalent sound level would be 47.5 dBA just east of the MRNMHD near State Highway 224, at Location #17 (No name pullout), which represents a reduction of 6.7 dBA as compared to existing conditions.

### ***Indirect and Cumulative Effects***

**Indirect Effects:** Indirect noise and visual effects to cultural resources could occur as a result of air tours flying outside of the ATMP planning area but within the APE, including those above 5,000 ft. AGL. As noted in Section 3.1.2, Indirect and Cumulative Effects for Noise and Noise-Compatible Land Use, indirect noise impacts would have the potential to occur under Alternatives 2, 3, and 4 as these alternatives could result in the displacement of air tours outside the ATMP planning area. The No Action Alternative is not expected to result in indirect effects to cultural resources within the APE.

For air tours displaced under Alternatives 2, 3, and 4, operators may choose to fly along existing flight paths but at or above 5,000 ft. AGL. This may be impractical due to the high elevation of the terrain because it would require operators to fly above 10,000 ft. MSL. Supplemental oxygen use is required in unpressurized aircraft flying at altitudes over 10,000 ft. MSL for more than 30 minutes (14 CFR Parts 135.89, 135.157); therefore, it is unlikely air tours would fly higher for extended periods of time. Additionally, flights at 5,000 ft. AGL or higher would provide limited value to a sightseeing operation. For air tours conducted at or above 5,000 ft. AGL, the increase in altitude would likely decrease impacts on ground level resources as compared to current conditions because the noise would be spread over a larger geographical area. Noise from air tours conducted at or above 5,000 ft. AGL would be audible for a longer period, but at lower intensity. Similarly, aircraft are transitory elements in a scene and visual impacts tend to be relatively short, especially at higher altitudes.

Operators could also choose to fly to points of interest elsewhere in the region outside the ATMP planning area where they already fly (such as the Crazy Horse Monument, Iron Mountain Road, Horsethief Lake, Black Elk Peak, and Sylvan Lake), or operators could fly routes just

outside of the ATMP planning area but within the APE that provide views of the sculpture. Operators with IOA for the Park currently conduct air tours just outside the ATMP planning area as do operators that do not have IOA for the Park as routes in this area still afford views of the sculpture. It is difficult to predict with specificity if, where, and to what extent any displaced air tours would result in impacts in different and/or new areas under Alternatives 2, 3, and 4. The preciseness of routes and altitudes for air tours flown on displaced routes are generally subject to Visual Flight Rules and may vary. However, the heliport on the boundary of the ATMP planning area is used for tours over the Park as well as other nearby Parks and attractions. It is reasonably foreseeable that air tour operations displaced from flying over the Park under Alternatives 2, 3, or 4 would continue to utilize this heliport to conduct tours over other areas that are outside the ATMP planning area. If air tour displacement occurred, the number of tours offered from this heliport could increase if operators chose to offer more tours over the other regional points of interest which could result in indirect noise effects to cultural resources in this area which includes the Historic Keystone Sign and Highway 16A Tunnel.

Alternative 2 would prohibit air tours from being conducted within the ATMP planning area, whereas Alternative 3 would limit them to no more than 3,657 tours per year and Alternative 4 would limit them to no more than 751 per year. Alternative 2 has the most potential to result in the displacement of air tours and could result in more indirect effects to cultural resources from air tours flying outside of the ATMP planning area. Alternative 3 and Alternative 4 also have the potential for indirect impacts due to displacement of air tours.

While these alternatives could result in some indirect noise and visual impacts to cultural resources within the APE for flights along the perimeter but outside or above the ATMP planning area, these impacts are not anticipated to result in adverse effects to cultural resources as those that may experience an increase in noise and/or visual effects are already experiencing noise coming from vehicles using the highway or noise and visual effects coming from aircraft using the nearby heliport and/or quiet or natural settings are not significant characteristics that make them eligible for listing in the National Register. Indirect effects under Alternative 2 were assessed in the Finding of Effects letter for Section 106. See Appendix G, *Cultural Resources Consultation and Summary*, for more information.

**Cumulative Effects:** Other ongoing sources of noise within the APE include Park maintenance and management actions such as aircraft for wildlife monitoring, firefighting, mechanized equipment for Park maintenance, and flyovers for special events (see Section 3.1.1, Affected Environment for Noise and Noise-Compatible Land Use for more information on the existing ambient for current conditions). Ongoing visual impacts within the APE include general aviation flights, overflights by commercial airlines, flyovers for special events, and aircraft used for resource monitoring or Park maintenance, which would likely continue in the same frequency and manner under any of the alternatives, as they occur independently of air tours. As described above for indirect effects, air tours flown just outside the ATMP planning area are



currently offered by operators both with and without IOA for the Park as air tours in this area still afford views of the sculpture. Noise from these air tours that is experienced within the ATMP planning area also contributes to the cumulative effects analysis.

The potential for cumulative noise and visual effects of these actions along with those from commercial air tours would be the greatest under the No Action Alternative, especially if the number of air tours per year reached IOA. The cumulative effects would be fewer for Alternatives 3 and 4, which limit the number of air tours that would occur as compared to the No Action Alternative, and the fewest under Alternative 2 as there would be no tours permitted within the ATMP planning area. Ongoing present and future Park management actions by the NPS would continue to occur under any of the alternatives.

### 3.5 Wilderness

While Wilderness is not an impact category the FAA traditionally examines, the Black Elk Wilderness to the south and west of the Park is managed by the USFS and is inside the ATMP planning area. The USFS agreed to be a cooperating agency and has participated in the development of the draft ATMP, this draft EA, and associated planning efforts.

The Wilderness Act of 1964 is the primary federal legislation regulating the management of Wilderness areas. The USFS has agency-wide management directives (USFS, 2021) and unit specific management plans for managing designated Wilderness areas in the National Forest system. The Forest Service Manual 2300 (USFS, 2021) states,

*Wilderness is a unique and vital resource. In addition to offering primitive recreation opportunities, it is valuable for its scientific and educational uses, as a benchmark for ecological studies, and for the preservation of historical and natural features*

The USFS manages Wilderness for the following qualities of Wilderness character (USFS, 2021):

- **Untrammeled:** Unhindered and free from the actions of modern human control or manipulation.
- **Natural:** Ecological systems are substantially free from the effects of modern civilization.
- **Undeveloped:** Retaining primeval character and influence without permanent improvements or modern human occupation.
- **Solitude or Primitive and Unconfined Recreation:** Ability to provide outstanding opportunities for solitude or primitive and unconfined type of recreation.
- **Other features of value:** Wilderness preserves other features of value that are of scientific, educational, scenic, or historical value.

Since commercial air tours do not land within Wilderness in the ATMP planning area, the undeveloped quality of Wilderness is not discussed. Additionally, the authorization of commercial air tours is not an intentional manipulation of the environment and therefore the untrammelled quality of Wilderness is also not discussed. Other features of value within the Wilderness in the ATMP planning area including historical and scenic resources are discussed in other sections of this draft EA (cultural and ethnographic resources are discussed in Section 3.4, Cultural Resources; scenic resources are discussed in Section 3.8, Visual Effects); therefore, the other features of value have not been discussed in this section.

The study area for Wilderness includes Congressionally designated Wilderness managed by the USFS within the ATMP planning area (Figure 16).

### **3.5.1 Affected Environment**

The Black Elk Wilderness is part of Black Hills National Forest, and thus is managed by the USFS. The Black Elk Wilderness borders the Park to the south and west, and a portion of the Black Elk Wilderness is within the ATMP planning area and shares a 2.6-mile boundary with the Park. The Black Elk Wilderness was Congressionally designated as Wilderness in 1980 and spans 13,426 acres in the central Black Hills. An important feature of the Black Elk Wilderness is Black Elk Peak. At 7,242 ft. above sea level, it is the highest point in the U.S. east of the Rocky Mountains. From the historic lookout tower on Black Elk Peak, there is a panoramic view of four states, and the surrounding granite formations and cliffs.

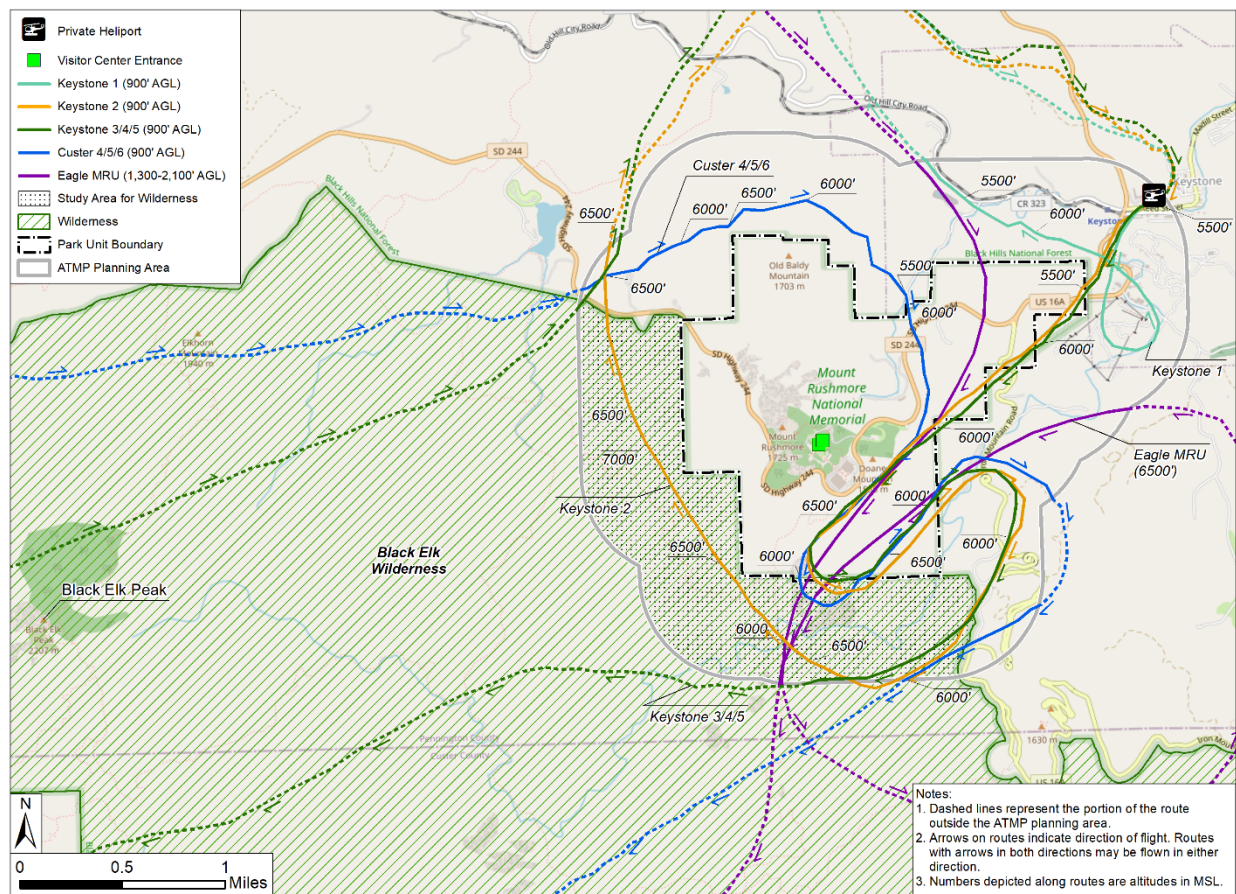


Figure 16. Affected Environment for Wilderness and Environmental Consequences for Alternatives 1, 3 and 4.

## Natural

A natural Wilderness is one where ecological systems are substantially free from the effects of modern civilization. The natural quality is preserved when indigenous species and ecological processes are intact. When the effects of modern civilization impact Wilderness, the natural quality is degraded.

The Black Elk Wilderness is composed of Rocky Mountain Coniferous Forests, Boreal Forests, Eastern Deciduous Forests, and Northern Great Plains; ponderosa pine is the dominant tree species in this area (USFS, 2006).

Within the Black Elk Wilderness, the diverse community of trees supports an array of bird species, while caves, granite outcrops, and riparian areas provide habitat for bats, mountain goats, and other mammals, respectively. Several mammal and bird species are used as indicator species to evaluate overall changes to the forest ecosystem (USFS, 2006). Non-native species are present in the Black Elk Wilderness and have populations that are maintained by the State of South Dakota. These species include bighorn sheep, mountain goats, and Merriam's

turkey (*Meleagris gallopavo merriami*), all of which were introduced to the region prior to the 1950s (Mejicano, 2013). Little data on these non-native species is available, but their impacts on the vegetation and natural quality of Wilderness are generally considered to be low (Mejicano, 2013). See Section 3.3.1, Affected Environment for Biological Resources, for additional information on wildlife.

Non-native plants are also a threat to the natural quality of Wilderness due to their tenacity and ability to spread. Non-native plants are treated with granular herbicides by foot, liquid spraying of herbicides by horseback, and other bio-control techniques (Mejicano, 2013). These actions are taken in order to preserve the natural quality of Wilderness that supports native plant communities that are adapted to the local environmental conditions, help maintain the local community structure, and are provided refuge in Wilderness areas. Trailheads to Wilderness are monitored annually for non-native species, several of which have been observed at the Norbeck Wildlife Preserve, trailheads, and areas near the Wilderness boundary.

Other goals and management actions implemented by the USFS that promote the natural quality of Wilderness include restoring fire in Wilderness to its natural role in the ecosystem; managing Wilderness within the context of larger landscapes to protect the integrity of natural processes; and improving conditions in situations where natural processes are not operating freely (USFS, 2006).

### ***Solitude***

The ability to experience solitude is an integral component of Wilderness character. In preserving this Wilderness quality, the USFS places importance on considering the value of maintaining these places where present and future generations have the opportunity to feel free, at peace, self-reliant, and observe landscapes without modern human effects.

The Black Elk Wilderness contains over 30 miles of hiking and horseback trails which lead from almost any direction to the top of Black Elk Peak. Management concerns identified by the USFS within the Black Elk Wilderness include conflicts among trail user groups, specifically hikers and horseback riders on the existing trails, trail congestion, and trail damage. One of the most prevalent signs of human impact that can degrade opportunities for solitude in Wilderness is recreation at campsites. All campsites in the Black Elk Wilderness are user-created and range in degree of development (Mejicano, 2013).

### **3.5.2 Environmental Consequences**

Section 2(a) of the Wilderness Act states that Wilderness areas “shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as Wilderness, and so as to provide for the protection of these areas, the preservation of their Wilderness character.” The USFS manages Wilderness to preserve qualities of Wilderness character consistent with the Wilderness Act and generally manages for

the natural, untrammelled, undeveloped, solitude and unconfined recreation, and other features of value Wilderness character qualities. Commercial air tours may impact the following qualities of Wilderness character, including the opportunity for solitude, the natural quality, and other features of value (e.g., cultural resources). Aircraft that land in Wilderness detract from the undeveloped quality of Wilderness. Because commercial air tours do not land in Wilderness within the ATMP planning area, the undeveloped quality of Wilderness is not considered here.

As described above, forested areas within the Black Elk Wilderness contribute to the natural quality of these areas' Wilderness character. However, as noted in Section 1.5, Environmental Impact Categories Not Analyzed in Detail for Biological Resources (Fish, Invertebrates, and Plants), the agencies have determined that the noise or dust generated as a result of commercial air tours are unlikely to impact plants, including those that are present within the Wilderness inside the ATMP planning area under any of the alternatives. Therefore, impacts to the natural quality of Wilderness character have not been discussed here.

*Keeping it Wild 2, An Updated Interagency Strategy to Monitor Trends in Wilderness Character Across the National Wilderness Preservation System, 2015* (Landres et al., 2015) notes that Wilderness has traditionally been associated with protecting ecological systems from human impacts. Therefore, "the natural quality is preserved when there are only indigenous species and natural ecological conditions and processes" taking place or by the restoration of those ecological conditions and that "natural quality is preserved when Wilderness ecological systems are substantially free from the effects of modern civilization" (Sutter, 2004, p.34). The natural quality of Wilderness may be impacted by actions both outside and inside Wilderness (Sutter, 2004, p.34). Effects on the natural quality are established by determining the effects from human actions on ecological systems (Sutter, 2004, p.34).

Solitude includes attributes such as "separation from people and civilization, inspiration (an awakening of the senses, connection with the beauty of nature and the larger community of life), and a sense of timelessness (allowing one to let go of day-to-day obligations, go at one's own pace, and spend time reflecting) (Sutter, 2004, p. 51). A review of research suggests that solitude encapsulates a range of experiences, including privacy, being away from civilization, inspiration, self-paced activities, and a sense of connection with times past (Borrie and Roggenbuck, 2001). Generally, solitude improves when sights and sounds of human activity are remote. Commercial air tours can represent both a sight and sound of human activity and therefore detract from this quality of Wilderness character.

### ***Alternative 1: No Action***

Based on operator provided information, under existing conditions the heaviest concentrations of air tours over the Black Elk Wilderness are located immediately east of the USFS Centennial #89 Trail, south of the Park. There is also one air tour route, Keystone 2, that flies adjacent to

the Park's southern and western boundaries over the Black Elk Wilderness as part of its flight path within the ATMP planning area (see Figure 16). Under the No Action Alternative, the existing flight routes, altitudes, number of tours per year, and other parameters described in Section 2.4, Alternative 1 (No Action Alternative) would continue to occur. The interdisciplinary team has determined that persistent noise within Wilderness under the No Action Alternative would continue to unreasonably interfere with the opportunity for solitude within Wilderness. The No Action Alternative would continue to adversely impact Wilderness character, as the current level of air tour noise and visibility within and near Wilderness detracts from the opportunity for solitude as described in detail below.

The presence of noise and visual intrusion of commercial air tours is a human activity that detracts from the opportunity for solitude in Wilderness. Noise from commercial air tours disrupts Wilderness visitors seeking an opportunity for solitude in Wilderness inside the ATMP planning area and would continue to occur under the No Action Alternative. The *Noise Technical Analysis* (Appendix F, Section 6) provides context for the noise effects that would occur under the No Action Alternative and that would detract from the opportunity for solitude within Wilderness areas within the ATMP planning area. This analysis shows that on days when air tours occur, the maximum time that air tours could be audible within the Wilderness is up to 480 minutes a day (non-contiguous), which would occur in portions of the Black Elk Wilderness that are located inside the ATMP planning area. All Wilderness inside the ATMP planning area would experience audible air tour noise. This noise would continue to detract from the opportunity for solitude in Wilderness as it introduces sounds of human activity and therefore detracts from this quality of Wilderness character. This analysis is based on the three-year average of flights between 2017-2019. The impacts could be greater than disclosed here if air tour numbers up to IOA occur which the NPS has previously determined to result in unacceptable impacts to Wilderness character in the Black Elk Wilderness.

### ***Alternative 2***

Under Alternative 2, commercial air tours would not be conducted within the ATMP planning area, except during takeoff and landing from the privately owned and operated heliport on the boundary of the ATMP planning area, which would offer the greatest protection to Wilderness within the ATMP planning area. Compared to existing conditions, this would enhance Wilderness character by reducing the intensity of noise and number of noise events over Wilderness areas. There would be direct beneficial impacts to opportunities for solitude under Alternative 2.

### ***Alternative 3***

Alternative 3 would authorize commercial air tours to be conducted on the same routes and altitudes as existing conditions, but it would authorize fewer air tours per year than existing conditions (approximately 7% reduction). Compared to existing conditions, this would enhance

qualities of Wilderness character by reducing the intensity of noise, noise footprint, and number of noise events over Wilderness areas. However, noise from air tours within the ATMP planning area could still affect Wilderness areas.

Impacts to opportunities for solitude would be less than existing conditions because the intensity and duration of air tour noise and visibility would be reduced, which would result in less impacts to this quality of Wilderness character. The *Noise Technical Analysis* (Appendix F, Section 6) shows that on days when air tours occur, the maximum time that air tours could be audible within Wilderness is less than 300 minutes a day (non-contiguous). In the Black Elk Wilderness, the highest durations of audible air tour noise are the areas near the Park's western boundary. The entire Wilderness inside the ATMP planning area would experience at least 150 minutes of audible air tour noise per day on days when air tours occur. This noise detracts from the opportunity for solitude as it introduces sounds of human activity and therefore detracts from this quality of Wilderness character, although it would be less compared to existing conditions.

#### ***Alternative 4***

Similar to Alternative 3, Alternative 4 would authorize commercial air tours to be conducted on the same routes and altitudes as existing conditions. Under Alternative 4, up to eight air tours per day could be flown within the ATMP planning area, which is fewer compared to existing conditions (38 air tours on a peak month average day) as well as Alternative 3 (25 air tours per day). Alternative 4 would authorize fewer air tours per year than existing conditions as well as Alternative 3 (approximately 81% reduction as compared to existing conditions. Compared to existing conditions, this would enhance qualities of Wilderness character by reducing the intensity of noise, noise footprint, and number of noise events and visual sightings of air tour aircraft over Wilderness areas. Alternative 4 would also result in fewer impacts to the opportunity for solitude than Alternative 3. However, noise from air tours in the ATMP planning area could still affect Wilderness under this alternative, as described below.

Impacts to opportunities for solitude would be less than existing conditions because the intensity and duration of air tour noise and visibility would be less. The *Noise Technical Analysis* (Appendix F, Section 6) shows that on days when air tours occur, the maximum time air tours could be audible within Wilderness is less than 90 minutes a day (non-contiguous). In the Black Elk Wilderness, the highest durations of audible air tour noise are the areas near the Park's western boundary. Wilderness areas within the ATMP planning area would experience at least 45 minutes of audible air tour noise per day on days when air tours occur. This noise detracts from the opportunity for solitude as it introduces sounds of human activity, although it would be less compared to existing conditions.



### ***Indirect and Cumulative Effects***

**Indirect Effects:** Under the No Action Alternative, commercial air tour operations within the ATMP planning area would remain consistent with existing conditions. Although they could increase up to IOA, no indirect impacts would be expected to occur under this alternative.

Alternatives 2, 3, and 4 would limit the number of flights per year as compared to existing conditions and would therefore have the potential to result in some displacement of air tours outside the ATMP planning area. Air tours occurring outside the ATMP planning area, or over the ATMP planning area at or above 5,000 ft. AGL, may result in noise that could affect qualities of Wilderness character to the extent that Wilderness is present in areas near where those air tours would be occurring. The Black Elk Wilderness is present to the south and east of the ATMP planning area (see Figure 16). For areas of the Black Elk Wilderness outside the ATMP planning area, FAA Advisory Circular No: 91-36D encourages pilots flying Visual Flight Rules near noise sensitive areas to fly at altitudes higher than the minimum permitted by regulations and on flight paths that will reduce aircraft noise, specifically requesting pilots fly higher than 2,000 ft. AGL. Therefore, displaced air tours that fly more than ½ mile outside the Park's boundary over the Black Elk Wilderness would likely fly at or above 2,000 ft. AGL.

Operators may also choose to fly along existing flight paths but above 5,000 ft. AGL. This may be impractical due to the high elevation of the terrain because it would require operators to fly above 10,000 ft. MSL. Supplemental oxygen use is required in unpressurized aircraft flying at altitudes over 10,000 ft. MSL for more than 30 minutes (14 CFR Parts 135.89, 135.157); therefore, it is unlikely air tours would fly higher for extended periods of time. Additionally, flights at 5,000 ft. AGL or higher would provide limited value to a sightseeing operation. For air tours conducted at or above 5,000 ft. AGL, the increase in altitude would likely decrease impacts on ground level resources compared to current conditions.

Operators could also choose to fly to points of interest elsewhere in the region outside the ATMP planning area where they already fly (such as the Crazy Horse Monument, Iron Mountain Road, Horsethief Lake, Black Elk Peak, and Sylvan Lake), or operators could fly routes just outside of the ATMP planning area that provide views of the sculpture. Operators, both with and without IOA for the Park, currently conduct air tours just outside the ATMP planning area as routes in this area still afford views of the sculpture. It is difficult to predict with specificity if, where, and to what extent any displaced air tours would result in impacts in different and/or new areas under Alternatives 2, 3, and 4. The preciseness of routes and altitudes for air tours flown on displaced routes are generally subject to Visual Flight Rules and may vary. However, the privately owned and operated heliport on the boundary of the ATMP planning area is used for tours over the Park as well as other nearby parks and attractions. It is reasonably foreseeable that air tour operations displaced from flying over the Park under Alternatives 2, 3, or 4 could continue to utilize this heliport to conduct tours over areas that are outside the



ATMP planning area. If air tour displacement occurred, the number of tours offered from this heliport could increase if operators chose to offer more tours over the other regional points of interest which could result in indirect noise or visual effects to Wilderness. Alternative 2 would prohibit air tours from being conducted within the ATMP planning area, whereas Alternative 3 would limit air tours to no more than 3,657 tours per year, and Alternative 4 would limit air tours to no more than 751 tours per year. Alternative 2 has the most potential to result in the displacement of air tours and could result in more indirect effects to Wilderness from air tours flying outside of the ATMP planning area. Alternative 3 and Alternative 4 also have the potential for indirect impacts due to displacement of air tours.

**Cumulative Effects:** Solitude in the Black Elk Wilderness is impacted by aircraft used for fire management activities and noise from commercial air tours which audibly and visually detract from the primitive Wilderness experience. Fire managers arrange detection flights at times of high and extreme fire danger in Black Hills National Forest and its Wilderness areas. Fire detection flights use fixed-wing aircraft and routinely avoid the airspace over the Park but fly over adjacent Wilderness and forested areas at 2,000 ft. AGL or higher. Firefighting aircraft are flown at lower elevations when battling wildfires that require the use of firefighting tools. When wildfires occur that require the use of aerial resources, temporary flight restrictions are established in order to maintain safety for firefighting aircraft. As described above for indirect effects, air tours flown just outside the ATMP planning area are currently offered by operators both with and without IOA for the Park as air tours in this area still afford views of the sculpture. Noise from these air tours that is experienced within the ATMP planning area also contributes to the cumulative effects analysis. Under the No Action Alternative these conditions would continue, resulting in limited opportunities to experience solitude in Wilderness. Under Alternatives 2, 3, and 4 fire management activities that impact the opportunity for solitude would continue, but impacts from commercial air tours would be less frequent since commercial air tours would be prohibited from flying directly over Wilderness areas below 5,000 ft. AGL. Therefore, the No Action Alternative would result in no cumulative change in the opportunity for solitude, while Alternatives 2, 3, and 4 would likely result in a net beneficial effect to the opportunity for solitude. However, Alternatives 3 and 4 would offer less overall net benefit to the natural quality of Wilderness character than Alternative 2. Ongoing present and future Park management actions by the NPS would continue to occur under any of the alternatives.

### **3.6 Visitor Use and Experience and Other Recreational Opportunities**

While visitor experience is not an impact category the FAA traditionally examines, the NPS has agency wide (NPS Management Policies § 8.2, 2006) and Park-specific guidelines (NPS, 2015) for managing visitors within the National Park System. This section also examines impacts to air tour customers.

### **3.6.1 Affected Environment**

#### ***Trends in Visitation and Visitor Demographics***

Visitors come to the Park from all around the U.S. and the world to view the 60 ft. tall granite faces of four American presidents carved out of Mount Rushmore and framed by the natural scenery of the Black Hills. Between 2017 and 2019, the Park averaged 2.2 million visitors annually. Visitation was approximately 2.5 million in 2021 (NPS, 2021b). Nearly 500,000 visitors participate in interpretive programs at the Park each year, representing a substantial portion of the Park's overall visitation. In addition to the sculpture, Park attractions include the Lincoln Borglum Museum, Sculptor's Studio, and climbing areas. The most common activities include visiting the sculpture, shopping at the gift shop, walking the Presidential Trail, and learning about the four Presidents (Littlejohn and Le, 2014). Approximately 90% of visitors remain within the immediate vicinity of the sculpture and visitor services, while 10% explore the backcountry areas (Littlejohn and Le, 2014).

#### ***Visitor Experience***

The character and quality of the visitor experience influences perception of natural areas, providing a unique encounter with a place that differentiates it from other areas. Public enjoyment of resources is a fundamental purpose of all national Parks (NPS, 2006). Visitor use and experience is focused on ways to view the sculpture and learn about the architectural and artistic undertaking, which is reflected in the facilities and programs provided at the Park. Both ranger-led and self-guided walks offering different viewing perspectives are available, in addition to informational videos. Key visitor facilities include the following:

- **The information center**, located beyond the main parking structures inside the Park's main entrance off South Dakota Route 244, is staffed by Park rangers and has exhibits and historic photos describing the Park's construction and contextual information about the Park and surrounding Black Hills.
- **The Lincoln Borglum Museum**, located between the sculpture and the parking structures, is staffed by Park rangers and includes interactive displays about Borglum and his assistants, historical films, models and tools used during construction, and exhibits about the four presidents and the sculpture's dedication.
- **The Sculptor's Studio** displays artifacts and historic photos and has a 1:12 scale model used by the Park's sculptor. Rangers use the model to describe the techniques and tools used for carving the sculpture.
- **The Amphitheater**, which is adjacent to the museum and faces the sculpture, accommodates 2,500 people and is used for ranger-led programs that run primarily from April through October. In the evening, approximately 30-minute ranger-led interpretive programs in the Amphitheater culminate in the lighting of the sculpture and singing of the national anthem.

- **Avenue of the Flags**, lined by the 56 state, territory, commonwealth, and district flags of the U.S., links the museum to the gift shop and snack/restaurant facilities and leads visitors to the Grand View Terrace.
- **The climbing areas** make the Park an internationally known world-class sport climbing area. There are six climbing areas within the northwest portion of the Park, with the three most popular locations being South Seas, Middle Marker, and Chopping Block.
- **The Park's trail system** is composed of three trails totaling 1 ½ miles. The Presidential Trail, a 0.6-mile trail that is partially handicapped-accessible, allows visitors to stand within 600 ft. of the sculpture. The Nature Trail offers views of the sculpture, plants, and wildlife, and connects the Parking structures directly to the Borglum View Terrace and the Sculptor's Studio. There are other trails that lie partially within the Park but begin in other locations such as the Black Hills National Forest. For example, the USFS Centennial #89 Trail traverses the Black Hills and is connected to the Park by a spur trail known as the Blackberry Trail.

The Park is open year-round with varying daily and seasonal hours. Generally, the Lincoln Borglum Visitor Center is open from 8:00 AM to 5:00 PM during fall, winter and spring seasons and will stay open as late as 10:00 PM during the summer season (NPS, 2022b).

The Park is divided into four management zones (Natural, Park Development, Historic, and Special Use) that were created to designate specific management strategies, fulfill management objectives, and support identified uses. The Natural Zone is managed for the protection of natural resources and processes, and developments in this zone are limited to actions that are essential for the management and appreciation of natural resources (NPS, 1980).

The Park Development Zone includes parking lots, public roads, buildings, and Park utilities. Lands in this zone are managed to support non-historic Park development and public use. Within the Park, this zone spans 120 acres and is restricted to the smallest area necessary to accommodate required major development and intensive use (NPS, 1980).

The Historic Zone includes lands managed primarily to preserve the sculpture and historic features. Development in this zone is only permitted when necessary for the preservation and interpretation of Park resources. Activities in this zone are limited to interpretation activities, viewing the sculpture, and adaptive management. Although the entire Park is listed on the National Register and is therefore considered to be a part of the Historic Zone, only a small area of the Park is managed as such. Within the Historic Zone, the Commemorative Subzone, which includes the sculpture and the immediate lands surrounding it that form its setting, are managed under the same guidelines as the Historic Zone (NPS, 1980).

The Special Use Zone includes undeveloped lands within the Park owned by the state of South Dakota. This zone spans 32.5 acres and could be transferred between the state of South

Dakota, USFS, or the Park via land exchange. A parcel of land managed by the USFS but located between the Park boundary and the nearby town of Keystone can be managed under the Black Hills National Forest Land Management Plan, but could also be managed as a buffer zone to the Park if acquired by NPS (NPS, 1980).

### Other Recreational Opportunities

This category applies to persons recreating within the ATMP planning area through the experience of air tours. An average of 19,570 air tour customers per year are currently able to experience the Park from another viewpoint.<sup>18</sup> The air tour experience generally focuses on viewing the sculpture from a variety of angles. Existing air tour routes within the ATMP planning area are shown in Figure 17.

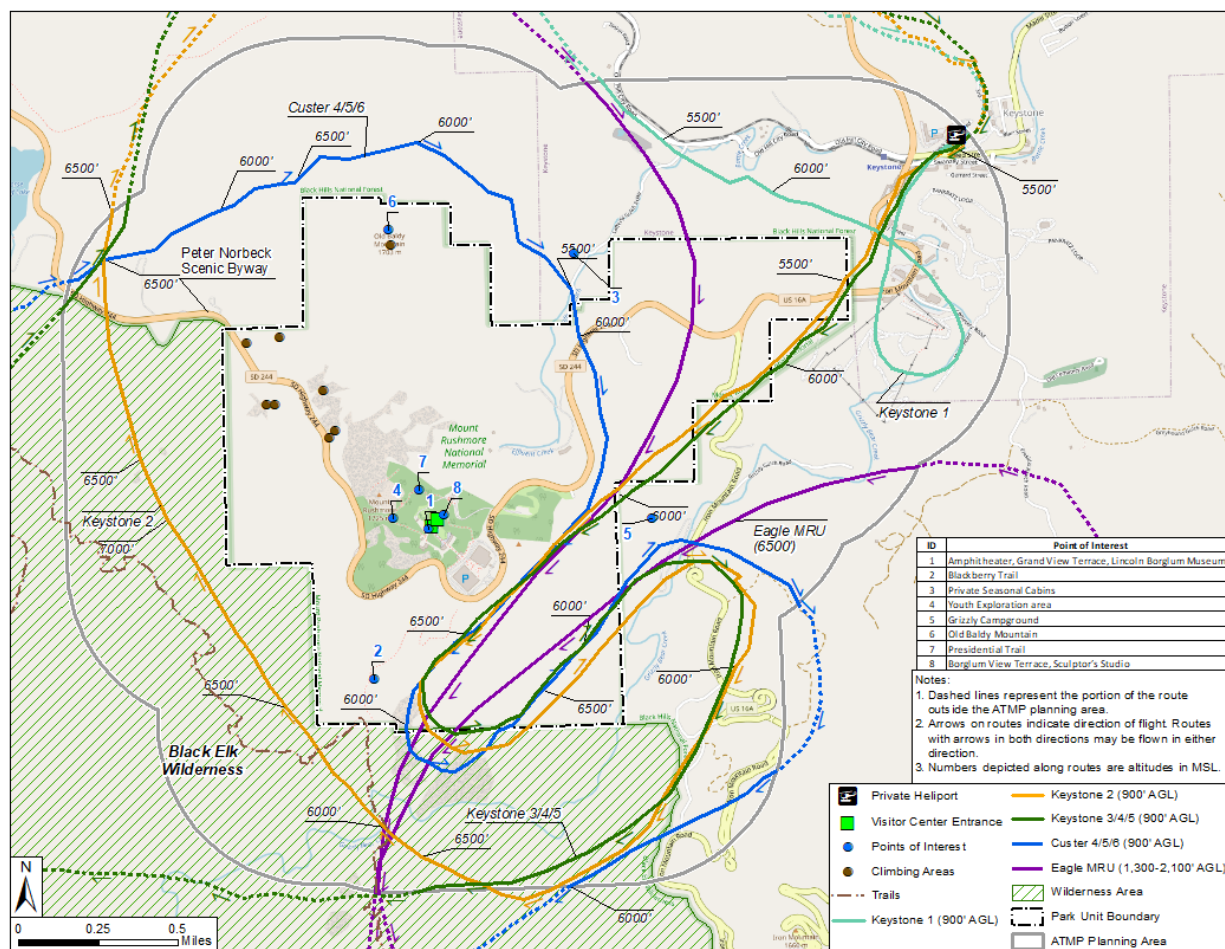


Figure 17. Affected Environment for Visitor Use and Experience and Environmental Consequences for Alternatives 1, 3 and 4.

<sup>18</sup> The estimated 19,570 air tour visitors is based on reported air tours from 2017-2019 (3,914), multiplied by an estimated 5 passenger seats per aircraft. The number of air tours visitors likely overestimates the actual number since it assumes every passenger seat is occupied.

### **3.6.2 Environmental Consequences**

The NPS allows visitor uses that are appropriate to the purpose for which the park was established and can be sustained without causing unacceptable impacts to park resources or values. Unacceptable impacts are impacts that, individually or cumulatively, would unreasonably interfere with park programs or activities including interpretive programs, or the atmosphere of peace and tranquility, or the natural soundscape maintained in Wilderness and natural, historic, or commemorative locations within the park (NPS, 2006).

Effects of commercial air tours on park visitor experience have been well documented over many years. One example is the *Report on the Effects of Aircraft Overflights on the National Park System* (Department of Interior and NPS, 1995). The primary effect of commercial air tours is the introduction of noise into the acoustic environment of the park. Numerous studies have identified the value and importance of soundscapes as one of the motivations for visiting parks (McDonald et al., 1995; Haas and Wakefield, 1998; Merchan et al., 2014; Miller et al., 2018), including in a cross-cultural context (Miller et al., 2018). Other studies have focused specifically on the effects of aircraft on the visitor experience both in parks and protected areas, and a laboratory setting, indicating that aircraft noise negatively impacts the visitor experience (Anderson et al., 2011; Mace et al., 2013; Rapoza et al., 2015; Ferguson, 2018).

Some Park visitors may hear noise from commercial air tours, which may disrupt visitors or degrade the visitor experience at the Park by disturbing verbal communications and masking the sounds of nature. For example, noise from commercial air tours may disrupt visitors during interpretive and educational programs at historical sites or while hiking, camping or participating in other activities. Visitors respond differently to noise from commercial air tour overflights – noise may be more acceptable to some visitors than others. Visitors in backcountry and Wilderness areas often find commercial air tours more intrusive than visitors in developed and frontcountry areas where noise from commercial air tours may not be as audible (Anderson et al., 2011; Rapoza et al., 2015).

As noted above, a majority of visitors come to the Park to view the sculpture. Visual effects, including those experienced by visitors, are described in Section 3.8, Visual Effects. Effects to visitor experience at the Park other than visual effects, including the acoustic environment of the Park in the context of the Park's visitor facilities and interpretive programs, are described below.

#### ***Alternative 1: No Action***

Under existing conditions, air tours are concentrated near visitor points of interest including the Blackberry Trail and visitor facilities off of South Dakota Route 244. The 3,914 air tours conducted in the ATMP planning area each year would continue under the No Action Alternative and could increase up to each operator's IOA for the Park. NPS interpretive programs offered at the Amphitheater from April to October would continue to be impacted by

air tours under this alternative due to the noise from air tours resulting in speech interference. The Amphitheater was one of the modeled location points selected by NPS for analysis in the *Noise Technical Analysis* (Location #1, see Appendix F), which indicates that on days that air tours occur, noise above 52 dBA, which corresponds with speech interference, would occur for 49 minutes a day. Impacts to speech interference in this location, one of the primary locations for programming, would affect the Park's interpretive programs which may impede visitors from enjoying and learning about existing Park resources. Part of the Park's purpose as stated in its Foundation Document includes "interpreting the mountain sculpture in its historic, cultural, and natural setting" (NPS, 2015), so impacts to this aspect of visitor experience would not allow the Park to fulfill its purpose and values for which it was established. Approximately 500,000 Park visitors participate in these interpretive programs each year (of the Park's approximately 2.2 million visitors each year) which represents a substantial portion of the overall Park visitation that would experience noise impacts from air tours during their visit.

Visitor experience in natural areas of the Park which are used by visitors for hiking and rock climbing may be impacted by air tour noise since visitors engaging in these activities value natural quiet and made need to communicate at distance of ten meters or more. The time audible natural ambient metric provides context for the total time that aircraft noise levels would be audible to an attentive listener with normal hearing under natural ambient conditions. Based on the *Noise Technical Analysis* (Appendix F, Section 6), 23% of the ATMP planning area would experience audible air tour noise for between 360 and 480 minutes a day (non-contiguous) under current conditions, and 100% of the ATMP planning area would experience audible air tour noise for at least 210 minutes a day, which includes areas in the Park's Natural Environment Zone. In these areas where visitors would generally expect to hear natural sounds prevail during their visit, noise from commercial air tours under this alternative would result in impacts to visitor experience. Visitors who come to the Park to rock climb could also experience impacts if noise from air tours resulted in speech interference that affected their ability to communicate. The modeled location points in the *Noise Technical Analysis* (Locations #3-8, 20, and 21) correspond to climbing areas within the Park and indicate that on days that air tours occur, noise above 52 dBA, which corresponds with speech interference, would occur in these locations for between 6 and 58 minutes a day. These impacts would continue to occur under the No Action Alternative. These modeling results for existing conditions represent the impacts of the No Action Alternative, though impacts such as interference with Park interpretive programs could increase if flights up to IOA occurred (see Section 2.4.1, Commercial Air Tours per Year for the No Action Alternative).

Commercial air tours offer a recreational experience for those who wish to view the Park from a different vantage point. Commercial air tour pilots may provide education to commercial air tour customers about the region and its history. Because the number of commercial air tours under the No Action Alternative would be consistent with the average number of flights from

2017-2019, or could increase up to IOA, there would be no, or minimal, changes anticipated to the availability of this recreational experience under this alternative.

### ***Alternative 2***

Under Alternative 2, commercial air tours would not be conducted within the ATMP planning area, except during takeoff and landing from the privately owned and operated heliport on the boundary of the ATMP planning area, which would eliminate this source of noise from the ATMP planning area for approximately 2.2 million Park visitors per year. Therefore, there would be a direct beneficial impact to visitor use and experience within the ATMP planning since the intensity and presence of noise from commercial air tours would be less than under existing conditions. Therefore, Alternative 2 would offer the greatest protection of visitor use and experience.

Alternative 2 would not allow commercial air tours within the ATMP planning area, so those (up to an average of 19,570 passengers per year) who wished to would not be able to view the Park from tours conducted within the ATMP planning area. This would be an adverse effect on those seeking that experience within the ATMP planning area, though they will likely take air tours of other areas or just outside the ATMP planning area while still viewing the sculpture, mitigating this adverse effect.

### ***Alternative 3***

Alternative 3 would authorize commercial air tours to be conducted on the same routes and altitudes as those flown under existing conditions, but it would authorize fewer air tours per year than existing conditions (approximately 7% reduction) which would reduce noise and corresponding impacts to visitor use and experience.

For interpretive programs at the Amphitheater, the time above 52 dBA metric from the *Noise Technical Analysis* (see Appendix F, Section 6) provides context for impacts to interpretive programs that would occur under Alternative 3, and indicates that noise above 52 dBA would occur for up to 32.1 minutes a day.

Elsewhere throughout the Park in areas managed as a Natural Environment Zone where visitors would expect to hear natural sounds, the *Noise Technical Analysis* (Appendix F) indicates that under Alternative 3, the maximum time that air tours could be audible by an attentive visitor would be less than 300 minutes a day. Areas used for rock climbing by Park visitors, as indicated by the modeled location points, would experience noise above 52 dBA (which corresponds with speech interference) for between 4 and 38 minutes a day. This noise may impact visitor experience across the Park, but it would represent a reduction in impacts compared to existing conditions.

Alternative 3 would limit the availability of air tours for those who wish to view the Park from the air within the ATMP planning area to no more than 3,657 tours per year. This would result in an adverse effect on those seeking that experience beyond the allowable number of flights within the ATMP planning area to the extent they could not be accommodated on the air tours authorized. However, they would likely be able to take air tours in other areas of the Black Hills or just outside the ATMP planning area while still viewing the sculpture, which would mitigate this adverse effect.

#### **Alternative 4**

Similar to Alternative 3, Alternative 4 would authorize commercial air tours to be conducted on the same routes and altitudes as those flown under existing conditions. Under Alternative 4, up to eight air tours per day could be flown within the ATMP planning area, as compared to existing conditions (38 air tours on a peak month average day) as well as Alternative 3 (25 air tours per day). Alternative 4 would authorize fewer air tours per year than existing conditions and Alternative 3 (approximately 81% reduction as compared to existing conditions which would reduce noise and corresponding impacts to visitor use and experience). For interpretive programs at the Amphitheater, the time above 52 dBA metric from the *Noise Technical Analysis* (Appendix F, Section 6) provides context for impacts to interpretive programs that would occur under Alternative 4, and indicates that noise above 52 dBA would occur for up to 10.3 minutes a day.

Elsewhere throughout the Park in areas managed as a Natural Environment Zone where visitors would expect to hear natural sounds, the *Noise Technical Analysis* (Appendix F, Section 6) indicates that under Alternative 4, the maximum time that air tours could be audible by an attentive visitor would be less than 105 minutes a day. Areas used for rock climbing by Park visitors, as indicated by the modeled location points, would experience noise above 52 dBA (which corresponds with speech interference) for between 1 and 13 minutes a day. This noise may impact visitor experience across the Park, but it would represent a reduction in impacts compared to existing conditions and would also be less than noise experienced under Alternative 3.

Alternative 4 would limit the availability of air tours for those who wish to view the Park from an aerial vantage point within the ATMP planning area to no more than 751 tours per year. This would be an adverse effect on those seeking that experience within the ATMP planning area to the extent they could not be accommodated on the authorized air tours, though they would likely take air tours of other areas or just outside the ATMP planning area while still viewing the sculpture, mitigating this adverse effect.



### ***Indirect and Cumulative Effects***

**Indirect Effects:** Under the No Action Alternative, commercial air tour operations within the ATMP planning area would remain consistent with existing conditions. Although they could increase up to IOA, no indirect impacts would be expected to occur under this alternative.

Alternatives 2, 3, and 4 would limit the number of flights per year as compared to existing conditions and would therefore have the potential to result in some displacement of air tours outside the ATMP planning area. Air tours occurring outside the ATMP planning area, or over the ATMP planning area at or above 5,000 ft. AGL, may result in noise that could affect visitor use and experience in areas near where those air tours would be occurring. Operators may choose to fly along existing flight paths but above 5,000 ft. AGL. This may be impractical due to the high elevation of the terrain because it would require operators to fly above 10,000 ft. MSL. Supplemental oxygen use is required in unpressurized aircraft flying at altitudes over 10,000 ft. MSL for more than 30 minutes (14 CFR Parts 135.89, 135.157); therefore, it is unlikely air tours would fly higher for extended periods of time. Additionally, flights at 5,000 ft. AGL or higher would provide limited value to a sightseeing operation. For air tours conducted above 5,000 ft. AGL, the increase in altitude would likely decrease impacts on ground level resources as compared to current conditions.

Operators could also choose to fly to points of interest elsewhere in the region outside the ATMP planning area where they already fly (such as the Crazy Horse Monument, Iron Mountain Road, Horsethief Lake, Black Elk Peak, and Sylvan Lake), or operators could fly routes just outside of the ATMP planning area that provide views of the sculpture. Operators, both with and without IOA for the Park, currently conduct air tours in the area just outside the ATMP planning area as routes in this area still afford views of the sculpture. It is difficult to predict with specificity if, where, and to what extent any displaced air tours would result in impacts in different and/or new areas under Alternatives 2, 3, and 4. The preciseness of routes and altitudes for air tours flown on displaced routes are generally subject to Visual Flight Rules and may vary. However, the privately owned and operated heliport on the boundary of the ATMP planning area is used for tours over the Park as well as other nearby Parks and attractions. It is reasonably foreseeable that air tour operations displaced from flying over the Park under Alternatives 2, 3, or 4 would continue to utilize this heliport to conduct tours over areas that are outside the ATMP planning area. If air tour displacement occurred, the number of tours offered from this heliport could increase if operators chose to offer more tours over the other regional points of interest which could result in indirect noise effects to visitor use and experience in this area, including nearby cabins and campgrounds.

**Cumulative Effects:** As part of the cumulative effects assessment, the FAA and NPS considered other ongoing and planned actions that may impact visitor use and experience. The noise from aircraft used for wildlife monitoring, firefighting, mechanized equipment for Park maintenance,

and flyovers for special events occasionally disrupts visitors. Because these flights generally occur throughout the ATMP planning area and are not concentrated in any one area, they are not a source of consistent disruption on the visitor experience. These flights are anticipated to continue to facilitate Park maintenance and resource management under any of the alternatives. Other noise from building maintenance and construction activities occasionally disrupts visitors, but these activities are temporary and short-term in nature. Alternatives 3 and 4 would result in less cumulative noise that could affect the visitor experience in the ATMP planning area than the No Action Alternative, given the reduced number of flights, designated routes, and other ATMP conditions. However, they could allow for more cumulative noise impacting the experience than Alternative 2, where flights are not authorized in the ATMP planning area. As described above for indirect effects, air tours flown just outside the ATMP planning area are currently offered by operators both with and without IOA for the Park as air tours in this area still afford views of the sculpture. Noise from these air tours that is experienced within the ATMP planning area also contributes to the cumulative effects analysis. Ongoing present and future Park management actions by the NPS would continue to occur under any of the alternatives.

### **3.7 Environmental Justice and Socioeconomics**

As mandated by EO 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, dated February 11, 1994), “each federal agency shall make achieving environmental justice part of its mission by identifying and addressing as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.” In addition to EO 12898, DOT Order 5610.2c, Final Order to Address Environmental Justice in Low-Income and Minority Populations, requires the FAA to incorporate environmental justice (EJ) principles in project development and provide meaningful public involvement opportunities to minority and low-income populations, known as “EJ populations.” For the purposes of this EJ analysis, the FAA will use the minority and low-income definitions provided in DOT Order 5610.2c.

Socioeconomics is an umbrella term used to describe aspects of a project that are either social or economic in nature, or a combination of the two. A socioeconomic analysis evaluates how elements of the human environment such as population, employment, housing, and public services might be affected by the proposed action and alternative(s) (FAA, 2020). The CEQ regulations for implementing NEPA, 40 CFR Part 1500, direct economic analyses of federal actions that will affect local or regional economies. The policies and rationale associated with including an evaluation of socioeconomic impacts in the NEPA process are found in NPS Management Policies § 1.4.7.1 (2006). The factors of socioeconomics discussed in this draft EA include the tourism industry. U.S. Census Bureau data was used to evaluate social and economic factors of the study area.

The combination of all the other relevant impact categories represents the potential EJ impact because EJ impacts may be realized in conjunction with impacts to any other impact category. Section 3.7.2, Environmental Consequences for Environmental Justice discusses the relevant resources that may have impacts considered in conjunction with EJ for this draft EA. Refer to each environmental impact category's respective section in this draft EA for a description of the study area limits and Figure 18 for a depiction of the study area used for the EJ and socioeconomic analyses. The analysis incorporates data presented at the county level and from census block groups that are within and adjacent to the study area.

### **3.7.1 Affected Environment**

#### ***Environmental Justice***

The most recent minority and low-income information were analyzed through 2020 U.S. Census Bureau data sets. U.S. Census Bureau data is collected in five descending groupings corresponding to geographic area. The groupings are as follows: state, county, tract, block group, and block. Block groups is the smallest unit for which income and poverty level information is available. Block level data is the smallest unit for which race and minority information is available. The agencies used data from the American Community Survey (ACS) to determine socioeconomic and racial characteristics of the population. AEDT Version 3e was used to screen for potential EJ populations. The analysis includes selecting a unit of analysis and comparing it to an appropriate reference community. If the percentage of minority or low-income populations in the unit of analysis exceed the reference community threshold, then those geographic units are populations of EJ concern. In this case, the agencies identified block level data within the study area (unit of analysis) and compared that data to the County (appropriate reference community). Data from the block group level was then compared to county level data to determine populations of EJ concern.

For this analysis, a minority census block group of EJ concern is a census block group (unit of analysis) with a minority population percentage greater than the average minority population percentage in the county (reference community). The average percentage of minority populations at the block group level residing in the county was 23% (ACS, 2016-2020). Therefore, every census block group with a percentage of minority population greater than the average minority population of approximately 23% is designated a census block group of EJ concern. For this analysis, a low-income population census block group of EJ concern is a census block group with a greater percentage of low-income population than the average percentage of low-income population in the county. The average percentage of low-income populations at the block group level residing in the county was 16% (ACS, 2016-2020). Therefore, every census block group with a low-income population greater than 16% is designated a census block group of EJ concern.

Figure 18 depicts locations of EJ concern by block group within the study area. The entire Park falls within Pennington County. Most block groups within the study area do not exceed the low-income or minority thresholds to be designated as block groups of environmental concern, but there is one block group in the northern section of the study area that is a low-income population census block group of EJ concern. See Figure 18 for a map of the block groups within the study area. Table 16 shows the minority and low-income data for Pennington County and block groups within the study area.

Table 16. Minority and Low-income Population Data within Pennington County and the Study Area.

Area	Population	Minority	Low-Income
Pennington County	111,806	19,566	13,529
Block Groups within Study Area	1,022	196	92

Source: ACS, 2016-2020

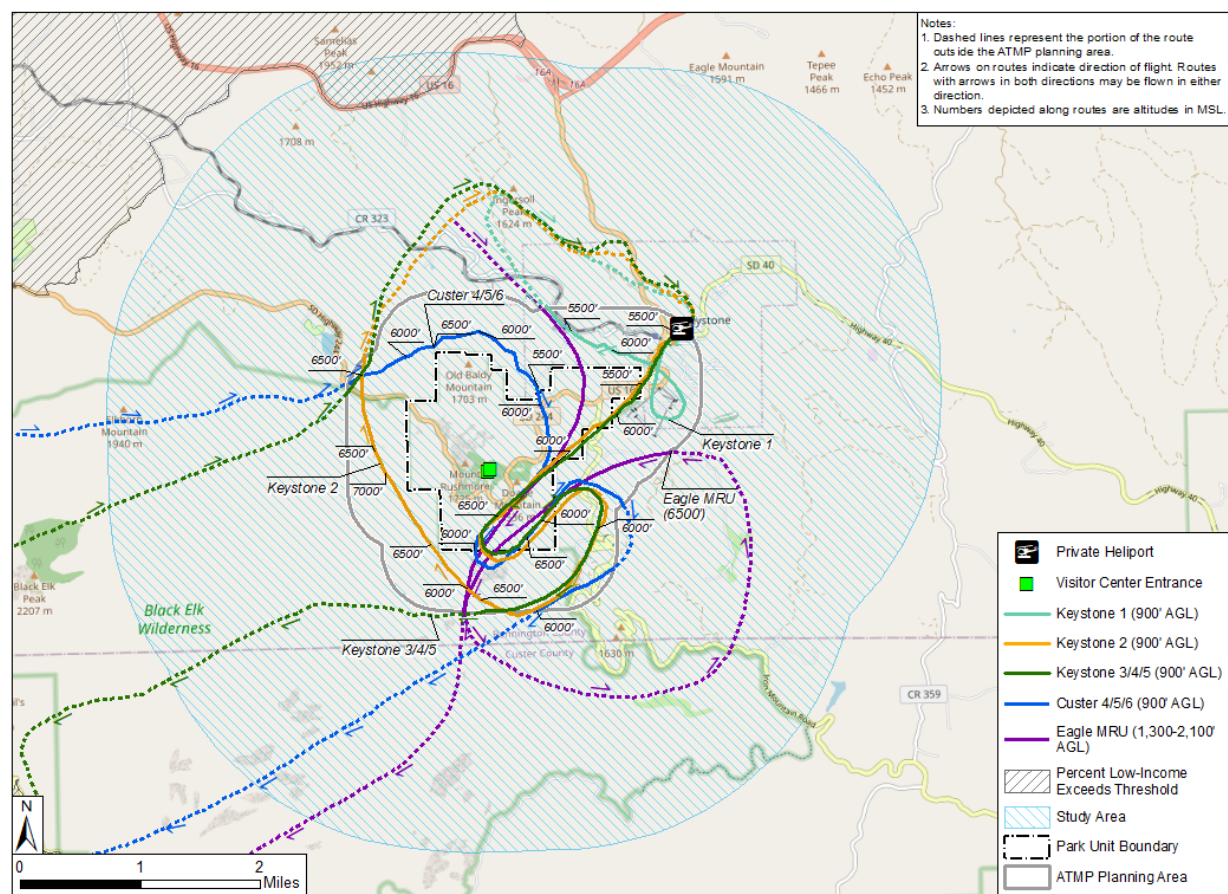


Figure 18. Affected Environment for Environmental Justice and Environmental Consequences for Alternatives 1, 3 and 4.

### ***Socioeconomics***

This section describes the socioeconomic conditions that may be affected by the alternatives. Socioeconomic impacts of the alternatives include the potential impacts commercial air tour operations have on two interest groups: 1) local residents living in close proximity to the Park, who may be affected by both the number of air tours and the manner in which they are conducted; and 2) air tour operators in South Dakota, specifically the two air tour operators with IOA for the Park and their employees, and the associated tourism industry. The factors of socioeconomic that will be discussed in this draft EA include population demographics, industry, employment and income.

### **Industry**

Pennington County is rural county in South Dakota and is known for the Black Hills National Forest and the Park. The leading industry in South Dakota is agriculture with the principle agricultural products in the state being soybeans and wheat (U.S. Department of Agriculture, 2021). Despite the importance of agriculture throughout the state, the industry accounts for only a small percentage of the total jobs in Pennington County, with the largest sources of employment being service-based jobs, such as health care and social assistance, retail and accommodation, and food services.

The Park also plays an important role in the industry and employment of the area and is often the top visited site in the state of South Dakota. The Park provides seasonal, term, permanent full-time, and part-time positions as well as volunteer opportunities. In 2021, visitor and Park payroll spending supported 2,321 local jobs, \$164,428,000 in total visitor spending, with \$118,436,000 value added to the local economy (Thomas and Koontz, 2020). NPS employs approximately 50 permanent positions at the Park. Other sources of employment include concessionaire Xanterra Parks and Resorts (a gift shop and restaurant), that employ approximately 32 permanent positions and 200 seasonal positions; concessionaire Mount Rushmore National Memorial Society (a parking facility) that employs approximately 17 full-time staff; and the Mount Rushmore History Association (bookstores) that employs approximately three permanent and 15 seasonal positions (NPS, 2008).

The Money Generation Model, managed by NPS and Michigan State University, is a conservative peer-reviewed tool used by the NPS Social Science Program to estimate the contribution of visitor and Park payroll spending to gateway economies within a 50-mile radius of Parks. According to the FY 2005 Money Generation Model Briefing Statement, the Park visitor and payroll spending in 2005 supported 1,602 local jobs, created \$32.36 million in personal income, and \$70.46 million in spending. In 2019, the Park visitor and payroll spending supported 1,717 local jobs, \$116,789,000 (in 2019 dollars) in total visitor spending, with \$82,558,000 value added to the local economy (Thomas and Koontz, 2020). This represents a 66% increase in growth over 14 years.

The tourism industry in western South Dakota is sustained by a number of attractions. In addition to the Park, nearby Custer State Park, Wind Cave National Park, the town of Deadwood, the Black Hills, and the Crazy Horse Memorial attract tourists to the area. Badlands National Park, Wall Drug, and Devils Tower National Monument in Wyoming are more distant attractions that also draw visitors to the region (NPS, 2022c). National parks specifically generate more than four dollars in value to the public for every tax dollar invested. National parks support \$21 billion of local private-sector economic activity and 278,000 private-sector jobs (NPS, 2020). National parks attract businesses and individuals to the local area, resulting in economic growth in areas near parks that is an average of 1% per year greater than statewide rates over the past three decades.

#### Commercial Air Tours

Commercial air tour operators currently fly an average of 3,914 air tours per year (based on 2017-2019 reporting) over the Park. The air tour industry operates scenic flights over the Park and several other area attractions.

The price per person for each air tour varies by company and can range from \$59 to \$700 per person (Eagle Aviation, Inc., 2022). The air tour industry employs pilots, mechanics, office administrators, and other types of jobs to conduct business. In 2021, 279 individuals worked in the air transportation industry in Pennington County (which includes both the air tour industry plus commercial airlines and airport employees), representing less than 1% of the county's total employment (ACS, 2016-2020). In addition to people directly employed by air tour operators, others indirectly involved with the industry include hotel staff, tour booking agents, and advertising and marketing professionals. Employment supported by the air tour industry provides income to workers and indirectly provides revenue to local businesses as a result of employee and operator spending.

#### **3.7.2 Environmental Consequences**

In accordance with FAA Order 1050.1F, the following factors were considered to determine if the action would have a disproportionately high and adverse impact to an environmental justice population (i.e., a low-income or minority population):

- Significant impacts in other environmental impact categories; or
- Impacts on the physical or natural environment that affect an EJ population in a way that the FAA determines are unique to the EJ population and significant to that population.

This assessment is provided for each alternative below. As shown in Figure 18, low-income populations of EJ concern are present within the northern extent of the study area. Specific impacts associated with each alternative are discussed in more detail below.

For socioeconomic impacts, FAA considers the following factors when evaluating the severity of impacts which include the potential to:

- Induce substantial economic growth in an area, either directly or indirectly (e.g., through establishing projects in an undeveloped area);
- Disrupt or divide the physical arrangement of an established community;
- Cause extensive relocation when sufficient replacement housing is unavailable;
- Cause extensive relocation of community businesses that would cause severe economic hardship for affected communities;
- Disrupt local traffic patterns and substantially reduce the levels of service of roads serving an airport and its surrounding communities; or
- Produce a substantial change in the community tax base.

Consideration of these factors for each alternative are provided below. The analysis below reflects the results of the impact analysis for noise, visual, and air quality effects as they are the impact categories that would be reasonably expected to affect EJ populations, though impact conclusions for other environmental impact categories are reflected in other sections of this draft EA.

### ***Alternative 1: No Action***

A census block group containing EJ populations is located approximately 1.5 miles from the Park but within the boundary of the study area. While under existing conditions, air tours are conducted within the ATMP planning area according to the operator-reported routes and altitudes depicted in Figure 18, air tour routes and altitudes outside the ATMP planning area are not subject to the Act and are flown in accordance with Visual Flight Rules. EJ populations within the study area may currently experience impacts from noise, air quality, and visual effects associated with air tours conducted within the ATMP planning area under current conditions. These effects are described in more detail below.

The noise impacts of the No Action Alternative (see Section 3.1.2, Environmental Consequences for Noise and Noise-Compatible Land Use) indicate that the No Action Alternative would not result in noise impacts that would exceed DNL 65 dB. The DNL is expected to be below 60 dB under the No Action Alternative.

For air quality impacts (see Section 3.2.2, Environmental Consequences for Air Quality and Climate Change), the No Action Alternative would not cause pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations. The total amount of annual GHG emissions resulting from commercial air tours in the ATMP planning area is 97.5 MT CO<sub>2</sub>.

Under the No Action Alternative, impacts to viewsheds would primarily occur along the Blackberry Trail and atop Old Baldy (see Section 3.8.2, Environmental Consequences for Visual Effects). Impacts would continue to occur to visual resources under the No Action Alternative as commercial air tours would continue to contrast the scenic vistas and natural areas in the study area, but the visual resources within the study area would still be viewable at times of the day when commercial air tours were not present within the ATMP planning area (on average, air tours were conducted within the ATMP planning area 38 times per day in a peak month average day).

In summary, the modeled impacts of the No Action Alternative show that it would not result in disproportionately high and adverse noise, air quality, or visual effects to EJ populations.

Under the No Action Alternative, the number of commercial air tours conducted by operators would vary from year to year but would likely be consistent with the number of tours reported in the timeframe from 2017-2019. Therefore, the amount of income generated for air tour operators and other ancillary businesses as well as employment would likely be consistent with income generated during that timeframe. Although under No Action Alternative flight numbers up to IOA could occur, it would not induce substantial economic growth, disrupt or divide physicality of community, cause extensive relocation, disrupt traffic patterns, or produce a substantial change in the community tax base.

### ***Alternative 2***

Under Alternative 2, commercial air tours would not be conducted within the ATMP planning area. Therefore, there would be direct beneficial impacts on noise, air quality, and viewsheds within the study area as a result of the elimination of commercial air tours in the ATMP planning area (see Section 3.1.2, Environmental Consequences for Noise and Noise-Compatible Land Use; Section 3.2.2, Environmental Consequences for Air Quality and Climate Change; and Section 3.8.2, Environmental Consequences for Visual Effects). Alternative 2 would result in a reduction in direct noise, air quality, and visual impacts compared to those currently occurring under existing conditions, therefore, this alternative would result in a benefit to EJ populations within the study area, and Alternative 2 would not result in disproportionately high and adverse noise, air quality, or visual impacts to EJ populations.

Alternative 2 would not induce substantial economic growth, disrupt or divide physicality of community, cause extensive relocation, or disrupt traffic patterns. Alternative 2 could result in some impacts to employment or the amount of income that air tour operators and other ancillary businesses could generate from conducting air tours within the ATMP planning area. However, the air transportation industry represents 1% of Pennington County's total employment, and the limits on air tours within the ATMP planning area would not preclude operators from making up this revenue generation in other ways such as using their aircraft for other business ventures or conducting air tours elsewhere within the region (see below for a



discussion of indirect socioeconomic effects). Therefore, it is unlikely that Alternative 2 would result in large socioeconomic impacts to the community, including those associated with a change in the community tax base.

### ***Alternative 3***

Alternative 3 would authorize 3,657 air tours per year and 25 air tours per day within the ATMP planning area on the same routes and altitudes as existing conditions. Compared to existing conditions, Alternative 3 would result in fewer direct noise, air quality, and visual impacts as described for each environmental impact category below.

Specifically, for noise impacts (see Section 3.1.2, Environmental Consequences for Noise and Noise-Compatible Land Use), the DNL analysis indicates that Alternative 3 would not result in noise impacts that would exceed DNL 65 dB. The resultant DNL is expected to be below 60 dB under Alternative 3.

For air quality impacts (see Section 3.2.2, Environmental Consequences for Air Quality and Climate Change), Alternative 3 would not cause pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations. Alternative 3 is modeled to result in a reduction of 6.09 MT CO<sub>2</sub> resulting from existing commercial air tours within the ATMP planning area.

Under Alternative 3, impacts to viewsheds would primarily occur along the Blackberry Trail and atop Old Baldy (see Section 3.8.2, Environmental Consequences for Visual Effects), but those impacts under Alternative 3 would be fewer than existing conditions as a result of the annual (3,657) and daily (25) limits on the number of air tours conducted within the ATMP planning area. Impacts would occur because commercial air tours would contrast the scenic vistas and natural areas in the study area, but the visual resources within the study area would still be viewable at times of the day when commercial air tours were not present within the ATMP planning area (air tours would occur up to 25 times per day).

In summary, Alternative 3 would not result in disproportionately high and adverse noise, air quality, or visual effects to EJ populations.

The same socioeconomic effects stated under Alternative 2 would occur under Alternative 3, but those effects would be fewer (including the potential for impacts associated with changes to the community tax base), as some air tours would still occur within the ATMP planning area. Alternative 3 would not induce substantial economic growth, disrupt or divide physicality of community, cause extensive relocation, disrupt traffic patterns, or produce a substantial change in the community tax base.

#### ***Alternative 4***

Alternative 4 would authorize 751 air tours per year and eight air tours per day within the ATMP planning area on the same routes and altitudes as existing conditions. Compared to existing conditions, Alternative 4 would result in fewer direct noise, air quality, and visual impacts as described for each environmental impact category below.

Specifically, for noise impacts (see Section 3.1.2, Environmental Consequences for Noise and Noise-Compatible Land Use), the DNL analysis indicates that Alternative 4 would not result in noise impacts that would exceed DNL 65 dB. The resultant DNL is expected to be below 60 dB under Alternative 4.

For air quality impacts (see Section 3.2, for Air Quality and Climate Change), Alternative 4 would not cause pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations. Alternative 4 is modeled to result in a reduction of 78.4 MT CO<sub>2</sub> resulting from existing commercial air tours within the ATMP planning area.

Under Alternative 4, impacts to viewsheds would primarily occur along the Blackberry Trail and atop Old Baldy (see Section 3.8.2, Environmental Consequences for Visual Effects), but those impacts under Alternative 4 would be fewer than existing conditions as a result of the annual (751) and daily (8) limits on the number of air tours conducted within the ATMP planning area. Impacts would occur because commercial air tours would contrast the scenic vistas and natural areas in the study area, but the visual resources within the study area would still be viewable at times of the day when commercial air tours were not present within the ATMP planning area (air tours would occur up to eight times per day).

In summary, Alternative 4 would not result in disproportionately high and adverse noise, air quality, or visual effects to EJ populations.

The same socioeconomic effects stated under Alternative 2 would occur under Alternative 4, but those effects would be fewer (including the potential for impacts associated with changes to the community tax base), as some air tours would still occur within the ATMP planning area. Socioeconomic effects under Alternative 4 would be expected to be greater than those under Alternative 3 because it would limit the number of air tours conducted within the ATMP planning area to fewer air tours per year. Alternative 4 would not induce substantial economic growth, disrupt or divide physicality of community, cause extensive relocation, produce a substantial change in the community tax base.

### ***Indirect and Cumulative Effects***

**Indirect Effects:** Under the No Action Alternative, commercial air tour operations within the ATMP planning area would remain consistent with existing conditions. Although they could increase up to IOA, no indirect impacts would be expected to occur under this alternative.

The limited number of flights permitted by Alternatives 2, 3, and 4 could limit the potential future economic growth for commercial air tour operators and other ancillary businesses. Because of the capital investment air tour operators have in aircraft, facilities, and equipment, operators could seek to make up lost revenue from air tours within the ATMP planning area by conducting air tour operations outside of the ATMP planning area, or over the ATMP planning area at or above 5,000 ft. AGL, to the extent possible. Operators may also choose to retire, surrender their operating certificates, or use their aircraft for other businesses or operations such as search and rescue, fire protection, resource mapping and assessment, and flight for life operations. Therefore, although Alternatives 2, 3, and 4 would limit the opportunities for air tour operators and ancillary businesses to generate revenue from tours conducted within the ATMP planning area, these alternatives would not preclude operators from making up this revenue generation in other ways such as using their aircraft for other business ventures or conducting air tours elsewhere within the region.

Under Alternatives 2, 3, and 4, it is difficult to predict with specificity if, where, and to what extent any air tours that were displaced to outside the ATMP planning area would result in indirect noise, air quality, or visual impacts to EJ populations within the study area. Operations that may occur outside the ATMP planning area, or over the ATMP planning area at or above 5,000 ft. AGL, as a result of Alternatives 2, 3, and 4 may shift where noise, air quality emissions, and visual effects occur, but the effects are not likely to change substantially as compared to current conditions. Therefore, disproportionately high or adverse indirect noise, air quality, or visual impacts to EJ populations are not expected to occur.

**Cumulative Effects:** The cumulative effects to EJ populations reflect those analyzed in other sections of this draft EA for noise, air quality, and visual effects. In summary, ongoing present and future Park management actions by the NPS within the ATMP planning area including aircraft used for Park flyovers, firefighting activities, wildlife surveys, and Park maintenance and their associated noise levels may contribute noise and air quality emissions that would continue to negatively affect the acoustic environment and air quality within the study area. Those effects would be greatest under the No Action Alternative and fewest under Alternative 2 based on the number of flights authorized per year. These activities would continue in the same frequency and manner under any of the alternatives, as they occur independently of air tours. The cumulative effects to viewsheds, including those experienced by EJ populations, would be greatest under the No Action Alternative and fewest under Alternative 2 based on the number of flights authorized per year.

The agencies are unaware of other ongoing planned or connected actions related to socioeconomic effects of the alternatives. Therefore, cumulative socioeconomic effects are not expected to occur under any of the alternatives.

### **3.8 Visual Effects**

Visual resources include buildings, sites, traditional cultural properties, and other natural or manmade landscape features that are visually important or have unique characteristics. In addition, visual resources can include the cohesive collection of various individual visual resources that can be viewed at once or in concert from the area surrounding the site of the alternatives. Visual character refers to the overall visual makeup of the existing environment where the alternatives would be located. For example, areas in close proximity to densely populated areas generally have a visual character that could be defined as urban, whereas less developed areas could have a visual character defined by the surrounding landscape features, such as open grass fields, forests, mountains, or deserts, etc. Visual effects generally describe the extent to which the proposed action or alternatives would either produce light emissions that create annoyance or interfere with activities; or contrast with, or detract from, the visual resources and/or the visual character of the existing environment. Although there are no federal special purpose laws or requirements specific to light emissions and visual effects, there are special purpose laws and requirements that may be relevant, such as those relating to cultural resources or Section 4(f) resources. Additionally, NPS Management Policies § 1.4.6 (2006) states that scenic views and vistas are Park resources that are subject to protection under the NPS Organic Act.

The study area for visual effects includes ATMP planning area as well as areas within the cultural resources APE that are outside of the ATMP planning area. Refer to Figure 19 for a depiction of the visual effects study area.

#### **3.8.1 Affected Environment**

Within the Park, visual resources include the sculpture and forested areas. Viewer sensitivity to the carving is very high due to the massiveness of the sculpture and the historical and social significance of Presidents Washington, Jefferson, Roosevelt, and Lincoln, as these leaders are personifications of American ideals such as independence, freedom, justice, equality, self-reliance, and individuality (Harpers Ferry Design Center, 2018). Along South Dakota Route 244 within the Park, there are five places where cars can pull out to stop and view the sculpture, in addition to designated overlooks such as the Norbeck Memorial Overlook. Distant or aerial views of the sculpture are sometimes obscured by haze caused by wildfires (refer to Section 3.2, Air Quality).

Visual resources associated with the Park's natural areas are characterized by massive granite outcrops intermingled with ponderosa pine (NPS, 2015). South Dakota Route 244, within the

Park, is part of the 70-mile Peter Norbeck Scenic Byway, providing views of the sculpture, Black Hills, and panoramic views of various landscapes and vegetation in the region. Other popular viewpoints within the Park include the Amphitheater and Grand View Terrace, the First Jefferson Overlook, the Northeast Pullout, the Blackberry Trail, and Old Baldy. Many of the visual resources within the Park also have a high degree of cultural significance (refer to Section 3.4, Cultural Resources).

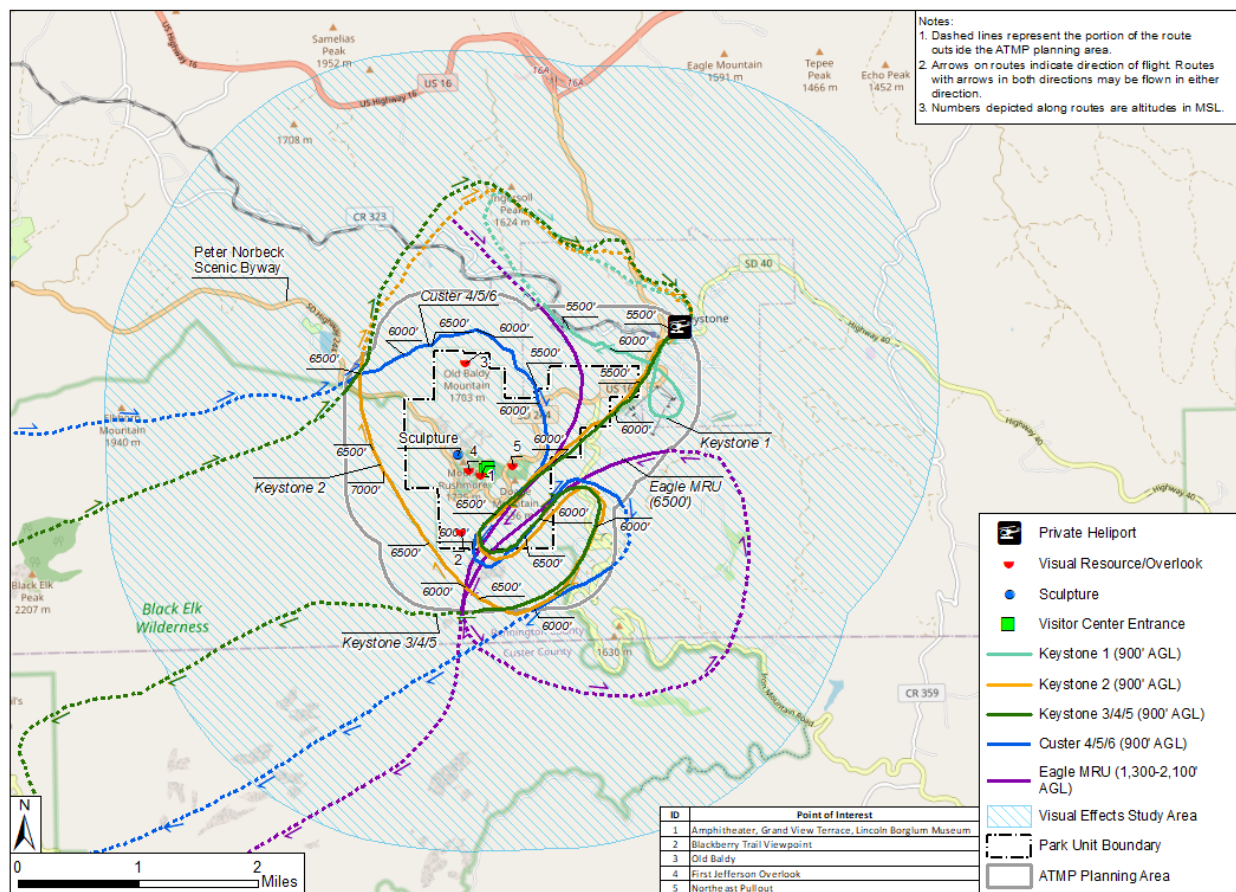


Figure 19. Affected Environment for Visual Effects and Environmental Consequences for Alternatives 1, 3 and 4.

### 3.8.2 Environmental Consequences

Studies indicate that aircraft noise in national parks can impact human perceptions of aesthetic quality of viewsheds (Weinzimmer et al., 2014; Benfield et al., 2018).

Impacts to visual resources and visual character relate to a decrease in the aesthetic quality of the Park resulting from air tours. FAA Order 1050.1F provides factors to consider in evaluating the severity of impacts, including the extent that the action would have the potential to:

- Affect the nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources;

- Contrast with the visual resources and/or visual character in the study area; and
- Block or obstruct the views of visual resources, including whether these resources would still be viewable from other locations.

***Alternative 1: No Action***

Reporting data from 2017-2019 indicates that on a peak month average day, air tours fly over the ATMP planning area approximately 38 times per day. Based on reported data, the existing air tours occur for up to eight to 12 hours a day. The altitudes reported near viewsheds in the ATMP planning area range from a minimum 900 ft. to 1,400 ft. AGL, so the aircraft are visible in these areas. Refer to Figure 19 for a depiction of existing air tour conditions in the context of visual points of interest and viewsheds within the visual effects study area.

Under existing conditions, the heaviest concentrations of commercial air tours are flown over or near the sculpture to the southeast of South Dakota Route 244. Based on operator reported data, commercial air tour routes maintain at least a 2,000 ft. lateral separation from the sculpture and stay to the southeast of South Dakota Route 244 (whereas the sculpture is located to the northwest). Most visitors view the sculpture from pull-off points along the roadway, as the routes do not bisect the viewer's line of sight to the sculpture. Other viewpoints of the sculpture, including those along South Dakota Route 244, the Amphitheater and Grand View Terrace, the First Jefferson Overlook, the Northeast Pullout, the Blackberry Trail, and Old Baldy, are not bisected by commercial air tours within the viewer's line of sight to the sculpture according to operator reported routes.

In the context of the Park's natural scenery consisting of forested areas, in some locations when commercial air tours are visible to Park visitors, they would contrast with the natural scenery in these areas. The viewpoints where this would be most likely to occur are the terminus of the Blackberry Trail and atop Old Baldy. Existing commercial air tour routes are located near these viewpoints and would be seen by visitors overlooking natural scenic areas, which would continue to occur under the No Action Alternative. Since much of the Park consists of a natural landscape, the encroachment of commercial air tour aircraft on these viewsheds would continue to detract from the visitor's opportunity to observe these scenic natural resources when commercial air tours are present (which occurs 38 times per day during a peak month average day). However, the greater Black Hills region provides opportunities to view similar natural landscape features and viewsheds as those found within the visual effects study area, and the visual resources of the Park would still be viewable at times of the day when commercial air tours were not present within the ATMP planning area. Collectively, these effects represent the impacts of the No Action Alternative, though impacts could increase if flights up to IOA occurred (see Section 2.4.1, Commercial Air Tours per Year for the No Action Alternative).

### ***Alternative 2***

Under Alternative 2, commercial air tours would not be conducted within the ATMP planning area which would result in fewer effects to visual resources in the visual effects study area. Visual resources would experience direct beneficial impacts throughout the Park under Alternative 2 and visual character would improve compared to current conditions. Alternative 2 would provide the greatest protection to Park viewsheds across the four alternatives.

### ***Alternative 3***

Alternative 3 would authorize commercial air tours to be conducted on the same routes and altitudes as those flown under existing conditions, but it would authorize fewer air tours per year than existing conditions (approximately 7% reduction) which would reduce impacts to visual resources within the visual effects study area. As with the No Action Alternative, visual impacts would primarily be associated with air tour aircraft contrasting natural scenery rather than blocking visitors' views of the sculpture since the air tour routes would not bisect the visual line of sight to this area at sculpture viewpoints.

Commercial air tours would still be visible from the Blackberry Trail and Old Baldy, but Alternative 3 would authorize fewer air tours in the ATMP planning area as compared to existing conditions, so the likelihood that a visitor would see a commercial air tour contrasting natural scenery would be less. Under Alternative 3, up to 25 air tours per day could be flown within the ATMP planning area, which represents a reduction in the number of times that viewers would potentially see an air tour as compared to existing conditions (38 air tours on a peak month average day). Therefore, this alternative would result in direct beneficial impacts to Park viewsheds.

### ***Alternative 4***

Similar to Alternative 3, Alternative 4 would authorize commercial air tours to be conducted on the same routes and altitudes as those flown under existing conditions, but it would authorize fewer air tours per year than existing conditions as well as Alternative 3 (approximately 81% reduction as compared to existing conditions) which would reduce impacts to visual resources throughout the visual effects study area. Under Alternative 4, up to eight air tours per day could be flown within the ATMP planning area, which represents a reduction in the number of times that viewers would potentially see an air tour as compared to existing conditions (38 air tours on a peak month average day) as well as Alternative 3 (25 air tours per day). Therefore, this alternative would result in direct beneficial impacts to Park viewsheds.

### ***Indirect and Cumulative Effects***

**Indirect Effects:** Under the No Action Alternative, commercial air tour operations within the ATMP planning area would remain consistent with existing conditions. Although they could increase up to IOA, no indirect impacts would be expected to occur under this alternative.

Under Alternatives 2, 3, and 4 since commercial air tour operations would be limited or prohibited within the ATMP planning area, it could result in the displacement of tours outside of this area. Operators may choose to fly along existing flight paths but above 5,000 ft. AGL. This may be impractical due to the high elevation of the terrain because it would require operators to fly above 10,000 ft. MSL. Supplemental oxygen use is required in unpressurized aircraft flying at altitudes over 10,000 ft. MSL for more than 30 minutes (14 CFR Parts 135.89, 135.157); therefore, it is unlikely air tours would fly higher for extended periods of time. Additionally, flights at 5,000 ft. AGL or higher would provide limited value to a sightseeing operation. For air tours conducted at or above 5,000 ft. AGL, the increase in altitude would likely decrease impacts on ground level resources as compared to current conditions.

Operators could also choose to fly to points of interest elsewhere in the region outside the ATMP planning area where they already fly (such as the Crazy Horse Monument, Iron Mountain Road, Horsethief Lake, Black Elk Peak, and Sylvan Lake), or operators could fly routes just outside of the ATMP planning area that provide views of the sculpture. Operators, both with and without IOA for the Park, currently conduct air tours in this area as routes in this area still afford views of the sculpture. It is difficult to predict with specificity if, where, and to what extent any displaced air tours would result in impacts in different and/or new areas under Alternatives 2, 3, and 4. The preciseness of routes and altitudes for air tours flown on displaced routes are generally subject to Visual Flight Rules and may vary. However, the heliport on the boundary of the ATMP planning area is used for tours over the Park as well as other nearby Parks and attractions. It is reasonably foreseeable that air tour operations displaced from flying over the Park under Alternatives 2, 3, or 4 could continue to utilize this heliport to conduct tours over areas that are outside the ATMP planning area. If air tour displacement occurred, the number of tours offered from this heliport could increase if operators choose to offer more tours over the other regional points of interest which could result in indirect effects to visual resources in this area. Alternative 2 would prohibit air tours from being conducted within the ATMP planning area, whereas Alternative 3 would limit air tours to no more than 3,657 tours per year and Alternative 4 would limit air tours to no more than 751 tours per year. Alternative 2 has the most potential to result in the displacement of air tours and could result in more indirect effects to visual resources from air tours flying outside of the ATMP planning area. Alternative 3 and Alternative 4 also have the potential for indirect impacts due to displacement of air tours.

**Cumulative Effects:** Other sources of ongoing visual impacts within the ATMP planning area include aircraft for wildlife monitoring, firefighting, mechanized equipment for Park maintenance, and flyovers for special events, which would likely continue in the same frequency and manner under any of the alternatives, as they occur independently of air tours.

The cumulative visual effects of these ongoing flights along with those from commercial air tours under the No Action Alternative would have the greatest potential for impacts within the



visual effects study area. The cumulative effects would be fewer for Alternatives 3 and 4, which limit the number of air tours that would occur as compared to the No Action Alternative, and the fewest under Alternative 2 as there would be no tours permitted within the ATMP planning area. Ongoing present and future Park management actions by the NPS would continue to occur under any of the alternatives.

### **3.9 Department of Transportation (DOT) Act Section 4(f) Resources**

Section 4(f) of the Department of Transportation Act of 1966, which was recodified and renumbered as Section 303(c) of 49 U.S.C., provides that the Secretary of Transportation will not approve any program or project that requires the use of any publicly owned land from a public park, recreational area, or wildlife and waterfowl refuge of national, state or local significance; or land from an historic site of national, state or local significance, as determined by the officials having jurisdiction over the land, unless 1) there is no feasible and prudent alternative to the use of such land; and 2) such program or project includes all possible planning to minimize harm resulting from such use. Where federal lands are administered for multiple uses, the federal official having jurisdiction over the lands shall determine whether the subject lands are in fact being used for park, recreational, wildlife, waterfowl, or historical purposes. National Wilderness areas may serve similar purposes and shall be considered subject to Section 4(f) unless the controlling agency specifically determines that, for Section 4(f) purposes, the lands are not being used.

Appendix B of FAA Order 1050.1F describes the FAA's procedures for complying with Section 4(f). Federal Highway Administration/Federal Railroad Administration/Federal Transit Administration regulations and policy are not binding on the FAA; however, the FAA may use them as guidance to the extent relevant to aviation projects.<sup>19</sup> According to FAA Order 1050.1F, significance of impacts is determined based on if the action involves more than a minimal physical use of a Section 4(f) resource or constitutes a "constructive use" based on an FAA determination that the aviation project would substantially impair the Section 4(f) resource.

The study area for considering Section 4(f) resources in this draft EA is inclusive of the APE used for compliance with Section 106 of the NHPA. Refer to Figure 20 for a depiction of the Section 4(f) study area.

#### **3.9.1 Affected Environment**

Section 4(f) resources including parks, recreational areas, and wildlife and waterfowl refuges were identified using public datasets from federal, state, and local sources. Historic properties were identified as part of the Section 106 consultation process (refer to Section 3.4, Cultural

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<sup>19</sup> See 1050.1F Desk Reference, Section 5-3.

Resources). Each resource that intersected the Section 4(f) study area (i.e., some portion of the property fell within the Section 4(f) study area) was included in the Section 4(f) analysis (see Appendix I, *Section 4(f) Analysis*).

Table 17 shows Section 4(f) parks, recreational areas, and wildlife refuges identified in the Section 4(f) study area. Section 3.4.1, Affected Environment for Cultural Resources, lists historic resources that qualify under Section 4(f). Except in unusual circumstances, Section 4(f) protects only those historic sites that are listed in or eligible for listing in the National Register.<sup>20</sup> Figure 20 shows a map of the Section 4(f) resources analyzed in this chapter, within the Section 4(f) study area.

*Table 17. Section 4(f) Parks, Recreational Resources, and Wildlife/Waterfowl Refuges in the Section 4(f) Study Area.*

<b>Property Name</b>	<b>Property Type</b>
Mount Rushmore National Memorial	National Park
Black Hills National Forest	National Forest
Norbeck Wildlife Preserve	National Wildlife Refuge

Sources: U.S. Geological Survey Protected Areas Database of the U.S.

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<sup>20</sup> If a historic site is not on the National Register (listed or eligible), a state or local official may formally provide information to the FAA to indicate that a historic site is locally significant. The responsible FAA official may then determine it is appropriate to apply Section 4(f). See FAA Order 1050.1F for further detail.

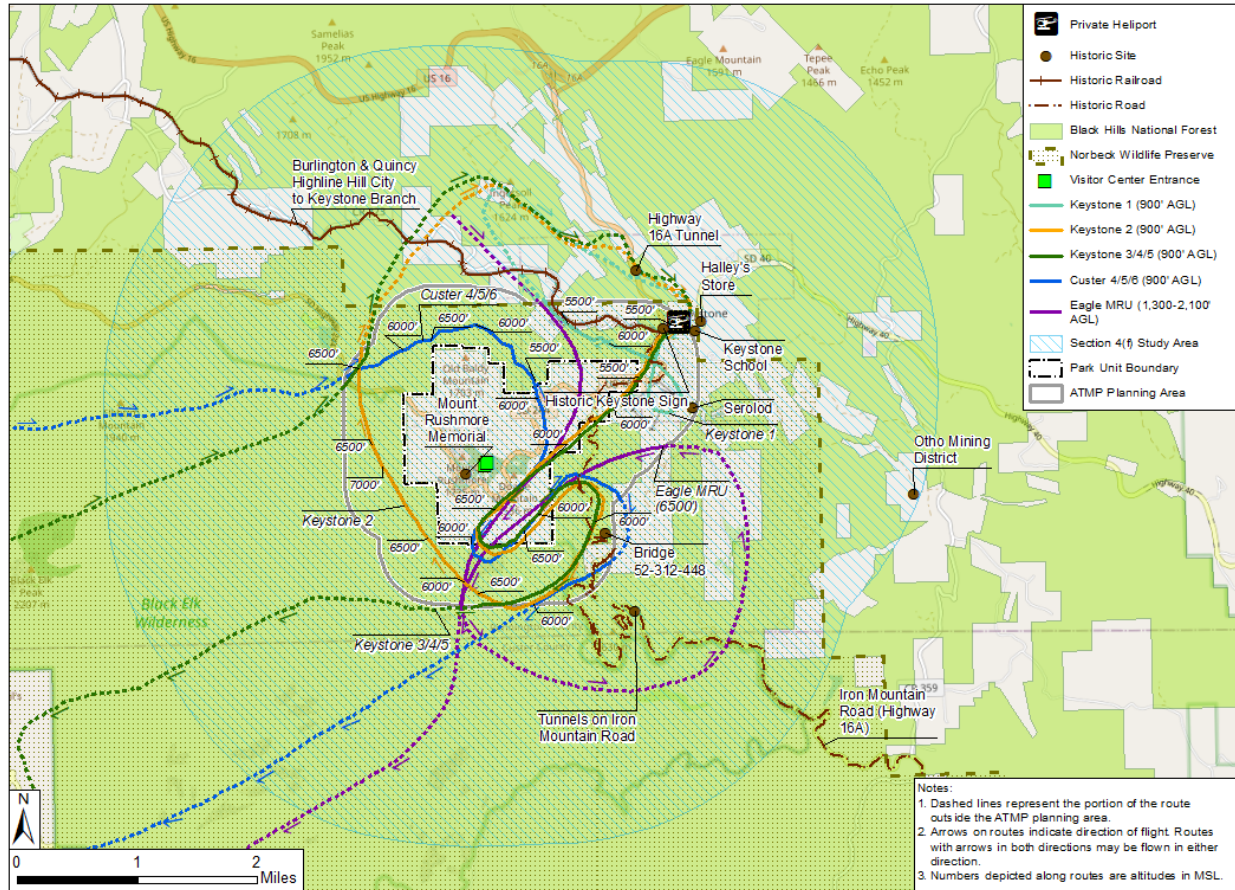


Figure 20. Affected Environment for Section 4(f) Resources.

### 3.9.2 Environmental Consequences

In the context of Section 4(f) resources, the term “use” refers to both physical and constructive impacts to Section 4(f) resources. A physical use involves the physical occupation or alteration of a Section 4(f) resource, while constructive use occurs when a proposed action results in substantial impairment of a resource to the degree that the activities, features, or attributes of the resource that contribute to its significance or enjoyment are substantially diminished. In consideration of potential impacts that could result in substantial impairment to Section 4(f) resources in the Section 4(f) study area, the analysis is limited to identifying impacts that could result in a constructive use, as the alternatives would not have the potential to cause a direct impact to a Section 4(f) resource. Potential impacts to Section 4(f) resources from commercial air tours may include noise from aircraft within the acoustic environment, as well as visual impacts.

The FAA considered the potential for constructive use of Section 4(f) resources under all alternatives. In accordance with FAA Order 1050.1F, the FAA determined through an initial assessment if the Proposed Action and alternatives would result in use of any of the properties

to which Section 4(f) applies. As noted in Section 2.4, Alternative 1 (No Action Alternative), the No Action Alternative provides a basis for comparison within this draft EA but is not a selectable alternative because it does not meet the purpose and need for the ATMP (refer to Section 1.4, Purpose and Need). Furthermore, the FAA consulted with the NPS on the potential for substantial impairment to Section 4(f) resources that would occur under the No Action Alternative, and the NPS determined that the No Action Alternative cannot be mitigated to avoid or prevent unacceptable impacts to the Park's natural and cultural resources and visitor experience. The *Noise Technical Analysis* (Appendix F) also demonstrates that the existing level of air tours is inconsistent with the Park's purpose and values. Therefore, the FAA did not advance the No Action Alternative for detailed Section 4(f) analysis as the NPS does not consider it a selectable alternative.

In order to assess noise impacts to Section 4(f) resources, the land use compatibility guidelines in 14 CFR Part 150 assist with determining whether a proposed action would constructively use a Section 4(f) resource. These guidelines rely on the DNL, which is considered the best measure of impacts to the quality of the human environment from exposure to noise. The FAA acknowledges that the land use categories in 14 CFR Part 150 may not be sufficient to determine the noise compatibility of Section 4(f) properties (including, but not limited to, noise sensitive areas within national parks and wildlife refuges), where a quiet setting is a generally recognized purpose and attribute. Visual impacts are assessed in accordance with the framework identified in Section 3.8.2, Environmental Consequences for Visual Effects.

### ***Alternative 2***

Under Alternative 2, commercial air tours would not be conducted within the ATMP planning area which would reduce this source of noise originating from within the Section 4(f) study area. The acoustic impacts of Alternative 2 cannot be modeled because, although some speculation about air tour routes can be made, it is unknown where air tours would fly when outside the ATMP planning area (see below for a discussion of indirect effects), so data on the resultant DNL for this alternative is not available. Alternative 2 would provide 365 days per year without air tours within the ATMP planning area and would reduce noise at Section 4(f) resources.

The FAA also considered the potential for vibrational or visual effects on Section 4(f) resources under Alternative 2. However, since Alternative 2 would not authorize commercial air tours to be conducted within the ATMP planning area, vibrational or visual effects would not occur and there would be no constructive use from vibrational or visual effects of Section 4(f) resources.

As a result, FAA concludes there would be no substantial impairment<sup>21</sup> of Section 4(f) resources from noise, visual, or vibrational related effects caused by air tours in the Section 4(f) study area under Alternative 2. This Section 4(f) determination for historic properties is based on 14 CFR Part 150 Appendix A and is also consistent with the Section 106 no adverse effect determination at the Park (see Section 3.4.2, Environmental Consequences for Cultural Resources).

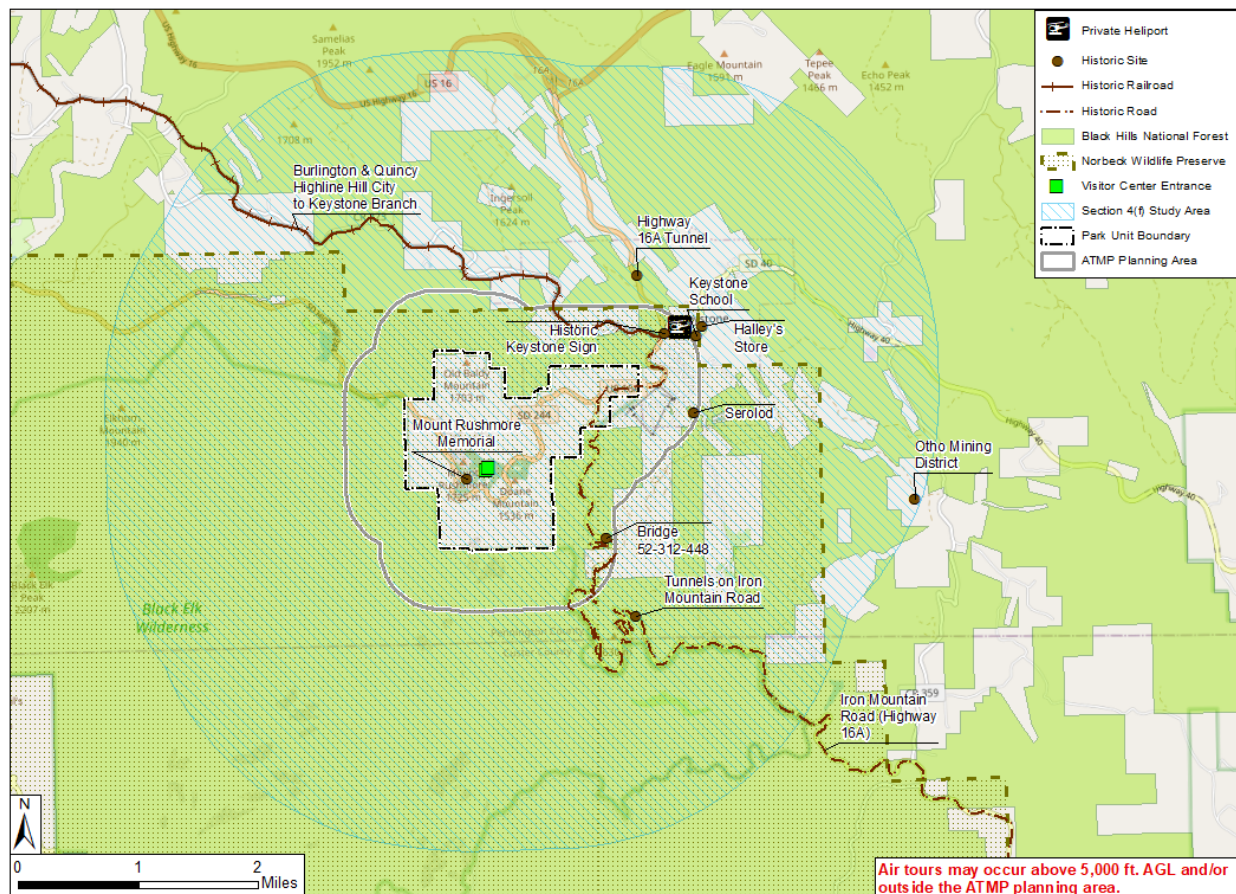


Figure 21. Section 4(f) Environmental Consequences for Alternative 2.

### Alternative 3

The FAA evaluated Alternative 3 for potential impacts to Section 4(f) resources. The noise analysis in Section 3.1.2, Environmental Consequences for Noise and Noise-Compatible Land Use, indicates that the resultant DNL due to Alternative 3 is expected to be less than 60 dB and

<sup>21</sup> Substantial impairment would occur when impacts to section 4(f) lands are sufficiently serious that the value of the site in terms of its prior significance and enjoyment are substantially reduced or lost.

there would be a reduction in the overall noise footprint (average sound level over a 12-hour day) compared to existing conditions.

Under Alternative 3, 3,657 air tours, 93% of the existing number of flights based on the three-year average of reporting data from 2017-2019, would be authorized to fly within the ATMP planning area along routes consistent with those currently flown over the ATMP planning area. Refer to Figure 22 for a depiction of air tour routes under Alternative 3 in the context of Section 4(f) properties. Because the number of authorized flights under Alternative 3 would be less than existing conditions and air tours would be limited to flying on designated routes within the ATMP planning area, evaluation of NPS supplemental metrics<sup>22</sup> show that impacts to Section 4(f) resources would be less than impacts currently occurring within the ATMP planning area:

- On days when commercial air tours would occur, noise levels above 35 dBA (an indicator used by the NPS to assess the potential for degradation of the natural sound environment) would occur for at least 75 minutes in the ATMP planning area, including between 180 and 225 minutes in small areas (<9 %) below flight routes, up to 180 minutes in 19% of the ATMP planning area, and between 120 and 135 minutes in 55% of the ATMP planning area (see Appendix F, *Noise Technical Analysis*, Figure 12).
- On days when commercial air tours would occur, noise levels above 52 dBA (which is associated with speech interference) are not anticipated to exceed 68.1 minutes in the ATMP planning area. Location points (provided by the NPS) are specific points of interest geographically located across the entire ATMP planning area where noise levels were evaluated (see Appendix I, *Section 4(f) Analysis*, for a summary of the reported ranges of time above 52 dBA for location points within 1.5 miles of each Section 4(f) property).

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<sup>22</sup> Noise contours were produced for the time above 35 dBA metric, but not the time above 52 dBA metric. For time above 52 dBA, location points across the Section 4(f) study area were used to assess impacts on Section 4(f) resources. See Appendix F, *Noise Technical Analysis*, for further detail.



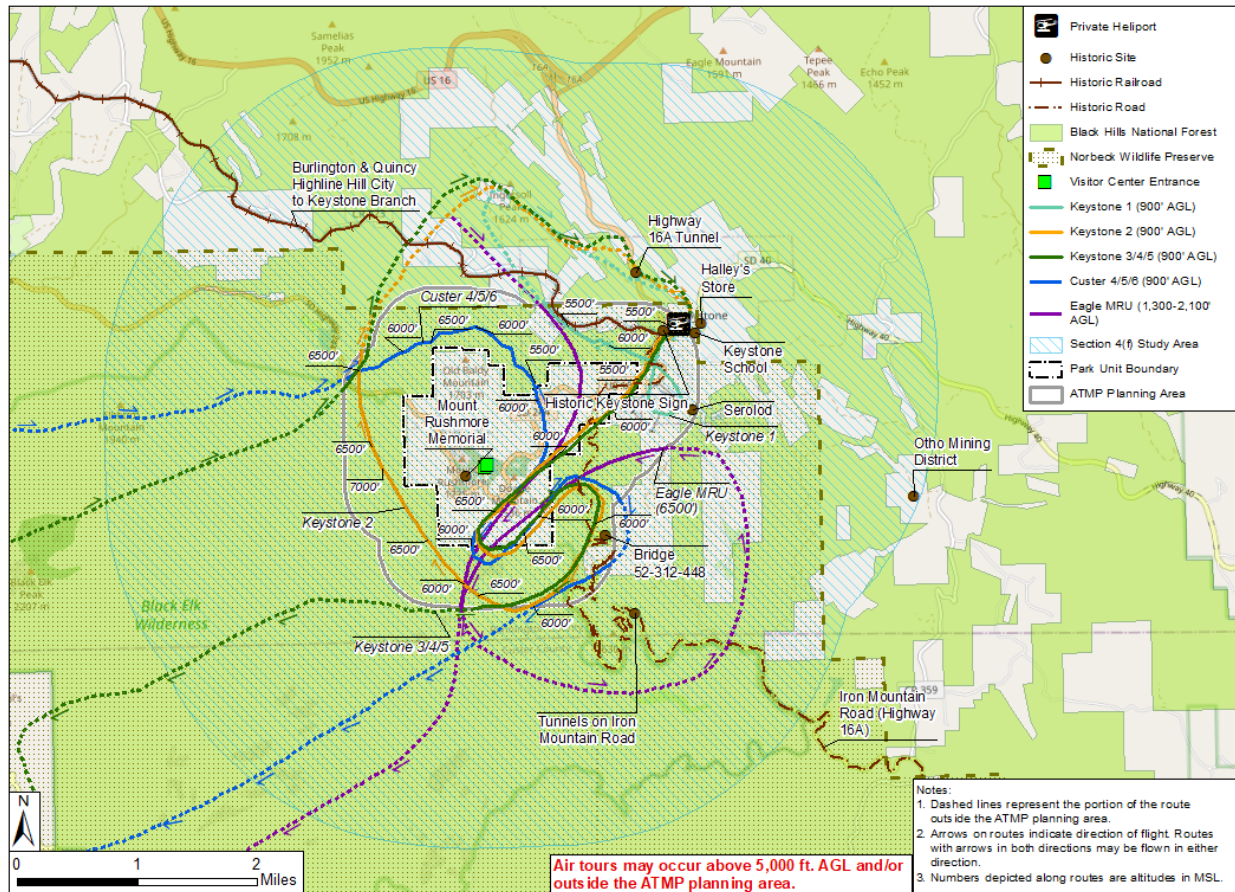


Figure 22. Section 4(f) Environmental Consequences for Alternative 3 and Alternative 4.

In addition, Alternative 3 would limit the operation of commercial air tours to one hour after sunrise until one hour before sunset or beginning at sunrise and ending at sunset for operators that have converted to quiet technology aircraft. These time restrictions provide times when visitors seeking solitude may experience the Section 4(f) resources without disruptions from commercial air tours. The altitudes required by Alternative 3, which would limit minimum altitudes to no lower than 900 ft. AGL for helicopters and no lower than 1,400 ft. AGL for fixed-wing aircraft, would reduce the maximum noise levels at sites directly below the air tour routes. In addition, Alternative 3 would limit the number of commercial air tours within the ATMP planning area to no more than 25 tours per day across all operators and limit the number of tours each operator could conduct on the days where air tours are permitted. Alternative 3 also prohibits hovering and circling by air tours.

As a result, FAA concludes there would be no substantial impairment<sup>23</sup> on Section 4(f) resources in the Section 4(f) study area from noise-related effects under Alternative 3. This conclusion supports the FAA's determination that Alternative 3 would not constitute constructive use of Section 4(f) resources in the Section 4(f) study area. This Section 4(f) determination for historic properties is based on 14 CFR Part 150 Appendix A and is also consistent with the impact discussion at the Park for cultural resources (see Section 3.4.2, Environmental Consequences for Cultural Resources).

The FAA also considered the potential for vibrational impacts on Section 4(f) resources under Alternative 3. A review of the potential for vibrational impacts on sensitive structures such as historic buildings suggests that the potential for damage resulting from helicopter overflights is minimal, as the fundamental blade passage frequency is well above the natural frequency of these structures. Additionally, the vibration amplitude of these overflights at the altitudes prescribed in Alternative 3 would be well below recommended limits.<sup>24, 25</sup> Vibrational impacts are not anticipated to affect surrounding parkland and National Forest areas given that aircraft overflights do not contain vibrational energy at levels which would affect outdoor areas or natural features and there is no substantial change from existing conditions.

Recognizing that some types of Section 4(f) resources may be affected by visual effects of commercial air tours, the FAA and the NPS considered the potential for the introduction of visual elements that could substantially diminish the significance or enjoyment of Section 4(f) resources in the Section 4(f) study area. Alternative 3 would limit the number of commercial air tours per year to 3,657 flights and would require operators to fly along five designated flight paths over the ATMP planning area, which would result in fewer areas of the ATMP planning area, and therefore, fewer Section 4(f) properties, from which a commercial air tour could be visible. Alternative 3 would not introduce visual elements or result in visual impacts that would substantially diminish the activities, features or attributes of a Section 4(f) resource. Therefore, there would be no constructive use from visual impacts of Section 4(f) resources.

#### ***Alternative 4***

The FAA evaluated Alternative 4 for potential impacts to Section 4(f) resources. The noise analysis in Section 3.1.2, Environmental Consequences for Noise and Noise Compatible Land Use, indicates that the resultant DNL due to Alternative 4 is expected to be less than 60 dB and

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<sup>23</sup> Substantial impairment would occur when impacts to section 4(f) lands are sufficiently serious that the value of the site in terms of its prior significance and enjoyment are substantially reduced or lost.

<sup>24</sup> Hanson, C.E., King, K.W., et al. (1991). Aircraft noise effects on cultural resources: review of technical literature. NPOA Report No. 91-3 (HMMH Report No.290940.04-1).

<sup>25</sup> Volpe National Transportation Systems Center, Department of Transportation. (2014). Literature review: vibration of natural structures and ancient/historical dwellings, internal report for National Park Service, Natural Sounds and Night Skies Division.



there would be a reduction in the overall noise footprint (average sound level over a 12-hour day) compared to existing conditions.

Under Alternative 4, 751 air tours, or 19% of the existing number of flights based on the three-year average of reporting data from 2017-2019, would be authorized to fly within the ATMP planning area along routes consistent with those currently flown over the ATMP planning area. Refer to Figure 22 for a depiction of air tour routes under Alternative 4 in the context of Section 4(f) properties. Because the number of authorized flights under Alternative 4 would be substantially less than existing conditions, evaluation of NPS supplemental metrics<sup>26</sup> show that impacts to Section 4(f) resources would be less than impacts currently occurring:

- On days when commercial air tours would occur, noise levels above 35 dBA (an indicator used by the NPS to assess the potential for degradation of the natural sound environment) would occur for at least 15 minutes in the ATMP planning area, including between 45 and 60 minutes in 42% of the ATMP planning area, up to 75 minutes in small regions (1%) below flight routes (see Appendix F, *Noise Technical Analysis*, Figure 15).
- On days when commercial air tours would occur, noise levels above 52 dBA (which is associated with speech interference) are not anticipated to exceed 21.1 minutes in the ATMP planning area. Location points (provided by the NPS) are specific points of interest geographically located across the ATMP planning area where noise levels were evaluated (see Appendix I, *Section 4(f) Analysis*, for a summary of the reported ranges of time above 52 dBA for location points within 1.5 miles of each Section 4(f) property).

In addition, Alternative 4 would limit the operation of commercial air tours to between the hours of 9:00 AM and 5:00 PM, or beginning at sunrise and ending at sunset for operators that have converted to quiet technology aircraft. These time restrictions provide times when visitors seeking solitude may experience the Section 4(f) resources without disruptions from commercial air tours. Alternative 4 would limit minimum altitudes at least 900 ft. AGL for helicopters and at 1,400 ft. AGL for fixed-wing aircraft, and prohibit air tours below 5,000 ft. AGL within the ATMP planning area except those conducted on the authorized routes. These altitude restrictions would reduce the maximum noise levels at sites directly below the air tour routes. Alternative 4 would also limit the number of commercial air tours within the ATMP planning area to no more than eight tours per day across all operators and limit the number of tours each operator could conduct on the days where air tours are permitted. In addition, Alternative 4 would prohibit hovering and circling by air tours.

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<sup>26</sup> Noise contours were produced for the time above 35 dBA metric, but not the time above 52 dBA metric. For time above 52 dBA, location points across the Section 4(f) study area were used to assess impacts on Section 4(f) resources. See Appendix F, *Noise Technical Analysis*, for further detail.

As a result, FAA concludes there would be no substantial impairment<sup>27</sup> of Section 4(f) resources in the Section 4(f) study area from noise-related effects under Alternative 4. This conclusion supports the FAA's determination that Alternative 4 would not constitute constructive use of Section 4(f) resources in the Section 4(f) study area. This Section 4(f) determination for historic properties is based on 14 CFR Part 150 Appendix A and is also consistent with the impact discussion at the Park for cultural resources (see Section 3.4.2, Environmental Consequences for Cultural Resources). The FAA also considered the potential for vibrational impacts on Section 4(f) resources under Alternative 4. A review of the potential for vibrational impacts on sensitive structures such as historic buildings suggests that the potential for damage resulting from helicopter overflights is minimal, as the fundamental blade passage frequency is well above the natural frequency of these structures. Additionally, the vibration amplitude of these overflights at the altitudes prescribed in Alternative 4 would be well below recommended limits.<sup>24, 25</sup> Vibrational impacts are not anticipated to affect surrounding Parkland and National Forest areas given that aircraft overflights do not contain vibrational energy at levels which would affect outdoor areas or natural features and there is no substantial change from existing conditions.

Recognizing that some types of Section 4(f) resources may be affected by visual effects of commercial air tours, the FAA and the NPS considered the potential for the introduction of visual elements that could substantially diminish the significance or enjoyment of Section 4(f) resources in the Section 4(f) study area. Alternative 4 would limit the number of commercial air tours per year to 751 flights and would require operators to fly along five designated flight paths over the ATMP planning area, which would result in fewer areas of the ATMP planning area, and therefore, fewer Section 4(f) properties, from which a commercial air tour could be visible. Alternative 4 would not introduce visual elements or result in visual impacts that would substantially diminish the activities, features or attributes of a Section 4(f) resource. Therefore, there would be no constructive use from visual impacts of Section 4(f) resources.

### ***Indirect and Cumulative Effects***

**Indirect Effects:** The indirect effects of Alternatives 2, 3, and 4 on Section 4(f) properties reflect those analyzed in the sections for noise and visual effects. Since commercial air tour operations would be limited or prohibited within the ATMP planning area under Alternatives 2, 3, and 4, these alternatives could result in the displacement of tours outside of this area.

The indirect effects analysis conducted for Noise and Noise-Compatible Land Use (see Section 3.1.2, Environmental Consequences for Noise and Noise-Compatible Land Use) indicates that it is highly unlikely that the air tours that are displaced to outside the ATMP planning area under

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<sup>27</sup> Substantial impairment would occur when impacts to section 4(f) lands are sufficiently serious that the value of the site in terms of its prior significance and enjoyment are substantially reduced or lost.

Alternatives 2, 3, and 4 would generate a noise exposure level at or above DNL 65 dB in a single location in accordance with FAA Order 1050.1F, including those that overlap with Section 4(f) properties. The indirect effects analysis for Visual Effects (see Section 3.8.2, Environmental Consequences for Visual Effects) identifies that some indirect visual impacts could occur if flights were displaced to outside the ATMP planning area. Air tour operators would likely continue to fly to points of interest outside of the ATMP planning area elsewhere in the region, such as Crazy Horse Monument, Iron Mountain Road, Horsethief Lake, Black Elk Peak, and Sylvan Lake, or would conduct tours just outside of the perimeter of the ATMP planning area since the sculpture would still be visible from this area. Section 4(f) resources are present in these areas and could experience visual effects if air tours were visible from those resources. However, it is difficult to predict with specificity if, where, and to what extent any displaced air tours would result in visual impacts in different and/or new areas, including Section 4(f) resources.

**Cumulative Effects:** The cumulative effects to Section 4(f) properties reflect those analyzed in the sections for noise and visual effects (see Section 3.1.2, Environmental Consequences for Noise and Noise-Compatible Land Use and Section 3.8.2, Environmental Consequences for Visual Effects). The cumulative effects would be fewer for Alternatives 3 and 4, which limit the number of air tours that would occur as compared to existing conditions, and the fewest under Alternative 2 as there would be no tours permitted within the ATMP planning area. Under Alternatives 2, 3, and 4, ongoing present and future Park management actions by the NPS within the ATMP planning area, including the use of aircraft for wildlife monitoring, firefighting, mechanized equipment for Park maintenance, and flyovers for special events, would continue to negatively affect the acoustic environment of Section 4(f) properties within the ATMP planning area. Other sources of ongoing visual impacts that may affect Section 4(f) properties within the ATMP planning area include general aviation flights or overflights by commercial airlines, which would likely continue under Alternatives 2, 3, and 4, as they occur independently of air tours. As described above for indirect effects, air tours flown just outside the ATMP planning area are currently offered by operators both with and without IOA for the Park as air tours in this area still afford views of the sculpture. Noise from these air tours that is experienced within the ATMP planning area also contributes to the cumulative effects analysis. Ongoing present and future Park management actions by the NPS would continue to occur under any of the alternatives.

#### ***Section 4(f) Recommended Finding***

In summary, the FAA has preliminarily determined that there would be no constructive use to Section 4(f) properties under Alternatives 2, 3, and 4 because noise, vibrational, and visual impacts from commercial air tours under this alternative would not constitute a substantial impairment of Section 4(f) resources in the Section 4(f) study area. As part of the draft ATMP and draft EA development, the FAA consulted with the NPS and through the release of the draft

ATMP and draft EA and consulted with the NPS and other Officials with Jurisdiction over Section 4(f) resources in the Section 4(f) study area regarding FAA's preliminary finding of no substantial impairment, and hence, the FAA's proposed no constructive use determination. The FAA has sent letters to each Section 4(f) property's Official with Jurisdiction with this preliminary finding concurrent with the release of this draft EA for public review. Refer to Appendix I, *Section 4(f) Analysis*, for additional details on this coordination.

### 3.10 Summary of Environmental Consequences

Table 18 summarizes the environmental consequences described above for each of the alternatives considered across each environmental impact category.

Table 18. Summary of Environmental Consequences of the ATMP Alternatives.

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
Noise and Noise-Compatible Land Use	<ul style="list-style-type: none"> <li>• 12-hr equivalent sound level: ≤60 dBA except for small area near heliport; 50-55 dBA in 43% of ATMP planning area; 40-45 dBA in entire ATMP planning area.</li> <li>• DNL: &lt;60 dB</li> <li>• Time audible natural ambient: Up to 345 minutes in 56% of ATMP planning area; 210-480 minutes in entire ATMP planning area.</li> <li>• Time above 35 dBA: &gt;315 minutes in 70% of the ATMP planning area; 210-330 minutes in entire ATMP planning area.</li> <li>• Maximum time above 52 dBA: 104.9 minutes at Location #14 (Undeveloped Park land-goat habitat).</li> <li>• Maximum sound level in ATMP planning area: 73.7 dBA at Location #17</li> </ul>	<ul style="list-style-type: none"> <li>• 365 days per year without air tours within the ATMP planning area and would reduce noise in the most noise sensitive regions of the Park.</li> <li>• Indirect noise impacts may occur due to air tours displaced to outside the ATMP planning area.</li> </ul>	<ul style="list-style-type: none"> <li>• 12-hr equivalent sound level: ≤60 dBA except for small area near heliport; generally &gt;45 dBA in 74% of the ATMP planning area; 40-45 dBA in entire ATMP planning area.</li> <li>• DNL: &lt;60 dB</li> <li>• Time audible natural ambient: 150-210 minutes in 66% of the ATMP planning area; 150-300 minutes in entire planning area.</li> <li>• Time above 35 dBA: 135-225 minutes in 55% of ATMP planning area; 75-225 minutes in entire ATMP planning area.</li> <li>• Maximum time above 52 dBA: 68.1 minutes at Location #14 (Undeveloped Park land-goat habitat).</li> <li>• Maximum sound level in ATMP planning area: 73.7 dBA at Location #17 (No name pullout).</li> </ul>	<ul style="list-style-type: none"> <li>• 12-hr equivalent sound level: ≤50 dBA except for small area near heliport; &gt;40 dBA in 76% of the ATMP planning area; 35-40 dBA in entire ATMP planning area.</li> <li>• DNL: &lt;60 dB</li> <li>• Time audible natural ambient: 45-90 minutes in entire ATMP planning area.</li> <li>• Time above 35 dBA: 15-60 minutes in entire ATMP planning area.</li> <li>• Maximum time above 52 dBA: 21.1 minutes at Location #14 (Undeveloped Park land-goat habitat).</li> <li>• Maximum sound level in ATMP planning area: 73.7 dBA at Location #17 (No name pullout).</li> <li>• Indirect noise impacts may occur due to air tours being displaced to outside the ATMP planning area.</li> </ul>

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Environmental Impact Category	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
	<ul style="list-style-type: none"> <li>No indirect effects expected.</li> </ul>		<ul style="list-style-type: none"> <li>Indirect noise impacts may occur due to air tours being displaced to outside the ATMP planning area.</li> </ul>	
Air Quality	<ul style="list-style-type: none"> <li>Criteria pollutants: 54 TPY</li> <li>GHG emissions: 97.5 MT of CO<sub>2</sub> per year</li> <li>Would not cause NAAQS exceedance or increase the frequency or severity of any existing violations.</li> <li>No indirect effects expected.</li> </ul>	<ul style="list-style-type: none"> <li>Reduction in criteria pollutants: 54 TPY</li> <li>Reduction in GHG emissions: 97.5 MT CO<sub>2</sub> per year</li> <li>Would not cause NAAQS exceedance or increase the frequency or severity of any existing violations.</li> <li>Indirect impacts may occur due to air tours outside the ATMP planning area if winds transport emissions to within the ATMP planning area, and some areas not currently exposed to emissions from air tours (outside the ATMP planning area) may be exposed to emissions.</li> <li>Highly unlikely that air tours displaced to outside the ATMP planning area would result in air quality impacts or change the current attainment status of the Park.</li> </ul>	<ul style="list-style-type: none"> <li>Reduction in criteria pollutants: 3.4 TPY</li> <li>Reduction in GHG emissions: 6.09 MT CO<sub>2</sub> per year</li> <li>Would not cause NAAQS exceedance or increase the frequency or severity of any existing violations.</li> <li>Indirect impacts may occur due to air tours outside the ATMP planning area if winds transport emissions to within the ATMP planning area, and some areas not currently exposed to emissions from air tours (outside the ATMP planning area) may be exposed to emissions.</li> <li>Highly unlikely that air tours displaced to outside the ATMP planning area would result in air quality impacts or change the current attainment status of the Park.</li> </ul>	<ul style="list-style-type: none"> <li>Reduction in criteria pollutants: 43.4 TPY</li> <li>Reduction in GHG emissions: 78.4 MT CO<sub>2</sub> per year</li> <li>Would not cause NAAQS exceedance or increase the frequency or severity of any existing violations.</li> <li>Indirect impacts may occur due to air tours outside the ATMP planning area if winds transport emissions to within the ATMP planning area, and some areas not currently exposed to emissions from air tours (outside the ATMP planning area) may be exposed to emissions.</li> <li>Highly unlikely that air tours displaced to outside the ATMP planning area would result in air quality impacts or change the current attainment status of the Park.</li> </ul>
Biological Resources	<ul style="list-style-type: none"> <li>Commercial air tour noise would continue to affect wildlife within the ATMP planning area.</li> <li>Time above 35 dBA: &lt;330 minutes in 70% of ATMP planning area.</li> </ul>	<ul style="list-style-type: none"> <li>Direct beneficial effects to biological resources are expected. No direct impacts to biological resources within the ATMP planning area but could result in some indirect impacts</li> </ul>	<ul style="list-style-type: none"> <li>Time-of-day restrictions: 1 hour after sunrise to 1 hour before sunset (non-quiet technology aircraft) to protect species active during dawn and dusk.</li> <li>Time above 35 dBA:</li> </ul>	<ul style="list-style-type: none"> <li>Time-of-day restrictions: 9:00 AM to 5:00 PM (non-quiet technology aircraft) to protect species active during dawn and dusk.</li> <li>Seasonal restrictions: Air tours permitted June 16 through Sept.</li> </ul>

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Environmental Impact Category	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
	<ul style="list-style-type: none"> <li>• Not expected to result in indirect effects to wildlife.</li> </ul>	<ul style="list-style-type: none"> <li>• due to air tour displacement outside the ATMP planning area.</li> </ul>	<ul style="list-style-type: none"> <li>• &lt;225 minutes a day in entire ATMP planning area.</li> <li>• Could result in indirect effects to wildlife due to air tour displacement outside the ATMP planning area.</li> </ul>	<ul style="list-style-type: none"> <li>• 30 to minimize impacts on nesting birds and bighorn sheep lamb rearing.</li> <li>• Time above 35 dBA: &lt;75 minutes in entire ATMP planning area.</li> <li>• Could result in indirect effects to wildlife due to air tour displacement outside the ATMP planning area.</li> </ul>
Cultural Resources	<ul style="list-style-type: none"> <li>• Cultural resources would continue to be impacted by air tours, as noise and visual effects would impact the feeling and setting of cultural resources.</li> <li>• Time above 35 dBA: &lt;330 minutes in entire the ATMP planning area.</li> <li>• Not expected to result in indirect effects to cultural resources within the APE.</li> </ul>	<ul style="list-style-type: none"> <li>• Would reduce the noise and remove visual intrusions from the setting of cultural resources within the APE.</li> <li>• Could result in some indirect impacts to cultural resources within the APE.</li> </ul>	<ul style="list-style-type: none"> <li>• Would reduce noise and visual impacts that could detract from the feeling and setting of cultural resources within the APE.</li> <li>• Annual (3,657) and daily (25) limits for air tour operations within the APE would reduce the likelihood that an air tour would interrupt tribal practices.</li> <li>• 12-hr equivalent sound level: 52.4 dBA</li> <li>• Time above 35 dBA: &lt;225 minutes in portions of ATMP planning area.</li> <li>• Could result in air tour displacement outside the ATMP planning area.</li> </ul>	<ul style="list-style-type: none"> <li>• Would reduce noise and visual impacts that could detract from the feeling and setting of cultural resources within the APE.</li> <li>• Annual (751) and daily (8) limits for air tour operations within the APE would reduce the likelihood that an air tour would interrupt tribal practices.</li> <li>• 12-hr equivalent sound level: 47.5 dBA</li> <li>• Time above 35 dBA: &lt;75 minutes in portions of ATMP planning area.</li> <li>• Could result in air tour displacement outside the ATMP planning area.</li> </ul>
Wilderness	<ul style="list-style-type: none"> <li>• Air tour noise within and near Wilderness detracts from the natural quality and opportunity for solitude.</li> <li>• Time audible within Wilderness &lt;480 minutes a day.</li> </ul>	<ul style="list-style-type: none"> <li>• Offers the greatest protection to Wilderness since commercial air tours would not be able to fly over Wilderness.</li> <li>• Could result in indirect impacts to Wilderness areas associated with</li> </ul>	<ul style="list-style-type: none"> <li>• Annual (3,657) limits for air tours within the ATMP planning area would enhance Wilderness character.</li> <li>• Would reduce noise impacts that would detract from the natural quality and</li> </ul>	<ul style="list-style-type: none"> <li>• Annual (751) limits for air tours within the ATMP planning area would enhance Wilderness character.</li> <li>• Would reduce noise impacts that would detract from the natural quality and</li> </ul>

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Environmental Impact Category	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
	<ul style="list-style-type: none"> <li>No indirect effects expected.</li> </ul>	<p>the sights and sounds of air tours if tours were displaced to outside the ATMP planning area.</p>	<p>opportunities for solitude within Wilderness.</p> <ul style="list-style-type: none"> <li>Time audible within Wilderness: &lt;300 minutes a day</li> <li>Could result in some indirect impacts to Wilderness areas if tours were displaced to outside the ATMP planning area and the sights and sounds of those tours affected Wilderness areas.</li> </ul>	<p>opportunities for solitude within Wilderness.</p> <ul style="list-style-type: none"> <li>Time audible within Wilderness: &lt;90 minutes a day</li> <li>Could result in some indirect impacts to Wilderness areas if tours were displaced to outside the ATMP planning area and the sights and sounds of those tours affected Wilderness areas.</li> </ul>
Visitor Use and Experience and Other Recreational Opportunities	<ul style="list-style-type: none"> <li>Impacts to interpretive programs at the Amphitheater due to sound levels from air tours resulting in speech interference and inability to hear natural sounds.</li> <li>Impacts to visitor experience in natural areas of the Park related to the intrusion of audible air tour noise where visitors would expect natural sounds to prevail during their visit to the Park.</li> <li>Maintains the current availability of air tours for those that wanted to view the Park from an aerial vantage point.</li> <li>Audible air tour noise: at least 210 minutes a day</li> <li>Time above 52 dBA: 49 minutes a day</li> <li>No indirect effects expected.</li> </ul>	<ul style="list-style-type: none"> <li>Offers the greatest protection to visitor use and experience by eliminating air tours within the ATMP planning area.</li> <li>Air tours occurring outside the ATMP planning area may result in noise in other areas near those flights which could affect the visitor experience.</li> <li>Indirect impacts to visitor experience and points of interest could occur if flights were displaced to outside the ATMP planning area.</li> </ul>	<ul style="list-style-type: none"> <li>Annual (3,657) and daily (25) limits on air tours within the ATMP planning area would reduce impacts.</li> <li>Indirect impacts to visitor experience and points of interest could occur if flights were displaced to outside the ATMP planning area.</li> <li>Limits the availability of air tours for those interested in viewing the Park from an aerial perspective.</li> <li>Time audible: &lt;300 minutes a day</li> <li>Time above 52 dBA: up to 32.1 minutes a day</li> </ul>	<ul style="list-style-type: none"> <li>Annual (751) and daily (8) limits on air tours within the ATMP planning area would reduce impacts.</li> <li>Indirect impacts to visitor experience and points of interest could occur if flights were displaced to outside the ATMP planning area.</li> <li>Limits the availability of air tours for those interested in viewing the Park from an aerial perspective.</li> <li>Time audible: &lt;105 minutes a day</li> <li>Time above 52 dBA: up to 10.3 minutes a day</li> </ul>

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Environmental Justice and Socioeconomics	<ul style="list-style-type: none"> <li>• Would not result in disproportionately high or adverse impacts to EJ populations or impact those populations in ways that are unique to those EJ populations.</li> <li>• DNL &lt;60 dB</li> <li>• 97.5 MT CO<sub>2</sub></li> <li>• Peak month average day: 38 tours</li> </ul>	<ul style="list-style-type: none"> <li>• Would not result in disproportionately high or adverse impacts to EJ populations or impact those populations in ways that are unique to those EJ populations.</li> <li>• Could impact employment or the amount of income that air tour operators and other ancillary businesses generate from conducting air tours within the ATMP planning area.</li> </ul>	<ul style="list-style-type: none"> <li>• Annual (3,657) and daily (25) limits on air tours within the ATMP planning area would reduce impacts.</li> <li>• Would not result in disproportionately high or adverse impacts to EJ populations or impact those populations in ways that are unique to those EJ populations.</li> <li>• DNL &lt;60 dB</li> <li>• Reduction in GHG emissions: 6.09 MT CO<sub>2</sub> per year</li> <li>• Could impact employment or the amount of income that air tour operators and other ancillary businesses generate from conducting air tours within the ATMP planning area.</li> </ul>	<ul style="list-style-type: none"> <li>• Annual (751) and daily (8) limits on air tours within the ATMP planning area would reduce impacts.</li> <li>• Would not result in disproportionately high or adverse impacts to EJ populations or impact those populations in ways that are unique to those EJ populations.</li> <li>• DNL &lt; 60 dB</li> <li>• Reduction in GHG emissions: 78.4 MT CO<sub>2</sub> per year</li> <li>• Could impact employment or the amount of income that air tour operators and other ancillary businesses generate from conducting air tours within the ATMP planning area.</li> </ul>
Visual Effects	<ul style="list-style-type: none"> <li>• Air tours would continue to impact viewsheds primarily near Blackberry Trail and Old Baldy.</li> <li>• No indirect effects expected.</li> <li>• Peak month average day: 38 tours</li> </ul>	<ul style="list-style-type: none"> <li>• Alternative 2 would provide the greatest protection to Park viewsheds and would benefit visual resources and visual character within the Park.</li> <li>• Indirect impacts to viewsheds could occur if flights were displaced to outside the ATMP planning area.</li> </ul>	<ul style="list-style-type: none"> <li>• Annual (3,657) and daily (25) limits would reduce the likelihood of visual impacts compared to current conditions.</li> <li>• Indirect impacts to viewsheds could occur if flights were displaced to outside the ATMP planning area.</li> </ul>	<ul style="list-style-type: none"> <li>• Annual (751) and daily (8) limits would reduce the likelihood of visual impacts compared to current conditions.</li> <li>• Indirect impacts to viewsheds could occur if flights were displaced to outside the ATMP planning area.</li> </ul>
DOT Section 4(f) Resources	<ul style="list-style-type: none"> <li>• FAA consulted with NPS, who determined that the No Action Alternative would result in substantial impairment to Section</li> </ul>	<ul style="list-style-type: none"> <li>• No substantial impairment of Section 4(f) resources in the ATMP planning area.</li> <li>• No “constructive use” to any Section 4(f)</li> </ul>	<ul style="list-style-type: none"> <li>• Annual (3,657) and daily (25) limits would reduce the likelihood of impacts.</li> <li>• No substantial impairment of Section</li> </ul>	<ul style="list-style-type: none"> <li>• Annual (751) and daily (8) limits would reduce the likelihood of impacts.</li> <li>• No substantial impairment of Section</li> </ul>



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<b>Environmental Impact Category</b>	<b>Alternative 1 (No Action)</b>	<b>Alternative 2 (Preferred)</b>	<b>Alternative 3</b>	<b>Alternative 4</b>
	4(f) resources.	properties.	4(f) resources in the ATMP planning area. <ul style="list-style-type: none"> <li>•No “constructive use” to any Section 4(f) properties.</li> <li>•DNL &lt;60 dB</li> <li>•Time above 35 dBA: ≥ 75 minutes</li> <li>•Time above 52 dBA: ≤68.1 minutes per day.</li> </ul>	4(f) resources in the ATMP planning area. <ul style="list-style-type: none"> <li>•No “constructive use” to any Section 4(f) properties.</li> <li>•DNL &lt;60 dB</li> <li>•Time above 35 dBA: ≥ 15 minutes</li> <li>•Time above 52 dBA: ≤ 21.1 minutes per day.</li> </ul>