

**Draft Environmental Assessment for an Air Tour  
Management Plan for  
Badlands National Park**

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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 Badlands National Park (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 that conduct air tours over the Park with combined IOA for 4,117 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, Wilderness character, and visitor experience. 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-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).

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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).

## 1.2 Background

On February 14, 2019, Public Employees for Environmental Responsibility and Hawai'i Coalition Malama Pono filed a petition in the 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 Badlands National Park. On May 1, 2020, the Court granted the petition and ordered the agencies to submit a schedule to bring 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 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

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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 Badlands National Park, 69 FR 20658 (April 16, 2004).

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 justification in the record of decision.

The ATMP will prescribe operating parameters to mitigate impacts from commercial air tours on Park resources and tribal lands. 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, visitor experience, and tribal lands. 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, visitor experience, and tribal lands.

## 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 and Plants)***

The ATMP would not result in ground disturbance or in-water activities that could affect plants or fish. The proposed minimum altitudes (800 ft. to 2,000 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 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 that would permit air tours range from 800 ft. to 2,000 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.

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 (800 ft. to 2,000 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 many natural resources, including plants, are considered significant resources by tribes and encompass both natural and cultural values. Since impacts on plant biology are not expected, they have been dismissed from further analysis as a biological resource and are instead analyzed as a cultural resource (see Section 3.4, Cultural Resources). In summary, for these reasons, the agencies have dismissed these resources from detailed analysis.

### ***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 shall 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 ground-based 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, ATMP Planning Area for the Development of the Alternatives, contain soils that are designated as prime/unique farmland soils. However, 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 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 been dismissed from detailed analysis 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. In developing the alternatives, the team considered the noise impacts of existing air tour routes and operations, the Park's cultural and natural resources, the Park's existing and natural acoustic environment, visitor experience, and visual resources, as well as potential protective measures that could be included in an ATMP. The alternatives identified by the NPS 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 NPS's interdisciplinary 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, four potential alternatives (Alternative 1 which serves as the No Action Alternative; Alternative 2 which would not permit air tours within the ATMP planning area; Alternative 3 which would permit the existing number of air tours annually (1,425 air tours) and 16 daily air tours with operational modifications; and Alternative 4 which would permit 1,055 annual air tours and eight daily air tours with operational modifications in the ATMP planning area) 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.

As further discussed in Section 2.4, Alternative 1 (No Action Alternative), after the public scoping period, the agencies refined the No Action Alternative to recognize that IOA is not reasonably foreseeable. 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 time-of-day restrictions, seasonal restrictions, and total

allowable annual flights for Alternative 4. Refer to Appendix J, *Public Scoping Newsletter and Comment Summary Report*, for additional details on the alternatives that were released for 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 Park's Foundation Document (NPS, 2017) for which states:

*The purposes of Badlands National Park are based on the various pieces of legislation that resulted in the creation of Badlands National Park and the legislation governing the National Park Service. Badlands National Park is to be managed to accomplish the following:*

- *Protect the unique landforms and scenery of the White River Badlands for the benefit, education, and inspiration of the public.*
- *Preserve, interpret, and provide for scientific study of the paleontological and geological resources of the White River Badlands.*
- *Preserve the flora, fauna, and natural processes of the mixed-grass prairie ecosystem.*
- *Preserve the Badlands Wilderness Area and associated Wilderness values.*
- *Preserve and interpret the history, culture, and heritage of the Sioux Nation and Lakota people.*
- *Preserve and interpret the archeological and contemporary history of use and settlement of lands within the Park.*

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

- Park acoustic resources support an outstanding visitor experience and opportunities to hear and enjoy natural sounds.
- Acoustic resources of the Park are maintained such that the following aspects of Wilderness character are preserved: solitude or primitive and unconfined recreation, including remoteness from sights and sounds; untrammelled; natural; undeveloped; other features or values.
- 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 and use of these resources by traditionally associated communities.

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

### **2.2.1 Air Tours Above Existing Levels or Air Tours at Existing Levels with Current Operating Parameters**

The agencies considered but eliminated alternatives that would allow air tour operations at existing reported numbers with current operating parameters or above existing reported 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, tribal sacred sites and ceremonial areas, Wilderness character, 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 that noise from existing levels of air tours without changing operating parameters inhibits the NPS's ability to meet the Park's purpose and values, which are described in its Foundation Document (NPS, 2017). The NPS also determined that additional air tours above existing levels would inhibit the NPS's ability to meet the Park's purposes and values.

Noise from existing levels of air tours with current operating parameters negatively impacts existing sacred sites within the Park and the cultural landscape as a whole that are associated with Tribal Nations, as well as the visitor experience and interpretation of the cultural and natural resources of the Park, as would noise from air tours above the existing number of reported tours. The NPS Management Policies direct the NPS to avoid adversely affecting the 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). Further, existing air tours with current operating parameters over the Park impede the NPS's ability to fully meet the Park's purposes of protecting Wilderness character, natural and cultural resource protection (including the acoustic environment), and interpreting the natural and cultural resources of the Park.

Noise from existing air tours with current operating parameters over the Badlands Wilderness interferes with the opportunity for solitude and detracts from the natural quality of Wilderness. The existing air tours with current operating parameters also diminish visitor opportunities to learn about and to be inspired by Park resources and values through interpretation, and

existing air tours interfere with the atmosphere of peace and tranquility in the Park. The interdisciplinary team concluded that existing level of air tours diminish Wilderness character due to its effect on the natural soundscapes (see NPS Management Policies § 4.9).

For these reasons, the agencies have considered but eliminated alternatives that would increase air tours above existing air tour numbers and alternatives that would allow the existing number of air tours without changes to operational parameters.

### **2.3 ATMP Planning Area for the 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.

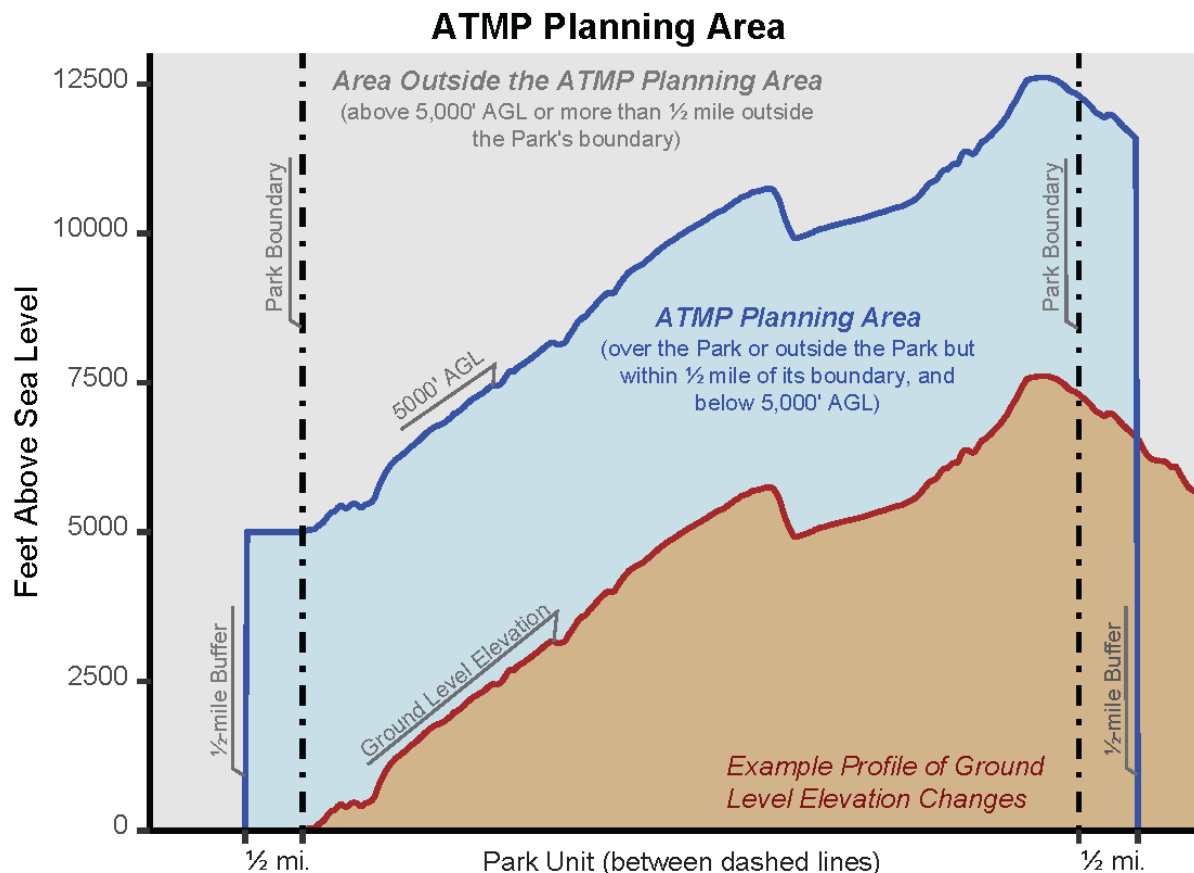


Figure 1. Graphic depiction of the ATMP planning area.

## 2.4 Alternative 1 (No Action Alternative)

The No Action Alternative represents a continuation of what is currently flown under existing conditions including applicable regulations that govern aviation safety (14 CFR Part 136, Appendix A (formerly Special Federal Aviation Regulation 71)) and in accordance with FAA Advisory Circular 91-36D *Visual Flight Rules Flight Near Noise Sensitive Areas*.<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).

### 2.4.1 Commercial Air Tours per Year

Two commercial air tour operators currently hold IOA to fly up to a combined total of 4,117 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

<sup>5</sup> [https://www.faa.gov/documentLibrary/media/Advisory\\_Circular/AC\\_91-36D.pdf](https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_91-36D.pdf)

1,425. 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 tours 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.

Although 4,117 commercial air tours per year are authorized under IOA, the operations reported by air tour operators from 2017-2019 reflect an average of 1,425 commercial air tours per year. The three-year average of commercial air tours from 2017-2019 is 1,425 per year, less than 35% of the IOA, and reflective of data collected. However, the agencies acknowledge that while it is possible that air tour operations could increase to the level authorized by IOA and thus dramatically change potential impacts to Park resources, the data does not support such changes in the way commercial air tour operations have occurred over the reporting years. Although the preliminary data from 2020 and 2021 shows an increase in commercial air tours during the COVID-19 pandemic, the agencies determined that air tour operations up to current IOA is not reasonably expected to occur within the life of the plan 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. There is no verifiable data demonstrating that operators have ever flown the number of commercial air tours authorized by IOA or would fly this number of tours in the future. Thus, the No Action Alternative is a continuation of existing conditions and uses the three-year average of flights from 2017-2019 for this draft EA analysis and impacts of IOA are not analyzed nor included as the baseline condition.

#### **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 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.

Under the No Action Alternative, commercial air tours on Badger Helicopters routes Discovery Flight, Valley Tour, Grand Tour, Adventure Tour, and Expedition Tour would likely continue to be conducted at operator-reported altitudes that range from 800 ft. AGL to 2,000 ft. AGL depending on the route, except during takeoff and landing from the privately owned and operated heliport within 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. The altitudes that range from 800 ft. to 2,000 ft. AGL result in the mean sea level (MSL) altitude callouts in Figure 2 that range from 3,300 ft. to 5,000 ft. MSL.<sup>6</sup> Commercial air tours conducted by fixed-wing aircraft on the Eagle Aviation route would likely continue to be conducted at operator-reported altitudes that range from 1,500 ft. AGL to 2,000 ft. AGL depending on location along the route, which result in altitudes that range from 3,900 ft. to 5,100 ft. MSL as shown on the altitude callouts in Figure 2.

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>7</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 operators that hold IOA for the Park reported flying commercial air tours over the Park between 2013 and 2020. Badger Helicopters, Inc. 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.

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

Operator	Aircraft Type	2013	2014	2015	2016	2017	2018	2019	2020 <sup>8</sup>	2017-2019 Avg.	IOA
Badger Helicopters, Inc.	BHT-206B, BHT-47-G3B1, R-44-II, R-66-66 (helicopter)	962	1,317	1,205	1,329	1,190	1,729	1,349	2,264	1,423	4,099

<sup>6</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>7</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)

<sup>8</sup> Based on unpublished reporting data.



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Operator	Aircraft Type	2013	2014	2015	2016	2017	2018	2019	2020 <sup>8</sup>	2017-2019 Avg.	IOA
Eagle Aviation, Inc.	Cessna 172, Cessna 206 (fixed-wing)	0	0	0	1	4	0	0	0	2	18
<b>TOTAL</b>		<b>962</b>	<b>1,317</b>	<b>1,205</b>	<b>1,330</b>	<b>1,194</b>	<b>1,729</b>	<b>1,349</b>	<b>2,264</b>	<b>1,425</b>	<b>4,117</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>.

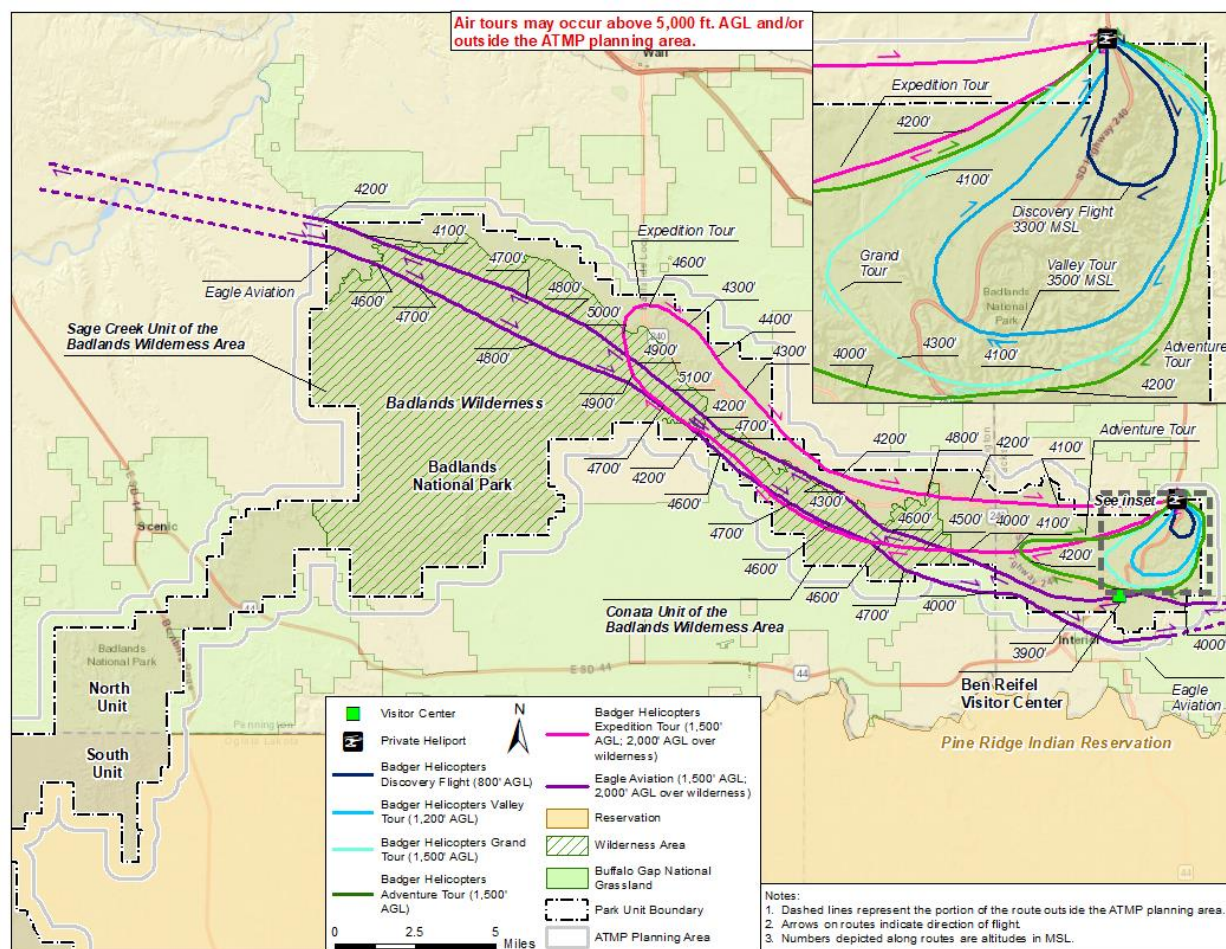


Figure 2. Alternative 1 (No Action Alternative).

## 2.5 Alternative 2 (Preferred Alternative)

Alternative 2 provides the greatest level of protection for the purposes, resources, and values of the Park as well as Park management objectives and is most responsive to tribal concerns.

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 (ATMP's

effective date). Except when necessary for takeoff or landing from the privately owned and operated heliport within 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. Refer to Figure 3 for a depiction of this alternative. 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.

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 the ATMP planning area.

All IOA for the Park and the Pine Ridge Indian Reservation 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. 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 fly routes over or around the ATMP planning area. They may also choose to move their air tours just outside or above the ATMP planning area. 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. 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. 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 greatly.

## 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*.

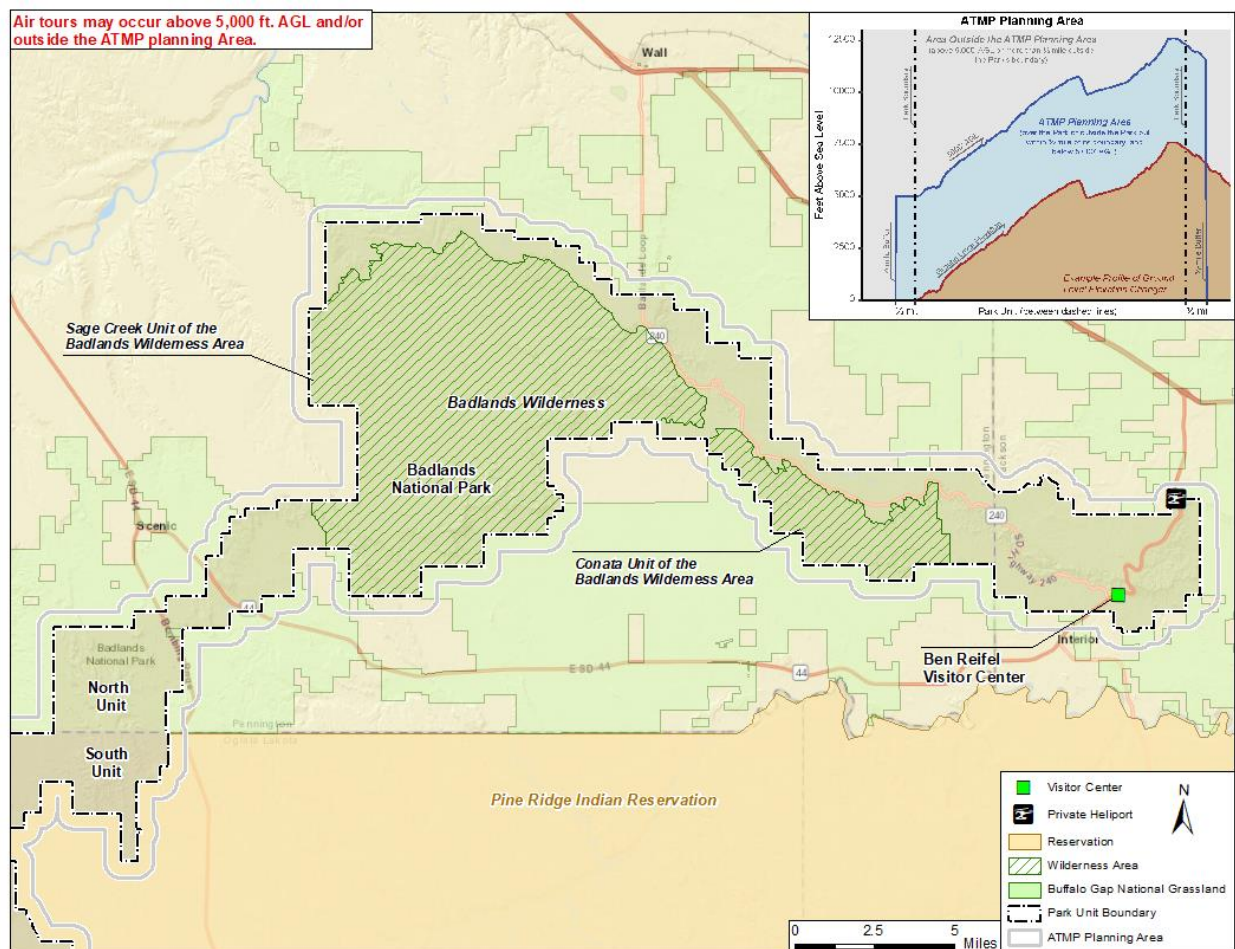


Figure 3. Alternative 2.

## **2.6 Alternative 3**

The NPS developed Alternative 3 to provide an alternative most similar to existing air tour operations, with mitigations to minimize impacts to natural and cultural resources and visitor experience. Alternative 3 would restrict air tour operations within the ATMP planning area primarily in the form of 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 1,425 commercial air tours per year within the ATMP planning area, consistent with 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 Wilderness character, cultural resources, tribal sacred sites and ceremonial areas, the natural acoustic environment, wildlife, and visitor experience that would result from an increased number of flights annually.

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 and the Pine Ridge Indian Reservation 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.

Operator	3-year Reported Average No. of Air Tours (2017-2019)	Annual Operations	Number of Routes
Badger Helicopters, Inc.	1,423	1,423	4
Eagle Aviation, Inc.	2	2	1
<b>TOTAL</b>	<b>1,425</b>	<b>1,425</b>	<b>5</b>

### 2.6.2 Commercial Air Tour Routes and Altitudes

Alternative 3 includes four routes for the helicopter operator (Badger Helicopters, Inc.) 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 five of the six routes that operators report they currently fly within the ATMP planning area.

Under Alternative 3, commercial air tours conducted on Badger Helicopters routes Discovery Flight, Valley Tour, Grand Tour, and Adventure Tour, would be conducted at the MSL altitude callouts on Figure 4 which range from 3,300 ft. to 4,300 ft. MSL and which result in minimum altitudes of 800 ft. AGL on the Discovery Flight, 1,200 ft. AGL on the Valley Tour, and 1,500 ft. AGL on the Grand and Adventure Tours. These altitudes would be required except when necessary for takeoff and landing from the privately owned and operated heliport within 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. The existing Expedition Tour would not be authorized under this alternative due to its extended length, spatial footprint, and time spent over the Park's designated Wilderness. Refer to Figure 4 for details.

Commercial air tours conducted by fixed-wing aircraft on the Eagle Aviation route would be conducted at the MSL altitude callouts on Figure 4 which range from 5,000 ft. to 5,700 ft. MSL and which result in a minimum altitude of 2,600 ft. AGL.

Under Alternative 3, commercial air tour operations would only occur over the North Unit of the Park on the designated routes at the designated altitudes described above. No commercial air tours would be authorized over Oglala Tribal Lands within the ATMP planning area, including the South Unit of the Park. 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 tours could be conducted outside of this area or over the ATMP planning area at or above 5,000 ft. AGL. The parameters and routes of such tours are difficult to predict with specificity due to operator preference and weather conditions at the time of the tour.

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

Route Name	Altitude	Aircraft Type	Operator
Discovery Flight	3,300 ft. MSL (800 ft. AGL)	Helicopter	Badger Helicopters
Valley Tour	3,500 ft. MSL (1,200 ft. AGL)	Helicopter	Badger Helicopters
Grand Tour	4,100 – 4,300 ft. MSL (1,500 ft. AGL)	Helicopter	Badger Helicopters
Adventure Tour	4,000 – 4,200 ft. MSL (1,500 ft. AGL)	Helicopter	Badger Helicopters
Eagle Aviation	5,000 – 5,700 ft. MSL (2,600 ft. AGL)	Fixed-wing	Eagle Aviation

### 2.6.3 Commercial Air Tour Aircraft Type

Operators would be limited to using the aircraft types reported in the period from 2017-2019 (see Table 2). 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>9</sup> Air tours would be permitted to occur from May 1 through September 30. This would mean that air tours would be allowed to occur on 153 total days each year. Air tours could occur any day of the week.

### 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 wildlife surveys, tribal activities, or other similar events.

<sup>9</sup> <https://gml.noaa.gov/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 16 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:
  - Badger Helicopters – 15
  - Eagle Aviation – 1
- Hovering/Circling: This alternative would prohibit hovering and circling because it could negatively impact visitors and 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 would be considered, analyzed, and included in this alternative for the protection of species and habitat shifts over time due to climate change, Wilderness, cultural resource quality, 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 would publish 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 conduct air tours beginning at sunrise or ending at sunset on all days that flights are authorized. In order to qualify for quiet technology incentives, operators would be required to follow a process to be defined by the agencies.

### **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 with 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 – 1,423
- Eagle Aviation – 2

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.



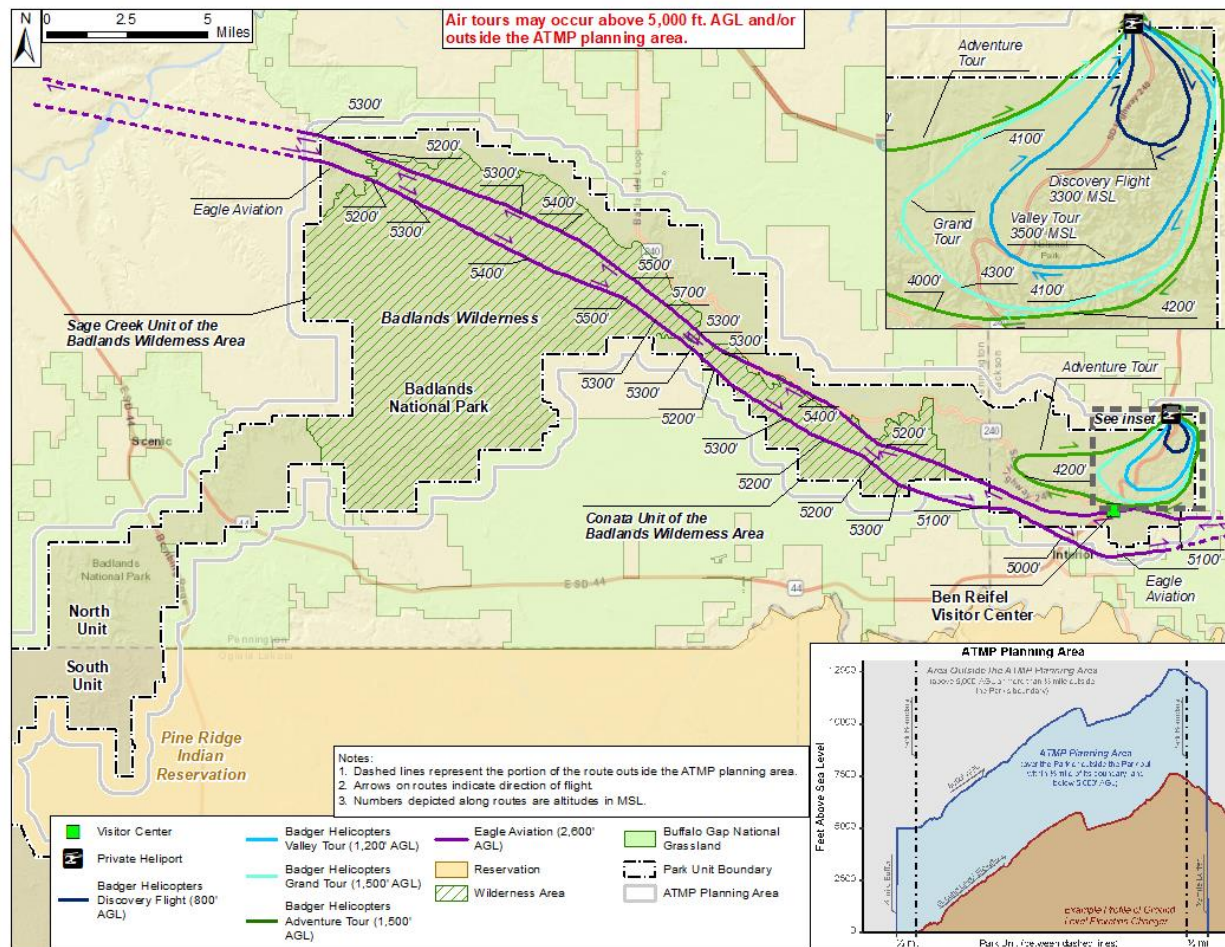


Figure 4. Alternatives 3 and 4.

## 2.7 Alternative 4

The NPS developed Alternative 4 to provide an alternative that improves the acoustic environment of the Park by reducing the number of existing air tour operations but not eliminating air tours. Compared to Alternative 3, Alternative 4 would further restrict and reduce the number of air tour operations within the ATMP planning area to minimize impacts on peregrine falcons 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 639 commercial air tours per year within the ATMP planning area. Thus, it would authorize approximately 45% 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, tribal sacred sites and ceremonial areas, the natural acoustic environment, wildlife such as peregrine falcon and bighorn sheep, 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 and the Pine Ridge Indian Reservation 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.*

Operator	3-year Reported Average No. of Air Tours (2017-2019)	Annual Operations	Number of Routes
Badger Helicopters, Inc.	1,423	637	4
Eagle Aviation, Inc.	2	2	1
<b>TOTAL</b>	<b>1,425</b>	<b>639</b>	<b>5</b>

### 2.7.2 Commercial Air Tour Routes and Altitudes

Alternative 4 includes four routes for the helicopter operator (Badger Helicopters, Inc.) and one route for the fixed-wing operator (Eagle Aviation, Inc.) all with varying distances and altitudes across the ATMP planning area (see Table 5). These five routes are consistent with five of the six routes that operators report that they currently fly within the ATMP planning area.

Under Alternative 4, commercial air tours conducted on Badger Helicopters routes Discovery Flight, Valley Tour, Grand Tour, and Adventure Tour, would be conducted at the MSL altitude callouts on Figure 4 which range from 3,300 ft. to 4,300 ft. MSL and which result in minimum altitudes of 800 ft. AGL on the Discovery Flight, 1,200 ft. AGL on the Valley Tour, and 1,500 ft. AGL on the Grand and Adventure Tours. These altitudes would be required except when necessary for takeoff and landing from the privately owned and operated heliport within 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. The existing Expedition Tour would not be authorized under this alternative due to its extended length, larger spatial footprint, and time spent over designated Wilderness. Refer to Figure 4 for details.

Commercial air tours conducted by fixed-wing aircraft on the Eagle Aviation route would be conducted at the MSL altitude callouts on Figure 4 which range from 5,000 ft. to 5,700 ft. MSL and which result in a minimum altitude of 2,600 ft. AGL. Refer to Figure 4 for details.

Under Alternative 4, commercial air tour operations would only occur over the North Unit of the Park on the designated routes at the designated altitudes described above inside the ATMP planning area. No commercial air tours would be authorized over Oglala Tribal Lands within the ATMP planning area, including the South Unit of the Park. 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 tours could be conducted outside of this area or over the ATMP planning area at or above 5,000 ft. AGL. The parameters and routes of such tours are difficult to predict with specificity due to operator preference and weather conditions at the time of the tour.

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

Route Name	Altitude	Aircraft Type	Operator
Discovery Flight	3,300 ft. MSL (800 ft. AGL)	Helicopter	Badger Helicopters
Valley Tour	3,500 ft. MSL (1,200 ft. AGL)	Helicopter	Badger Helicopters
Grand Tour	4,100 – 4,300 ft. MSL (1,500 ft. AGL)	Helicopter	Badger Helicopters
Adventure Tour	4,000 – 4,200 ft. MSL (1,500 ft. AGL)	Helicopter	Badger Helicopters
Eagle Aviation	5,000 – 5,700 ft. MSL (2,600 ft. AGL)	Fixed-wing	Eagle Aviation

### **2.7.3 Commercial Air Tour Aircraft Type**

Operators would be limited to using the aircraft types 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 to operate three hours after sunrise until three hours before sunset, as defined by NOAA. Exceptions to these parameters for quiet technology aircraft are noted below. Sunrise and sunset data are available from the NOAA Solar Calculator. Air tours would be permitted to occur from July 1 through September 30. This would mean that air tours would be allowed to occur on up to 92 total days each year. Air tours could occur any day of the week.

### **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 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:
  - Badger Helicopters – 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 would be considered, analyzed, and included in this alternative for the protection of species and habitat shifts over time due to climate change, Wilderness, cultural resource quality, 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 would 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 at rate of 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, 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. In order to qualify for quiet technology incentives, operators would be required to follow a process to be defined by the agencies.

### **2.7.8 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 for Alternative

4, 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 2.7.1, 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 initially allocated among the two air tour operators who have conducted air tours over the Park since 2017 as follows:

- Badger Helicopters – 637
- Eagle Aviation – 2

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 provide an alternative most similar to existing air tour operations, with mitigations to avoid unacceptable impacts to natural and cultural resources and visitor experience. Primarily, the conditions in this alternative include annual and daily caps, designated routes, and required minimal altitudes.	Restricts and reduces air tour operations within the ATMP planning area to improve the acoustic environment of the Park. Primarily, the conditions in this alternative include annual and daily caps, designated routes, and required minimal altitudes.

Alternative Attributes	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
Annual/Daily Number of Flights	Considers the three –year average of 1,425 flights per year (based on 2017-2019 reporting) as the existing condition.	None in ATMP planning area.	Authorizes 1,425 flights per year.  Daily limit of 16 flights per day on days where flights are allowed.	Authorizes 639 flights per year.  Daily limit of eight flights per day on days where flights are allowed.
Routes	No mandatory routes or no-fly zones.	None in ATMP planning area. Operators may fly to other points of interest in the area but outside of the ATMP planning area (i.e., at or above 5,000 ft. AGL or more than ½-mile outside of the Park’s boundary).	Four routes for the helicopter operator and one route for the fixed-wing operator all with varying distances and altitudes.  Badger Helicopters Expedition Tour would be prohibited under this alternative.	Same as Alternative 3.
Minimum Altitudes	No mandatory minimum altitudes. See map for depiction of reported operations. Helicopter flights range from 800-2,000 ft. AGL depending on the selected route, and fixed-wing flights range from 1,500-2,000 ft. AGL depending on location over the ATMP planning area.	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 occur.	For helicopter routes, 3,300 - 4,300 ft. MSL, depending on the route, which results in minimum 800 – 1,500 ft. AGL depending on the route.  For the fixed-wing route, 5,000 – 5,700 ft. MSL, which results in a minimum 2,600 ft. AGL.	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 to one hour before sunset.	On days where air tours are permitted, non-quiet technology tours may operate from three hours after sunrise to three hours before sunset.

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<b>Alternative Attributes</b>	<b>Alternative 1 (No Action)</b>	<b>Alternative 2 (Preferred)</b>	<b>Alternative 3</b>	<b>Alternative 4</b>
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 to occur from May 1 through September 30 (153 total days each year).	Air tours would be permitted to occur from July 1 through September 30 (92 total days each year).
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, and/or the local FAA FSDO, all operators would be required to meet once per year.	Same as Alternative 3.
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.



Alternative Attributes	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
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 Park and Pine Ridge Indian Reservation.	<p>Badger Helicopters: 1,423 flights annually; BHT-206B, BHT-47-G3B1, R-44-II, R-66-66</p> <p>Eagle Aviation: Two 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 Park and Pine Ridge Indian Reservation.</p>	<p>Badger Helicopters: 637 flights annually; BHT- 206B, BHT-47-G3B1, R-44-II, R-66-66</p> <p>Eagle Aviation: Two 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 Park and Pine Ridge Indian Reservation.</p>

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

This chapter includes a description of each environmental impact 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 methods 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 that 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, religious structures and sites, 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, Section 4(f) resources 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 will 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). 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 to define territories or aid in attracting mates;
- Sounds produced by wildlife, such as herds of bison; and
- Sounds produced by physical processes, such as wind blowing through the prairie and Badlands formations.

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 includes vehicular traffic (visitors and locals alike) and noise from human recreation activities more generally. Other sources of human-generated noise include Park administrative operations at the visitor center and aircraft overflights (including military flights and commercial tour helicopters).

To characterize the natural and existing ambient (both with and without air tours), detailed sound level measurements were conducted at three locations across the Park in 2003 (Lee et al., 2016). 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. 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).

The median or  $L_{50}$  sound level (in decibels, dBA) is the sound level exceeded 50 percent of the daytime hours. Median daytime natural ambient ( $L_{50}$ )<sup>10</sup> sound levels measured 23.5 decibels in the North Unit Development Zone, 24.1 decibels in the Sage Creek Unit of Wilderness, and 22.6 decibels in the South Unit. Median daytime existing ambient ( $L_{50}$ ) sound levels for these areas exhibit similar variability. Median daytime existing ambient ( $L_{50}$ ) sound levels measured 24.6 decibels in the North Unit Development Zone, 27.1 decibels in the Sage Creek Unit of Wilderness, and 22.8 decibels in the South Unit. Table 3 in the *Noise Technical Analysis* (Appendix F) contains additional breakdown of the ambient sound level data by zone.

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 the Existing Ambient without Air Tours ( $L_{50}$ )<sup>11</sup> (see Appendix F, *Noise Technical Analysis*). The result of this process is the Cumulative Existing Ambient (Figure 6).

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<sup>10</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.

<sup>11</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.

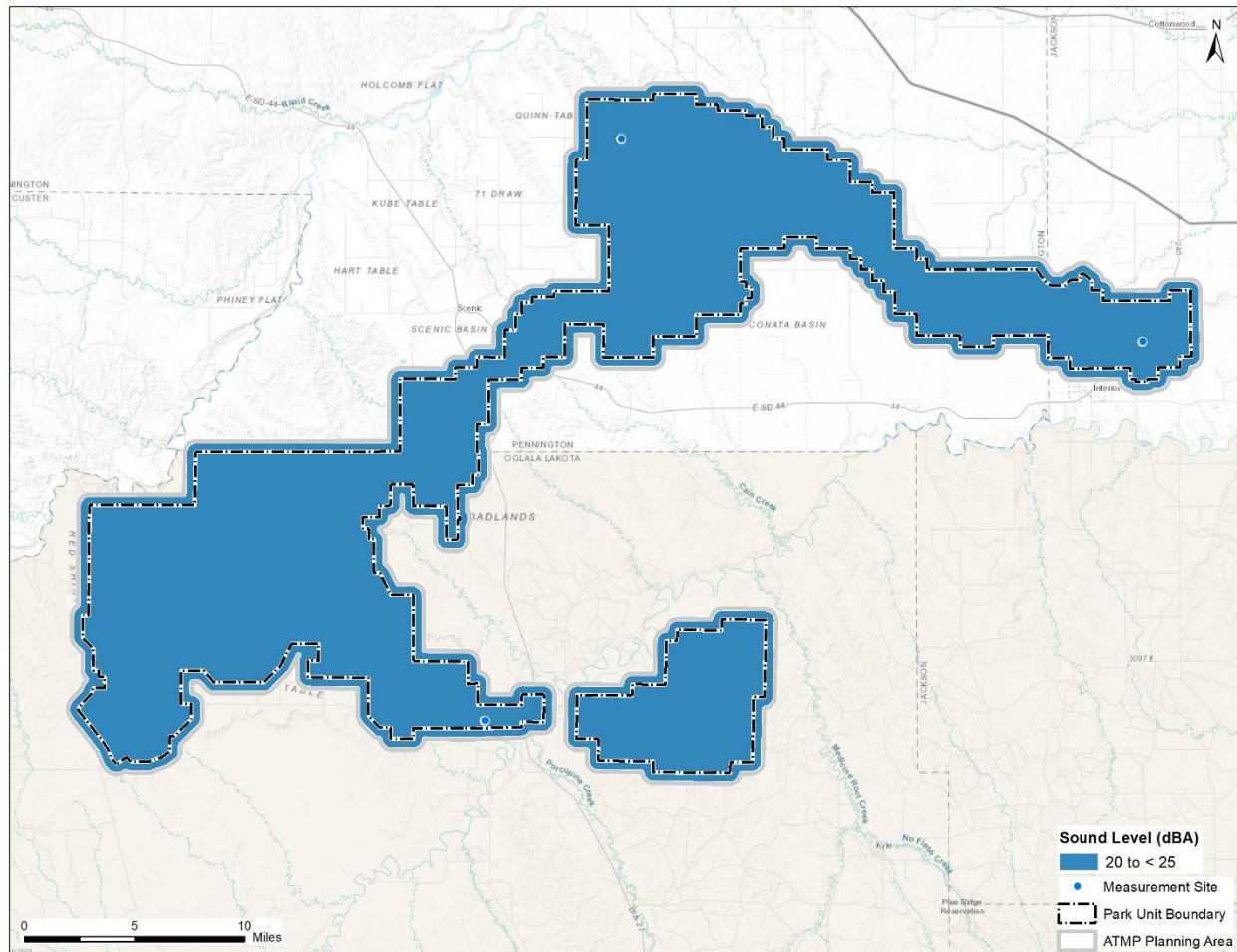


Figure 5. Ambient Map – Natural Ambient  $L_{50}$ .

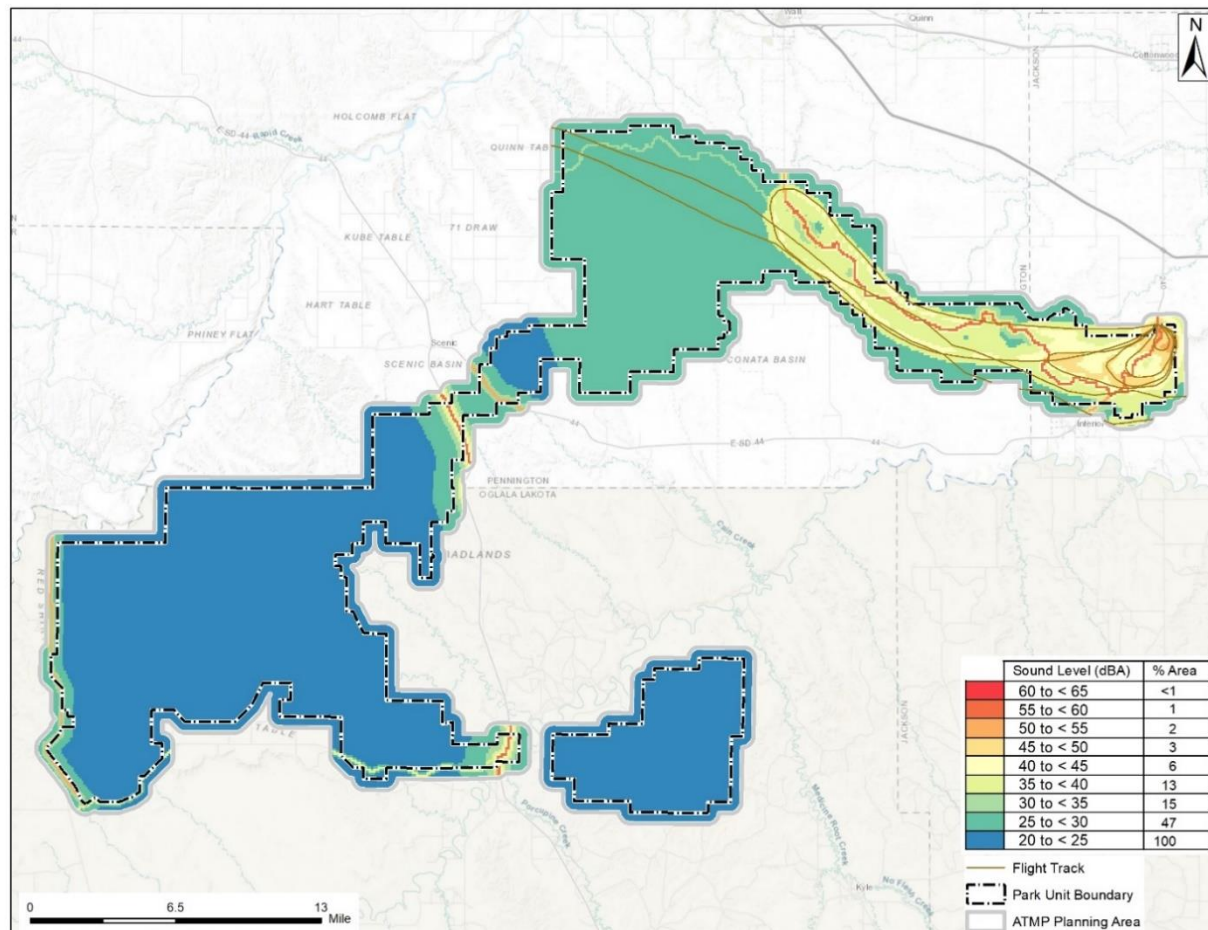


Figure 6. Cumulative Existing Ambient for Current Conditions.

### 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 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</p>

	Institute (ANSI), 2007); blood pressure increases in sleeping humans (Haralabidis et al., 2008); maximum background noise level inside classrooms (ANSI/Acoustical Society of America S12.60/Part 1, 2007).
Time Above 52 dBA	The amount of time (in minutes) that aircraft sound levels are above a given threshold (i.e., 52 dBA).  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 (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.
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 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>12</sup> to

<sup>12</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.



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.

The tour aircraft types identified for modeling are the Robinson R-44 and Cessna 206 aircraft. The flight routes and altitudes used for modeling the No Action Alternative are shown in Figure 7. The flight routes and altitudes used for modeling Alternatives 3 and 4 are shown in Figure 8.

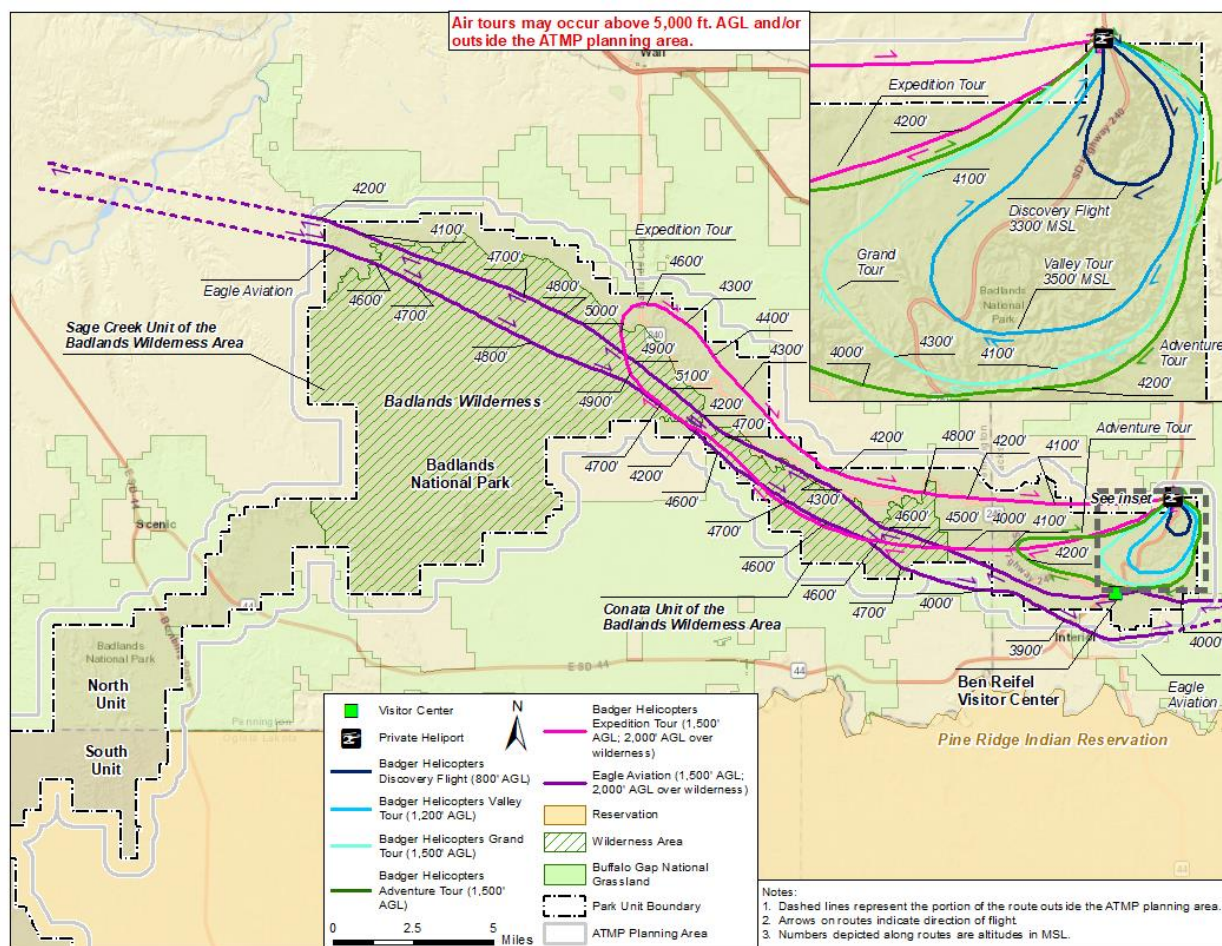


Figure 7. Air Tour Routes Modeled for the No Action Alternative.

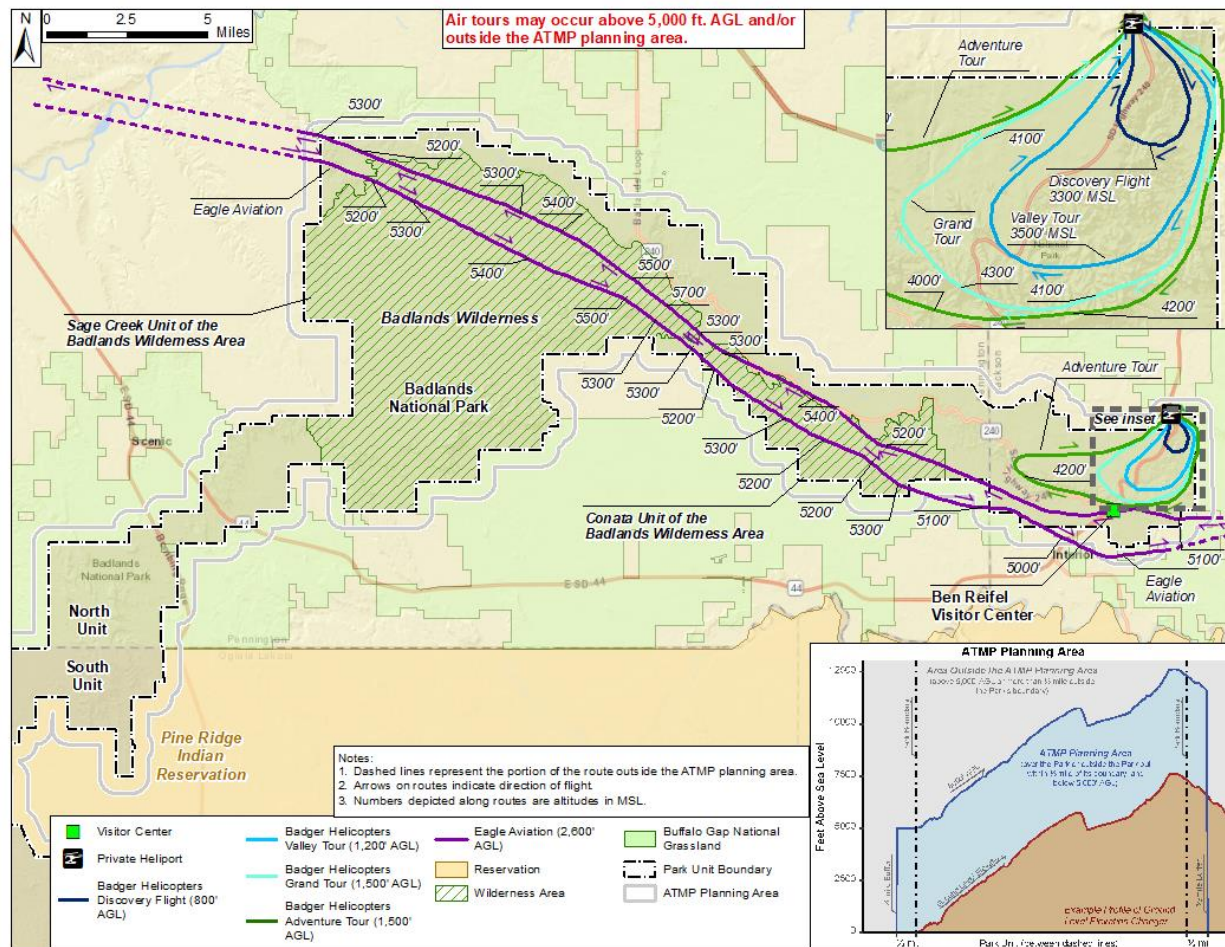


Figure 8. Air Tour Routes Modeled for Alternatives 3 and 4.

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 analysis for the No Action Alternative is based on a peak month, average day<sup>13</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 activity over the Park. For the ATMP planning area,

<sup>13</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.

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 and altitude 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>Discovery Flight</b>	Robinson R-44	7	7	5
<b>Valley Tour</b>	Robinson R-44	1	1	0
<b>Grand Tour</b>	Robinson R-44	4	4	1
<b>Adventure Tour</b>	Robinson R-44	3	3	1
<b>Expedition Tour</b>	Robinson R-44	1	NA	NA
<b>Eagle Aviation route</b>	Cessna 206	1	1	1
	<b>Total</b>	17	16	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 9 and Figure 10 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 increase, although levels up to IOA are not reasonably foreseeable.

*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>Maximum value &lt;60 dBA</li> <li>Most portions (89%) of the ATMP planning area would continue to be &lt;35 dBA</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 maximum time that air tours may be audible would exceed 165 minutes a day; 4% of the ATMP planning area would experience audible air tour noise between 150 and 165 minutes a day*</li> <li>More than half (62%) of the ATMP planning area would experience audible air tour noise for more than 15 minutes a day (non-contiguous)</li> <li>94% of the ATMP planning area would continue to experience audible air tour noise</li> </ul>
Time Above 35 dBA	<ul style="list-style-type: none"> <li>The maximum time that noise from air tours would be above 35 dBA would be 105 minutes a day; less than 1% of the ATMP planning area would experience air tour noise above 35 dBA for between 90 and 105 minutes</li> <li>35% of the ATMP planning area would experience air tour noise above 35 dBA</li> <li>65% of the ATMP planning area would not experience air tour noise above 35 dBA</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 21.2 minutes at location point #1 (Scenic Overlook / Sheep Lambing Area).</li> <li>At the Ben Reifel Visitor Center, noise above 52 dBA would occur for less than 5.7 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) would be 76.9 dBA and would occur at location point #30 (Big Badlands Overlook). See Appendix F (<i>Noise Technical Analysis</i>, Table 6).</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.

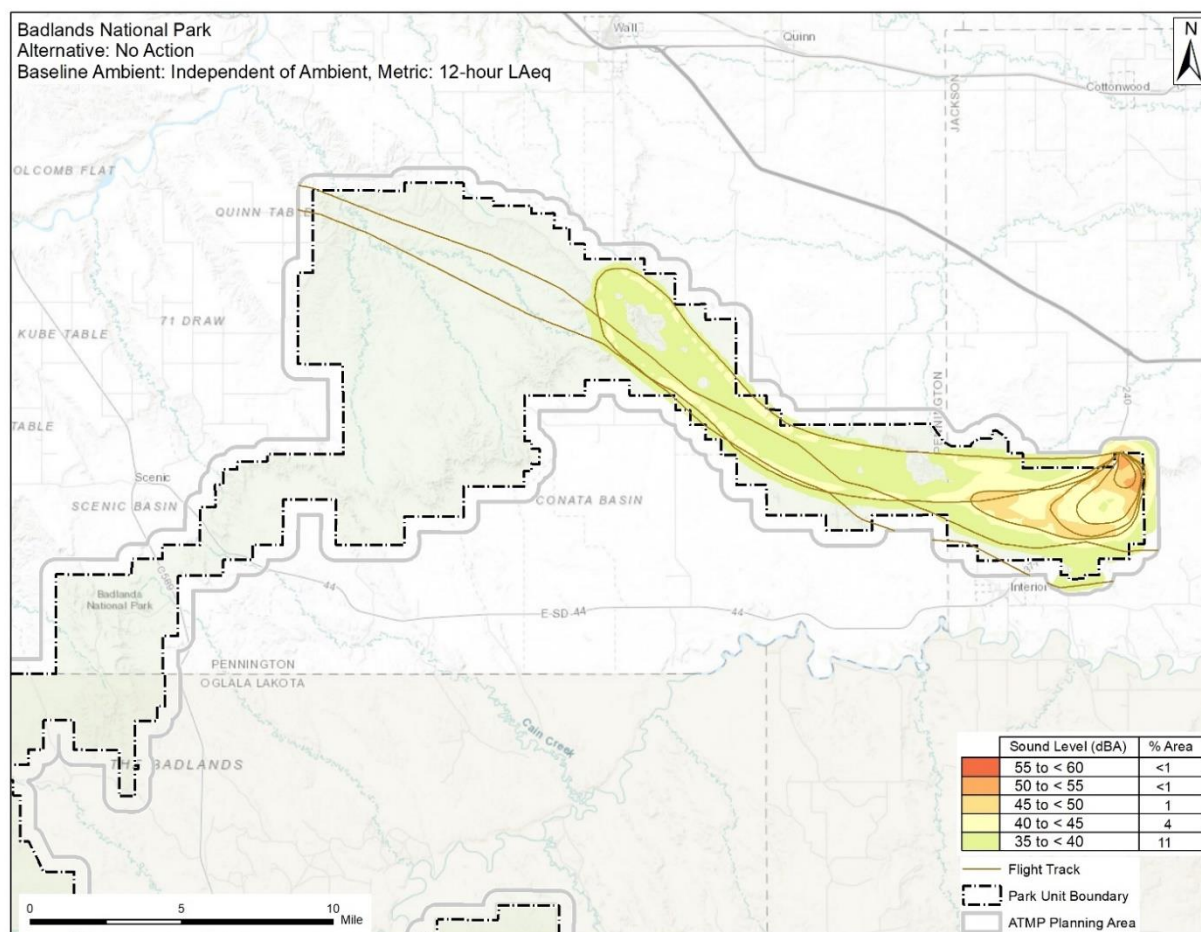


Figure 9. 12-hour Equivalent Sound Level ( $L_{Aeq,12h}$ ) Map for Alternative 1 (No Action Alternative).

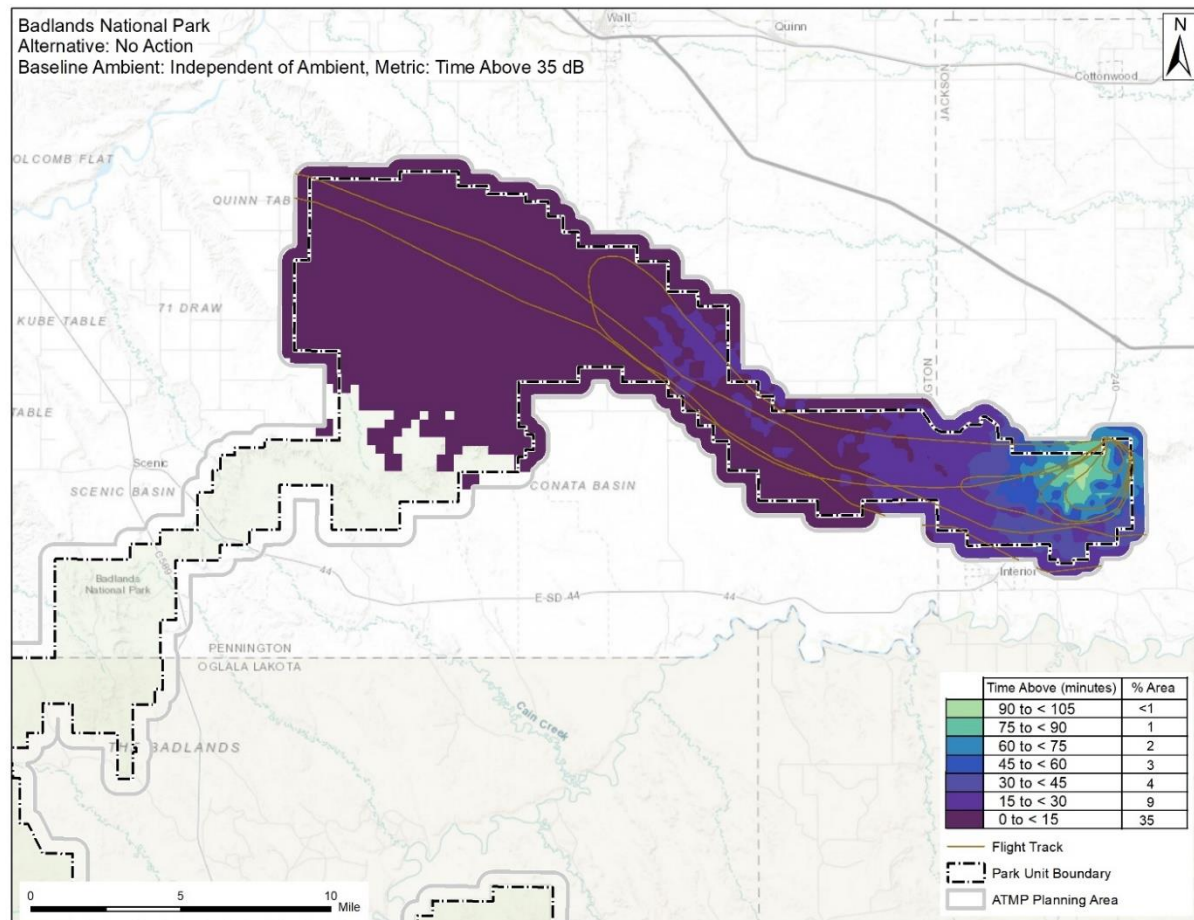


Figure 10. Time Above 35 dBA for Alternative 1 (No Action Alternative).

## 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 ATMP planning area. Compared the No Action Alternative, 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. Although commercial air tours are not currently conducted over the South Unit, Alternative 2 would prohibit any such tours and provide 365 days per year without air tours within the ATMP planning area. These restrictions would reduce noise in the most noise sensitive regions of the Park resulting in direct beneficial effects compared to the No Action Alternative and Alternatives 3 and 4.

**Alternative 3**

Compared to the No Action Alternative, 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 slight reduction in the overall noise footprint (average sound level over a 12-hour day) compared to the No Action Alternative. Compared to the No Action Alternative, Alternative 3 would also eliminate or reduce noise at locations under or near the Expedition Tour (this route would not be authorized under Alternative 3). Table 10 summarizes the modeled noise metric results and Figure 11 and Figure 12 display noise metrics results that would be experienced within the ATMP planning area under Alternative 3.

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

<b>Metric</b>	<b>Alternative 3</b>
12-hour Equivalent Sound Level	<ul style="list-style-type: none"> <li>• Maximum value &lt;60 dBA</li> <li>• Most portions (96%) of the ATMP planning area would be &lt;35 dBA</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 maximum time that air tours could be audible would be less than 135 minutes a day; 4% of the ATMP planning area would experience audible air tour noise between 120 and 135 minutes a day*</li> <li>• More than half (65%) of the ATMP planning area would experience audible air tour noise for more than 15 minutes a day (non-contiguous)</li> </ul>
Time Above 35 dBA	<ul style="list-style-type: none"> <li>• The maximum time that noise from air tours would be above 35 dBA would be 90 minutes a day; less than 1% of the ATMP planning area would experience air tour noise above 35 dBA between 75 and 90 minutes a day</li> <li>• 36% of the ATMP planning area would experience noise above 35 dBA</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 21.2 minutes and would occur at location point #1 (Scenic Overlook / Sheep Lambing Area).</li> </ul>

	<ul style="list-style-type: none"> <li>At the Ben Reifel Visitor Center, noise above 52 dBA would occur for less than 5.4 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) would be 76.9 dBA and would occur at location point #30 (Big Badlands Overlook). See Appendix F (<i>Noise Technical Analysis</i>, Table 7).</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 for Alternative 3 is expected to be below 60 dB. Refer to the *Noise Technical Analysis* in Appendix F for more information.

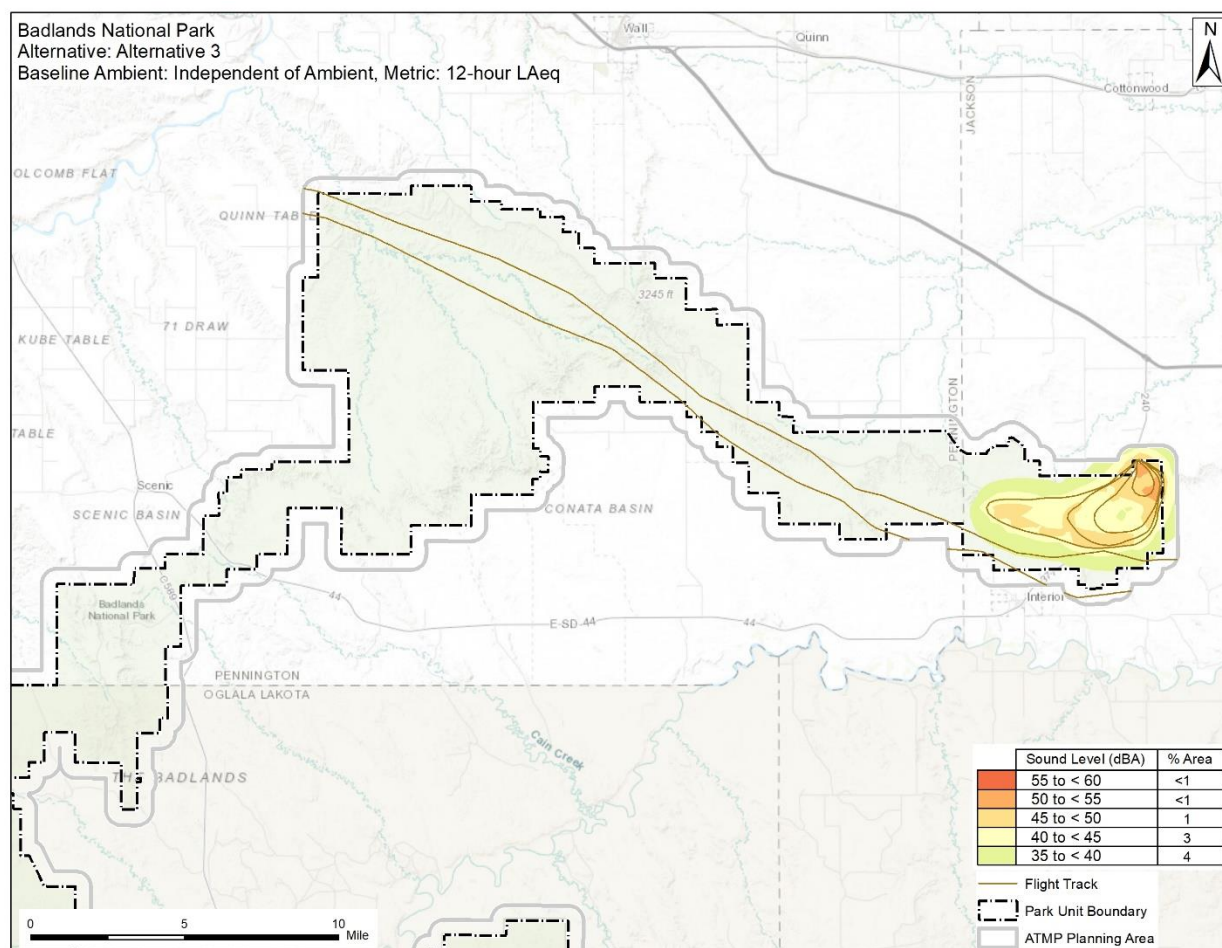


Figure 11. 12-hour Equivalent Sound Level ( $L_{Aeq,12h}$ ) Map for Alternative 3.



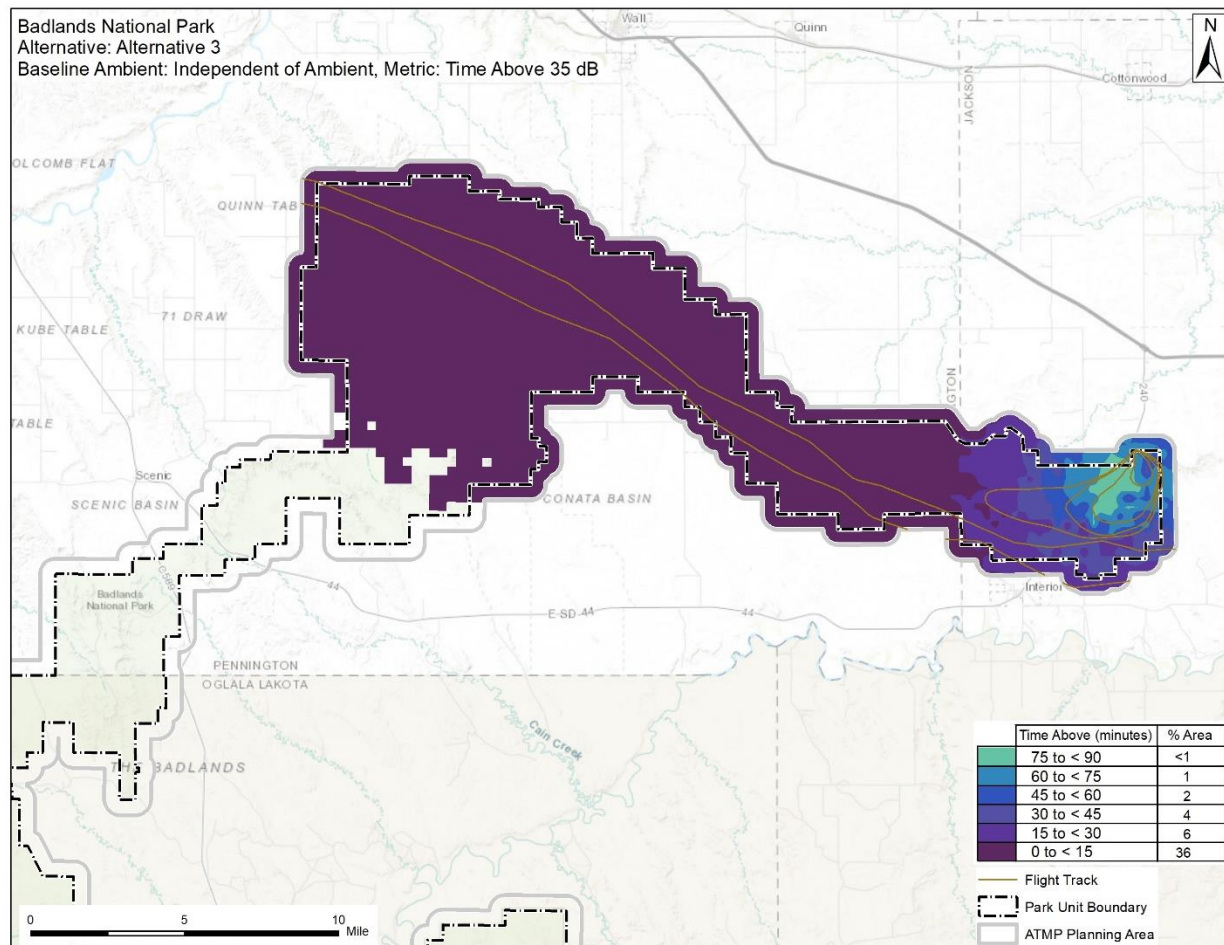


Figure 12. Time Above 35 dBA for Alternative 3.

A comparison of impacts to noise and noise-compatible land use between Alternative 3 and the No Action Alternative is provided below:

12-hour Equivalent Sound Level (See Tables 9 and 12 in Appendix F, *Noise Technical Analysis*)

- Compared to the No Action Alternative, the average sound levels at most modeled location points under Alternative 3 would not significantly change, as Alternative 3 represents a small (6%) reduction in the number of daily operations. Locations under or near the Expedition Tour (not authorized under Alternative 3) would experience a decrease; average sound levels may be up to 10 dBA lower (see modeled location points #6 (Wilderness), #17 (Big Foot Pass Overlook), #18 (Scenic Overlook), #21 (Pig Dig and Picnic Area/ High Concentration Day Use/ Sheep Lambing Area), #22 (Pinnacles Overlook/High Visitor Concentration), and #23 (Badlands Wilderness Overlook / Day Use)).

- The noise footprint (for 12-hour average sound levels exceeding 35 dBA) for Alternative 3 would affect 7% less of the ATMP planning area than the No Action Alternative.
- As there are no nighttime events, DNL would be 3 dB less than the 12-hour equivalent sound level.
- If air tours are restricted to operating within a window that is less than 12 hours, e.g., from 1 hour after sunrise until 1 hour before sunset, the equivalent sound level will be greater by a factor equal to  $10 \cdot \log_{10}(12/n)$  where  $n$  is the number of hours of operation. For example, if the window is 8 hours, then the 8-hour equivalent sound level will be equal to  $10 \cdot \log_{10}(12/8) = 1.8$  dBA greater than the 12-hour equivalent sound level.

Time Audible Natural Ambient (See Tables 10 and 13 in Appendix F, *Noise Technical Analysis*)

- Compared to the No Action Alternative, the average time audible at most modeled location points under Alternative 3 would be 15 minutes less. Modeled location points #10 (Backcountry), #13 (Sun Dance Area), and #14 (Sun Dance Area) would be the exception, as the altitude for the Eagle Aviation route would increase from 1,500 ft. under the No Action Alternative to 2,600 ft. under Alternative 3.
- The time audible footprint for Alternative 3 would affect 1% more of the ATMP planning area due to the increased altitude of the Eagle Aviation route as compared to the No Action Alternative.

Time Above 35 dBA (See Tables 11 and 14 in Appendix F, *Noise Technical Analysis*)

- Compared to the No Action Alternative, the average time above 35 dBA at the modeled location points under Alternative 3 is 2 minutes less. Locations under or near the Expedition Tour experience the largest decrease, up to 12 minutes; see modeled location points #6 (Wilderness), #17 (Big Foot Pass Overlook), #18 (Scenic Overlook), #21 (Pig Dig and Picnic Area/ High Concentration Day Use/ Sheep Lambing Area), #22 (Pinnacles Overlook/High Visitor Concentration), and #23 (Badlands Wilderness Overlook / Day Use)).
- The time above 35 dBA footprint for Alternative 3 affects 1% more of the ATMP planning area than the No Action Alternative, due to the increase in altitude of the Eagle Aviation route as compared to the No Action Alternative.

Time Above 52 dBA (See Table 15 in Appendix F, *Noise Technical Analysis*)

- Compared to the No Action Alternative, the average time above 52 dBA at the modeled location points under Alternative 3 would be <1 minute less. Locations under or near the Expedition Tour experience the largest decrease, up to 4 minutes; see modeled

location points #18 (Scenic Overlook) and #21 Pig Dig and Picnic Area/ High Concentration Day Use/ Sheep Lambing Area).

**Maximum Sound Level (See Table 16 in Appendix F, *Noise Technical Analysis*)**

- 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 little to no change in the maximum sound level compared to the No Action Alternative.
- Under Alternative 3, locations under or near the Expedition Tour (not authorized by Alternative 3) would experience a reduction in maximum sound level; the largest being 15 dBA at location point #17 (Bigfoot Pass Overlook). Modeled location points #6 (Wilderness), #18 (Scenic Overlook), #21 (Pig Dig and Picnic Area/ High Concentration Day Use/ Sheep Lambing Area), #22 (Pinnacles Overlook/High Visitor Concentration), #26 (Research Zone), and #37 (Cultural Resource #6) will experience a reduction in maximum sound level greater than 3 dBA.

**Alternative 4**

Compared to the No Action Alternative, Alternative 4 would result in direct beneficial effects on the Park's acoustic environment. Alternative 4 would reduce the number of tours to 639 per year and set a limit of 8 tours per day, and would further restrict air tour operations within the ATMP planning area by limiting the time-of-day air tours may be conducted to three hours after sunrise to three hours before sunset and by limiting the seasonal air tour operations from July 1 through September 30, for 92 total days each year. This alternative would provide 273 noise-free days per year (from air tours within the ATMP planning area) and a reduction in the overall noise footprint (average sound level over a 12-hour day) compared to the No Action Alternative. Compared to the No Action Alternative, Alternative 4 also eliminates or reduces noise in the most noise sensitive regions of the Park. Table 11 summarizes the modeled noise metrics and Figure 13 and Figure 14 display noise metrics results that would be experienced within the ATMP planning area under Alternative 4.

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

<b>Metric</b>	<b>Alternative 4</b>
12-hour Equivalent Sound Level	<ul style="list-style-type: none"> <li>• Maximum value &lt;45 dBA</li> <li>• Most portions (98%) of the ATMP planning area would be &lt;35 dBA</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 45 dB</li> </ul>

Time Audible Natural Ambient	<ul style="list-style-type: none"> <li>The maximum time that air tours could be audible would be less than 75 minutes a day; 4% of the ATMP planning area would experience audible air tour noise between 60 and 75 minutes a day*</li> <li>78% of the ATMP planning area would experience audible air tour noise on days when air tours occurred</li> </ul>
Time Above 35 dBA	<ul style="list-style-type: none"> <li>The maximum time that noise from air tours would be above 35 dBA would be 45 minutes a day; less than 1% of the ATMP planning area would experience noise from air tours above 35 dBA for between 30 and 45 minutes a day</li> <li>36% of the ATMP planning area would experience noise above 35 dBA</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 8.6 minutes and would occur at location point #1 (Scenic Overlook / Sheep Lambing Area).</li> <li>At the Ben Reifel Visitor Center, noise above 52 dBA would occur for less than 2.9 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) would be 76.2 dBA and would occur at location Point #29 (Cliff Shelf).</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 for Alternative 3 is expected to be below 45 dB. Refer to the *Noise Technical Analysis* in Appendix F for more information.

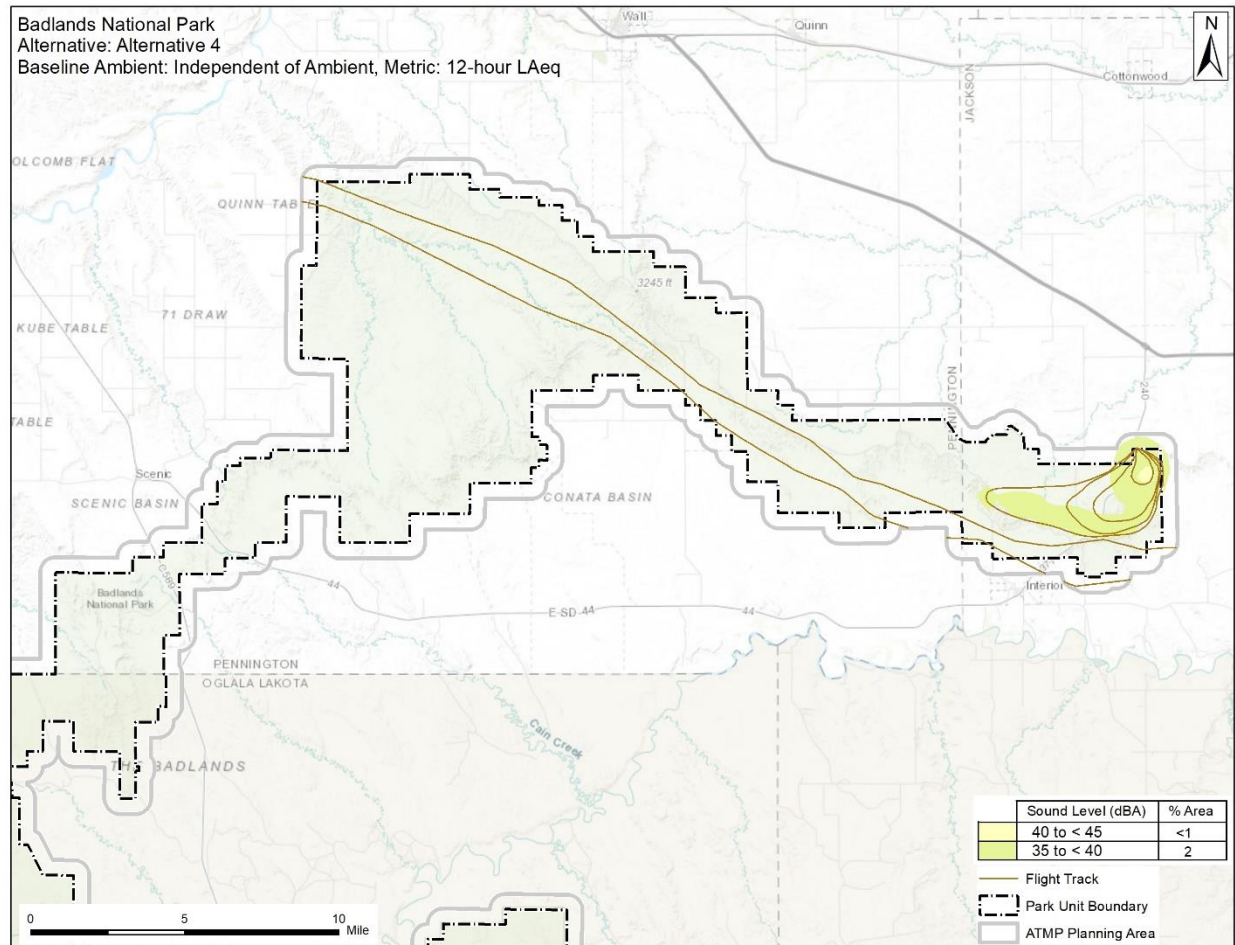


Figure 13. 12-hour Equivalent Sound Level ( $L_{Aeq,12h}$ ) Map for Alternative 4.

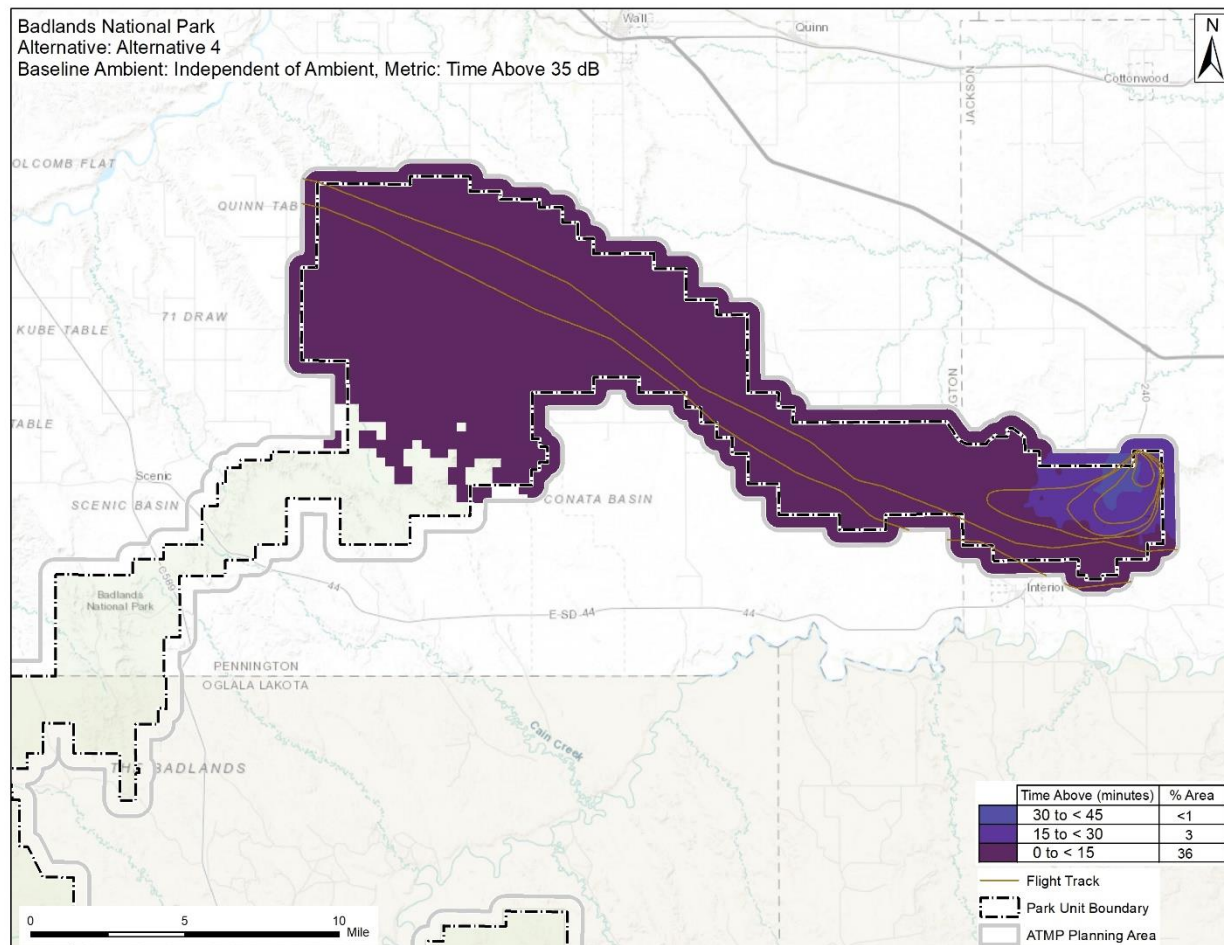


Figure 14. Time Above 35 dBA for Alternative 4.

A comparison of impacts to noise and noise-compatible land use between Alternative 4 and the No Action Alternative is provided below:

12-hour Equivalent Sound Level (See Tables 9 and 12 in Appendix F, *Noise Technical Analysis*)

- Compared to the No Action Alternative, the average sound levels at all modeled location points under Alternative 4 would be lower, as Alternative 4 represents a 53% reduction in the number of daily operations. As with Alternative 3, much lower sound levels would be experienced at locations under or near the Expedition Tour which would not be authorized under Alternative 4 as well.
- Alternative 4 would eliminate areas with average sound levels over 45 dBA. The noise footprint (for 12-hour average sound levels exceeding 35 dBA) would affect 9% less of the ATMP planning area than the No Action Alternative.



- As there are no nighttime events, DNL would be 3 dB less than the 12-hour equivalent sound level.
- If air tours are restricted to operating within a window that is less than 12 hours, e.g., from 3 hours after sunrise until 3 hours before sunset, the equivalent sound level will be greater by a factor equal to  $10 \cdot \log_{10}(12/n)$  where  $n$  is the number of hours of operation. For example, if the window is 8 hours, then the 8-hour equivalent sound level will be equal to  $10 \cdot \log_{10}(12/8) = 1.8$  dBA greater than the 12-hour equivalent sound level.

Time Audible Natural Ambient (See Tables 10 and 13 in Appendix F, *Noise Technical Analysis*)

- Compared to the No Action Alternative, the average time audible at most modeled location points under Alternative 4 would be 34 minutes less. Modeled location points #10 (Backcountry), #13 (Sun Dance Area), and #14 (Sun Dance Area) would be the exception, as the altitude for the Eagle Aviation route would increase from 1,500 ft. under the No Action Alternative to 2,600 ft. AGL under Alternative 4.
- The time audible footprint for Alternative 4 would affect 16% less of the ATMP planning area due to the decrease in number of operations compared to the No Action Alternative.

Time Above 35 dBA (See Tables 11 and 14 in Appendix F, *Noise Technical Analysis*)

- Compared to the No Action Alternative, the average time above 35 dBA at the modeled location points under Alternative 4 is 10 minutes less. Modeled location points #4 (Doors and Windows High Concentration Day Use/ Sheep Lambing Area) and #28 (Castle and Medicine Root Trail) experience the largest decrease, 58 and 47 minutes, respectively.
- The time above 35 dBA footprint for Alternative 4 would affect 1% more of the ATMP planning area than the No Action Alternative, due to the increase in altitude of the Eagle Aviation route compared to the No Action Alternative.

Time Above 52 dBA (See Table 15 in Appendix F, *Noise Technical Analysis*)

- Compared to the No Action Alternative, the average time above 52 dBA at the modeled location points under Alternative 4 would be 3 minutes less. Modeled location points #1 (Scenic Overlook / Sheep Lambing Area) and #28 (Castle and Medicine Root Trail), which are near the Park entrance and privately owned and operated heliport, would experience the largest decrease, up to 13 minutes.

**Maximum Sound Level (See Table 16 in Appendix F, *Noise Technical Analysis*)**

- 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 little to no change in the maximum sound level compared to the No Action Alternative.
- Under Alternative 4, modeled location points #4 (Doors and Windows High Concentration Day Use/ Sheep Lambing Area), #17 (Big Foot Pass Overlook), #22 (Pinnacles Overlook/High Visitor Concentration), #26 Research Zone), and #37 (Cultural Resource #6) would experience a reduction in maximum sound level greater than 3 dBA.

***Indirect and Cumulative Effects***

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

For any action alternative that would limit the annual number of tours to a level at or below existing conditions, it is reasonably foreseeable that current air tour operators could seek to make up lost revenue in other ways since these alternatives include restrictions on flight numbers or routes. 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 if, where, and to what extent any air tours would be displaced to areas outside the ATMP planning area, including over the ATMP planning area at altitudes at or above 5,000 ft. AGL. The preciseness of routes and altitudes for air tours flown on displaced routes are generally subject to Visual Flight Rules which is based on the principle of “see and avoid” and may vary greatly. It is reasonably foreseeable that operators would continue to fly to points of interest outside of the ATMP planning area. Operators may also choose to move their air tours just outside or above the ATMP planning area. Air tour operations displaced from flying within the ATMP planning area under Alternatives 2, 3, or 4 would be able to continue to utilize the privately owned and operated heliport within the ATMP planning area 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 other regional points of interest which could result in indirect noise effects.

If operators chose to fly above the ATMP planning area, they would be required to maintain altitudes at or above 5,000 ft. AGL. Higher flights 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 the No Action Alternative, 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 the No Action Alternative. Additionally, other locations within the ATMP planning area not currently experiencing air tour noise may experience some noise under these alternatives when compared to the No Action Alternative. 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 the No Action Alternative 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 to outside the ATMP planning 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. A helicopter is sometimes used by the NPS to spray weeds in the North Unit. Annually, helicopters are used to gather and cull the Park's bison. For the next three to four years, South Dakota Game, Fish, and Parks will use helicopter capture of bighorn sheep for disease management. This will occur three days per year. Prescribed fire is scheduled at the Park annually. Prescribed fire management may use helicopters for air ignition operations. Fighting wildfire could require the use of helicopters and single engine air tankers. Occasional search and rescue operations require the use of helicopters to evacuate individuals. The NPS uses helicopters to transport personnel to various locations for management actions, rescue, and maintenance activities. These flights contribute noise to the Park's acoustic environment. Park staff conduct management and resource monitoring activities in remote areas of the Park. Fieldwork may last for several days to a week at a time. Helicopter use for these activities within the Park boundary averaged approximately 200 hours per year between 2011 and 2022. Current administrative flight locations are dispersed nearly evenly across the Park.

The NPS is currently implementing management actions which may require helicopters for access to remote locations not accessible by other means. Other activities that use motorized tools include fencing to exclude ungulates and maintenance for existing cabins within Wilderness enclaves. The NPS would continue current management actions and respond to future needs and conditions without major changes in the present course. The number of NPS administrative helicopter flights and associated noise levels within the ATMP planning area would likely continue at current levels.

In addition to the use of aircraft, construction adds noise to the soundscape. Planned construction actions include construction of a new visitor center, demolition of Cedar Pass Lodge, and conversion of the current visitor center into office space and a new lodge in 2025.

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

would decrease as described above. 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 Class I airshed, which means that it is afforded special air quality and visibility protection (NPS, 2020a). The Park has relatively good air quality due in part to the rural setting of the surrounding Northern Great Plains. However, there are nearby and regional sources of air pollution, including oil and gas production, power plants, agriculture, and vehicles. These pollutants can harm the Park's natural and scenic resources.

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.

#### ***Greenhouse Gases***

Of growing concern is the impact of proposed projects on climate change. 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, 2015).

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. The NPS does not currently have a climate action plan for the Park, but the NPS has completed a climate change vulnerability assessment to understand the effects of climate change on Park resources (Amberg et al., 2012), as well as a climate scenario planning assessment to identify potential climate impacts and management responses in the Park (Fisichelli et al., 2016). Aviation emissions comprise a small but potentially important percentage of anthropogenic GHG and other emissions that contribute to global warming. In 2019, direct GHG emissions from the transportation industry accounted for 23% of global CO<sub>2</sub> emissions, 12% of that deriving from aviation (IPCC, 2022).

### 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 of flights between 2017-2019. The frequency of flights could be greater than disclosed here if air tour numbers increased, although levels up to IOA are not reasonably foreseeable. Modeling results for the No Action Alternative 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 the No Action Alternative; 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 Criterial Pollutant Annual Emissions in Tons per Year (TPY) Under the No Action Alternative.*

<b>Criteria Pollutant</b>	<b>Total Annual Emissions (TPY)</b>
Carbon monoxide (CO)	28.9
Lead (Pb)	0.014
Nitrogen dioxide (NO <sub>2</sub> )	0.005
Particulate matter: aerodynamic diameter ≤ 2.5 µm (PM <sub>2.5</sub> )	0.002
Particulate matter: aerodynamic diameter ≤ 10 µm (PM <sub>10</sub> )	0.002
Sulfur dioxide (SO <sub>2</sub> )	0.023

Total annual GHG emissions for the No Action Alternative are modeled to be 55.2 metric tons (MT) of CO<sub>2</sub>. The No Action Alternative would not cause pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed.

### **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 ATMP 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 the No Action Alternative, due to lower commercial air tour emissions within the ATMP planning area. Direct emissions in the ATMP planning area would be expected to decrease by the amount reported in the No Action Alternative (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 occur within the ATMP planning area at 1,425 air tours per year; however, this alternative would authorize those tours to be conducted on fewer routes within the ATMP planning area as compared to the No Action Alternative. 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. Modeling results for Alternative 3 are presented in Table 13 for the criteria pollutants in terms of change in emissions as compared to the No Action Alternative. Note that ozone is not reported as it is not directly emitted in aircraft exhaust. Similar to the No Action Alternative, 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 the No Action Alternative.*

<b>Criteria Pollutant</b>	<b>Change in TPY as Compared to the No Action Alternative*</b>
Carbon monoxide (CO)	-6.69
Lead (Pb)	-0.003
Nitrogen dioxide (NO <sub>2</sub> )	-0.001

Particulate matter: aerodynamic diameter $\leq 2.5 \mu\text{m}$ (PM <sub>2.5</sub> )	<-0.001
Particulate matter: aerodynamic diameter $\leq 10 \mu\text{m}$ (PM <sub>10</sub> )	<-0.001
Sulfur dioxide (SO <sub>2</sub> )	-0.005

\*Negative values represent a reduction in total emissions.

The total change in annual GHG emissions for Alternative 3 as compared to the No Action Alternative is modeled to be a reduction of 12.6 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 the No Action Alternative, Alternative 3 would result in beneficial impacts to air quality due to lower commercial air tour emissions within the ATMP planning area. Alternative 3 could result in an approximately 23% reduction in both criteria pollutant and GHG emissions as compared to the No Action Alternative. 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 occur within the ATMP planning area; however, the total number of flights per day and per year would be reduced as compared to Alternative 3, and this alternative would authorize those tours to be conducted on fewer routes within the ATMP planning area as compared to the No Action Alternative. 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. Modeling results for Alternative 4 are presented in Table 14 for the criteria pollutants in terms of change in emissions as compared to the No Action Alternative. Note that ozone is not reported as it is not directly emitted in aircraft exhaust. Similar to the No Action Alternative, 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 the No Action Alternative.*

<b>Criteria Pollutant</b>	<b>Change in TPY as Compared to No Action Alternative*</b>
Carbon monoxide (CO)	-21.2
Lead (Pb)	-0.010
Nitrogen dioxide (NO <sub>2</sub> )	-0.003

Particulate matter: aerodynamic diameter $\leq 2.5 \mu\text{m}$ (PM <sub>2.5</sub> )	-0.001
Particulate matter: aerodynamic diameter $\leq 10 \mu\text{m}$ (PM <sub>10</sub> )	-0.001
Sulfur dioxide (SO <sub>2</sub> )	-0.017

\*Negative values represent a reduction in total emissions.

The total change in annual GHG emissions for Alternative 4 as compared to the No Action Alternative is modeled to be a reduction of 40.5 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 the No Action Alternative, Alternative 4 would result in beneficial impacts to air quality due to lower commercial air tour emissions within the ATMP planning area. Alternative 4 could result in an approximately 73% reduction in both criteria pollutant and GHG emissions as compared to the No Action Alternative. 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 at or below existing conditions (1,425 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 this 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 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 greatly.

Under the No Action Alternative, the number of commercial air tour operations within the ATMP planning area on an annual basis would generally remain consistent with existing conditions and operators would continue to be able to fly the routes currently flown. Although operations could increase and routes could change, no indirect impacts would be expected to occur under this alternative.

Alternatives 2, 3, and 4 would limit the number of flights per year and/or routes to a level at or below existing conditions, so these alternatives would have the potential to result in some displacement of air tours outside the ATMP planning area including those which may result in increased the use of the privately owned and operated heliport within the ATMP planning area to conduct air tours to other regional points of interest. While air tours conducted from the heliport within the ATMP planning area could result in emissions in this area during takeoff and

landing, 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). Additionally, some areas that are not currently exposed to emissions from air tours (outside the ATMP planning area) may be exposed to emissions in this scenario 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, and 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 highly 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.

**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 and vegetation management activities. 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 vegetation maintenance, wildlife management and monitoring, 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). 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**

The biological resources analyzed in this section include both listed and non-listed wildlife most likely to be affected by the alternatives. There is designated critical habitat in the ATMP planning area. The federally listed species described in this section are also state listed species. As discussed in Section 1.5, Environmental Impact Categories Not Analyzed in Detail, 1.5 it is unlikely that plant and fish species would be affected by air tours, therefore they are not considered for detailed analysis in this draft EA. See Figure 15 for a depiction of the affected environment for biological resources.

#### ***Birds***

According to landbird surveys, the most common bird documented within the Park was the cliff swallow (*Petrochelidon pyrrhonota*), followed by western meadowlark (*Sturnella neglecta*), mourning dove (*Zenaidura macroura*), and red-winged blackbird (*Agelaius phoeniceus*) (National Park Service and Northern Great Plains Network, 2017). The 2016 breeding season was the fourth year of bird surveys at the Park and only one non-native species, the European starling (*Sturnus vulgaris*), was detected. Cliff swallows and other grassland and cliff-associated species were the most abundant bird species in the Park for multiple years because most of the North Unit is composed of these preferred habitat types (Birek et al., 2014). Bird species detected in the Park had higher densities compared to the rest of the region.

Birds are commonly observed at the Badlands Wall in the North Unit of the Park, as this location provides habitat for roosting, nesting, and protection from predators. Cliff swallows, golden eagles, and prairie falcons can be found here, as well as non-native rock pigeons (*Columba livia*) (NPS, 2020b). The less steep, slump areas of the Badlands Wall, such as areas along the Cliff Shelf Nature Trail or near the Ben Reifel Visitor Center, provide grassland habitat with junipers and shrubs that support granivores like Townsend's solitaires (*Myadestes townsendi*), black-capped chickadees (*Poecile atricapillus*), and black-billed magpies (*Pica hudsonia*) (NPS, 2020b). Important nesting periods for birds extend from mid-June to late September.

### **Mammals**

Mammals within the Park include large game species, non-game species, and nocturnal mammals, among others. Large big game mammals include white-tailed deer (*Odocoileus virginianus*), mule deer (*Odocoileus hemionus*), and pronghorn (*Antilocapra americana*), whose populations vary yearly based on habitat conditions and the severity of the winter season. Small game mammal species include eastern and desert cottontails. Non-game mammals include bats, voles, gophers, woodrats, and mice that are preyed upon by raptors, snakes, and larger mammals (NPS, 2018a). Many mammal species within the Park utilize the continuous grasslands habitat and can be found throughout the Park and ATMP planning area.

The Park supports an abundant and diverse community of bats. During winter acoustic bat monitoring, over 250 bat calls across seven species were detected, the most frequent of which belonged to the silver-haired bat (*Lasionycteris noctivagans*) (Maddox, 2022). Activity levels of bats within the Park increased with warmer temperatures, and activity levels peaked shortly after sunset, around 5:00 PM (Maddox, 2022). 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.

### **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*) was not included in this draft EA discussion; for more information on this 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.

## Mammals

### Black-footed Ferret

The black-footed ferret (*Mustela nigripes*) is the only ferret native to North America and is listed as endangered under the ESA. They are nocturnal mammals that live underground in prairie dog colonies. The breeding season for the black-footed ferret occurs from March to April, and their litter size is three to four kits. This species was listed by both the federal and South Dakota State governments as endangered in 1967 and 1978, respectively, and was grandfathered into the ESA in 1973. Later thought to be extinct in the wild, a remnant population was rediscovered in Wyoming in 1981 and the remaining 18 individuals were removed for captive breeding (NPS, 2012). An aggressive captive breeding program allowed the population to recover enough that reintroductions began in 1991 and extended to the Park in 1994. The successful experimental population at the Park is now self-sustaining, and the Park and nearby Buffalo Gap National Grasslands hosts the largest wild population of black-footed ferrets, which is estimated to be 115 individuals (Breck, 2019). The largest captive population of black-footed ferrets is located in the National Black-Footed Ferret Conservation Center in Colorado, one of six captive breeding facilities in North America.

Black-footed ferrets depend largely on the prairie dog population, as they live in prairie dog colonies and prairie dogs make up most of their diet. Dependence on prairie dogs for habitat and food was a critical factor in black-footed ferret population decline and is a continual challenge for the successful recovery of this species. Other threats to this species beyond prairie dog population control include habitat conversion, sylvatic plague, drought, and predation by larger mammals. Black-footed ferret populations within the ATMP planning area are stable. The Park has one of the only self-sustaining black-footed ferret populations in the world, where this population does not need to be supplemented by ferrets raised in captivity.

Within the ATMP planning area, black-footed ferret populations are concentrated in the Conata Basin. In consideration of the noise sensitivity of this species, black-footed ferrets that become habituated to human disturbance such as noise could have higher hair cortisol concentrations, which is an indicator of stress (Santymire et al., 2021).

### Northern Long-eared Bat

The northern long-eared bat (*Myotis septentrionalis*) is listed as endangered under the ESA (87 FR 73488). Northern long-eared bats 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 southeast region of the North Unit

(Maddox, 2022). There are several commercial air tour routes that are currently utilized over this area, which is considered to be part of the affected environment for this species.

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 eared 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 in bat species at the Park, the fungus that causes white nose syndrome was detected at the Park in 2017.

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 to 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 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 above 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 throughout the fall, hibernate throughout the winter, and migrate to summer habitat where females form maternity colonies to birth their young (USFWS, 2022b). Once juveniles can fly, bats disperse and return to their winter habitats to swarm, mate, and hibernate. Tricolored 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 (tending 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). Although there have been no detections of white nose syndrome at the Park, the fungus that causes white nose syndrome was detected in other species at the Park in 2017. Low abundances also increase the loss of genetic diversity which would further lessen the ability of the tricolored bat to adapt to changes in their environment.

The tricolored bat was not detected during 2021-2022 acoustic studies in the Park which could be due to the fact that this species was only recently documented in the region and because their calls were overlooked during manual review. According to acoustic surveys conducted at several locations in the Park, the area of greatest winter bat activity occurs in southeast region of the North Unit (Maddox, 2022). Several commercial air tour routes are currently utilized over this area, which is part of the affected environment for this species.

#### Whooping Crane

The whooping crane (*Grus americana*) is an omnivore with a diet that consists primarily of smaller aquatic animals that varies by season. Whooping crane are listed as endangered under the ESA. Whooping cranes breed, migrate, winter, and forage in a variety of habitats including estuaries, coastal marches, tidal flats. Within the ATMP planning area, they are generally observed at inland marshes, lakes, pastures, and ponds. Whooping cranes cannot land in trees, and therefore do not use them, but opt for habitats with more vegetative cover during molting that occurs every two to three years and renders them flightless. This species mates for life and lays eggs from late April to mid-May, where their clutch size is typically two eggs.

The whooping crane population began to decline with the rise of western urbanization. This species was first listed in 1967, where it was grandfathered into the ESA in 1973 and is currently listed as endangered in addition to being recognized as endangered at the state level in South Dakota. The last non-migratory population, found in Louisiana, was reduced to 13 birds following a hurricane in 1940, and only 18 birds remained in the migratory population by 1942. Extensive conservation efforts since the early 1940s have brought a steady but slow increase in the whooping crane population. Threats to this species include collisions with power lines and other obstructions in flight, predation, disease, and illegal shooting. Populations within South Dakota are currently undergoing a five-year status review by the USFWS to assess population status (USFWS, 2021). As a result of habitat conservation efforts, whooping crane populations and flock size have been slowly increasing; over 70% of sites that hosted 10 or more whooping cranes at a time were within 15 kilometers of land managed by conservation organizations such as USFWS (Caven et al., 2020).

In consideration of the noise sensitivity of this species, whooping cranes that were introduced to aircraft as juveniles did not have increased stress responses when exposed to novel stimuli such as aircraft introduction or engine noise (Hartup et al., 2005), but increased aircraft rotor noise caused cranes to stand when used as a population sampling technique (Johns, 2010). Whooping cranes could stop at the Park on their migration. There are records of sightings of the birds near the Park, but no observations within the Park.

## Insects

### Monarch

The monarch (*Danaus plexippus*) is one of 70 butterfly species documented within the Park and is a candidate for listing under the ESA. They are known for their orange, black, and white wings that serve as a warning of their toxicity to predators. Monarch feed on nectar and are important pollinators. Populations of monarch within North America are divided into east and west populations based on their proximity to the Rocky Mountains; monarch butterflies within the Park are part of the eastern population. Monarchs breed year-round and lay their eggs on milkweed plants, where adult butterflies emerge after eight to 19 days (USFWS, 2020). Three to five generations are produced each breeding season, and the lifespan of monarch butterflies ranges from several weeks to nine months.

This population of North American monarchs have unique features that differentiate them from other populations. Notably, they undergo long-distance migration every fall where they travel south to central Mexico. Overwintering adults enter reproductive diapause (suspended reproduction) and are also equipped with directional flight orientation to the south, which allow the eastern population of monarchs to be adapted for their long migratory patterns. The phenotypes of eastern monarchs differ from other populations as well- eastern monarchs have larger bodies, elongated wings, are redder in color, and have lower rates of parasitic infection (USFWS, 2020).

Butterfly distribution within the ATMP planning area depends on the presence of host plants. The mixed-grass prairie supports wheatgrass (*Triticum aestivum*), buffalograss (*Bouteloua dactyloides*), and forbs, or herbaceous flowering plants, that host butterfly species.

Monarch abundances have been declining across North America, and the primary threats to the abundance and health of these populations are habitat degradation as grasslands are converted for agriculture, use of herbicides and insecticides, urban development, and climate change. The eastern population of monarchs in North America have experienced lower abundances and declining population rates over the past several years (USFWS, 2020). Therefore, this species and its populations within the Park is a candidate for listing on the ESA, but is precluded from listing by higher priority actions of USFWS (85 FR 81813). In consideration of the noise sensitivity of this species, monarch butterfly larvae exposed to short-term traffic noise showed

increased heart rates, while larvae exposed to seven to 12 days of continuous traffic noise showed no increased heart rates, suggesting that larvae could become desensitized or habituated to chronic exposure to anthropogenic noise (Davis et al., 2018).

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

#### **Bighorn Sheep**

Bighorn sheep (*Ovis canadensis*) and its several subspecies are native to western North America. This species forages in grasses and shrubs in prairie habitats, then retreat to cliffs away from predators to finish consuming their food. Within the Park, there are few to no natural predators for adult bighorn sheep, making the only threats to this species disease or fatal falls from traversing cliffs.

Bighorn sheep can be observed on the cliffs of Pinnacles Overlook and areas in Cedar Pass such as the Castle Trail and Big Badlands Overlook. Mating occurs in the fall, when males fight for dominance. Females typically give birth to one lamb in the spring. Bighorn sheep lambing season occurs from July 1 through September 30.

A key migratory route for the bighorn sheep is the narrow pass between the North and South Units, which is bisected by South Dakota 44. However, much of the historic bighorn sheep habitat in the Park remains unoccupied.

There have been two subspecies of bighorn sheep that have resided in the Park: the Badlands bighorn sheep and the Rocky Mountain bighorn sheep. The Badlands bighorn sheep, also referred to as Audubon's bighorn sheep (*O. canadensis auduboni*) were historically found in the Badlands region but went extinct by 1925. One management strategy to address the extirpation of the Badlands bighorn sheep was to replace this species with a similar mammal. In 1964, NPS restored 22 Rocky Mountain bighorn sheep to the Park in order to fulfill the ecological niche that was occupied by the Badlands bighorn sheep prior to its extinction. The Rocky Mountain bighorn sheep population declined from 1994 to 1996 as a result of epizootic disease, causing sex ratios of this species to be skewed (NPS, 2012). In 2004, the NPS collaborated with state park departments in New Mexico and South Dakota to translocate 23 Rocky Mountain bighorn sheep in the Pinnacles area to supplement the existing population of 50 to 70 individuals. The population in the Park has recently faced decline as a result of epizootic disease, and in 2022 populations consisted of approximately 50 sheep in each of the North and South Units of the Park.

Epizootic disease such as pneumonia in bighorn sheep continues to affect populations within the Park. Transmission occurs via domestic sheep and goats who pass the disease to wild populations. Bighorn sheep pneumonia typically results in high mortality and can limit the success of reintroduction efforts as the population faces the impacts of this disease even after the initial outbreak and mortality (Wieseler, 2021). Bighorn sheep herds in the Park and greater

region (such as the Buffalo Gap National Grassland) have experienced population declines of over 50% as a result of bighorn sheep pneumonia (Werdel et al., 2020; Wieseler, 2021). Adults that do recover become carriers of this bacteria and have the potential to transmit disease to lambs, impacting lamb survival in subsequent years. There is no evidence that bighorn sheep pneumonia can be transmitted to humans.

In consideration of the noise sensitivity of this species, human and road-related disturbance negatively affected bighorn sheep use of a foraging site (Keller and Bender, 2007), and bighorn sheep spent less time grazing and more time evaluating their surroundings for predators in areas with high human presence (Sproat et al., 2020). Bighorn sheep were more sensitive to helicopter disturbance during winter than during the spring, which could be due to sheep grazing at lower elevations, further away from helicopter overflights (Stockwell et al., 1991). The maximum disturbance distance threshold associated with bighorn sheep and helicopter noise was 250 to 450 meters (250 ft. to 1,476 ft.) (Stockwell et al., 1991).

### Plains Bison

The Park is home to the plains bison (*Bison bison bison*), one of two subspecies of American bison. Bison played a key role in the grasslands ecosystems of North America, shaping both the landscape and the way of life for native cultures in the region through grazing activities that increase the rates of nutrient cycling, disperse seeds, and supports habitat for prairie dogs, upland bird species, and amphibians (Gates et al., 2010). Bison breed in the summer, where males headbutt each other to compete for mating rights. Females give birth in the spring to one calf. This species spends nine to 11 hours per day grazing in prairies and grasslands.

By the end of the 1800s, the population of bison in the western U.S. had been significantly reduced to approximately 1,000 individuals nation-wide due to hunting (Redford and Fearn, 2007). The Park is one of the most recent NPS units to participate in bison restoration by restoring this species to the North Region of the Park in 1963 and 1983, where they roam along Sage Creek Rim Road and in the Sage Creek and Tyree Basins of the North Unit. There are approximately 20,500 total plains bison in conservation herds and an additional 420,000 in commercial herds (USFWS, 2022c). Within the Park, bison populations can reach 1,700 individuals and are routinely culled to prevent overgrazing and loss of unique alleles, but their steadily increasing population growth allow this herd to be a source of surplus animals for other bison herds throughout North America (Licht, 2017).

Plains bison are not recognized under the ESA because their populations have recovered, but they are protected under the Department of the Interior's Bison Conservation Initiative

### Black-tailed Prairie Dog

Black-tailed prairie dogs (*Cynomys ludovicianus*) are ground-dwelling rodents of the squirrel family and are one of five prairie dog species native to North America. Black-tailed prairie dogs



are the most numerous and widely distributed prairie dog species, ranging from southern Canada to northern Mexico, but are designated as a pest species in South Dakota (USFWS, 2009). They live in large communities called colonies or towns.

Black-tailed prairie dogs alter their environment, forming a microhabitat in mixed grass prairies. They alter the soil structure by digging burrows, reduce the height of vegetation, and provide habitat for burrowing owls, snakes, and foxes, changing the density and abundance of other wildlife. At least nine species depend directly on prairie dogs or their activities to some extent, and 137 more species are associated opportunistically (Kotliar et al., 1999). Prairie dogs are also prey for black-footed ferrets and birds of prey. As such, they are considered a keystone species.

In the winter months, prairie dogs go into a state of torpor where they lower their body temperature, breathing rate, and metabolic rate. Prairie dogs come out of torpor in the spring and mate from March to April. Females give birth to one to six pups throughout May and June that remain in underground prairie dog colonies for six weeks until they are no longer fully dependent on adults for survival.

Historically, interconnected colonies extended for miles and contained thousands of individuals. In present day, most black-tailed prairie dog colonies are smaller than 100 acres, disjunct, and geographically isolated from other colonies. Their occupied acreage has decreased as much as 98% over the range of the species since the early 1900s and is currently estimated at two million acres across 11 states, with most colonies occurring on private and tribal lands (Miller et al., 2007; McDonald et al., 2015). The causes of prairie dog decline include land conversion, wide-scale poisoning, shooting, and sylvatic plague. Upon initial settlement of the west, many native grasslands were converted for agriculture. During the first half of the 20th century, there were large-scale, government-sponsored exterminations of prairie dogs to reduce competition with livestock.

Prairie dog populations are considered stable and are managed through the Park's Black-tailed Prairie Dog Management Plan, which was created to ensure that the black-tailed prairie dog is maintained as a keystone species in the mixed-grass prairie ecosystem in the North Unit of the Park, in addition to effectively managing prairie dog encroachment onto adjacent private lands (NPS, 2012).

Within the Park, prairie dog populations are located at Burns Basin Overlook, Roberts Prairie Dog Town, Sage Creek Campground, and along Quinn Road. In response to intermittent anthropogenic noise, other animals in the same family as prairie dogs had the potential to adapt their intraspecies communication in response to changes in their acoustic environment (Rabin et al., 2003).

### Bald Eagle

Bald eagles (*Haliaeetus leucocephalus*) are present in the Park and are considered a common, native resident avian species. Bald eagles inhabit seacoasts, forest valleys, mountain regions, lakes, and rivers, and are common throughout 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, the USFWS released the Final Programmatic Environmental Impact Statement for the Eagle Rule Revision<sup>14</sup>, which analyzed the effects of revised incidental take permit regulations. In 2022, USFWS published a proposed rule<sup>15</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

Peregrine falcons (*Falco peregrinus*) are present in the Park and are considered an uncommon, migratory native avian species. The peregrine falcon is a carnivorous bird of prey that consume other birds and whose diet 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 threatened under the ESA in 1973 (NPS, 2021a). Limiting the use

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<sup>14</sup> <https://www.fws.gov/media/final-programmatic-environmental-impact-statement-eagle-rule-revision>

<sup>15</sup> <https://www.federalregister.gov/documents/2022/09/30/2022-21025/permits-for-incidental-take-of-eagles-and-eagle-nests>

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 Game, Fish, and Parks, 2022). Historically, threats to peregrine falcons include poisoning from DDT-based pesticides and illegal shooting.

This species is an uncommon migrant in the Park that could be exposed to commercial air tour noise. 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 are 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. from active nest for human activities (Richardson and Miller, 1997; Colorado Division of Wildlife, 2020).

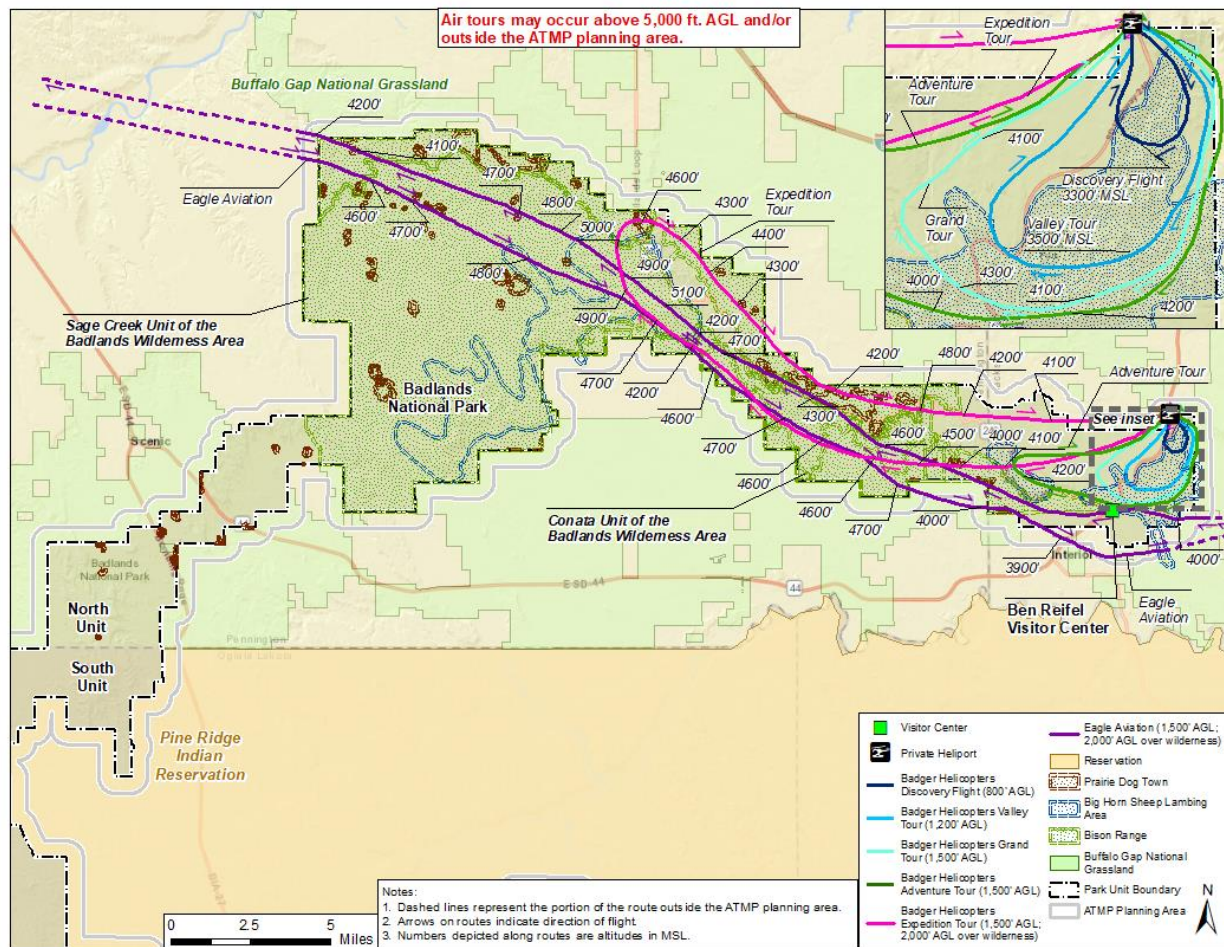


Figure 15. Affected Environment for Biological Resources.

### 3.3.2 Environmental Consequences

Noise from commercial air tours may impact wildlife in many 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 impact analysis below examines the time above 35 dBA metric (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. The frequency and intensity of disturbance could be greater than disclosed here if air tour numbers increase, although levels up to IOA are not reasonably foreseeable. Ongoing noise from commercial air tours currently disturbs the Park's wildlife and could result in changes in wildlife behavior, such as vocal behavior, breeding relocation, avoiding an area, and changes in foraging behavior. Existing commercial air tour routes are present over known lambing areas for bighorn sheep, bison range, and prairie dog towns within the ATMP planning area (see Figure 15) which would increase the likelihood of these effects occurring. Effects to prairie dogs could also affect black-footed ferrets because of their dependence on the prairie dog population for food and habitat. For bighorn sheep, the altitudes along the routes that are flown over bighorn sheep lambing areas are within the threshold for this species that could cause disturbance (below 1,476 ft. AGL) along the Valley Tour (which is flown at 1,200 ft. AGL) and the Discovery Flight (which is flown at 800 ft. AGL), so some disturbance to bighorn sheep could occur that causes them to avoid use of foraging sites in this area. The *Noise Technical Analysis* (Appendix F, Figure 10) shows that on days when air tours occur, noise above 35 dBA would occur for less than 105 minutes a day in the eastern portion of the ATMP planning area, and for less time throughout the Park's North Unit. This noise may interfere with species behavior for any noise sensitive species that occur in this area. In addition, when flown at low altitudes, such as near tree canopies, commercial air tours may result in direct strikes to airborne species including bats and birds.

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 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; 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 to 150 meters (164 ft. to 492 ft.) (Watson, 1993). Additionally, raptors may collide with aircraft because of the altitude at which raptors fly. Scientific and national level

guidance recommends a minimum aircraft standoff of 1,000 ft. for bald eagles (USFWS, 2007) and 2,600 ft. for peregrine falcons to prevent both collisions as well as noise impacts (Colorado Parks and Wildlife, 2020).

The current altitudes reported by air tour operators over the ATMP planning area are not in compliance with these recommended buffer zones (routes are flown at a minimum of 800 ft. to 2,000 ft. AGL) 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 would continue to occur under 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 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 the No Action Alternative. 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 within the ATMP planning area.

The FAA and the NPS are currently conducting Section 7 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. As of the time of this draft EA publication, the agencies believe 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 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 permitted within the ATMP planning area on the same routes and altitudes as existing conditions, with the exception that the Expedition Tour route would not be authorized (Figure 16). By not authorizing commercial air tours on the Expedition Tour, Alternative 3 would provide improved protection as compared to the No Action Alternative for bison, prairie dogs, and bighorn sheep, as these habitat areas are present beneath this route and would therefore not be subject to air tour noise from aircraft flown along this route.

Because Alternative 3 would eliminate the Expedition Tour, increase minimum altitudes of the route flown by Eagle Aviation, and would authorize a limited 16 air tours per day, the likelihood of effects occurring to biological resources would decrease, including effects resulting from noise or physical effects caused by collisions with aircraft. The *Noise Technical Analysis*

(Appendix F, Figure 13) shows that on days when air tours occur, noise above 35 dBA would occur for less than 90 minutes a day across the ATMP planning area, which represents a reduction of 70 minutes a day compared to the No Action Alternative.

Similar to the No Action Alternative, the altitudes under Alternative 3 over the ATMP planning area would not comply with the recommended buffer zones (routes are flown at a minimum of 800 ft. to 2,000 ft. AGL) for raptor species 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. Most bats would be roosting in trees during this time of day and the risk of a direct strike would be extremely low. If operators request and are authorized to use the quiet technology incentive, which allows them to operate during sunrise/sunset, it could introduce noise during the periods when bat species are more active, when those flights would not otherwise be occurring. During the summer, bats typically begin foraging flights around dusk, with most foraging being within or beneath the tree canopy. Bats are typically roosted for the day by sunrise.



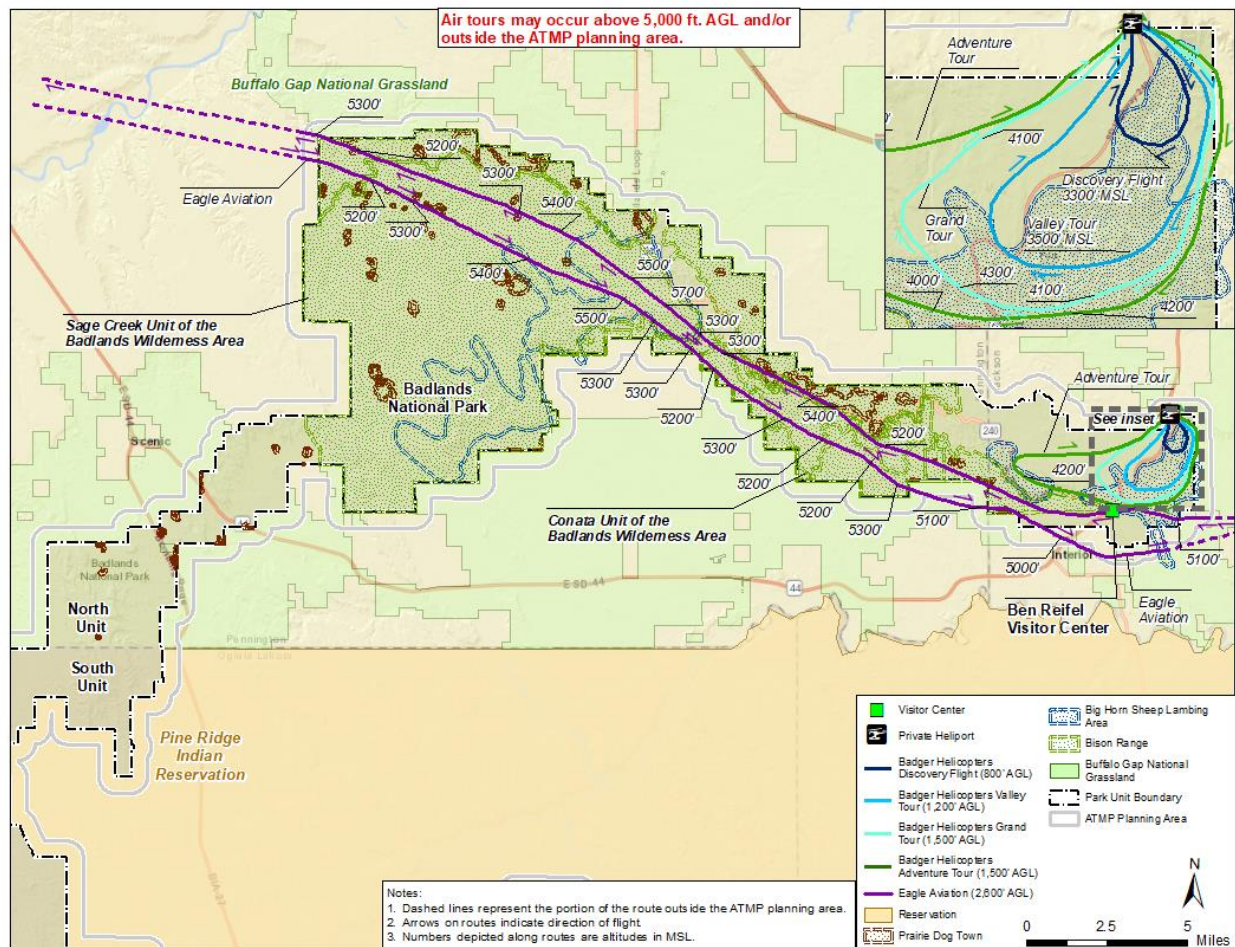


Figure 16. Biological Resources Environmental Consequences for Alternatives 3 and 4.

#### Alternative 4

Effects to biological resources under Alternative 4 would be similar to those under Alternative 3 because it would authorize air tours to be conducted on the same routes and altitudes as Alternative 3 (see Figure 16). Compared to the No Action Alternative and similar to Alternative 3, Alternative 4 would result in less disturbance to biological resources by not authorizing air tours to be conducted on the Expedition Tour. Compared to the No Action Alternative and Alternative 3, Alternative 4 would result in less disturbance to biological resources, specifically for peregrine falcons and bighorn sheep lamb rearing, by limiting the time-of-day during which air tours could be conducted from three hours after sunrise to three hours before sunset, reducing seasonal operations from July 1 through September 30, and reducing the number of annual air tours to 639 per year and daily air tours to eight per day over the ATMP planning area. Specifically, Alternative 4 would result in approximately 85% fewer air tours conducted within the ATMP planning area as compared to the No Action Alternative which is 21% fewer than Alternative 3. This would reduce the intensity and duration of noise within the ATMP



planning area compared to the No Action Alternative which would have beneficial effects on biological resources. The *Noise Technical Analysis* (Appendix F, Figure 16) shows that on days when air tours occur, noise above 35 dBA would occur for less than 45 minutes a day across the ATMP planning area, which represents a reduction of 60 minutes a day compared to the No Action Alternative and would be 45 minutes less than Alternative 3.

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

**Indirect Effects:** Indirect effects to biological resources could occur as a result of noise caused by air tours flying outside of the ATMP planning area. As noted in Section 3.1.2, 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 above 5,000 ft. AGL; however, air tours at higher altitudes 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 the No Action Alternative.

Operators may also choose to move their air tours just outside the ATMP planning area. The agencies are unaware of any current air tour routes that are offered just outside of the ATMP planning area. 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 which is based on the principle of “see and avoid” and may vary greatly. Air tour operations displaced from flying within the ATMP planning area under Alternatives 2, 3, or 4 would be able to utilize the privately owned and operated heliport within the ATMP planning area 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 other regional points of interest which could result in indirect noise effects to biological resources outside of the planning area. Alternative 2 would prohibit air tours from being conducted within the ATMP planning area, whereas Alternative 3 would limit them to no more than 1,425 tours per year and a reduced number of routes, and Alternative 4 would limit them to no more than 639 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 firefighting, fire management activities, wildlife surveys, vegetation management, 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.

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). Changes in microclimatic conditions in the habitats of endemic invertebrates and their host plants may lead to the loss of native species due to direct physiological stress, the loss or alteration of habitat, increasing distribution and abundance of invasive species, and changes in disturbance regimes (e.g., droughts, fire, and storms). Because there is little known about the ecology and distribution of many invertebrates, specific and cumulative effects of climate change on most invertebrate species of concern are presently unknown. However, it is well documented that stress from different sources can cumulatively have 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 under Alternative 4, 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 including those 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 Chapter 5 of NPS Management Policies (2006) 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 letter dated April 12, 2021, and April 15, 2021. Tribal consultation meetings were held on March 30, 2021, July 23, 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 a 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 North Unit of the Park, plus a one and one-half-mile buffer from this area. Refer to Figure 17 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 SHPO and tribes, determined the APE and completed a preliminary identification of historic properties. An Undertaking/APE letter dated October 28, 2022 was sent to the SHPO, operators, 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**

Cultural resources within the APE include Historic, Architectural, Archeological and Cultural Resources, inclusive of ethnographic resources, traditional cultural properties (TCPs), sacred sites, cultural landscapes, historic districts, and prehistoric and historic buildings and structures 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 in the eastern region of the Park, which is where several cultural resources are located.

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.

Initial identification of historic properties relied upon data submitted by Park staff about known historic properties within the Park and from data received by the NPS Midwest Archeological Center, the Buffalo Gap National Grasslands (U.S. Forest Service), 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, and others that the area from the Badlands to the Black Hills are part of a continuous landscape that is sacred. The landscape is considered a TCP by many tribes.

***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 continuous landscape extending from the Black Hills to the Park sacred, and Bear Butte at the northeast edge of the Black Hills is a popular worship site. The region was used by numerous Native American tribes for resource gathering, especially for timber, and for religious purposes. 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. 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. Archeological sites within the Park date from the prehistoric period and include artifact scatters, subsurface deposits, and paleosols. Approximately 73% of the Park's archeological sites are classified as surface artifact scatters, many of which have not been tested for subsurface deposits, and almost one in five archeological sites contain flora, fauna, and ubiquitous lithic material, in addition to prehistoric ceramic sherds and hearths, roasting pits, stone rings, and human remains (Lynott, 2012).

However, only about 6% of the North Unit of the Park has been systematically surveyed for archeological resources, and the 300 known archeological sites within the North Unit have not been extensively studied (Lynott, 2012).

Approximately 430 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 Cedar Pass Developed Area is a cultural landscape composed of contributing elements that include three seasonal apartment buildings, seven single-family residences, the visitor center, Cedar Pass Lodge cabins, the Cedar Pass Lodge building and its outbuildings, the lodge cottage, amphitheater, comfort stations, interpretive signage, and two maintenance buildings (NPS, 2018b). The cultural landscape at Cedar Pass includes elements from periods of private and federal efforts to improve visitor services. Natural contributing elements of this district include the geologic formations of the Park, including the Badlands Wall, and native plant and wildlife communities. Of the 70 structures identified within the Cedar Pass Developed Area, 47 were contributing features to the historic landscape when first described. Twenty-two of the original Cedar Pass Lodge cabins were removed and replaced in 2011 and 2012. New cabins are non-contributing elements but compatible features of the cultural landscape (NPS, 2018b). The Cedar Pass Lodge was considered individually eligible for the National Register in 1983 but remains a contributing feature of the Cedar Pass Developed Area. See Appendix G, *Cultural Resources Consultation and Summary*, for more information.

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 and buildings, bridges, linear properties, and districts within the APE, which relate to themes associated with Mission 66-era recreation development, tourism ranch history, engineering, commerce, and vernacular architecture.

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

There are 21 cultural resources within the APE, listed in Table 15 and depicted in Figure 17. The locations of some sites are considered sensitive information and are therefore not included in Figure 17. Descriptions of each can be found in Appendix G, *Cultural Resources Consultation and Summary*.

*Table 15. National Register Listed and 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
Cedar Pass Developed Area	Cultural Landscape	Eligible
1 Sage Creek Rim Road – N.W. Entry to West Boundary	Structure	Eligible
Cedar Pass to Northwest Entrance Road (Loop Road)	Structure	Eligible
Cedar Pass Road	Structure	Eligible
Sheep Mountain Table Road	Structure	Eligible
Conata Picnic Area	Site	Eligible
Dugout and Claim Shack	District	Listed
39PN2007*	Site	Eligible
39PN3504*	Site	Unknown
Check Dam 01*	Site	Unknown
Old Highway 40	Structure	Unknown
39PN3692*	Site	Eligible
39PN3695*	Site	Unknown
39PN3697*	Site	Unknown
39PN3696*	Site	Unknown
Historic Farmstead*	Building	Unknown
Historic Farmstead*	Building	Unknown
39PN886*	Site	Unknown
36-100-136	Structure	Eligible
Kudrna Ranch	Building	Eligible

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

Sources: NPS Cultural Resource Managers, NPS Midwest Archeological Center, the U.S. Forest Service Buffalo Gap National Grasslands, the South Dakota SHPO's CR GRID database, and the South Dakota Archaeological Research Center. See Appendix G, *Cultural Resources and Consultation Summary*.

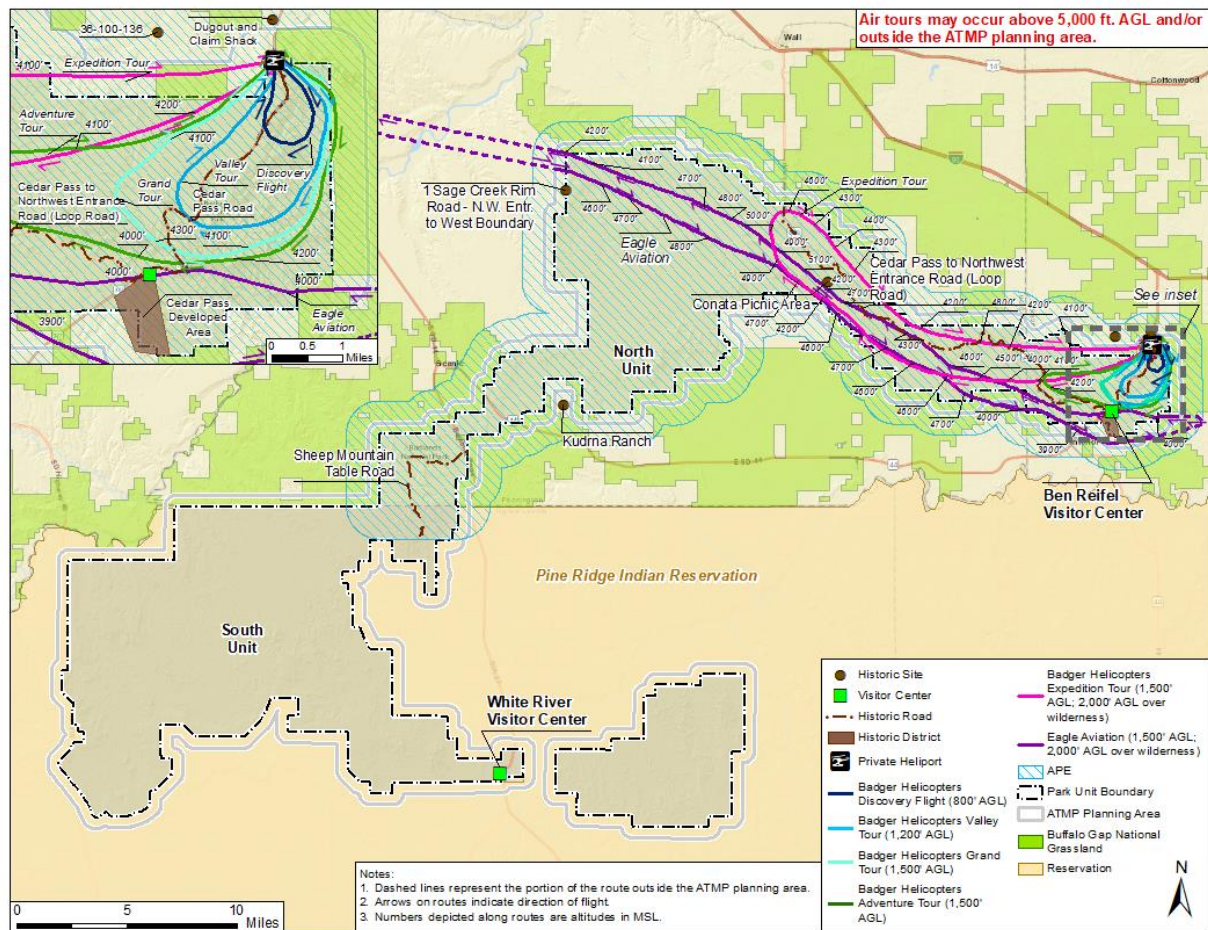


Figure 17. Affected Environment for Cultural Resources.

### 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 cultural resources 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, 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. The frequency and intensity of noise and visual effects could be greater than existing conditions if the number of air tours were to increase, although levels up to IOA are not reasonably foreseeable. As described in Section 2.2.1, Air Tours Above Existing Levels or Air Tours at Existing Levels with Current Operating Parameters, noise and visual effects from air tours negatively impact existing 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 Badlands. 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. Reporting data from 2017-2019 indicates that on a peak month average day, air tours fly over the ATMP planning area approximately 17 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 105 minutes a day across the ATMP planning area under existing conditions, which would continue to occur under the No Action Alternative. The 12-hour equivalent sound level would be less than 60 dBA within the ATMP planning area near the privately owned and operated heliport, and across the modeled location points, the highest 12-hour equivalent sound level would be 50.7 dBA at location point #30 (Big Badlands Overlook) near the heliport. The 12-hour equivalent sound level at location point #18 (Scenic Overlook), which is located away from the heliport and near the historic property Conata Picnic Area, would be 38.9 dBA. These noise effects would continue to occur under the No Action Alternative, including those that interrupt tribal practices and connections to the landscape of the Black Hills TCP.

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 Conata Picnic Area, Cedar Pass Road, Dugout and Claim Shack, the Cedar Pass

Developed Area, and the Cedar Pass to Northwest Entrance Road (Loop Road) (refer to Figure 17). Noise from commercial air tours may affect the feeling and setting of these resources. These effects would continue to occur under the No Action Alternative.

### ***Alternative 2***

Under Alternative 2, commercial air tours would not be conducted within the ATMP planning area. The elimination of commercial air tours from the ATMP planning area would reduce the direct noise and visual intrusions from impacting the 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 the No Action Alternative.

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***

Under Alternative 3, the nature of effects to cultural resources would be similar to the No Action Alternative as air tours would still be permitted within the ATMP planning area on the same routes and altitudes as the No Action Alternative, with the exception that the Expedition Tour would not be authorized (Figure 18). By not authorizing commercial air tours on the Expedition Tour, Alternative 3 would provide improved protection as compared to the No Action Alternative for cultural resources along the path of this route because they would be subject to less air tour noise from aircraft flown along this route. Specifically, this would benefit the feeling and setting of the Conata Picnic Area and the Cedar Pass to Northwest Entrance Road (Loop Road) because air tours would no longer be flown in close proximity to these cultural resources.

Because Alternative 3 would authorize a limited 16 air tours per day, eliminate the Expedition Tour, and increase minimum altitudes on the route flown by Eagle Aviation compared to the No Action Alternative, direct impacts to the feeling and setting of cultural resources throughout the APE would decrease as compared to the No Action Alternative as a result of fewer noise and visual impacts from air tours. Alternative 3 would not introduce new audible and visual elements into the APE because air tours are currently occurring in this area. The daily limits on

the number of air tours within the ATMP planning area (16) 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, Figure 13) indicates that on days when air tours occur, portions of the APE would experience noise above 35 dBA for less than 90 minutes a day across the ATMP planning area, which represents a reduction of 70 minutes a day compared to the No Action Alternative. The time above 35 dBA under Alternative 3 would stay the same or be reduced at all the identified cultural resources. For example, the time above 35 dBA under Alternative 3 ranges from no difference at several of the modeled location points compared to the No Action Alternative to 12.4 minutes less at location point #18 (Scenic Overlook) near the Conata Picnic Area. The time above 52 dBA under Alternative 3 ranges from no difference at several of the modeled location points compared to the No Action Alternative to 12.5 minutes less at location point #18 (Scenic Overlook) near the Conata Picnic Area. The 12-hour equivalent sound level would be less than 60 dBA within the ATMP planning area near the privately owned and operated heliport. Across the modeled location points, the highest 12-hour equivalent sound level would be 50.7 dBA at location point #30 (Big Badlands Overlook) near the heliport, which is the same value as the No Action Alternative.

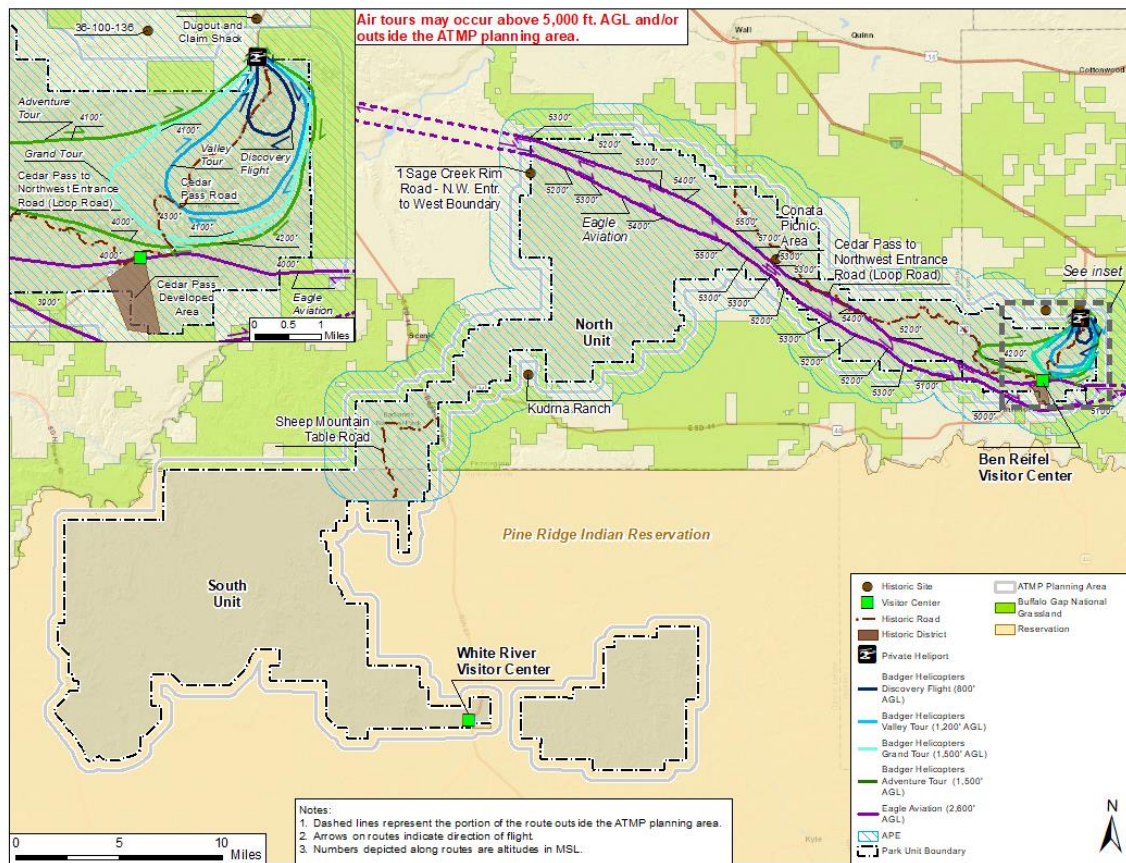


Figure 18. Cultural Resources Environmental Consequences for Alternatives 3 and 4.

### ***Alternative 4***

Direct effects to cultural resources under Alternative 4 would be similar in nature to those under Alternative 3 because it would authorize air tours to be conducted on the same routes and altitudes as Alternative 3. However, Alternative 4 would further restrict air tour operations within the ATMP planning area by limiting the time-of-day air tours may be conducted to three hours after sunrise to three hours before sunset and by limiting the seasonal air tour operations from July 1 through September 30. Compared to Alternative 3, Alternative 4 would result in approximately 85% fewer air tours conducted within the ATMP planning area as compared to the No Action Alternative, which is 21% fewer than Alternative 3, so it would reduce the intensity and duration of direct noise and visual impacts within the APE to a greater degree than Alternative 3. Alternative 4 would not introduce new audible and visual elements into the APE because air tours are currently occurring in this area. The annual (639) and daily (eight) 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, Figure 16) 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 45 minutes a day, which represents a reduction of 60 minutes a day compared to the No Action Alternative and 45 minutes less than Alternative 3. The time above 35 dBA under Alternative 4 would stay the same or be less at all the identified cultural resources. For example, the time above 35 dBA under Alternative 4 ranges from no difference at several of the modeled location points compared to the No Action Alternative to 30.7 minutes less at location point #38 (Dugout and Claim Shack). The time above 52 dBA under Alternative 4 ranges from no difference at several of the modeled location points compared to the No Action Alternative to 4.2 minutes less at location point #38 (Dugout and Claim Shack). The 12-hour equivalent sound level would be less than 60 dBA near the privately owned and operated heliport. Across the modeled location points, the highest 12-hour equivalent sound level would be 47.8 dBA at location point #30 (Big Badlands Overlook) near the heliport, which represents a reduction of 2.9 dBA as compared to the No Action Alternative.

### ***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 at or 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; however, air tours at higher altitudes 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 the No Action Alternative 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 may also choose to move their air tours just outside the ATMP planning area. The agencies are unaware of any current air tour routes that are offered just outside of the ATMP planning area, and 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 greatly. Air tour operations displaced from flying within the ATMP planning area under Alternatives 2, 3, or 4 could continue to utilize the privately owned and operated heliport within the ATMP planning area 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 other regional points of interest, which could result in indirect noise effects to cultural resources in this area such as Cedar Pass Road, Cedar Pass Developed Area, and the Dugout and Claim Shack. 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 1,425 tours per year and a reduced number of routes, and Alternative 4 would limit air tours to no more than 639 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 but within the APE. 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 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 privately owned and operated 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 and fire management, and mechanized equipment for Park maintenance (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, 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.

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. The cumulative effects would be fewer for Alternatives 3 and 4 which would limit the number of air tours that would occur as compared to the No Action Alternative (Alternative 4 only) and the number of routes on which air tours could be conducted within the ATMP planning area, and would be 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 FAA traditionally examines, the NPS has agency wide (see NPS Management Policies (2006), Chapter 6, and Director's Order 41, 2013) and Park-specific guidelines (NPS, 2017) for managing designated Wilderness areas within the national Park system. The Wilderness Act of 1964 is the primary federal legislation regulating the management of Wilderness areas. As a managing agency, the NPS is required to preserve Wilderness character. NPS Management Policies (2006), § 6.1. states:

*The purpose of Wilderness in the national parks includes the preservation of Wilderness character and Wilderness resources in an unimpaired condition and, in accordance with the Wilderness Act, Wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use.*

NPS manages Wilderness for the following qualities of Wilderness character<sup>16</sup>:

- **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.

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<sup>16</sup> <https://www.nps.gov/subjects/wilderness/wilderness-character.htm>

- **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, 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 Park's Wilderness 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 is the Congressionally designated Badlands Wilderness within the Park. Refer to Figure 19 for a depiction of the Badlands Wilderness.

### **3.5.1 Affected Environment**

In 1976, Congress designated 64,250 acres of the North Unit of the Park as the Badlands Wilderness. The Badlands Wilderness is divided into two geographically separate units, referred to by the NPS as the Sage Creek Unit and Conata Basin Unit. Refer to Figure 19 for a depiction of the Sage Creek and Conata Basin Units.



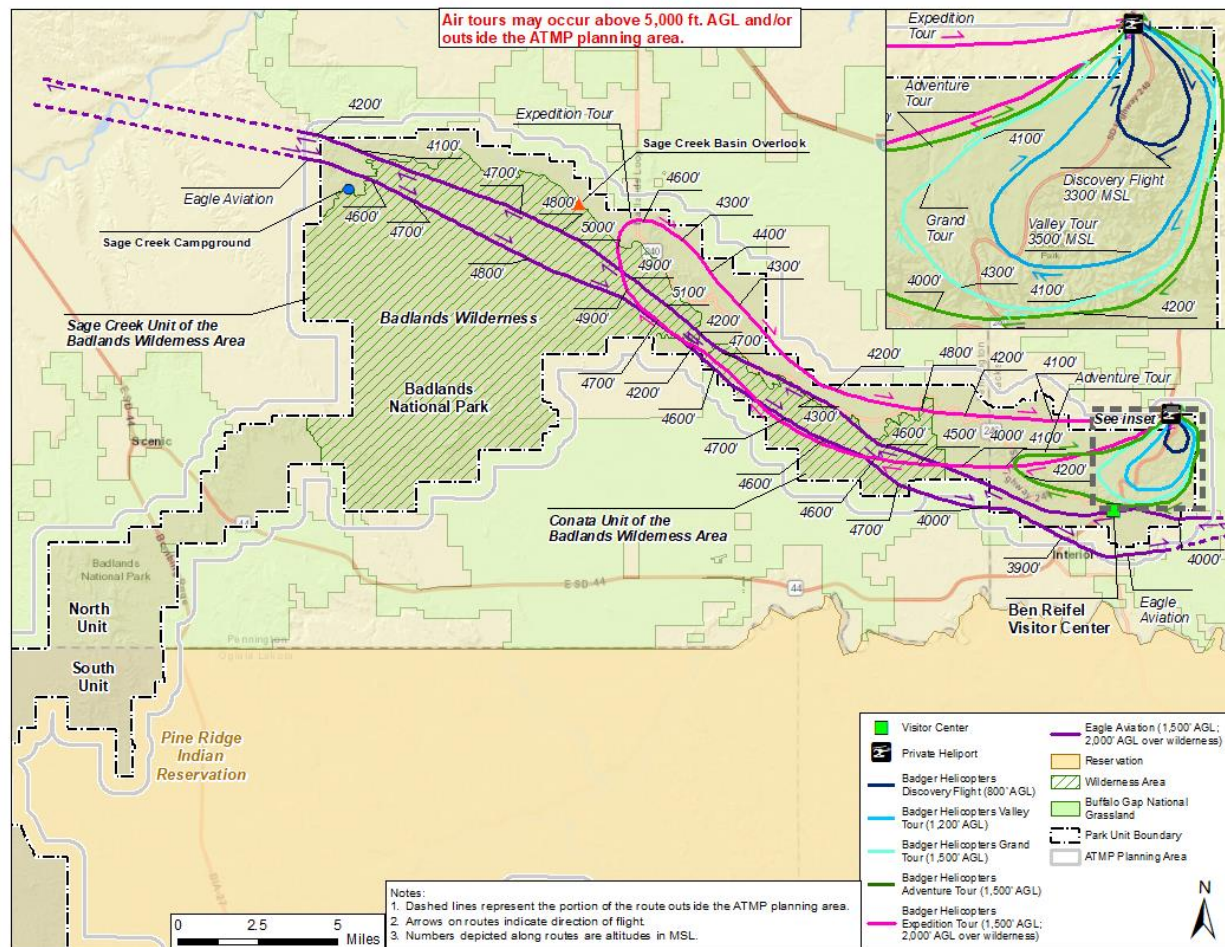


Figure 19. Affected Environment for Wilderness.

## 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 Badlands Wilderness is one of the largest protected and undisturbed prairie ecosystems in the U.S. and supports diverse plant and animal communities. The Wilderness provides habitat for species and refuge from predators. Important pollinators like bats and butterflies benefit from and contribute to the species diversity within Wilderness units, in addition to species listed as threatened or endangered under the ESA. The Sage Creek Unit is home to the Park's bison range as well as many bird species.

Changes to wildlife species composition and abundance can jeopardize the natural quality of Wilderness character. Native species such as bison and bighorn sheep were extirpated from



Park in the late 1800s and early 1900s, and although populations have been successfully reintroduced, these species historically did not populate the region year-round as they do currently (NPS, 2016). Moreover, changes to prairie dog abundance can impact the vegetative composition and other wildlife populations, as prairie dogs are a keystone species responsible for occupying a unique ecological niche within Wilderness inside the ATMP planning area. In order to address fluctuating wildlife populations and maintain the natural quality of Wilderness character, the Park has implemented wildlife management practices for bison, bighorn sheep, and prairie dogs. Refer to Section 3.3.1, Affected Environment for Biological Resources, for additional information.

Non-native species contribute the most to the degradation of the natural quality of Wilderness character. Within the Badlands Wilderness, non-native vegetative species such as brome grasses, crested wheatgrass (*Agropyron cristatum*), Canada thistle (*Cirsium arvense*), and yellow sweetclover can hinder the natural quality of Wilderness (NPS, 2016).

### ***Solitude***

The ability to experience solitude is an integral component of Wilderness. In preserving this Wilderness quality, the NPS 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. There are several opportunities for solitude and recreation throughout the Badlands Wilderness.

There are eight marked trails throughout the Park that vary in difficulty and can lead visitors to Wilderness, although there are no formal trails within the Badlands Wilderness. The Park has an Open Hike Policy, which allows visitors to hike off trail and explore social trails and Wilderness areas. Primitive (non-motorized) forms of recreation are allowed in the Badlands Wilderness and include hiking, horseback riding, and camping. Cross-country foot travel and overnight stays in Wilderness areas are permitted, but visitors are encouraged to register at backcountry registers located at the Conata Picnic Area, Sage Creek Basin Overlook, and Sage Creek Campground before traveling into the Badlands Wilderness. Wilderness visitors must camp at least 0.5 miles away from a road or trail and must not be visible from a roadway. Campfires are not allowed.

Wilderness areas within the Park receive very little use by the public compared to the more developed areas of the Park, so there are numerous opportunities for backcountry camping at isolated and primitive sites. According to informal backcountry registers for backcountry hikers and campers, there are typically only about five backcountry hiking or camping individuals or groups per night in the North Unit. There are no recreation facilities (designated trails, toilets, shelters, or waysides) within the Badlands Wilderness.

Anthropogenic sources of sound and light pollution can be an unwanted intrusion into the solitude of Wilderness. These sounds are usually confined to areas closer to developed areas such as Loop Road, Sage Creek Rim Road, and associated pullouts and camping areas. Lights may be visible within the Wilderness from vehicles along nearby roads or from development in the surrounding area. There are occasional overflights of crop dusters, commercial air tours, and commercial or military overflights, whose noise disrupts Wilderness visitors seeking an opportunity for solitude. Existing commercial air tours occur in the northern region of the Sage Creek Unit and throughout the Conata Basin Unit.

### **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 NPS manages Wilderness to preserve qualities of Wilderness character consistent with the Wilderness Act and generally manages for the natural, untrammeled, undeveloped, solitude and unconfined recreation, and other features of value. Commercial air tours over the Park may impact the following qualities of Wilderness character: opportunity for solitude, natural quality of Wilderness character, 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, the undeveloped quality of Wilderness is not considered 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). The natural quality of Wilderness character may be impacted by actions both outside and inside Wilderness (Sutter, 2004). Effects on the natural quality of Wilderness character are determined by determining the effects from human actions on ecological systems (Sutter, 2004).

Solitude includes attributes such as 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). 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***

Two of the existing operator-reported routes (Expedition Tour and the Eagle Aviation route) currently fly over the Badlands Wilderness. 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, though the number of tours conducted in any given year could potentially increase beyond the three-year average. The impacts could be greater than disclosed here if air tour numbers increase, although levels up to IOA are not reasonably foreseeable.

Persistent noise within the Badlands Wilderness under the No Action Alternative would unreasonably interfere with the opportunity for solitude and would detract from the natural quality of Wilderness character. Noise and visibility from commercial air tours would continue to detract from the natural quality of Wilderness character and opportunities for solitude as described below.

Air tours at existing levels detract from the natural quality of Wilderness character, which would continue under the No Action Alternative. Specifically, air tour noise currently affects natural resources that are present within the Badlands Wilderness, including plains bison, bighorn sheep, and prairie dogs, which are of particular importance to the natural quality of the Badlands Wilderness. Noise may affect these species by causing them to avoid certain areas for feeding or foraging, such as in the case of bighorn sheep, or cause changes in intraspecies communication, such as for that of prairie dogs (refer to Section 3.3.2, Environmental Consequences for Biological Resources, for more information on noise impacts). The *Noise Technical Analysis* (Appendix F, Figure 10) shows that on days when air tours occur, noise above 35 dBA would occur for less than 30 minutes a day in the Badlands Wilderness. The potential for impacts to native wildlife species that would occur under the No Action Alternative would detract from the natural quality of the Badlands Wilderness.

Noise from commercial air tours disrupts Wilderness visitors seeking an opportunity for solitude within the Badlands Wilderness and would continue to occur under the No Action Alternative. The modeled location points in the *Noise Technical Analysis* (see Appendix F, Section 6) provide context for the noise effects that would occur under the No Action Alternative and that would detract from the opportunity for solitude within the Badlands Wilderness. This analysis shows that on days when air tours occur, the maximum time that air tours could be audible within the Badlands Wilderness would be less than 165 minutes a day (non-contiguous) in the eastern extent of the Badlands Wilderness, and 100% of the Wilderness would experience audible air tour noise. This noise would continue to detract from the

opportunity for solitude in the Park's Wilderness areas as it introduces sounds of human activity and therefore detracts from this quality of Wilderness character. The noise and resultant impacts to Wilderness character could be greater than existing conditions if air tour numbers were to increase, although levels up to IOA are not reasonably foreseeable.

### ***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 originating within the ATMP planning area and would offer the greatest protection to the Badlands Wilderness. Compared to the No Action Alternative, this would enhance qualities of 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 and the natural quality of Wilderness character under Alternative 2.

### ***Alternative 3***

Under Alternative 3, air tours over the Badlands Wilderness would be fewer as compared to the No Action Alternative. While the Eagle Aviation route would still allow tours to be conducted over the Badlands Wilderness, these tours would be limited to two per year, so on most days of the year, air tours over the Badlands Wilderness would not occur. Furthermore, Alternative 3 would not allow air tours to be conducted on the Expedition Tour which currently flies over the Badlands Wilderness, so there would be fewer noise impacts to Wilderness character from air tours in this area (Figure 20). Both of these mitigations would result in beneficial effects to the Badlands Wilderness, though noise from air tours elsewhere in the ATMP planning area could still impart noise on the Wilderness as discussed below.

Impacts to the natural quality of Wilderness character would be fewer than the No Action Alternative because the intensity and duration of air tour noise would be less, which would result in fewer disturbances to wildlife that contribute to the natural quality of Wilderness character. There would be direct beneficial impacts to the natural quality of Wilderness character under Alternative 3. The *Noise Technical Analysis* (Appendix F, Figure 13) shows that on days when air tours occur, noise above 35 dBA would occur for less than 15 minutes a day within the Badlands Wilderness, which represents a reduction of 30 minutes a day compared to the No Action Alternative. These impacts would detract from the natural quality of Wilderness character, although it would represent a reduction in impacts compared to the No Action Alternative.

Impacts to opportunities for solitude would be less than the No Action Alternative because the intensity and duration of air tour noise and visibility would be less, which would result in less impact to this quality of Wilderness character. The *Noise Technical Analysis* (see Appendix F, Figure 12) shows that on days when air tours occur, the maximum time that air tours could be

audible within Wilderness would be less than 120 minutes a day (non-contiguous). This noise would detract from the opportunity for solitude as it introduces sounds of human activity and therefore would detract from this quality of Wilderness character, although it would be less than the No Action Alternative.

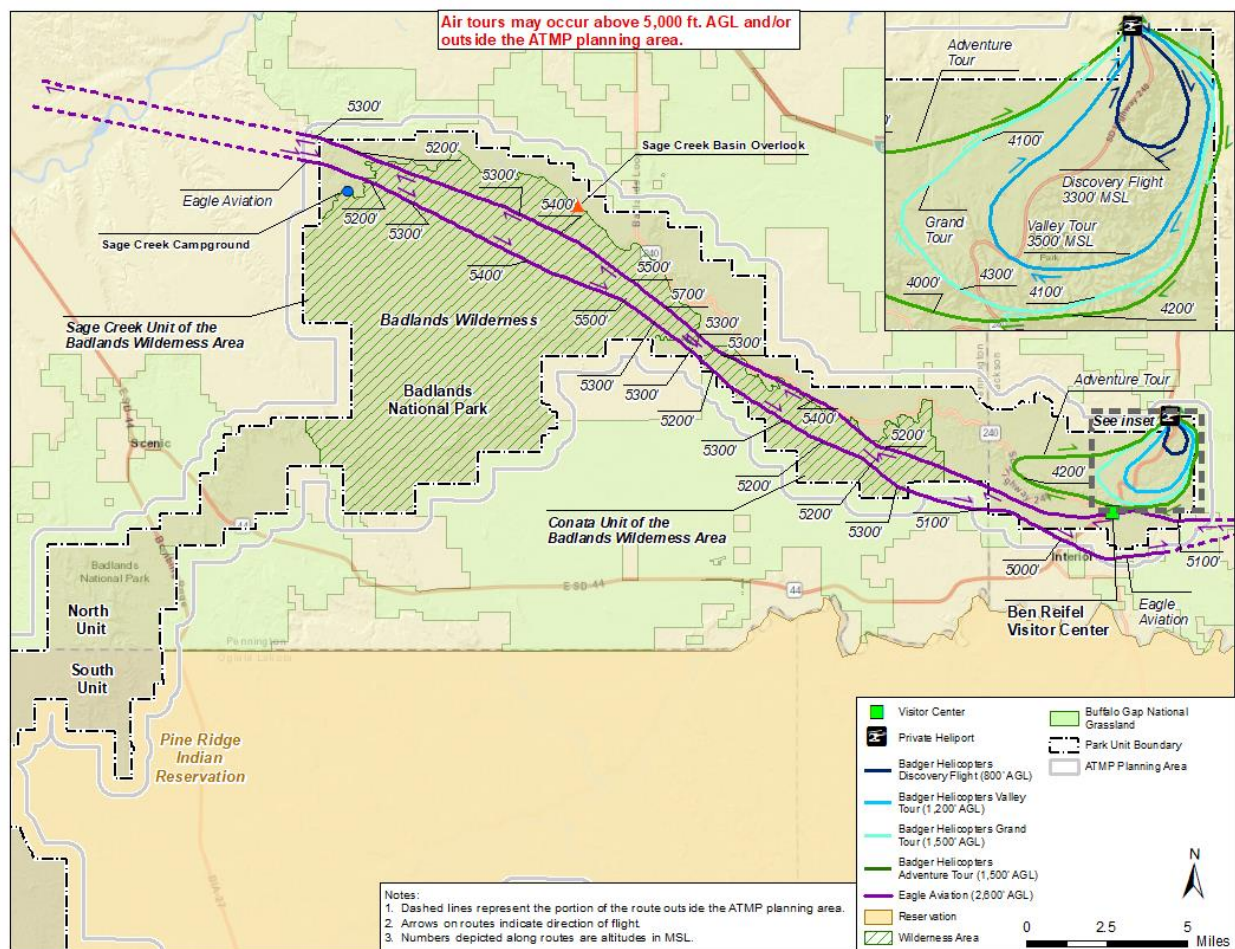


Figure 20. Wilderness Environmental Consequences for Alternatives 3 and 4.

### Alternative 4

Alternative 4 would authorize commercial air tours on the same routes and altitudes as the Alternative 3, but it would authorize fewer air tours per year (45% fewer air tours conducted within the ATMP planning area as compared to the No Action Alternative, which is 45% fewer than Alternative 3) and would authorize a limited eight air tours per day. Alternative 4 would further restrict air tour operations within the ATMP planning area by limiting the time of day air tours may be conducted to three hours after sunrise and three hours before sunset, and by limiting the seasonal air tour operations from July 1 through September 30, for a total of 92 total days each year. Therefore, Alternative 4 would result in fewer impacts to opportunities

for solitude and the natural quality of Wilderness character than Alternative 3. While the Eagle Aviation fixed-wing route would still allow tours to be conducted over the Badlands Wilderness, these tours would be limited to two per year, so on most days of the year, air tours over the Badlands Wilderness would not occur. Furthermore, Alternative 4 would not allow air tours to be conducted on the Expedition Tour which currently flies over the Badlands Wilderness, so there would be fewer noise impacts to Wilderness character from air tours in this area. Compared to the No Action Alternative, 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. However, noise from air tours elsewhere in the ATMP planning area could still affect Wilderness within the Wilderness inside the ATMP planning area under this alternative, as described below.

Impacts to the natural quality of Wilderness character would be fewer than the No Action Alternative as well as Alternative 3 because the intensity and duration of air tour noise would be less, which would result in fewer disturbances to wildlife that contribute to the natural quality of Wilderness character. There would be direct beneficial impacts to the natural quality of Wilderness character under Alternative 4. The *Noise Technical Analysis* (Appendix F, Figure 16) shows that on days when air tours occur, noise above 35 dBA would occur for less than 15 minutes a day within the Badlands Wilderness. These impacts would detract from the natural quality of Wilderness character, although it would represent a reduction in impacts compared to the No Action Alternative as well as Alternative 3.

Impacts to opportunities for solitude would be less than the No Action Alternative as well as Alternative 3 because the intensity and duration of air tour noise and visibility would be less, which would result in less of an impact to this quality of Wilderness character. The *Noise Technical Analysis* (see Appendix F, Figure 15) shows that on days when air tours occur, the maximum time that air tours could be audible within Wilderness would be less than 60 minutes a day (non-contiguous). This noise would detract from the opportunity for solitude as it introduces sounds of human activity and therefore would detract from this quality of Wilderness character, although it would be less than the No Action Alternative as well as Alternative 3.

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

**Indirect Effects:** Indirect noise and visual effects to Wilderness could occur as a result of air tours flying outside of the ATMP planning area, including those at or 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. Under the No Action Alternative, commercial air tour operations within the ATMP planning area



would remain consistent with existing conditions. Although the number of flights could increase, no indirect impacts would be expected to occur under this alternative.

Air tours occurring outside the ATMP planning area, including over the ATMP planning area at or above 5,000 ft. AGL, if any, 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. Operators may choose to fly along existing flight paths but at or above 5,000 ft. AGL. However, air tours at higher altitudes 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 the No Action Alternative.

Operators may also choose to move their air tours just outside the ATMP planning area. The agencies are unaware of any current air tour routes that are offered just outside of the ATMP planning area. 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 greatly. Air tour operations displaced from flying within the ATMP planning area under Alternatives 2, 3, or 4 could continue to utilize the privately owned and operated heliport within the ATMP planning area 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 other regional points of interest which could result in indirect noise effects. However, this heliport is located over five miles from Wilderness so use of this facility by displaced air tours would be unlikely to affect qualities of Wilderness character. 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 1,425 tours per year and a reduced number of routes, and Alternative 4 would limit air tours to no more than 639 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 Badlands Wilderness is impacted by aircraft used for prescribed fire and wildfire management activities and noise from commercial air tours which audibly and visually detract from the primitive Wilderness experience. Prescribed fire managers may use helicopters for air ignition operations at the Park. Wildfire fire managers may use single engine air tankers or helicopters to manage wildfires.

Under the No Action Alternative these conditions would continue, resulting in limited opportunities for solitude in the Wilderness. Under Alternatives 2, 3, and 4, prescribed fire and wildfire 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 within the ATMP planning area under Alternative 2, and limited to two events per year at a minimum altitude of 2,600 ft. AGL on fixed-wing aircraft under Alternatives 3 and 4. 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 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, 2017) 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***

Between 2017 and 2019, the Park averaged 1.01 million recreational visitors annually. Visitation was approximately 1.22 million in 2021 (NPS, 2021b). Visitation varies by season, with the peak times being June to September which accounts for more than 75% of visitors each year, while July and August alone account for almost 50% of the Park's annual visitation (NPS, 2018b).

A visitor survey conducted in 2000 indicates that most groups (76%) that visit the Park consist of four people or fewer, and more than 50% of visitors to the Park are in family groups that stay less than one day (Simmons and Gramann, 2001). The majority of visitors (67%) spent two to four hours exploring the Park and spent most of their time in the North Unit. Other groups that visit the Park include senior citizen tour groups and school groups from Pine Ridge Indian Reservation or the greater region. Of the visitors that responded to the visitor survey, most (65%) were making their first visit to the Park (Simmons and Gramann, 2001).

##### ***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). The Park's scenic landscape of the Badlands provides visitors with a unique experience, in addition to educational opportunities regarding the Park's geological and paleontological wonders, as the Badlands geologic formation contains one of the world's richest fossil beds. The Park is often the first or last stop on a longer trip to Mount Rushmore National Memorial, Wind Cave



National Park, Jewel Cave National Monument, and Custer State Park. See Figure 21 for a depiction of the affected environment for visitor use and experience.

Key visitor facilities within the Park include the following:

- **Ben Reifel Visitor Center**, located on Loop Road, is the primary visitor center in the Park. It has a store, classroom, theater, information desk, and museum exhibits.
- **Amphitheater**, which seats 250 people and is used for a variety of interpretive programs put on by the Park.
- **Cedar Pass Lodge**, located between the Ben Reifel Visitor Center and the campground, is operated by a concessioner and contains a restaurant and gift shop and offers cabins for lodging.
- **Ben Reifel Picnic Area**, located adjacent to the visitor center to the east, contains four sheltered picnic benches and is used as a meeting location for interpretive programs in addition to picnicking.
- **Car Accessible Campgrounds**, located to the west of the visitor center, with 96 individual campsites and four group campsites.
- **Castle Trail network**, which is comprised of the Castle, Medicine Root, and Saddle Pass Trails, is the largest network of trails within the Park, spanning approximately seven miles, five of which are on the Castle Trail which travels from the parking lot to the Fossil Exhibit.
- **Cliff Shelf**, which is another popular trail within the Park, is a 0.5-mile trail commonly used on interpretation walks as it leads through a wooded area on the edge of the Badlands Wall (NPS, 2016).

Visitors can experience various interpretive and educational programs led by Park staff. The paleontology lab program is a popular program and occupies the educational classroom at the visitor center from May through September (NPS, 2018b). Visitation to the Park is primarily concentrated in the North Unit, where visitors spend time at Pinnacles Overlook, Big Foot Pass picnic area, and Roberts Prairie Dog Town, in addition to the sites previously discussed. Visitors also enjoy the many overlooks and trails along Loop Road, viewing wildlife, and exploring the Wilderness. The South Unit, located on the Pine Ridge Indian Reservation, is the least visited area of the Park. It offers a rugged experience for people with backcountry experience. Vehicle access in the South Unit is restricted to the few existing roads. Popular activities for visitors are driving to Sheep Mountain and Blindman tables, which provide expansive overlooks.

### Other Recreational Opportunities

This category applies to persons recreating within the ATMP planning area through the experience of air tours. An average of 7,125 air tour customers per year are currently able to experience the Park from another viewpoint.<sup>17</sup> The air tour experience often varies depending on weather conditions and the desires of the air tour client/visitor (i.e., length of flight, geographic features of special interest).

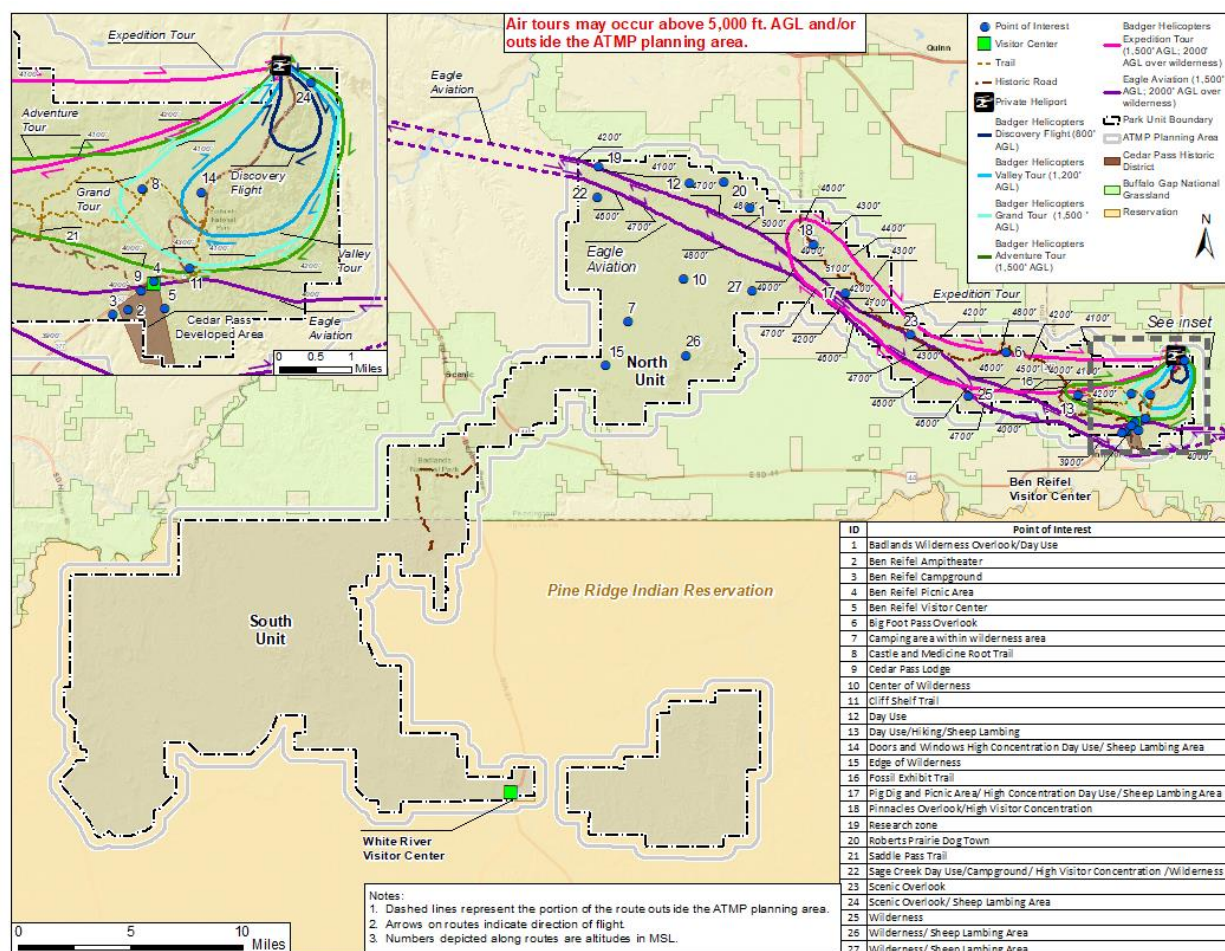


Figure 21. Affected Environment for Visitor Use and Experience.

### 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

<sup>17</sup> The estimated 7,125 air tour visitors is based on reported air tours from 2017-2019 (1,425), 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.

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 in a laboratory setting, indicating that aircraft noise negatively impacts the visitor experience (Anderson et al., 2011; Ferguson, 2018; Mace et al., 2013; Rapoza et al., 2015).

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 (Rapoza et al., 2015; Anderson et al., 2011).

The environmental consequences for non-air tour recreation opportunities is addressed in Section 3.9.2, Environmental Consequences for Department of Transportation (DOT) Section 4(f) Resources.

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

Under the No Action Alternative, the most frequently flown air tour routes would likely continue to be located over the eastern portion of the ATMP planning area near visitor points of interest including the Ben Reifel Visitor Center, the Doors and Windows Trails, Castle Trail, and Medicine Root Trail (popular day use areas), and Cedar Pass Campground. The current level of air tours, and any increase in the level of air tours, would continue to diminish visitor opportunities to learn about and be inspired by Park resources and values, and unreasonably interferes with Park programs, activities, and the atmosphere of peace and tranquility (see NPS Management Policies, § 1.4.7.1, 2006). Average sound levels would generally range between 35 and 40 dBA in the eastern extent of the ATMP planning area, and below 35 dBA in

backcountry areas under the No Action Alternative (Appendix F, *Noise Technical Analysis*, Figure 8).

As noted in Section 3.6.1, Affected Environment for Visitor Use and Experience and Other Recreation Opportunities, interpretive programs are offered primarily at the Ben Reifel Visitor Center in the North Unit, which would be impacted by air tours under this alternative as the noise from air tours would result in speech interference. Based on the *Noise Technical Analysis* (see Appendix F, Table 6), noise above 52 dBA would occur at the Ben Reifel Visitor Center for less than 5.7 minutes a day on days when air tours occurred under the No Action Alternative. Since this metric typically corresponds with speech interference, impacts to interpretive programs would occur, which may impede visitors from enjoying and learning about Park resources.

Natural quiet is an important resource for the Park that contributes to the visitor experience, and air tours disrupt natural quiet throughout the Park which affects the visitor experience for activities such as hiking and viewing native wildlife which value natural quiet. This would continue to occur under the No Action Alternative. 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, Figure 9) nearly the entire ATMP planning area (94%) would experience audible air tour noise at some point during a day that commercial air tours occurred. In the areas of the Park most heavily utilized by visitors, audible air tour noise would occur for less than 165 minutes a day.

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, its history, and geology. Because the number of commercial air tours under the No Action Alternative would be consistent with the average number of flights from 2017-2019, 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 which would eliminate this source of noise from the ATMP planning area for approximately 1.01 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 the No Action Alternative. 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 air tour customers (an average of 7,125 passengers per year) who wished to would not be able to view

the Park from an aerial vantage point that would be available from tours conducted within the ATMP planning area. This would be an adverse effect on those seeking that experience within the ATMP planning area.

### ***Alternative 3***

Alternative 3 would permit air tours to be conducted along five designated routes and altitudes (see Figure 22). The authorized air tour routes would be similar to those flown under the No Action Alternative, but it would not authorize tours to be conducted on one route that is currently flown (Expedition Tour) so fewer visitor points of interest would be flown over by air tours under Alternative 3 as compared to the No Action Alternative. Specifically, this route would provide improved protection to visitor use and experience along Loop Road because there would be less noise from air tours in this area by not authorizing tours on the Badger Helicopters Expedition Tour. Furthermore, Alternative 3 would limit the number of air tours conducted over the Park per day, eliminate the Expedition Route, and would increase minimum altitudes on the route flown by Eagle Aviation as compared to the No Action Alternative. Alternative 3 would reduce the number of instances that visitors would have the potential to hear an air tour during their visit as compared to the No Action Alternative. This would have the effect of reducing the average sound level at visitor points of interest throughout the Park, which would have a beneficial effect on visitor experience. Average sound levels would generally be between 35 and 40 dBA in the eastern extent of the ATMP planning area and below 35 dBA in most of the ATMP planning area, including backcountry areas (Appendix F, *Noise Technical Analysis*, Figure 11).

Based on the *Noise Technical Analysis* (Appendix F, Table 7), noise above 52 dBA would occur at the Ben Reifel Visitor Center for less than 5.4 minutes a day on days when air tours occurred under Alternative 3. Since this metric typically corresponds with speech interference, impacts to interpretive programs at the Ben Reifel Visitor Center would be slightly reduced as compared to the No Action Alternative (difference of approximately 0.3 minutes).

For areas of the Park that value natural quiet, such as those used for hiking and viewing native wildlife, 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, Figure 12) nearly the entire ATMP planning area (96%) would experience audible air tour noise at some point during a day that commercial air tours occurred. In the areas of the Park most heavily utilized by visitors, audible air tour noise would occur for less than 135 minutes a day. At most modeled location points, the duration of audible air tour noise would be less than that experienced under the No Action Alternative, which represents an improvement to visitor use and experience under this alternative.



Alternative 3 would limit the availability of air tours as a recreational resource for those who wished to view the Park from an aerial vantage point to no more than 1,425 tours per year. This would be an adverse effect on those seeking that experience within the ATMP planning area.

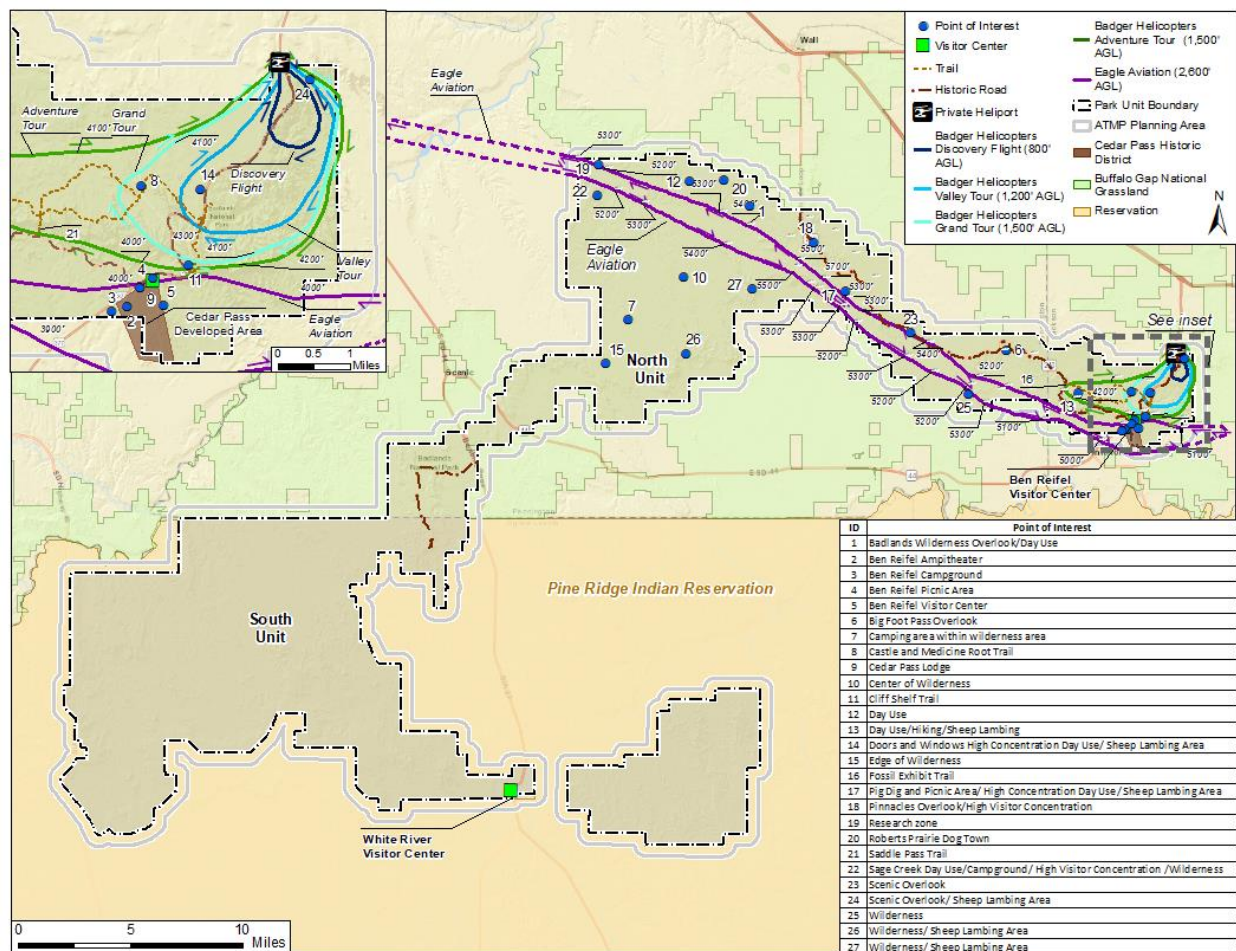


Figure 22. Visitor Use and Experience Environmental Consequences for Alternatives 3 and 4.

### Alternative 4

Alternative 4 would authorize air tours to be conducted along the same routes and at the same altitudes as Alternative 3 (see Figure 22), so the visitor points of interest that experience noise under this alternative would be similar to that under Alternative 3. However, Alternative 4 would authorize fewer air tours than Alternative 3 on both an annual (639) and daily (eight) basis which would provide enhanced protection to visitor use and experience throughout the ATMP planning area because visitors would be less likely to experience air tour noise during their visit. This has the effect of reducing the average sound level at visitor points of interest throughout the Park. Average sound levels would generally be between 35 and 40 dBA in the

eastern extent of the ATMP planning area and below 35 dBA in most of the ATMP planning area, including backcountry areas (*Noise Technical Analysis*, Appendix F, Figure 14). Additionally, Alternative 4 would further restrict air tour operations within the ATMP planning area by limiting the time-of-day air tours may be conducted to three hours after sunrise to three hours before sunset and by limiting the seasonal air tour operations from July 1 through September 30, for 92 total days each year.

Based on the *Noise Technical Analysis* (Appendix F, Table 8), noise above 52 dBA would occur at the Ben Reifel Visitor Center for less than 2.9 minutes a day on days when air tours occurred under Alternative 4. This means this alternative would result in fewer instances of speech interference than Alternative 3 or the No Action Alternative, which would improve conditions for visitors to learn about Park resources during interpretive programs.

For areas of the Park which value natural quiet, such as those used for hiking and viewing native wildlife, 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, Figure 15) the majority of the ATMP planning area (78%) would experience audible air tour noise at some point during a day that commercial air tours occurred. In the areas of the Park most heavily utilized by visitors, audible air tour noise would occur for less than 75 minutes a day, which represents a reduction compared to the No Action Alternative.

Alternative 4 would limit the availability of air tours as a recreational resource for those who wished to view the Park from an aerial vantage point to no more than 639 tours per year. This would be an adverse effect on those seeking that experience within the ATMP planning area.

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

**Indirect Effects:** Indirect noise effects to visitor use and experience could occur as a result of air tours flying outside of the ATMP planning area, including those at or 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 visitor use and experience or to the experience of air tour customers.

Air tours occurring outside the ATMP planning area 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 at or above 5,000 ft. AGL. However, air tours at higher altitudes 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 the No Action Alternative.

Operators may also choose to move their air tour routes just outside the ATMP planning area (i.e., more than ½ mile from the Park's boundary). The agencies are unaware of any current air tour routes that are offered just outside of the ATMP planning area. 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 greatly. Air tour operations displaced from flying within the ATMP planning area under Alternatives 2, 3, or 4 could continue to utilize the privately owned and operated heliport within the ATMP planning area 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 other regional points of interest which could result in indirect noise effects to visitor use and experience in this area, including at resources such as the Cedar Pass Campground, Ben Reifel Visitor Center, and the Castle and Medicine Root Trails.

**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, vegetation management, firefighting and fire management, and mechanized equipment for Park maintenance, 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. A major construction project will build a new visitor center, demolish the Cedar Pass Lodge, and expand the current visitor center by converting it into office space and a new lodge. This large, multi-year project will likely start in 2025.

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. 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 and Socioeconomics, 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 23 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 following EJ analysis includes selecting a geographic 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 within the county was 27% (ACS, 2016-2020). Therefore, every census block group with a percentage of minority population greater than the average minority population of approximately 27% is designated a census block group of EJ concern. For this analysis, a low-income census block group of EJ concern is a census block group with a low-income population percentage greater than the average low-income population percentage in the county. The average percentage of low-income populations within the county was 19% (ACS, 2016-2020). Therefore, every census block group with a low-income population greater than 19% is designated a census block group of EJ concern.

Figure 23 depicts locations of EJ concern by block group within the study area. As depicted on the figure, the eastern portion of the study area includes EJ populations. Table 16 (ACS, 2016-2020) shows the minority and low-income data for block groups within the study area.

*Table 16. Minority and Low-income Population Data within Jackson, Pennington, and Oglala Lakota Counties and the Study Area.*

<b>Area</b>	<b>Population</b>	<b>Minority</b>	<b>Low-Income</b>
Jackson County	2,878	1,851	811
Pennington County	111,806	23,591	12,969
Oglala Lakota County	13,586	12,947	7,676
<b>Block Groups within Study Area</b>	<b>11,820</b>	<b>7,730</b>	<b>4,448</b>

Source: ACS 2016-2020.

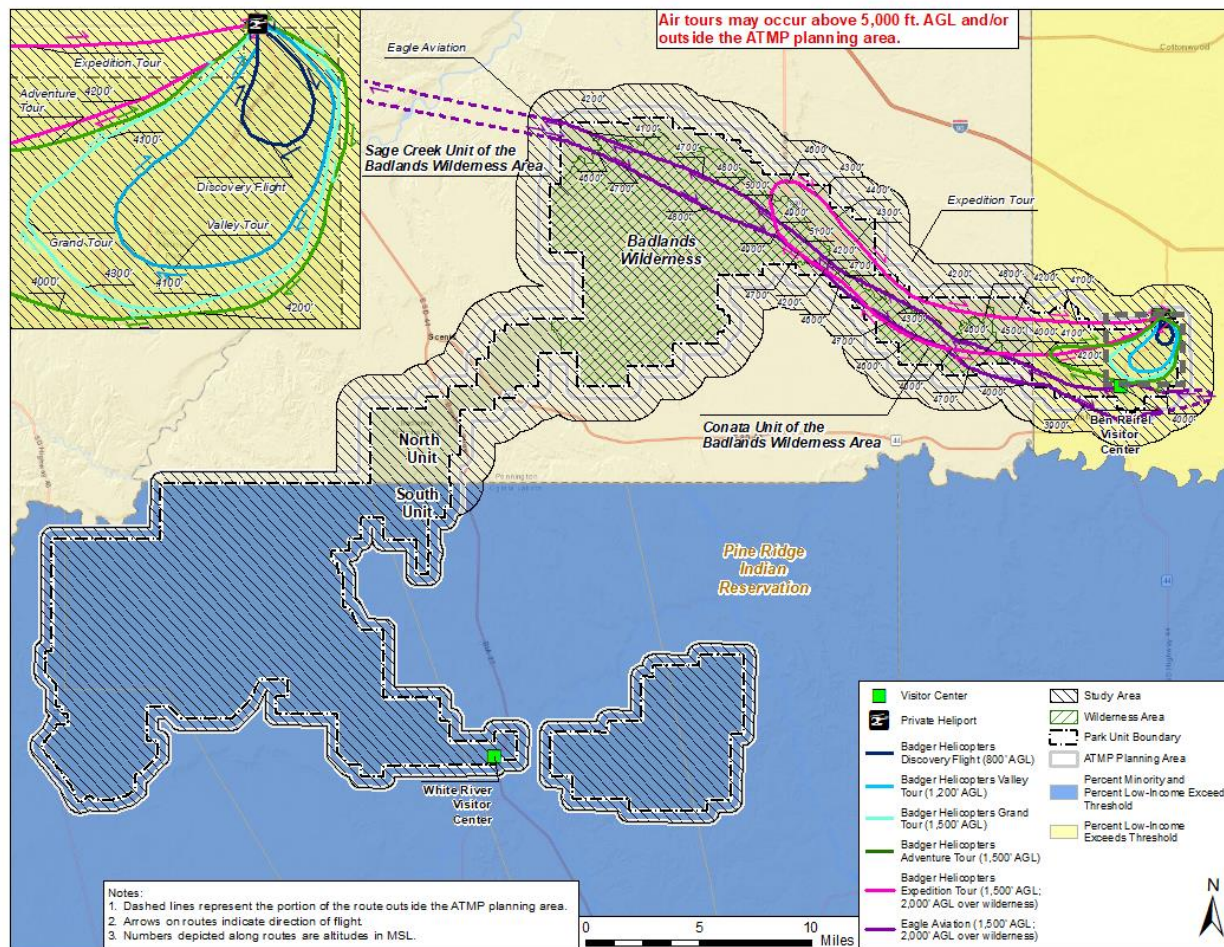


Figure 23. Affected Environment for Environmental Justice.

## Socioeconomics

This section describes the socioeconomic conditions that may be affected by the ATMP alternatives. Socioeconomic impacts of ATMP alternatives include the potential impacts that commercial air tour operations have on two interest groups: 1) local residents living 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 commercial air tour operators with IOA for the Park and their employees, and the associated tourism industry. The factors of socioeconomic discussed in this draft EA include population demographics, industry, employment and income.

## Industry

Jackson County, Oglala Lakota County, and Pennington County are rural counties in South Dakota and known for the Park, Buffalo Gap National Grassland, Mount Rushmore National Memorial, and the Pine Ridge Indian Reservation. The Pine Ridge Indian Reservation is

governed by the federally recognized Oglala Sioux Tribe, with an enrollment of 46,855 members (Bureau of Indian Affairs, 2022). 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 the counties, with the largest sources of employment being education and service-based jobs, such as health care and social assistance, retail, and accommodation and food services.

The Park also plays a major role in the tourism industry of Jackson County. In 2019, visitor and Park payroll spending supported 890 local jobs, \$63,503,000 in total visitor spending, with \$43,288,000 value added to the local economy (Thomas and Koontz, 2020). In 2021, visitor and Park payroll spending supported 1,190 local jobs, \$88,287,000 in total visitor spending, with \$61,008,000 value added to the local economy (Thomas et al., Flyr, 2022). The Park provides full-time, part-time, and seasonal employment as well as volunteer opportunities. This represents a 39% increase in growth over 2 years.

The tourism industry in South Dakota is sustained by a number of attractions. In addition to the Park, nearby Minuteman Missile National Historic Site and the Prairie Homestead attract tourists to the area. Mount Rushmore National Memorial, Custer State Park, Wind Cave National Park, the town of Deadwood, Wall Drug, the Black Hills, and the Crazy Horse Memorial are distant attractions in western South Dakota that also draw visitors to the region (NPS, 2022). 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, 2021b). 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 1,425 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 in the region. Popular points of interest on air tours related to the Park include Spearfish Canyon in the Northern Hills, Homestake Gold Mine, and Whitewood Creek.

The price per person for each air tour varies by company and can range from \$129 to \$350 per person. 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, 2020). Employment in the air transportation industry in Pennington County, Jackson County, and

Oglala Lakota County also represents less than 1% of the total employment in those counties (ACS, 2020). Air tour businesses also contribute to economies that are directly related to the operation of aircraft including insurance carriers, fuel purveyors, and aircraft part suppliers. In addition to people directly employed by air tour operators, others are indirectly involved with the industry and including 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 EJ 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 23, low-income populations of EJ concern are present in the eastern extent of the ATMP planning 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***

Under existing conditions, air tours are concentrated in the northern and eastern parts of the ATMP planning area near the Ben Reifel Visitor Center (Figure 23). Some block groups within these areas contain EJ populations, though other block groups in this area do not contain EJ populations.<sup>18</sup> Reporting data from 2017-2019 indicates that on a peak month average day, air tours fly over the ATMP planning area approximately 17 times per day. Because block groups containing EJ populations are present within the study area, EJ populations currently experience the noise, air quality, and visual effects associated with air tours under the No Action Alternative as 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 55.2 MT CO<sub>2</sub>.

Under the No Action Alternative, impacts to viewsheds would primarily occur at overlooks along Loop Road and Sage Creek Rim Road (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 Park, but the visual resources of the Park would still be viewable at times of the day when commercial air tours were not present within the study area (on average, air tours were conducted within the ATMP planning area 17 times per day in a peak month, average day).

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

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<sup>18</sup> Note that while residential use of the Park is limited to that provided by NPS temporary housing, the block groups encompassing the Park also encompass areas outside of the Park. Because block groups are the smallest unit of analysis for which data is available to identify EJ populations, these geographic areas inside and outside the Park have been lumped together as containing EJ populations, but the Park does not contain residential settlements other than temporary NPS housing.

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 the No Action Alternative flight numbers could increase, 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 Sections 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) except as necessary for takeoff and landing from the privately owned and operated heliport within the ATMP planning area. Alternative 2 would result in a reduction in noise, air quality, and visual impacts compared to those currently occurring under the No Action Alternative, 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.

Because Alternative 2 would prohibit air tours from being conducted within the ATMP planning area, air tour operators and other ancillary businesses would not be able to generate income from conducting tours in this area. There could be some economic benefit under this alternative to businesses within the study area that benefit from quieter noise levels and/or the absence of human-caused sounds, which may include Park visitation.

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 as would occur under the other alternatives. However, the air transportation industry represents less than 1% of the total employment in Pennington County, Jackson County, and Oglala Lakota County, and the prohibition 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 surrounding community, including those associated with changes to the community tax base associated with loss of industry.

### ***Alternative 3***

Alternative 3 would authorize a limited 16 air tours per day, would not authorize air tours to be conducted on one route that is currently flown (Expedition Tour), and would increase minimum altitudes of the route flown by Eagle Aviation (see Figure 24). Compared to the No Action Alternative, 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. The total amount of annual GHG emissions resulting from existing commercial air tours within the ATMP planning area is 42.6 MT CO<sub>2</sub>.

Under Alternative 3, impacts to viewsheds would primarily occur at overlooks along Loop Road and Sage Creek Rim Road (see Section 3.8.2, Environmental Consequences for Visual Effects). Some impacts to visual resources would occur under Alternative 3 as commercial air tours would contrast the scenic vistas and natural areas in the Park, but impacts would be fewer than those under the No Action Alternative. Alternative 3 would provide improved protection of the visual character of the Park and its viewsheds, including the importance, uniqueness, and aesthetic value of the affected visual resources. Other than times of day when commercial air tours were present within the ATMP planning area, this alternative would not contrast with the visual resources and/or visual character in the study area or obstruct views of the visual resources (see Section 3.8.2, Environmental Consequences for Visual Effects).

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, or disrupt traffic patterns.



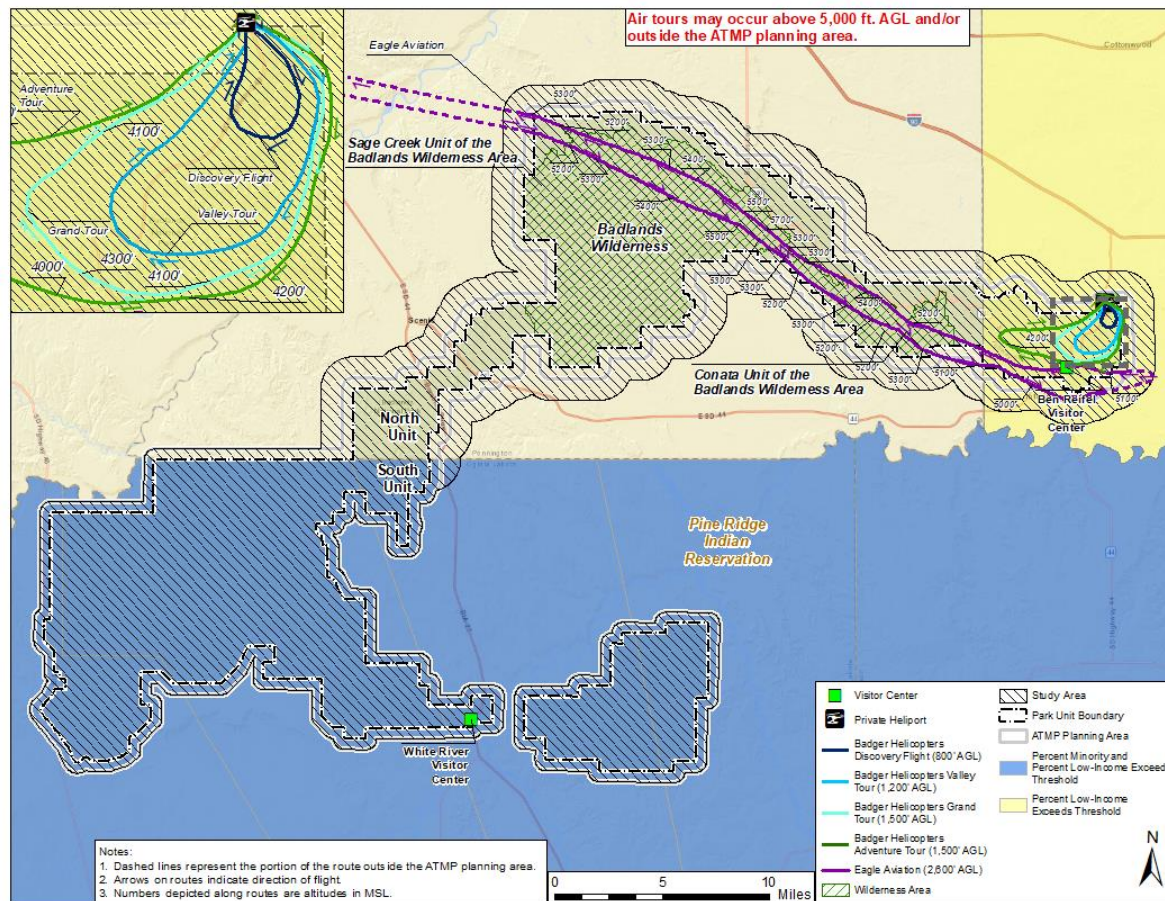


Figure 24. Environmental Justice Environmental Consequences for Alternatives 3 and 4.

#### Alternative 4

Alternative 4 would authorize approximately 45% fewer air tours over the ATMP planning area compared to the No Action Alternative and 45% fewer air tours than Alternative 3. Similar to Alternative 3, Alternative 4 would not authorize air tours to be conducted on one route that is currently flown (Expedition Tour) (see Figure 24). Additionally, Alternative 4 would further restrict air tour operations within the ATMP planning area by limiting daily (eight) and annual (639) air tours, reducing the time-of-day air tours may be conducted to three hours after sunrise and three hours before sunset, and by limiting the seasonal air tour operations from July 1 through September 30, for 92 total days each year. Compared to the No Action Alternative, 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 45 dB under Alternative 4.

For air quality impacts (see Section 3.2.2, Environmental Consequences 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. The total change in annual GHG emissions for Alternative 4 as compared to the No Action Alternative is modeled to be a reduction of 40.5 MT CO<sub>2</sub> within the ATMP planning area.

Under the Alternative 4, impacts to viewsheds would primarily occur at overlooks along Loop Road and Sage Creek Rim Road (see Section 3.8.2, Environmental Consequences for Visual Effects). Some impacts to visual resources would occur under Alternative 4 as commercial air tours would contrast the scenic vistas and natural areas in the Park, but impacts would be fewer than those under the No Action Alternative. Alternative 4 would provide improved protection of the visual character of the Park and its viewsheds, including the importance, uniqueness, and aesthetic value of the affected visual resources. Other than times of day when commercial air tours were present within the ATMP planning area, this alternative would not contrast with the visual resources and/or visual character in the study area or obstruct views of the visual resources (see Section 3.8.2, Environmental Consequences for Visual Effects).

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 tours per year. Alternative 4 would not induce substantial economic growth, disrupt or divide physicality of community, cause extensive relocation, or disrupt traffic patterns.

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

**Indirect Effects:** Under the No Action Alternative, the number of commercial air tour operations authorized on an annual basis and the availability of routes within the ATMP planning area would remain consistent with existing conditions. Although flight numbers could increase, no indirect impacts would be expected to occur under this alternative.

The limited number of air tours and/or authorized routes 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 are 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 the No Action Alternative. 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 administrative helicopter flights 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 and authorized routes. Other sources of ongoing visual impacts that may affect EJ populations within the ATMP planning area include general aviation flights, overflights by commercial airlines, military flights from the nearby Ellsworth Air Force Base, and administrative flights such as those used for maintenance or search and rescue efforts, which 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.

### 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, 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 25 for a depiction of the affected environment for visual effects.

### **3.8.1 Affected Environment**

Visual resources are a key element within the Cedar Pass Developed Area landscape. Views from the top of the pass, visitor center area, lodge area, campground area, and from Loop Road are all contributing features that have changed little since the Mission 66 development era in the 1950s (NPS, 2018b). Other opportunities within the Park for visitors to observe scenic viewsheds and wildlife include Loop Road, the primary road for sightseeing, where visitors can view the Badlands, its rock formations, and the prairie ecosystem. There are fourteen designated overlooks along Loop Road and Sage Creek Rim Road where visitors can stop for photo opportunities. The best place for viewing bison herds and other wildlife such as bighorn sheep and pronghorn antelope are at Pinnacles Overlook, unpaved sections of Sage Creek Rim Road, and the Hay Butte overlooks. See Figure 25 for a depiction of the affected environment for visual effects.

The South Unit of the Park is characterized by gently rolling grassland terraces that weave through and become a visually pleasing contrast to the rugged and barren peaks and gullies that frequent the landscape. The scenic beauty of the South Unit's landscape extends far beyond the boundary of the Park in sweeping vistas. The scenic resources of the South Unit have a high degree of cultural significance holding importance for tribal ceremonies, artists, writers, and photographers who value the Park's landscapes and solitude. For many visitors, the viewsheds and landforms provoke strong emotions. The high level of interest in promoting the creation of the proposed Crazy Horse Scenic Byway is another indication of the beauty and scenic value of the landscape within the South Unit.



Intrusions to the visual character of the Park are primarily from occasional residential structures and radio and cellular telephone towers located inside and outside the ATMP planning area. Other sources of ongoing visual impacts include general aviation flights, overflights by commercial airlines, military flights, commercial air tours, and administrative flights such as those used for wildlife management or search and rescue efforts.

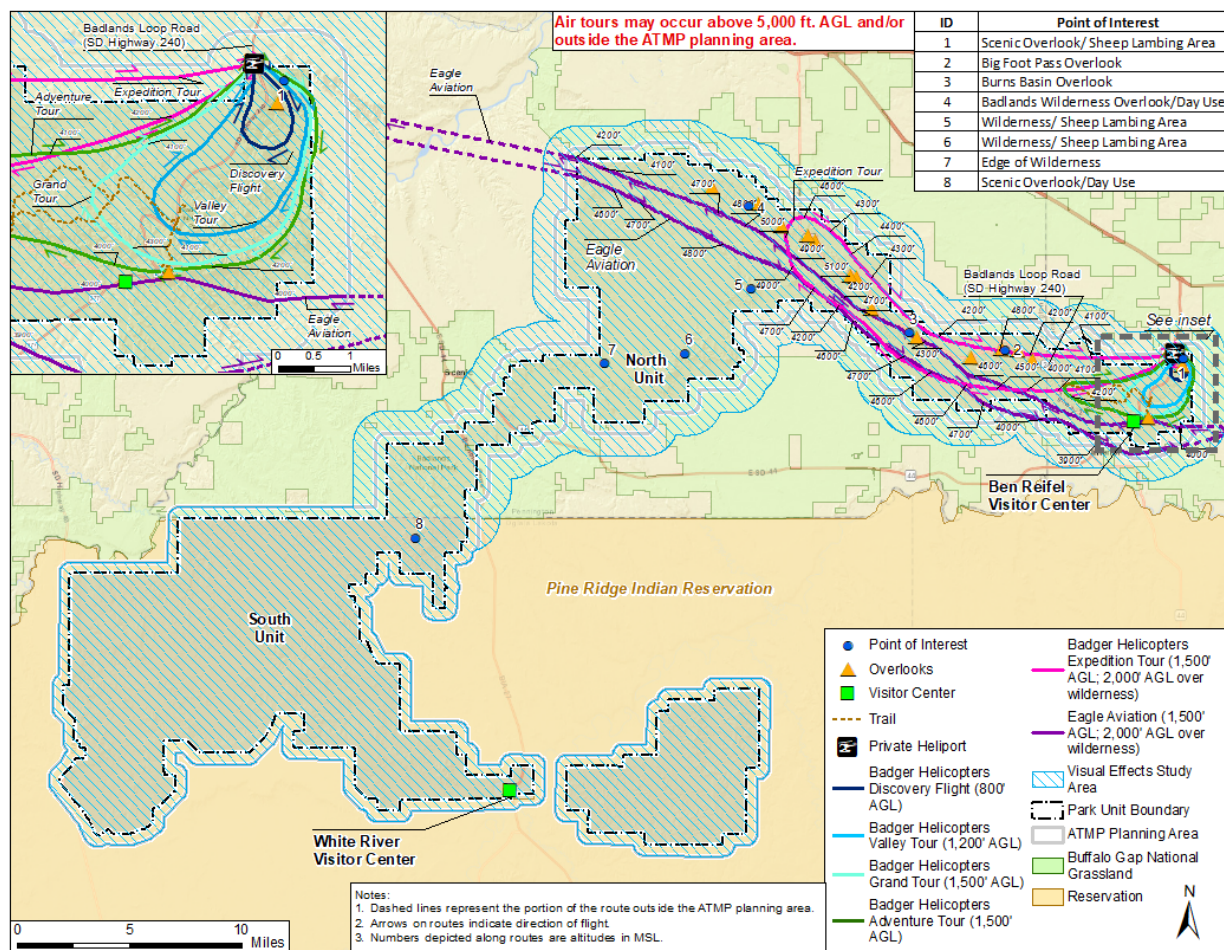


Figure 25. Affected Environment for Visual Effects.

### 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 17 times per day. The altitudes reported near viewsheds in the ATMP planning area range from minimum 800 ft. to 1,500 ft. AGL, so the aircraft are visible in these areas. Refer to Figure 25 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, commercial air tours are flown near Park viewsheds along Loop Road and Sage Creek Rim Road. These conditions would continue to occur under the No Action Alternative, which could result the potential for visitors in these areas to experience visual impacts associated with commercial air tours during their visit. The frequency of sightings could be greater if air tour numbers increased, although levels up to IOA are not reasonably foreseeable. Visual impacts in these areas could occur if aircraft from an air tour blocked visitors from seeing a viewshed or was at odds with the visual experience that visitors would expect to see, such as that overlooking a natural area or if it disturbed wildlife at a wildlife viewing area. As the majority of the Park consists of a natural landscape, the encroachment of commercial air tour aircraft on these viewsheds would be likely to detract from the Park's visual character and overall visitor experience associated with the Park's viewsheds, as it would be at odds with the natural experience free from human intrusions that most visitors would expect when experiencing the Park's viewsheds. Moreover, the ability for Park visitors to partake in these visual resources are limited to certain locations and the air tours would be observed when observing these viewsheds from any angle or location given the proximity of the air tours and the visual landscape. The unique visual resources within the Park of scenic vistas and natural areas contrast with commercial air tours and would continue to detract from the visitor's opportunity to observe these resources when commercial air tours are present (which occurs 17 times per day during a peak month average day). However, the greater Badlands 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.

### ***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 the No Action Alternative. Alternative 2 would provide the greatest protection to Park viewsheds across the four alternatives.

### ***Alternative 3***

Alternative 3 would permit air tours to be conducted along five designated routes and altitudes (see Figure 26). The authorized air tour routes would be similar to those flown under existing conditions, but Alternative 3 would not authorize tours to be conducted on one route that is currently flown (Expedition Tour) so fewer visual resources would be overflowed by air tours under Alternative 3 as compared to the No Action Alternative. Specifically, this route would provide improved protection to visual resources along Loop Road because there would be fewer air tours occurring in this area, so visitors would not see them as much. Furthermore, Alternative 3 would limit the number of air tours conducted over the Park per day to 16 air tours and would increase minimum altitudes of the Eagle Aviation route as compared to the No Action Alternative.

Under Alternative 3, commercial air tours would still be visible from the Big Badlands Overlook and at overlooks near the Ben Reifel Visitor Center, but they would not be visible from other visual resources across the visual effects study area on most days of the year. This would provide improved protection to viewsheds within the ATMP planning area as compared to the No Action Alternative.

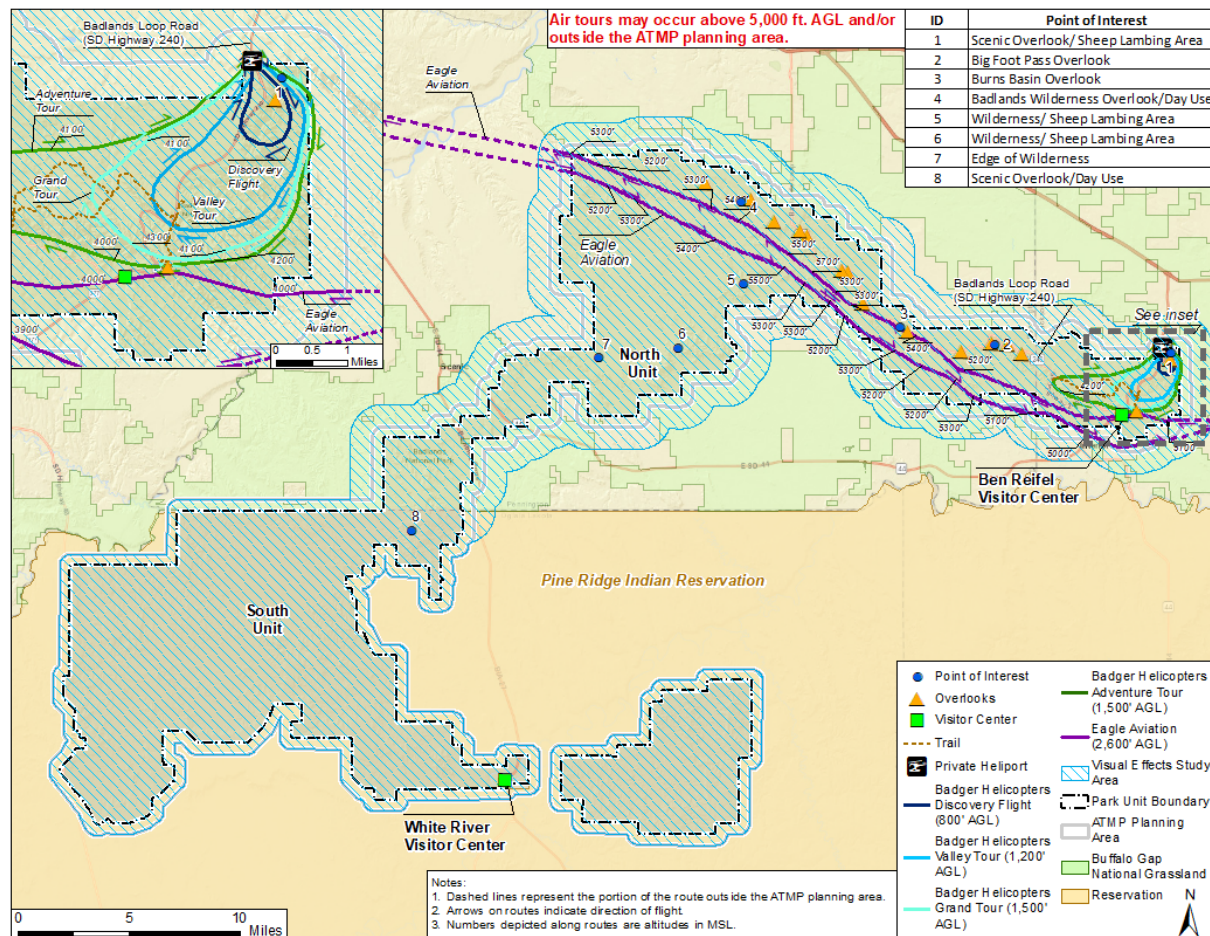


Figure 26. Visual Effects Environmental Consequences for Alternatives 3 and 4.

### Alternative 4

Alternative 4 would authorize air tours to be conducted along the same routes and at the same altitudes as Alternative 3 (Figure 26) so the visual resources where commercial air tour aircraft could be seen from the visual effects study area would be similar to that under Alternative 3. However, Alternative 4 would authorize fewer flights than Alternative 3 on both an annual (639) and daily (eight) basis which would provide enhanced protection to visual resources because visitors would be less likely to see aircraft from visual resources or scenic points of interest. Additionally, Alternative 4 would further restrict air tour operations within the ATMP planning area by limiting the time-of-day air tours may be conducted to three hours after sunrise to three hours before sunset and by limiting the seasonal air tour operations from July 1 through September 30, for 92 total days each year. Therefore, Alternative 4 would provide increased protection to visual resources within the visual effects study area as compared to both the No Action Alternative and Alternative 3.



### ***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 in terms of both the number of tours per year and the routes on which tours would be conducted. Although air tour operations could increase, no indirect impacts would be expected to occur under this alternative.

Under Alternatives 2, 3, and 4 since the number of commercial air tour operations per year and/or the number of authorized routes 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 at or above 5,000 ft. AGL; however, air tours at higher altitudes would provide limited value to a sightseeing operation.

Operators may also choose to move their air tours just outside the ATMP planning area. The agencies are unaware of any current air tour routes that are offered just outside of the ATMP planning area. 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 greatly. Air tour operations displaced from flying within the ATMP planning area under Alternatives 2, 3, or 4 could continue to utilize the privately owned and operated heliport within the ATMP planning area 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 other regional points of interest which could result in indirect 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 1,425 tours per year and a reduced number of routes, and Alternative 4 would limit air tours to no more than 639 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 but within the visual effects study 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 visual effects study area include aircraft for wildlife monitoring, vegetation management, fire management and firefighting, mechanized equipment for Park maintenance, and search and rescue, which would 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 and/or the number of routes on which tours could be conducted 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 303I 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 27 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 3.4.1, Affected

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

Environment for Cultural 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 lists Section 4(f) parks and recreational areas identified in the Section 4(f) study area, and Section 3.4.1, Affected Environment for Cultural Resources and Appendix G, *Cultural Resources Consultation and Summary*, list 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> There were no wildlife or waterfowl refuges identified in the Section 4(f) study area. Figure 27 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) Resources.*

<b>Property Name</b>	<b>Property Type</b>
Badlands National Park	National Park
Buffalo Gap National Grassland	National Grassland

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 National Register listed or eligible, a state or local official may formally provide information to 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.

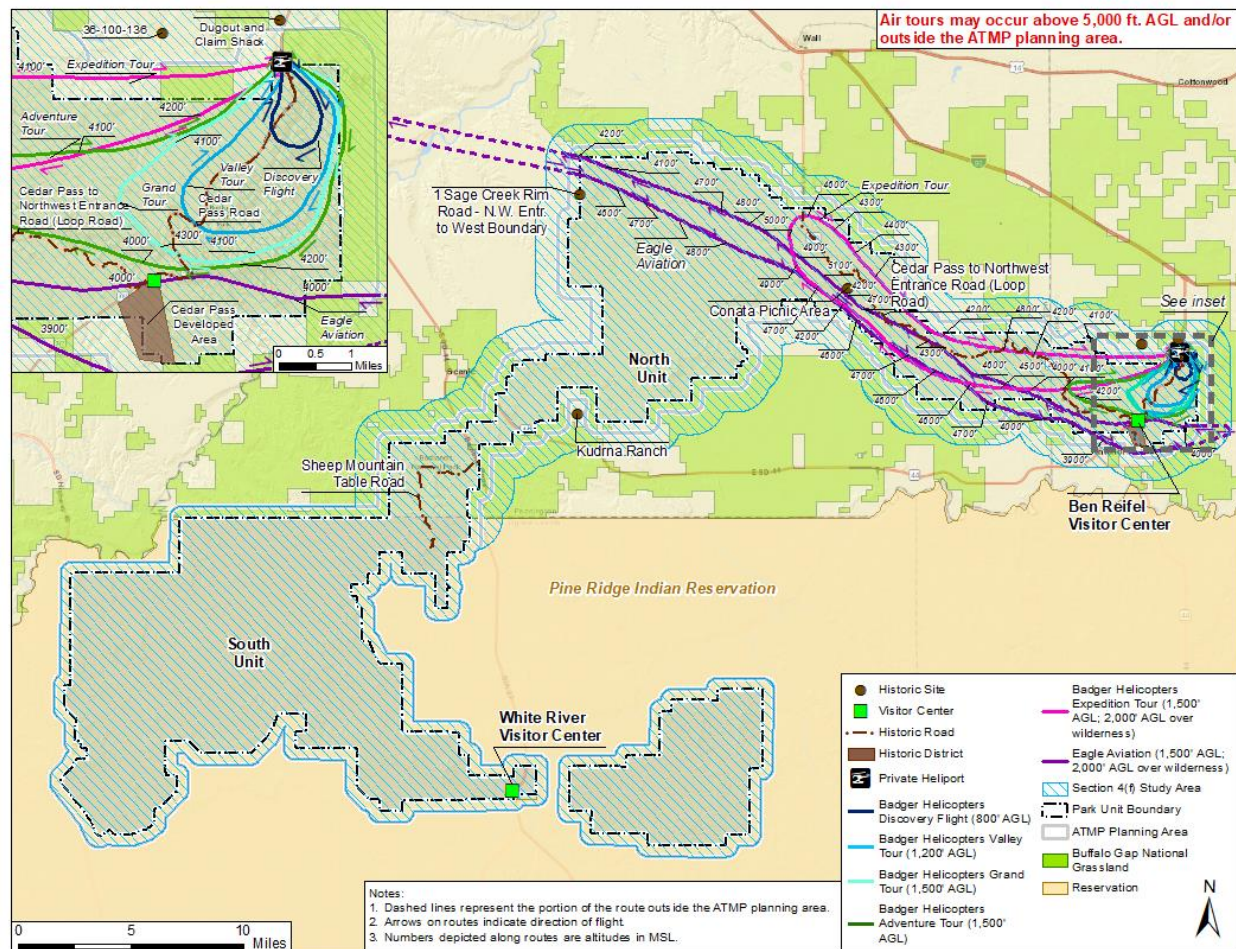


Figure 27. Affected Environment for Section 4(f) Properties.

### 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. 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 ATMP planning area and its effect on Section 4(f) properties within the Section 4(f) study area (Figure 28). 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). Thus, 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 air tour noise at Section 4(f) resources within this area.

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 to Section 4(f) resources would not occur from air tours within the ATMP planning area.



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 ATMP planning 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, Cultural Resources).

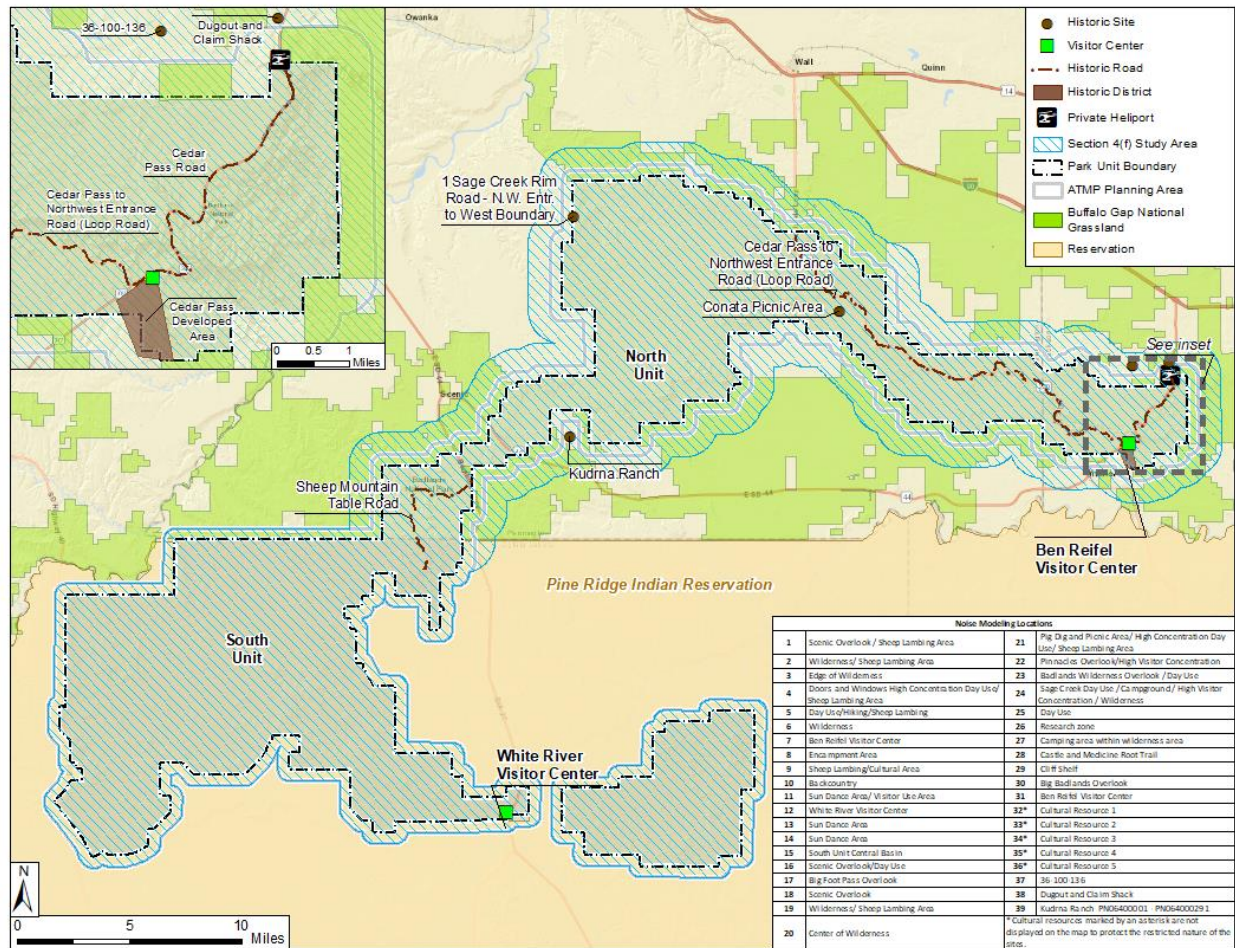


Figure 28. Section 4(f) Environmental Consequences for Alternative 2.

### 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 dBA and Section 4(f) resources would experience no increase in noise as a result of this alternative.

<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.

Alternative 3 would authorize 1,425 air tours per year to be conducted within the ATMP planning area, consistent with existing conditions based on the three-year average of reporting data from 2017-2019. However, Alternative 3 would not authorize air tours on the Expedition Route that is utilized under existing conditions. Refer to Figure 29 for a depiction of air tour routes under Alternative 3 in the context of Section 4(f) properties. Because Alternative 3 would utilize fewer routes, evaluation of NPS supplemental metrics 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 less than 15 minutes in 36% of the ATMP planning area, between 15 and 75 minutes in 13% of the ATMP planning area, and up to 90 minutes in a small region (less than 1%) in the far east portion of the ATMP planning area (see Appendix F, *Noise Technical Analysis*, Figure 13).
- On days when commercial air tours would occur, noise levels above 52 dBA (which is associated with speech interference) are not anticipated to exceed 21.2 minutes in the ATMP planning area. Location points (provided by the NPS) are specific points of interest geographically located across the entire Park 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).

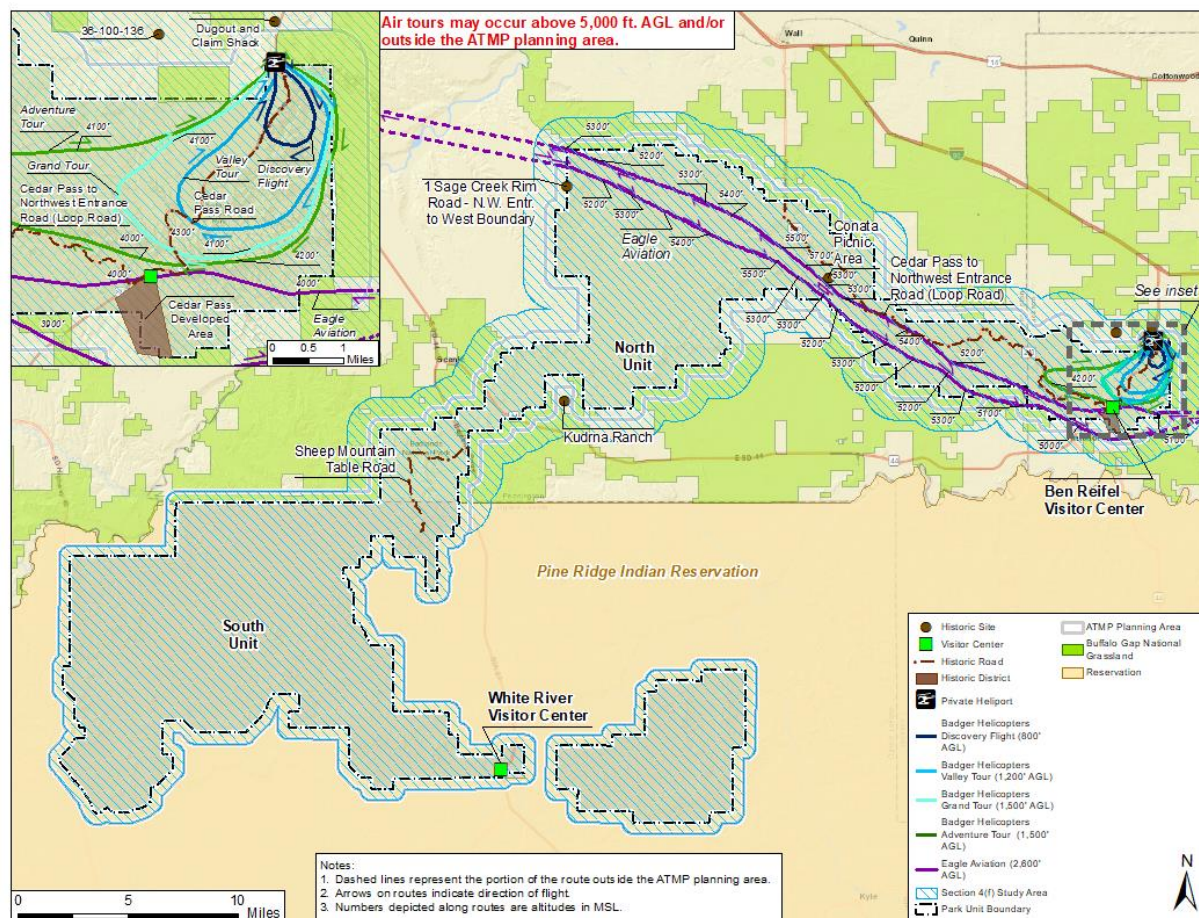


Figure 29. Section 4(f) Environmental Consequences for Alternative 3 and Alternative 4.

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 would provide times when visitors seeking solitude may experience the Section 4(f) resources without disruptions from commercial air tours. The increased altitudes required by Alternative 3 for fixed-wing air tours, which would limit minimum altitudes to minimum 2,600 ft. AGL (from a current minimum of 1,500 ft. AGL to 2,000 ft. AGL), would reduce the maximum noise levels at sites directly below the air tour route for fixed-wing aircraft. In addition, Alternative 3 would limit the number of commercial air tours within the ATMP planning area to no more than 16 tours per day across all operators.



As a result, FAA concludes there would be no substantial impairment<sup>22</sup> of 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>23, 24</sup> Vibrational impacts are not anticipated to affect surrounding Parkland 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 ATMP planning area. Alternative 3 would limit the number of commercial air tours per year to 1,425 tours and would limit those routes to 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

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<sup>22</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>23</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>24</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.

Use, indicates that the resultant DNL due to Alternative 4 is expected to be less than 45 dB and Section 4(f) resources would experience a decrease in noise as a result of this alternative.

Like Alternative 3, impacts to Section 4(f) resources under Alternative 4 would be expected to be less than the No Action Alternative because Alternative 4 would authorize commercial air tours to be conducted on the same routes and altitudes as Alternative 3 which would not authorize air tours to be conducted on one route (Expedition Tour) utilized under existing conditions (Figure 29). Furthermore, Alternative 4 would authorize fewer air tours in the ATMP planning area as compared with existing conditions on both an annual (639) and daily (eight) basis. Because the number of authorized flights under Alternative 4 would be the less than existing conditions and fewer routes would be utilized, evaluation of NPS supplemental metrics 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 less than 15 minutes in 36% of the ATMP planning area, between 15 and 30 minutes in 3% of the ATMP planning area, and up to 45 minutes in a small region (less than 1%) in the far east portion of the ATMP planning area (see Appendix F, *Noise Technical Analysis*, Figure 16).
- On days when commercial air tours would occur, noise levels above 52 dBA (which is associated with speech interference) are not anticipated to exceed 8.6 minutes in the ATMP planning area. Location points (provided by the NPS) are specific points of interest geographically located across the entire Park 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 three hours after sunrise until three hours before sunset, or beginning at sunrise and ending at sunset for operators that have converted to quiet technology aircraft. These time restrictions would provide times when visitors seeking solitude may experience the Section 4(f) resources without disruptions from commercial air tours. The increased altitudes required by Alternative 4 for fixed-wing air tours, which would limit minimum altitudes to minimum 2,600 ft. AGL (from a current minimum 1,500 ft. AGL to 2,000 ft. AGL), would reduce the maximum noise levels at sites directly below the air tour route for fixed-wing aircraft. In addition, 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.

As a result, FAA concludes there would be no substantial impairment<sup>25</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>23, 24</sup> Vibrational impacts are not anticipated to affect surrounding parkland 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 ATMP planning area. Alternative 4 would limit the number of commercial air tours per year to 639 tours and would limit those routes to 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. Alternatives 2, 3, and 4 would limit the number of air tours per year and the number of routes on which tours could be conducted within the ATMP planning area as compared to the No Action Alternative and would have the potential to result in some displacement of air tours outside the ATMP planning area. Air tours

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<sup>25</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.

occurring outside the ATMP planning area, if any, may result in noise or visual effects to Section 4(f) resources to the extent that they are present near the areas that those flights would occur.

The indirect effects analysis conducted 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 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 (see Section 3.1.2, Environmental Consequences for Noise and Noise-Compatible Land Use). The indirect effects analysis for Visual Effects identifies that visual impacts could occur when displaced air tours conducted takeoff and landing operations at the privately owned and operated heliport that is within the ½ mile buffer of the Park's boundary if those air tours were visible from Section 4(f) resources in this area, or if operators choose to move their air tours just outside the ATMP planning area (see Section 3.8.2, Environmental Consequences for Visual Effects). 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). 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. Alternative 2 would result in less cumulative noise and visual effects to Section 4(f) properties than Alternatives 3 and 4, as air tours would not be authorized within the ATMP planning area. 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 these alternatives 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: Maximum &lt;60 dBA; &lt;35 dBA in 89% of the ATMP planning area.</li> <li>DNL: &lt;60 dB</li> <li>Time audible natural ambient: Maximum exceeds 165 minutes per day; 150-165 minutes per day in 4% of the ATMP planning area; 62% of the ATMP planning area &gt;15 minutes a day; audible in 94% of ATMP planning area.</li> <li>Time above 35 dBA: Maximum 105 minutes per day; &gt;35 dBA in 35% of the ATMP planning area; &lt;1% of the ATMP planning area 90-105 minutes; &lt;35 dBA in 65% of the ATMP planning area.</li> <li>Maximum time above 52 dBA: 21.2 minutes at location point #1 (Scenic Overlook / Sheep Lambing Area).</li> <li>Maximum sound level in ATMP planning area: 76.9 dBA at location</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 outside the ATMP planning area.</li> </ul>	<ul style="list-style-type: none"> <li>12-hr equivalent sound level: Maximum &lt;60 dBA; &lt;35 dBA in 96% of the ATMP planning area.</li> <li>DNL: &lt;60 dB</li> <li>Time audible natural ambient: Maximum less than 135 minutes per day; 120-135 minutes per day in 4% of the ATMP planning area; 65% of the ATMP planning area &gt;15 minutes a day.</li> <li>Time above 35 dBA: Maximum 90 minutes a day; &lt;1% of the ATMP planning area 75-90 minutes a day; &gt;35 dBA in 36% of ATMP planning area.</li> <li>Maximum time above 52 dBA: 21.2 minutes at location point #1 (Scenic Overlook / Sheep Lambing Area).</li> <li>Maximum sound level in ATMP planning area: 76.9 dBA at location point #30 (Big Badlands Overlook).</li> <li>Indirect noise impacts may occur due to air</li> </ul>	<ul style="list-style-type: none"> <li>12-hr equivalent sound level: Maximum &lt;45 dBA; &lt;35 dBA in 98% of the ATMP planning area.</li> <li>DNL: &lt;45 dB</li> <li>Time audible natural ambient: Maximum less than 75 minutes per day; 60-75 minutes per day in 4% of the ATMP planning area; audible in 78% of the ATMP planning area.</li> <li>Time above 35 dBA: Maximum 45 minutes a day; &lt;1% of the ATMP planning area 30-45 minutes a day; &gt;35 dBA in 36% of ATMP planning area.</li> <li>Maximum time above 52 dBA: 8.6 minutes at location point #1 (Scenic Overlook / Sheep Lambing Area).</li> <li>Maximum sound level in ATMP planning area: 76.2 dBA at location point #29 (Cliff Shelf).</li> <li>Indirect noise impacts may occur due to air tours being displaced</li> </ul>

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
	<p>point #30 (Big Badlands Overlook).</p> <ul style="list-style-type: none"> <li>No indirect effects expected.</li> </ul>		<p>tours being displaced outside the ATMP planning area.</p>	<p>outside the ATMP planning area.</p>
Air Quality and Climate Change	<ul style="list-style-type: none"> <li>Criteria pollutants: 29 TPY</li> <li>GHG emissions: 55.2 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: 29 TPY</li> <li>Reduction of GHG emissions: 55.2 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>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: 7 TPY</li> <li>Reduction in GHG emissions: 12.6 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: 21 TPY</li> <li>Reduction in GHG emissions: 40.5 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>
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;105 minutes in portions of ATMP planning area.</li> <li>Not expected to result in indirect effects to wildlife.</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 due to air tour displacement outside the ATMP planning area.</li> </ul>	<ul style="list-style-type: none"> <li>Daily (16) limits of air tour operations; time-of-day restrictions: 1-hour after sunrise to 1-hour before sunset (non-quiet technology aircraft); elimination of Expedition Tour; and increased minimum altitude of Eagle Aviation route (2,600 ft. AGL) to protect species</li> </ul>	<ul style="list-style-type: none"> <li>Annual (639) and daily (8) limits of air tour operations; time-of-day restrictions: 3-hours after sunrise to 3-hours before sunset (non-quiet technology aircraft); elimination of Expedition Tour; and increased minimum altitude of Eagle Aviation route (2,600 ft.</li> </ul>

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
			<p>active during dawn and dusk.</p> <ul style="list-style-type: none"> <li>• Time above 35 dBA: &lt;90 minutes per 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>	<p>AGL) to protect species active during dawn and dusk.</p> <ul style="list-style-type: none"> <li>• Seasonal restrictions: Air tours permitted July 1 – Sept. 30 to minimize impacts on peregrine falcons and bighorn sheep lamb rearing.</li> <li>• Time above 35 dBA: &lt;45 minutes per 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>
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;105 minutes per day in entire ATMP planning area.</li> <li>• 12-hr equivalent sound level: 50.7 dBA at location point #30 (Big Badlands Overlook).</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>• Daily (16) limits for air tour operations within the APE, elimination of the Expedition Tour; and increased minimum altitude of Eagle Aviation route (2,600 ft. AGL) would reduce the likelihood that an air tour would interrupt tribal practices.</li> <li>• 12-hr equivalent sound level: 50.7 dBA at location point #30 (Big Badlands Overlook).</li> <li>• Time above 35 dBA: &lt;90 minutes per day in entire 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 (639) and daily (8) limits for air tour operations within the APE; seasonal restrictions: air tours permitted July 1 – Sept. 30; elimination of the Expedition Tour; and increased minimum altitude of Eagle Aviation route (2,600 ft. AGL) would reduce the likelihood that an air tour would interrupt tribal practices.</li> <li>• 12-hr equivalent sound level: 47.8 dBA at location point #30 (Big Badlands Overlook).</li> <li>• Time above 35 dBA: &lt;45 minutes per day in entire 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>• 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 the Wilderness detracts from the natural quality and opportunity for solitude.</li> <li>• Time audible within Wilderness: &lt;165 minutes per day in eastern extent of Wilderness.</li> <li>• No indirect effects expected.</li> </ul>	<ul style="list-style-type: none"> <li>• Offers the greatest protection of 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 the sights and sounds of air tours if tours were displaced to outside the ATMP planning area.</li> </ul>	<ul style="list-style-type: none"> <li>• Would reduce noise impacts that would detract from the natural quality and opportunities for solitude within Wilderness.</li> <li>• Eagle Aviation route annual (2) limits of air tour operations; and elimination of Expedition Tour reduce noise impacts that would detract from the natural quality and opportunities for solitude within Wilderness.</li> <li>• Time audible within Wilderness: &lt;120 minutes per day in Wilderness.</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>	<ul style="list-style-type: none"> <li>• Would reduce noise impacts that would detract from the natural quality and opportunities for solitude within Wilderness.</li> <li>• Eagle Aviation route annual (2) limits and all other route daily (8) limits of air tour operations; seasonal restrictions: air tours permitted July 1 – Sept. 30; elimination of the Expedition Tour; and increased minimum altitude of Eagle Aviation route (2,600 ft. AGL) would reduce noise impacts that would detract from the natural quality and opportunities for solitude within Wilderness.</li> <li>• Time audible within Wilderness: &lt;60 minutes per day in Wilderness.</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 Ben Reifel Visitor Center due to sound levels from air tours resulting in speech interference and</li> </ul>	<ul style="list-style-type: none"> <li>• Offers the greatest protection of visitor use and experience for the greatest number of visitors, but eliminates air tours within the</li> </ul>	<ul style="list-style-type: none"> <li>• Daily (16) limits on air tours; elimination of Expedition Tour; and increased minimum altitude of Eagle Aviation route (2,600 ft.</li> </ul>	<ul style="list-style-type: none"> <li>• Annual (639) and daily (8) limits on air tours; seasonal restrictions: air tours permitted July 1 – Sept. 30; elimination of Expedition Tour; and</li> </ul>

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Environmental Impact Category	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
	<p>inability to hear natural sounds.</p> <ul style="list-style-type: none"> <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>94% of ATMP planning area would experience audible air tour noise at some point in the day.</li> <li>Audible air tour noise &lt;165 minutes a day in areas most heavily used by visitors.</li> <li>Time above 52 dBA: &lt;6 minutes per day at the Ben Reifel Visitor Center.</li> <li>No indirect effects expected.</li> </ul>	<p>ATMP planning area.</p> <ul style="list-style-type: none"> <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>	<p>AGL) within the ATMP planning area would reduce impacts.</p> <ul style="list-style-type: none"> <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>96% of ATMP planning area would experience audible air tour noise at some point in the day.</li> <li>Audible air tour noise &lt;135 minutes a day in areas most heavily used by visitors.</li> <li>Time above 52 dBA: &lt;5.4 minutes per day at the Ben Reifel Visitor Center.</li> </ul>	<p>increased minimum altitude of Eagle Aviation route (2,600 ft. AGL) within the ATMP planning area would reduce impacts.</p> <ul style="list-style-type: none"> <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>78% of ATMP planning area would experience audible air tour noise at some point.</li> <li>Audible air tour noise &lt;75 minutes a day in areas most heavily used by visitors.</li> <li>Time above 52 dBA: &lt;3 minutes per day at the Ben Reifel Visitor Center.</li> </ul>
Environmental Justice and Socioeconomics	<ul style="list-style-type: none"> <li>Would not result in disproportionately high and 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>55.2 MT CO<sub>2</sub></li> <li>Peak month average day: 17 air tours</li> </ul>	<ul style="list-style-type: none"> <li>Would not result in disproportionately high and 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>Daily (16) limits on air tours; elimination of Expedition Tour; and increased minimum altitude of Eagle Aviation route (2,600 ft. AGL) within the ATMP planning area would reduce impacts.</li> <li>Would not result in disproportionately high and 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> </ul>	<ul style="list-style-type: none"> <li>Annual (639) and daily (8) limits on air tours; seasonal restrictions: air tours permitted July 1 – Sept. 30; elimination of Expedition Tour; and increased minimum altitude of Eagle Aviation route (2,600 ft. AGL) within the ATMP planning area would reduce impacts.</li> <li>Would not result in disproportionately high and adverse impacts to EJ populations or impact those populations in</li> </ul>

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
			<ul style="list-style-type: none"> <li>• 42.6 MT CO<sub>2</sub></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>	<p>ways that are unique to those EJ populations.</p> <ul style="list-style-type: none"> <li>• DNL: &lt;60 dB</li> <li>• 14.8 MT CO<sub>2</sub></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 along Loop Road and Sage Creek Rim Road.</li> <li>• No indirect effects expected.</li> <li>• Peak month average day: 17 air 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 visual effects study area.</li> <li>• Indirect impacts to viewsheds could occur if flights were displaced outside the ATMP planning area.</li> </ul>	<ul style="list-style-type: none"> <li>• Daily (16) limits on air tours; elimination of Expedition Tour; and increased minimum altitude of Eagle Aviation route (2,600 ft. AGL) within the visual effects study area would reduce the likelihood of visual impacts.</li> <li>• Indirect impacts to viewsheds could occur if flights were displaced outside the ATMP planning area.</li> </ul>	<ul style="list-style-type: none"> <li>• Annual (639) and daily (8) limits on air tours; seasonal restrictions: air tours permitted July 1 – Sept. 30; elimination of Expedition Tour; and increased minimum altitude of Eagle Aviation route (2,600 ft. AGL) would reduce the likelihood of visual impacts.</li> <li>• Indirect impacts to viewsheds could occur if flights were displaced outside the ATMP planning area.</li> </ul>
DOT Section 4(f) Resources	<ul style="list-style-type: none"> <li>• After consultation with the NPS, the FAA determined that the No Action Alternative would result in substantial impairment to Section 4(f) resources.</li> </ul>	<ul style="list-style-type: none"> <li>• No substantial impairment of Section 4(f) resources in the Section 4(f) study area.</li> <li>• No “constructive use” to any Section 4(f) properties.</li> </ul>	<ul style="list-style-type: none"> <li>• Daily (16) limits on air tours; elimination of Expedition Tour; and increased minimum altitude of Eagle Aviation route (2,600 ft. AGL) within the ATMP planning would reduce the likelihood of impacts.</li> <li>• No substantial impairment of Section 4(f) resources in the Section 4(f) study area.</li> <li>• No “constructive use” to any Section 4(f) properties.</li> </ul>	<ul style="list-style-type: none"> <li>• Annual (639) and daily (8) limits on air tours; seasonal restrictions: air tours permitted July 1 – Sept. 30; elimination of Expedition Tour; and increased minimum altitude of Eagle Aviation route (2,600 ft. AGL) within the ATMP planning area would reduce the likelihood of impacts.</li> <li>• No substantial impairment of Section 4(f) resources in the Section 4(f) study area.</li> </ul>

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
			<ul style="list-style-type: none"> <li>• DNL: &lt;60 dB</li> <li>• Time above 35 dBA: &lt;15 minutes in 36% of the ATMP planning area, 15-75 minutes in 13% of the ATMP planning area, and up to 90 minutes in &lt;1% of the ATMP planning area.</li> <li>• Time above 52 dBA: Not anticipated to exceed 21.2 minutes per day.</li> </ul>	<ul style="list-style-type: none"> <li>• No “constructive use” to any Section 4(f) properties.</li> <li>• DNL: &lt;45 dB</li> <li>• Time above 35 dBA: &lt;15 minutes in 36% of the ATMP planning area, 15-30 minutes in 3% of the ATMP planning area, and up to 45 minutes in &lt;1% of the ATMP planning area.</li> <li>• Time above 52 dBA: Not anticipated to exceed 8.6 minutes per day.</li> </ul>

**Appendices for the Draft Environmental  
Assessment for an Air Tour Management  
Plan for  
Badlands National Park**

# **List of Appendices**

Appendix A: References

Appendix B: List of Acronyms, Abbreviations, and Glossary

Appendix C: List of Preparers

Appendix D: Distribution List

Appendix E: Environmental Impact Analysis Methods

Appendix F: Noise Technical Analysis

Appendix G: Cultural Resources Consultation and Summary

Appendix H: Section 7 No Effect Memo

Appendix I: Section 4(f) Analysis

Appendix J: Public Scoping Newsletter and Comment Summary Report

# **APPENDIX A**

## References



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## **APPENDIX B**

### List of Acronyms, Abbreviations, and Glossary

## Acronyms and Abbreviations

AAD	Average Annual Day
The Act	National Parks Air Tour Management Act of 2000
ACS	American Community Survey
AEDT	Aviation Environmental Design Tool
AGL	Above Ground Level
ANSI	American National Standards Institute
APE	Area of Potential Effects
ATMP	Air Tour Management Plan
ATMP planning area	The area within which 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.
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH <sub>4</sub>	Methane
CO <sub>2</sub>	Carbon Dioxide
CR GRID	Cultural Resource Geographic Research Information Display database
dB	Decibels
dBA	Decibels (A-weighted scale)
DDT	Dichloro-diphenyl-trichloroethane
DNL	Day-night Average Sound Level (denoted by the symbol $L_{dn}$ )
DOT	United States Department of Transportation
EA	Environmental Assessment
EJ	Environmental Justice
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
ft.	Feet
FR	Federal Register
FSDO	Flight Standards District Office
GHG	Greenhouse Gas
H <sub>2</sub> O	Water Vapor
IOA	Interim Operating Authority
IPCC	Intergovernmental Panel on Climate Change
L <sub>50</sub>	The median or L <sub>50</sub> sound level (in decibels) is the sound level exceeded 50 percent of the day
L <sub>Aeq</sub>	Equivalent Continuous Sound Level
L <sub>dn</sub>	Day-night Average Sound Level
L <sub>max</sub>	The loudest sound level, in dBA, generated by the loudest event
MBTA	Migratory Bird Treaty Act
MSL	Mean Sea Level
MT	Metric Tons

N <sub>2</sub> O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
The National Register	The National Register of Historic Places
O <sub>3</sub>	Ozone
The Park	Badlands National Park
PM	Particulate Matter
PM <sub>2.5</sub>	Particulate matter sized 2.5 micrometers in aerodynamic diameter or less
PM <sub>10</sub>	Particulate matter sized 10 micrometers in aerodynamic diameter or less
SHPO	State Historic Preservation Office
SLAMS	State and Local Air Monitoring Stations
SO <sub>2</sub>	Sulfur Dioxide
TCP	Traditional Cultural Property
TPY	Tons per Year
U.S.C.	United States Code
USFWS	United States Fish and Wildlife Service

# **APPENDIX C**

## List of Preparers

Appendix C lists the names of the principal persons contributing information to this draft EA.

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- Matthew Simon

# **APPENDIX D**

## Distribution List



The agencies have sent the following agencies and parties copies of this draft EA and draft ATMP documents for participation in the NEPA process.

#### **Federal Agencies**

- Bureau of Indian Affairs
- Bureau of Land Management
- Federal Emergency Management Agency
- Federal Highway Administration
- Federal Railroad Administration
- National Park Service U.S. Fish and Wildlife Service
- Rep. Dusty Johnson – U.S. Representative from South Dakota
- Senator John Thune – U.S. Senator from South Dakota
- Senator Mike Rounds – U.S. Senator from South Dakota
- U.S. Army Corps of Engineers
- U.S. Department of Agriculture – Natural Resources Conservation Service
- U.S. Department of Agriculture – Black Hills National Forest
- U.S. Department of Agriculture – Buffalo Gap National Grasslands
- U.S. Department of Commerce
- U.S. Department of Energy - Western Area Power Administration
- U.S. Department of Housing and Urban Development
- U.S. Environmental Protection Agency Region VIII
- U.S. Fish and Wildlife Service
- U.S. Geological Survey - Dakota Water Science Center

#### **South Dakota State Agencies**

- Governor of South Dakota
- South Dakota Bureau of Finance and Management
- South Dakota Department of Agriculture
- South Dakota Department of Agriculture and Natural Resources – Air Quality Program
- South Dakota Department of Agriculture and Natural Resources – Surface Water Quality Program
- South Dakota Department of Game, Fish, and Parks – Division of Parks and Recreation
- South Dakota Department of Game, Fish, and Parks – Division of Wildlife
- South Dakota Department of Health
- South Dakota Department of Human Services
- South Dakota Department of Public Safety
- South Dakota Department of Public Safety – Office of Emergency Management
- South Dakota Department of Tourism
- South Dakota Department of Transportation – Division of Planning and Engineering
- South Dakota Geological Survey
- South Dakota Governor's Office of Economic Development
- South Dakota Office of the Governor

- South Dakota Office of School and Public Lands
- South Dakota Public Utilities Commission
- South Dakota Secretary of Transportation
- South Dakota State Historical Society
- South Dakota Secretary of State

#### **Oglala Lakota, Pennington, and Jackson County and Local Agencies**

- Mayor of Wall, South Dakota
- Pennington County
- Pennington County Commission
- Pennington County Emergency Management Department
- Pennington County Fire Department
- Pennington County Highway Department
- Pennington County Planning Department
- Pennington County Sheriff

#### **Community Organizations, Associations, Businesses, and Interest Groups**

- South Dakota Wing – Civil Air Patrol

#### **Tribal Nations**

- Apache Tribe of Oklahoma
- Cheyenne and Arapaho Tribes of Oklahoma
- Cheyenne River Sioux Tribe (of the Cheyenne River Reservation, South Dakota)
- Crow Creek Sioux Tribe (of the Crow Creek Reservation, South Dakota)
- Crow Tribe of Montana
- Flandreau Santee Sioux Tribe of South Dakota
- Fort Belknap Indian Community of the Fort Belknap Reservation
- Lower Brule Sioux Tribe of the Lower Brule Reservation
- Oglala Lakota Nation
- Omaha Tribe of Nebraska
- Ponca Tribe of Nebraska
- Rosebud Sioux Tribe of the Rosebud Indian Reservation
- Santee Sioux Nation, Nebraska
- Sisseton-Wahpeton Oyate of the Lake Traverse Reservation
- Spirit Lake Tribe
- Standing Rock Sioux Tribe of North & South Dakota
- Three Affiliated Tribes of the Berthold Reservation, North Dakota (Mandan, Hidatsa and Arikara Nation)
- Turtle Mountain Band of Chippewa Indians of North Dakota
- Upper Sioux Community, Minnesota
- Winnebago Tribe of Nebraska

- Yankton Sioux Tribe of South Dakota

### **Public Review**

Copies of this draft EA are available for public review and comment. The full document is available via the following:

- **NPS Planning, Environmental and Public Comment website:**  
<https://parkplanning.nps.gov/BadlandsATMP>

## **APPENDIX E**

### **Environmental Impact Analysis Methods**

# **Draft Environmental Assessment for an Air Tour Management Plan for Badlands National Park**

## **Environmental Impact Analysis Methodologies**

### **1.0 Introduction and Overview**

The Federal Aviation Administration (FAA), in cooperation with the National Park Service (NPS) (the agencies), are working together to develop an Air Tour Management Plan (ATMP) for Badlands National Park (Park). In compliance with the National Environmental Policy Act (NEPA), the agencies prepared a draft Environmental Assessment (EA) for the Park's ATMP. The proposed action is to implement an ATMP for the Park and is described in Section 1.3 of the draft EA. This technical appendix describes the methodologies used for evaluating the potential for environmental impacts to occur from the alternatives considered in the draft EA.

The agencies have identified environmental impact categories that require detailed analysis in the draft EA due to the potential environmental impacts resulting from implementing the alternatives (refer to Section 1.5 of the draft EA for a discussion of the environmental impact categories not analyzed in detail). The methodologies in this document reflect the analysis that has been performed by environmental impact category for each of the alternatives. The results of these analyses are described in the Environmental Consequences sections of the draft EA. This methodology is based on the 2015 FAA 1050.1F Order and Desk Reference - *Environmental Impacts: Policies and Procedures*, and NPS NEPA policies and procedures (2015 NPS NEPA Handbook, 2015 NPS NEPA Handbook Supplemental Guidance - *Writing Impact Analysis Sections for EAs and EISs*).

Under the National Parks Air Tour Management Act of 2000 (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 feet (ft.) above ground level (AGL) (ATMP planning area). Air tours outside of the ATMP planning area are not regulated under the ATMP. Unless otherwise noted, the study area for each environmental impact category is the ATMP planning area.

### **2.0 Environmental Baseline and Impact Analysis for the No Action Alternative**

For all environmental impact categories described herein, impact analysis for each alternative discloses how environmental conditions would change relative to current conditions, which serves as the environmental baseline for this analysis. Impacts are analyzed relative to current conditions, so that they can be described and measured relative to a level for which data exists. Each analysis provides a comparative analysis between alternatives for each environmental impact category.

Existing conditions for air tour activity are defined as the three-year average of commercial air tours conducted over the Park from 2017-2019, along with operator-provided route and altitude information. Reporting data from 2013 and 2014 are considered incomplete as reporting protocols were not fully in place at that time and likely do not reflect actual flights. The agencies consider the 2017-2019, three-year average, existing conditions for the purposes of understanding both the existing number of commercial air tour flights over the Park and impacts from that activity. Flight numbers from a single year were not chosen as the existing condition because the three-year average accounts for both

variation across years and takes into account the most recent years prior to the COVID-19 pandemic. The 2020 COVID-19 pandemic resulted in atypical commercial air tour operations, 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 No Action Alternative represents a continuation of existing air tour conditions over the Park. 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> Flights up to IOA are not considered part of the No Action Alternative, as flights at these levels are not reasonably foreseeable based on reporting data. The affected environment for each environmental impact category discloses existing conditions of commercial air tours over the Park as it relates to resources within the study area for each category. Impact analysis for the No Action Alternative discloses the effects on the environment that would occur with existing conditions carried into the future. There are no designated routes under the No Action Alternative, but for the purpose of defining the No Action Alternative for analysis, route information provided by operators is used to define the routes for this alternative. There are no altitude restrictions under the No Action Alternative.

### **3.0 Impacts Considered**

The analysis considers direct, indirect, and cumulative effects of each alternative described in Chapter 3 of the draft EA. The methodologies used in considering these effects to environmental impact categories are described by category in Section 4.0 of this document.

#### **3.1. Direct Effects**

Direct effects are those caused by the alternative and occur at the same time and place as implementation of the alternative. Direct effects consider the change from current resource condition, which is described in the affected environment, on environmental resources within the study area resulting from implementation of that alternative.

#### **3.2. Indirect Effects**

Indirect effects are those which are caused by the alternative and occur later in time or are farther removed in distance but are still reasonably foreseeable.

It is reasonably foreseeable that 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 over the Park resulting from a reduction in air tours by conducting air tour operations outside of the ATMP planning area, including over the ATMP planning area at or above 5,000 ft. AGL, to the extent possible. In accordance with Section 1508.1(g)(2) of Council on Environmental Quality (CEQ) NEPA regulations, the agencies considered reasonably foreseeable actions that could occur as a result of the alternative in the indirect effects analysis for each environmental impact category. The indirect effects analyses consider

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

<sup>2</sup> Federal Register, Vol. 70, No. 194, October 7, 2005, page 58778

potential shifts in air tour operations resulting from implementation of each alternative and the potential for displacement of air tours outside of the ATMP planning area due to a reduction in the number of authorized flights per year compared to existing conditions.

Consistent with the Section 1502.21 of CEQ NEPA regulations, the agencies have disclosed that specific air tour routes, altitudes, and numbers of tours are not available to assess impacts that would occur from air tours that are displaced outside the ATMP planning area, or over the ATMP planning area at or above 5,000 ft. AGL, and the resultant environmental effects that would occur. In addition, because specific air tour routes are not available, it is not possible to identify all the other potential noise sources or sources of visual effects that might contribute to the acoustic or visual conditions if operators were to fly just outside the ATMP planning area. It is difficult to predict whether any displaced air tours would result in operations on alternative routes that could have effects within or outside the ATMP planning area. This is because the airspace outside of the ATMP planning area is uncontrolled airspace, and operators fly under Visual Flight Rules (VFR). VFR is based on the principle of “see and avoid,” and does not require specific routes or altitudes, excepting weather minimums (see 14 Code of Federal Regulations (CFR) § 91.155).<sup>3</sup> Therefore, the exactness of routes and altitudes for air tours outside of the ATMP planning area flying VFR could vary depending on client demand, weather, fuel load, and other costs. See 40 CFR § 1502.21 (c)(1). Agencies are not required to conduct new scientific or technical research to analyze impacts and may rely on existing information to assess impacts. See 43 CFR § 1502.21(c).

For the purposes of disclosing the potential indirect effects of each alternative, the agencies have considered operator websites, the current availability of air tours over other lands outside the ATMP planning area, and the proximity of the operator’s facilities to other airports or heliports. The analysis considers current and historical flight patterns, the prevalence of features outside the ATMP planning area that may attract air tours (such as known points of interest), and the potential for operators to fly along the perimeter of the ATMP planning area and/or above 5,000 ft. AGL over the ATMP planning area to continue to observe features within the ATMP planning area. Indirect effects analyses consider the number of air tours proposed in each alternative and the likely displacement of air tours outside the ATMP planning area boundary. The draft EA qualitatively discusses what potential shifts in air tour operations would mean for resources within or outside of the ATMP planning area to the extent that they are present.

### 3.3. Cumulative Effects

Cumulative effects are effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Based on local knowledge from NPS staff, the agencies have identified other ongoing and reasonably foreseeable actions to consider within each environmental impact category.

The cumulative effects analysis qualitatively considers the effects of each alternative along with any known past, present, or future actions that would contribute to environmental effects to resources in the ATMP planning area. The draft EA presents this analysis in a comparative manner across all

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<sup>3</sup> <https://www.faa.gov/files/gslac/courses/content/25/185/vfr%20weather%20minimums.pdf>

alternatives and describes the context of the effect in terms of other environmental effects that are present or likely to occur within the ATMP planning area.

#### 4.0 Analysis Methodology by Environmental Impact Category

The section presents the impact analysis methodologies used in development of the draft EA for each environmental impact category considered.

##### 4.1. Noise and Noise-Compatible Land Use

The impact analysis for noise and noise-compatible land use discloses the noise generated from air tours under each alternative as modeled. The analysis also includes a comparison of the effects across alternatives. The methods used for the noise modeling are presented below and also described in the *Noise Technical Analysis*, Appendix F of the draft EA.

###### 4.1.1. Noise Modeling

There are numerous ways to measure the potential impacts of noise from commercial air tours on the acoustic environment of a park, including intensity, duration, and spatial footprint of the noise. The ambient sound level data and air tour operational data are used as inputs into the FAA's Aviation Environmental Design Tool (AEDT) to compute the following metrics to be used for the noise technical analysis (Table 1).

*Table 1. Primary metrics used for the noise technical 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 AM to 7 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 PM and 7 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 the events are averaged over 24 hours instead of 12 hours.</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 (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)<sup>4</sup>; blood pressure increases in sleeping humans (Haralabidis et al., 2008)<sup>5</sup>; maximum background noise level inside classrooms (ANSI/Acoustical Society of America S12.60/Part 1-2010)<sup>6</sup>.</p>
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 (United States Environmental Protection Agency, Office of Noise Abatement and Control, 1974)<sup>7</sup>. 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, $L_{max}$	<p>The loudest sound level, in dBA, generated by the loudest event; it is event-based and is independent of the number of operations. <math>L_{max}</math> does not provide any context of frequency, duration, or timing of exposure.</p>

<sup>4</sup> American National Standards Institute, Inc. (2007). Quantities and procedures for description and measurement of environmental sound — Part 5: Sound level descriptors for determination of compatible land use. ANSI/ASA S12.9-2007/PART 5 (R2020), 1-20. <https://webstore.ansi.org/Standards/ASA/ANSIASAS122007PartR2020>.

<sup>5</sup> Haralabidis A.S., Dimakopoulou, K., Vigna-Taglianti, F., Giampaolo, M., Borgini, A., Dudley, M., & Jarup, L. (2008). Acute effects of night-time noise exposure on blood pressure in populations living near airports. *European Heart Journal Advance Access*. <https://academic.oup.com/eurheartj/article/29/5/658/440015>.

<sup>6</sup> American National Standards Institute, Inc. (2002). Acoustical performance criteria, design requirements, and guidelines for schools, Part 1: Permanent schools. Acoustical Society of America, ANSI/ASA S12.60-2002/Part 1. <https://webstore.ansi.org/Standards/ASA/ANSIASAS1260Part2010R2020>.

<sup>7</sup> United States Environmental Protection Agency, Office of Noise Abatement and Control (1974). Information on levels of environmental noise requisite to protect public health and welfare with an adequate margin of safety. NPC Online Library, 550/9-74-004, 1-78. <https://www.nrc.gov/docs/ML1224/ML12241A393.pdf>.

#### *4.1.2. Indirect Effects*

The indirect effects analysis for noise and noise-compatible land use considers potential shifts in air tour operations resulting from implementation of an alternative within the ATMP planning area and the potential for displacement of air tours outside of the ATMP planning area, or over the ATMP planning area at or above 5,000 ft. AGL, due to a reduction in the number of authorized flights per year compared to existing conditions. FAA considers that noise levels are generally significant if aircraft activity under the alternative would increase noise by annual 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 would be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the existing conditions for the same timeframe. (FAA Order 1050.1F, Exhibit 4-1).

The analysis consists of two separate components:

- A noise analysis that, for the aircraft currently operating at the Park, assesses the activity threshold that would generate a noise exposure level at or above DNL 65 dB in a single location. Use of the DNL 65 dB threshold speaks to whether or not noise from air tours operating outside the ATMP planning area under the alternative would result in levels incompatible with noise-sensitive land use (i.e., DNL 65 dB), but the threshold of significance is a 1.5 dB or more increase at or above the resulting DNL 65 dB level as defined in FAA Order 1050.1F and 14 CFR Part 150.1.
  - The noise analysis considers the activity threshold two ways:
    - For the aircraft type with the loudest noise level, what is the activity level that would generate a noise level at or above DNL 65 dB?
    - For the aircraft types and fleet mix distribution within the 2017-2019 peak month average day, what is the activity level that would generate a noise level at or above DNL 65 dB?
- An activity assessment that describes the potential number of aircraft operations that may occur at a given point outside the ATMP planning area over a 24-hour period due to a no air tour alternative or additional flights outside the ATMP planning area resulting from a decrease in annual operations.
  - The analysis assumed air tour operations would comply with applicable aviation safety regulations.

The results of this analysis are described in the indirect effects analysis in the environmental consequences discussion of the draft EA for Noise and Noise-Compatible Land Use.

#### *4.1.3. Cumulative Effects*

The impacts analysis for cumulative effects to noise and noise-compatible land use discloses the likely changes to the ambient condition (not natural ambient, which is disclosed in the Affected Environment section of the draft EA) as modeled for each alternative. The qualitative discussion includes mention of whether the overall soundscape would become louder, quieter, or stay the same. The cumulative impact analysis includes the noise from air tours plus other noise sources. The section also provides discussion of differences between alternatives.

## 4.2. Air Quality and Climate Change

### 4.2.1. Air Quality Analysis

The EPA has established the National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50) for six criteria air pollutants which can be harmful to human health and the environment.<sup>8</sup> Primary standards protect public health, including sensitive populations such as children and the elderly, while secondary standards protect public welfare, including visibility impairment and damage to animals, vegetation, and buildings. The six criteria pollutants are:

- Carbon monoxide (CO)
- Lead (Pb)
- Nitrogen dioxide (NO<sub>2</sub>)
- Ozone (O<sub>3</sub>)<sup>9</sup>
- Particulate matter: aerodynamic diameter ≤ 2.5 μm (PM<sub>2.5</sub>)<sup>10</sup> and aerodynamic diameter ≤ 10 μm (PM<sub>10</sub>)
- Sulfur dioxide (SO<sub>2</sub>)

The EPA designates geographic areas<sup>11</sup> based on their relation to the NAAQS by pollutant:

- Nonattainment Area: Areas of the country where air pollution levels persistently exceed one or more of the NAAQS.
- Attainment Area: any area that meets the standard for all criteria pollutants.
- Maintenance Area: any area that was formerly in nonattainment status for one or more criteria pollutants, but currently meets the standard for all criteria pollutants.

The General Conformity Rule (40 CFR Part 93) ensures that federal actions do not cause or contribute to new violations of the NAAQS, worsen existing NAAQS violations, or delay attainment of the NAAQS. Federal agencies are required to work with state, tribal, and local governments in nonattainment or maintenance areas to ensure their actions conform to relevant air quality plans.<sup>12</sup>

### 4.2.2. Study Area and Data Sources

The study area for the air quality analysis corresponds with the ATMP planning area. The study area is compared with geographic information systems (GIS) data in EPA's Green Book<sup>13</sup> to confirm attainment status (attainment, nonattainment, or maintenance by pollutant). The FAA's AEDT is used to derive emission rates for aircraft used in air tours over the Park. The route lengths by aircraft type and number of annual operations by aircraft type are derived from operator reporting data.

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<sup>8</sup> NAAQS Table: <https://www.epa.gov/criteria-air-pollutants/naaqs-table>

<sup>9</sup> Nitrogen oxides (NOX) and volatile organic compounds (VOC) are considered precursors to ground-level ozone and may be closely monitored in areas with ozone concerns.

<sup>10</sup> Sulfur dioxide (SO<sub>2</sub>), NOX, VOC, and ammonia are considered precursors to PM<sub>2.5</sub>.

<sup>11</sup> Current Nonattainment Counties for All Criteria Pollutants:

<https://www3.epa.gov/airquality/greenbook/ancl.html>

<sup>12</sup> General Conformity: <https://www.epa.gov/general-conformity>

<sup>13</sup> Nonattainment Areas for Criteria Pollutants (Green Book): <https://www.epa.gov/green-book>

#### 4.2.3. Methodology for Analyzing Air Quality Impacts

The impact analysis for air quality consists of five steps:

**1. Calculate annual flight miles for each aircraft type operating over the ATMP planning area.**

Annual flight miles over the ATMP planning area are calculated for each aircraft type by multiplying the total number of air tour operations by each route flown over the ATMP planning area.

**2. Calculate emission rates for each aircraft used in air tours over the ATMP planning area.**

The latest version of FAA's AEDT is used to develop emission rates (pounds of emissions per mile flown) for each aircraft. Emission rates for non-jet engines (i.e., those most likely conducting air tours) are based on emission factors in AEDT, which are primarily derived from the EPA's AP-42: Compilation of Emission Factors. Although the AP-42 emission factors represent the best available data, they have not been updated since the 1990s and most aircraft engines in use today are likely to be cleaner due to less-polluting fuels and improvements in engine emissions controls. Therefore, the calculated emission rates should be considered a conservative estimate of emission rates for aircraft used in air tours.

**3. Calculate emissions from air tours over the ATMP planning area.**

For each aircraft type operating over the ATMP planning area, emissions (tons per year) are calculated by multiplying the annual flight miles (step 1) by the aircraft-specific emission factor (step 2). The sum of emissions across all aircraft types represents the total emissions (by alternative) for the ATMP planning area.

**4. If the ATMP planning area is located in EPA's nonattainment and/or maintenance areas, compare emissions with *de minimis* thresholds.**

To highlight the potential impacts to ambient air quality for all criteria pollutants, the emissions results are compared with the EPA's General Conformity *de minimis* thresholds for the most stringent<sup>14</sup> nonattainment areas. EPA's General Conformity *de minimis* thresholds represent a surrogate for impacts to ambient air quality. If emissions estimates for all pollutants in the ATMP planning area are below *de minimis* thresholds, the proposed air tours are expected to result in negligible impacts to air quality.

**5. If the ATMP planning area is located in EPA's attainment areas, disclose ATMP emissions to fulfill NEPA requirements.**

Per the requirements of NEPA, disclosure of both baseline emissions and any change in emissions (comparison between the No Action Alternative and the action alternatives) shall be provided in the draft EA to understand the potential consequences to air quality. Since the ATMP planning area is located in an area of the United States that is in attainment for all regulated pollutants, there are no regulatory thresholds to compare that indicate the potential air quality impacts of said emissions. Rather, the reported emissions provide a basis of acknowledgement as to what the proposed project

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<sup>14</sup> The most stringent non-attainment areas (i.e., lowest *de minimis* thresholds) are categorized as "extreme" for ozone (VOCs or NOX) and "serious" for particulate matter (PM<sub>10</sub>, PM<sub>2.5</sub>, NOX, VOC, and SO<sub>2</sub>; ammonia is not considered for aircraft emissions as they relate to ATMPs).

may contribute to the attainment air shed. For the purposes of ATMPs, only emissions changes from aircraft operations for each alternative are considered.

If adverse effects on air quality are predicted, the final step of the analysis is to determine whether:

- there are any practicable mitigation measures or alternatives that would avoid or reduce impacts to air quality; and
- a substantial need for action exists, and if other alternatives with less adverse impacts on air quality will still satisfy the purpose and need without resulting in exorbitant costs.

#### *4.2.4. Climate Change Analysis*

In February 2021, the CEQ rescinded the 2019 Draft NEPA Guidance on Consideration of Greenhouse Gas Emissions and is reviewing, for revision and update, the 2016 Final Guidance on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change. CEQ directs agencies to consider: (1) the potential effects of a proposed action on climate change as indicated by assessing greenhouse gas (GHG) emissions (e.g., to include, where applicable, carbon sequestration); and (2) the effects of climate change on a proposed action and its environmental impacts. Federal agencies are advised to use projected GHG emissions as a proxy for assessing an action's impact on climate change. The difference in GHG emissions between alternatives, as well as the total GHG emissions of the No Action Alternative, should be provided as part of the NEPA analysis. The 2016 CEQ guidance does not establish any particular quantity of GHG emissions as significant.

#### *4.2.5. Study Area and Data Sources*

The study area for GHG emissions from reflects the ATMP planning area. FAA's AEDT is used to derive emission rates for aircraft used in air tours over the ATMP planning area. The route lengths by aircraft type and number of annual operations by aircraft type are derived from operator reporting data.

#### *4.2.6. Methodology for Analyzing Greenhouse Gas Impacts*

The GHG analysis includes the following four steps:

##### **1. Calculate annual fuel burn for each aircraft type operating over the ATMP planning area.**

Annual fuel burn (for use with fuel burn-based emission factors in step 2) are calculated from the annual flight miles using conversion factors given in FAA's AEDT. Annual flight miles over the ATMP planning area are calculated for each aircraft type by multiplying the total number of air tour operations by each route flown within the ATMP planning area.

##### **2. Calculate GHG emission factors for each aircraft used in air tours in the ATMP planning area.**

The latest version of AEDT is used to develop a CO<sub>2</sub> equivalents (CO<sub>2</sub>e) emission factor in metric tons of emissions per gallon of fuel (MT CO<sub>2</sub>/gal) for each aircraft. CO<sub>2</sub>e emission factors in AEDT are calculated based on the quantity of aircraft fuel burned. Since the proposed action involves only aircraft operations, MT CO<sub>2</sub>e will be assumed to be the same as the aircraft MT CO<sub>2</sub>.<sup>15</sup>

##### **3. Calculate GHG emissions from air tours over the ATMP planning area.**

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<sup>15</sup> FAA 1050.1F Desk Reference. February 2020. Section 3.3 Environmental Consequences – Climate.

For each aircraft type operating over the ATMP planning area, the CO<sub>2</sub>e emissions (MT per year) are calculated by multiplying the annual fuel burn (step 1) by the aircraft-specific emission factor (step 2). The sum of emissions across all aircraft types represents the total emissions (by alternative) for the ATMP planning area.

GHG emission inventory results are not compared to the NAAQS nor any other significant criteria. The results are provided for informational purposes as a means of disclosing the project's potential effects on GHGs and climate change.

If an increase in GHG emissions is predicted, the final step of the analysis involves considering whether there are areas within the scope of the project where such emissions could be reduced through mitigation measures such as changes to more fuel-efficient aircraft, use of renewable fuels, and operational changes.

### 4.3. Biological Resources

The study area for biological resources includes the ATMP planning area. 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 has been analyzed accordingly.

The agencies have identified federally listed species, special status species, and any critical habitats within the Affected Environment discussion of the draft EA. For any species for which habitat does not encompass the entire ATMP planning area, habitat areas for these species are identified in order to connect data on effects of air tours, such as noise contours, to potential effects on species that utilize those areas. Based on the results of this review, the Park's natural resource managers and biologists have confirmed species within the ATMP planning area that have the potential to be affected by commercial air tours based on their knowledge of wildlife responses to commercial air tours.

For special status species and/or critical habitats which have the potential to be affected by commercial air tours, the agencies have performed a literature review for species-specific management guidelines such as recommended noise limits, time of year restrictions, aircraft standoff distances, or other mitigation measures that could be feasibly addressed by the ATMP parameters. The agencies have also sought technical assistance from the U.S. Fish and Wildlife Service for species-specific management guidelines and recommendations, the results of which have been integrated into the draft EA.

The draft EA includes a qualitative analysis of the effects to biological resources that could result from each alternative. The analysis discloses how ATMP operating parameters and the resultant resource conditions would change by comparing existing conditions to the parameters proposed for each alternative. For example, the draft EA identifies areas where noise levels would change, if routes had been shifted closer or further from sensitive habitat attributes, or if altitudes would increase or decrease as compared to existing conditions, and qualitatively discloses how that could affect biological resources. The analysis also discloses the effects of the use itself by analyzing the impacts of each alternative in the context of any documented management guidelines (as available). Based on this analysis, the agencies have also proposed an effect determination and will consult with the U.S. Fish and Wildlife Service in accordance with Section 7 of the Endangered Species Act.

#### 4.4. Cultural Resources

The analysis methodology for cultural resources (inclusive of Historical, Architectural, Archeological and Cultural Resources) consists of evaluating the potential impacts of each alternative under consideration on cultural resources identified within the NEPA study area. Section 106 of the National Historic Preservation Act (NHPA Section 106) as set forth in 36 CFR Part 800 provides the framework for gathering the information needed to assess impacts on cultural resources under NEPA, per FAA's 1050.1F Desk Reference. 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. The APE may be revised and refined based on the preferred alternative or the consultation process. Cultural Resources within the APE are identified in the Affected Environment of the draft EA.

Section 106 considers effects to properties (districts, sites, buildings, structures, or objects) that are listed in or eligible for listing in the National Register of Historic Places (National Register). The Section 106 process for the Park 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. NPS Management policies define five types of cultural resources for consideration – archeological resources, cultural landscapes, ethnographic resources, historic and prehistoric structures, and museum collections. Because of the nature of the alternatives (i.e., no ground disturbance or physical incursion), the cultural resource identification focuses on resources that could be affected visually or by noise from aircraft. The focus of cultural resources identification is on those resources for which feeling and setting contribute to the properties' significance, including TCPs and other properties of cultural and religious significance to Native American Tribes, as identified by Native American Tribes and other consulting parties with relevant expertise. This analysis in the draft EA considers potential beneficial and adverse impacts to all cultural resources within the APE, including resources identified by the Park that may not fall under the Section 106 process, if present.

Park staff have provided information about cultural resources located within the Park boundaries and the consulting parties and Tribes have identified TCPs and sacred sites within the APE. Additional records have been gathered from the Midwest Archeological Center, the U.S. Forest Service Black Hills National Forest, Cultural Resource Geographic Research Information Display (GRID), South Dakota Archeological Research Center, and through a records request of the South Dakota State Historic Preservation Office (SHPO) to identify any additional cultural resources within the APE. Historic property identification includes previously documented properties with no formal National Register evaluation as well as those previously listed or determined eligible for listing in the National Register. No additional survey will be conducted; unevaluated or undetermined properties will be treated as eligible for the purposes of Section 106 consultation and NEPA evaluation. Using this information, a list of cultural resources located within the APE is generated and those with unrestricted location data are mapped (any individual TCPs, sites of cultural or religious significance or boundaries of archeological districts included in the study area maps depict only general buffered areas to protect the location of sensitive sites).

The agencies have reviewed the alternatives and determined if any of the cultural resources within the APE may be affected by each alternative and evaluated the magnitude of those impacts. The analysis

includes a qualitative assessment of how the ATMP operating parameters for each alternative may affect resource conditions compared to current conditions. The agencies use the time above 35 dBA metric, time above 52 dBA metric, and 12-hour equivalent sound level metric from the *Noise Technical Analysis* to quantitatively assess potential noise impacts to cultural resources from Alternatives 3 and 4 as compared to the No Action Alternative. Noise data is used to identify where audible impacts may increase, decrease, or be introduced. Metrics used for this analysis included point data that is specific to cultural resources and included areas outside of the ATMP planning area that may be within the APE. Alternative 2 was not modeled, so the same data is not available for Alternative 2.

The impacts analysis considers the context and significant features of the resources as well as the nature of the impacts that may result from the action, including the intensity and severity of the impact. Effects to cultural resources would occur if implementation of the alternative would alter the characteristics of the resource that make it eligible for listing in the National Register or otherwise culturally significant. Examples of effects that adversely impact cultural resources are noted in 36 CFR 800.5(a). An adverse effect finding under Section 106 does not automatically trigger a significant impact under NEPA. The analysis of impacts will incorporate any measures developed through the Section 106 process to avoid, minimize or mitigate adverse effects. The relative effects to cultural resources are also qualitatively compared across all alternatives. The NEPA documentation will report consultation conducted as relevant to the delineation of the APE and affected environment. The results of Section 106 consultation and the FAA's proposed finding of effect will also be included for the preferred alternative when available. Relevant documentation of the Section 106 process will be included in the appendix for reference.

#### 4.5. Wilderness

An evaluation of impacts to Wilderness character includes a qualitative analysis of how each alternative would affect the natural and solitude or primitive and unconfined recreation qualities of Wilderness character.

The results of the biological resources analysis are utilized to identify Wilderness areas that may experience potential impacts to the natural quality of Wilderness character.

To identify potential impacts to solitude within Wilderness areas, the time audible natural ambient metric from the *Noise Technical Analysis* is utilized.

The analysis also considers the change in Wilderness character between current conditions and each alternative, as well as provides qualitative comparison across all alternatives.

#### 4.6. Visitor Use and Experience and Other Recreational Opportunities

The impact analysis for visitor use and experience and other recreational opportunities is analyzed for visitors and air tour clients. The visitor analysis focuses effects on visitor points of interest and how visitors use those areas, interpretive programs, and Park management objectives related to visitor use and experience, as identified in the Affected Environment of the draft EA. The Affected Environment also identifies Park management zones and objectives that would apply to the management of commercial air tours. The environmental impact analysis quantitatively analyzes how the ATMP operating parameters and the resultant resource conditions for visitor use and experience would change



by comparing existing conditions to the parameters proposed in the alternative. The analysis also utilizes the results of the *Noise Technical Analysis* to identify potential impacts to visitor use and experience from the alternatives, including interpretive programs. As described in the *Noise Technical Analysis*, the time above 52 dBA metric represents the level at which one may reasonably expect interference with Park interpretive programs. The locations of Park interpretive programs and the corresponding time above 52 dBA are noted in order to identify impacts to interpretive programs that could occur. The analysis also considers the different noise sensitivities of the different types of Park visitor and visitor experiences (e.g., backcountry vs. front country), and how each of the alternatives could affect visitor use at those sites. For areas of the Park where visitors would have an expectation to hear natural sounds, the analysis includes a reference to the results of the time audible, natural ambient metric. In addition to considering noise effects on the Park visitor experience, the analysis considers how visual effects could influence visitor use and experience (see method description for visual effects below). The relative effects to Park visitors are also qualitatively compared across all alternatives.

The impact analysis for other recreational opportunities applies to persons recreating outside the Park but within the ATMP planning area through the experience of air tours. Although they are not considered Park visitors, commercial air tours offer a recreational experience for those who wish to view the Park from a different vantage point. Impacts to the availability of this experience within the ATMP planning area are considered by qualitatively analyzing how the opportunity to see the Park from an air tour within the ATMP planning area would change as a result of each alternative by comparing existing conditions to the parameters proposed under each alternative. This analysis primarily considers how routes and the number of tours authorized by each alternative could affect the availability of this experience within the ATMP planning area for air tour clients.

#### 4.7. Environmental Justice and Socioeconomics

The study area for the environmental justice (EJ) analysis includes the county or counties that are within or partially within the Park and ½-mile of its boundary. As stated in the 1050.1F Desk Reference, the combination of all study areas for the other relevant impact categories represents the potential impact area for EJ, because EJ impacts may be realized in conjunction with impacts to any other impact category. Refer to each environmental impact category's respective section in the draft EA for a description of the study area limits. The analysis incorporates data presented at the county level and from U.S. Census block groups that are within and adjacent to the ATMP planning area.

U.S. Census data is used to identify the percentage of the populations within the counties that are low-income (as identified by poverty status) and minority pursuant to U.S. Department of Transportation (DOT) Order 5610.2(a), otherwise known as "EJ populations." For the purposes of this EJ analysis, FAA uses the minority and low-income definitions provided in DOT Order 5610.2a. The average of the county income and minority population percentages is compared to block group level data on income and race and ethnicity within the study area to determine if the population is an EJ community of concern. A minority census block group considered as an EJ community is a census block group with a minority population percentage greater than the average minority population percentage of the study area. Any census block group with a minority population greater than the average of the study area is designated as a census block group of EJ concern. A low-income population census block group considered as an EJ community is a census block group with a greater percentage of low-income population than the average percentage of low-income population in the study area. Each census block

group with a low-income population greater than the study area average is designated a census block group of EJ concern. State and local data has also been evaluated to confirm accuracy of findings.

The EJ analysis considers the ATMP operating parameters (i.e., locations of the commercial air tour routes, altitudes, and frequencies) under each alternative as well as the results of the analyses for Noise and Noise-Compatible Land Use, Air Quality, and Visual Effects, as well as the corresponding environmental effects of each alternative. The analysis identifies if each alternative would cause disproportionately high and adverse effects on low-income or minority populations within the study area. The definitions for disproportionately high and adverse effects provided in DOT Order 5610.2(a) is used to conduct the analysis. The significance of the impacts to EJ populations is determined by identifying the context, intensity, and relation the impact has to other environmental impact categories. Specifically, for each environmental impact category, the analysis identifies if an EJ population would sustain more of an impact than any other population segment. In doing so, the impacts to environmental impact categories are considered, as well as if the impacts would affect the EJ population in a way that the agencies determine is unique or significant to that population.

The socioeconomic analysis considers the effects the alternatives may have on local business activity. This could include businesses within the ATMP planning area that could be affected by noise or other effects of the ATMP, such as ranching operations, and will also evaluate effects of the alternatives on the commercial air tour industry and related businesses. Specifically, the draft EA analyzes how commercial air tour operators may support economic development by generating income for other ancillary tourism industry businesses. The draft EA describes how the number of flights authorized by each alternative compares to the current level of air tours reported by each operator. The analysis notes that the competitive bidding process may redistribute the number of flights and income between individual operators in the future.

Given the nature of the alternatives, the agencies do not anticipate impacts to the housing, race, age, or population conditions of the ATMP planning area; therefore, effects to these socioeconomic characteristics within the ATMP planning area have not been analyzed.

As they occur, the draft EA will document efforts that the agencies performed to incorporate EJ principles throughout the ATMP development process, including opportunities for engagement with EJ populations throughout the ATMP planning area.

#### 4.8. Visual Effects

In accordance with FAA's 1050.1F Desk Reference, visual effects deal broadly with the text to which the alternatives would either: 1) produce light emissions that create annoyance or interfere with activities; or 2) contrast with, or detract from, the visual resources and/or visual character of the existing environment. As air tours occur during daylight, the draft EA focuses on visual effects on visual resources and character and not light emissions. Visual effects on resources discussed in other sections of the draft EA are discussed in those sections and a cross-reference to the Visual Effects section is provided.

Visual resources may include structures or objects that identify 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 are located.

The study area for visual effects includes the Park and ½ mile buffer up to 5,000 ft. AGL, which corresponds with the ATMP planning area. The study area for visual effects also includes areas within the cultural resources APE that are outside the ATMP planning area. The impact analysis focuses on analyzing effects to Park viewsheds and notable visual resources, as identified in the Affected Environment, which notes any aesthetic value and unique aspects within the Park. The analysis analyzes how the ATMP operating parameters (e.g., number of tours, location of the routes, altitudes, hovering/loitering, and other ATMP elements that could affect Park viewsheds) for each alternative and the resultant Park viewshed resource conditions would change by comparing existing conditions to the parameters proposed in the alternative. The relative effects to Park viewsheds are also compared across all alternatives. Impacts to visual resources and visual character relate to a decrease in the aesthetic quality of the Park resulting from air tours. According to FAA's 1050.1F Desk Reference, significance of impacts is determined based on the degree the action would have to affect the visual character of the area, taking into consideration the importance, uniqueness, and aesthetic value; the degree to which the action contrasts with the visual resources or character; and the degree to which views are obstructed.

#### 4.9. Department of Transportation Act Section 4(f) Resources

Section 4(f) is applicable to historic sites and publicly owned Parks, recreation areas, and wildlife and waterfowl refuges of national, state, or local significance that may be impacted by transportation programs or projects carried out by the U.S. DOT and its operating administrations, including the FAA. The study area for considering Section 4(f) resources in the draft EA corresponds with the APE used for compliance with Section 106 of the NHPA.

Historic properties are identified as part of the Section 106 consultation process (see section above: Cultural Resources). Parks, recreational areas, and wildlife and waterfowl refuges are identified using public datasets from federal, state, and local sources. The study area for Section 4(f) analysis is the same as the APE identified as part of Section 106. Each resource that intersects the study area is included in the Section 4(f) analysis. A list of these properties as well as a short description, the approximate size, and Official(s) with Jurisdiction has been compiled, and the properties was mapped.

As land acquisition, construction, or other ground disturbance activities would not occur under the ATMP, the alternatives would not have the potential to cause a permanent use of a Section 4(f) resource. Therefore, analysis of potential impacts to Section 4(f) resources is limited to identifying impacts that could result in a constructive use. Evaluating potential impacts to Section 4(f) resources focuses on changes in aircraft noise exposure and visual effects resulting from implementing the alternative. A constructive use of a Section 4(f) resource would occur if there was a substantial impairment of the resource to the degree that the activities, features, or attributes of the site that contribute to its significance or enjoyment are substantially diminished. This could occur as a result of both visual and noise impacts. The FAA has evaluated the Section 4(f) resources for potential noise (including vibration) and visual impacts for the preferred alternative to determine if there will be substantial impairment to Section 4(f) resources due to the preferred alternative that would result in a constructive use.

The methodology for the noise impacts analysis will reflect that described for the Noise and Noise-Compatible Land Use resource category (see above). The methodology for the visual impacts analysis reflects that described under the Visual Effects resource category (see above). As noted, both resource analyses describe the effects of the alternative itself as well as the relative change from the environmental baseline.

Noise impacts on Section 4(f) resources are analyzed using location point data provided in the *Noise Technical Analysis*. Location points are used to model noise across multiple metrics (e.g., 12-hour equivalent sound level, time above 52 dBA) at specific points of interest in the study area, including forests, geological features, and historic sites, and often correspond to Section 4(f) resources. For Section 4(f) resources without corresponding location point data, noise impacts are assessed using the closest location point(s). The range of time (in minutes) above 52 dBA is reported for each Section 4(f) resource.

## **APPENDIX F**

### Noise Technical Analysis

# Noise Technical Analysis: Badlands National Park

**January 2023**

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# 1. Introduction

The purpose of this report is to present the noise results used in the alternatives impact analysis discussed in the Badlands National Park (Park) Air Tour Management Plan (ATMP) draft Environmental Assessment (EA) and to document the inputs and assumptions used in the computer modeling of air tour aircraft activity. This information will provide the reader with the technical basis used to assess potential impacts to the following resource categories – Noise and Noise-Compatible Land Use; Biological Resources; Department of Transportation Act Section 4(f) Resources; Cultural Resources; Environmental Justice and Socioeconomics; Visitor Use and Experience; Wilderness; and cumulative effects.

Humans perceive sound as an auditory sensation created by pressure variations that move through a medium such as water or air. Sound is measured in terms of amplitude and frequency. Amplitude, which refers to the sound pressure level or intensity, is the relative strength of sound waves which humans perceive as loudness or volume and is measured in decibels (dB). Decibels work on a logarithmic scale, such that an increase of 10 dB causes a doubling of perceived loudness and represents a ten-fold increase in sound level. Thus 20 dB would be perceived as twice as loud as 10 dB, 30 dB would be perceived as 4 times louder than 10 dB, 40 dB would be perceived as 8 times louder than 10 dBA, etc. (see Table 1).

**Table 1. Subjective Effect of Change in Sound Level**

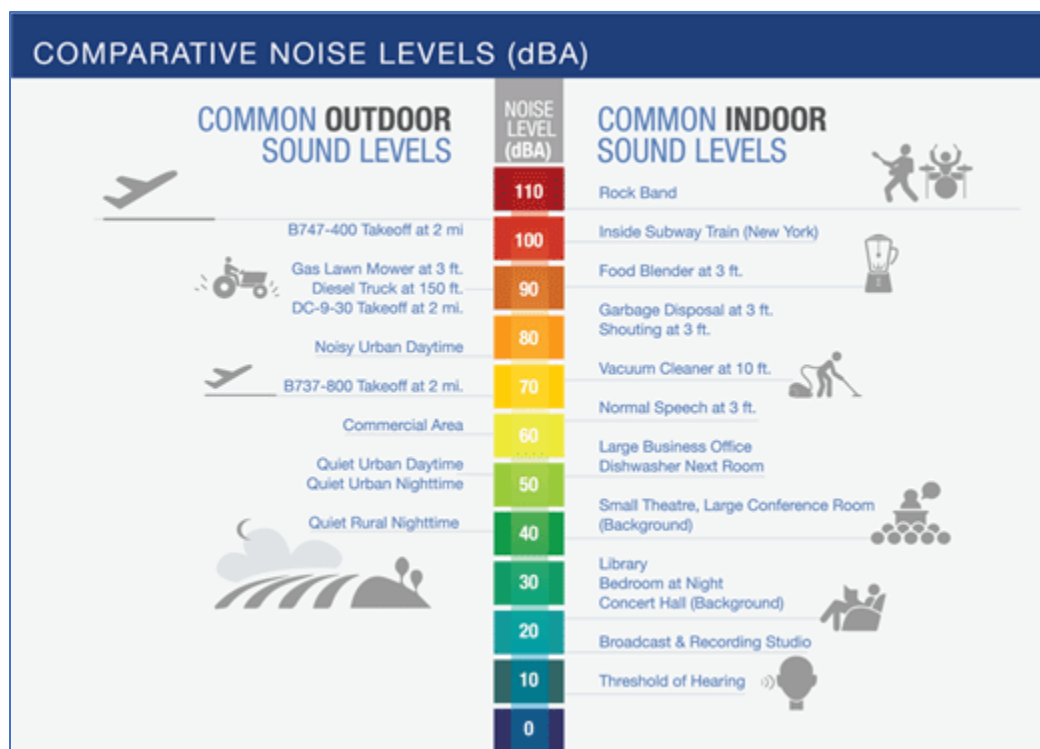
Change in Sound Level	Perceived Change to Human Ear
± 1 dB	Not Perceptible
± 3 dB	Threshold of Perception
± 5 dB	Obvious Change
± 10 dB	Twice / Half as Loud
± 20 dB	Fourfold or ¼ as Loud

The A-weighted decibel scale (dBA) is commonly used to describe sound levels because it reflects the frequency range to which the human ear is most sensitive.<sup>1</sup> The dBA scale from zero to 110 covers most of the range of everyday sounds, as shown in Figure 1. Note that background sound levels in protected

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<sup>1</sup> dBA (A-weighted decibels): Sound is measured on a logarithmic scale relative to the reference sound pressure for atmospheric sources, 20 µPa. Sound levels are reported in units of decibels (dB) (ANSI S1.1-1994, American National Standard Acoustical Terminology). A-weighting is applied to sound levels to account for the sensitivity of the human ear (ANSI S1.42-2001, Design Response of Weighting Networks for Acoustical Measurements). To approximate human hearing sensitivity, A-weighting discounts sounds below 1 kHz and above 6 kHz.

natural areas, such as the Park, are often lower than those of the ‘common’ outdoor areas shown, in the range of 20-40 dBA.



**Figure 1. Comparative Sound Levels<sup>2</sup>**

Section 2 discusses the noise metrics. Section 3 discusses the affected environment and ambient soundscape. Section 4 discusses the noise model method and inputs while Section 5 discusses outputs. Sections 6 and 7 provide detailed noise results for each alternative. Section 8 discusses indirect effects.

## 2. Modeled Noise Metrics

There are numerous ways to measure the potential impacts of noise from commercial air tours on the acoustic environment of a park, including intensity, duration, and spatial footprint of the noise. The affected environment and impact analysis disclose noise metrics consistent with both Federal Aviation Administration (FAA) and National Park Service (NPS) noise guidance. The FAA noise evaluation is based on guidance under FAA Order 1050.1F and uses the yearly Day Night Average Sound Level (DNL) metric; the cumulative noise energy exposure from aircraft over 24 hours. The NPS considers various different metrics to analyze impacts to park resources and values from noise, including equivalent sound level, time audible (the amount of time you can hear air tour aircraft noise), the amount of time that the noise

<sup>2</sup> Source: [https://www.faa.gov/regulations\\_policies/policy\\_guidance/noise/basics/](https://www.faa.gov/regulations_policies/policy_guidance/noise/basics/)

from a commercial air tour operation would be above specific sound levels that relate to functional effects of noise and park management objectives (e.g., 35 and 52 decibels), and maximum sound level. These metrics are discussed further in Table 2.

**Table 2. Primary metrics used for the noise analysis**

Metric	Relevance and citation
Equivalent sound level, $L_{Aeq, 12\text{ hr}}$	<p>The logarithmic average of commercial air tour sound levels, in dBA, over a 12-hour day. The selected 12-hour period is selected to represent typical daytime commercial air tour operating hours.</p> <p>If air tours are restricted to operating within a window that is less than 12 hours, e.g., from 3 hours after sunrise until 3 hours before sunset, the equivalent sound level will be greater by a factor equal to <math>10 \cdot \log_{10}(12/n)</math> where <math>n</math> is the number of hours of operation. For example, if the window is 8 hours, then the 8-hour equivalent sound level will be equal to <math>10 \cdot \log_{10}(12/8) = 1.8</math> dBA greater than the 12-hour equivalent sound level.</p>
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 between 10 PM and 7 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.</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 (minutes) that aircraft noise levels are audible to an attentive listener with normal hearing under natural ambient conditions.</p> <p>The median 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 study 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>

Metric	Relevance and citation
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 35 dBA degrade experience in outdoor performance venues (American National Standards Institute (ANSI), 2007). This level is also shown to cause blood pressure increases in sleeping humans (Haralabidis et al., 2008); as well as exceeding recommended maximum background noise level inside classrooms (ANSI S12.60/Part 1-2010).</p>
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>This metric represents the level at which one may reasonably expect interference with park interpretive programs. At this background sound level (52 dBA), 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 (United States Environmental Protection Agency, Office of Noise Abatement and Control, 1974).</p>
Maximum sound level, $L_{max}$	<p>The loudest sound level, in dBA, generated by the loudest event; it is event-based and is independent of the number of operations. <math>L_{max}</math> does not provide any context of number of events, duration, or timing of exposure.</p>

### 3. Affected Environment

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). The acoustic environment is the combination of all the acoustic resources within a given area. This includes natural sounds and cultural sounds, as well as non-natural human-caused sounds. Soundscape can be defined as the human perception of those physical sound resources.

Natural sounds are also part of the biological or other physical resource components of the Park. Examples 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
- 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 of the naturally occurring sounds of the Park, as well as the quiet associated with certain environments, still nights and certain seasons. 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 Management Policies, 4.9 Soundscape Management).

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, tour buses, and cyclists, and aircraft overflights consisting of high-altitude commercial jet aircraft, occasional NPS flights for research or other Park purposes, commercial air tour operations, and private general aviation aircraft. On the ground, human-generated noise within the Park is typically concentrated in travel corridors and areas of high visitor use.

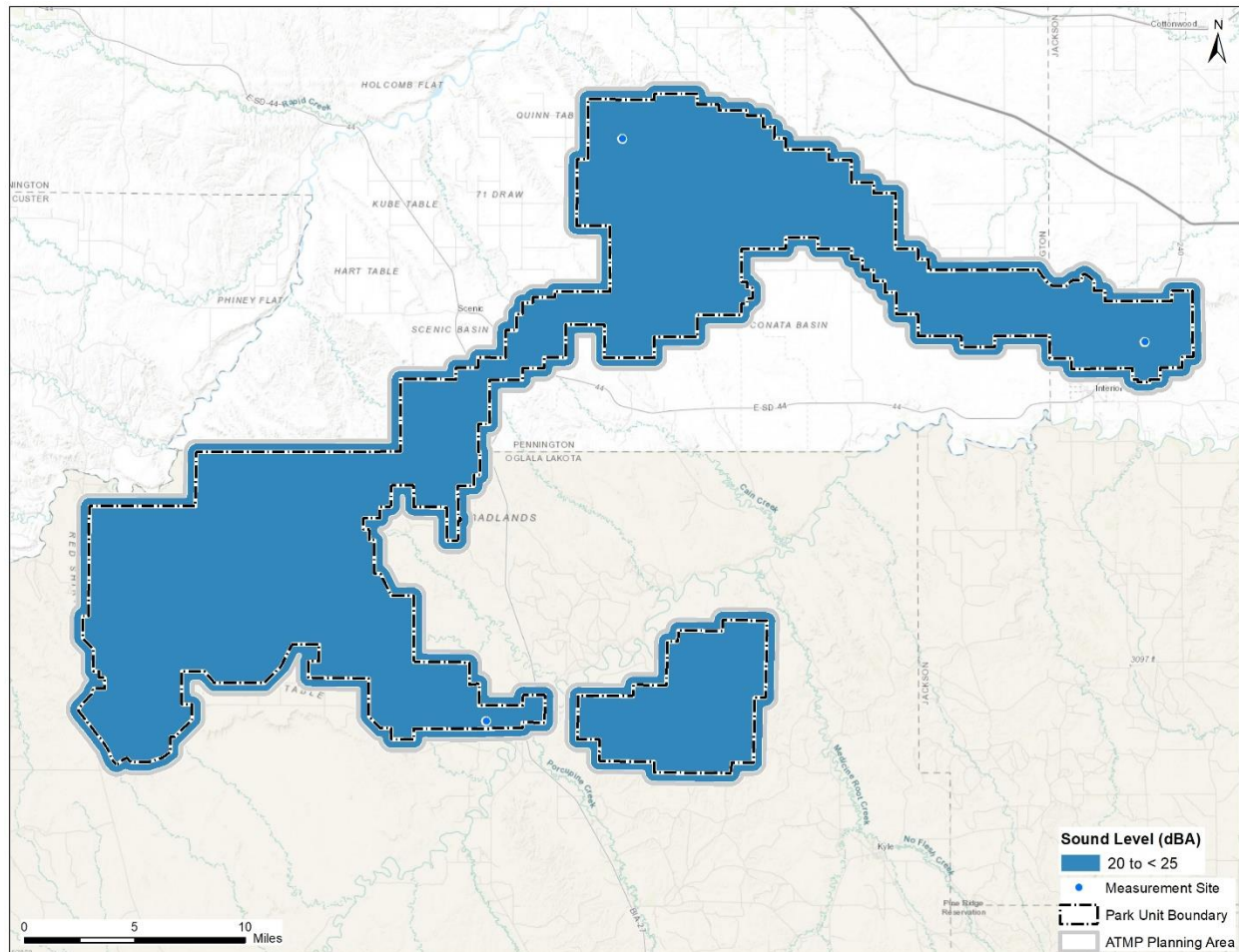
To characterize the natural and existing ambient at the Park, detailed sound level measurements were conducted at three locations in 2003, resulting in the identification of three acoustic zones representing regions with similar acoustic conditions (Table 3) (Lee et al., 2016). The acoustic sampling locations were chosen to be representative of the natural ecological zones or broad ecosystems of the Park and ATMP planning area, but were not intended to directly measure the amount of air tour noise. Median daytime natural ambient sound levels ( $L_{50}$ ) were 23-24 dBA; median daytime existing ambient sound levels were 23-27 dBA. The median or  $L_{50}$  sound level (in decibels) is the sound level exceeded 50 percent of the day.

**Table 3. Acoustic Conditions**

<b>Acoustic Sampling Area</b>	<b>Daytime Natural Ambient, <math>L_{50}</math> (dBA)</b>	<b>Daytime Existing Ambient, <math>L_{50}</math> (dBA)</b>	<b>Description</b>
Zone 1 (Development Zone, North Unit)	24	25	Natural sounds in this zone include wind through the low brush, sheep and deer. Human sounds include aircraft (helicopters), and vehicles.
Zone 2 (Wilderness Zone, Sage Creek)	24	27	Natural sounds in this zone include wind through the low brush and animals such as bison prairie dogs, birds, and insects. Human sounds include distant aircraft and visitors.
Zone 3 (Backcountry Zone, South Unit)	23	23	Natural sounds in this zone include wind through the low brush and animals such as cows, birds and insects. Human sounds include distant aircraft and vehicles.

## Ambient Map Data

From the detailed data collected in 2003, an ambient “map” of the natural soundscape<sup>3</sup> of the ATMP planning area was developed to be used in computer modeling (Figure 2). Lee et al., 2016 provides further technical detail on the acoustical monitoring and development of the ambient map.

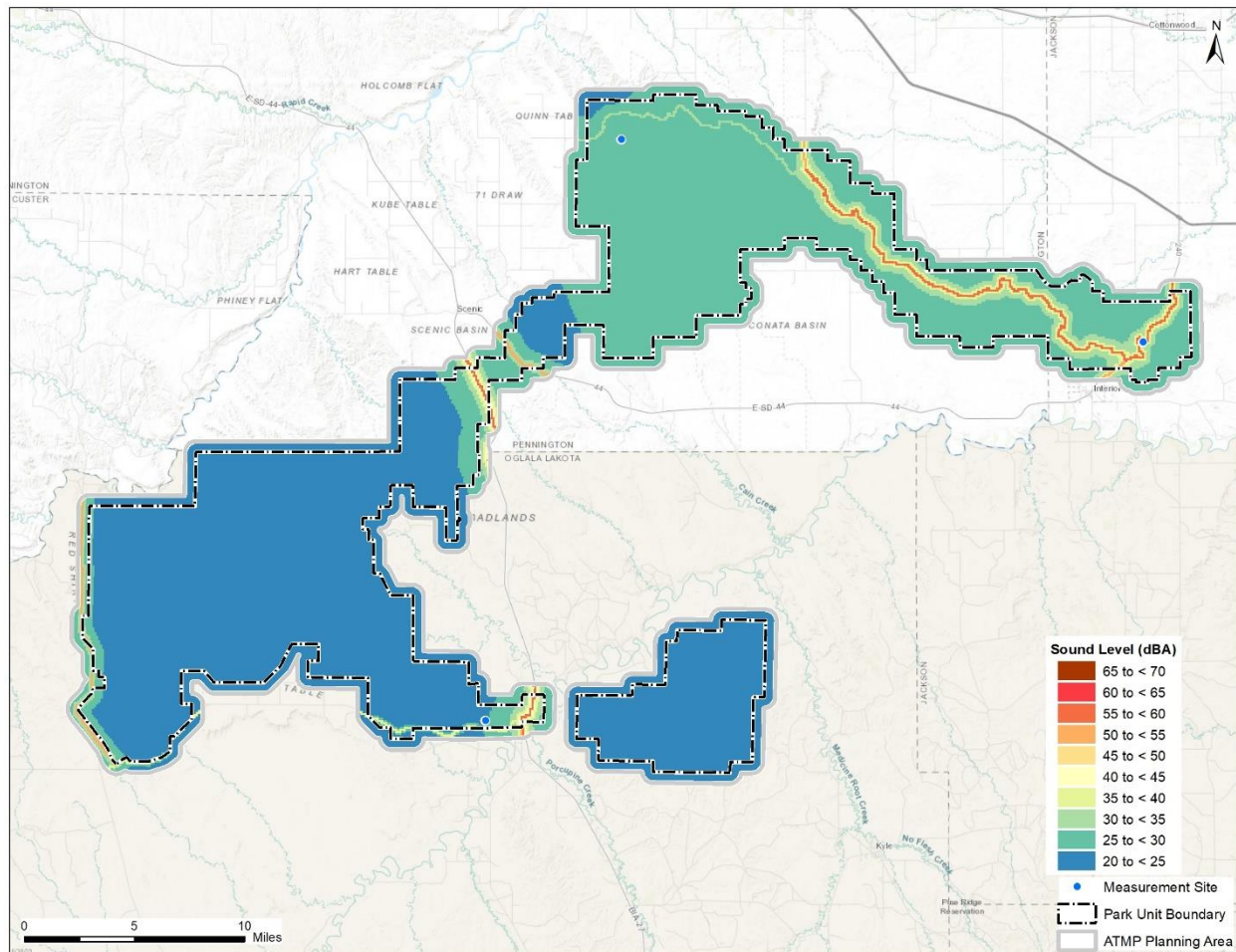


**Figure 2. Ambient map – Natural Ambient L<sub>50</sub>**

The contribution of aircraft noise during the sound level measurements provides a snapshot in time and is not necessarily a representative characterization of the existing ambient under current conditions (as described in the No Action Alternative and in Section 4 below). The existing ambient under current conditions was determined by adding the noise exposure due to existing air tours (Figure 8), modeled using the FAA Aviation Environmental Design Tool (AEDT) version 3e (see Section 4), to the Existing

<sup>3</sup> Natural Ambient/Soundscape (L<sub>50</sub>): 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. All ambient data were based on a 12-hour time period, i.e., 7 AM to 7 PM, which are the typical operating hours for air tours.

Ambient without Air Tours shown in Figure 3. The Existing Ambient without Air Tours 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; visitors, vehicles, amphitheater announcements, commercial jets, and general aviation aircraft. The result of this process is the Cumulative Existing Ambient (Figure 4).



**Figure 3. Ambient map – Existing Ambient without Air Tours L<sub>50</sub>**<sup>4</sup>

<sup>4</sup> Because it is not feasible to carry out field data collection efforts in all areas of a park, the effect of localized sound sources, such as from roadways, were modeled using the Federal Highway Administration's Traffic Noise Model® (TNM). Details of modeled roadway sound sources can be found in Lee et al., 2016.



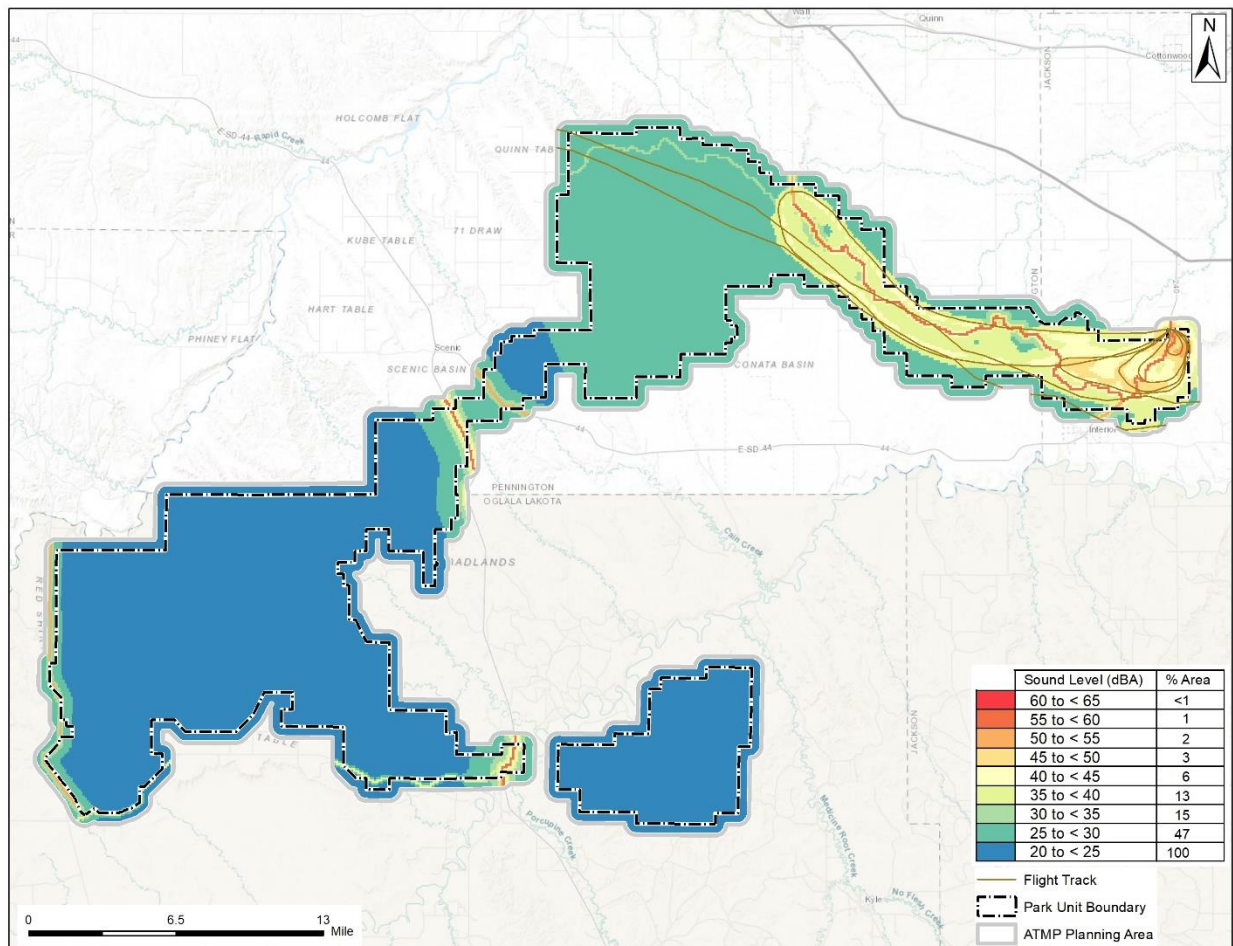


Figure 4. Cumulative Existing Ambient for Existing Conditions

## 4. Noise Model Method

The FAA's AEDT, Ver. 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 Code of Federal Regulations (CFR) sec. 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 (FAR) 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>5</sup> to compute

<sup>5</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 SAE Aerospace Information Report

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.

## Aircraft Data

The tour aircraft types identified for modeling are the Robinson R-44 and Cessna 206 aircraft. The flight routes used for modeling the No Action Alternative are shown in Figure 5. The flight routes used for modeling Alternatives 3 and 4 are shown in Figure 6.

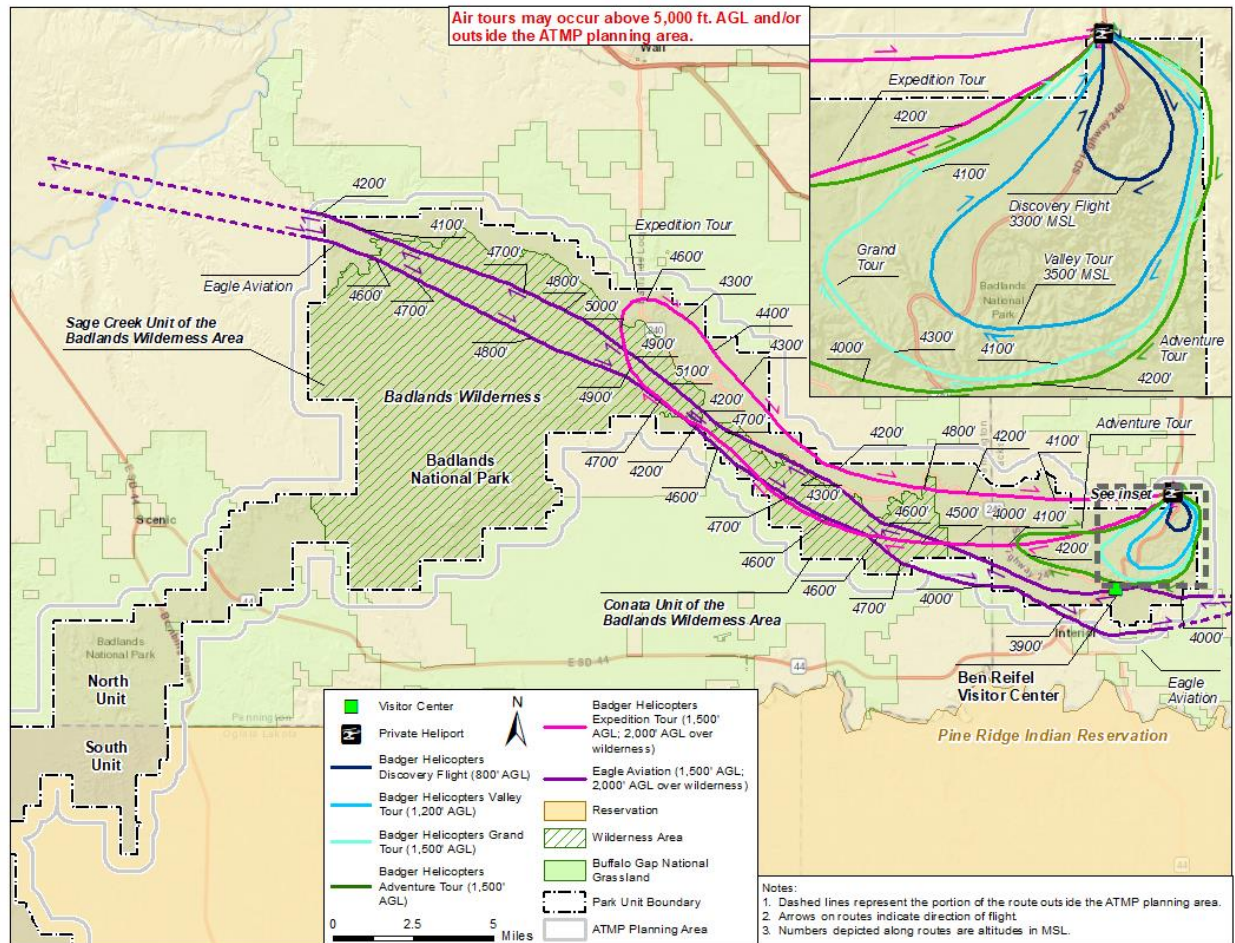
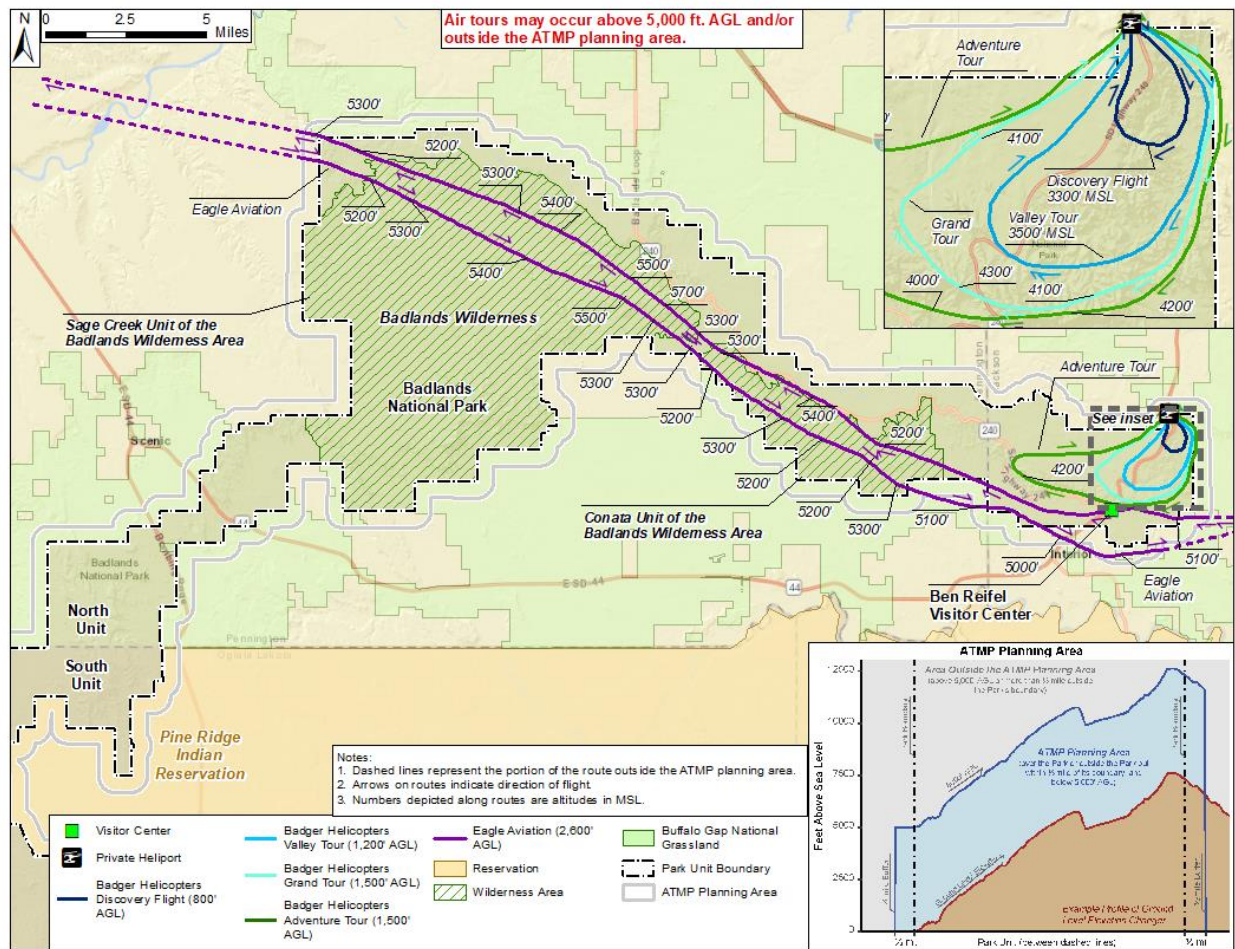


Figure 5. Air Tour Routes for modeling the No Action Alternative

(AIR) 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.





**Figure 6. Air Tour Routes for modeling Alternatives 3 and 4**

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 analysis for the No Action Alternative is based on a peak month, average day<sup>6</sup> (PMAD) of commercial air tour activity. For the three-year average of commercial air tour activity from 2017-2019, the PMAD 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 activity over the Park. For the ATMP planning area, the PMAD was identified as summarized in Table 4. Altitudes were modeled based on information provided by the operators.

<sup>6</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 (PMAD) representation of the operations would more adequately allow for disclosure of any potential impacts. PMAD has therefore been used as a conservative representation of assessment of AAD conditions.

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

**Table 4. Aircraft, Routes and Number of Operations Modeled**

Route	Aircraft	No Action Alternative (2017-2019 PMAD)	Alternative 3	Alternative 4
<b>Discovery Flight</b>	Robinson R-44	7	7	5
<b>Valley Tour</b>	Robinson R-44	1	1	0
<b>Grand Tour</b>	Robinson R-44	4	4	1
<b>Adventure Tour</b>	Robinson R-44	3	3	1
<b>Expedition Tour</b>	Robinson R-44	1	NA	NA
<b>Eagle Aviation route</b>	Cessna 206	1	1	1
	<b>Total</b>	17	16	8

## 5. Model Output

Two types of analyses were performed using FAA’s AEDT, Version 3e: 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 NPS provided a list of 31 location points, geographically located across the ATMP planning area, where noise levels were to be evaluated. In addition, noise levels were evaluated at 8 cultural resource and historic property locations (points 32-39) outside<sup>7</sup> the ATMP planning area. These locations are listed in Table 5 and shown geographically in Figure 7.

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<sup>7</sup> The routes, altitudes and numbers of air tours outside the ATMP planning area are unknown. This is because directly outside of the Park is uncontrolled airspace, and operators fly under Visual Flight Rules (VFR). For the purposes of disclosing the potential effects on locations outside the ATMP planning area, routes within the ATMP planning area were extrapolated based on available information. Additionally, ambient data are not available outside the ATMP planning area and thus time audible results were not computed.

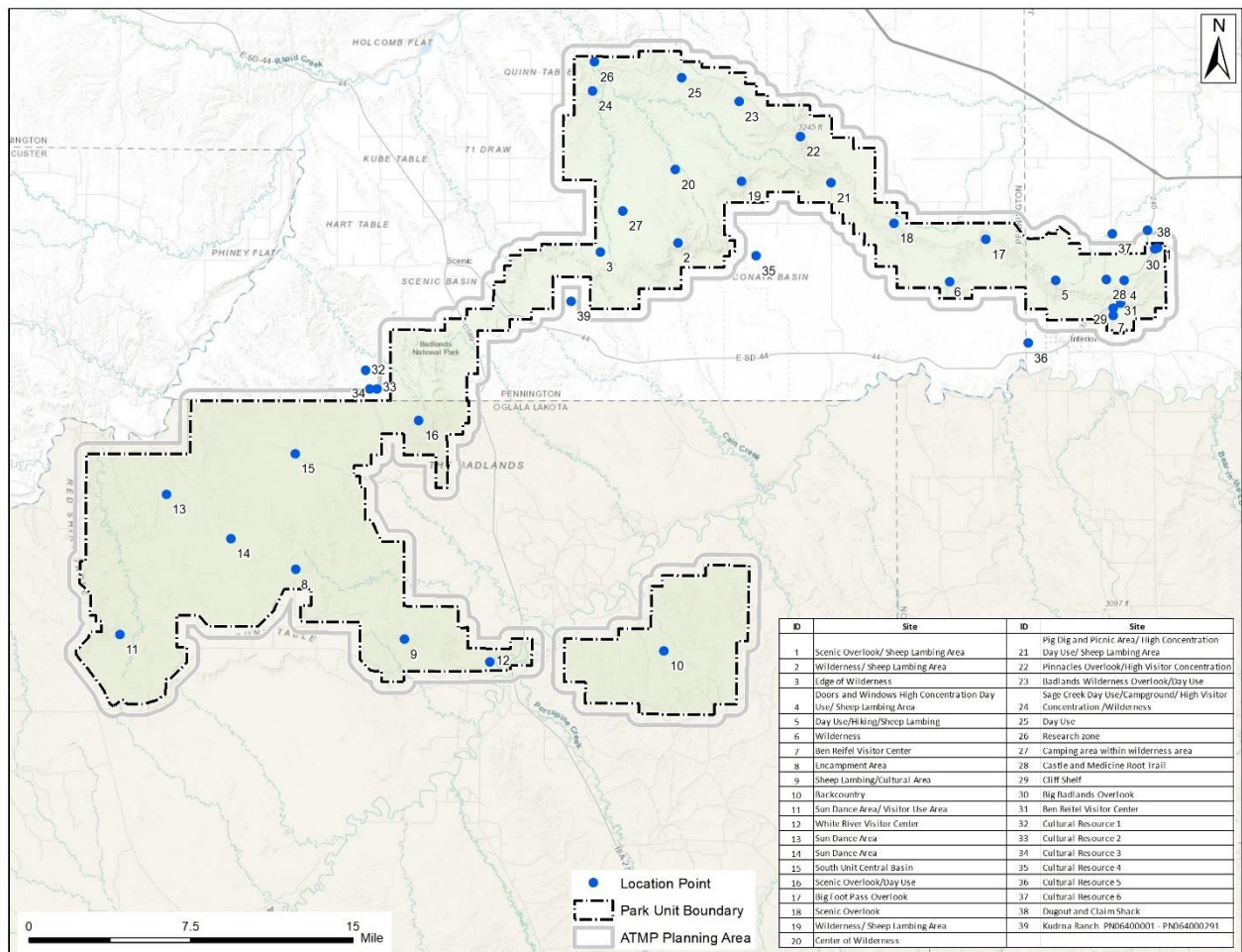


Figure 7. Location Points Modeled

**Table 5. Location points modeled**

Location	Longitude (decimal degrees)	Latitude (decimal degrees)	Natural Ambient L <sub>50</sub> (dBA)
1. Scenic Overlook/ Sheep Lambing Area	-101.8976	43.7891	20-25
2. Wilderness/ Sheep Lambing Area	-102.3416	43.7935	20-25
3. Edge of Wilderness	-102.4134	43.7874	20-25
4. Doors and Windows High Concentration Day Use/ Sheep Lambing Area	-101.9285	43.7672	20-25
5. Day Use/Hiking/Sheep Lambing	-101.9918	43.7677	20-25
6. Wilderness	-102.0898	43.7671	20-25
7. Ben Reifel Visitor Center	-101.9387	43.7439	20-25
8. Encampment Area	-102.6946	43.5738	20-25
9. Sheep Lambing/Cultural Area	-102.5939	43.5272	20-25
10. Backcountry	-102.3547	43.5196	20-25
11. Sun Dance Area/ Visitor Use Area	-102.8564	43.5297	20-25
12. White River Visitor Center	-102.5150	43.5121	20-25
13. Sun Dance Area	-102.8142	43.6238	20-25
14. Sun Dance Area	-102.7544	43.5944	20-25
15. South Unit Central Basin	-102.6953	43.6516	20-25
16. Scenic Overlook/Day Use	-102.5812	43.6741	20-25
17. Big Foot Pass Overlook	-102.0563	43.7953	20-25
18. Scenic Overlook	-102.1413	43.8063	20-25
19. Wilderness/ Sheep Lambing Area	-102.2826	43.8349	20-25
20. Center of Wilderness	-102.3438	43.8427	20-25
21. Pig Dig and Picnic Area/ High Concentration Day Use/ Sheep Lambing Area	-102.1995	43.8336	20-25
22. Pinnacles Overlook/High Visitor Concentration	-102.2278	43.8648	20-25
23. Badlands Wilderness Overlook/Day Use	-102.2848	43.8883	20-25
24. Sage Creek Day Use/Campground/ High Visitor Concentration /Wilderness	-102.4205	43.8956	20-25
25. Day Use	-102.3379	43.9043	20-25
26. Research zone	-102.4191	43.9150	20-25
27. Camping area within wilderness area	-102.3926	43.8150	20-25
28. Castle and Medicine Root Trail	-101.9448	43.7679	20-25
29. Cliff Shelf	-101.9318	43.7519	20-25
30. Big Badlands Overlook	-101.8998	43.7885	20-25
31. Ben Reifel Visitor Center	-101.9387	43.7486	20-25
32. Cultural Resource 1*	-102.6306	43.7078	NA
33. Cultural Resource 2*	-102.6200	43.6952	NA
34. Cultural Resource 3*	-102.6266	43.6951	NA
35. Cultural Resource 4*	-102.2693	43.7847	NA
36. Cultural Resource 5*	-102.0175	43.7256	NA
37. Cultural Resource 6*	-101.9393	43.7987	NA
38. Dugout and Claim Shack*	-101.9066	43.8010	NA
39. Kudrna Ranch PN06400001 - PN064000291*	-102.4404	43.7543	NA

\*Location point is outside the ATMP planning area.



## 6. Noise Model Results / Environmental Consequences

This section provides figures and tables showing the detailed noise results, organized by alternative. Presented first are the noise contour result maps for three metrics: 12-hour equivalent sound level (Figure 8, Figure 11, and Figure 14), time audible natural ambient (Figure 9, Figure 12, and Figure 15) and time above 35 dBA (Figure 10, Figure 13, and Figure 16), followed by tabular results (Table 6, Table 7, and Table 8) for the location points for each of the five acoustic metrics modeled. The noise contour map legends include the percentage of the ATMP planning area covered by each contour level.

### Alternative 1 (No Action Alternative)

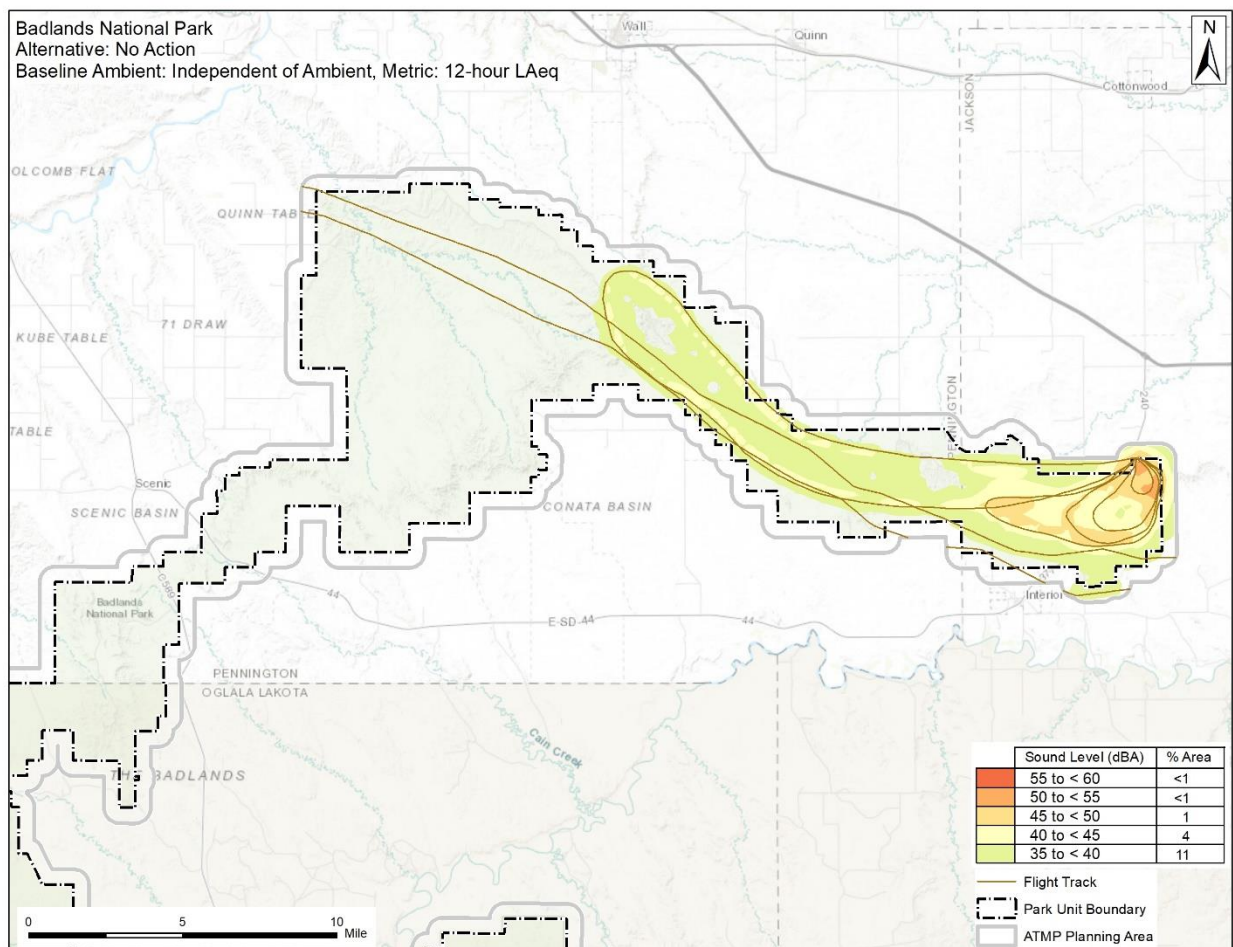


Figure 8. 12-hour equivalent sound level ( $L_{Aeq,12h}$ ) map for the No Action Alternative

As there are no nighttime events, DNL would be 3 dB less than the 12-hour equivalent sound level.

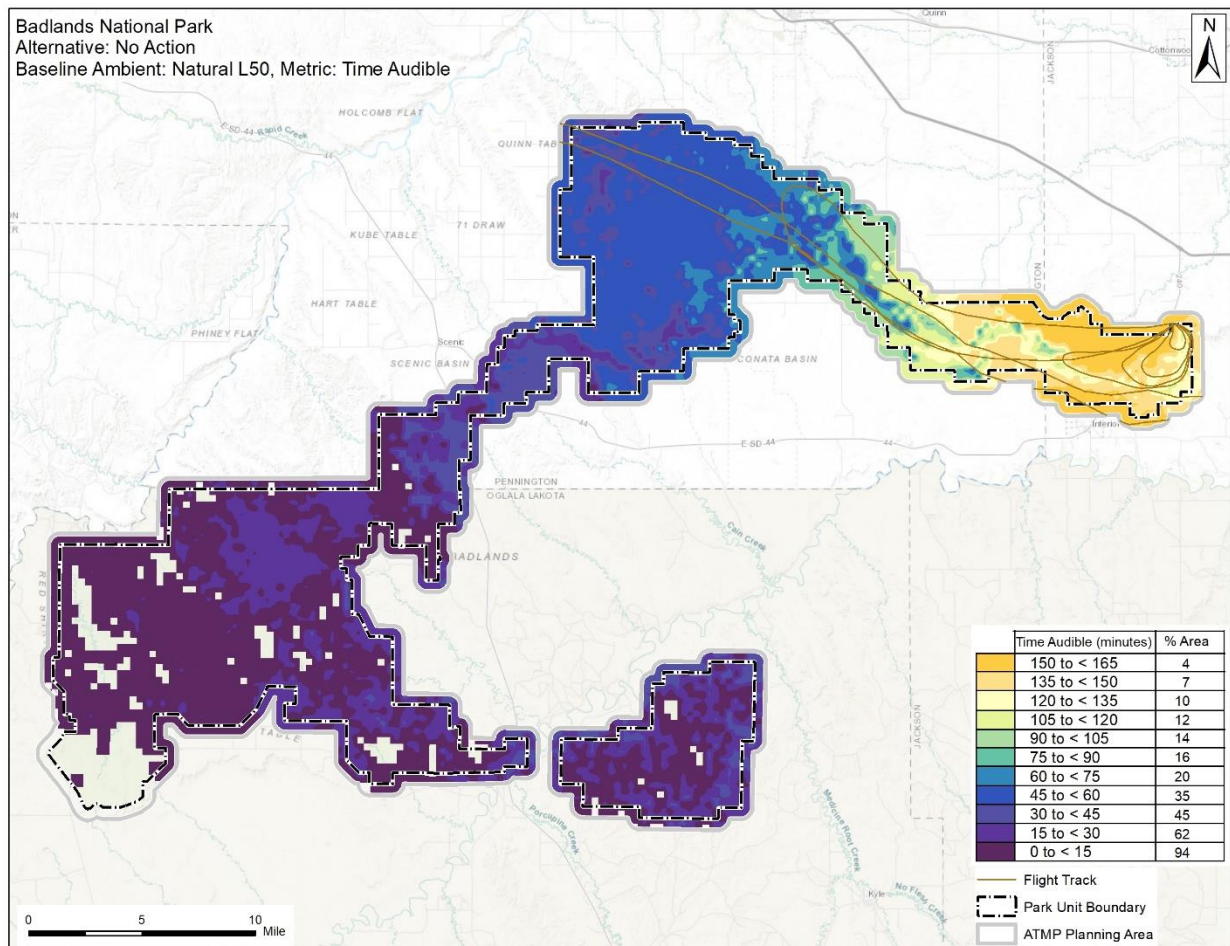


Figure 9. Time audible (for natural ambient) map for the No Action Alternative



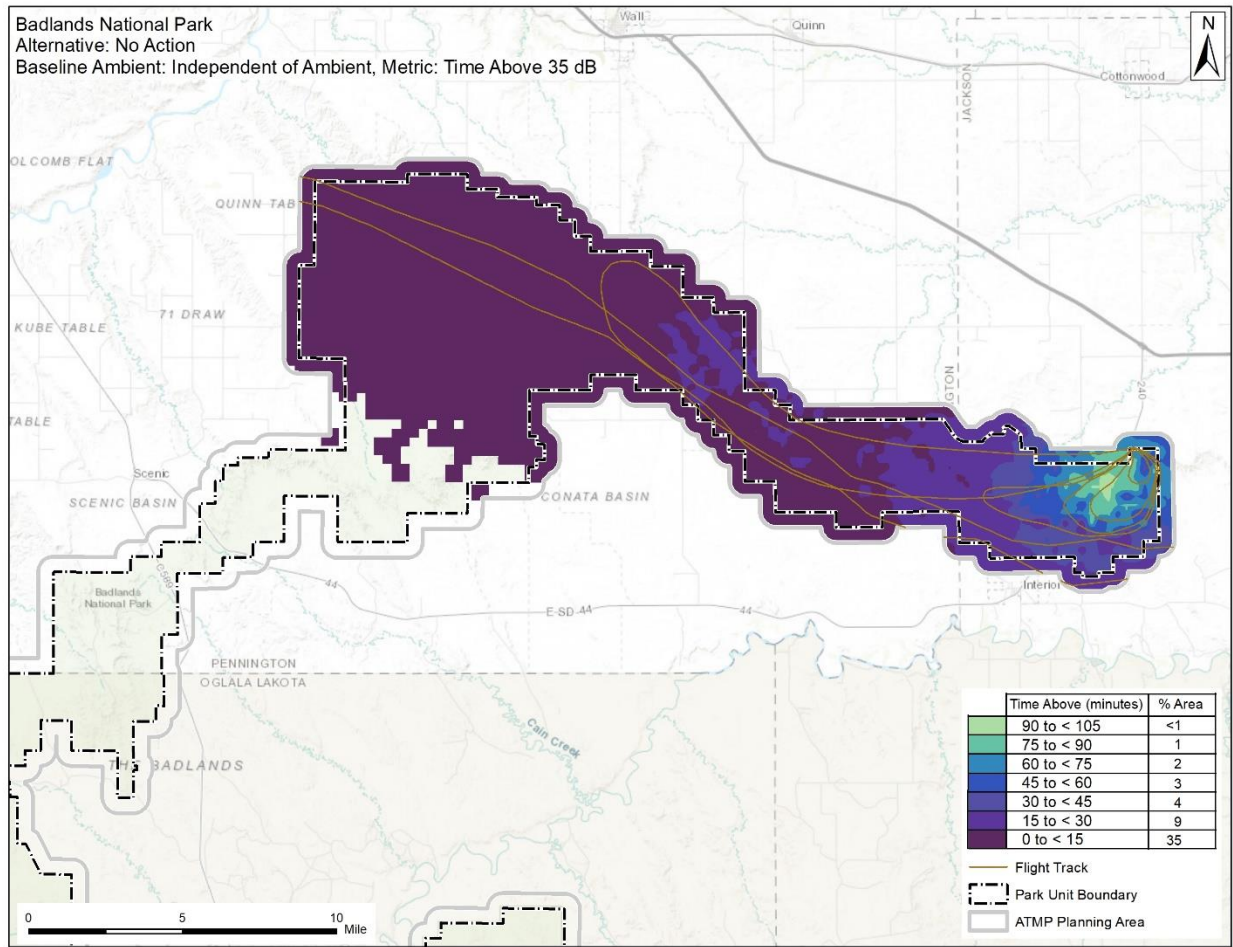


Figure 10. Time Above 35 dBA map for the No Action Alternative

**Table 6. Location point results - No Action Alternative**

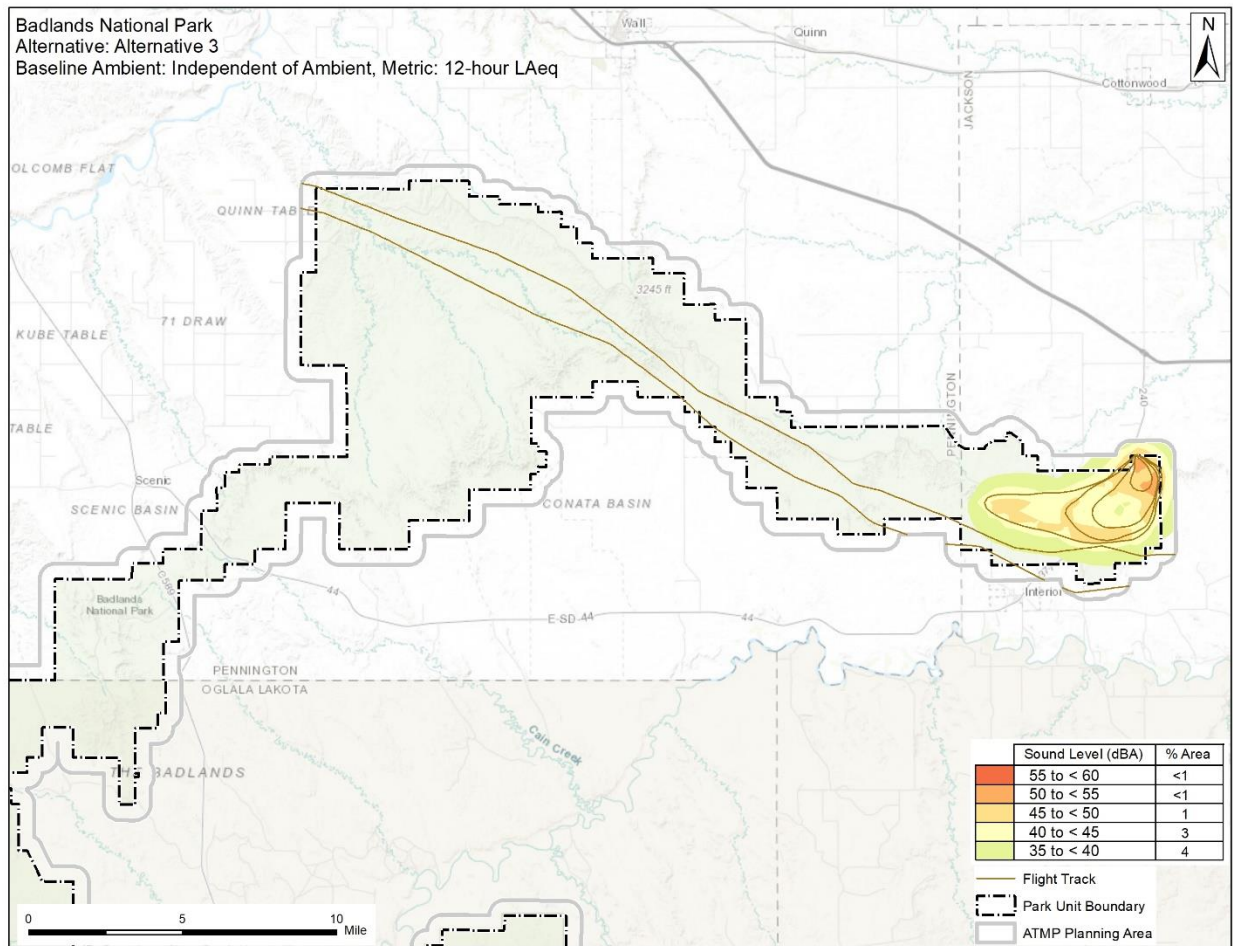
Location	12-Hour Equivalent Sound Level (dBA)*	Time Audible for Natural Ambient (minutes)	Time Above 35 dBA (minutes)	Time Above 52 dBA (minutes)	Maximum Sound Level (dBA)
1. Scenic Overlook / Sheep Lambing Area	49.8	119.2	49.0	21.2	75.9
2. Wilderness/ Sheep Lambing Area	2.1	29.7	0.0	0.0	27.6
3. Edge of Wilderness	9.3	48.2	0.0	0.0	29.9
4. Doors and Windows High Concentration Day Use/ Sheep Lambing Area	41.1	157.3	89.5	11.6	67.7
5. Day Use/Hiking/Sheep Lambing	46.3	148.5	39.1	12.5	70.8
6. Wilderness	33.8	74.7	9.1	1.6	66.0
7. Ben Reifel Visitor Center	37.0	143.1	35.0	5.7	62.8
8. Encampment Area	<0	8.1	0.0	0.0	14.0
9. Sheep Lambing/Cultural Area	<0	0.0	0.0	0.0	3.7
10. Backcountry	<0	13.7	0.0	0.0	15.0
11. Sun Dance Area/ Visitor Use Area	<0	0.0	0.0	0.0	8.2
12. White River Visitor Center	<0	0.0	0.0	0.0	11.3
13. Sun Dance Area	<0	1.9	0.0	0.0	14.3
14. Sun Dance Area	<0	5.9	0.0	0.0	14.8
15. South Unit Central Basin	<0	23.4	0.0	0.0	17.5
16. Scenic Overlook/Day Use	<0	0.0	0.0	0.0	8.9
17. Big Foot Pass Overlook	34.1	132.9	11.4	1.3	66.3
18. Scenic Overlook	38.9	118.8	15.8	5.2	67.4
19. Wilderness/ Sheep Lambing Area	25.6	62.5	8.6	0.2	52.8
20. Center of Wilderness	21.9	57.0	4.7	0.0	48.2
21. Pig Dig and Picnic Area/ High Concentration Day Use/ Sheep Lambing Area	37.2	81.1	15.2	4.3	65.2
22. Pinnacles Overlook/High Visitor Concentration	33.8	92.2	12.4	2.4	61.4
23. Badlands Wilderness Overlook / Day Use	27.3	49.5	5.1	0.6	57.8
24. Sage Creek Day Use / Campground / High Visitor Concentration / Wilderness	29.4	49.4	3.2	0.9	60.9
25. Day Use	27.4	52.9	3.6	0.6	58.1
26. Research zone	32.5	41.0	2.6	1.1	66.0
27. Camping area within wilderness area	11.4	55.7	0.0	0.0	33.8
28. Castle and Medicine Root Trail	43.6	156.0	68.7	17.0	67.4
29. Cliff Shelf	49.2	142.1	30.8	12.0	76.2
30. Big Badlands Overlook	50.7	114.0	46.2	15.8	76.9
31. Ben Reifel Visitor Center	40.1	118.2	27.4	7.3	66.0
32. Cultural Resource 1**	1.2	NA	0.0	0.0	21.0
33. Cultural Resource 2**	<0	NA	0.0	0.0	20.0

Location	12-Hour Equivalent Sound Level (dBA)*	Time Audible for Natural Ambient (minutes)	Time Above 35 dBA (minutes)	Time Above 52 dBA (minutes)	Maximum Sound Level (dBA)
34. Cultural Resource 3**	0.8	NA	0.0	0.0	20.2
35. Cultural Resource 4**	16.7	NA	2.7	0.0	39.0
36. Cultural Resource 5**	24.7	NA	10.2	0.0	50.3
37. Cultural Resource 6**	29.5	NA	33.8	0.5	56.1
38. Dugout and Claim Shack**	37.8	NA	52.8	6.8	67.3
39. Kudrna Ranch PN06400001 - PN064000291**	6.7	NA	0.0	0.0	26.3

\* As there are no nighttime events, DNL would be 3 dB less than the 12-hour equivalent sound level.

\*\*Location point is outside the ATMP planning area.

### Alternative 3



**Figure 11. 12-hour equivalent sound level ( $L_{Aeq,12h}$ ) map for Alternative 3**

As there are no nighttime events, then DNL would be 3 dB less than the 12-hour equivalent sound level. If air tours are restricted to operating within a window that is less than 12 hours, e.g., from 3 hours after sunrise until 3 hours before sunset, the equivalent sound level would be greater by a factor equal to  $10 \cdot \log_{10}(12/n)$  where  $n$  is the number of hours of operation. For example, if the window is 8 hours, then the 8-hour equivalent sound level will be equal to  $10 \cdot \log_{10}(12/8) = 1.8$  dBA greater than the 12-hour equivalent sound level.

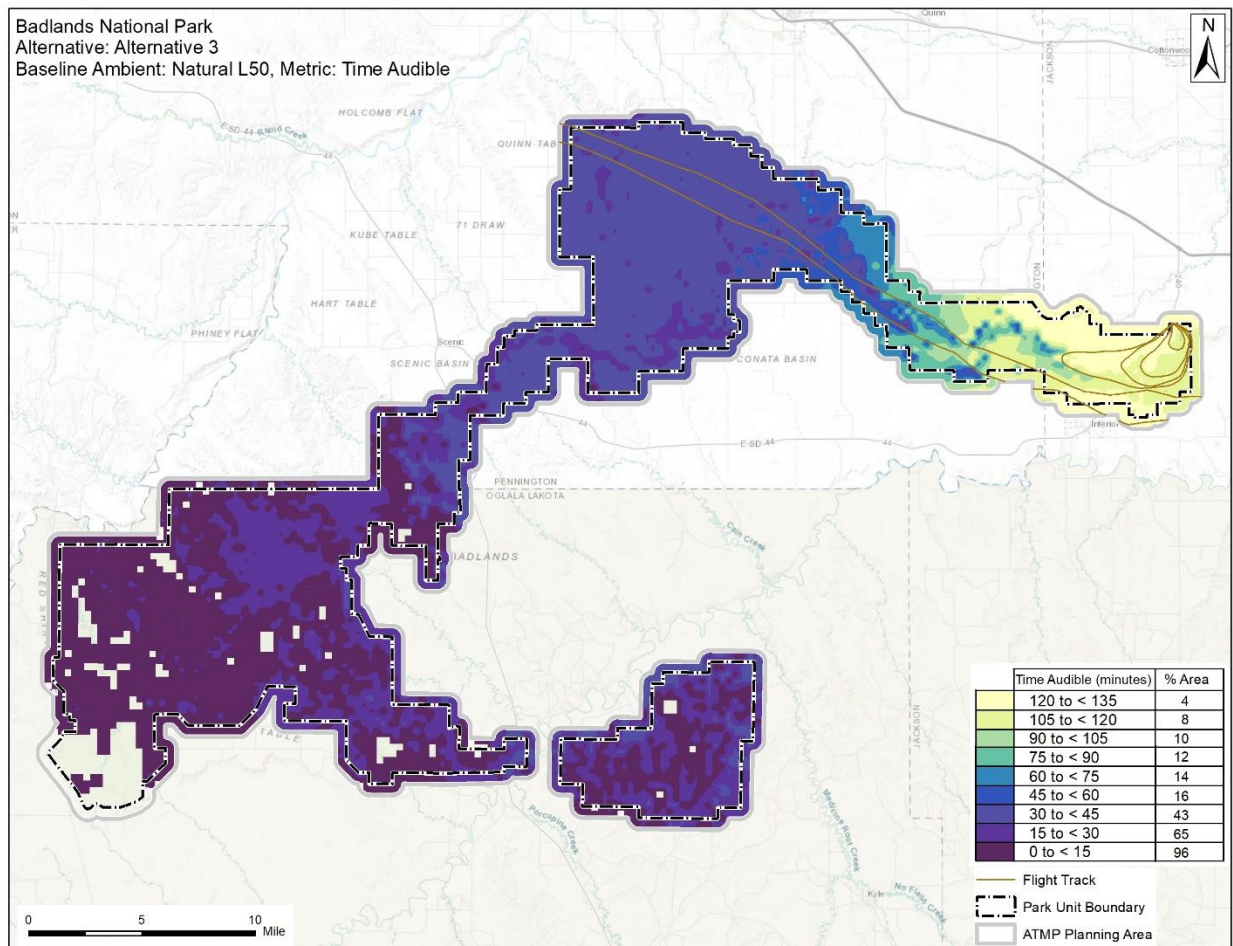


Figure 12. Time Audible (for natural ambient) map for Alternative 3



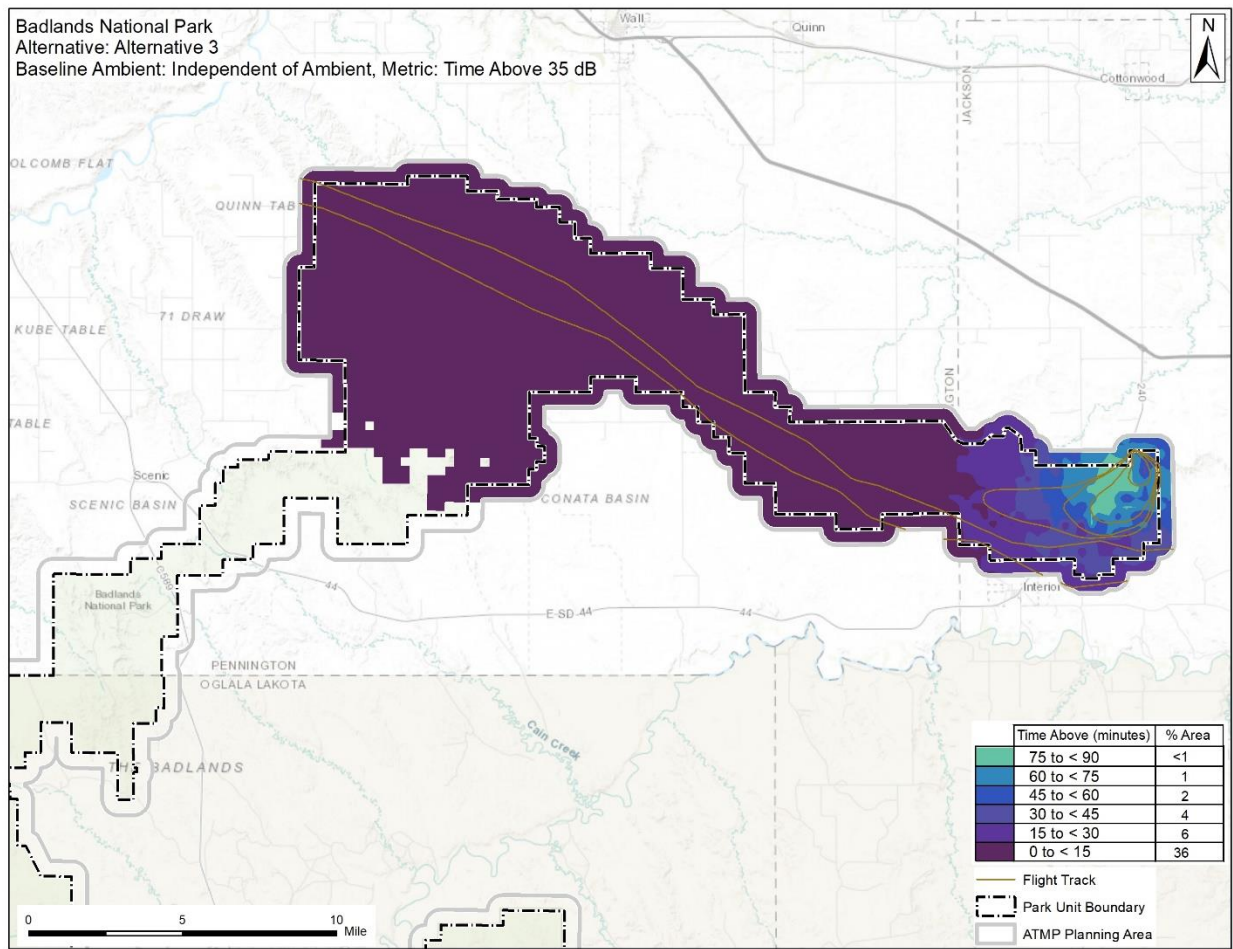


Figure 13. Time Above 35 dBA map for Alternative 3

**Table 7. Location point results for Alternative 3**

Location	12-Hour Equivalent Sound Level (dBA)*	Time Audible for Natural Ambient (minutes)	Time Above 35 dBA (minutes)	Time Above 52 dBA (minutes)	Maximum Sound Level (dBA)
1. Scenic Overlook / Sheep Lambing Area	49.8	107.2	48.3	21.2	75.9
2. Wilderness/ Sheep Lambing Area	2.4	23.3	0.0	0.0	27.6
3. Edge of Wilderness	9.7	37.7	0.0	0.0	32.4
4. Doors and Windows High Concentration Day Use/ Sheep Lambing Area	41.1	126.0	83.1	11.6	67.7
5. Day Use/Hiking/Sheep Lambing	45.9	119.1	31.9	10.3	70.8
6. Wilderness	29.1	45.9	2.3	0.7	62.0
7. Ben Reifel Visitor Center	36.5	118.0	34.8	5.4	60.2
8. Encampment Area	<0	6.5	0.0	0.0	14.0
9. Sheep Lambing/Cultural Area	<0	0.0	0.0	0.0	4.2
10. Backcountry	<0	18.5	0.0	0.0	16.0
11. Sun Dance Area/ Visitor Use Area	<0	0.0	0.0	0.0	8.5
12. White River Visitor Center	<0	0.0	0.0	0.0	11.7
13. Sun Dance Area	<0	2.8	0.0	0.0	15.0
14. Sun Dance Area	<0	9.8	0.0	0.0	15.2
15. South Unit Central Basin	<0	22.8	0.0	0.0	17.7
16. Scenic Overlook/Day Use	<0	0.0	0.0	0.0	10.2
17. Big Foot Pass Overlook	23.5	99.7	4.3	0.0	51.4
18. Scenic Overlook	30.5	86.4	3.4	1.0	62.8
19. Wilderness/ Sheep Lambing Area	26.2	38.8	4.5	0.5	55.4
20. Center of Wilderness	21.6	37.7	4.6	0.0	48.0
21. Pig Dig and Picnic Area/ High Concentration Day Use/ Sheep Lambing Area	31.9	55.6	3.1	0.7	64.5
22. Pinnacles Overlook/High Visitor Concentration	25.5	61.8	3.1	0.5	54.8
23. Badlands Wilderness Overlook / Day Use	23.9	33.1	3.8	0.0	53.1
24. Sage Creek Day Use / Campground / High Visitor Concentration / Wilderness	28.6	37.7	3.6	0.8	59.1
25. Day Use	27.0	36.3	3.8	0.6	57.1
26. Research zone	30.4	33.5	2.9	1.1	62.0
27. Camping area within wilderness area	11.6	37.7	0.0	0.0	34.3
28. Castle and Medicine Root Trail	43.5	124.8	61.6	16.7	67.4
29. Cliff Shelf	49.1	117.1	31.0	11.6	76.2
30. Big Badlands Overlook	50.7	103.1	45.7	15.8	76.9
31. Ben Reifel Visitor Center	39.8	105.9	27.6	7.1	65.5
32. Cultural Resource 1**	1.7	NA	0.0	0.0	21.2
33. Cultural Resource 2**	0.8	NA	0.0	0.0	20.1

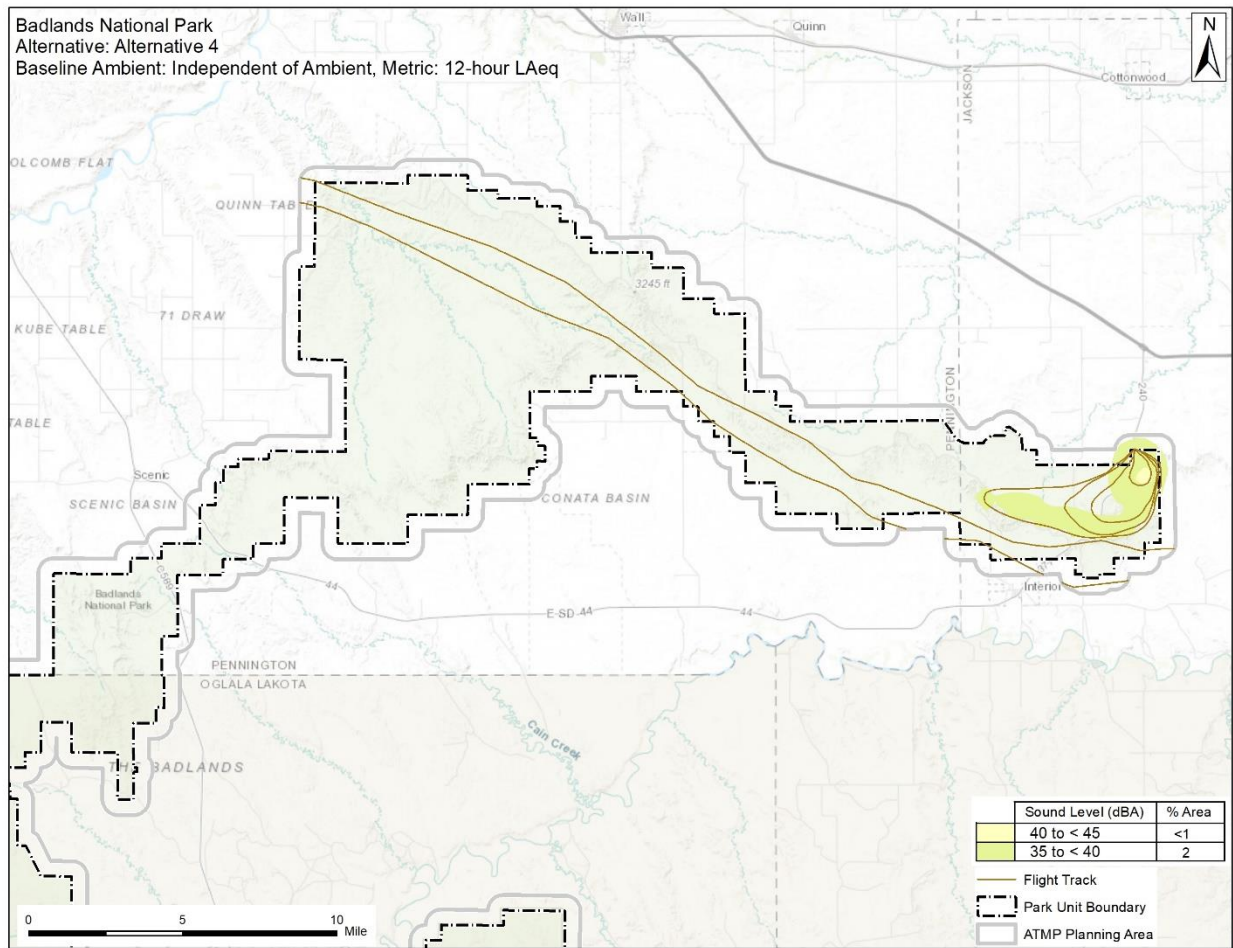
Location	12-Hour Equivalent Sound Level (dBA)*	Time Audible for Natural Ambient (minutes)	Time Above 35 dBA (minutes)	Time Above 52 dBA (minutes)	Maximum Sound Level (dBA)
34. Cultural Resource 3**	1.4	NA	0.0	0.0	20.4
35. Cultural Resource 4**	17.8	NA	3.8	0.0	41.9
36. Cultural Resource 5**	25.2	NA	9.3	0.0	50.0
37. Cultural Resource 6**	27.2	NA	28.1	0.1	52.8
38. Dugout and Claim Shack**	37.6	NA	50.0	6.6	67.3
39. Kudrna Ranch PN06400001 - PN064000291**	7.1	NA	0.0	0.0	26.6

\* As there are no nighttime events, DNL would be 3 dB less than the 12-hour equivalent sound level. If air tours are restricted to operating within a window that is less than 12 hours, e.g., from 3 hours after sunrise until 3 hours before sunset, the equivalent sound level would be greater by a factor equal to  $10^{\log_{10}(12/n)}$  where n is the number of hours of operation. For example, if the window is 8 hours, then the 8-hour equivalent sound level would be equal to  $10^{\log_{10}(12/8)} = 1.8$  dBA greater than the 12-hour equivalent sound level.

\*\*Location point is outside the ATMP planning area.



## Alternative 4



**Figure 14. 12-hour equivalent sound level ( $L_{Aeq,12h}$ ) map for Alternative 4**

As there are no nighttime events, then DNL would be 3 dB less than the 12-hour equivalent sound level. If air tours are restricted to operating within a window that is less than 12 hours, e.g., from 3 hours after sunrise until 3 hours before sunset, the equivalent sound level would be greater by a factor equal to  $10 \cdot \log_{10}(12/n)$  where  $n$  is the number of hours of operation. For example, if the window is 8 hours, then the 8-hour equivalent sound level would be equal to  $10 \cdot \log_{10}(12/8) = 1.8$  dBA greater than the 12-hour equivalent sound level.

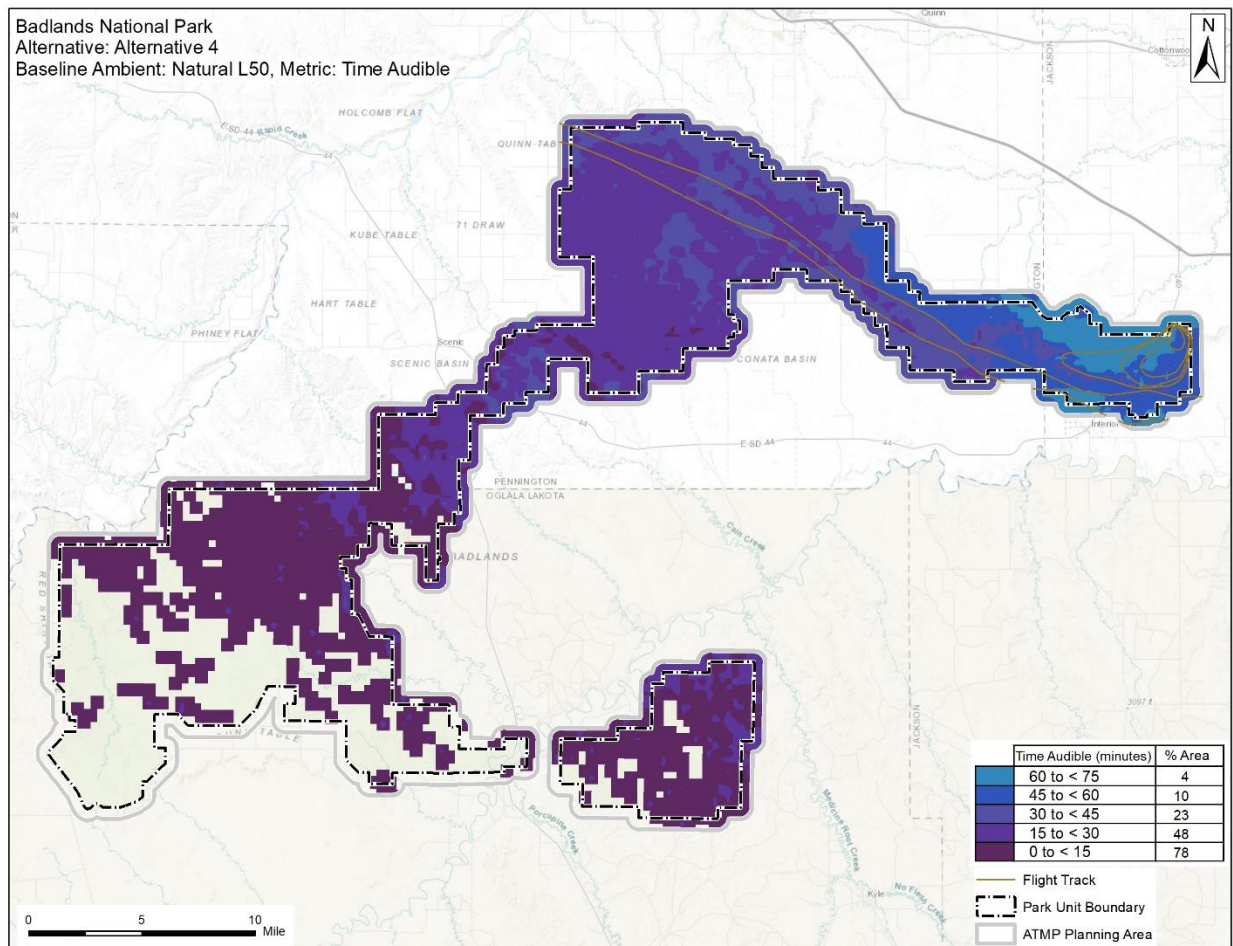


Figure 15. Time Audible (for natural ambient) map for Alternative 4

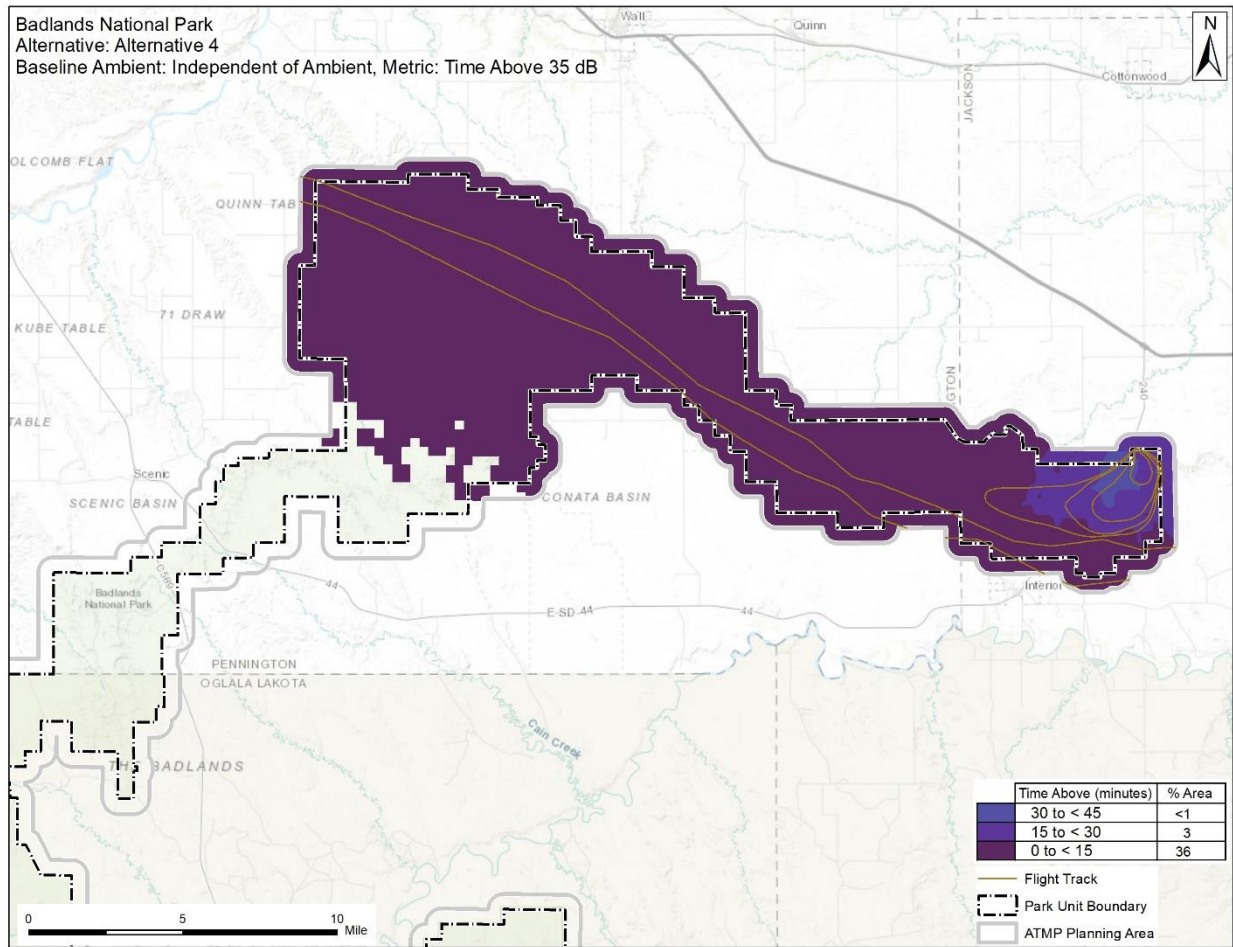


Figure 16. Time Above 35 dBA map for Alternative 4

**Table 8. Location point results for Alternative 4**

Location	12-Hour Equivalent Sound Level (dBA)*	Time Audible for Natural Ambient (minutes)	Time Above 35 dBA (minutes)	Time Above 52 dBA (minutes)	Maximum Sound Level (dBA)
1. Scenic Overlook / Sheep Lambing Area	45.9	48.1	22.2	8.6	73.4
2. Wilderness/ Sheep Lambing Area	1.9	23.9	0.0	0.0	27.6
3. Edge of Wilderness	9.5	36.2	0.0	0.0	31.3
4. Doors and Windows High Concentration Day Use/ Sheep Lambing Area	35.0	67.7	31.2	3.3	59.6
5. Day Use/Hiking/Sheep Lambing	41.2	60.6	12.8	3.8	70.8
6. Wilderness	30.2	39.3	2.2	0.7	63.8
7. Ben Reifel Visitor Center	33.9	59.6	12.5	2.9	61.4
8. Encampment Area	<0	8.3	0.0	0.0	14.0
9. Sheep Lambing/Cultural Area	<0	0.0	0.0	0.0	3.9
10. Backcountry	<0	17.3	0.0	0.0	15.1
11. Sun Dance Area/ Visitor Use Area	<0	0.0	0.0	0.0	8.4
12. White River Visitor Center	<0	0.0	0.0	0.0	11.5
13. Sun Dance Area	<0	2.6	0.0	0.0	14.7
14. Sun Dance Area	<0	7.5	0.0	0.0	15.0
15. South Unit Central Basin	<0	24.6	0.0	0.0	17.6
16. Scenic Overlook/Day Use	<0	0.0	0.0	0.0	9.6
17. Big Foot Pass Overlook	23.0	49.6	3.8	0.0	51.5
18. Scenic Overlook	31.6	55.8	3.3	1.0	64.8
19. Wilderness/ Sheep Lambing Area	24.8	34.7	4.7	0.1	52.6
20. Center of Wilderness	21.9	36.5	4.9	0.0	48.1
21. Pig Dig and Picnic Area/ High Concentration Day Use/ Sheep Lambing Area	31.2	37.8	2.9	1.1	63.3
22. Pinnacles Overlook/High Visitor Concentration	23.9	40.1	2.8	0.3	55.3
23. Badlands Wilderness Overlook / Day Use	26.9	31.5	3.7	0.6	57.3
24. Sage Creek Day Use / Campground / High Visitor Concentration / Wilderness	29.0	36.5	3.4	0.9	60.0
25. Day Use	27.2	34.8	3.7	0.6	57.6
26. Research zone	31.3	32.1	2.7	1.1	63.8
27. Camping area within wilderness area	11.5	36.5	0.0	0.0	33.9
28. Castle and Medicine Root Trail	38.0	66.5	21.4	5.0	67.4
29. Cliff Shelf	44.2	59.2	11.6	4.3	76.2
30. Big Badlands Overlook	47.8	45.1	20.9	6.5	75.8
31. Ben Reifel Visitor Center	35.8	46.8	9.7	2.7	65.5
32. Cultural Resource 1**	1.5	NA	0.0	0.0	21.1
33. Cultural Resource 2**	0.3	NA	0.0	0.0	20.1

Location	12-Hour Equivalent Sound Level (dBA)*	Time Audible for Natural Ambient (minutes)	Time Above 35 dBA (minutes)	Time Above 52 dBA (minutes)	Maximum Sound Level (dBA)
34. Cultural Resource 3**	1.1	NA	0.0	0.0	20.3
35. Cultural Resource 4**	16.6	NA	3.5	0.0	40.3
36. Cultural Resource 5**	23.4	NA	5.8	0.0	50.2
37. Cultural Resource 6**	22.6	NA	9.4	0.0	52.8
38. Dugout and Claim Shack**	33.6	NA	22.1	2.6	67.3
39. Kudrna Ranch PN06400001 - PN064000291**	6.9	NA	0.0	0.0	26.4

\* As there are no nighttime events, DNL would be 3 dB less than the 12-hour equivalent sound level. If air tours are restricted to operating within a window that is less than 12 hours, e.g., from 3 hours after sunrise until 3 hours before sunset, the equivalent sound level would be greater by a factor equal to  $10 \cdot \log_{10}(12/n)$  where n is the number of hours of operation. For example, if the window is 8 hours, then the 8-hour equivalent sound level would be equal to  $10 \cdot \log_{10}(12/8) = 1.8$  dBA greater than the 12-hour equivalent sound level.

\*\*Location point is outside the ATMP planning area.

## 7. Comparison of Alternatives by Metric

This section provides tables showing the detailed noise results, organized by metric for each of the five acoustic metrics modeled. These tables allow for comparison across the alternatives. High-level observations of the differences between alternatives by metric include:

### 12-hour Equivalent Sound Level (Table 9 and Table 12)

- Compared to the current conditions, the average sound levels at most modeled location points under **Alternative 3** would not significantly change, as Alternative 3 represents a small (6%) reduction in the number of daily operations. Locations under or near the Expedition Tour (eliminated under Alternative 3) would experience a decrease; average sound levels may be up to 10 dBA lower, see points 6, 17, 18, 21, 22, and 23.
- The noise footprint (for 12-hour average sound levels exceeding 35 dBA) for **Alternative 3** affects 7% less of the ATMP planning area than current conditions.
- Compared to the current conditions, the average sound levels at all modeled location points under **Alternative 4** would be lower, as Alternative 4 represents a 53% reduction in the number of daily operations. As with Alternative 3, much lower sound levels would be experienced at locations under or near the Expedition Tour which is eliminated under Alternative 4 as well.
- Alternative 4** would eliminate areas with 12-hour average sound levels over 45 dBA. The noise footprint (for 12-hour average sound levels exceeding 35 dBA) would affect 9% less of the ATMP planning area than current conditions.
- As there are no nighttime events, then DNL would be 3 dB less than the 12-hour equivalent sound level.
- If air tours are restricted to operating within a window that is less than 12 hours, e.g., from 3 hours after sunrise until 3 hours before sunset, the equivalent sound level would be greater by a



factor equal to  $10 \cdot \log_{10}(12/n)$  where  $n$  is the number of hours of operation. For example, if the window is 8 hours, then the 8-hour equivalent sound level would be equal to  $10 \cdot \log_{10}(12/8) = 1.8$  dBA greater than the 12-hour equivalent sound level.

#### Time Audible Natural Ambient (Table 10 and Table 13)

- Compared to the current conditions, the average time audible at most modeled location points under **Alternative 3** would be 15 minutes less. Locations 10, 13, and 14 would be the exception, as altitudes for the Eagle Aviation route are increased from 1,500 feet (ft.) above ground level (AGL) under existing conditions to 2,600 ft. AGL under Alternative 3.
- Compared to the current conditions, the time audible footprint for **Alternative 3** affects *1% more* of the ATMP planning area due to the increase in altitude of the Eagle Aviation route as mentioned previously.
- Compared to the current conditions, the average time audible at most modeled location points under **Alternative 4** would be 34 minutes less. Locations 10, 13, and 14 would be the exception, as altitudes for the Eagle Aviation are increased from 1,500 ft. AGL under existing conditions to 2,600 ft. AGL under Alternative 4.
- The time audible footprint for **Alternative 4** affects 16% less of the ATMP planning area due to the decrease in number of operations.

#### Time Above 35 (Table 11 and Table 14)

- Compared to the current conditions, the average time above 35 dBA at the modeled location points under **Alternative 3** would be 2 minutes less. Locations under or near the Expedition Tour would experience the largest decrease, up to 12 minutes, see points 6, 17, 18, 21, 22, and 23.
- The time above 35 dBA footprint for **Alternative 3** would affect *1% more* of the ATMP planning area than current conditions, due to the increase in altitude of the Eagle Aviation route.
- Compared to the current conditions, the average time above 35 dBA at the modeled location points under **Alternative 4** would be 10 minutes less. Locations 4 and 28 would experience the largest decrease, 58 and 47 minutes, respectively.
- The time above 35 dBA footprint for **Alternative 4** would affect *1% more* of the ATMP planning area than current conditions, due to the increase in altitude of the Eagle Aviation route.

#### Time Above 52 (Table 15)

- Compared to the current conditions, the average time above 52 dBA at the modeled location points under **Alternative 3** would be <1 minute less. Locations under or near the Expedition Tour would experience the largest decrease, up to 4 minutes, see points 18 and 21.
- Compared to the current conditions, the average time above 52 dBA at the modeled location points under **Alternative 4** would be 3 minutes less. Locations 1 and 28, which are near the Park entrance and private heliport, would experience the largest decrease, up to 13 minutes.

#### Maximum Sound Level (Table 16)

- 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 little to no change in the maximum sound level between alternatives.
- Under **Alternative 3**, locations under or near the Expedition Tour (eliminated under Alternative 3) would experience a reduction in maximum sound level; the largest being 15 dBA at point 17 (Big Foot Pass Overlook). Points 6, 18, 21, 22, 26, and 37 would experience a reduction in maximum sound level greater than 3 dBA.
- Under **Alternative 4**, locations 4, 17, 22, 26, and 37 would experience a reduction in maximum sound level greater than 3 dBA.

**Table 9. Comparison of contour results for 12-hour Equivalent Sound Level**

12-hour Equivalent Sound Level Contour Results (dBA)	% Area for No Action	% Area for Alternative 3	% Area for Alternative 4
55 to <60	<1	<1	0
50 to < 55	<1	<1	0
45 to < 50	1	1	0
40 to < 45	4	3	<1
35 to < 40	11	4	2

**Table 10. Comparison of contour results for Time Audible for Natural Ambient**

Time Audible for Natural Ambient Contour Results (minutes)	% Area for No Action	% Area for Alternative 3	% Area for Alternative 4
150 to < 165	4	0	0
135 to < 150	7	0	0
120 to < 135	10	4	0
105 to < 120	12	8	0
90 to < 105	14	10	0
75 to < 90	16	12	0
60 to < 75	20	14	4
45 to < 60	35	16	10
30 to < 45	45	43	23
15 to < 30	62	65	48
0 to < 15	94	96	78

**Table 11. Comparison of contour results for Time Above 35 dBA**

Time Above 35 dBA Contour Results (minutes)	% Area for No Action	% Area for Alternative 3	% Area for Alternative 4
90 to < 105	<1	0	0
75 to < 90	1	<1	0
60 to < 75	2	1	0
45 to < 60	2	2	0
30 to < 45	4	4	<1

Time Above 35 dBA Contour Results (minutes)	% Area for No Action	% Area for Alternative 3	% Area for Alternative 4
15 to < 30	9	6	3
0 to < 15	35	36	36

**Table 12. Comparison of location point results for 12-hour Equivalent Sound Level**

Location	No Action (dBA)	Alternative 3 (dBA)	Alternative 4 (dBA)
1. Scenic Overlook / Sheep Lambing Area	49.8	49.8	45.9
2. Wilderness/ Sheep Lambing Area	2.1	2.4	1.9
3. Edge of Wilderness	9.3	9.7	9.5
4. Doors and Windows High Concentration Day Use/ Sheep Lambing Area	41.1	41.1	35.0
5. Day Use/Hiking/Sheep Lambing	46.3	45.9	41.2
6. Wilderness	33.8	29.1	30.2
7. Ben Reifel Visitor Center	37.0	36.5	33.9
8. Encampment Area	<0	<0	<0
9. Sheep Lambing/Cultural Area	<0	<0	<0
10. Backcountry	<0	<0	<0
11. Sun Dance Area/ Visitor Use Area	<0	<0	<0
12. White River Visitor Center	<0	<0	<0
13. Sun Dance Area	<0	<0	<0
14. Sun Dance Area	<0	<0	<0
15. South Unit Central Basin	<0	<0	<0
16. Scenic Overlook/Day Use	<0	<0	<0
17. Big Foot Pass Overlook	34.1	23.5	23.0
18. Scenic Overlook	38.9	30.5	31.6
19. Wilderness/ Sheep Lambing Area	25.6	26.2	24.8
20. Center of Wilderness	21.9	21.6	21.9
21. Pig Dig and Picnic Area/ High Concentration Day Use/ Sheep Lambing Area	37.2	31.9	31.2
22. Pinnacles Overlook/High Visitor Concentration	33.8	25.5	23.9
23. Badlands Wilderness Overlook / Day Use	27.3	23.9	26.9
24. Sage Creek Day Use / Campground / High Visitor Concentration / Wilderness	29.4	28.6	29.0
25. Day Use	27.4	27.0	27.2
26. Research zone	32.5	30.4	31.3
27. Camping area within wilderness area	11.4	11.6	11.5
28. Castle and Medicine Root Trail	43.6	43.5	38.0
29. Cliff Shelf	49.2	49.1	44.2
30. Big Badlands Overlook	50.7	50.7	47.8
31. Ben Reifel Visitor Center	40.1	39.8	35.8
32. Cultural Resource 1**	1.2	1.7	1.5
33. Cultural Resource 2**	<0	0.8	0.3
34. Cultural Resource 3**	0.8	1.4	1.1
35. Cultural Resource 4**	16.7	17.8	16.6



Location	No Action (dBA)	Alternative 3 (dBA)	Alternative 4 (dBA)
36. Cultural Resource 5**	24.7	25.2	23.4
37. Cultural Resource 6**	29.5	27.2	22.6
38. Dugout and Claim Shack**	37.8	37.6	33.6
39. Kudrna Ranch PN06400001 - PN064000291**	6.7	7.1	6.9

\*\*Location point is outside the ATMP planning area.

**Table 13. Comparison of location point results for Time Audible for Natural Ambient**

Location	No Action (min)	Alternative 3 (min)	Alternative 4 (min)
1. Scenic Overlook / Sheep Lambing Area	119.2	107.2	48.1
2. Wilderness/ Sheep Lambing Area	29.7	23.3	23.9
3. Edge of Wilderness	48.2	37.7	36.2
4. Doors and Windows High Concentration Day Use/ Sheep Lambing Area	157.3	126.0	67.7
5. Day Use/Hiking/Sheep Lambing	148.5	119.1	60.6
6. Wilderness	74.7	45.9	39.3
7. Ben Reifel Visitor Center	143.1	118.0	59.6
8. Encampment Area	8.1	6.5	8.3
9. Sheep Lambing/Cultural Area	0.0	0.0	0.0
10. Backcountry	13.7	18.5	17.3
11. Sun Dance Area/ Visitor Use Area	0.0	0.0	0.0
12. White River Visitor Center	0.0	0.0	0.0
13. Sun Dance Area	1.9	2.8	2.6
14. Sun Dance Area	5.9	9.8	7.5
15. South Unit Central Basin	23.4	22.8	24.6
16. Scenic Overlook/Day Use	0.0	0.0	0.0
17. Big Foot Pass Overlook	132.9	99.7	49.6
18. Scenic Overlook	118.8	86.4	55.8
19. Wilderness/ Sheep Lambing Area	62.5	38.8	34.7
20. Center of Wilderness	57.0	37.7	36.5
21. Pig Dig and Picnic Area/ High Concentration Day Use/ Sheep Lambing Area	81.1	55.6	37.8
22. Pinnacles Overlook/High Visitor Concentration	92.2	61.8	40.1
23. Badlands Wilderness Overlook / Day Use	49.5	33.1	31.5
24. Sage Creek Day Use / Campground / High Visitor Concentration / Wilderness	49.4	37.7	36.5
25. Day Use	52.9	36.3	34.8
26. Research zone	41.0	33.5	32.1
27. Camping area within wilderness area	55.7	37.7	36.5
28. Castle and Medicine Root Trail	156.0	124.8	66.5
29. Cliff Shelf	142.1	117.1	59.2
30. Big Badlands Overlook	114.0	103.1	45.1
31. Ben Reifel Visitor Center	118.2	105.9	46.8
32. Cultural Resource 1**	NA	NA	NA
33. Cultural Resource 2**	NA	NA	NA

Location	No Action (min)	Alternative 3 (min)	Alternative 4 (min)
34. Cultural Resource 3**	NA	NA	NA
35. Cultural Resource 4**	NA	NA	NA
36. Cultural Resource 5**	NA	NA	NA
37. Cultural Resource 6**	NA	NA	NA
38. Dugout and Claim Shack**	NA	NA	NA
39. Kudrna Ranch PN06400001 - PN064000291**	NA	NA	NA

\*\*Location point is outside the ATMP planning area.

**Table 14. Comparison of location point results for Time Above 35 dBA**

Location	No Action (min)	Alternative 3 (min)	Alternative 4 (min)
1. Scenic Overlook / Sheep Lambing Area	49.0	48.3	22.2
2. Wilderness/ Sheep Lambing Area	0.0	0.0	0.0
3. Edge of Wilderness	0.0	0.0	0.0
4. Doors and Windows High Concentration Day Use/ Sheep Lambing Area	89.5	83.1	31.2
5. Day Use/Hiking/Sheep Lambing	39.1	31.9	12.8
6. Wilderness	9.1	2.3	2.2
7. Ben Reifel Visitor Center	35.0	34.8	12.5
8. Encampment Area	0.0	0.0	0.0
9. Sheep Lambing/Cultural Area	0.0	0.0	0.0
10. Backcountry	0.0	0.0	0.0
11. Sun Dance Area/ Visitor Use Area	0.0	0.0	0.0
12. White River Visitor Center	0.0	0.0	0.0
13. Sun Dance Area	0.0	0.0	0.0
14. Sun Dance Area	0.0	0.0	0.0
15. South Unit Central Basin	0.0	0.0	0.0
16. Scenic Overlook/Day Use	0.0	0.0	0.0
17. Big Foot Pass Overlook	11.4	4.3	3.8
18. Scenic Overlook	15.8	3.4	3.3
19. Wilderness/ Sheep Lambing Area	8.6	4.5	4.7
20. Center of Wilderness	4.7	4.6	4.9
21. Pig Dig and Picnic Area/ High Concentration Day Use/ Sheep Lambing Area	15.2	3.1	2.9
22. Pinnacles Overlook/High Visitor Concentration	12.4	3.1	2.8
23. Badlands Wilderness Overlook / Day Use	5.1	3.8	3.7
24. Sage Creek Day Use / Campground / High Visitor Concentration / Wilderness	3.2	3.6	3.4
25. Day Use	3.6	3.8	3.7
26. Research zone	2.6	2.9	2.7
27. Camping area within wilderness area	0.0	0.0	0.0
28. Castle and Medicine Root Trail	68.7	61.6	21.4
29. Cliff Shelf	30.8	31.0	11.6
30. Big Badlands Overlook	46.2	45.7	20.9
31. Ben Reifel Visitor Center	27.4	27.6	9.7

Location	No Action (min)	Alternative 3 (min)	Alternative 4 (min)
32. Cultural Resource 1**	0.0	0.0	0.0
33. Cultural Resource 2**	0.0	0.0	0.0
34. Cultural Resource 3**	0.0	0.0	0.0
35. Cultural Resource 4**	2.7	3.8	3.5
36. Cultural Resource 5**	10.2	9.3	5.8
37. Cultural Resource 6**	33.8	28.1	9.4
38. Dugout and Claim Shack**	52.8	50.0	22.1
39. Kudrna Ranch PN06400001 - PN064000291**	0.0	0.0	0.0

\*\*Location point is outside the ATMP planning area.

**Table 15. Comparison of location point results for Time Above 52 dBA**

Location	No Action (min)	Alternative 3 (min)	Alternative 4 (min)
1. Scenic Overlook / Sheep Lambing Area	21.2	21.2	8.6
2. Wilderness/ Sheep Lambing Area	0.0	0.0	0.0
3. Edge of Wilderness	0.0	0.0	0.0
4. Doors and Windows High Concentration Day Use/ Sheep Lambing Area	11.6	11.6	3.3
5. Day Use/Hiking/Sheep Lambing	12.5	10.3	3.8
6. Wilderness	1.6	0.7	0.7
7. Ben Reifel Visitor Center	5.7	5.4	2.9
8. Encampment Area	0.0	0.0	0.0
9. Sheep Lambing/Cultural Area	0.0	0.0	0.0
10. Backcountry	0.0	0.0	0.0
11. Sun Dance Area/ Visitor Use Area	0.0	0.0	0.0
12. White River Visitor Center	0.0	0.0	0.0
13. Sun Dance Area	0.0	0.0	0.0
14. Sun Dance Area	0.0	0.0	0.0
15. South Unit Central Basin	0.0	0.0	0.0
16. Scenic Overlook/Day Use	0.0	0.0	0.0
17. Big Foot Pass Overlook	1.3	0.0	0.0
18. Scenic Overlook	5.2	1.0	1.0
19. Wilderness/ Sheep Lambing Area	0.2	0.5	0.1
20. Center of Wilderness	0.0	0.0	0.0
21. Pig Dig and Picnic Area/ High Concentration Day Use/ Sheep Lambing Area	4.3	0.7	1.1
22. Pinnacles Overlook/High Visitor Concentration	2.4	0.5	0.3
23. Badlands Wilderness Overlook / Day Use	0.6	0.0	0.6
24. Sage Creek Day Use / Campground / High Visitor Concentration / Wilderness	0.9	0.8	0.9
25. Day Use	0.6	0.6	0.6
26. Research zone	1.1	1.1	1.1
27. Camping area within wilderness area	0.0	0.0	0.0
28. Castle and Medicine Root Trail	17.0	16.7	5.0
29. Cliff Shelf	12.0	11.6	4.3

Location	No Action (min)	Alternative 3 (min)	Alternative 4 (min)
30. Big Badlands Overlook	15.8	15.8	6.5
31. Ben Reifel Visitor Center	7.3	7.1	2.7
32. Cultural Resource 1**	0.0	0.0	0.0
33. Cultural Resource 2**	0.0	0.0	0.0
34. Cultural Resource 3**	0.0	0.0	0.0
35. Cultural Resource 4**	0.0	0.0	0.0
36. Cultural Resource 5**	0.0	0.0	0.0
37. Cultural Resource 6**	0.5	0.1	0.0
38. Dugout and Claim Shack**	6.8	6.6	2.6
39. Kudrna Ranch PN06400001 - PN064000291**	0.0	0.0	0.0

\*\*Location point is outside the ATMP planning area.

**Table 16. Comparison of location point results for Maximum Sound Level**

Location	No Action (dBA)	Alternative 3 (dBA)	Alternative 4 (dBA)
1. Scenic Overlook / Sheep Lambing Area	75.9	75.9	73.4
2. Wilderness/ Sheep Lambing Area	27.6	27.6	27.6
3. Edge of Wilderness	29.9	32.4	31.3
4. Doors and Windows High Concentration Day Use/ Sheep Lambing Area	67.7	67.7	59.6
5. Day Use/Hiking/Sheep Lambing	70.8	70.8	70.8
6. Wilderness	66.0	62.0	63.8
7. Ben Reifel Visitor Center	62.8	60.2	61.4
8. Encampment Area	14.0	14.0	14.0
9. Sheep Lambing/Cultural Area	3.7	4.2	3.9
10. Backcountry	15.0	16.0	15.1
11. Sun Dance Area/ Visitor Use Area	8.2	8.5	8.4
12. White River Visitor Center	11.3	11.7	11.5
13. Sun Dance Area	14.3	15.0	14.7
14. Sun Dance Area	14.8	15.2	15.0
15. South Unit Central Basin	17.5	17.7	17.6
16. Scenic Overlook/Day Use	8.9	10.2	9.6
17. Big Foot Pass Overlook	66.3	51.4	51.5
18. Scenic Overlook	67.4	62.8	64.8
19. Wilderness/ Sheep Lambing Area	52.8	55.4	52.6
20. Center of Wilderness	48.2	48.0	48.1
21. Pig Dig and Picnic Area/ High Concentration Day Use/ Sheep Lambing Area	65.2	64.5	63.3
22. Pinnacles Overlook/High Visitor Concentration	61.4	54.8	55.3
23. Badlands Wilderness Overlook / Day Use	57.8	53.1	57.3
24. Sage Creek Day Use / Campground / High Visitor Concentration / Wilderness	60.9	59.1	60.0
25. Day Use	58.1	57.1	57.6
26. Research zone	66.0	62.0	63.8
27. Camping area within wilderness area	33.8	34.3	33.9

Location	No Action (dBA)	Alternative 3 (dBA)	Alternative 4 (dBA)
28. Castle and Medicine Root Trail	67.4	67.4	67.4
29. Cliff Shelf	76.2	76.2	76.2
30. Big Badlands Overlook	76.9	76.9	75.8
31. Ben Reifel Visitor Center	66.0	65.5	65.5
32. Cultural Resource 1**	21.0	21.2	21.1
33. Cultural Resource 2**	20.0	20.1	20.1
34. Cultural Resource 3**	20.2	20.4	20.3
35. Cultural Resource 4**	39.0	41.9	40.3
36. Cultural Resource 5**	50.3	50.0	50.2
37. Cultural Resource 6**	56.1	52.8	52.8
38. Dugout and Claim Shack**	67.3	67.3	67.3
39. Kudrna Ranch PN06400001 - PN064000291**	26.3	26.6	26.4

\*\*Location point is outside the ATMP planning area.

## 8. Indirect Effects of Potential Displacement of Air Tours Outside of the ATMP Planning Area

For alternatives that limit the number of flights per year to a level below existing conditions (1,425 flights per year) or limit the number of routes on which air tours could be conducted within the ATMP planning area, it is reasonably foreseeable that current air tour operators could seek to make up lost revenue in other ways. One of the ways that operators could potentially generate revenue is by offering air tours outside of the ATMP planning area, as these 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, or over the ATMP planning area at or above 5,000 ft. AGL. This could result in impacts to resources to the extent that they are present near the locations where displaced air tours would occur.

### Indirect Effects to ATMP Planning Area

Displaced air tours, if any, above the ATMP planning area (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 these 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.

Air tours could also fly just outside of the ATMP planning area. Noise from air tours in this case would still likely reach the Park, however, the noise would be less intense.

### **Indirect Effects outside the ATMP Planning Area**

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, a conservative, screening-level noise analysis was conducted. The analysis considers the air tour aircraft types currently operating at the Park, and assesses the activity threshold that would generate a noise at or above DNL 65 dB. For the purposes of this illustration only, the analysis assumes a hypothetical, worst-case scenario where all operations occur at a low altitude (500 ft. AGL for helicopters and 1,000 ft. AGL for fixed-wing aircraft) on a common route outside the ATMP planning area. The noise analysis considers aircraft activity in two ways:

- For the aircraft type with the loudest noise level, what is the activity level that would generate a noise level at or above DNL 65 dB?
- For the aircraft types and fleet mix distribution within the 2017-2019 PMAD, what is the activity level that would generate a noise level at or above DNL 65 dB?

#### *Analysis for aircraft with loudest noise level*

The aircraft with the loudest noise level<sup>8</sup> currently operating at the Park is the Robinson R-44. For overflight operations at 500 ft. AGL, the number of operations over a 12-hour period to exceed a DNL 65 dB level is 1,086 (see Table 17). Other aircraft operating at the Park are the Cessna 206. The number of daily operations to exceed a DNL 65 dB level for this aircraft is 1,306.

**Table 17. Overflight sound exposure levels and number of daily flights of each aircraft type that would generate a cumulative noise exposure level at or above DNL 65 dB**

<b>Aircraft</b>	<b>Altitude, AGL (ft.)</b>	<b>Overflight Sound Exposure Level (dB)</b>	<b># daily flights for DNL to exceed 65 dB</b>
<b>Robinson R-44</b>	<b>500</b>	84.0	1,086
<b>Cessna 206</b>	<b>1,000</b>	83.2	1,306

#### *Analysis for the aircraft types and fleet mix distribution within the 2017-2019 reporting data*

This analysis compares the number of PMAD operations and peak day operations, since they could occur outside the ATMP planning area as a result of Alternatives 2, 3 and 4, to the number of daily flights it would take to exceed DNL 65 dB. Based on the fleet mix assessed for the PMAD, it would take at least

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<sup>8</sup> The determination of loudest is based on the aircraft with the highest overflight sound exposure level within the noise-power-distance data that form the basis of FAA's AEDT. Sound exposure level describes the cumulative noise exposure from a single overflight. It is represented by the total A-weighted sound energy during the overflight, normalized to a 1-second interval.

1,099 daytime operations at low altitude to exceed a DNL 65 dB level (see Table 18). This activity level represents an increase in daily operations of 1,082 compared to the PMAD (17 operations). This, coupled with the likely dispersal of air tours outside the ATMP planning area for the reasons discussed previously, indicates that it would be highly unlikely that air tours that are displaced to outside the ATMP planning area under these alternatives would generate noise at or above DNL 65 dB.

**Table 18. Number of daily flights of each aircraft type that would generate a cumulative noise exposure level at or above DNL 65 dB for the aircraft types and fleet mix distribution within the 2017-2019 PMAD**

Aircraft	Altitude, AGL (ft)	Overflight Sound Exposure Level (dB)	# daily flights in 2017-2019 PMAD	2017-2019 PMAD Fleet Distribution %	# daily flights for DNL to exceed 65 dB
Robinson R-44	500	84.0	16	94.0%	1,034
Cessna 206	1,000	83.2	1	5.9%	65
Total			18	100%	1,099

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<https://www.nrc.gov/docs/ML1224/ML12241A393.pdf>



## **APPENDIX G**

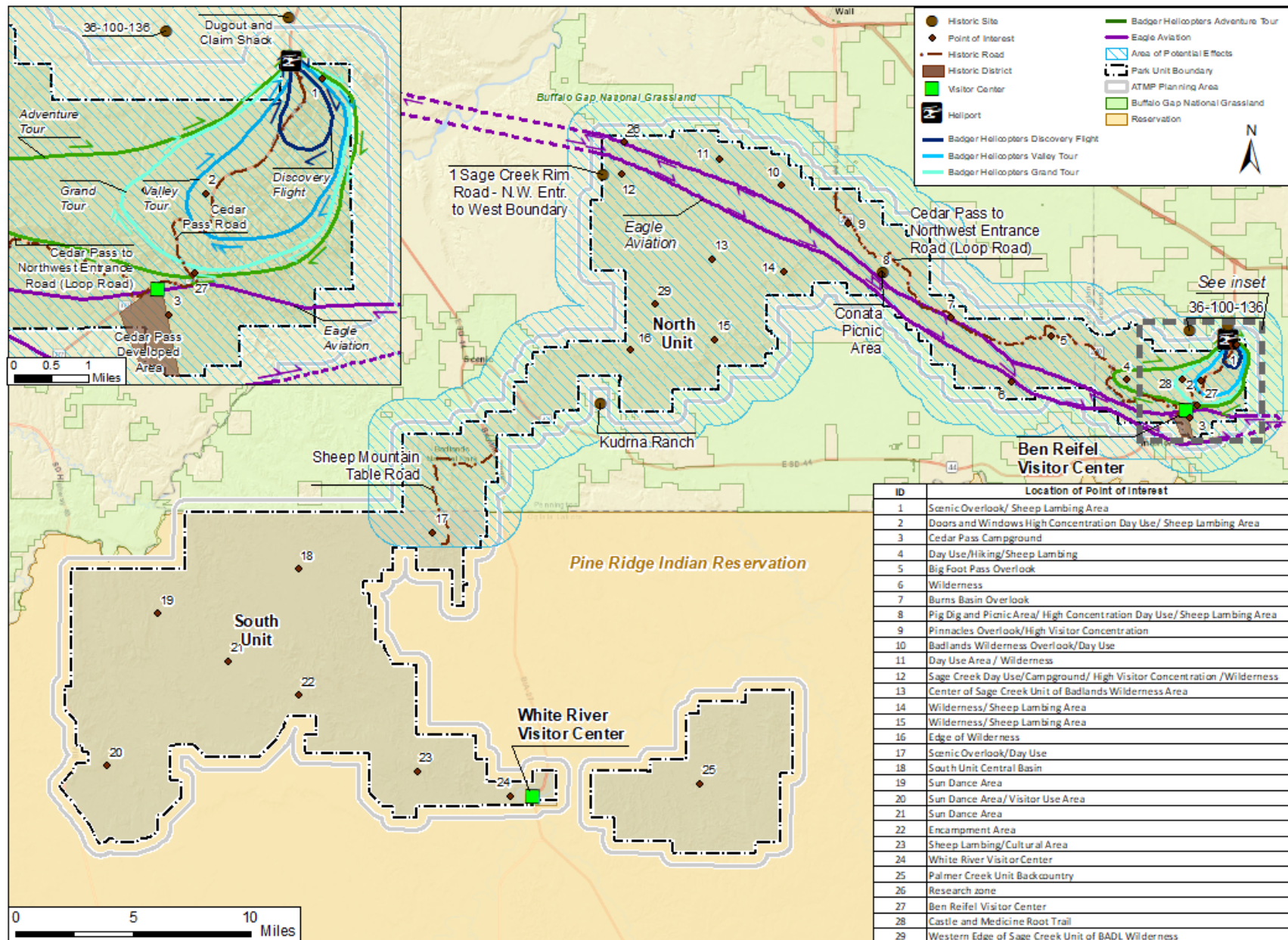
### **Cultural Resources Consultation and Summary**

## **Appendix G: Cultural Resources Consultation and Summary**

*Historic Property List*

*Section 106 Consultation Correspondence*

## Area of Potential Effects with Historic Properties and Point of Interest for ATMP at Badlands National Park



### List of Historic Properties in the APE and Description of Historic Characteristics

Property Name	Property Type	Eligibility Status	Location	Significant Characteristics
Black Hills	TCP	Recommended Eligible/undetermined <sup>1</sup>	Black Hills	The Black Hills, including Badlands National Park and Mount Rushmore National Memorial, are part of a continuous landscape that is sacred, which includes plants, animals, the sky, and other natural resources. The landscape is considered a TCP by many tribes.
Cedar Pass Developed Area	Cultural Landscape	Eligible	Within the Park	Badlands National Park Cedar Pass Historic District possesses significance for its connection to early tourism associated with western landscapes and parks; CCC development and New Deal Master Planning; and the NPS's Mission 66 initiative. It is significant within the areas of Architecture, Landscape Architecture, Social History/Tourism, Community Planning and Development, and Recreation during the period ca. 1928 through 1966. Badlands National Park is also a relatively complete example of a Mission 66 developed area with a high degree of integrity, which remains rare and unusual within the state of South Dakota.
1 Sage Creek Rim Road – N.W. Entry. to West Boundary	Structure	Eligible	Within the Park	Sage Creek Rim Road (SD 590) is a dirt/gravel road that travels through the Sage Creek Wilderness Area of Badlands National Park. It provides access to several scenic overlooks.
Cedar Pass to Northwest Entrance Road (Loop Road)	Structure	Eligible	Within the Park	This road is historically significant for its association with the development of park road systems for public access to natural features and for its design principles that clearly seek to enhance the viewsheds for park

<sup>1</sup> For the purposes of Section 106, the FAA is treating identified but unevaluated properties as eligible for the National Register of Historic Places.

Property Name	Property Type	Eligibility Status	Location	Significant Characteristics
				visitors. The road is a two-lane asphalt paved roadbed 29.4 miles long and 24 feet wide.
Cedar Pass Road	Structure	Eligible	Within the Park	This road is historically significant for its association with the development of park road systems for public access to natural features, and for its design principles that clearly seek to enhance the viewsheds for park visitors. Cedar Pass Road is a two-lane asphalt road, 5.2 miles in length, extending from the NE Entrance to Cedar Pass Junction.
Sheep Mountain Table Road	Structure	Eligible	Within the Park	Sheep Mountain Table is the highest area in the park at nearly 3,300 ft. above sea level. Horses or cattle might be seen roaming the area because of agreements made with local ranchers on the Pine Ridge Reservation. Part of the agreement between the NPS and the Oglala Lakota Nation is that park lands remain accessible to tribal ranchers on the Reservation. Potential significant characteristics include viewshed and setting.
Conata Picnic Area	Site	Eligible	Within the Park	The Conata Picnic Area at Badlands National Park is significant for its association to Architecture, Landscape Architecture, Social History/Tourism, and Recreational and Community Planning and Development under the NPS Mission 66 period of design and development (MPDF, POS=1945-1973). During the Mission 66 period the NPS focused on improvements to parks with an emphasis on master planning and visitor experience. The period is characterized by the concept of immersing the visitor(s) into the site/landscape and providing facilities that were distinctively modern. The

Property Name	Property Type	Eligibility Status	Location	Significant Characteristics
				Conata Picnic Area retains integrity to the period of significance (1957-1965). Viewshed is a potential significant characteristic.
Dugout and Claim Shack	District	Listed	Outside the Park	The dugout and claim shack are vernacular representatives of the type and period of construction techniques and of shelter solutions on the Great Plains. Once common in the region, the dugout is now a rare extant example of the patterns in which nineteenth and early twentieth century homesteaders of the region fashioned relatively hospitable quarters. The structure retains outstanding historic integrity and retains the character-defining features of its type. This is especially true considering comparable properties, few of which are extant. The physical setting of the property is a potential significant characteristic.
39PN2007*	Site	Eligible	Portions may be within the Park	This site is an abandoned segment of the Chicago, Milwaukee, St. Paul and Pacific Railroad. The built-up grade runs southeast-northwest in this area, crossing a short northeast-flowing intermittent tributary of Cain Creek.
39PN3504*	Site	Unknown/Undetermined	Outside the Park	Resource may be eligible for listing in the National Register.
Check Dam 01*	Site	Unknown/Undetermined	Outside the Park	Resource may be eligible for listing in the National Register.
OLD Hwy 40*	Structure	Unknown/Undetermined	Outside the Park	Multiple sections of old highway 40 and 44.

Property Name	Property Type	Eligibility Status	Location	Significant Characteristics
39PN3692*	Site	Eligible	Outside the Park	Resource may be eligible for listing in the National Register because it has the potential to yield information important in prehistory or history.
39PN3695*	Site	Unknown/Undetermined	Outside the Park	Resource may be eligible for listing in the National Register.
39PN3697*	Site	Unknown/Undetermined	Outside the Park	Resource may be eligible for listing in the National Register.
39PN3696*	Site	Unknown/Undetermined	Outside the Park	Resource may be eligible for listing in the National Register.
Historic farmstead*	Building	Unknown/Undetermined	Outside the Park	Resource may be eligible for listing in the National Register. Potential significant characteristics include viewshed and setting.
Historic farmstead*	Building	Unknown/Undetermined	Outside the Park	Resource may be eligible for listing in the National Register. Potential significant characteristics include viewshed and setting.
39PN886*	Site	Unknown/Undetermined	Outside the Park	Resource may be eligible for listing in the National Register.
36-100-136	Structure	Eligible	Outside the Park	This bridge is an intact example of a common steel stringer bridge configuration for the pre-World War II era, reflecting a technology preferred by the South Dakota State Highway Commission for short crossings of the era. Bridge 36-100-136 is eligible for listing in the National Register as an example in the West River area

Property Name	Property Type	Eligibility Status	Location	Significant Characteristics
				of the steel stringer type for the pre-World War II period.
Kudrna Ranch PN06400001 - PN064000291	Buildings	Eligible	Outside the Park	Josef and Marie Kudrna claimed this homestead ranch in 1910 and practiced diverse small-scale cultivation while proving up on the land. The farm switched to livestock production in 1930s and acquired additional lands in the area. The Kudrna Ranch is significant for its history of homesteading, agriculture, and vernacular rural architecture. Period of significance is 1910-1964.

\*Location is restricted and therefore cannot be shown on the APE map





**United States Department of the Interior**  
**NATIONAL PARK SERVICE**  
Natural Resource Stewardship & Science  
Natural Sounds and Night Skies Division



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

**United States Department of Transportation**  
**FEDERAL AVIATION ADMINISTRATION**  
Office of Policy, International Affairs & Environment  
Office of Environment and Energy

## **NATIONAL PARKS AIR TOUR MANAGEMENT PROGRAM**

April 12, 2021

Re: Initiation of consultation under Section 106 of the National Historic Preservation Act for the development of Air Tour Management Plans for Badlands National Park and Mount Rushmore National Memorial

Ted Spencer  
State Historic Preservation Officer  
Cultural Heritage Center  
900 Governors Drive  
Pierre, SD 57501

Dear Mr. Spencer:

The Federal Aviation Administration (FAA) and the National Park Service (NPS) (collectively, the agencies) are developing Air Tour Management Plans (ATMPs) for 23 parks including Badlands National Park and Mount Rushmore National Memorial. ATMPs apply to commercial air tours flown at or below 5,000 feet above ground level in and within ½ mile of a park boundary. The agencies have determined that development of an ATMP qualifies as an “undertaking” subject to Section 106 of the National Historic Preservation Act (NHPA). The purpose of this letter is to initiate Section 106 consultation with your office in accordance with 36 CFR 800.3(c), and solicit any initial comments you may have about the proposed undertaking.

In response to a May 1, 2020 court order, the agencies are working to complete all of the ATMPs by August 31, 2022.<sup>1</sup> The ATMPs are being developed in accordance with the National Parks Air Tour Management Act (NPATMA). NPATMA directs the agencies to either enter into voluntary agreements with air tour operators or establish ATMPs for national parks and adjacent tribal lands where commercial air tour operations are conducted or proposed, subject to certain exceptions not relevant here.

The FAA is acting as the lead federal agency overseeing compliance with Section 106 of the NHPA for this undertaking. The FAA will be coordinating its review under Section 106 with its compliance with the National Environmental Policy Act (NEPA). Each ATMP will be unique and therefore, each ATMP will be

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<sup>1</sup> For more information about the court order and proposed plan, see:  
[https://www.faa.gov/about/office\\_org/headquarters\\_offices/arc/programs/air\\_tour\\_management\\_plan/](https://www.faa.gov/about/office_org/headquarters_offices/arc/programs/air_tour_management_plan/)

assessed individually under Section 106 and NEPA. We look forward to meaningful consultation on the air tours and their overall effect on historic properties.

There will be no ground disturbance, construction or demolition associated with this undertaking. Air tours have been operating in Badlands National Park and Mount Rushmore National Memorial for over 20 years. Since 2005, these air tours have been conducted pursuant to interim operating authorizations (IOAs) as provided in NPATMA. The agencies are creating ATMPs to replace IOAs and, to the extent possible, will limit the number of annual air tour operations to the average flown between 2017 and 2019. At this time we anticipate little or no increase in air tour operations

In accordance with 36 CFR 800.3 and NPATMA, the agencies have identified and initiated consultation with federally recognized tribes whose lands will be overflown or who have an interest or ancestral connections to one or more of the parks (See Attachment A). We would welcome your assistance in identifying additional consulting parties along with meaningful ways to engage the public. Information regarding ATMPs is available through a dedicated web site located at:

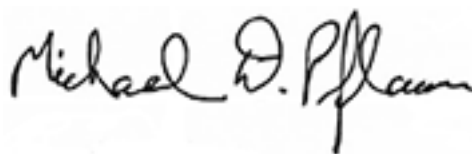
[https://www.faa.gov/about/office\\_org/headquarters\\_offices/arc/programs/air\\_tour\\_management\\_plan/](https://www.faa.gov/about/office_org/headquarters_offices/arc/programs/air_tour_management_plan/). During the next phase of consultation, we will seek your input regarding the Area of Potential Effect and the identification of historic properties.

We will follow up with you in the next month. Should you wish to receive additional information regarding this undertaking, please contact Cathy Nadals at [ATMPTeams@dot.gov](mailto:ATMPTeams@dot.gov) or (202) 267-0746.

Sincerely,



Rebecca MacPherson  
Regional Administrator  
Great Lakes Region  
Federal Aviation Administration



Michael Pflaum  
Superintendent  
Badlands National Park  
National Park Service



Michelle Wheatley  
Superintendent  
Mount Rushmore National Memorial  
National Park Service

Attachment A: List of Tribes

**ATTACHMENT A**  
**TRIBAL CONSULTATION LIST**

<b>Tribe</b>
Apache Tribe of Oklahoma
Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation
Cheyenne and Arapaho Tribes of Oklahoma
Cheyenne River Sioux Tribe (of the Cheyenne River Reservation, South Dakota)
Crow Creek Sioux Tribe (of the Crow Creek Reservation, South Dakota)
Crow Tribe of Montana
Eastern Shoshone Tribe of the Wind River Reservation, Wyoming
Flandreau Santee Sioux Tribe of South Dakota
Fort Belknap Indian Community of the Fort Belknap Reservation
Kiowa Indian Tribe of Oklahoma
Lower Brule Sioux Tribe of the Lower Brule Reservation
Northern Arapaho Tribe of the Wind River Reservation, WY
Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation
Oglala Lakota Nation
Omaha Tribe of Nebraska
Ponca Tribe of Nebraska
Rosebud Sioux Tribe of the Rosebud Indian Reservation
Santee Sioux Nation, Nebraska
Sisseton-Wahpeton Oyate of the Lake Traverse Reservation
Spirit Lake Tribe
Standing Rock Sioux Tribe of North & South Dakota
Three Affiliated Tribes of the Berthold Reservation, North Dakota (Mandan, Hidatsa and Arikara Nation)
Turtle Mountain Band of Chippewa Indians of North Dakota
Upper Sioux Community, Minnesota
Winnebago Tribe of Nebraska
Yankton Sioux Tribe of South Dakota



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

**United States Department of Transportation**  
**FEDERAL AVIATION ADMINISTRATION**  
Office of Policy, International Affairs & Environment  
Office of Environment and Energy

## **NATIONAL PARKS AIR TOUR MANAGEMENT PROGRAM**

October 28, 2022

Re: Continuing Consultation under Section 106 of the National Historic Preservation Act for the development of an Air Tour Management Plan for Badlands National Park

Ted Spencer  
State Historic Preservation Officer  
Cultural Heritage Center  
900 Governors Drive  
Pierre, SD 57501

Dear Mr. Spencer:

The Federal Aviation Administration (FAA), in coordination with the National Park Service (NPS), seeks to continue consultation with your office under Section 106 of the National Historic Preservation Act (NHPA) for the development of an Air Tour Management Plan (ATMP) for Badlands National Park (Park). The FAA initiated consultation with your office by letter dated April 12, 2021.

This letter presents a description of the alternatives being considered for the ATMP. The ATMP will become the proposed undertaking in accordance with 36 CFR 800.3(a) and 800.16(y). This letter will also describe the proposed Area of Potential Effects (APE) pursuant to 36 CFR 800.4(a)(1). The FAA has completed its initial historic property identification effort within the proposed APE in accordance with 36 CFR 800.4. The FAA specifically requests your comments on our proposed APE and initial historic property identification efforts.

### **Description of the Undertaking**

Consistent with the National Parks Air Tour Management Act of 2000 (Act), the proposed ATMP would regulate commercial air tours over the Park or within a half-mile outside the boundary of the Park, including over tribal lands within or abutting the Park. Further background information regarding the history of commercial air tours over the Park, the authority under which they are currently conducted, and the area to be regulated under the ATMP is available in the September 2022 Scoping Newsletter, prepared by the FAA and the NPS (together, the agencies), that was previously provided to your office and is available at the following link:

<https://parkplanning.nps.gov/document.cfm?parkID=117&projectID=102957&documentID=123301>

The agencies have documented the existing conditions for commercial air tour operations over the Park. Two commercial air tour operators currently conduct tours over Badlands National Park: Eagle Aviation, Inc. (Eagle Aviation) and Badger Helicopters, Inc. (Badger). All air tour operations currently fly over the North Unit of the Park, though until the ATMP is in place the operators could change their operations to fly over other areas of the Park without notice to the agencies.

The agencies consider the existing operations for commercial air tours to be an average of 2017-2019 annual air tours flown, which is 1,424 air tours. A three-year average is used because it reflects the most accurate and reliable air tour conditions, and accounts for variations across multiple years. Under existing conditions, commercial air tours over the Park are conducted using both fixed wing aircraft: CE-172-N and CE-206-U206F, and helicopters: BHT-206B, BHT-47- G3B1, R-44- II, and R-66-66. The helicopter operator accounts for the vast majority of the tours. The fixed-wing operator flew 4 tours in 2017, and none in 2018 or 2019. Reported minimum altitudes range from 800 to 1,500 feet (ft.) above ground level (AGL).<sup>1</sup>

The helicopter operator flies five loop routes that originate outside the northeast corner of the Park, within a half-mile outside the boundary of the Park, and vary in length from approximately 3 miles to over 40 miles. The fixed-wing operator flies one route down-and-back along the North Unit. Under existing conditions, the operators are not required to use these routes and could change the routes without notice to the agencies. Existing routes are depicted in **Attachment A**. The commercial air tours are offered seasonally, occurring May through September, and typically peak in July.

The proposed ATMP would authorize or prohibit commercial air tour operations over the Park in accordance with the conditions included in the selected alternative. The agencies are working to select a preferred alternative for the ATMP, which will be the proposed undertaking. The current draft alternatives are shown in the table below and a summary of the elements in each alternative being considered can be found in **Attachment B**.

#### **Potential Undertakings**

Alternative 2 – No Air Tours in the Planning Area <sup>2</sup>
Alternative 3 – Operational Modifications to Existing Air Tours
Alternative 4 – Reduction of Air Tours

The agencies have decided to comply with the Act by developing an ATMP for the Park. Alternative 2 would prohibit any commercial air tours from operating within the ATMP planning area. The other two

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<sup>1</sup> Altitude expressed in units above ground level is a measurement of the distance between the ground surface and the aircraft, whereas altitude expressed in median sea level (MSL) refers to the altitude of 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>2</sup> Under the Act and its implementing regulations, an ATMP regulates commercial air tours over a national park or outside the park but within 1/2 mile of its boundary during which the aircraft flies below 5,000 ft. AGL. This is referred to as the ATMP planning area.

alternatives being considered for selection for the Park ATMP (Alternatives 3 and 4) are detailed with specificity in **Attachment B** and generally incorporate some or all of the following:

- Annual and daily number of flights.
- Air tours would be conducted along designated routes.
- Aircraft types used for commercial air tours would be designated and any new or replacement aircraft could not exceed the noise level produced by the aircraft being replaced.
- Minimum Altitudes: The range of altitudes examined in the alternatives will be from 800 to 1,500 ft. AGL for helicopters and 1,500 to 2,600 ft. AGL for fixed-wing aircraft.
- Time of day restrictions and seasonal restrictions.
- Incentives for quiet technology aircraft.
- A process for the NPS to establish temporary no-fly periods that apply to air tours for special events or planned Park management. Events could include tribal ceremonies or rituals as determined by affected tribes.
- Operators would submit semi-annual reports to the FAA and the NPS regarding the number of commercial air tours conducted by the operator over the Park.
- Operators would be encouraged to take one training course per year conducted by NPS staff that will include the terms and conditions of the ATMP as well as Park, tribal, and historical resource information for operators to use to enhance interpretive narratives for air tour clients and increase understanding of parks by air tour clients.
- At the request of either of the agencies, the Park staff, or the local FAA Flight Standards District Office (FSDO), all operators would meet once per year to discuss the implementation of the ATMP. This proposed annual meeting could be conducted in conjunction with the required annual training.

### **Proposed Area of Potential Effects**

The APE as defined at 36 CFR 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 FAA and NPS approval of the ATMP does not require land acquisition, construction, or ground disturbance, and the FAA anticipates no physical effects to historic properties. The FAA is therefore focusing its assessment on the potential introduction of visual or audible elements that could diminish the integrity of any identified significant historic properties.<sup>3</sup>

In establishing the proposed APE, the FAA sought to include areas where any historic property present could be affected by noise from or sight of commercial air tours that may take place under any of the selectable draft alternatives, including those over the Park or adjacent tribal lands or those that are reasonably foreseeable. The FAA will consider the number and altitude of commercial air tours over historic properties in these areas to further assess the potential for visual effects and any incremental change in noise levels that may result in alteration of the characteristics of historic properties qualifying them for the National Register of Historic Places (National Register).

The APE was delineated based on the undertaking's potential effects in consultation with the SHPO and in consideration of input by consulting parties. The APE encompasses all selectable alternatives under

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<sup>3</sup> The term historic property is defined in 54 U.S.C. 300308 and 36 CFR 800.16(l)(1).

consideration. The FAA proposes an APE comprising the North Unit of the Park plus 1 ½ miles outside the boundary of the North Unit of the Park, as depicted in **Attachment A** below. The APE may be refined depending on the preferred alternative. Air tours currently occur solely over the North Unit of the Park. No air tours occur over the South Unit and no air tours will occur over the South Unit under the proposed alternatives. While no air tours would occur over the South Unit, the buffer extends beyond the North Unit boundary, therefore, a portion of the APE falls within the South Unit. The additional 1 ½ mile boundary beyond the Park was chosen because each alternative under consideration (i.e., alternatives 2, 3, and 4) will decrease the number of air tours operations under 5,000 ft. AGL over the Park and within ½ mile of the boundary outside of the Park and/or may eliminate routes and concentrate air tours operations in the north portion of the Park. The proposed alternatives will change how air tours are conducted over the Park and the ½-mile radius beyond the Park's boundary. While the agencies cannot know for certain, it is reasonable to assume that air tour operators may elect to conduct additional air tours beyond the ½-mile radius of the Park's boundary as a result of the undertaking. The additional mile boundary is the furthest distance that it is feasible to conduct air tour operations outside the boundary of the Park while still allowing views of the features inside the park.

### **Preliminary Historic Property Identification**

The FAA, in cooperation with NPS, has undertaken preliminary efforts to identify historic properties within the APE. In so doing, the FAA has taken into consideration the views of consulting parties, past planning, research and studies, the magnitude and nature of the undertaking, the degree of Federal involvement, the nature and extent of potential effects on historic properties and the likely nature of historic properties within the APE in accordance with 36 CFR 800.4(b)(1). As such, the historic property identification effort has focused on properties for which setting and feeling are characteristics contributing to the property's National Register eligibility. The FAA is also considering whether air tours could affect the use of traditional cultural properties (TCPs) associated with cultural practices, customs or beliefs that continue to be held or practiced today.

The agencies have invited 26 tribes to participate in the consultation process for either Badlands National Park, Mount Rushmore National Memorial, or both parks. The FAA and NPS recognize that these tribes have a long-standing and deeply rooted association with the landscape that encompasses these National Park lands, which include numerous sites of religious and cultural significance. The agencies have held various meetings to begin discussing ATMP planning, the range of alternatives and Section 106 consultation. Tribal meetings were held on March 30, 2021, July 23, 2021, September 9, 2021, October 19, 2021, January 28, 2022 and May 12, 2022 for both Badlands National Park and Mount Rushmore National Memorial. At these meetings, the FAA heard from the Fort Peck Assiniboine and Sioux Tribes, Upper Sioux Community, Santee Sioux Nation, Rosebud Sioux Tribe, Cheyenne River Sioux Tribe, and others that the Black Hills, including Badlands National Park, are part of a continuous landscape that is sacred. The landscape is considered a TCP by many tribes.

The FAA, with assistance from NPS Park staff, the NPS Midwest Archeological Center, the US Forest Service Black Hills National Forest, the South Dakota State Historic Preservation Office's CR GRID database, and the South Dakota Archaeological Research Center, has identified 11 historic properties within the APE for which feeling and setting are characteristics that make the properties eligible for listing on the National Register. FAA has identified nine historic properties within the APE that have no prior determination of eligibility; for the purposes of this undertaking FAA assumes that these nine

properties are eligible for listing in the National Register. Historic properties with unrestricted locations are shown in the proposed APE map provided in **Attachment A**. All 20 historic properties mentioned above are listed in **Attachment C**.

### **Preliminary Effects Assessment**

The FAA anticipates the proposed undertaking would have no physical effects to historic properties. However, the FAA recognizes that for certain types of historic properties, including those where the property's setting contributes to its historic significance or where the introduction of visual, atmospheric, or audible elements could diminish the integrity of a property's significant historic features, air tour operations could result in non-physical effects. FAA seeks the expertise of consulting parties to identify properties that could be thus impacted.

### **Review Request**

The FAA requests that you provide any comments you may have regarding the proposed APE and initial identification of historic properties. In particular, we would appreciate your views regarding the characteristics of historic properties, and any information you might have that would help us to identify additional properties for which setting or feeling is a significant characteristic. Should you wish to receive additional information regarding this undertaking, please contact Judith Walker at 202-267-4185 or [Judith.Walker@faa.gov](mailto:Judith.Walker@faa.gov) and copy the ATMP team at [ATMPTeam@dot.gov](mailto:ATMPTeam@dot.gov).

Sincerely,

A handwritten signature in black ink, appearing to read 'Judith Walker', with a stylized flourish extending to the right.

Judith Walker  
Federal Preservation Officer  
Senior Environmental Policy Analyst  
Environmental Policy Division (AEE-400)  
Federal Aviation Administration

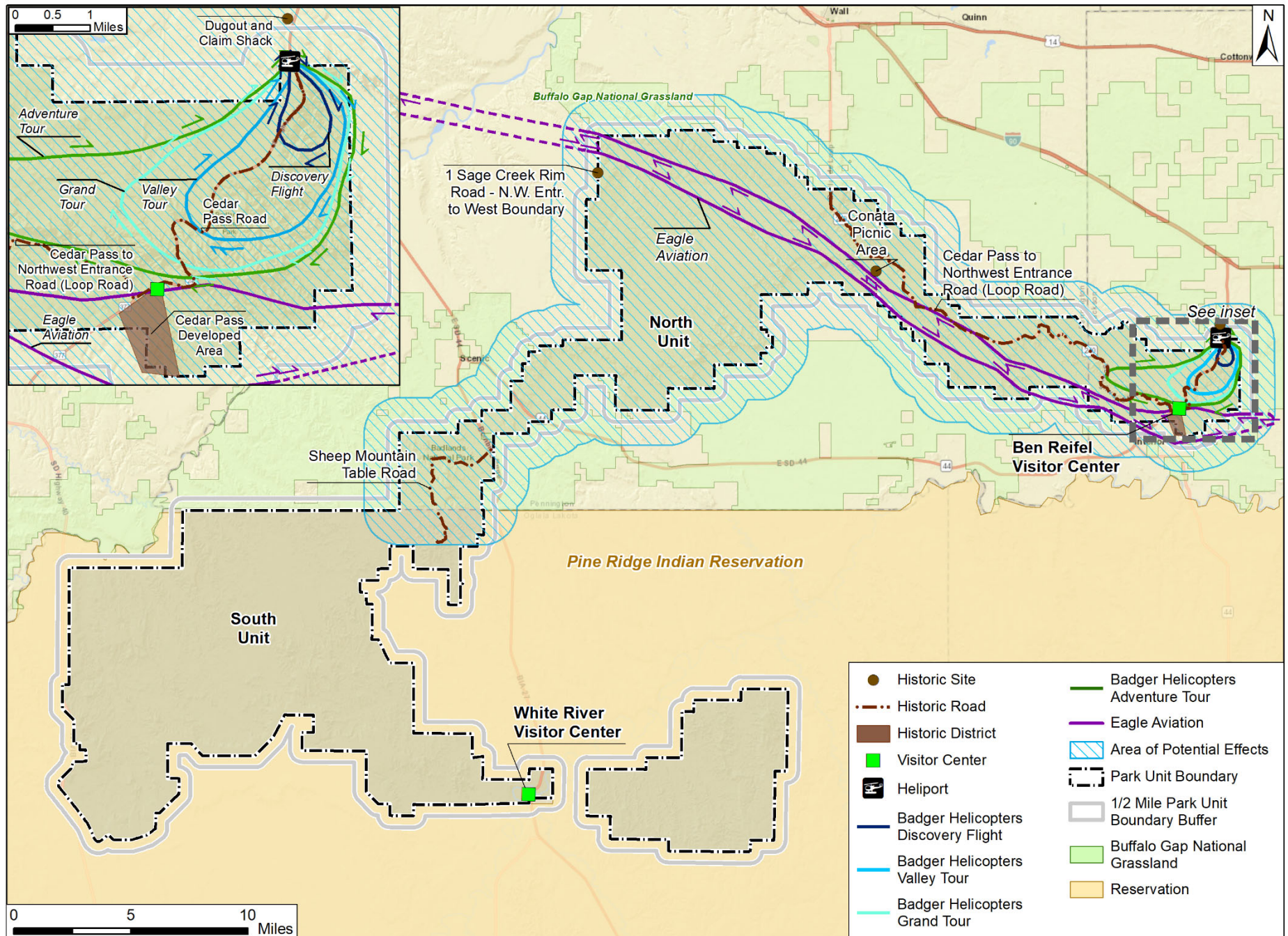
### **Attachments**

- A. APE Map Including Existing Commercial Air Tour Routes
- B. Summary of Alternative Elements
- C. List of Historic Properties in the APE and Description of Historic Characteristics



**ATTACHMENT A**  
**AREA OF POTENTIAL EFFECTS MAP**  
**INCLUDING EXISTING**  
**COMMERCIAL AIR TOUR ROUTES**

# Area of Potential Effects with Historic Properties for ATMP at Badlands National Park



## ATTACHMENT B

### SUMMARY OF ALTERNATIVE ELEMENTS

Alternative Attributes	Alternative 2 (No Air Tours in the Planning Area <sup>4</sup> )	Alternative 3 (Operational Modifications to Existing Air Tours)	Alternative 4 (Reduction of Air Tours)
<b>General Description and Objectives</b>	Prohibits air tours within the ATMP planning area to maximize Park resource protection. Air tours could still continue to fly outside the ATMP planning area (i.e., 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. Primarily, the conditions in this alternative include annual and daily caps, designated routes, and required minimal altitudes.	Restricts and reduces air tour operations within the ATMP planning area. Primarily, the conditions in this alternative include annual and daily caps, designated routes, and required minimal altitudes.
<b>Annual/Daily Number of Flights</b>	None in ATMP planning area.	The annual number of flights would be limited to 1,425 total flights per year across both operators. The daily number of flights may not exceed 16 tours per day across both operators. There would be annual and daily limitations for each operator.	The annual number of flights would be limited to 1,055 total flights per year across both operators. The daily number of flights may not exceed 8 tours per day across both operators. There would be annual and daily limitations for each operator.
<b>Routes</b>	None in ATMP planning area.	Four routes for the helicopter operator and one route for the fixed-wing operator all with varying distances and altitudes. Badger Route 5 – Expedition Tour would be prohibited under this alternative.	Same as Alternative 3.

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<sup>4</sup> Under the Act and its implementing regulations, an ATMP regulates commercial air tours over a national park or outside the park but within 1/2 mile of its boundary during which the aircraft flies below 5,000 ft. AGL. This is referred to as the ATMP planning area.

<b>Alternative Attributes</b>	<b>Alternative 2 (No Air Tours in the Planning Area<sup>4</sup>)</b>	<b>Alternative 3 (Operational Modifications to Existing Air Tours)</b>	<b>Alternative 4 (Reduction of Air Tours)</b>
<b>Minimum Altitudes</b>	No minimum altitude would be set. However, flights over the Park that are above 5,000 ft. AGL could occur as they are outside the ATMP planning area. Flights more than ½-mile outside the Park boundary are similarly outside the ATMP planning area and could occur.	Minimum 2,600 ft. AGL for fixed-wing aircraft, and minimum 800 ft. AGL to 1,500 ft. AGL for helicopter aircraft.	Same as Alternative 3.
<b>Time of Day</b>	N/A	One hour after sunrise to one hour before sunset for non-QT flights.	Same as Alternative 3.
<b>Seasonal Restrictions</b>	N/A	Air tours would be permitted to occur from May 1 through September 30, for 152 total days each year.	Same as Alternative 3.
<b>Day of Week</b>	N/A	Air tours may fly any day of the week from May 1 to September 30.	Same as Alternative 3.
<b>Quiet Technology (QT) Incentives</b>	N/A	Air tours operators are incentivized to adopt QT by being extended the opportunity to fly sunrise through sunset for QT flights.	Same as Alternative 3.
<b>Operator Training and Education</b>	N/A	Mandatory if requested and/or made available by the FAA or the NPS.	Same as Alternative 3.
<b>Annual Meeting</b>	N/A	Mandatory if requested and/or made available by the FAA or the NPS.	Same as Alternative 3.
<b>Restrictions for Particular Events</b>	N/A	In addition to seasonal restrictions, 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.

<b>Alternative Attributes</b>	<b>Alternative 2 (No Air Tours in the Planning Area<sup>4</sup>)</b>	<b>Alternative 3 (Operational Modifications to Existing Air Tours)</b>	<b>Alternative 4 (Reduction of Air Tours)</b>
<b>Adaptive Management</b>	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.
<b>Operators, Initial Allocation of Air Tours, Aircraft Types, and Interim Operating Authority</b>	The establishment of the ATMP will result in the termination of all the interim operating authority (IOA) for the Park and tribal lands that is currently in place. See p. 6 of the September 2022 newsletter for a description of IOA.	Badger Helicopter: 1,423 flights annually; BHT-206B, BHT-47-G3B1, R-44-II, R-66-66 Eagle Aviation: two flights annually; Cessna 172, Cessna 206 Competitive bidding could occur and change air tour allocations. The establishment of the ATMP will result in the termination of all IOA for the Park and tribal lands.	Badger Helicopter: 1,053 flights annually; BHT-206B, BHT-47-G3B1, R-44-II, R-66-66 Eagle Aviation: two flights annually; Cessna 172, Cessna 206 Competitive bidding could occur and change air tour allocations. The establishment of the ATMP will result in the termination of all IOA for the Park and for tribal lands.
<b>Amendments</b>	The ATMP may be amended at any time if the NPS, by notification to the FAA, determines that the ATMP is not adequately protecting Park resources and/or visitor enjoyment; or if the FAA, by notification to the NPS, determines that the ATMP is adversely affecting aviation safety and/or the national aviation system; or, if the agencies determine that appropriate changes to the ATMP are necessary to address new information or changed circumstances.	The ATMP may be amended at any time: if the NPS, by notification to the FAA and the operator(s), determines that the ATMP is not adequately protecting Park resources and/or visitor enjoyment; if the FAA, by notification to the NPS and the operator(s), determines that the ATMP is adversely affecting aviation safety and/or the national aviation system; or, if the agencies determine that appropriate changes to the ATMP are necessary to address new information or changed circumstances that cannot be addressed through adaptive management.	Same as Alternative 3.

**ATTACHMENT C**  
**LIST OF HISTORIC PROPERTIES IN THE APE AND DESCRIPTION OF HISTORIC CHARACTERISTICS**

<b>Property Name</b>	<b>Property Type</b>	<b>Eligibility Status</b>	<b>Location</b>	<b>Significant Characteristics</b>
Cedar Pass Developed Area	Cultural Landscape	Eligible	Within the Park	Badlands National Park Cedar Pass Historic District possesses significance at the state level as a historic district under National Register Criteria A and C for 1) early tourism associated with western landscapes and parks; 2) CCC development and New Deal Master Planning; and 3) the National Park Service's (NPS) Mission 66 initiative. It is significant within the areas of Architecture, Landscape Architecture, Social History/Tourism, Community Planning and Development, and Recreation during the period ca. 1928 through 1966. Badlands National Park is also a relatively complete example of a Mission 66 developed area with a high degree of integrity, which remains rare and unusual within the state of South Dakota.
1 Sage Creek Rim Road – N.W. Entry. to West Boundary	Linear Property	Eligible	Within the Park	Resource may be eligible for listing in the National Register under Criteria A, B, C and D.
Cedar Pass to Northwest Entrance Road (Loop Road)	Linear Property	Eligible	Within the Park	This road is historically significant under Criterion A for its association with the development of park road systems for public access to natural features, and under Criterion C for its design principles that clearly seek to enhance the viewsheds for park visitors. The road is a two-lane asphalt paved roadbed 29.4 miles long and 24 feet wide.
Cedar Pass Road	Linear Property	Eligible	Within the Park	This road is historically significant under Criterion A for its association with the development of park road systems for public access to natural features, and under Criterion C for its design principles that clearly seek to enhance the viewsheds for park visitors. Cedar Pass

Property Name	Property Type	Eligibility Status	Location	Significant Characteristics
				Road is a two-lane asphalt road, 5.2 miles in length, extending from the NE Entrance to Cedar Pass Junction.
Sheep Mountain Table Road	Linear Property	Eligible	Within the Park	Sheep Mountain Table is the highest area in the park at nearly 3,300 ft. above sea level. Horses or cattle might be seen roaming the area because of agreements made with local ranchers on the Pine Ridge Reservation. Part of the agreement between the NPS and the Oglala Lakota Nation is that park lands remain accessible to tribal ranchers on the Reservation.
Conata Picnic Area	Site	Eligible	Within the Park	The Conata Picnic Area at Badlands National Park is significant at the national level, under National Register Criteria A and C. Areas of significance include Architecture, Landscape Architecture, Social History/Tourism, and Recreational and Community Planning and Development under the NPS Mission 66 period of design and development (MPDF, POS=1945-1973). During the Mission 66 period the NPS focused on improvements to parks with an emphasis on master planning and visitor experience. The period is characterized by the concept of immersing the visitor(s) into the site/landscape and providing facilities that were distinctively modern. The Conata Picnic Area retains integrity to the period of significance (1957-1965).
Dugout and Claim Shack	District	Listed	Outside the Park	The dugout and claim shack are vernacular representatives of the type and period of construction techniques and of shelter solutions on the Great Plains. Once common in the region, the dugout is now a rare extant example of the patterns in which nineteenth and early twentieth century homesteaders of the region fashioned relatively hospitable quarters. The structure retains outstanding historic integrity and retains the character-defining features of its type. This is especially

Property Name	Property Type	Eligibility Status	Location	Significant Characteristics
				true in light of comparable properties, few of which are extant
39PN2007*	Site	Eligible	Portions may be within the Park	This site is an abandoned segment of the Chicago, Milwaukee, St. Paul and Pacific Railroad. The built-up grade runs southeast-northwest in this area, crossing a short northeast-flowing intermittent tributary of Cain Creek.
39PN3504*	Site	Unknown	Outside the Park	Resource may be eligible for listing in the National Register.
Check Dam 01*	Site	Unknown	Outside the Park	Resource may be eligible for listing in the National Register under Criteria C and D.
OLD Hwy 40*	Linear Property	Unknown	Outside the Park	Multiple sections of old highway 40 and 44.
39PN3692*	Site	Eligible	Outside the Park	Resource may be eligible for listing in the National Register under Criteria D.
39PN3695*	Site	Unknown	Outside the Park	Resource may be eligible for listing in the National Register.
39PN3697*	Site	Unknown	Outside the Park	Resource may be eligible for listing in the National Register.
39PN3696*	Site	Unknown	Outside the Park	Resource may be eligible for listing in the National Register.
Historic farmstead*	Building	Unknown	Outside the Park	Resource may be eligible for listing in the National Register under Criteria A, B and C.
Historic farmstead*	Building	Unknown	Outside the Park	Resource may be eligible for listing in the National Register under Criteria A, B and C.
39PN886*	Site	Unknown	Outside the Park	Resource may be eligible for listing in the National Register.
36-100-136*	Bridge	Eligible	Outside the Park	This bridge is an intact example of a common steel stringer bridge configuration for the pre-World War II era, reflecting a technology preferred by the South Dakota State Highway Commission for short crossings of the era. Bridge 36-100-136 is eligible for listing in the



Property Name	Property Type	Eligibility Status	Location	Significant Characteristics
				National Register under Criterion C, as an example in the West River area of the steel stringer type for the pre-World War II period.
Kudrna Ranch PN06400001 - PN064000291	Buildings	Eligible	Outside the Park	Various resources contribute to ranch history and are eligible for listing in the National Register under Criteria A and C. Period of significance is 1910-1964.

\*Location is restricted and therefore cannot be shown on the APE map.



United States Department of Transportation  
**FEDERAL AVIATION ADMINISTRATION**  
Office of Policy, International Affairs & Environment  
Office of Environment and Energy

## **NATIONAL PARKS AIR TOUR MANAGEMENT PROGRAM**

March 14, 2023

Re: Continuing Consultation and Finding of No Adverse Effect under Section 106 of the National Historic Preservation Act for the development of an Air Tour Management Plan for Badlands National Park

Ted Spencer  
State Historic Preservation Officer  
Cultural Heritage Center  
900 Governors Drive  
Pierre, SD 57501

Dear Ted Spencer:

### **Introduction**

The Federal Aviation Administration (FAA), in coordination with the National Park Service (NPS) (together, the agencies), seeks to continue consultation with your office under Section 106 of the National Historic Preservation Act (NHPA) for the development of an Air Tour Management Plan (ATMP) for Badlands National Park (the Park). At this time, the FAA requests your concurrence with its proposed finding that the undertaking would have no adverse effect on historic properties, in accordance with 36 CFR 800.5(c). On this date, we are also notifying all consulting parties of this proposed finding and providing the documentation below for their review.

In accordance with the requirements of 36 CFR 800.11(e), this letter provides: a description of the undertaking - no air tours in the planning area (the preferred alternative under the National Environmental Policy Act (NEPA)); the Area of Potential Effects (APE); a description of steps taken to identify historic properties; a description of affected historic properties in the APE and the characteristics that qualify them for listing in the National Register of Historic Places (National Register); and an explanation of why the criteria of adverse effect do not apply to this undertaking. This letter also describes the Section 106 consultation process and public involvement for this undertaking.

The FAA initiated Section 106 consultation with your office by letter dated April 12, 2021. In a follow-up letter dated October 28, 2022, we described the proposed undertaking in more detail, including the range of alternatives under consideration, proposed a preliminary APE, and provided our initial list of historic properties identified within the APE. Similar letters were sent to all consulting parties listed in **Attachment A**.

The agencies have held six tribal consultation meetings under Section 106 to discuss the ATMP planning process, the range of alternatives, and Section 106 consultation. During these tribal consultation meetings, several tribal representatives stated that the entire Black Hills region, including the Black Hills and Badlands, is sacred land that many tribes view as a single landscape and Traditional Cultural Property (TCP).<sup>1</sup> Section 106 consultation with tribes is further described below.

Public involvement for this undertaking was integrated with the NEPA process. The agencies published an ATMP Public Scoping Potential Alternatives Newsletter on September 6, 2022. The Public Scoping comment period spanned from September 6, 2022, through October 6, 2022. The agencies received 43 comments, of which four were about potential adverse effects on cultural resources and five were about tribal concerns. One commenter requested that the agencies consider the effects of noise on cultural and historic resources during the preparation of the environmental assessment for the plan. A commenter also stated that archaeological and ethnographic resources are identified as fundamental resources and values in the Park's foundation document, which could be adversely affected by commercial air tours. A commenter stated that the Park is responsible for protecting places of spiritual and historical importance to the Lakota people. Another commenter also suggested that the scenery of the Park could be adversely affected by commercial air tours. Most commenters supported Alternative 2 - no air tours in the planning area, because it provides the greatest protection of the Park's cultural resources, and it is most consistent with some of the Park's most important management objectives including preservation of traditional and cultural resources. During the Public Scoping comment period, a commenter also stated that air tours over the Badlands is a violation of sacred space to the indigenous people who claim spiritual beliefs associated with lands in the park.

### **Description of the Undertaking**

Consistent with NPATMA, the proposed ATMP would regulate commercial air tours within the ATMP planning area including over tribal lands within or abutting the Park. Further background information regarding the history of commercial air tours over the Park, the authority under which they are currently conducted, and the area to be regulated under the ATMP is available in the September 2022 Scoping Newsletter, prepared by the agencies, that was previously provided to your office and is available at the following link:

<https://parkplanning.nps.gov/document.cfm?documentID=123301>

The undertaking for purposes of Section 106 is implementing an ATMP that applies to all commercial air tours over the Park and within ½ mile outside the Park's boundary. A commercial air tour subject to the ATMP is any flight conducted for compensation or hire in a powered aircraft where a purpose of the flight is sightseeing over the Park, or within ½ mile of its boundary, during which the aircraft flies:

- (1) Below 5,000 feet above ground level (except solely for the purposes of takeoff or landing, or necessary for safe operation of an aircraft as determined under the rules and regulations of the FAA requiring the pilot-in-command to take action to ensure the safe operation of the aircraft); or
- (2) Less than one mile laterally from any geographic feature within the Park (unless more than ½ mile outside the Park boundary).

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<sup>1</sup> For the purposes of Section 106, the FAA is treating identified but unevaluated properties as eligible for listing in the National Register.

This area is referred to as the ATMP planning area. Overflights that do not meet the definition of a commercial air tour above are not subject to NPATMA and are thus outside the scope of the ATMP.

The agencies have documented the existing conditions for commercial air tour operations over the Park. Two commercial air tour operators currently conduct tours over the Park: Badger Helicopters, Inc. (Badger) flies helicopters, and Eagle Aviation, Inc. (Eagle) flies fixed wing aircraft. The agencies consider the existing operations for commercial air tours to be an average of 2017-2019 annual air tours flown, which is 1,425 air tours. A three-year average is used because it reflects the most accurate and reliable air tour conditions, and accounts for variations across multiple years. Under existing conditions, commercial air tours over the Park are conducted using both fixed wing aircraft: CE-172-N and CE-206-U206F, and helicopters: BHT-206B, BHT-47-G3B1, R-44-II, R-66- 66. The helicopter operator accounts for the vast majority of the tours. The fixed-wing operator flew four tours in 2017, zero tours in 2018, and zero tours in 2019. Reported minimum altitudes range from 3,900 ft. MSL (800 ft. AGL) to 5,100 ft. MSL (2,000 ft. AGL), depending on operator.<sup>2</sup>

The helicopter operator flies five loop routes that originate within ½ mile outside the northeast corner of the Park boundary. These routes vary in length from approximately 3 miles to over 40 miles. The fixed-wing operator flies one route from the west of the park to the east end of the North Unit and back. Under existing conditions, the operators are not required to use these routes and could change the routes without notice to the agencies. Existing routes are depicted in **Attachment B**. The commercial air tours are offered seasonally, occurring May through September, and typically peak in July.

The proposed undertaking, which was referred to in prior consultation and the September 2022 Scoping Newsletter as Alternative 2 – No Air Tours in the Planning Area, would prohibit commercial air tour operations within the ATMP planning area. A summary of the undertaking elements is shown in the table below:

#### SUMMARY OF ATMP ELEMENTS

<b>General Description and Objectives</b>	Prohibits air tours within the ATMP planning area to maximize achievement of Park management objectives. Air tours could continue to fly outside the ATMP planning area (i.e., at or above 5,000 feet AGL or more than ½-mile outside of the Park’s boundary).
<b>Annual/Daily Number of Flights</b>	None in ATMP planning area.
<b>Routes</b>	None in ATMP planning area.
<b>Minimum Altitudes</b>	Flights over the Park at or above 5,000 feet AGL could occur as they are outside the ATMP planning area. Flights more than ½-mile outside the Park boundary could similarly still occur as they are also outside the ATMP planning area.
<b>Time of Day</b>	N/A

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<sup>2</sup> Altitude expressed in units above ground level (AGL) is a measurement of the distance between the ground surface and the aircraft, whereas altitude expressed in median sea level (MSL) refers to the altitude of 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.

<b>Day of Week</b>	N/A
<b>Seasonal</b>	N/A
<b>Quiet Technology (QT) Incentives</b>	N/A
<b>Annual Meeting, Operator Training and Education</b>	N/A
<b>Restrictions for Particular Events</b>	N/A
<b>Adaptive Management</b>	N/A
<b>Initial Allocation, Aircraft Type, Competitive Bidding, and New Entrants</b>	N/A
<b>Monitoring and Enforcement</b>	Monitoring would occur to ensure operators are complying with the terms and conditions of the ATMP.
<b>Interim Operating Authority<sup>3</sup></b>	Goes away and operations must be consistent with the ATMP.

### **Area of Potential Effects (APE)**

The APE for the undertaking was proposed in the Section 106 consultation letter dated October 28, 2022, sent to all consulting parties. In a letter dated November 30, 2022, your office informed the FAA that you had no concerns with the proposed APE. At the conclusion of the 30-day comment period the agencies received no additional comments regarding the APE. The APE has therefore not changed. The undertaking does not require land acquisition, construction, or ground disturbance. In establishing the APE, the FAA sought to include areas where any historic property present could be affected by noise from or sight of commercial air tours that may take place under any of the selectable draft alternatives, including those over the Park or adjacent tribal lands or those that are reasonably foreseeable to take place adjacent to the ATMP planning area. The FAA considered the number and altitude of commercial air tours over historic properties in these areas to further assess the potential for visual effects and any incremental change in, or elimination of, noise levels that may result in alteration of the characteristics of historic properties qualifying them for listing in the National Register.

The FAA proposed an APE comprising the North Unit of the Park plus 1 ½ miles outside the boundary of the North Unit of the Park, as depicted in **Attachment B**. Air tours currently occur solely over the North Unit of the Park. No air tours occur over the South Unit and no air tours will occur over the South Unit under the undertaking. While no air tours would occur over the South Unit, the buffer extends beyond the North Unit boundary; therefore, a portion of the APE falls within the South Unit. The additional 1 ½ miles beyond the Park boundary was chosen because each alternative considered under NEPA would decrease the number of air tours operations within the ATMP planning area and/or eliminate routes and concentrate air tours operations in the north portion of the Park. The proposed undertaking will change how air tours are conducted within the ATMP planning area. While the agencies cannot know for

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<sup>3</sup> See p. 6 of the September 2022 newsletter for a description of interim operating authority.

certain, it is reasonable to assume that air tour operators may elect to conduct additional air tours beyond the ½-mile radius of the Park's boundary as a result of the undertaking. The additional mile boundary is the furthest distance that it is feasible to conduct air tour operations outside the boundary of the Park while still allowing views of the features inside the park.

### **Summary of Section 106 Consultation with Tribes**

On April 15, 2021, the agencies invited 26 federally recognized tribes to participate in the consultation process for either Badlands National Park, Mount Rushmore National Memorial, or both Parks. The agencies recognize that these tribes have a long-standing and deeply rooted association with the landscape that includes these National Park lands, which have numerous sites of religious and cultural significance. Tribal consultation meetings were held on March 30, 2021, July 23, 2021, October 19, 2021, January 28, 2022, May 12, 2022, and November 17, 2022, regarding the ATMP for Badlands National Park. Meeting attendees for some or all of these meetings included representatives from Assiniboine and Sioux Tribes of Fort Peck, Cheyenne River Sioux Tribe, Flandreau Santee Sioux Tribe, Fort Belknap Indian Community, Northern Arapaho Tribe, Northern Cheyenne Tribe, Oglala Lakota Nation, Omaha Tribe of Nebraska, Rosebud Sioux Tribe, Santee Sioux Nation, Sisseton-Wahpeton Oyate of the Lake Traverse Reservation, Spirit Lake Tribe, Standing Rock Sioux Tribe, Three Affiliated Tribes, Upper Sioux Community and Winnebago Tribe of Nebraska.

The April 15, 2021, invitation letter included a request for the tribes' expertise in identifying historic properties, including TCPs that may be located within the APE. The list of tribes is included in the list of consulting parties enclosed as **Attachment A**. On October 28, 2021, the FAA sent a Section 106 consultation letter to all consulting parties describing the proposed undertaking, including a description of the alternatives being considered for the ATMP, proposed an APE, and provided the results of a preliminary identification of historic properties.

During tribal consultation meetings the agencies heard from the participating tribes that they support no air tours in the planning area. The Rosebud Sioux Tribe expressed that the sound from commercial air tours would have an effect on animals; the wind of helicopter blades would alter the seed distribution of the plant relatives; and that commercial air tours in general affect soundscapes when the Rosebud Sioux Tribe conducts ceremonies, and they should be able to conduct traditional practices without that kind of disruption.

The agencies also heard from several tribes that the Black Hills, including Badlands National Park and Mount Rushmore National Memorial, are part of a continuous landscape that is sacred. The landscape is considered a TCP by many tribes, which includes natural resources that are also considered to be cultural resources by the tribes. The tribes emphasized that plants, animals, the sky, and other natural resources are contributing features to cultural resources within the area throughout the Black Hills which includes Badlands National Park and Mount Rushmore National Memorial.

During a tribal consultation meeting that occurred before the agencies defined the APE, the Cheyenne River Sioux Tribe also discussed how this project could have the potential to contribute to preservation as a whole by considering an expanded buffer zone around the Parks' boundaries. The Cheyenne River Sioux Tribe noted that they would like the agencies to expand the buffer zone beyond the ATMP planning area, otherwise that they were interested in no air tours in the planning area. The Cheyenne River Sioux Tribe also expressed concerns about land, air, and water protection for all life forms. A tribal

representative expressed concerns because the Park is within lands that involve the Cheyenne River Sioux Tribe's creation stories.

### **Identification of Historic Properties**

In accordance with 36 CFR 800.4, the FAA has made a reasonable and good faith effort to identify historic properties within the APE. As the undertaking would not result in physical effects, the identification effort focused on identifying properties where setting and feeling are characteristics contributing to a property's National Register eligibility, as they are the type of historic properties most sensitive to the effects of aircraft overflights. These may include isolated properties where a cultural landscape is part of the property's significance, rural historic districts, and outdoor spaces designed for meditation or contemplation. The FAA is specifically considering whether air tours could affect the use of TCPs associated with cultural practices, customs, or beliefs that continue to be held or practiced today. In so doing, the FAA has taken into consideration the views of consulting parties, past planning, research and studies, the magnitude and nature of the undertaking, the degree of Federal involvement, the nature and extent of potential effects on historic properties, and the likely nature of historic properties within the APE in accordance with 36 CFR 800.4(b)(1).

The initial identification of historic properties relied upon data submitted by the NPS regarding known historic properties in the Park and data received by or retrieved from the NPS Midwest Archeological Center, the Buffalo Gap National Grasslands (U.S. Forest Service), the South Dakota State Historic Preservation Office's Cultural Resource Geographic Research Information Display (CR GRID) database, and the South Dakota Archaeological Research Center. Section 106 consultation efforts to identify historic properties within the APE also involved outreach to affiliated tribes, the South Dakota State Historic Preservation Office, operators, and other consulting parties including local governments. Public comments submitted as part of the Public Scoping process also informed identification efforts.

A preliminary list of historic properties was provided to all consulting parties for their review and comment in a letter dated October 28, 2022. In a letter dated November 30, 2022, the agencies received a comment from your office about the preliminary list of historic properties stating that the National Register listed Prairie Homestead and related structures need to be considered for potential audio and visual effects. The agencies received no other written comments identifying additional historic properties within the APE.

As discussed above, a number of tribal consultation meetings were held regarding the ATMPs for both Badlands National Park and Mount Rushmore National Memorial in which the agencies heard from the Fort Peck Assiniboine and Sioux Tribes, Upper Sioux Community, Santee Sioux Nation, Rosebud Sioux Tribe, Cheyenne River Sioux Tribe, and others that the Black Hills, including Badlands National Park and Mount Rushmore National Memorial, are part of a continuous landscape that is sacred and considered a TCP by many tribes.

The efforts described resulted in the identification of 21 historic properties within the APE for which feeling and setting are characteristics that make the properties eligible for listing on the National Register, which are listed in **Attachment C**. Nine of these historic properties have no prior determination of eligibility; for the purposes of this undertaking FAA assumes that these nine properties are eligible for listing in the National Register. Those historic properties identified with available non-restricted location data are shown in the APE map provided in **Attachment B**. Approximately 430 additional below-ground archaeological sites were identified within the APE; however, these below-ground archaeological

resources are not further described in this letter 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.

### **Assessment of Effects**

The undertaking could have an effect on a historic property if it alters the characteristics that qualify the property for eligibility for listing or inclusion in the National Register. The characteristics of the historic properties within the APE that qualify them for inclusion in the National Register are described in **Attachment C**. Effects are considered adverse if they diminish the integrity of a property's elements that contribute to its significance. The undertaking does not include land acquisition, construction, or ground disturbance and will not result in physical effects to historic properties. The FAA, in coordination with the NPS, focused the assessment of effects on the potential for adverse effects from the introduction of audible or visual elements that could diminish the integrity of the property's significant historic features.

As the undertaking would remove flights from the ATMP planning area and potentially displace some of those flights to outside of the ATMP planning area, it is reasonably foreseeable that current air tour operators would increase flights in areas not regulated by the ATMP, referred to as "air tour displacement." Because the undertaking would eliminate air tours within the ATMP planning area, the agencies also considered the potential for indirect impacts to cultural resources within the APE that could occur from air tours displaced outside the ATMP planning area as a result of the undertaking. Based on current air tour activity, the number of flights displaced outside the ATMP planning area could 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 (VFR), which is based on the principle of "see and avoid," and therefore may vary.

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 because of the undertaking. Due to the undertaking, it is reasonably foreseeable that operators would continue to utilize the helipad near the boundary of the ATMP planning area 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 helipad could increase if operators chose to offer more tours over other regional points of interest, which could result in indirect noise effects to cultural resources in this area such as Cedar Pass Road, Cedar Pass Developed Area, and the Dugout and Claim Shack. Therefore, the undertaking may result in some indirect impacts to cultural resources within the APE that could occur from the noise and visual effects associated with these displaced flights.

### **Assessment of Noise Effects**

To assess the potential for the introduction of audible elements, including changes in the character of aircraft noise, the agencies considered whether there would be a change in the annual number, daily frequency, routes, or altitudes of commercial air tours, as well as the type of aircraft used to conduct those tours. The level of commercial air tour activity under the ATMP is expected to improve the protection of cultural resources within the ATMP planning area.

The ATMP prohibits commercial air tours within the ATMP planning area; therefore, overall noise impacts within the ATMP planning area that are associated with commercial air tours are expected to be reduced in both character and decibel level. The elimination of air tours within the ATMP planning area



will reduce maximum noise levels at sites directly below commercial air tour routes under existing conditions. Historic properties that would experience a reduction in noise effects include portions of the Black Hills TCP, Conata Picnic Area, Cedar Pass Road, Dugout and Claim Shack, the Cedar Pass Developed Area, and the Cedar Pass to Northwest Entrance Road (Loop Road) – properties for which setting and feeling are significant characteristics that make them eligible for listing in the National Register.

For purposes of assessing noise impacts from commercial air tours on the acoustic environment of the Parks under NEPA, the FAA noise evaluation is based on Yearly<sup>4</sup> Day Night Average Sound Level ( $L_{dn}$  or DNL); the cumulative noise energy exposure from aircraft over 24 hours. The DNL analysis indicates that the undertaking would not result in any noise impacts that would be “significant” or “reportable” under the FAA’s policy for NEPA.<sup>5</sup>

As part of the ATMP noise analysis, the NPS provided supplemental metrics to further assess the impact of commercial air tours in quiet settings: time above 35 dBA and time above 52 dBA. These metrics account for the amount of time in minutes that aircraft sound levels are above a given threshold (i.e., 35 dBA and 52 dBA). In quiet settings, outdoor sound levels exceeding 35 dB degrade experience in outdoor performance venues (American National Standards Institute (ANSI), 2007). Interference with Park interpretive programs would reasonably occur at 52 dBA. **Attachment D** provides further information about the supplemental noise metrics and presents the results of modeling.

**Attachment D** presents noise contours (i.e. graphical illustration depicting noise exposure) for existing conditions and the representative location point analysis. Under existing conditions, noise related to commercial air tours is modeled to be greater than 35 dBA for approximately 105 minutes (1.75 hours) a day within the ATMP planning area. Historic properties that may experience the elimination of noise related to commercial air tours within the ATMP planning area are listed above. Under existing conditions, historic properties outside the ATMP planning area for which setting and feeling are significant characteristics that make them eligible for listing in the National Register are currently experiencing noise related to commercial air tours modeled to be greater than 35 dBA for approximately 53 minutes a day. For example, the Dugout and Claim Shack, which is near the helipad, is currently experiencing sound above 35 dBA for approximately 52.8 minutes on days when commercial air tours would occur. Various historic properties for which setting and feeling are significant characteristics that make them eligible for listing in the National Register, like Conata Picnic Area (point 8 in **Attachment D**) and others that have restricted names and locations, are currently experiencing noise related to commercial air tours modeled to be greater than 35 dBA from 0 minutes to 33 minutes on days when commercial air tours would occur. Because noise is modeled using conservative assumptions (see **Attachment D**) and implementing the ATMP would eliminate flights and routes within the ATMP planning area, noise impacts are expected to be reduced within the ATMP planning area, and therefore would not diminish the integrity of any historic property’s significant historic features.

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

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<sup>4</sup> Yearly conditions are represented as the Average Annual Day (AAD)

<sup>5</sup> Under FAA policy, an increase in the Day-Night Average Sound Level (DNL) of 1.5 dBA or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dBA noise exposure level, or that will be exposed at or above the DNL 65 dBA level due to a DNL 1.5 dBA or greater increase, is significant. FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, Exhibit 4-1. Noise increases are “reportable” if the DNL increases by 5 dB or more within areas exposed to DNL 45-60 dB, or by 3 dB or more within areas exposed to DNL 60-65 dB. FAA Order 1050.1F, Appendix B, section B-1.4.

larger geographical area and would be audible for a longer period, but at lower intensity. Additionally, other locations within the APE not currently experiencing air tour noise may experience some noise when compared to current conditions. However, in both cases, the intensity of noise within the APE would likely be low given the aircraft altitude of 5,000 ft. AGL or higher. Any noise that might result could also be more easily masked by opportunistic sounds such as wind and various anthropogenic noise sources.

Locations outside the ATMP planning area but within the APE not currently experiencing noise due to air tours within the ATMP planning area may experience noise from displaced air tours. For example, the Dugout and Claim Shack, which is near the helipad outside the ATMP planning area but within the APE may experience an increase in noise from displaced air tours. However, any noise that might result would not adversely affect the Dugout and Claim Shack because that property is already experiencing noise coming from aircraft using the nearby helipad. Cultural resources such as the bridge 36-100-136 and 39PN2007 would not be adversely affected by noise coming from displaced air tours because quiet or natural settings are not significant characteristics that make them eligible for listing in the National Register.

The undertaking could result in some indirect noise and visual effects to cultural resources within the APE for flights along the perimeter but outside the ATMP planning area. For flights above 5,000 ft. AGL, the increase in altitude would likely decrease impacts on ground level resources as compared to existing conditions. Numbers of flights displaced above or along the perimeter of the ATMP planning area due to the ATMP restrictions are expected to be similar to or less than the existing number of flights that currently fly within the ATMP planning area and therefore may result in an increase of flights outside the ATMP planning area. However, this is not anticipated to result in adverse effects to historic properties as those that may have an increase in noise are already experiencing noise coming from aircraft using the nearby helipad or quiet or natural settings are not significant characteristics that make them eligible for listing in the National Register.

### **Assessment of Visual Effects**

Recognizing that some types of historic properties may be affected by visual effects of commercial air tours, the agencies considered the potential for the introduction of visual elements that could alter the characteristics of a historic property that qualify it for inclusion in the National Register. Aircraft are transitory elements in a scene and visual impacts tend to be relatively short. The elimination of flights within the ATMP planning area make it unlikely a historic property within the ATMP planning area would experience a visual effect from the undertaking. The agencies also considered the experience of tribal members who may be conducting ceremonies or practices that could involve looking toward the sky. The elimination of air tour aircraft overhead represents an improvement over existing conditions.

The ATMP prohibits commercial air tours within the ATMP planning area and would not introduce visual elements that would alter the characteristics of any historic property that qualifies it for inclusion in the National Register. Visual effects to historic properties within the ATMP planning area are expected to decrease compared to impacts currently occurring because no flights are authorized in the ATMP planning area and any visual impacts would be further removed from the properties to areas outside the ATMP planning area. Sites that would experience a reduction in visual effects include portions of the Black Hills TCP, Conata Picnic Area, Cedar Pass Road, Dugout and Claim Shack, the Cedar Pass Developed Area, and the Cedar Pass to Northwest Entrance Road (Loop Road) – properties for which setting and feeling are significant characteristics that make them eligible for the National Register.

Displaced air tours, if any, above the ATMP planning area (at or above 5,000 ft. AGL) would not result in an increase of visual effects as compared to current conditions as air tour flights currently occur in these areas at lower altitudes. However, other locations within the APE not currently seeing air tours within the ATMP planning area may experience some visual effects of commercial air tours when compared to current conditions due to displaced air tours. However, the effects of these displaced air tours would likely be minimal given the aircraft altitude.

Locations outside the ATMP planning area but within the APE not currently experiencing visual effects due to air tours within the ATMP planning area may experience an increase in visual elements from displaced air tours along the perimeter of the ATMP planning area when compared to current conditions. For example, Dugout and Claim Shack, which is near the helipad outside the ATMP planning area, but within the APE may experience an increase in visual elements from displaced air tours. However, as noted above, aircraft are transitory elements in a scene and visual impacts tend to be relatively short. Any visual elements that might result from displaced air tours would not adversely affect the Dugout and Claim Shack because that property is already experiencing visual effects coming from aircraft using the nearby helipad. Cultural resources, such as bridge 36-100-136 and 39PN2007 would not be adversely affected by visual elements coming from displaced air tours because setting and feeling are not significant characteristics that make them eligible for listing in the National Register.

The undertaking could result in some indirect visual effects to cultural resources within the APE for flights just outside of the ATMP planning area. Numbers of flights displaced above or along the perimeter of the ATMP planning area due to the ATMP restrictions are expected to be similar to or less than the existing number of air tour flights within the ATMP planning area and therefore may result in an increase of flights outside the ATMP planning area. However, this is not anticipated to result in adverse effects to historic properties as those that may have an increase in visual effects are already experiencing visual effects from aircraft using the nearby helipad or setting and feeling are not significant characteristics that make them eligible for listing in the National Register.

### **Finding of No Adverse Effect Criteria**

To support a Finding of No Adverse Effect, an undertaking must not meet any of the criteria set forth in the Advisory Council on Historic Preservation's Section 106 regulations at 36 CFR 800.5(a). This section demonstrates the undertaking does not meet those criteria. The undertaking would not have any physical impact on any property. The undertaking would not result in any alteration or physical modifications to historic properties. The undertaking would not remove any property from its location. The undertaking would not change the character of any property's use or any physical features in any historic property's setting. As discussed above, the undertaking would not introduce any auditory or visual elements that would diminish the integrity of the significant historical features of any historic properties in the APE. The undertaking would not cause any property to be neglected, sold, or transferred.

### **Proposed Finding and Request for Review and Concurrence**

FAA and NPS approval of the undertaking would not alter the characteristics of any historic properties located within the APE as there would be a reduction in audible or visual effects from existing conditions. Based on the above analysis, the FAA proposes a finding of no adverse effect on historic properties. We request that you review the information and respond whether you concur with the proposed finding within 30 days of receiving this letter.

Should you have any questions regarding any of the above, please contact Judith Walker at 202-267-4185 or [Judith.Walker@faa.gov](mailto:Judith.Walker@faa.gov) and copy the ATMP team at [ATMPTeam@dot.gov](mailto:ATMPTeam@dot.gov).

Sincerely,

A handwritten signature in black ink, appearing to read 'Judith Walker', with a long horizontal flourish extending to the right.

Judith Walker  
Federal Preservation Officer  
Senior Environmental Policy Analyst  
Environmental Policy Division (AEE-400)  
Federal Aviation Administration

#### Attachments

- A. List of Consulting Parties
- B. APE Map including existing Commercial Air Tour Routes
- C. List of Historic Properties in the APE and Description of Historic Characteristics
- D. Summary of Noise Technical Analysis from NEPA Review

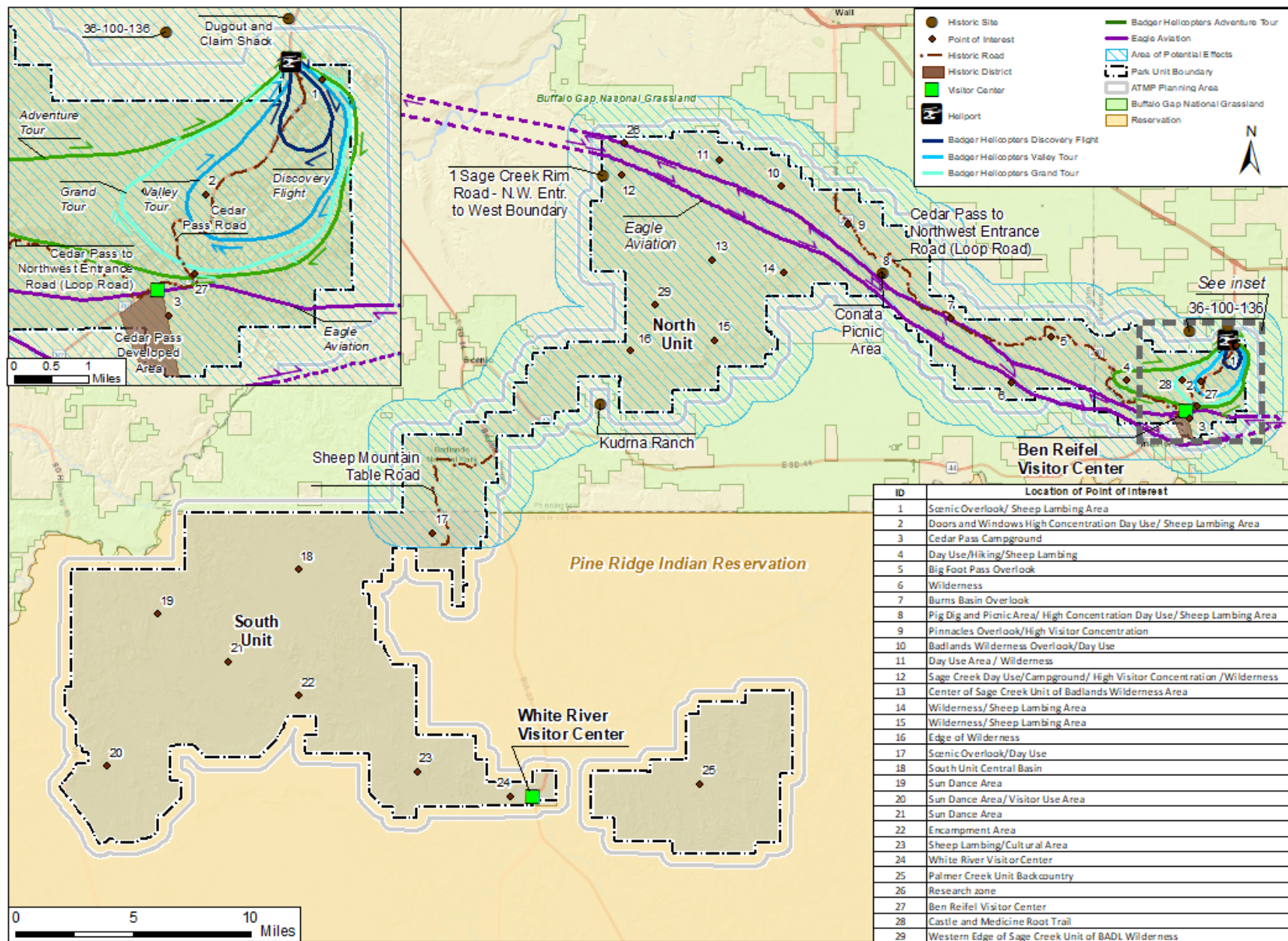
**ATTACHMENT A**  
**List of Consulting Parties**

Apache Tribe of Oklahoma
Assiniboine and Sioux Tribes of Fort Peck
Badger Helicopter, Inc.
Dakota Rotors LLC (Black Hills Aerial Adventures, Inc.)
Cheyenne and Arapaho Tribes of Oklahoma
Cheyenne River Sioux Tribe
Crow Creek Sioux Tribe (of the Crow Creek Reservation, South Dakota)
Crow Tribe of Montana
Eagle Aviation, Inc.
Eastern Shoshone Tribe of the Wind River Reservation, Wyoming
Flandreau Santee Sioux Tribe of South Dakota
Fort Belknap Indian Community of the Fort Belknap Reservation
Jackson County
Kiowa Indian Tribe of Oklahoma
Lower Brule Sioux Tribe of the Lower Brule Reservation
National Trust for Historic Preservation
Northern Arapaho Tribe of the Wind River Reservation, WY
Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation
Oglala Lakota Nation
Omaha Tribe of Nebraska
Ponca Tribe of Nebraska
Rosebud Sioux Tribe of the Rosebud Indian Reservation
Santee Sioux Nation, Nebraska
Sisseton-Wahpeton Oyate of the Lake Traverse Reservation
Spirit Lake Tribe
Standing Rock Sioux Tribe of North & South Dakota
Three Affiliated Tribes of the Berthold Reservation, North Dakota (Mandan, Hidatsa and Arikara Nation)
Turtle Mountain Band of Chippewa Indians of North Dakota
Upper Sioux Community, Minnesota
US Forest Service Buffalo Gap National Grasslands
Winnebago Tribe of Nebraska
Yankton Sioux Tribe of South Dakota

**ATTACHMENT B**

**Area of Potential Effects Map  
Including  
Existing Commercial Air Tour Routes**

## Area of Potential Effects with Historic Properties and Point of Interest for ATMP at Badlands National Park



## ATTACHMENT C

### List of Historic Properties in the APE and Description of Historic Characteristics

Property Name	Property Type	Eligibility Status	Location	Significant Characteristics
Black Hills	TCP	Recommended Eligible/undetermined <sup>6</sup>	Black Hills	The Black Hills, including Badlands National Park and Mount Rushmore National Memorial, are part of a continuous landscape that is sacred, which includes plants, animals, the sky, and other natural resources. The landscape is considered a TCP by many tribes.
Cedar Pass Developed Area	Cultural Landscape	Eligible	Within the Park	Badlands National Park Cedar Pass Historic District possesses significance for its connection to early tourism associated with western landscapes and parks; CCC development and New Deal Master Planning; and the NPS's Mission 66 initiative. It is significant within the areas of Architecture, Landscape Architecture, Social History/Tourism, Community Planning and Development, and Recreation during the period ca. 1928 through 1966. Badlands National Park is also a relatively complete example of a Mission 66 developed area with a high degree of integrity, which remains rare and unusual within the state of South Dakota.
1 Sage Creek Rim Road – N.W. Entry. to West Boundary	Structure	Eligible	Within the Park	Sage Creek Rim Road (SD 590) is a dirt/gravel road that travels through the Sage Creek Wilderness Area of Badlands National Park. It provides access to several scenic overlooks.
Cedar Pass to Northwest Entrance Road (Loop Road)	Structure	Eligible	Within the Park	This road is historically significant for its association with the development of park road systems for public access to natural features and for its design principles that clearly seek to enhance the viewsheds for park

<sup>6</sup> For the purposes of Section 106, the FAA is treating identified but unevaluated properties as eligible for the National Register of Historic Places.



Property Name	Property Type	Eligibility Status	Location	Significant Characteristics
				visitors. The road is a two-lane asphalt paved roadbed 29.4 miles long and 24 feet wide.
Cedar Pass Road	Structure	Eligible	Within the Park	This road is historically significant for its association with the development of park road systems for public access to natural features, and for its design principles that clearly seek to enhance the viewsheds for park visitors. Cedar Pass Road is a two-lane asphalt road, 5.2 miles in length, extending from the NE Entrance to Cedar Pass Junction.
Sheep Mountain Table Road	Structure	Eligible	Within the Park	Sheep Mountain Table is the highest area in the park at nearly 3,300 ft. above sea level. Horses or cattle might be seen roaming the area because of agreements made with local ranchers on the Pine Ridge Reservation. Part of the agreement between the NPS and the Oglala Lakota Nation is that park lands remain accessible to tribal ranchers on the Reservation. Potential significant characteristics include viewshed and setting.
Conata Picnic Area	Site	Eligible	Within the Park	The Conata Picnic Area at Badlands National Park is significant for its association to Architecture, Landscape Architecture, Social History/Tourism, and Recreational and Community Planning and Development under the NPS Mission 66 period of design and development (MPDF, POS=1945-1973). During the Mission 66 period the NPS focused on improvements to parks with an emphasis on master planning and visitor experience. The period is characterized by the concept of immersing the visitor(s) into the site/landscape and providing facilities that were distinctively modern. The

Property Name	Property Type	Eligibility Status	Location	Significant Characteristics
				Conata Picnic Area retains integrity to the period of significance (1957-1965). Viewshed is a potential significant characteristic.
Dugout and Claim Shack	District	Listed	Outside the Park	The dugout and claim shack are vernacular representatives of the type and period of construction techniques and of shelter solutions on the Great Plains. Once common in the region, the dugout is now a rare extant example of the patterns in which nineteenth and early twentieth century homesteaders of the region fashioned relatively hospitable quarters. The structure retains outstanding historic integrity and retains the character-defining features of its type. This is especially true considering comparable properties, few of which are extant. The physical setting of the property is a potential significant characteristic.
39PN2007*	Site	Eligible	Portions may be within the Park	This site is an abandoned segment of the Chicago, Milwaukee, St. Paul and Pacific Railroad. The built-up grade runs southeast-northwest in this area, crossing a short northeast-flowing intermittent tributary of Cain Creek.
39PN3504*	Site	Unknown/Undetermined	Outside the Park	Resource may be eligible for listing in the National Register.
Check Dam 01*	Site	Unknown/Undetermined	Outside the Park	Resource may be eligible for listing in the National Register.
OLD Hwy 40*	Structure	Unknown/Undetermined	Outside the Park	Multiple sections of old highway 40 and 44.

Property Name	Property Type	Eligibility Status	Location	Significant Characteristics
39PN3692*	Site	Eligible	Outside the Park	Resource may be eligible for listing in the National Register because it has the potential to yield information important in prehistory or history.
39PN3695*	Site	Unknown/Undetermined	Outside the Park	Resource may be eligible for listing in the National Register.
39PN3697*	Site	Unknown/Undetermined	Outside the Park	Resource may be eligible for listing in the National Register.
39PN3696*	Site	Unknown/Undetermined	Outside the Park	Resource may be eligible for listing in the National Register.
Historic farmstead*	Building	Unknown/Undetermined	Outside the Park	Resource may be eligible for listing in the National Register. Potential significant characteristics include viewshed and setting.
Historic farmstead*	Building	Unknown/Undetermined	Outside the Park	Resource may be eligible for listing in the National Register. Potential significant characteristics include viewshed and setting.
39PN886*	Site	Unknown/Undetermined	Outside the Park	Resource may be eligible for listing in the National Register.
36-100-136	Structure	Eligible	Outside the Park	This bridge is an intact example of a common steel stringer bridge configuration for the pre-World War II era, reflecting a technology preferred by the South Dakota State Highway Commission for short crossings of the era. Bridge 36-100-136 is eligible for listing in the National Register as an example in the West River area

Property Name	Property Type	Eligibility Status	Location	Significant Characteristics
				of the steel stringer type for the pre-World War II period.
Kudrna Ranch PN06400001 - PN064000291	Buildings	Eligible	Outside the Park	Josef and Marie Kudrna claimed this homestead ranch in 1910 and practiced diverse small-scale cultivation while proving up on the land. The farm switched to livestock production in 1930s and acquired additional lands in the area. The Kudrna Ranch is significant for its history of homesteading, agriculture, and vernacular rural architecture. Period of significance is 1910-1964.

\*Location is restricted and therefore cannot be shown on the APE map.

## ATTACHMENT D

### Summary of Noise Technical Analysis from NEPA Review

There are numerous ways to measure the potential impacts from commercial air tours on the acoustic environment of a park, including intensity, duration, and spatial footprint of the noise. The metrics and acoustical terminology used for the ATMPs are shown in the table below.

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 selected 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 between 10 PM and 7 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.</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 Above 35 dBA <sup>7</sup>	<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 35 dB degrade experience in outdoor performance venues (American National Standards Institute (ANSI), 2007). This level is also shown to cause blood pressure increases in sleeping humans (Haralabidis et al., 2008); as well as exceeding recommended maximum background noise level inside classrooms (ANSI S12.60/Part 1-2010).</p>
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>This metric represents the level at which one may reasonably expect interference with park interpretive programs. At this background sound level (52 dB), normal voice communication at five meters (two people five meters apart), or a raised voice to an audience at ten meters</p>

<sup>7</sup> dBA (A-weighted decibels): Sound is measured on a logarithmic scale relative to the reference sound pressure for atmospheric sources, 20  $\mu\text{Pa}$ . Sound levels are reported in units of decibels (dB) (ANSI S1.1-1994, American National Standard Acoustical Terminology). A-weighting is applied to sound levels to account for the sensitivity of the human ear (ANSI S1.42-2001, Design Response of Weighting Networks for Acoustical Measurements). To approximate human hearing sensitivity, A-weighting discounts sounds below 1 kHz and above 6 kHz.

Metric	Relevance and citation
	would result in 95% sentence intelligibility (United States Environmental Protection Agency, Office of Noise Abatement and Control, 1974).

#### Aircraft, Routes and Number of Operations Modeled

Route	Aircraft	Existing Conditions
<b>Discovery Flight</b>	Robinson R-44	7
<b>Valley Tour</b>	Robinson R-44	1
<b>Grand Tour</b>	Robinson R-44	4
<b>Adventure Tour</b>	Robinson R-44	3
<b>Expedition Tour</b>	Robinson R-44	1
<b>Eagle Aviation route</b>	Cessna 206	1
	<b>Total</b>	17

Two types of analyses were performed using FAA’s AEDT, Version 3e: 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 NPS provided a list of 31 location points, geographically located across the planning area, where noise levels were to be evaluated. In addition, noise levels were evaluated at 8 cultural resource and historic property locations (points 32-39) outside<sup>8</sup> the ATMP planning area. These locations are geographically shown in Figure 1 and listed in Figure 2.

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<sup>8</sup> The routes, altitudes and numbers of air tours outside the ATMP boundary are unknown. This is because directly outside of the ATMP boundary is uncontrolled airspace outside the scope of this ATMP, and operators fly under Visual Flight Rules (VFR) in uncontrolled airspace. For the purposes of disclosing the potential effects on locations outside the ATMP boundary, routes outside the park were extrapolated based on available information. Additionally, ambient data are not available outside the ATMP planning area and thus time audible results were not computed.

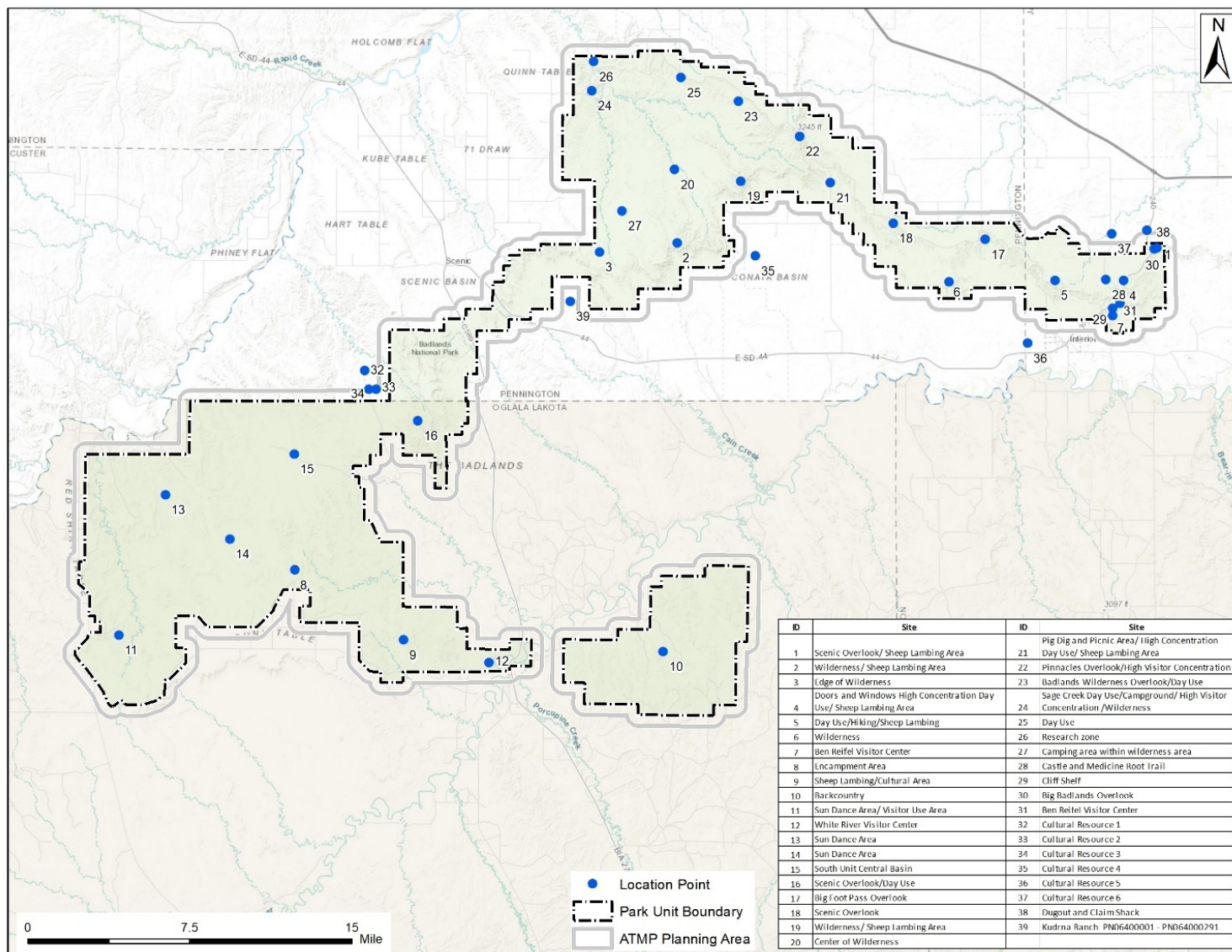


Figure 1. Location Points Modeled

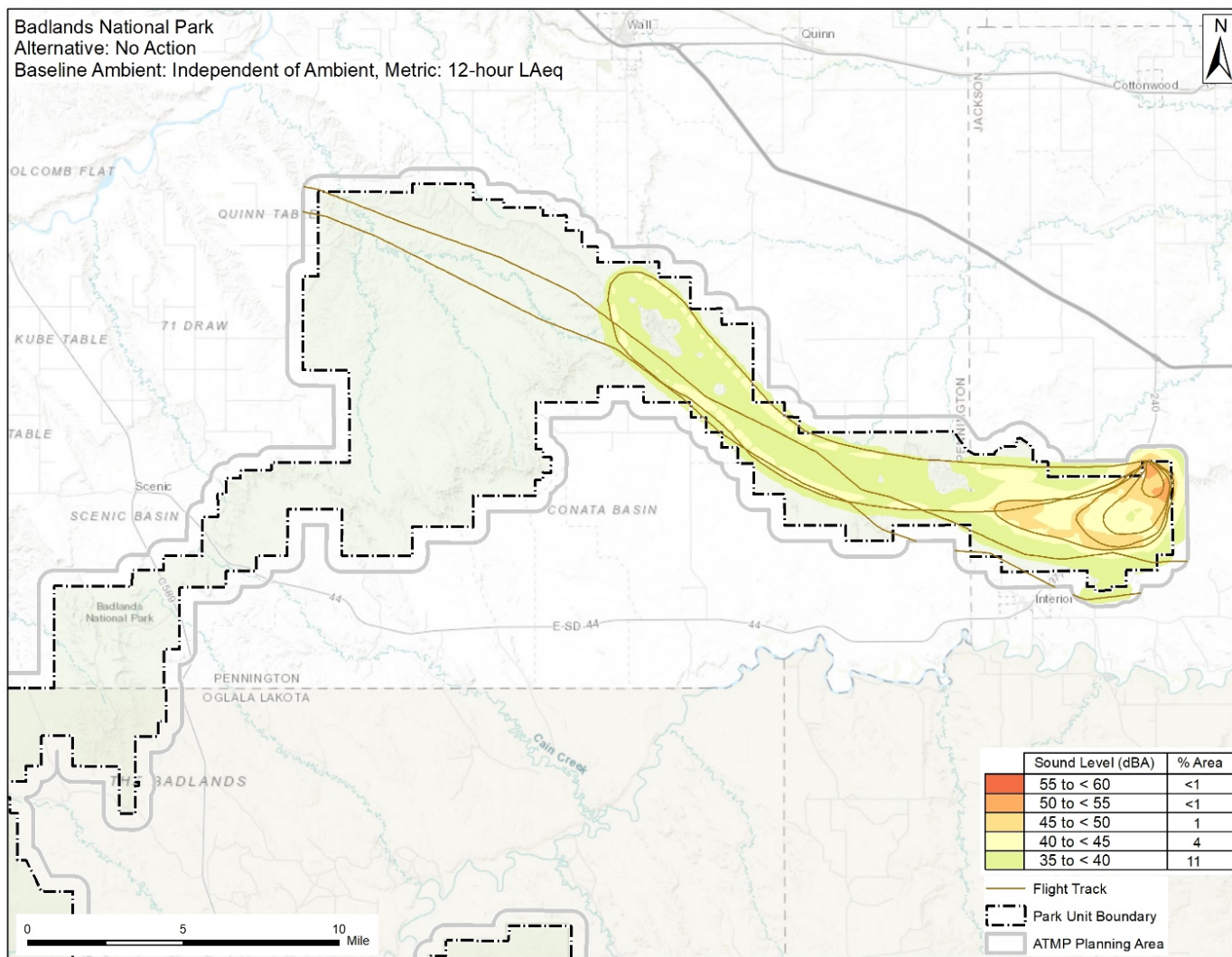
**Figure 2. Location point results – Existing Conditions**

Location	12 Hour Equivalent Sound Level (dBA)*	Time Above 35 dBA (minutes)	Time Above 52 dBA (minutes)
1. Scenic Overlook / Sheep Lambing Area	49.8	49.0	21.2
2. Wilderness/ Sheep Lambing Area	2.1	0.0	0.0
3. Edge of Wilderness	9.3	0.0	0.0
4. Doors and Windows High Concentration Day Use/ Sheep Lambing Area	41.1	89.5	11.6
5. Day Use/Hiking/Sheep Lambing	46.3	39.1	12.5
6. Wilderness	33.8	9.1	1.6
7. Ben Reifel Visitor Center	37.0	35.0	5.7
8. Encampment Area	<0	0.0	0.0
9. Sheep Lambing/Cultural Area	<0	0.0	0.0
10. Backcountry	<0	0.0	0.0
11. Sun Dance Area/ Visitor Use Area	<0	0.0	0.0
12. White River Visitor Center	<0	0.0	0.0
13. Sun Dance Area	<0	0.0	0.0
14. Sun Dance Area	<0	0.0	0.0
15. South Unit Central Basin	<0	0.0	0.0
16. Scenic Overlook/Day Use	<0	0.0	0.0
17. Big Foot Pass Overlook	34.1	11.4	1.3
18. Scenic Overlook	38.9	15.8	5.2
19. Wilderness/ Sheep Lambing Area	25.6	8.6	0.2
20. Center of Wilderness	21.9	4.7	0.0
21. Pig Dig and Picnic Area/ High Concentration Day Use/ Sheep Lambing Area	37.2	15.2	4.3
22. Pinnacles Overlook/High Visitor Concentration	33.8	12.4	2.4
23. Badlands Wilderness Overlook / Day Use	27.3	5.1	0.6
24. Sage Creek Day Use / Campground / High Visitor Concentration / Wilderness	29.4	3.2	0.9
25. Day Use	27.4	3.6	0.6
26. Research zone	32.5	2.6	1.1
27. Camping area within wilderness area	11.4	0.0	0.0
28. Castle and Medicine Root Trail	43.6	68.7	17.0



Location	12 Hour Equivalent Sound Level (dBA)*	Time Above 35 dBA (minutes)	Time Above 52 dBA (minutes)
29. Cliff Shelf	49.2	30.8	12.0
30. Big Badlands Overlook	50.7	46.2	15.8
31. Ben Reifel Visitor Center	40.1	27.4	7.3
32. Cultural Resource 1**	1.2	0.0	0.0
33. Cultural Resource 2**	<0	0.0	0.0
34. Cultural Resource 3**	0.8	0.0	0.0
35. Cultural Resource 4**	16.7	2.7	0.0
36. Cultural Resource 5**	24.7	10.2	0.0
37. Cultural Resource 6**	29.5	33.8	0.5
38. Dugout and Claim Shack**	37.8	52.8	6.8
39. Kudrna Ranch PN06400001 - PN064000291**	6.7	0.0	0.0

\*Location points outside the ATMP planning area



**Figure 3. 12-hour equivalent sound level ( $L_{Aeq,12h}$ ) map for existing conditions**  
 As there are no nighttime events, DNL will be 3 dB less than the 12-hour equivalent sound level.

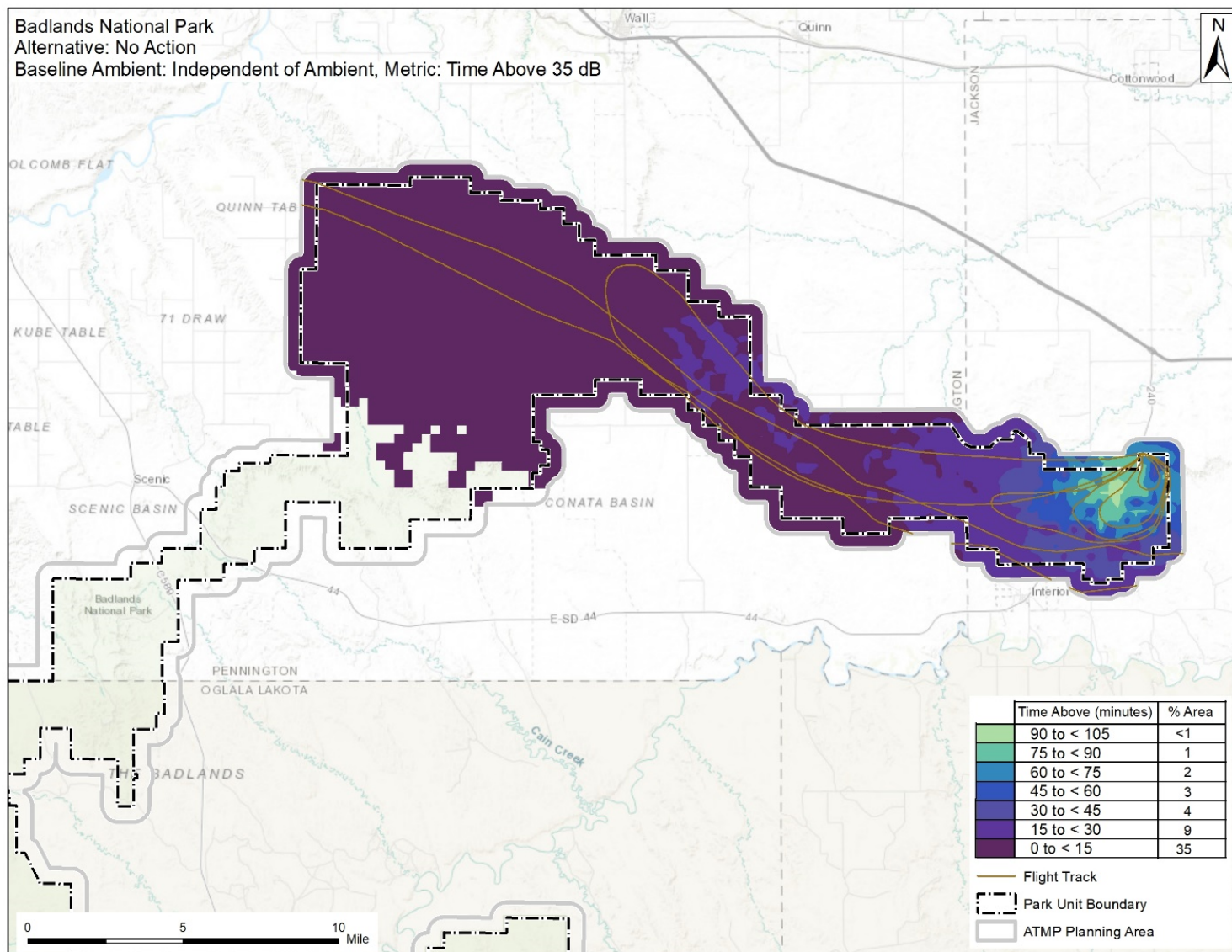


Figure 4. Time Above 35 dBA map for existing conditions

## **APPENDIX H**

### **Section 7 No Effect Memo**



## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
South Dakota Ecological Services Field Office  
420 South Garfield Avenue, Suite 400  
Pierre, SD 57501-5408  
Phone: (605) 224-8693 Fax: (605) 224-1416



In Reply Refer To:

April 17, 2023

Project Code: 2023-0069795

Project Name: Badlands National Park - Air Tour Management Plan

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<https://www.fws.gov/media/endangered-species-consultation-handbook>

**Migratory Birds:** In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see <https://www.fws.gov/law/bald-and-golden-eagle-protection-act>, <https://www.fws.gov/media/endangered-species-act-1>, and/or <https://www.fws.gov/law/migratory-bird-treaty-act-1918>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see <https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/law/migratory-birds>

Please be aware that bald and golden eagles are protected under the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712, as amended), as well as the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.). Projects affecting these species may benefit from the development of an Eagle Conservation Plan (ECP), see guidance at this website (<https://www.fws.gov/node/266177>). An ECP can assist developers in achieving compliance with regulatory requirements, help avoid "take" of eagles at project sites, and provide biological support for eagle permit applications. Additionally, we recommend wind energy

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developments adhere to our Land-based Wind Energy Guidelines for minimizing impacts to migratory birds and bats.

We have recently updated our guidelines for minimizing impacts to migratory birds at projects that have communication towers (including meteorological, cellular, digital television, radio, and emergency broadcast towers). These guidelines can be found at:

<https://www.fws.gov/story/incidental-take-beneficial-practices-communication-towers>  
<http://www.towerkill.com>

According to National Wetlands Inventory maps, (available online at <https://www.fws.gov/library/collections/national-wetland-inventory>) wetlands exist adjacent to the proposed construction corridor. If a project may impact wetlands or other important fish and wildlife habitats, the U.S. Fish and Wildlife Service (Service), in accordance with the National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347) and other environmental laws and rules, recommends complete avoidance of these areas, if possible. If this is not possible, attempts should be made to minimize adverse impacts. Finally if adverse impacts are unavoidable, measures should be undertaken to replace the impacted areas. Alternatives should be examined and the least damaging practical alternative selected. If wetland impacts are unavoidable, a mitigation plan addressing the number and types of wetland acres to be impacted, and the methods of replacement should be prepared and submitted to the resource agencies for review.

Please check with your local wetland management district to determine whether Service interest lands exist at the proposed project site, the exact locations of these properties, and any additional restrictions that may apply regarding these sites. The Offices are listed below. If you are not sure which office to contact, we can help you make that decision.

U.S. Fish and Wildlife Service, Huron Wetland Management District, Federal Building, Room 309, 200 4th Street SW, Huron, SD 57350; telephone (605) 352-5894. Counties in the Huron WMD: Beadle, Buffalo, Hand, Hughes, Hyde, Jerauld, Sanborn, Sully.

U.S. Fish and Wildlife Service, Lake Andes Wetland Management District, P O Box 18, Pickstown, South Dakota, 57367; telephone (605) 487-7603. Counties in the Lake Andes WMD: Aurora, Brule, Charles Mix, Davison, Douglas.

U.S. Fish and Wildlife Service, Madison Wetland Management District, P.O. Box 48, Madison, South Dakota, 57042, telephone (605) 256-2974. Counties in the Madison WMD: Bon Homme, Brookings, Clay, Deuel, Hamlin, Hanson, Hutchinson, Kingsbury, Lake, Lincoln, McCook, Miner, Minnehaha, Moody, Turner, Union, Yankton.

U.S. Fish and Wildlife Service, Sand Lake Wetland Management District, 39650 Sand Lake Drive, Columbia, South Dakota, 57433; telephone (605) 885-6320. Counties in the Sand Lake WMD: Brown, Campbell, Edmunds, Faulk, McPherson, Potter, Spink, Walworth.

U.S. Fish and Wildlife Service, Waubay Wetland Management District, 44401 134A Street, Waubay, South Dakota, 57273; telephone (605) 947-4521. Counties in the Waubay WMD: Clark, Codington, Day,

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Grant, Marshall, Roberts.

You are welcome to visit our website (<https://www.fws.gov/office/southdakota-ecological-services>) or to contact our office/staff at the address or phone number above for more information.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
  - USFWS National Wildlife Refuges and Fish Hatcheries
  - Migratory Birds
  - Wetlands
-



## OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**South Dakota Ecological Services Field Office**

420 South Garfield Avenue, Suite 400

Pierre, SD 57501-5408

(605) 224-8693

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## PROJECT SUMMARY

Project Code: 2023-0069795

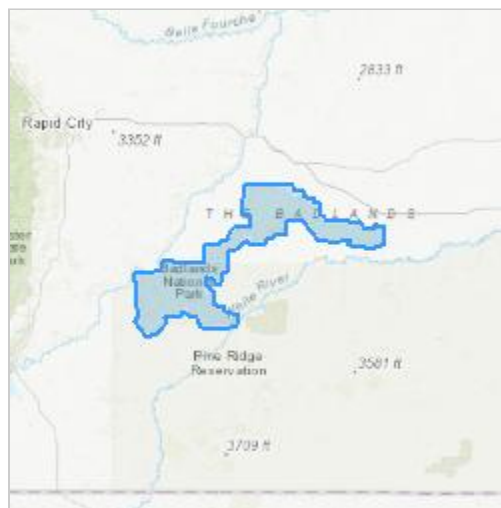
Project Name: Badlands National Park - Air Tour Management Plan

Project Type: Recreation Operations

Project Description: The Federal Aviation Administration (FAA) and the National Park Service (NPS) are working together to develop an air tour management plan (ATMP) pursuant to the National Parks Air Tour Management Act of 2000. The National Parks Air Tour Management Act applies to all commercial air tour operations over a unit of the National Park System and 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.

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@43.69567975,-102.56884796866974,14z>



Counties: South Dakota

## ENDANGERED SPECIES ACT SPECIES

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## MAMMALS

NAME	STATUS
Black-footed Ferret <i>Mustela nigripes</i> Population: U.S.A. (WY and specified portions of AZ, CO, MT, SD, and UT, see 17.84(g)(9)) No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/6953">https://ecos.fws.gov/ecp/species/6953</a>	Experimental Population, Non-Essential
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a>	Endangered
Tricolored Bat <i>Perimyotis subflavus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/10515">https://ecos.fws.gov/ecp/species/10515</a>	Proposed Endangered

## BIRDS

NAME	STATUS
Red Knot <i>Calidris canutus rufa</i> There is <b>proposed</b> critical habitat for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/1864">https://ecos.fws.gov/ecp/species/1864</a>	Threatened
Whooping Crane <i>Grus americana</i> Population: Wherever found, except where listed as an experimental population There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/758">https://ecos.fws.gov/ecp/species/758</a>	Endangered

**INSECTS**

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate

**FLOWERING PLANTS**

NAME	STATUS
Western Prairie Fringed Orchid <i>Platanthera praeclara</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/1669">https://ecos.fws.gov/ecp/species/1669</a>	Threatened

**CRITICAL HABITATS**

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

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## **USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES**

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

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# MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

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1. The [Migratory Birds Treaty Act](#) of 1918.
  2. The [Bald and Golden Eagle Protection Act](#) of 1940.
  3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

**The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern \(BCC\)](#) list or warrant special attention in your project location.** To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Baird's Sparrow <i>Ammodramus bairdii</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/5113">https://ecos.fws.gov/ecp/species/5113</a>	Breeds May 20 to Aug 15
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Dec 1 to Aug 31

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NAME	BREEDING SEASON
<b>Black Tern <i>Chlidonias niger</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/3093">https://ecos.fws.gov/ecp/species/3093</a>	Breeds May 15 to Aug 20
<b>Black-billed Cuckoo <i>Coccyzus erythrophthalmus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9399">https://ecos.fws.gov/ecp/species/9399</a>	Breeds May 15 to Oct 10
<b>Bobolink <i>Dolichonyx oryzivorus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
<b>Chestnut-collared Longspur <i>Calcarius ornatus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 10
<b>Ferruginous Hawk <i>Buteo regalis</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/6038">https://ecos.fws.gov/ecp/species/6038</a>	Breeds Mar 15 to Aug 15
<b>Franklin's Gull <i>Leucophaeus pipixcan</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
<b>Lark Bunting <i>Calamospiza melanocorys</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 10 to Aug 15
<b>Lesser Yellowlegs <i>Tringa flavipes</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9679">https://ecos.fws.gov/ecp/species/9679</a>	Breeds elsewhere
<b>Lewis's Woodpecker <i>Melanerpes lewis</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9408">https://ecos.fws.gov/ecp/species/9408</a>	Breeds Apr 20 to Sep 30
<b>Long-eared Owl <i>asio otus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/3631">https://ecos.fws.gov/ecp/species/3631</a>	Breeds Mar 1 to Jul 15
<b>Marbled Godwit <i>Limosa fedoa</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9481">https://ecos.fws.gov/ecp/species/9481</a>	Breeds May 1 to Jul 31

NAME	BREEDING SEASON
<b>Prairie Falcon <i>Falco mexicanus</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/4736">https://ecos.fws.gov/ecp/species/4736</a>	Breeds Mar 1 to Jul 31
<b>Red-headed Woodpecker <i>Melanerpes erythrocephalus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
<b>Sprague's Pipit <i>Anthus spragueii</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/8964">https://ecos.fws.gov/ecp/species/8964</a>	Breeds May 10 to Aug 31
<b>Western Grebe <i>aechmophorus occidentalis</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/6743">https://ecos.fws.gov/ecp/species/6743</a>	Breeds Jun 1 to Aug 31
<b>Willet <i>Tringa semipalmata</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5

## PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum



probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

### Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

### Survey Effort (|)

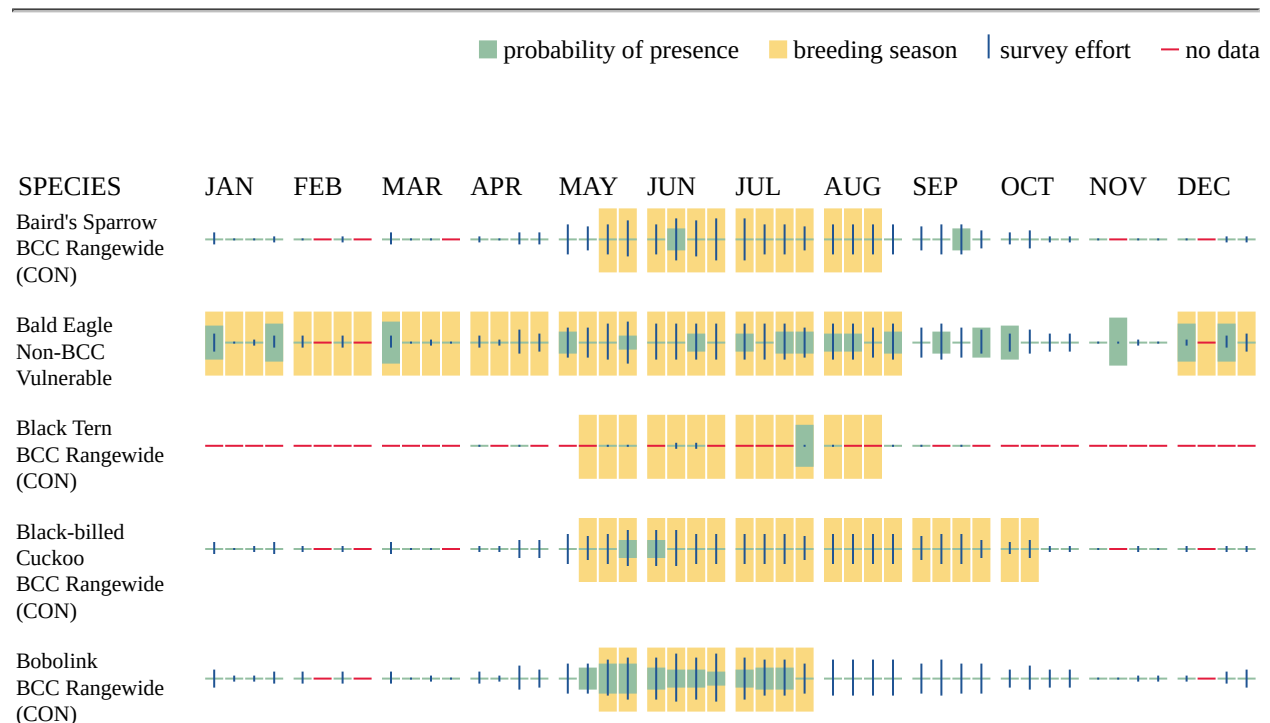
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

**No Data (—)**

A week is marked as having no data if there were no survey events for that week.

## Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>

- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

## MIGRATORY BIRDS FAQ

**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

**What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

**How do I know if a bird is breeding, wintering or migrating in my area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look

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at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

### **What are the levels of concern for migratory birds?**

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

### **Details about birds that are potentially affected by offshore projects**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

### **What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

### **Proper Interpretation and Use of Your Migratory Bird Report**

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be

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aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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## WETLANDS

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

WETLAND INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED.  
PLEASE VISIT [HTTPS://WWW.FWS.GOV/WETLANDS/DATA/MAPPER.HTML](https://www.fws.gov/wetlands/data/mapper.html) OR CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

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## IPAC USER CONTACT INFORMATION

[REDACTED]

## LEAD AGENCY CONTACT INFORMATION

[REDACTED]



United States Department of the Interior  
**NATIONAL PARK SERVICE**  
Natural Resource Stewardship & Science  
Natural Sounds and Night Skies Division



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

United States Department of Transportation  
**FEDERAL AVIATION ADMINISTRATION**  
Office of Policy, International Affairs & Environment  
Office of Environment and Energy

## **NATIONAL PARKS AIR TOUR MANAGEMENT PROGRAM**

April 23, 2023

### **Re: Section 7 Endangered Species Act No Effect Determination for Badlands National Park Air Tour Management Plan**

The Federal Aviation Administration (FAA), in cooperation with the National Park Service (NPS) (collectively, the agencies), is developing an Air Tour Management Plan (ATMP) for Badlands National Park (the Park). The agencies are preparing documentation for the ATMP in accordance with the National Parks Air Tour Management Act of 2000 (NPATMA) and other applicable laws. This memorandum documents the agencies' *No Effect* determination associated with the proposed action for the purpose of compliance with Section 7 of the Endangered Species Act (ESA). In addition, this memorandum documents the analysis for birds protected under the Migratory Bird Treaty Act (MBTA) and other species of concern.

### **Action Area**

The action area is the area that includes all direct and indirect effects within the ATMP planning area, which includes the Park and the area within a ½-mile outside the Park's boundary. Figure 1 depicts the action area for the North Unit of the Park, the only portion of the Park where air tours occur under existing conditions. The South Unit of the Park is Oglala Lakota tribal land, and no air tours are permitted or proposed over the South Unit. A commercial air tour subject to the ATMP is any flight, conducted for compensation or hire in a powered aircraft where a purpose of the flight is sightseeing over the Park, during which the aircraft flies:

- (1) Below 5,000 feet (ft.) above ground level (except solely for the purposes of takeoff or landing, or necessary for safe operation of an aircraft as determined under the rules and regulations of the FAA requiring the pilot-in-command to take action to ensure the safe operation of the aircraft); or
- (2) Less than one mile laterally from any geographic feature within the Park (unless more than ½-mile outside the Park boundary).

As air tours outside of the action area are outside the jurisdiction of the ATMP and not subject to NPATMA, there would be no limitations on the annual number of air tours that could occur, and no designated routes could be set outside of the action area.



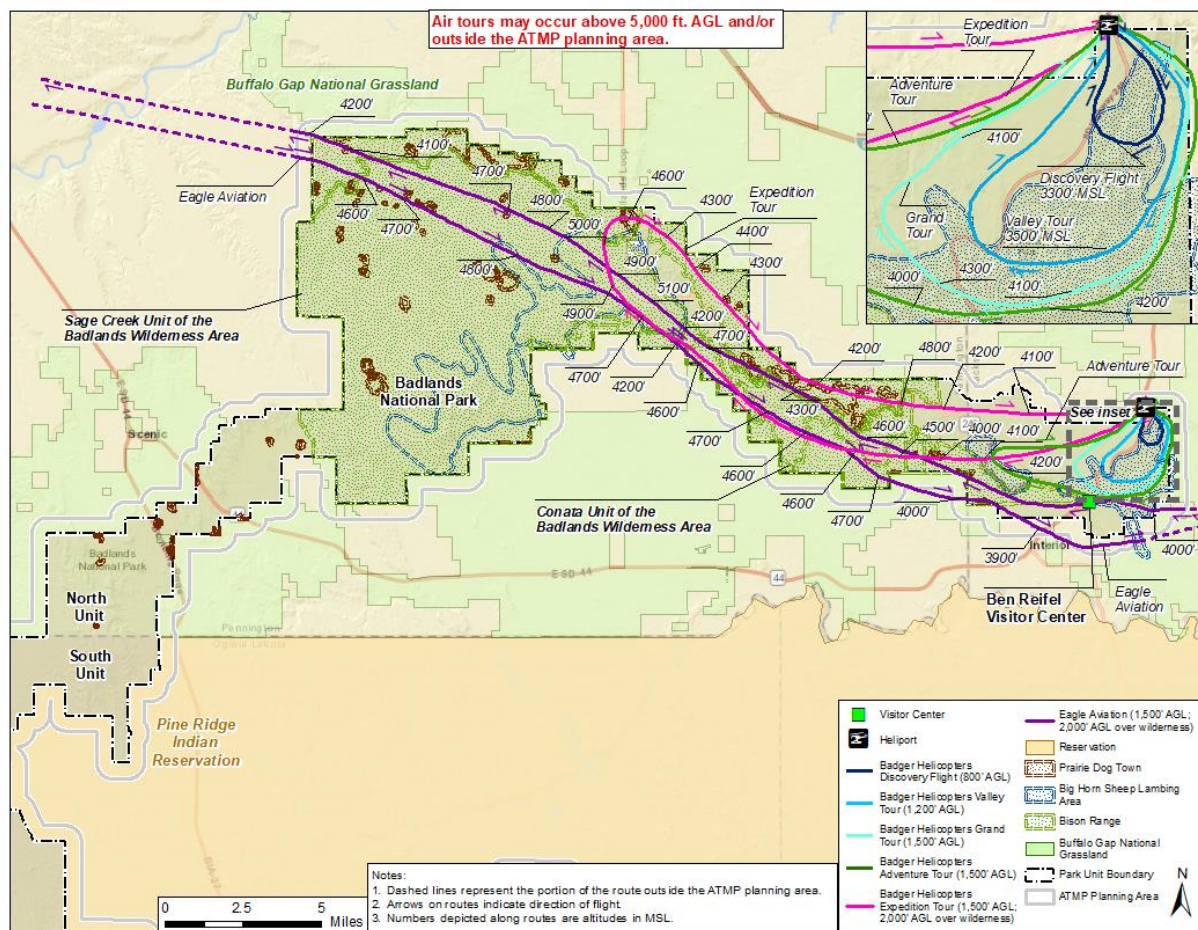


Figure 1. Species Habitat and Commercial Air Tour Routes Under Existing Conditions at Badlands National Park

### Description of Proposed Action

The proposed action is implementation of an ATMP for the Park which establishes conditions for the management of commercial air tour operations. The ATMP will remain in effect until amended, at which time the agencies would reinstate consultation pursuant to 50 CFR 402.16. The relevant operating parameters of the draft ATMP are discussed in detail below.

The proposed action prohibits commercial air tours within the action area (below 5,000 ft. AGL over the Park and outside the Park within ½-mile of its boundary). Except when necessary for takeoff or landing from the privately owned heliport on the boundary of the action area, in an emergency or to avoid unsafe conditions, or unless otherwise authorized for a specified purpose, commercial air tour operators would not be allowed to enter the action area.

Air tours could be conducted only outside the action area. Air tours outside of the action area are not subject to NPATMA and are therefore not regulated under the draft ATMP. An unknown number of air tours may continue to fly more than ½-mile outside of the Park’s boundary, or over the ATMP planning area at or above 5,000 ft. AGL. There would be no limitations on the number of such air tours that could occur.

Aircraft monitoring and enforcement would occur under the proposed action to ensure that commercial air tour operators are complying with the terms and conditions of the draft ATMP by not conducting tours under 5,000 ft. AGL over the action area. The NPS and the FAA would both be responsible for the monitoring and oversight of implementation of the ATMP.

### Listed Species Evaluated for Effects

The U.S. Fish and Wildlife Service’s (USFWS) Information for Planning and Consultation (IPaC) tool and the NPS species list were used to assess the potential for any federally listed species or designated critical habitat that may occur within the action area. Based on this review, the agencies identified the following species and/or critical habitat that may occur within the action area (see Table 1).

The agencies analyzed potential impacts to all federally listed species with suitable habitat within the action area with a focus on several federally listed species, some of which are noise sensitive species that occur within the action area (see Table 1).

Because the proposed action would prohibit commercial air tours within the action area, it is reasonably foreseeable that current air tour operators could offer air tours outside of the action area, as the areas beyond the action area would not be regulated by the draft 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 action area, some of which could result in impacts to wildlife 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 action area, including at altitudes at or above 5,000 ft. AGL. However, air tours outside of the action area are outside the jurisdiction of the ATMP and not subject to NPATMA.

*Table 1. Listed Species Potentially Occurring in the Action Area with No Effect Determination*

<b>Mammals Scientific Name</b>	<b>Mammals Common Name</b>	<b>Mammals Status (Federal)</b>	<b>Mammals Critical Habitat (Y/N)</b>	<b>Mammals Occurrence in the Park</b>
<i>Mustela nigripes</i>	Black-footed Ferret	Endangered	N	Present
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	Endangered	N	Present
<i>Perimyotis subflavus</i>	Tricolored Bat	Proposed – Endangered	N	Present
<b>Birds Scientific Name</b>	<b>Birds Common Name</b>	<b>Birds Status (Federal)</b>	<b>Birds Critical Habitat (Y/N)</b>	<b>Birds Occurrence in the Park</b>
<i>Calidris canutus rufa</i>	Red Knot	Threatened	N	Not Present

<i>Grus americana</i>	Whooping Crane	Endangered	N	Unknown
Insects Scientific Name	Insects Common Name	Insects Status (Federal)	Insects Critical Habitat (Y/N)	Insects Occurrence in the Park
<i>Danaus plexippus</i>	Monarch	Candidate	N	Unknown
Flowering Plants Scientific Name	Flowering Plants Common Name	Flowering Plants Status (Federal)	Flowering Plants Critical Habitat (Y/N)	Flowering Plants Occurrence in the Park
<i>Platanthera praeclara</i>	Western Prairie Fringed Orchid	Threatened	N	Not Present

Table 1 includes the Section 7 determination for each species listed under the ESA. The proposed action does not involve disturbance or other activities with the potential to modify aquatic or terrestrial habitat. Therefore, the agencies determined the proposed action will have *No Effect* on mammals, birds, insects, and flowering plants.

### Black-footed Ferret

The black-footed ferret (*Mustela nigripes*) is the only ferret native to North America and is listed as endangered under the ESA. It is a nocturnal mammal that lives underground in prairie dog colonies. The breeding season for the black-footed ferret occurs from March to April, and their litter size is three to four kits. This species was listed as endangered in 1967, and was grandfathered into the ESA in 1973. Later thought to be extinct, a remnant population was rediscovered in Wyoming in 1981 and the remaining 18 individuals were removed for captive breeding (NPS, 2012). An aggressive captive breeding program allowed the population to recover enough that reintroductions began in 1991 and extended to the Park in 1994. The successful experimental population at the Park is now self-sustaining, and the Park and nearby Buffalo Gap National Grasslands host the largest wild population of black-footed ferrets, which is estimated to be 115 individuals (Breck, 2019). The Park has one of the only self-sustaining black-footed ferret populations in the world, where this population does not need to be supplemented by ferrets raised in captivity. The largest captive population of black-footed ferrets is located in the National Black-Footed Ferret Conservation Center in Colorado, one of six captive breeding facilities in North America.

Black-footed ferrets depend largely on the prairie dog population, as they live in prairie dog colonies and prairie dogs make up most of their diet. Dependence on prairie dogs for habitat and food was a critical factor in black-footed ferret population decline and is a continual challenge for the successful recovery of this species. Other threats to this species beyond prairie dog population control include habitat conversion, sylvatic plague, drought, and predation by larger mammals. Black-footed ferret populations within the action area are stable. Within the action area, black-footed ferret populations are concentrated in the Conata Basin.

## Effect Determination

In consideration of the noise sensitivity of this species, black-footed ferrets that become habituated to human disturbance such as noise could have higher hair cortisol concentrations, which is an indicator of stress (Santymire et al., 2021). However, under the proposed action, commercial air tours would not be conducted within the action area. The intensity and likely presence of noise from commercial air tours would be less than those present under existing conditions. The agencies believe that the proposed action is sufficiently protective of this species. Therefore, the agencies have determined the proposed action would have **No Effect** on the black-footed ferret.

## **Northern Long-eared Bat**

The northern long-eared bat (*Myotis septentrionalis*) is listed as endangered<sup>1</sup> under the ESA (87 FR 73488). Northern long-eared bats are nocturnal and emerge at dusk to forage for insects in the understories of trees. Delayed fertilization occurs in spring, and the breeding season occurs from later summer to fall. They spend the remainder of the year in forested habitat.

NPS conducted bat monitoring at the Park from mid-October to February of 2021-2022 in order to track winter bat activity and identify areas of importance to wintering bats. Survey methods included mist-netting, emergence counts, radio telemetry, and acoustic monitoring; the area of greatest winter bat activity occurs in the southeast region of the North Unit (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 poses a risk to 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 eared 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 in bat species at the Park, the fungus that causes white nose syndrome was detected at the Park in 2017.

## Effect Determination

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 – 15 meters (33 - 49 ft.) away; bats will avoid foraging areas with these conditions in favor for quieter foraging areas (Schaub et al., 2008). Northern long-eared bats have been documented utilizing artificial bat houses near airports for roosting (Whitaker et al., 2004), while other endangered bats such as the

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<sup>1</sup>The effective date of a final rule amending 50 CFR Part 17 to reclassify the northern long-eared bat as endangered was delayed until March 31, 2023.

Indiana bat (*Myotis sodalis*) focused foraging activity near forested areas in response to increases in developed land around airports (Divoll and O'Keefe, 2018).

Under the proposed action, commercial air tours would not be conducted within the action area which would eliminate this source of noise from the action area. Therefore, there would be a direct beneficial effect on the northern long-eared bat in the Park since the intensity and likely presence of noise from commercial air tours would be less than those present under existing conditions. The agencies believe that the proposed action is sufficiently protective of this species and therefore have determined that the proposed action would have **No Effect** on northern long-eared bat.

### **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 is one of several bat species that were 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 above 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 throughout the fall, hibernate throughout the winter, and migrate to summer habitat where females form maternity colonies to birth their young (USFWS, 2022b). Once juveniles can fly, bats disperse and return to their winter habitats to swarm, mate, and hibernate. Tricolored 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. 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 (tending 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). Although there have been no detections of white nose syndrome at the Park, the fungus that causes white nose syndrome was detected in other species at the Park in 2017. Low abundances also increase the loss of genetic diversity which would further lessen the ability of the tricolored bat to adapt to changes in their environment.

The tricolored bat was not detected during 2021-2022 winter bat monitoring in the Park, which could be due to the fact that this species was only recently documented in the region and because their calls may have been overlooked during manual review. In addition to acoustic monitoring, other survey methods included mist-netting, emergence counts, and radio telemetry. According to these surveys conducted at several locations in the Park, the area of greatest winter bat activity occurs in southeast region of the North Unit (Maddox, 2022).

### Effect Determination

As discussed above, anthropogenic noise can impact foraging success and patterns of bats (Siemers and Schaub, 2011; Luo et al., 2015), while other species of bats have been documented roosting and foraging near airports (Whitaker et al., 2004; Divoll and O'Keefe, 2018). However, under the proposed action, commercial air tours would not be conducted within the action which would eliminate this source of noise from the action area. Therefore, there would be a direct beneficial effect on the

tricolored bat since the intensity and likely presence of noise from commercial air tours would be less than under existing conditions. The agencies believe that the proposed action is sufficiently protective of this species and therefore have determined the proposed action would have **No Effect** on the tricolored bat.

### **Red Knot**

The red knot (*Calidris canutus rufa*) is listed as threatened under the ESA and is a robin-like shorebird in the sandpiper family. They fly thousands of miles to and from the Arctic tundra where they nest in large flocks. As such, stopover sites such as South Dakota, where knots occupy inland saline lakes and freshwater marshes, are vital for successful migratory patterns. However, this species has not been observed within the Park, and no habitat for the red knot is located within the action area. Red knots migrate at dawn and dusk. Females lay eggs from June to July and depart the northern breeding grounds around mid-July shortly after chicks hatch, where adults and juveniles migrate separately to southern wintering habitats.

Their diet consists of invertebrates, marine worms, and crustaceans, in addition to horseshoe crab eggs along the eastern seaboard of the United States that support 50-80% of migrating red knots every year (USFWS, 2022c). Overharvesting of horseshoe crabs limited the food supply for migrating red knots, causing their survival rates to decrease and populations to decline from 67,546 individuals in 1985 to 14,800 individuals in 2008 (Niles et al., 2009). Restrictions on horseshoe crab harvests have not resulted in recovered or increasing population sizes for horseshoe crabs and subsequently red knots, so both of these species continue to decline in number (Niles et al., 2009). Additional threats to red knots include sea level rise and coastal development that jeopardize coastal stopover habitat where red knots forage and rest during migration.

### Effect Determination

In a study considering the noise sensitivity of this species, areas with more aircraft noise had lower abundances of red knots compared to areas with fewer overflights, and restlessness among birds who resided in these noisier areas was greater on days that had a greater number of aircraft overflights (Koolhaas, 1993).

The red knot has not been documented in the Park, and no suitable habitat for the species occurs within the Park. Under the proposed action, commercial air tours would not be conducted within the action area which would eliminate this source of noise from the planning area. Therefore, since the species is not present or likely to become present and commercial air tours would not occur within the action area, the agencies have determined that the proposed action would have **No Effect** on the red knot.

### **Whooping Crane**

The whooping crane (*Grus americana*) is listed as endangered under the ESA. The whooping crane is an omnivore with a diet that consists primarily of smaller aquatic animals that varies by season. There are records of sightings near the Park, but no observations of this species within the Park. Whooping cranes breed, migrate, winter, and forage in a variety of habitats including estuaries, coastal marches, tidal flats. Within the action area, they are generally observed at inland marshes, lakes, pastures, and ponds. Whooping cranes cannot land in trees, and therefore do not use them, but opt for habitats with more

vegetative cover during molting that occurs every two to three years and renders them flightless. This species mates for life and lays eggs from late April to mid-May, with a typical clutch size of two eggs.

The whooping crane population began to decline with the rise of western urbanization. The last non-migratory population, found in Louisiana, was reduced to 13 birds following a hurricane in 1940, and only 18 birds remained in the migratory population by 1942. Extensive conservation efforts since the early 1940s have brought a steady but slow increase in the whooping crane population. Threats to this species include collisions with power lines and other obstructions in flight, predation, disease, and illegal shooting. Populations within South Dakota are currently undergoing a five-year status review by the USFWS to assess population status (USFWS, 2021). As a result of habitat conservation efforts, whooping crane populations and flock size have been slowly increasing; over 70% of sites that hosted 10 or more whooping cranes at a time more were within 15 kilometers of land managed by conservation organizations such as USFWS (Caven et al., 2020).

#### Effect Determination

In consideration of the noise sensitivity of this species, whooping cranes that were introduced to aircraft as juveniles did not have increased stress responses when exposed to novel stimuli such as aircraft introduction or engine noise (Hartup et al., 2005), but increased aircraft rotor noise caused cranes to stand when aircraft were used during population sampling (Johns, 2010).

Under the proposed action, commercial air tours would not be conducted within the action area which would eliminate this source of noise from the action area. Therefore, there would be a direct beneficial effect to whooping cranes since the intensity and likely presence of noise from commercial air tours would be less than those present under existing conditions. The agencies believe that the proposed action is sufficiently protective of species. Although whooping cranes could stop at the Park during migration, there are no records of bird sightings within the Park. Therefore, the agencies have determined that the proposed action would have **No Effect** on the whooping crane.

#### **Monarch**

The monarch butterfly (*Danaus plexippus*) is one of 70 butterfly species documented within the Park and is a candidate for listing under the ESA. They are known for their orange, black, and white wings that serve as a warning of their toxicity to predators. Monarch feed on nectar and are important pollinators. Populations of monarch within North America are divided into east and west populations based on their proximity to the Rocky Mountains; monarch butterflies within the Park are part of the eastern population. Monarchs breed year-round and lay their eggs on milkweed plants, where adult butterflies emerge after eight to 19 days (USFWS, 2020). Three to five generations are produced each breeding season, and the lifespan of monarch butterflies ranges from several weeks to nine months.

This population of North American monarchs have unique features that differentiate them from other populations. Notably, they migrate long distances every fall and travel south to central Mexico. Overwintering adults enter reproductive diapause (suspended reproduction) and are also equipped with directional flight orientation to the south, which allow the eastern population of monarchs to be adapted for their long migratory patterns. The phenotypes of eastern monarchs differ from other populations as well- eastern monarchs have larger bodies, elongated wings, are redder in color, and have lower rates of parasitic infection (USFWS, 2020).

Butterfly distribution within the action area depends on the presence of host plants. The mixed-grass prairie supports wheatgrass (*Triticum aestivum*), buffalograss (*Bouteloua dactyloides*), and forbs, or herbaceous flowering plants, that host butterfly species.

Monarch abundances have been declining across North America, and the primary threats to the abundance and health of these populations are habitat degradation as grasslands are converted for agriculture, use of herbicides and insecticides, urban development, and climate change. The eastern population of monarchs in North America have experienced lower abundances and declining population rates over the past several years (USFWS, 2020). This species and its populations within the Park is a candidate for listing on the ESA, but is precluded from listing by higher priority actions of USFWS (85 FR 81813).

#### Effect Determination

In consideration of the noise sensitivity of this species, monarch butterfly larvae exposed to short-term traffic noise showed increased heart rates, while larvae exposed to 7 to 12 days of continuous traffic noise showed no increased heart rates, suggesting that larvae could become desensitized or habituated to chronic exposure to anthropogenic noise (Davis et al., 2018).

Although the monarch has not been documented in the Park, the Park falls within its known range. It is possible that the species occurs but has not yet been identified in the Park. Under the proposed action, commercial air tours would not be conducted within the action area, which would eliminate this source of noise from the action area. The agencies believe that the proposed action is sufficiently protective of this species. Therefore, the agencies have determined that the proposed action would have **No Effect** on the monarch butterfly.

#### **Summary of Determinations for ESA-Listed Species**

A *No Effect* determination under the ESA means that there would be no consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other connected activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action.

As discussed, the proposed action prohibits air tours within the action area, which provides the greatest protection to threatened and endangered species. Therefore, the ATMP results in no meaningful, measurable, or noticeable impacts on the species listed in Table 1. In accordance with Section 7 of the ESA, the agencies have determined that the proposed action will have **No Effect** on black-footed ferret (*Mustela nigripes*), northern long-eared bat (*Myotis septentrionalis*), tricolored bat (*Perimyotis subflavus*), red knot (*Calidris canutus rufa*), whooping crane (*Grus americana*), and monarch butterfly (*Danaus plexippus*).



## Species Protected under the MBTA

The agencies also analyzed potential impacts to non-ESA listed species that are protected under the MBTA, including bald eagles (*Haliaeetus leucocephalus*) and peregrine falcons (*Falco peregrinus*) (see Table 2).

Because the proposed action would prohibit commercial air tours within the action area, it is reasonably foreseeable that current air tour operators could offer air tours outside of the action area, as the areas beyond the action area would not be regulated by the draft ATMP. It is difficult to predict with specificity if, where, and to what extent any air tours would be displaced to areas outside the action area, including at altitudes at or above 5,000 ft. AGL. However, air tours outside of the action area are outside the jurisdiction of the ATMP and not subject to NPATMA.

Based on the analysis below, there would be no impacts from the proposed action on species protected under the MBTA.

Table 2. Species Protected Under the Migratory Bird Treaty Act Potentially Occurring in the Action Area

Scientific Name	Common Name	Occurrence in the Park
<i>Falco peregrinus</i>	Peregrine Falcon	Unknown
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Unknown

### Peregrine Falcon

Peregrine falcons (*Falco peregrinus*) are present in the Park and are considered an uncommon, migratory native avian species. 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 threatened under the ESA in 1973 (NPS, 2021). 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 endangered at the state level in South Dakota (South Dakota Department of Game, Fish, and Parks, 2022). Historically, threats to peregrine falcons include poisoning from DDT-based pesticides and illegal shooting.

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 are 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). Under the proposed action, no impacts to peregrine falcons would occur.

### Bald Eagle

Bald eagles (*Haliaeetus leucocephalus*) are birds of prey with large wingspans. They are considered carnivores, with a diet that consists primarily of rodents. Bald eagles are present in the Park and are considered a common, native resident avian species. They inhabit seacoasts, forest valleys, mountain regions, lakes, and rivers, and are common throughout the Park and greater action 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. These guidelines provide landowners, land managers, and others who share public and private lands with bald eagles with procedures for 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. In 2016, the USFWS released the Final Programmatic Environmental Impact Statement for the Eagle Rule Revision, which analyzed the effects of revised incidental take permit regulations. In 2022, the USFWS published a proposed rule and draft EA proposing additional changes to the eagle incidental take permitting program. Threats to bald eagles include habitat loss from development in coastal areas, pesticide poisoning, and illegal shooting.

Noise from air tours may impact wildlife in a number of ways: altered vocal behavior, breeding relocation, changes in vigilance and foraging behavior, and impacts on individual fitness and the structure of ecological communities (Shannon et al., 2015, Kunc and Schmidt, 2019). Under the proposed action, commercial air tours will not be conducted in the action area and therefore are not expected to impact bald eagles or inhibit foraging, feeding, breeding or nesting.

### **Other Species of Concern**

The agencies also analyzed potential impacts to non-ESA listed species that are considered other species of concern, including the swift fox (*Vulpes velox*).

### Swift Fox

The swift fox is a small-sized member of the dog family and are most active at night. Black markings on the sides of their snout can distinguish swift foxes from young coyotes. Their breeding season is February to March, and pups are born in April and May but do not emerge above ground from their natal den until early fall. Dens are located in hilltops, ridges, pastures, rangeland, or prairie dog

colonies. In some regions, their diet consists of prairie dogs; swift foxes are often associated with prairie dog colonies, and abundance of swift fox may decline with prairie dog abundance (Uresk and Sharps, 1986).

Historically, this species was locally abundant through the shortgrass and mixed grass prairies of the Great Plains. Abundances declined in the early 1900s due to conversion of native prairie to agriculture, incidental take from predator control aimed at coyotes and wolves, and unregulated hunting and trapping. From 1995 to 2001, swift foxes were a candidate species under the ESA (South Dakota Department of Game, Fish, and Parks, 2022).

The Park was one of four reintroduction sites for swift foxes in South Dakota, but reintroduction was not considered successful and there have been no observations within the Park. From 2003 to 2006, 114 individuals were released. The greatest threat to this population and the limiting factor to its growth is interspecific competition with coyotes and red foxes. Swift foxes are listed as threatened at the state level in South Dakota and monitored by the South Dakota Natural Heritage Program. Although the Park has suitable habitat for swift fox, this species have not been recently observed within the Park. Based on the analysis, there would be no impacts from the proposed action on other species of concern, including the swift fox.

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# **APPENDIX I**

## **Section 4(f) Analysis**

# Section 4(f) Analysis

## Section 4(f) Parks and Recreational Areas

Table 1 lists Section 4(f) parks and recreational areas identified in the Section 4(f) study area. All data sources were accessed the week of February 13, 2023. Information on coordination with Officials with Jurisdiction is located in Table 4.

*Table 1. Section 4(f) parks and recreational resources in the study area*

Property Name	Official(s) with Jurisdiction	Property Type	Description	Approximate Size
Badlands National Park	National Park Service	National Park	Badlands National Park is located in southwestern South Dakota and known for its eroded buttes and pinnacles. The geologic deposits contain one of the world's richest fossil beds and the Park protects an expanse of mixed-grass prairie where bison, bighorn sheep, prairie dogs, and black-footed ferrets live today.	242,756 ac (entirely within study area)
Buffalo Gap National Grassland	U.S. Forest Service	National Grassland	Buffalo Gap is the second largest National Grassland. It is additionally composed of mixed prairie and chalky badlands. Black-footed ferrets were successfully reintroduced in the Grassland as a sustainable population.	655,000 ac (62,400 ac in study area)

## Noise Effects Analysis on Section 4(f) Resources

Noise modeling for the Park included two types of analyses: contour analysis and representative location point analysis. A noise contour presents a graphical illustration or “footprint” of the area potentially affected by the noise. Contours were developed for the following metrics: 12-Hour equivalent sound level, time audible for natural ambient, and time above 35 decibels, A-weighted (dBA). Location point results present the metric results at specific points of interest. The National Park Service (NPS) provided a list of 44 location points, geographically located across the entire Park, where noise levels were to be evaluated. Location point analysis was conducted for the same set of metrics, as well as time above 52 dBA and the maximum sound level. Refer to Appendix F, *Noise Technical Analysis*.



To assess time above 52 dBA at Section 4(f) resources under Alternative 3 and Alternative 4, location points within 1.5 miles of each Section 4(f) resource were identified. These location points are listed in Table 3 for each Section 4(f) resource and the corresponding time above 52 dBA. The time above 52 dBA at each location point and the range of time above 52 dBA at Section 4(f) resources based on nearby location points were then calculated and reported as high and low values. This range is reported in Table 2 for each Section 4(f) property. See Figure 1 for a map of location points and Section 4(f) resources at the Park.

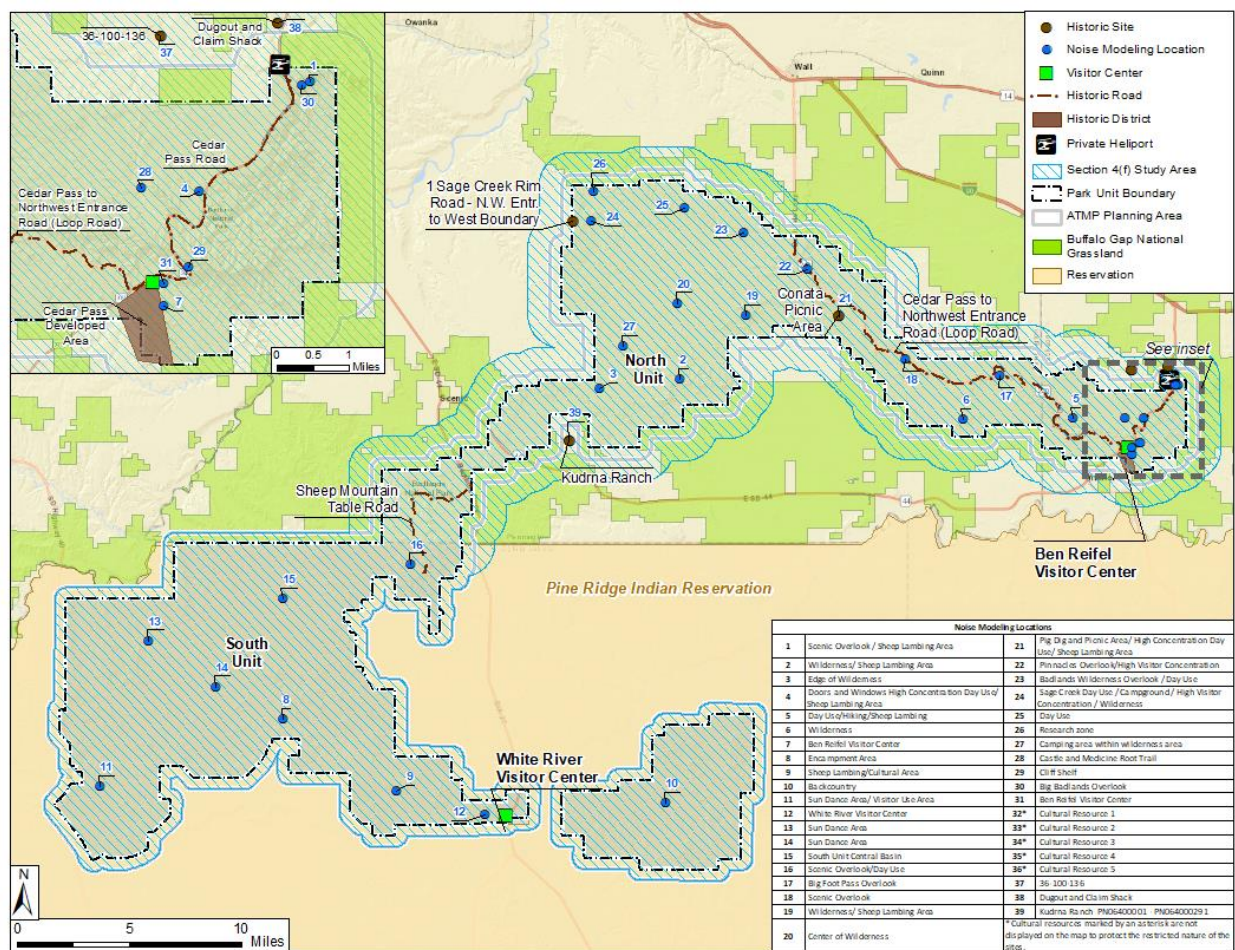


Figure 1. Section 4(f) resources and location points in the Section 4(f) study area.

Table 2 shows the low and high modelled time above 52 dBA values under Alternative 3 and Alternative 4 at each Section 4(f) resource. Table 3 shows the distance between each Section 4(f) resource and nearby location point and the time above 52 dBA at the corresponding location point. A distance of 0.00 miles indicates that the location point falls within the Section 4(f) property. The longest time above 52 dBA in the Section 4(f) study area on days when air tours occur is 21.2 minutes under Alternative 3 and 8.6 minutes under Alternative 4.

Table 2. Low and high modelled values for Time Above 52 dBA under Alternative 3 and Alternative 4 for Section 4(f) resources.

<b>Section 4(f) Resource</b>	<b>Time Above 52 dBA – Low (minutes) under Alternative 3</b>	<b>Time Above 52 dBA – High (minutes) under Alternative 3</b>	<b>Time Above 52 dBA – Low (minutes) under Alternative 4</b>	<b>Time Above 52 dBA – High (minutes) under Alternative 4</b>
1 Sage Creek Rim Road - N.W. Entr. to West Boundary	0.8	0.8	0.9	0.9
36-100-136	0.1	0.1	0	0
Buffalo Gap National Grassland	0	21.2	0	8.6
Cedar Pass Developed Area	5.4	16.7	2.7	5
Cedar Pass Road	5.4	21.2	2.6	8.6
Cedar Pass to Northwest Entrance Road (Loop Road)	0	16.7	0	5
Conata Picnic Area	0.7	0.7	1.1	1.1
Dugout and Claim Shack	6.6	21.2	2.6	8.6
Kudrna Ranch	0	0	0	0
Sheep Mountain Table Road	0	0	0	0

Table 3. Section 4(f) resources and corresponding location point data for air tours under Alternative 3 and Alternative 4.

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA under Alternative 3 (Minutes)	Time Above 52 dBA under Alternative 4 (Minutes)
1 Sage Creek Rim Road - N.W. Entr. to West Boundary	24	24. Sage Creek Day Use / Campground / High Visitor Concentration / Wilderness	0.87	0.8	0.9
36-100-136	37	37. Cultural Resource 6**	<1.5	0.1	0
Buffalo Gap National Grassland	1	1. Scenic Overlook / Sheep Lambing Area	0.19	21.2	8.6
Buffalo Gap National Grassland	2	2. Wilderness/ Sheep Lambing Area	1.14	0	0
Buffalo Gap National Grassland	3	3. Edge of Wilderness	1.22	0	0
Buffalo Gap National Grassland	4	4. Doors and Windows High Concentration Day Use/ Sheep Lambing Area	1.21	11.6	3.3
Buffalo Gap National Grassland	5	5. Day Use/Hiking/Sheep Lambing	1.39	10.3	3.8
Buffalo Gap National Grassland	6	6. Wilderness	0.54	0.7	0.7
Buffalo Gap National Grassland	7	7. Ben Reifel Visitor Center	0.81	5.4	2.9
Buffalo Gap National Grassland	17	17. Big Foot Pass Overlook	0.78	0	0
Buffalo Gap National Grassland	18	18. Scenic Overlook	1.31	1	1
Buffalo Gap National Grassland	21	21. Pig Dig and Picnic Area/ High Concentration Day Use/ Sheep Lambing Area	1.38	0.7	1.1
Buffalo Gap National Grassland	22	22. Pinnacles Overlook/High Visitor Concentration	1.06	0.5	0.3

<b>Section 4(f) Resource</b>	<b>Location Point ID</b>	<b>Location Point Name</b>	<b>Distance to Location Point (Miles)</b>	<b>Time Above 52 dBA under Alternative 3 (Minutes)</b>	<b>Time Above 52 dBA under Alternative 4 (Minutes)</b>
Buffalo Gap National Grassland	23	23. Badlands Wilderness Overlook / Day Use	0.9	0	0.6
Buffalo Gap National Grassland	25	25. Day Use	1.09	0.6	0.6
Buffalo Gap National Grassland	26	26. Research zone	0.26	1.1	1.1
Buffalo Gap National Grassland	28	28. Castle and Medicine Root Trail	1.19	16.7	5
Buffalo Gap National Grassland	29	29. Cliff Shelf	1.24	11.6	4.3
Buffalo Gap National Grassland	30	30. Big Badlands Overlook	0.24	15.8	6.5
Buffalo Gap National Grassland	31	31. Ben Reifel Visitor Center	1.11	7.1	2.7
Buffalo Gap National Grassland	32	32. Cultural Resource 1**	<1.5	0	0
Buffalo Gap National Grassland	33	33. Cultural Resource 2**	<1.5	0	0
Buffalo Gap National Grassland	34	34. Cultural Resource 3**	<1.5	0	0
Buffalo Gap National Grassland	35	35. Cultural Resource 4**	<1.5	0	0
Buffalo Gap National Grassland	36	36. Cultural Resource 5**	<1.5	0	0
Buffalo Gap National Grassland	37	37. Cultural Resource 6**	<1.5	0.1	0
Buffalo Gap National Grassland	38	38. Dugout and Claim Shack**	0.15	6.6	2.6
Buffalo Gap National Grassland	39	39. Kudrna Ranch PN06400001 - PN064000291**	0.37	0	0
Cedar Pass Developed Area	4	4. Doors and Windows High Concentration Day Use/ Sheep Lambing Area	1.34	11.6	3.3
Cedar Pass Developed Area	7	7. Ben Reifel Visitor Center	0.03	5.4	2.9

<b>Section 4(f) Resource</b>	<b>Location Point ID</b>	<b>Location Point Name</b>	<b>Distance to Location Point (Miles)</b>	<b>Time Above 52 dBA under Alternative 3 (Minutes)</b>	<b>Time Above 52 dBA under Alternative 4 (Minutes)</b>
Cedar Pass Developed Area	28	28. Castle and Medicine Root Trail	1.25	16.7	5
Cedar Pass Developed Area	29	29. Cliff Shelf	0.48	11.6	4.3
Cedar Pass Developed Area	31	31. Ben Reifel Visitor Center	0.09	7.1	2.7
Cedar Pass Road	1	1. Scenic Overlook / Sheep Lambing Area	0.28	21.2	8.6
Cedar Pass Road	4	4. Doors and Windows High Concentration Day Use/ Sheep Lambing Area	0.09	11.6	3.3
Cedar Pass Road	7	7. Ben Reifel Visitor Center	0.72	5.4	2.9
Cedar Pass Road	28	28. Castle and Medicine Root Trail	0.57	16.7	5
Cedar Pass Road	29	29. Cliff Shelf	0.22	11.6	4.3
Cedar Pass Road	30	30. Big Badlands Overlook	0.16	15.8	6.5
Cedar Pass Road	31	31. Ben Reifel Visitor Center	0.41	7.1	2.7
Cedar Pass Road	38	38. Dugout and Claim Shack**	0.72	6.6	2.6
Cedar Pass to Northwest Entrance Road (Loop Road)	4	4. Doors and Windows High Concentration Day Use/ Sheep Lambing Area	0.97	11.6	3.3
Cedar Pass to Northwest Entrance Road (Loop Road)	5	5. Day Use/Hiking/Sheep Lambing	0.59	10.3	3.8
Cedar Pass to Northwest Entrance Road (Loop Road)	7	7. Ben Reifel Visitor Center	0.42	5.4	2.9
Cedar Pass to Northwest	17	17. Big Foot Pass Overlook	0.21	0	0

<b>Section 4(f) Resource</b>	<b>Location Point ID</b>	<b>Location Point Name</b>	<b>Distance to Location Point (Miles)</b>	<b>Time Above 52 dBA under Alternative 3 (Minutes)</b>	<b>Time Above 52 dBA under Alternative 4 (Minutes)</b>
Entrance Road (Loop Road)					
Cedar Pass to Northwest Entrance Road (Loop Road)	18	18. Scenic Overlook	0.08	1	1
Cedar Pass to Northwest Entrance Road (Loop Road)	21	21. Pig Dig and Picnic Area/ High Concentration Day Use/ Sheep Lambing Area	0.7	0.7	1.1
Cedar Pass to Northwest Entrance Road (Loop Road)	22	22. Pinnacles Overlook/High Visitor Concentration	0.07	0.5	0.3
Cedar Pass to Northwest Entrance Road (Loop Road)	28	28. Castle and Medicine Root Trail	1.08	16.7	5
Cedar Pass to Northwest Entrance Road (Loop Road)	29	29. Cliff Shelf	0.05	11.6	4.3
Cedar Pass to Northwest Entrance Road (Loop Road)	31	31. Ben Reifel Visitor Center	0.11	7.1	2.7
Conata Picnic Area	21	21. Pig Dig and Picnic Area/ High Concentration Day Use/ Sheep Lambing Area	0.1	0.7	1.1
Dugout and Claim Shack	1	1. Scenic Overlook / Sheep Lambing Area	0.94	21.2	8.6
Dugout and Claim Shack	30	30. Big Badlands Overlook	0.93	15.8	6.5
Dugout and Claim Shack	38	38. Dugout and Claim Shack**	0.0	6.6	2.6
Kudrna Ranch	39	39. Kudrna Ranch PN06400001 - PN064000291**	0.0	0	0

<b>Section 4(f) Resource</b>	<b>Location Point ID</b>	<b>Location Point Name</b>	<b>Distance to Location Point (Miles)</b>	<b>Time Above 52 dBA under Alternative 3 (Minutes)</b>	<b>Time Above 52 dBA under Alternative 4 (Minutes)</b>
Sheep Mountain Table Road	16	16. Scenic Overlook/Day Use	0.42	0	0

\*\* Location points outside of the ATMP planning area.

*Table 4. Distribution to Officials with Jurisdiction for Section 4(f) resources.*

<b>Entity Name</b>	<b>Address</b>
National Park Service	25216 Ben Reifel Road Interior, SD 57750
U.S. Forest Service	1801 Hwy. #18 Truck Bypass Hot Springs, SD 57747

## **APPENDIX J**

### **Public Scoping Newsletter and Comment Summary Report**

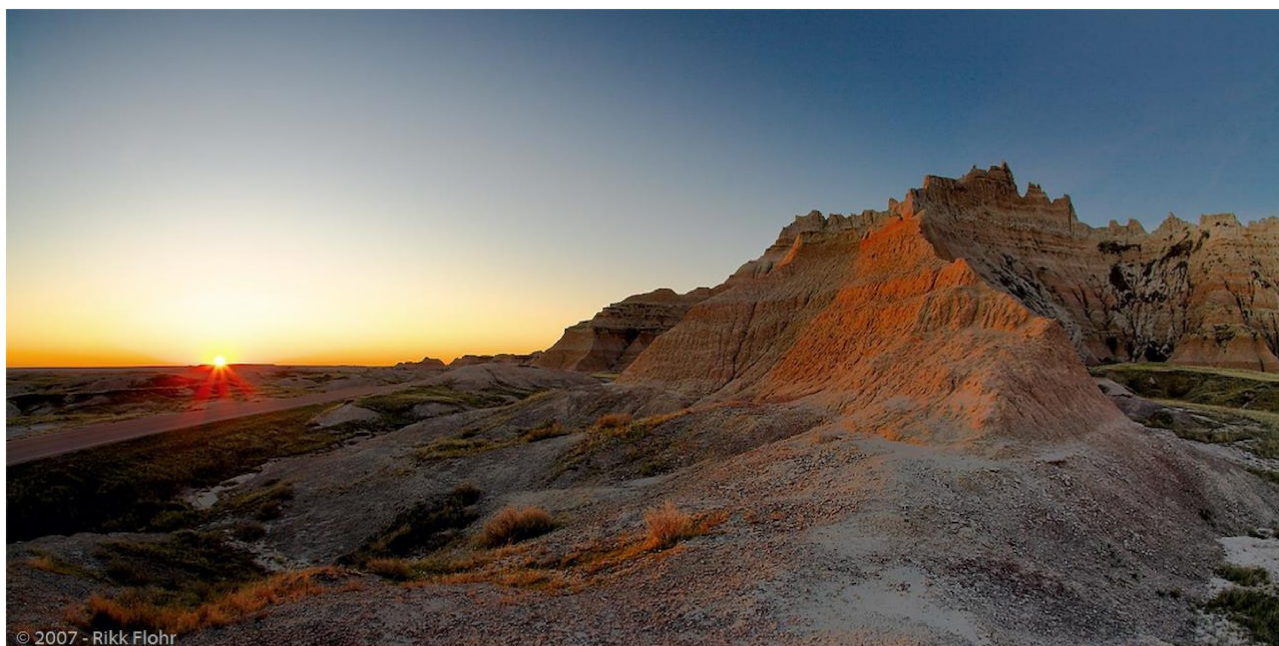




# Public Scoping Comment Report

## Badlands National Park Air Tour Management Plan

### December 2022



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## APPENDIX

### A Scoping Newsletter

## INTRODUCTION AND BACKGROUND

The National Park Service (NPS) and Federal Aviation Administration (FAA) are preparing an Air Tour Management Plan (ATMP), which would regulate commercial air tours conducted over Badlands National Park (park) pursuant to the National Parks Air Tour Management Act (Act) of 2000. The act requires that the Federal Aviation Administration, in cooperation with the National Park Service (collectively, the agencies), establish an ATMP or voluntary agreement for each national park system unit for which one or more applications to conduct commercial air tours has been submitted, unless that unit is exempt from this requirement because 50 or fewer commercial air tour operations are conducted over the park on an annual basis, 49 *United States Code* (USC) § 40128(a)(5). The objective of the ATMP development process is to develop acceptable and effective measures to mitigate or prevent the significant adverse impacts, if any, of commercial air tours on natural and cultural resources, wilderness character, visitor experience, and tribal lands.

An environmental assessment (EA) is being completed in compliance with the National Environmental Policy Act (NEPA) to analyze a range of alternatives and evaluate potential issues and impacts. This plan will also be conducted in accordance with section 106 of the National Historic Preservation Act (NHPA) and other applicable laws, regulations, and policies. This report summarizes comments, feedback, and input received from the public during scoping for this ATMP environmental assessment.

Scoping was conducted by an interdisciplinary team of NPS and FAA planners, scientists, cultural resource specialists, and managers. Scoping is a process that federal agencies pursue in the early stages of preparing environmental analyses and is intended to encourage public participation and solicit public input on the scope and significance of a proposed action (see the *Code of Federal Regulations* [CFR], Title 40, Part 1501.7). Comments received during scoping help the agencies identify issues and concerns and allow the agencies to refine or dismiss alternatives and potentially consider new alternatives. Public input received during scoping is also used to inform the environmental analysis in the environmental assessment.

The agencies notified the public of the scoping period through a park news release, notices on the park's website and social media, and e-mails. Comments were accepted from September 6 through October 6, 2022. The agencies posted a newsletter describing the potential alternatives to the NPS Planning, Environment, and Public Comment (PEPC) website at the start of the scoping period and attached the newsletter to the notification e-mails. The newsletter on potential alternatives provided a project introduction, the purpose and need for the project, resources for consideration in the environmental assessment, elements common to all alternatives, and an overview of four potential alternatives, including routes, altitudes, time-of-day restrictions, restrictions for particular events, maximum numbers of flights, or other provisions. The potential draft alternatives also include a justification for the provisions and conditions designed to protect park resources and visitor experience.

## METHODS

Comment analysis is a process used to compile and combine similar public comments into a format to be used by decision makers and the planning team. Comment analysis assists the team in organizing, clarifying, and addressing technical information pursuant to NEPA regulations. It also aids in identifying the alternatives, topics, and issues to be evaluated and considered throughout the planning process.

The comment analysis process includes five steps:

1. Develop a coding structure.
2. Use a comment database for comment management.
3. Read and code public comments.
4. Interpret and analyze the comments to identify issues and themes.
5. Prepare a comment summary.

The agencies developed a coding structure to organize comments into logical groups by topics and issues. The coding structure was derived from an analysis of the range of topics discussed during internal agency scoping, past planning documents, and the comments themselves.

The agencies used the NPS PEPC database to manage the comments. The database stores the full text of all correspondence, facilitates coding of comments by topic and issue, and includes several other tools and report functions.

A **correspondence** is the entire document received from a commenter. It can be in the form of a letter, e-mail, fax, written comment form, note card, open house transcript, or petition. Correspondences were entered directly into PEPC by the commenter. A **comment** is a portion of the text within a correspondence that addresses a single subject. It could include information such as an expression of support or opposition to the use of a potential management tool, additional data regarding an existing condition, or an opinion debating the adequacy of the analysis.

The agencies read all correspondences and assigned a code to all substantive comments within the correspondence. **Substantive comments** are comments that do one or more of the following:

- Question, with reasonable basis, the accuracy of information in the environmental assessment.
- Question, with reasonable basis, the adequacy of environmental analysis.
- Present reasonable alternatives other than those presented in the environmental assessment.
- Cause changes or revisions in the proposal.

In other words, they raise, debate, or question a point of fact or policy. Comments in favor of or against the proposed action or alternatives, or comments that only agree or disagree with NPS policy, are not considered substantive.

The agencies wrote one or more **concern statements** (written summaries) for each code that summarized the comments received and included representative quotes directly from the comments.

Although the analysis process attempts to capture the full range of public concerns, this content analysis report should be used with caution. Comments from people who chose to respond do not necessarily represent the sentiments of the entire public. Furthermore, this was not a vote counting

process, and the emphasis was on the content of the comment rather than the number of times a comment was received. This report is intended to be a summary of the comments received rather than a statistical analysis.

## COMMENT SUMMARY

The agencies received 43 correspondences, of which two were duplicates. No form letters were received. The agencies coded 100 comments by topic. Some comments received more than one code. Table 1 lists the number and proportion of comments by topic. Adverse impacts on visitor use and experience (28) and soundscape (24) and support for alternative 2 (no air tours) (22) were the most common comment topics.

**Table 1. Number of Comments by Topic**

Topic	Number of Comments	Percentage
<b>Impacts</b>		
Adverse Impacts: Soundscape	24	12.5%
Adverse Impacts: Visitor Use and Experience	28	14.6%
Adverse Impacts: Socioeconomics	5	2.6%
Adverse Impacts: Wildlife / Biological	5	2.6%
Adverse Impacts: Wilderness Character	6	3.1%
Adverse Impacts: Cultural Resources	4	2.1%
Adverse Impacts: Visual	6	3.1%
Adverse Impacts: Equity	6	3.1%
Adverse Impacts: Climate Change / Greenhouse Gases / Air Quality	2	1.0%
Adverse Impacts: Other	2	1.0%
Tribal Concerns	5	2.6%
<b>Alternatives</b>		
Alternatives: Support Alternative 1 – No Action	3	1.6%
Alternatives: Oppose Alternative 1 – No Action	1	0.5%
Alternatives: Support Alternative 2 – No Air Tours in Planning Area	22	11.5%
Alternatives: Oppose Alternative 2 – No Air Tours in Planning Area	0	0.0%
Alternatives: Support Alternative 3 – Mitigation Measures	0	0.0%
Alternatives: Oppose Alternative 3 – Mitigation Measures	0	0.0%
Alternatives: Support Alternative 4 – Reduction of Air Tours In Planning Area	1	0.5%
Alternatives: Oppose Alternative 4 – Reduction of Air Tours in Planning Area	0	0.0%
<b>ATMP Elements</b>		
ATMP Elements: Annual Number of Air Tours	8	4.2%
ATMP Elements: Routes and Altitudes	8	4.2%
ATMP Elements: Aircraft Type	9	4.7%
ATMP Elements: Day / Time	7	3.6%
ATMP Elements: Other	2	1.0%
<b>Process</b>		
Process Comments: Alternatives Considered	6	3.1%
Process Comments: NEPA	12	6.3%
Process Comments: Other	8	4.2%
<b>Miscellaneous</b>		
Benefits Of Air Tours	6	3.1%



Topic	Number of Comments	Percentage
Duplicate Correspondence	2	1.0%
<b>Non-Substantive</b>		
Non-Substantive Comment: Oppose Air Tours Continuing	3	1.6%
Non-Substantive Comment: Other	1	0.5%

## CONCERN STATEMENTS

Concern statements, summarizing comments received by topic, are presented below.

### IMPACTS

#### Adverse Impacts: Soundscape Impacts

- Commenters stated that air tours create adverse impacts on the soundscape of the park due to noise, which interferes with visitors' enjoyment of the park by drowning out natural sounds, disturbing peace and quiet, and being artificial in nature. Some of these commenters note that visitors should enjoy the park via more traditional means on the ground, and some commenters suggest that air tours should not be allowed.
- Commenters note that reserving the national parks for wilderness and quiet is important as wild places become rare.
- Commenters suggested that air tours are quieter than cars and motorcycles. Commenters suggested that noise from a helicopter overhead is not any more distracting than the noise from a group of loud people nearby on a trail.
- Commenters requested that the NPS subject matter experts on noise and NEPA analysis are active participants in preparing the impact analysis.
- Commenters suggested that the National Park Service consider several references related to noise impacts during the preparation of the environmental assessment, for which they provided links. The commenters requested that the National Park Service collect new ambient sound data and compare it to data collected in the past in order to be able to measure the effectiveness of the plan.
- Commenters note concern that helicopter flights are concentrated in the highly visited area of Cedar Pass and cite FAA Advisory Circular AC No: 91-36D, which recommends noise-producing aircraft fly no lower than 2,000 feet above ground level (AGL) over noise-sensitive areas. They also requested that the National Park Service provide modeling or air contour map analysis to support air tours.
- Commenters state that alternative 4 would allow helicopter air tours to fly from one hour after sunrise until one hour before sunset for non-quiet technology flights and from sunrise to sunset for quiet technology flights, which is the same as alternative 3. Commenters suggest that the proposed schedule would make it difficult for visitors to experience the Cedar Pass area during quieter times of day when helicopter tours are not occurring.
- Commenters recommend that in alternative 4 the National Park Service consider time of day restrictions that would only allow air tours to fly from three hours after sunrise until three hours before sunset, which would triple the amount of air tour free time and provide a greater range of attributes to evaluate and compare in the environmental assessment. Commenters request that the National Park Service provide quiet technology and financial feasibility analysis in the environmental assessment.

#### Adverse Impacts: Visitor Use and Experience / Recreation

- Commenters suggest that air tours have an adverse impact on the visitor experience because they:

- Disrupt the experience of enjoying quiet;
  - Disturb the experience of solitude;
  - Disrupt the experience of peacefulness;
  - Add an unwanted element of society/civilization into a natural setting;
  - Detract from experiencing beauty of landscape or wildlife;
  - Interrupt the experience of being in wilderness; and
  - Allow the minority of visitors who can afford air tours to adversely affect the visitor experience of those who cannot.
- Commenters suggest that the park's foundation document provides important context for the ATMP planning process about significance and fundamental resources that could be adversely affected by air tour management.
  - Commenters suggested that the number of park visitors potentially impacted by air tours should be analyzed by location in the environmental assessment.
  - Commenters suggest that the impact analysis for visitor use and experience should include a discussion of relevant reference material, available data, such as previous surveys, as well as a review of relevant scientific literature related to the impacts of aircraft noise.
  - Commenters suggest that ensuring commercial air tour operators are complying with the terms and conditions of the ATMP would be difficult and may result in impacts on visitor experience.

### **Adverse Impacts: Socioeconomics**

- Commenters expressed concern about loss of business and employment that would negatively impact the economy of small towns, such as Keystone and Interior, and the State of South Dakota if air tours were stopped. Preventing tours would be a disruption of a tradition of safe tours in the Badlands since the 1960s.
- Commenters suggested that air tours are about private business making a profit, which is not the purpose of the national parks.

### **Adverse Impacts: Wildlife/Biological Impacts**

- Commenters expressed concern that air tours would adversely impact wildlife, including bighorn sheep, raptors, and mountain lions.
- Commenters suggested that the park's foundation document provides important context for the ATMP planning process about the park's significance and fundamental resources, which could affect wildlife native to the mixed-grass prairie.
- Commenters encourage the National Park Service to identify reference materials and data used during the preparation of the proposed action. Commenters provided a suggested list.

### **Adverse Impacts: Wilderness Character Impacts**

- Commenters suggested that wilderness impact analysis should include a discussion of available data and relevant scientific literature related to the impacts of aircraft noise, and that adverse impacts be addressed under all alternatives.

- Commenters suggest that air tours conflict with the park’s stated purposes including preserving conditions that allow visitors to enjoy the wilderness in solitude.

### **Adverse Impacts: Cultural Resource Impacts**

- Commenters suggested that the environmental assessment’s evaluation of potential impacts of air tours on several key resources, including cultural resources, should be the primary basis for determining an appropriate level of air tours. Commenters recommend that chapter 1 of the environmental assessment include a section summarizing applicable laws, including the NPS Organic Act and the park’s enabling legislation.
- Commenters highlight that archeological and ethnographic resources are identified as fundamental resources and values in the park’s foundation document, which could be adversely affected by commercial air tours. The park is also responsible for protecting places of spiritual and historical importance to the Lakota people.
- Commenters provided references that could be used to assess impacts on cultural resources.

### **Adverse Impacts: Visual Impacts**

- Commenters suggest that scenery at the park, which is documented in the park’s foundation document, could be adversely affected by commercial air tours.
- Commenters suggest that the impact analysis for visual resources should include a discussion of available data, such as previous sound surveys, as well as a review of relevant scientific literature related to the impacts of aircraft noise on specific resources.

### **Adverse Impacts: Equity**

- Commenters suggested that air tours can provide opportunities for individuals and groups with disabilities that may not otherwise be able to see the park. Limiting flights could discriminate against elderly, very young, and disabled individuals.
- Commenters suggested that the price of an air tour is too costly for most visitors.

### **Adverse Impacts: Climate Change / Greenhouse Gases / Air Quality**

- Commenters suggested that air tours produce air pollution.

### **Adverse Impacts: Other**

- Commenters suggest that the National Parks Overflights Advisory Group (NPOAG) should be involved in developing ATMPs to provide industry safety expertise because exclusion could result in safety impacts.

### **Tribal Concerns**

- Commenters suggested that the ATMP should specifically address tribal concerns, and that the National Park Service should engage in consultation beyond sending a copy of the plan.
- Commenters suggest that air tours over the Badlands is a violation of sacred space to the indigenous people who claim spiritual beliefs associated with lands in the park.

## **ALTERNATIVES**

### **Alternatives: Support Alternative 1 – No Action**

Commenters expressed support for alternative 1 – no action for the following reasons:

- Tour operators have safely operated in this airspace for decades.
- The national park system is intended to be shared among all Americans.
- The aircraft are seen and heard for a small proportion of the day and are no more distracting than cars or trucks on the adjacent highways.
- Further restrictions would limit the ability of many people to see the full extent of the parklands with no significant improvement to the experience of others.

### **Alternatives: Oppose Alternative 1 – No Action**

Commenters agree that the no-action alternative is not selectable for the reasons stated in the newsletter. Commenters question whether the maximum theoretical number of flights (4,117) could serve as a valid basis for comparison with the proposed action alternatives because the no-action alternative should accurately describe the environmental impacts of not taking an action under consideration. Commenters suggest that the National Park Service likely has useful information and data regarding actual impacts of the existing number of flights (1,425) that would allow for a meaningful analysis and comparison of the baseline to the action alternatives. In contrast, there is likely no such existing information to document the potential impacts of a much higher number of flights (4,117) that could theoretically occur under the Interim Operating Authorities (IOAs), but has not. Lastly, commenters believe such a comparison (to a much higher theoretical number) would only serve to make alternative 3, which would allow the most flights of any action alternative, appear more acceptable than it really is in terms of the relative severity of its impacts. Commenters recommend that the National Park Service consider existing number of flights with current operating parameters as the no-action alternative in the environmental assessment.

### **Alternatives: Support Alternative 2 – No Air Tours in Planning Area**

- Commenters support alternative 2, but they are concerned that the alternative includes a provision that the ATMP may be amended at any time if either agency notifies the other agency. Commenters request the amendment provision in this alternative be removed, so that a decision to eliminate air tours at the park is final and cannot be easily reversed without the agencies re-initiating and completing a new planning process.
- Commenters support alternative 2 because air tours adversely affect visitor experience and wildlife. Commenters suggest that the National Park Service has the authority under the National Parks Air Tour Management Act to decide when air tours are adversely impacting natural and cultural resources. Commenters suggest that the National Park Service should select alternative 2 to comply with the Organic Act and other relevant federal laws.

### **Alternatives: Oppose Alternative 2 – No Air Tours in Planning Area**

No comments.

### **Alternatives: Support Alternative 3 – Mitigation Measures**

No comments.

### **Alternatives: Oppose Alternative 3 – Mitigation Measures**

No comments.

## **Alternatives: Support Alternative 4 – Reduction of Air Tours in Planning Area**

- Commenters support the reductions in total number of flights allowed under alternative 4. However, commenters are concerned that alternative 4 is essentially the same as alternative 3, except for the reduction in flights. Commenters recommend that the National Park Service consider different levels of intensity among alternatives, allowing for a more meaningful analysis.

## **Alternatives: Oppose Alternative 4 – Reduction of Air Tours in Planning Area**

No comments.

## **ATMP ELEMENTS**

### **ATMP Elements: Annual Number of Air Tours**

- Commenters expressed support for the decrease in number of flights in alternative 4 because it would best decrease the cumulative impacts of air tours.
- Commenters expressed concern that alternative 3 provides no meaningful reduction in the number of flights and would have the greatest adverse impacts of the action alternatives.
- Commenters requested a moderate increase in air traffic in the ATMP to allow for growth in numbers of visitors.

### **Air Tour Management Plan Elements: Routes and Altitudes**

- Commenters noted that all of the helicopter routes are concentrated over the Cedar Pass area.
- Commenters suggested that alternatives 3 and 4 are too similar, including the routes being the same.
- Commenters suggest that the agencies should involve the National Parks Overflights Advisory Group in designing routes for the ATMP.

### **Air Tour Management Plan Elements: Aircraft Type**

- Commenters noted that the ATMP should include consideration of future technology, quieter aircraft such as electric propulsion airplanes, dirigibles, and balloons.

### **Air Tour Management Plan Elements: Day/Time**

- Commenters suggest that the National Park Service consider time of day restrictions that would only allow air tours to fly from three hours after sunrise until three hours before sunset in order to increase the amount of quiet time and provide a greater range of attributes to evaluate in the environmental assessment.
- Commenters note that adding one hour of available flight time after sunrise and one hour before sunset, for a maximum of 16 flights per day, as a quiet technology incentive is not sufficient to offset the millions of dollars that the technology costs.
- Commenters suggest that quiet technology incentives allowing air tours to fly at sunrise and sunset adversely impact the views of visitors on the ground experiencing sunrise and sunset.
- Commenters suggested that flying helicopters in low light conditions near sunrise and sunset presents a safety risk.

## **Air Tour Management Plan Elements: Other**

- Commenters suggest that the National Park Service clarify in the plan whether or not air tour operator training is required.

## **PROCESS**

### **Process Comments: Alternatives Considered**

- Commenters agree with the NPS determination, described in the ‘alternatives dismissed’ section of the newsletter that, ‘the existing number of air tours with current operating parameters’ would result in unacceptable impacts.
- Commenters suggest that the alternatives 3 and 4 are too similar. Commenters recommend that the National Park Service consider varying attributes between the alternatives that are most likely to contribute to impacts.
- Commenters suggest that dismissing alternatives, as described in the newsletter, is premature because the results of the environmental assessment were not considered.

### **Process Comments: National Environmental Policy Act**

- Commenters suggest that the plan include monitoring of park management objectives. Monitoring should also consider the cumulative impacts of all the sources of impact.
- Commenters are concerned that the National Park Service didn’t comply with applicable NEPA guidance by issuing numerous previous ATMPs without considering a reasonable range of alternatives and without preparing any sort of NEPA compliance for public review.
- Commenters suggest that under the act, air tours are essentially a discretionary activity subject to agency approval. Commenters suggest that to the best of their knowledge, the National Park Service has never formally considered or determined whether commercial air tours are an appropriate use for Badlands. Commenters recommend that the environmental assessment include an appropriate use analysis as described in *NPS Management Policies 2006*, section 1.5.
- Commenters suggest that the environmental assessment should include an impairment determination for the proposed action as described in *NPS Management Policies 2006*, section 1.4.7. The National Park Service should apply a standard that offers greater assurance that impairment will not occur.
- Commenters suggest that the environmental assessment should identify its preparers as well as the respective roles of the agencies in the NEPA process. Commenters suggest that it is confusing which agency is actually coordinating preparation of the environmental assessment and serves as the lead agency and which agency serves as the cooperating agency. Commenters urge the National Park Service to play an active role.
- Commenters suggest that the environmental assessment should identify the NPS preferred alternative as well as the environmentally preferable alternative. The value of the National Park Service identifying both is that it would add transparency to a less than transparent public process for the past 20 years.

- Commenters note that the scoping newsletter states that current air tours at the park impede the National Park Service's ability to fully meet the park's purposes of protecting wilderness character and values, natural resource protection, soundscape, and interpreting natural and cultural resources. Commenters question how this was determined prior to analyzing impacts in the environmental assessment and suggest that it is a premature determination.
- Commenters suggest that the National Park Service should establish and explain levels of significance in the environmental assessment.

### **Process Comments: Other**

- Commenters suggest that the agencies need to consider input from stakeholders, operators, and NPOAG, and they feel that NPOAG has not been appropriately involved in previous planning.
- Commenters note that the laws and policies governing the NPS mission and duties are grounded in the Organic Act to conserve park resources and provide for their use and enjoyment, "in such a manner and by such means as will leave them unimpaired" for future generations.

## **MISCELLANEOUS**

### **Benefits of Air Tours**

- Commenters suggest that flights over the park should not be limited because they provide a fun and safe way for people to enjoy views of the park and allow access to visitors with less mobility.
- Commenters suggest that air tours are an important option for visitors to experience natural and human-made landmarks. Commenters suggest that air tours have the least impact because they reduce congestion and demand on park surface infrastructure.

### **Wrong Park: Substantive Comment**

No comments.

## **NON-SUBSTANTIVE**

### **Non-Substantive Comment: Oppose Air Tours Continuing**

- Commenters recommend that the National Park Service ask Congress to change the law to ban air tours over national parks to preserve some of the last remaining quiet places in the United States.

### **Non-Substantive Comment: Other**

No comments.



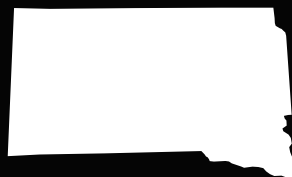
**APPENDIX A**  
**Scoping Newsletter**

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# Badlands National Park

September 2022  
Newsletter



**Air Tour Management Plan**  
Potential Alternatives for Public Comment



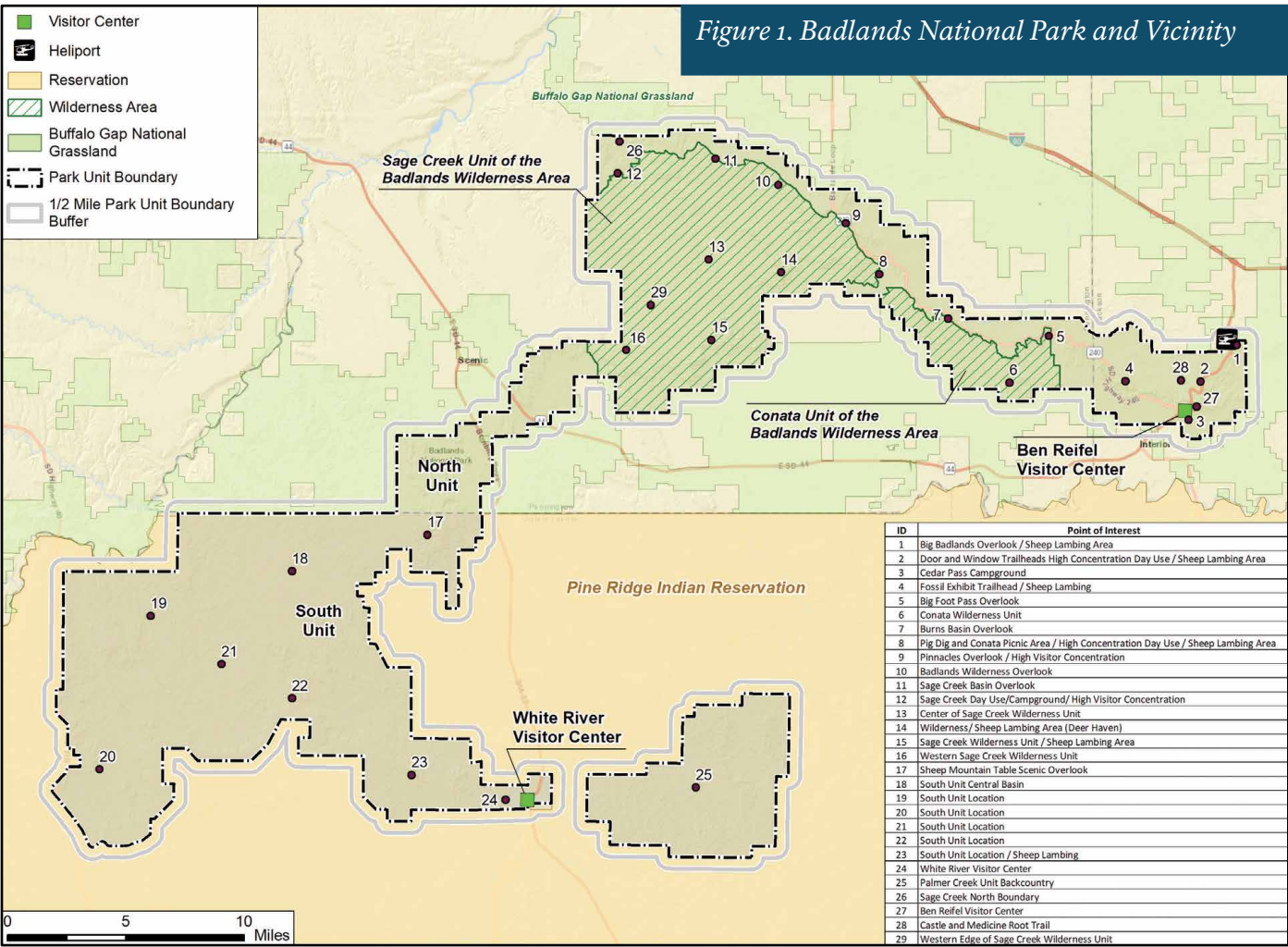
The Federal Aviation Administration (FAA) and the National Park Service (NPS) are working together to present potential alternatives for an air tour management plan for Badlands National Park (Park). Public and stakeholder feedback during this phase is critical. This document will explain:

- Commercial air tour operations
- Requirements for a plan for the Park
- Potential alternatives being considered for the plan
- How the public and stakeholders can provide feedback

## Badlands National Park

Badlands National Park is located in western South Dakota, 70 miles east of Rapid City. The Park (originally Badlands National Monument) was established in 1939, and totals 242,756 acres.

The North Unit includes the 64,250-acre Badlands Wilderness Area (Figure 1). The South Unit is located within the Pine Ridge Indian Reservation, and is managed by the NPS in cooperation with the Oglala Sioux Tribe under a 1976 Memorandum of Agreement.



## Project Introduction

This document presents potential alternatives for the Badlands National Park Air Tour Management Plan (ATMP) Environmental Assessment (EA) for public and stakeholder input. As applied to Badlands National Park, 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 the Park or outside the Park but within 1/2 mile of its boundary during which the aircraft flies below 5,000 feet (ft.) above ground level (AGL). Altitude expressed in mean sea level (MSL) refers to the altitude of an aircraft above sea level, regardless of the terrain below it, whereas altitude expressed in AGL is a measurement of the distance between the ground surface and the aircraft.

Air tours have been occurring over the Park since before the year 2000.

The National Parks Air Tour Management Act (the Act) of 2000 requires the FAA, in cooperation with the NPS, to develop an ATMP for parks and tribal lands where operators have applied to conduct commercial air tours. The objective of the ATMP, under the Act, is to develop acceptable and effective measures to mitigate or prevent the significant adverse impacts of commercial air tour operations on the Park's natural and cultural resources, tribal sacred sites and ceremonial areas, wilderness character, and visitor experience.

As part of the public scoping process pursuant to the National Environmental Policy Act (NEPA), the FAA and the NPS invite public input on potential alternatives. Public and stakeholder input will be used to further refine or dismiss alternatives and potentially to consider new alternatives. Public input will also be used to inform the environmental analysis. Alternatives

that are carried forward and analyzed in the EA are expected to be available for public review and comment early next year.

## Purpose and Need for the Project

Under NEPA, alternatives must meet the Purpose (i.e., objective) and Need for the project.

### Purpose

To comply with the *National Parks Air Tour Management Act of 2000 (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*.

### Need

The Act requires an ATMP or voluntary agreement for the Park. Air tours have the potential to impact natural and cultural resources, 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, wilderness character, visitor experience, and tribal lands. Cultural and ethnographic resources that may be protected under an ATMP include traditional cultural properties, tribal sacred sites, and ceremonial areas. In order to address impacts from commercial air tours the agencies have decided to prepare an ATMP for the Park.

## Resources for Consideration in the EA

The agencies propose to analyze the potential impacts of each alternative on the following resources:

- Air quality
- Biological resources
- Climate (climate change and greenhouse gas emissions)
- Cultural resources (historic buildings, historic districts, archeological resources)
- Ethnographic resources (sacred sites, traditional cultural properties, cultural landscapes, traditional uses)
- Department of Transportation Act, Section 4(f) properties
- Noise and compatible land use (acoustic environment and Park soundscape)
- Visitor experience
- Socioeconomics, Children's Environmental Health and Safety Risk, and Environmental Justice
- Visual effects (visual resources and visual character)
- Wilderness





## Elements Common to All Alternatives for the Badlands National Park ATMP

All alternatives being considered for selection for the Badlands National Park ATMP will incorporate the following:

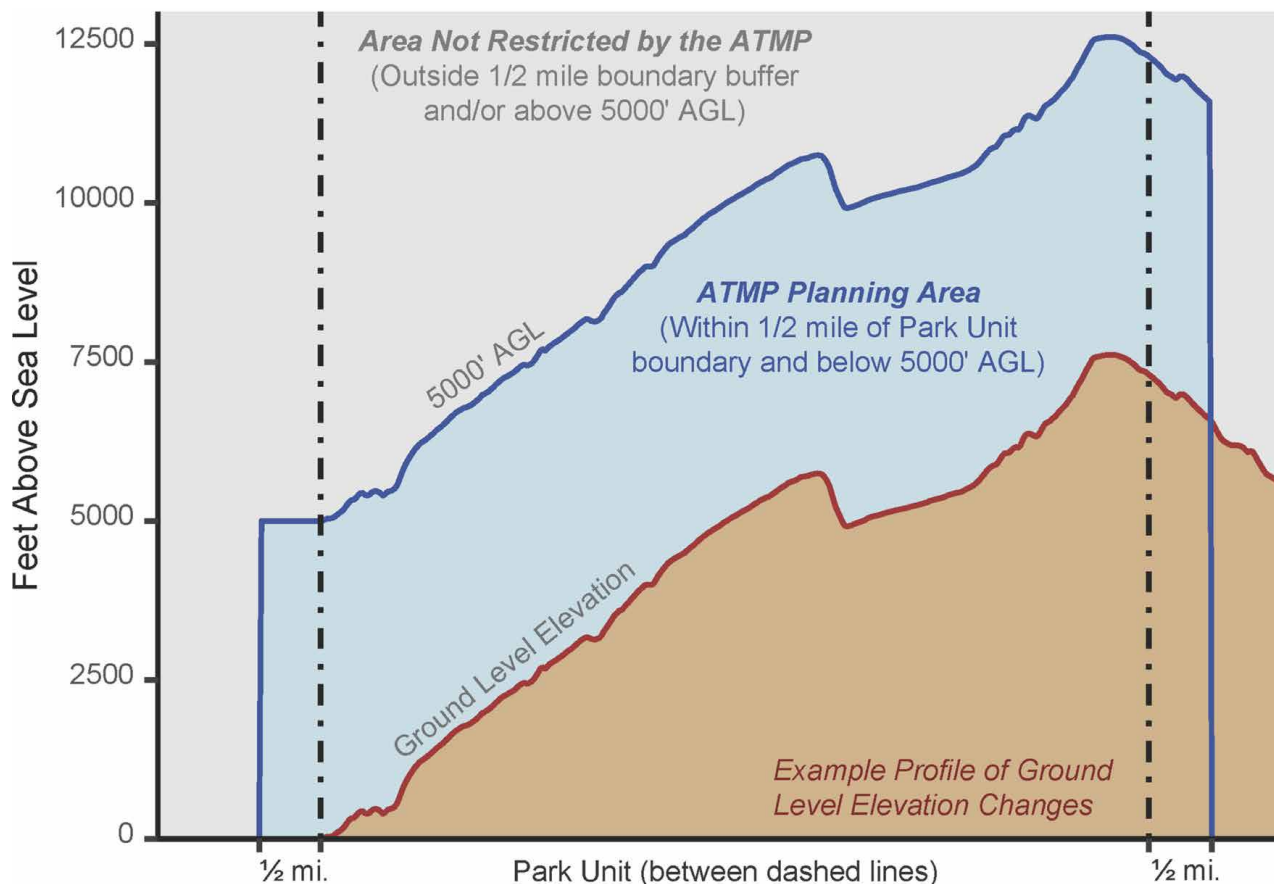
### ATMP Planning Area

Under the Act and its implementing regulations, an ATMP regulates commercial air tours over a national park or outside the park but within 1/2 mile of its boundary during which the aircraft flies below 5,000 ft. AGL. This is referred to as the



ATMP planning area. Air tours outside of the ATMP planning area are not subject to the Act and are therefore not regulated under the ATMP. Thus, there would be no limitations on the annual number of air tours or routes that could occur outside the ATMP planning area under any alternative. Refer to the figure below for a geographic depiction of the ATMP planning area. In addition, 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.

Geographic Areas Covered by the ATMP



## Interim Operating Authority

Commercial air tours over the Park are currently conducted under interim operating authority (IOA) that the Act required the FAA to grant air tour operators. Interim operating authority does not provide any operating parameters (routes, altitudes, etc.) for commercial air tours other than an annual limit. Under the Act, IOA for a park terminates after an ATMP is established for that park.



## Monitoring and Enforcement

All air tour operators are required to report the number of commercial air tour operations they have conducted within the ATMP planning area to the FAA and NPS.



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.

## Minimum Altitudes

The range of altitudes examined in the alternatives will be from 800 to 1,500 ft. AGL for helicopters and 1,500 to 2,600 ft. AGL for fixed-wing aircraft.



## Flight Routes

The maps included in the potential alternatives show flight routes where air tours could occur within the ATMP planning area.



Flight routes within the ATMP planning area are represented by a line. The flight lines will be used for noise modeling purposes in the impact analysis.

## FAA Airspace Authority

The FAA has authority for all airspace matters, including any enforcement actions for violations under the ATMP, which the agency would process in accordance with existing FAA procedures and regulations.



## Fee Collection

The NPS is authorized by the Omnibus Budget Reconciliation Act of 1993 (54 U.S.C. § 100904) to collect commercial tour use fees for all aircraft conducting tours in the airspace over certain parks. The Park does not currently collect fees from air tour operators and does not propose to begin fee collection from air tour operators at this time.





## Potential Alternatives

The agencies have considered a range of reasonable alternatives that are technically and economically feasible, meet the purpose and need for the project, and the goals of the agencies. The alternatives are discussed in detail below and summarized in Table 6.

### Alternatives Considered and Dismissed

The agencies considered but dismissed alternatives that would allow air tour operations above existing reported numbers as well as current operating parameters at existing numbers. Existing air tour reporting figures are displayed in Table 1 below. These alternatives were dismissed from further consideration because the NPS determined they would result in unacceptable impacts to the Park's natural and cultural resources, wilderness character, and visitor enjoyment under the NPS 2006 Management Policies 1.4.7.1, and do not meet the purpose and need for the plan.

The Park's purpose includes preserving and interpreting: the history, culture, and heritage of the Sioux Nation and Lakota people and traditionally associated Tribal Nations; the contemporary history of use and settlement, wilderness character and values; and the unique landforms, scenery, and natural resources of the Park (see Foundation Document). Noise from

additional or current levels of air tours without changing operating parameters inhibits the NPS's ability to meet these purposes.

Noise from air tours negatively impacts existing sacred sites within the Park that are associated with Tribal Nations, as well as the visitor experience and interpretation of the cultural and natural resources of the Park. The NPS is required to avoid such impacts to sacred sites to the extent possible (NPS 2006 Management Policies 5.3.5.3.2 and 5.3.1.1). Additionally, current air tours over the Park impede the NPS's ability to fully meet the Park's purposes of protecting wilderness character and values, natural resource protection (including the acoustic environment), and interpreting the natural and cultural resources of the Park.

Noise from air tours over the Badlands Wilderness interferes with the opportunity for solitude and detracts from the natural quality of wilderness. The existing air tour operations also diminish visitor opportunities to learn about and be inspired by Park resources and values through interpretation and interfere with the atmosphere of peace and tranquility and the natural soundscapes in the Park and Badlands Wilderness (see NPS Management Policies 4.9).

For these reasons, the agencies have considered but dismissed alternatives that would increase air tours above existing air tour numbers or that would authorize the existing number of air tours without changes to operational parameters.

*Bison at Badlands*



## Alternative 1 — No Action/No ATMP

### Objective

A no action alternative is required by the Council on Environmental Quality and NEPA regulations.

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 and is not in compliance with the Act. The agencies have decided to comply with the Act by developing an ATMP for the Park.

### Description

The no action alternative is what happens if the agencies do not adopt an ATMP. The no action alternative would allow a continuation of air tours under IOA without implementation of an ATMP or voluntary agreement. Under the no action alternative, air tour numbers would be expected to vary from year to year, likely consistent with reported numbers over the past three to five years. Air tour numbers from 2017 to 2019 are listed in Table 1.

Under the no action alternative operators could fly up to their IOA, 4,117 air tours per year. IOA includes only an annual cap on the number of commercial air tours that may be conducted by an operator but does not represent the actual number of air tours conducted and does not designate the route(s), time-of-day, altitude(s), or other conditions for such tours.

### Number of Flights Each Year

Alternative 1 represents a continuation of air tours that are currently flown and allowed under existing law, including each company's IOA as granted by the FAA (70 Fed. Reg. 36,456 (June 23, 2005)) and applicable regulations that govern aviation safety (14 CFR Part 136).

Two commercial air tour operators currently hold IOA to fly up to a combined total of 4,117 annual commercial air tours over the Park and outside the Park but within 1/2 mile of its boundary, including Oglala Lakota Tribal lands within that area (see Table 1). Under this no action alternative, IOA would remain in place. Though no commercial air tours are currently conducted over the South Unit of the Park or within the 1/2 mile of the South Unit's boundary, including Oglala Lakota Tribal lands within the area, under this alternative any operator with IOA for the Park could conduct such tours.

Since reporting began in 2013, the total number of commercial air tours reported over the Park each year has ranged from 962 (reported in 2013) to 1,729 (reported in 2018). The operators may not exceed their respective IOA limitation in any given year.

The average annual number of commercial air tours conducted over the Park from 2017-2019 for all operators is 1,425. The agencies consider the 2017-2019, three-year average, the existing baseline for the purposes of understanding the existing number of commercial air tour flights over the Park. These years were selected because they reflected relatively current air tour conditions, represented reliable operator

## Alternative 1 — No Action/No ATMP

reporting of air tours, accounted for variations across multiple years, and excluded 2020 which was atypical due to the COVID-19 pandemic. The agencies also decided against using 2021 data due to continued abnormalities associated with the COVID-19 pandemic and the unavailability of reporting data for 2021 during most of the planning effort.

## 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, but operators could change routes without notice.

## Operators, Aircraft Types, Interim Operating Authority

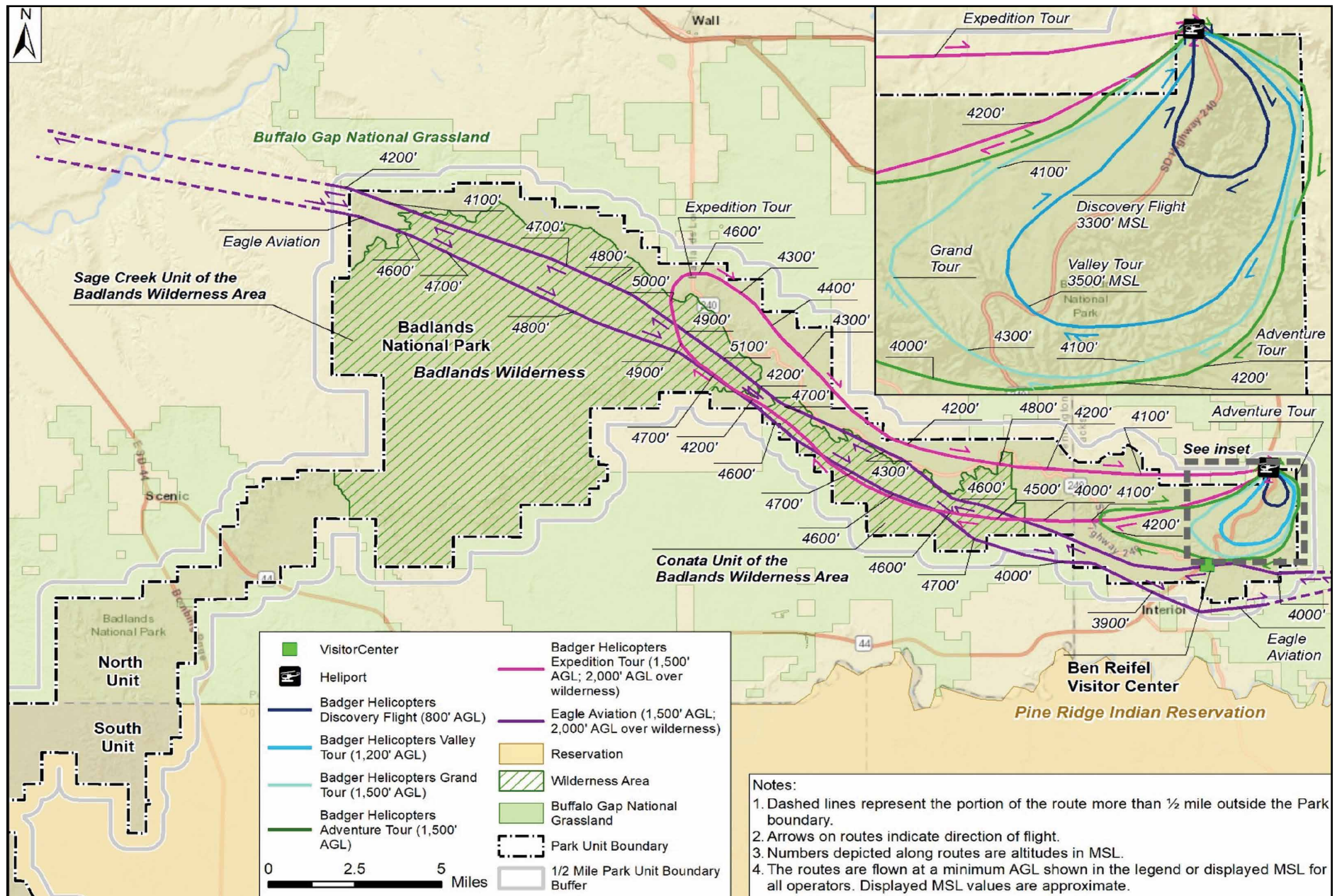
The two commercial operators that hold IOA for the Park reported flying commercial air tours over the Park between 2013 and 2019. Badger Helicopters, Inc. (Badger) flies helicopters, and Eagle Aviation, Inc. (Eagle) flies fixed-wing aircraft. Badger flies five loop routes that originate outside the northeast corner of the Park, adjacent to the Park boundary, and vary in length from approximately 3 miles to over 40 miles. Eagle flies one route down-and-back along the north unit of the Park. The following table (Table 1) summarizes each operator's aircraft type, IOA for the Park, and average number of reported air tours over the Park from 2017-2019.

**Table 1. Existing air tour operators and reported air tours.**

Operator	Aircraft Type	2017 Reported Tours	2018 Reported Tours	2019 Reported Tours	3-year Reported Average No. of Air Tours (2017-2019)	Interim Operating Authority (IOA)
Badger Helicopters, Inc.	BHT-206B, BHT-47-G3B1, R-44-II, R-66-66 (helicopters)	1,190	1,729	1,349	1,423	4,099
Eagle Aviation, Inc.	Cessna 172, Cessna 206 (fixed-wing)	4	0	0	2	18
		<b>1,194</b>	<b>1,729</b>	<b>1,349</b>	<b>1,425</b>	<b>4,117</b>



Figure 2. Alternative 1 — No Action/No ATMP



## Alternative 2 — No Air Tours in the Planning Area

### Objective

Alternative 2 — No Air Tours in the Planning Area would provide the greatest protection for the purposes, resources, and values of the Park. The Park holds and protects numerous resources and values including: sites of spiritual and cultural significance to Native Americans and traditional cultural practices; threatened and endangered species and other wildlife sensitive to noise; Congressionally designated wilderness and visitor opportunities for solitude; ground-based visitor experiences; scenic qualities, and natural sounds.

This alternative supports the following Park management objectives:

- Park acoustic resources support an outstanding visitor experience and opportunities to hear and enjoy natural sounds.
- Acoustic resources of the Park are maintained such that the following aspects of wilderness character area is preserved; solitude or primitive and unconfined recreation, including remoteness from sights and sounds; untrammelled or wildness; naturalness; undeveloped; other features or values.
- Parks 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 and use of these resources by traditionally associated communities.

### Description

Alternative 2 would prohibit air tours within the ATMP planning area, except for the purpose of takeoff and landing at a helipad operated by Badger that is within the ½ mile of the Park boundary. The ATMP planning area includes the airspace below 5,000 ft. AGL and within ½-mile of the Park boundary. The Park itself and all areas within ½ mile of the Park boundary would be designated as an area to remain free of commercial air tours under 5,000 ft. AGL.

Air tours outside of the ATMP planning area (i.e., 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 the ATMP planning area.

### Routes and Altitudes

The figure for this alternative (Figure 3) depicts a prohibition on all air tours within the ATMP planning area. Air tours could be conducted only outside the ATMP planning area. Based on current air tour activity, it is unknown if operators would begin conducting air tours outside of the Park. The actual flight path and number of air tours outside the ATMP planning area would vary due to operator preference and weather conditions at the time of the air tour.



## Alternative 2 — No Air Tours in the Planning Area

This alternative could result in some current air tour operators shifting routes to other areas outside the Park that may also be significant to Tribes.<sup>1</sup>

### 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. The NPS and the FAA are both responsible for the monitoring and oversight of the ATMP. If the NPS identifies instances of non-compliance, the NPS will report such findings to the FAA's local Flight Standards District Office (FSDO). The FSDO will investigate all substantiated reports of noncompliance. The public may also report allegations of non-compliance with the ATMP to the FSDO, which may result in an FAA investigation.

<sup>1</sup> During consultation, a number of Tribes stated that they consider the Badlands and Black Hills a traditional cultural landscape; a large scale area containing many linked features that have religious and cultural significance.

### Amendment

The ATMP may be amended at any time if the NPS, by notification to the FAA, determines that the ATMP is not adequately protecting Park resources and/or visitor enjoyment; or if the FAA, by notification to the NPS, determines that the ATMP is adversely affecting aviation safety and/or the national aviation system; or, if the agencies determine that appropriate changes to the ATMP are necessary to address new information or changed circumstances.

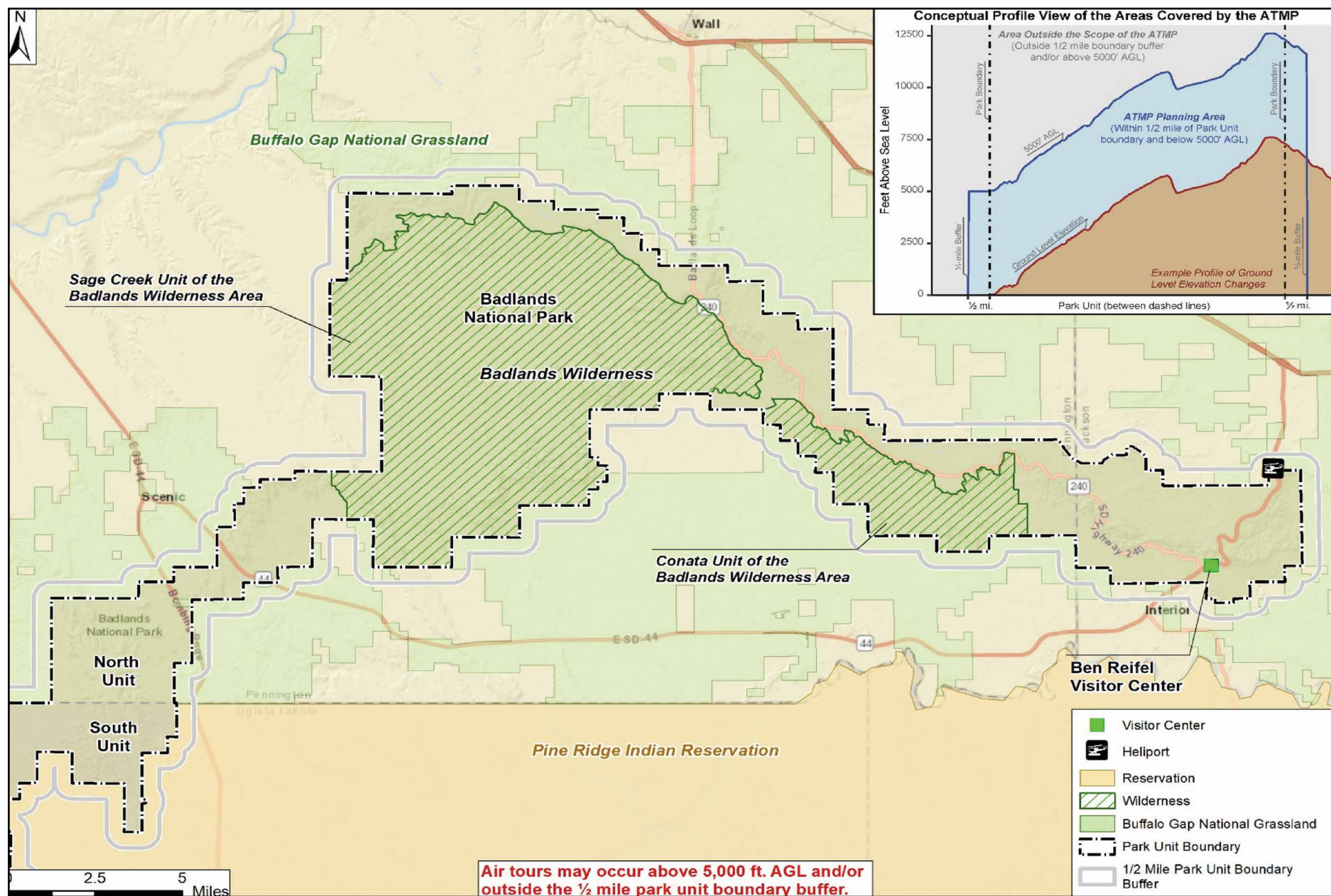
### IOA

The establishment of an ATMP for Alternative 2 (No Air Tours in the Planning Area) would result in the termination of all IOA for both the Park and tribal lands. Air tour operators' operation specifications (OpSpecs) will be updated accordingly. OpSpecs are a set of rules that an operator must follow.

*Badlands Landscape*



Figure 3. Alternative 2 — No Air Tours in the Planning Area



## Alternative 3 — Operational Modifications to Existing Air Tours

### Objective

The NPS developed Alternative 3 - Operational Modifications to Existing Air Tours to provide an alternative most similar to existing air tour operations, with mitigations to avoid or minimize impacts to natural and cultural resources and visitor experience.

Similar to Alternative 2 – No Air Tours in the Planning Area, Park management objectives would also apply. The FAA reviewed the alternative to ensure it would not adversely affect aviation safety.

### Description

Alternative 3 would restrict air tour operations within the ATMP planning area. Primarily, the conditions in this alternative include annual and daily caps, designated routes, and required minimal altitudes.

### Caps on Numbers of Flights Allowed Annually and Daily

The annual number of flights would be limited to 1,425 total flights per year across both operators, consistent with the reported average of air tours for 2017, 2018, and 2019. The daily number of flights may not exceed 16 tours per day across both operators. There would be annual and daily limitations for each operator (see Table 2).

### Routes and Altitudes

Alternative 3 includes four routes for the helicopter operator and one route for the fixed-wing operator all with varying distances and altitudes across the ATMP planning area (see Table 3). These five routes are consistent with what operators currently fly (see Figure 4). While some helicopter routes have seemingly low altitudes, this is due to the helipad being just outside of the Park boundary and the short distance of each looped route. The helicopter would only be able to reach the minimum altitude listed for a brief period before having to turn around and begin descent. Badger Route 5 – Expedition Tour would not be authorized under this alternative due to its extended length and time spent over designated wilderness.

### Time of Day, Day of Week, and Seasonal Restrictions

Commercial air tours would be permitted to operate one hour after sunrise until one hour before sunset, as defined by the National Oceanic and Atmospheric Administration (NOAA), except for the quiet technology incentive below. Sunrise and sunset data are available from the NOAA Solar Calculator.

Air tours would be permitted to occur from May 1 through September 30, for 152 total days each year. Air tours could occur any day of the week.



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## Alternative 3 — Operational Modifications to Existing Air Tours

### Quiet Technology Incentives

The Act requires that the ATMP include incentives for the adoption of quiet technology by commercial air tour operators. The ATMP for this alternative would incentivize the use of quiet technology aircraft by commercial air tour operators. Operators that have converted to quiet technology aircraft may request to be allowed to conduct air tours beginning at sunrise or ending at sunset on all days that flights are authorized.

Because aviation technology continues to evolve and advance and FAA updates its noise certification standards periodically, the aircraft eligible for this incentive will be analyzed on a case-by-case basis at the time of the operator's request to be considered for this incentive. The NPS will periodically monitor Park conditions and coordinate with FAA to assess the effectiveness of this incentive. If implementation of this incentive results in unanticipated effects on Park resources or visitor experience, further agency action may be required to ensure the protection of Park resources and visitor experience.

### Restrictions for Particular Events

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

### Adaptive Management

Adaptive management allows for minor modifications to the ATMP without a formal ATMP amendment if the impacts of such changes are within the impacts already analyzed by the agencies under the National Environmental Policy Act, the National Historic Preservation Act, and the Endangered Species Act. Adjustments to the number of commercial air tours allocated to individual operators as a result of the competitive bidding process and minor changes to routes, altitudes, or other operating parameters are examples of adaptive management measures that may not require a formal ATMP Amendment. Such modifications may be made if: 1) the NPS determines that they are necessary to avoid adverse impacts to Park resources, values, or visitor experiences; 2) the FAA determines the need for such changes due to safety concerns; or 3) the agencies determine that appropriate, minor changes to the ATMP are necessary to address new information or changed circumstances.

### Operator Training and Education

When made available by Park staff, operators/pilots would be required to take at least one training course per year conducted by NPS staff. The training would include Park information that operators can use to further their own understanding of Park priorities and management objectives as well as enhance the interpretive narrative and increase understanding the Park by air tour clients.

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## Alternative 3 — Operational Modifications to Existing Air Tours

### Annual Meeting

At the request of either of the agencies, 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. This annual meeting could be conducted in conjunction with any required annual training.

The annual meeting will facilitate effective implementation of the ATMP because it would be used to review and discuss implementation of the ATMP between Park staff, local FAA FSDO, and all operators. It will thus serve to ensure that air tour operators remain informed regarding the terms and conditions of the ATMP, including any adaptive management measures or amendments, and are made aware of new or reoccurring concerns regarding Park resources.

### 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) and other criteria developed by the agencies. Since the number of flights would be limited for this alternatives, competitive bidding could be conducted, if appropriate.

In the time period between the finalization of an ATMP and the completion of a competitive bidding process, commercial air tour operators would be allocated a certain number of commercial air tours over the Park, referred to as the initial allocation.

Competitive bidding may also be appropriate to address: a new entrant application; a request by an existing operator for additional operating authority; consideration by the agencies of Park-specific resources, impacts, or safety concerns; or for other reasons. The Act directs

the agencies to consider various factors during the competitive bidding process including known resource issues, reporting, and compliance concerns.

### Operators, Initial Allocation of Air Tours, Aircraft Types, and Interim Operating Authority

Upon finalization of the ATMP, the number of flights authorized to occur each year would be proportionally allocated to each of the two operators that have reported operations over the Park in the period from 2017-2019 (Table 2). Each operator's aircraft types would reflect those reported in the period from 2017-2019. The initial allocation would be used until a competitive bidding process could occur, if necessary. IOA will be terminated when the operators' OpSpecs are updated, which will occur within 90 days of signing of an ATMP.

### New Entrant

For the purposes of the ATMP, a "new entrant" is a commercial air tour operator that has not been granted any operations under the ATMP or that no longer holds operations under the ATMP at the time of the application. New entrants must apply for and be granted operating authority before conducting commercial air tours over the ATMP planning area.

The FAA and the NPS will publish additional information for interested parties about the form and required content of a new entrant application. The FAA and the NPS will jointly consider new entrant applications and determine whether to approve such applications. Review of applications submitted prior to the effective date of the ATMP will commence within six months of the effective date. Applications submitted after that time will be considered no less frequently than every three years from the effective date of the ATMP.

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## Alternative 3 — Operational Modifications to Existing Air Tours

If any new entrant is granted operating authority under the ATMP, the FAA will issue OpSpecs (and, if necessary, will revise OpSpecs of operators whose allocation of operating authority changes due to accommodation of a new entrant) within 90 days of the publication of an amended ATMP or of the effective date of ATMP changes implemented through the adaptive management process.

### Monitoring and Enforcement

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. In addition to these reports, operators will also include flight monitoring data and such other information as the FAA and the NPS may request.

Aircraft monitoring and enforcement would occur to ensure that commercial air tour operators are complying with the terms and conditions of the ATMP. The NPS and the FAA are both responsible for the monitoring and oversight of the ATMP. If the NPS identifies instances of non-compliance, the NPS will report such findings to the FAA's local FSDO. The FSDO will investigate all substantiated reports of noncompliance. The public may also report allegations of non-compliance with the ATMP to the FSDO, which may result in an FAA investigation.

### Amendment

The ATMP may be amended at any time: if the NPS, by notification to the FAA and the operator(s), determines that the ATMP is not

adequately protecting Park resources and/or visitor enjoyment; if the FAA, by notification to the NPS and the operator(s), determines that the ATMP is adversely affecting aviation safety and/or the national aviation system; or, if the agencies determine that appropriate changes to the ATMP are necessary to address new information or changed circumstances that cannot be addressed through adaptive management.

The FAA and the NPS will jointly consider requests to amend the ATMP from interested parties. Requests must be made in writing and submitted to both the FAA and the NPS. Requests must also include justification that includes information regarding how the requested amendment: is consistent with the objectives of the ATMP with respect to protecting Park resources, tribal lands, or visitor use and enjoyment; and would not adversely affect aviation safety or the national aviation system. The FAA and the NPS will publish additional information for interested parties about the form and manner for submitting a request.

Increases to the total number of air tours authorized per year under the ATMP resulting from accommodation of a new entrant application or a request by an existing operator will require an amendment to the ATMP and additional environmental review. Notice of all amendments to the ATMP will be published in the Federal Register for notice and comment.

## Alternative 3 — Operational Modifications to Existing Air Tours

**Table 2. Alternative 3 operators and annual cap, daily cap, and number of routes**

Operator	Aircraft Type	3-year Reported Average No. of Air Tours (2017-2019)	Alternative 3 Allocations	Daily Cap	Number of Routes
Badger Helicopters, Inc.	BHT-206B, BHT-47-G3B1, R-44-II, R-66-66 (helicopter)	1,423	1,423	15	4
Eagle Aviation, Inc.	Cessna 172, Cessna 206 (fixed-wing)	2	2	1	1
		<b>1,425</b>	<b>1,425</b>	<b>16</b>	<b>5</b>

**Table 3. Alternative 3 operator routes, altitude, and aircraft type conditions**

Route Name	Altitude	Aircraft Type	Operator
BADL-1/Discovery	3,300 ft. MSL/800 ft. AGL	Helicopter	Badger Helicopter
BADL-2/Valley Tour	3,500 ft. MSL/1,200 ft. AGL	Helicopter	Badger Helicopter
BADL-3/Grand Tour	4,000 – 4,200 ft. MSL/1,500 ft. AGL	Helicopter	Badger Helicopter
BADL-4/Adventure Tour	4,200 – 4,400 ft. MSL/1,500 ft. AGL	Helicopter	Badger Helicopter
Eagle Aviation Route	4,100 – 5,000 ft. MSL/2,600 ft AGL	Fixed-wing	Eagle Aviation





**Air tours may occur above 5,000 ft. AGL and/or outside the ½ mile park unit boundary buffer.**

**Legend:**

- Visitor Center
- Heliport
- Badger Helicopters Discovery Flight (800' AGL)
- Badger Helicopters Valley Tour (1,200' AGL)
- Badger Helicopters Grand Tour (1,500' AGL)
- Badger Helicopters Adventure Tour (1,500' AGL)
- Eagle Aviation (2,600' AGL)
- Reservation
- Wilderness Area
- Buffalo Gap National Grassland
- Park Unit Boundary
- 1/2 Mile Park Unit Boundary Buffer

**Notes:**

- Dashed lines represent the portion of the route more than ½ mile outside the Park boundary.
- Arrows on routes indicate direction of flight.
- Numbers depicted along routes are altitudes in MSL.
- The routes are flown at a minimum AGL shown in the legend or displayed MSL for all operators. Displayed MSL values are approximate.

**Conceptual Profile View of the Areas Covered by the ATMP**

This profile view shows the relationship between the ground level elevation and the Air Tour Management Planning (ATMP) planning area. The y-axis represents Feet Above Sea Level (0 to 12,500). The x-axis represents distance across the park unit (between dashed lines), with ½ mile markers at each end. The ground level elevation is shown as a brown shaded area. The ATMP planning area is defined by two boundaries: the 1/2-mile Park Unit Boundary (dashed line) and the 1/2-mile Park Unit Boundary Buffer (solid line). The area between these boundaries is labeled "Area Outside the Scope of the ATMP (Outside 1/2 mile of Park Unit boundary and below 5000' AGL)". The area within the 1/2-mile Park Unit Boundary and below 5000' AGL is labeled "ATMP Planning Area (Within 1/2 mile of Park Unit boundary and below 5000' AGL)". An example profile of ground level elevation changes is also shown.

## Alternative 4 — Reduction of Air Tours

### Objective

The NPS developed Alternative 4 – Reduction of Air Tours, to provide an alternative that improves the acoustic environment of the Park by reducing the number of existing air tour operations but not eliminating air tours (see Figure 5).

Similar to Alternative 2 - No Air Tours in the Planning Area and Alternative 3 - Operational Modifications to Existing Tours, Park management objectives would also apply. The FAA reviewed the alternative to ensure it does not adversely affect aviation safety.

### Description

Alternative 4 would restrict and reduce air tour operations within the ATMP planning area. Primarily, the conditions in this alternative include annual and daily caps, designated routes, and required minimal altitudes.

### Caps on Numbers of Flights Allowed Annually and Daily

The total number of commercial air tours would be limited to 1,055 total flights per year which is an approximately 26% reduction from existing annual air tours. The daily number of flights may not exceed 8 tours per day. There would be annual and daily limitations for each operator (see Table 4).

### Conditions that are the Same as Alternative 3:

- Routes and Altitudes
- Time of Day, Day of Week, and Seasonal Restrictions
- Quiet Technology (QT) Incentives
- Restrictions for Particular Events
- Adaptive Management
- Operator Training and Education
- Annual Meeting
- Competitive Bidding
- Operators, Initial Allocation of Air Tours, Aircraft Types, and Interim
- Operating Authority
- New Entrant
- Monitoring and Enforcement
- Amendment



## Alternative 4 — Reduction of Air Tours

**Table 4. Alternative 4 operators and annual cap, daily cap, and number of routes**

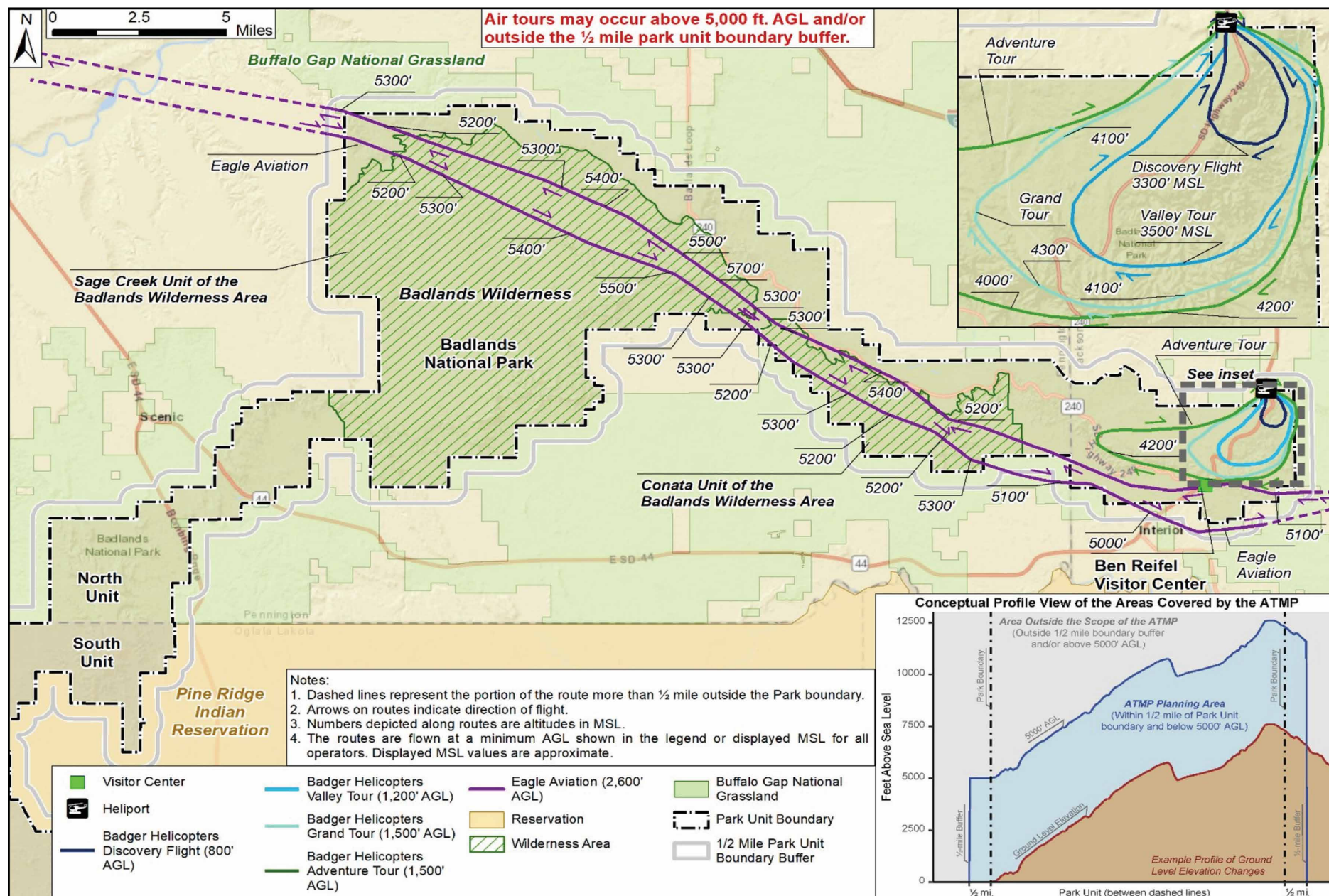
Operator	Aircraft Type	3-year Reported Average No. of Air Tours (2017-2019)	Alternative 4 Allocations	Daily Cap	Number of Routes
Badger Helicopters, Inc.	BHT-206B, BHT-47-G3B1, R-44-II, R-66-66 (helicopter)	1,423	1,053	7	4
Eagle Aviation, Inc.	Cessna 172, Cessna 206 (fixed-wing)	2	2	1	1
		<b>1,425</b>	<b>1,055</b>	<b>8</b>	<b>5</b>

**Table 5. Alternative 4 operator routes, altitude, and aircraft type conditions**

Route Name	Altitude	Aircraft Type	Operator
BADL-1/Discovery	3,300 ft. MSL/800 ft. AGL	Helicopter	Badger Helicopter
BADL-2/Valley Tour	3,500 ft. MSL/1,200 ft. AGL	Helicopter	Badger Helicopter
BADL-3/Grand Tour	4,000 – 4,200 ft. MSL/1,500 ft. AGL	Helicopter	Badger Helicopter
BADL-4/Adventure Tour	4,200 – 4,400 ft. MSL/1,500 ft. AGL	Helicopter	Badger Helicopter
Eagle Aviation Route	4,100 – 5,000 ft. MSL/2,600 ft. AGL	Fixed-wing	Eagle Aviation



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**Table 6. Summary of Alternative Elements**

<b>Alternative Attributes</b>	<b>Alternative 1 (No Action/No ATMP)</b>	<b>Alternative 2 (No Air Tours in the Planning Area)</b>	<b>Alternative 3 (Operational Modifications to Existing Air Tours)</b>	<b>Alternative 4 (Reduction of Air Tours)</b>
<b>General Description and Objectives</b>	Allows a continuation of air tours under IOA without implementation of an ATMP or voluntary agreement. Does not comply with the Act.	Prohibits air tours within the ATMP planning area to maximize Park resource protection. Air tours could still continue to fly outside the ATMP planning area (i.e., 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. Primarily, the conditions in this alternative include annual and daily caps, designated routes, and required minimal altitudes.	Restricts and reduces air tour operations within the ATMP planning area. Primarily, the conditions in this alternative include annual and daily caps, designated routes, and required minimal altitudes.
<b>Annual/Daily Number of Flights</b>	Leaves IOA in place, allowing the potential for up to 4,117 commercial air tours each year. Actual number of tours has historically ranged from 962 to 1,729 flights per year, or an average of 1,425 flights (based on 2017-2019 reporting).	None in ATMP planning area.	The annual number of flights would be limited to 1,425 total flights per year across both operators. The daily number of flights may not exceed 16 tours per day across both operators. There would be annual and daily limitations for each operator.	The annual number of flights would be limited to 1,055 total flights per year across both operators. The daily number of flights may not exceed 8 tours per day across both operators. There would be annual and daily limitations for each operator.
<b>Routes</b>	No mandatory routes or no-fly zones. See map for depiction of reported routes and actual operations, though operators may change routes or altitude without notice.	None in ATMP planning area.	Four routes for the helicopter operator and one route for the fixed-wing operator all with varying distances and altitudes.  Badger Route 5 – Expedition Tour would be prohibited under this alternative.	Same as Alternative 3.
<b>Minimum Altitudes</b>	No mandatory minimum altitudes. See map for depiction of reported operations, though operators may change altitude without notice.	No minimum altitude would be set. However, flights over the Park that are above 5,000 ft. AGL could occur as they are outside the ATMP planning area. Flights more than ½-mile outside the Park boundary are similarly outside the ATMP planning area and could occur.	Minimum 2,600 ft. AGL for fixed-wing aircraft, and minimum 800 ft. AGL to 1,500 ft. AGL for helicopter aircraft.	Same as Alternative 3.

Continuation of Table 6. Summary of Alternative Elements

<b>Alternative Attributes</b>	<b>Alternative 1 (No Action/No ATMP)</b>	<b>Alternative 2 (No Air Tours in the Planning Area)</b>	<b>Alternative 3 (Operational Modifications to Existing Air Tours)</b>	<b>Alternative 4 (Reduction of Air Tours)</b>
<b>Time of Day</b>	No Restrictions.	N/A	One hour after sunrise to one hour before sunset for non-QT flights.	Same as Alternative 3.
<b>Seasonal Restrictions</b>	No Restrictions.	N/A	Air tours would be permitted to occur from May 1 through September 30, for 152 total days each year.	Same as Alternative 3.
<b>Day of Week</b>	No Restrictions.	N/A	Air tours may fly any day of the week from May 1 to September 30.	Same as Alternative 3.
<b>Quiet Technology (QT) Incentives</b>	None.	N/A	Air tours operators are incentivized to adopt QT by being extended the opportunity to fly sunrise through sunset for QT flights.	Same as Alternative 3.
<b>Operator Training and Education</b>	None.	N/A	Mandatory if requested and/or made available by the FAA or the NPS.	Same as Alternative 3.
<b>Annual Meeting</b>	None.	N/A	Mandatory if requested and/or made available by the FAA or the NPS.	Same as Alternative 3.
<b>Restrictions for Particular Events</b>	None.	N/A	In addition to seasonal restrictions, 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.

Continuation of Table 6. Summary of Alternative Elements

Alternative Attributes	Alternative 1 (No Action/No ATMP)	Alternative 2 (No Air Tours in the Planning Area)	Alternative 3 (Operational Modifications to Existing Air Tours)	Alternative 4 (Reduction of Air Tours)
<b>Adaptive Management</b>	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.
<b>Operators, Initial Allocation of Air Tours, Aircraft Types, and Interim Operating Authority</b>	<p>Two operators hold IOA for 4,117 air tours each year.</p> <p>Badger Helicopter: BHT-206B, BHT-47-G3B1, R-44-II, R-66- 66</p> <p>Eagle Aviation: Cessna 172, Cessna 206</p> <p>Aircraft type used by operators could change under this alternative.</p>	The establishment of the ATMP will result in the termination of all IOA for the Park and tribal lands.	<p>Badger Helicopter: 1,423 flights annually; BHT-206B, BHT-47-G3B1, R-44-II, R-66- 66</p> <p>Eagle Aviation: two flights annually; Cessna 172, Cessna 206</p> <p>Competitive bidding could occur and change air tour allocations.</p> <p>The establishment of the ATMP will result in the termination of all IOA for the Park and tribal lands.</p>	<p>Badger Helicopter: 1,053 flights annually; BHT-206B, BHT-47-G3B1, R-44-II, R-66- 66</p> <p>Eagle Aviation: two flights annually; Cessna 172, Cessna 206</p> <p>Competitive bidding could occur and change air tour allocations.</p> <p>The establishment of the ATMP will result in the termination of all IOA for the Park and for tribal lands.</p>
<b>Amendments</b>	None.	The ATMP may be amended at any time if the NPS, by notification to the FAA, determines that the ATMP is not adequately protecting Park resources and/or visitor enjoyment; or if the FAA, by notification to the NPS, determines that the ATMP is adversely affecting aviation safety and/or the national aviation system; or, if the agencies determine that appropriate changes to the ATMP are necessary to address new information or changed circumstances.	The ATMP may be amended at any time: if the NPS, by notification to the FAA and the operator(s), determines that the ATMP is not adequately protecting Park resources and/or visitor enjoyment; if the FAA, by notification to the NPS and the operator(s), determines that the ATMP is adversely affecting aviation safety and/or the national aviation system; or, if the agencies determine that appropriate changes to the ATMP are necessary to address new information or changed circumstances that cannot be addressed through adaptive management.	Same as Alternative 3.

## Glossary

The Act	National Parks Air Tour Management Act of 2000
AGL	Above Ground Level
ATMP	Air Tour Management Plan
EA	Environmental Assessment
FAA	Federal Aviation Administration
FSDO	Flight Standards District Office
IOA	Interim Operating Authority
MSL	Mean Sea Level
NEPA	National Environmental Policy Act
NPS	National Park Service
Park	Badlands National Park
PEPC	Planning, Environment & Public Comment System
OpSpecs	Operations Specifications
QT	Quiet Technology



*Prairie Dog at Badlands*

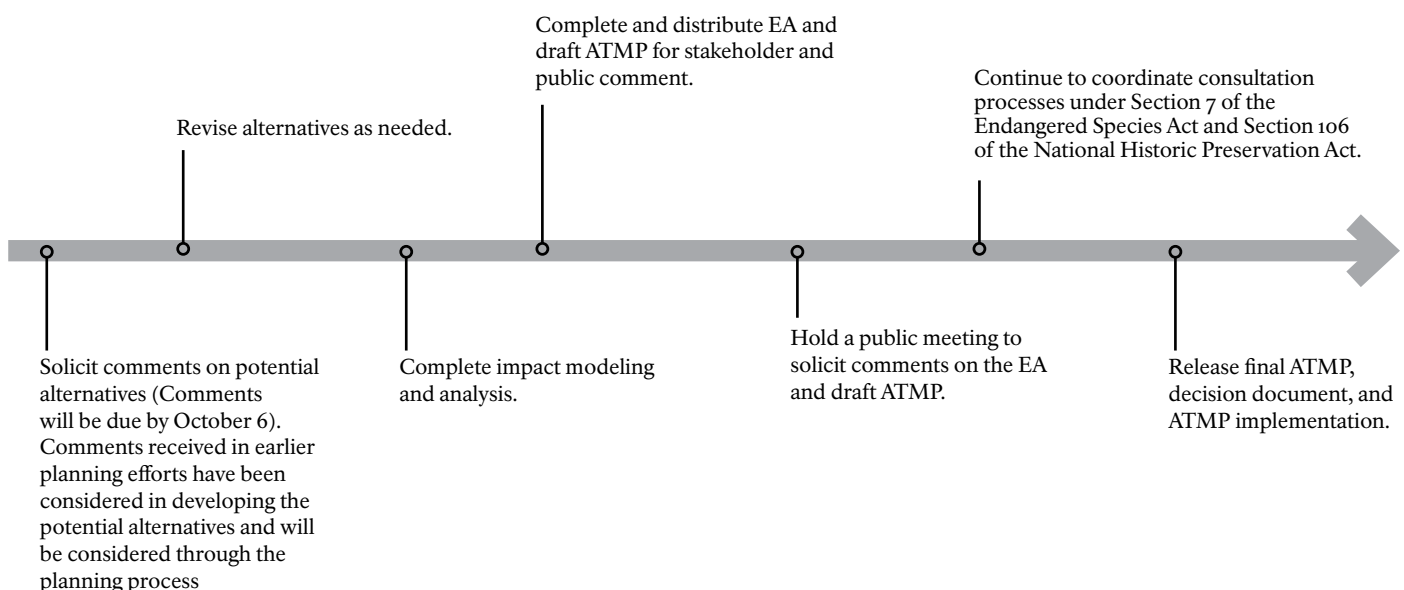
## Next Steps

This public scoping period represents the first opportunity to be involved in the current planning process. During this scoping period, the project planning team would like to receive comments on the potential alternatives. After this public scoping process has concluded, the agencies will prepare an EA to comply with NEPA and a draft ATMP. Important steps in the planning process are in the graphic below.

The FAA and the NPS are also identifying resources that are listed in or eligible for listing in the National Register of Historic Places that could be affected by air tours operating under the proposed ATMP. This includes any historic districts, sites, buildings, structures, objects or landscapes, including traditional cultural properties. If members of the public have any information on historic properties that they believe would be helpful in this effort, including properties outside of the Park, we welcome that assistance.

The FAA and the NPS are also seeking to identify additional individuals or organizations that may be interested in participating in Section 106 of the National Historic Preservation Act consultations for the ATMP as consulting parties. We want to ensure that we include anyone that may have information or expertise to share.

Should you have information you wish to provide regarding historic properties or are interested in participating in the Section 106 review process as a consulting party, please contact Sheri G. Lares at 701.323.7388 or [sheri.lares@faa.gov](mailto:sheri.lares@faa.gov) and copy the ATMP Team at [ATMPTeam@dot.gov](mailto:ATMPTeam@dot.gov). Please note that this contact information is only for correspondence related to the Section 106 process, and comments not related to the Section 106 process will not be accepted or relayed via email. Instructions for general public comment on the potential alternatives described in this newsletter are provided below.





## Instructions for Public Comment

Please comment on any alternative and/or alternative element described above. The agencies are seeking substantive comments that describe why something will or will not work, provide new ideas or factual information to correct or adjust assumptions made, or present reasonable alternatives other than those described. Comments that merely support or oppose the proposals are not considered substantive. Commenters may wish to consider the following questions:

- What elements of the alternatives do you think are most important? Why?
- What other information should the planning team consider when analyzing the alternatives?
- Are there other elements or ideas that should be considered and analyzed that are not already presented? What is missing, and why should it be considered?
- Are there other resources or impact topics that should be considered in the analysis?
- What other comments and suggestions do you have?

Comment submission using the Planning, Environment & Public Comment (PEPC) system is preferred, although written comments sent via postal mail will also be accepted. If you do not have access to a computer, use the attached comment form, following directions on the form. Comments will not be accepted via email.

Comments may be submitted using the PEPC system (<https://parkplanning.nps.gov/BadlandsATMP>) by October 6, 2022 at 11:59 PM MT.

Written comments may be sent via postal mail to the following address:

Volpe National Transportation Systems Center  
Kaitlyn Rimol, V-326  
Attn: Badlands National Park ATMP  
55 Broadway  
Cambridge, MA 02142



# Send Us Your Comments!

**PLEASE SUBMIT YOUR COMMENTS BY OCTOBER 6, 2022 AT 11:59 PM MT.**

Please submit comments electronically by visiting: <https://parkplanning.nps.gov/Badlands>  
Once on the website, select “Open for Comment” to provide your thoughts on these preliminary alternatives. If you do not have access to a computer, you can send us your comments on this comment form.

Do you wish to remain on the mailing list for the Air Tour Management Plan ?      ☐ YES      ☐ NO

Please print your name and address in the space provided. If the mailing label we used is incorrect, please indicate any corrections in the space below. To keep our mailing list accurate, please check the boxes below that apply.

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Below, please write any comments or feedback related to information provided in this newsletter. Please include additional sheets of paper as necessary. When complete, please fold this form in half, showing the preprinted address on the outside, tape it closed (no staples please), add postage, and drop in the mail.

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*Comments will not be accepted by fax, e-mail, or any other way than those specified above. Bulk comments in any format (hard copy or electronic) submitted on behalf of others will not be accepted. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you can ask us to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.*

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Kaitlyn Rimol, V-326  
Attn: Badlands National Park ATMP  
55 Broadway  
Cambridge, MA 02142



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