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.[1,2] 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).

[1] 49 U.S.C. § 40128(c)(2)(A)(i-ii).

[2] 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.[3] 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.[4] 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

[3] 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).

[4] 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; untrammeled; 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.

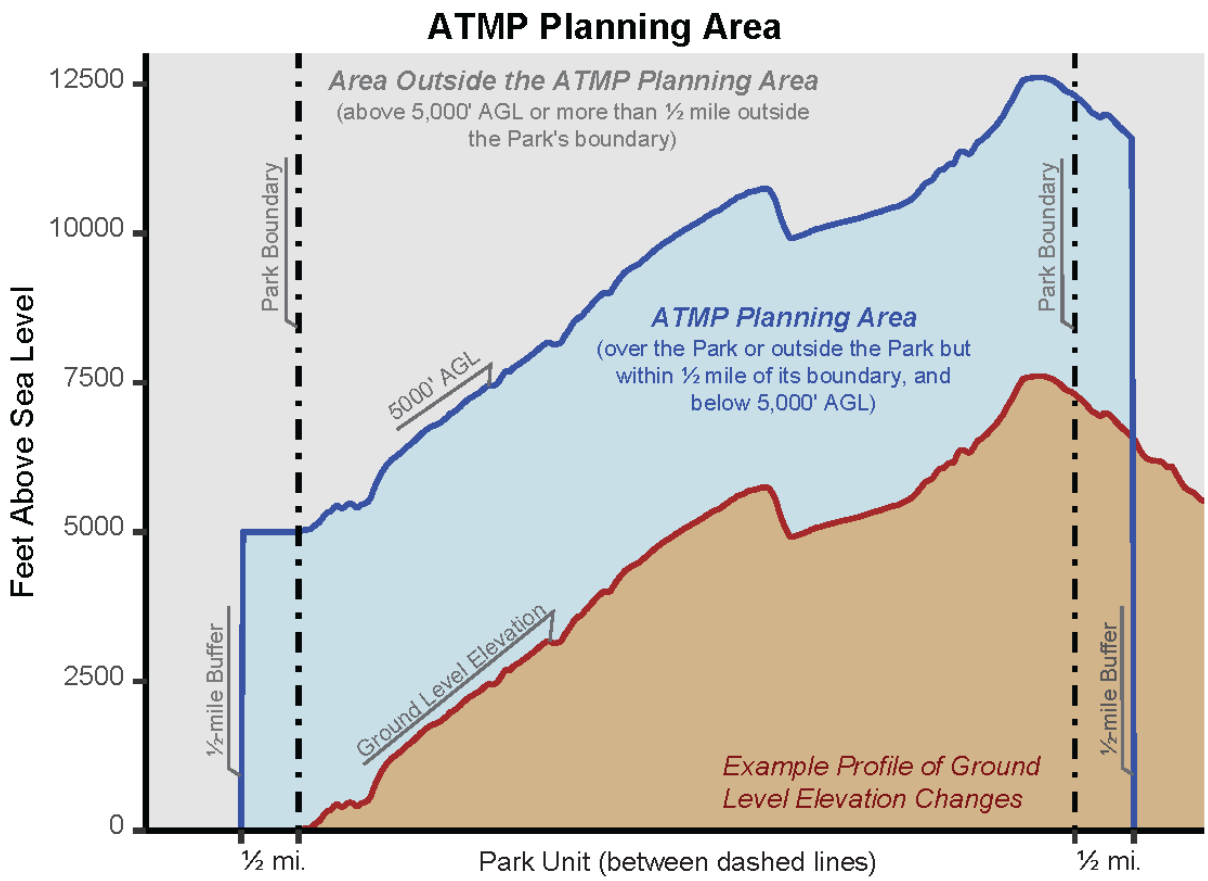

Figure 1. Graphic depiction of the ATMP planning area.

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*.[5]

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

[5] 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.[6] 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.[7] 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[8]	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

[6] 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.

[7] See *Air Tour Reporting Guidance Memo* (2020), https://www.faa.gov/about/office_org/headquarters_offices/ara/programs/air_tour_management_plan/program_information

[8] Based on unpublished reporting data.

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

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.

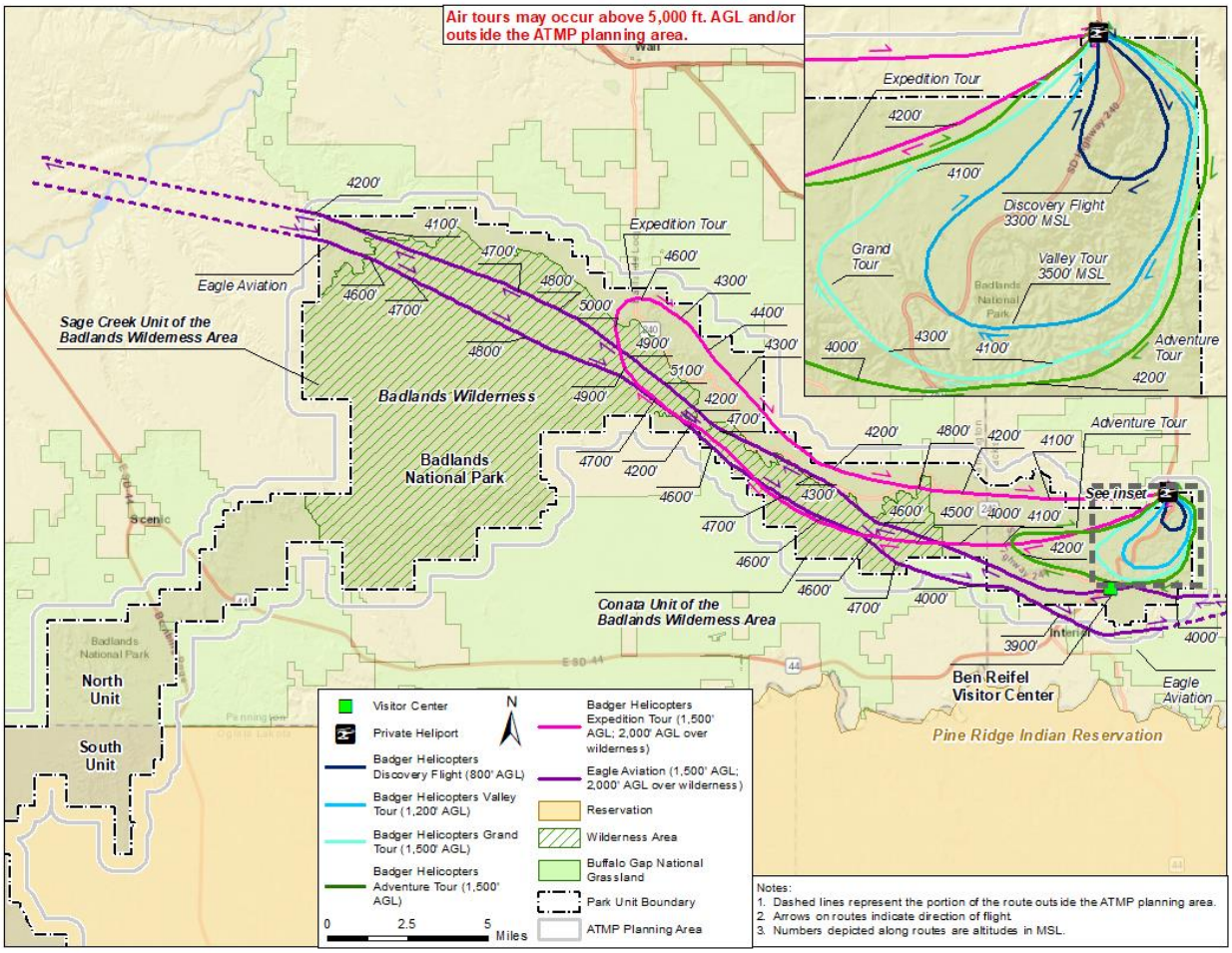

Figure 2. Alternative 1 (No Action Alternative).

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*.

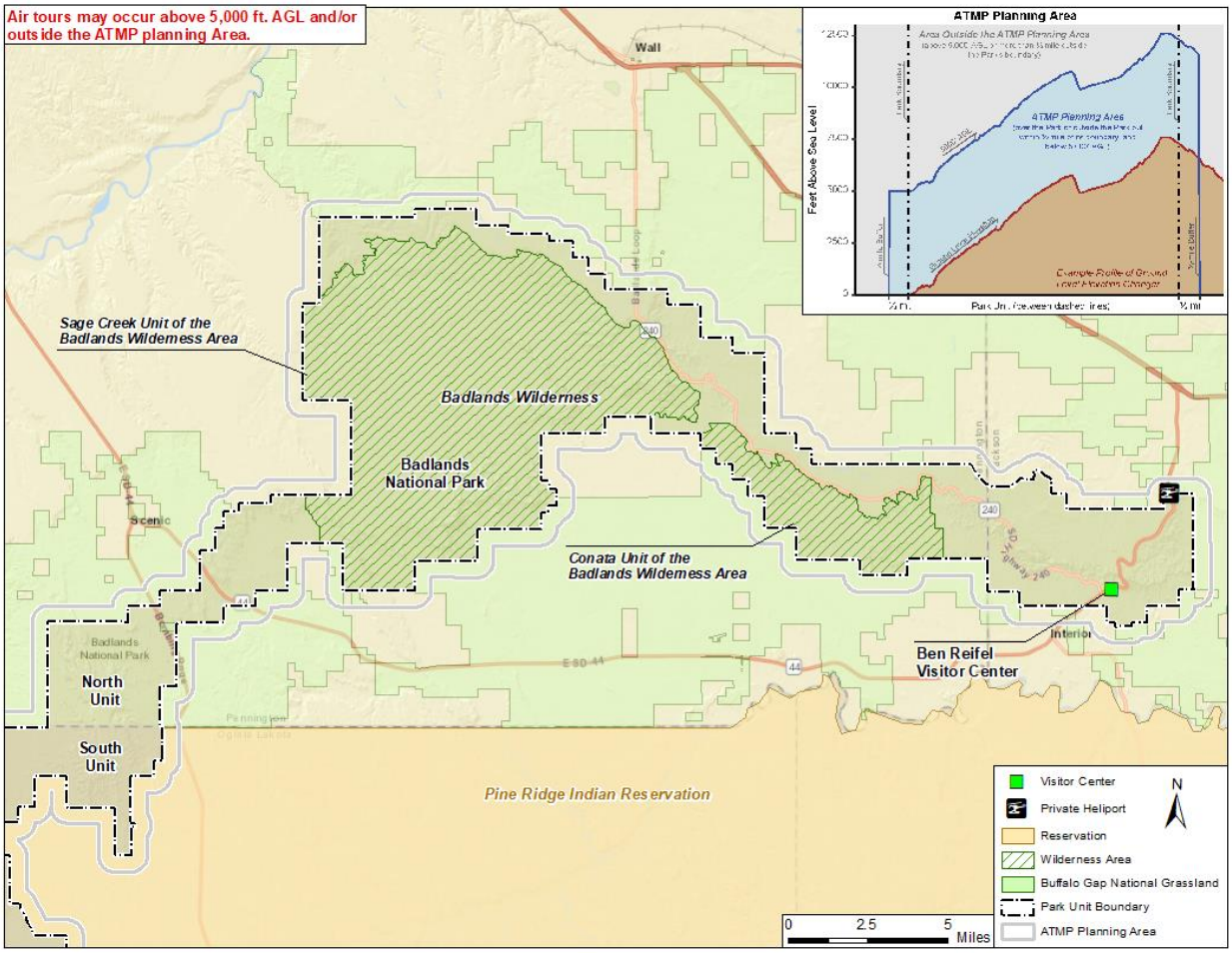

Figure 3. Alternative 2.

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
TOTAL	**1,425**	**1,425**	**5**

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.[9] 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.

[9] 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.

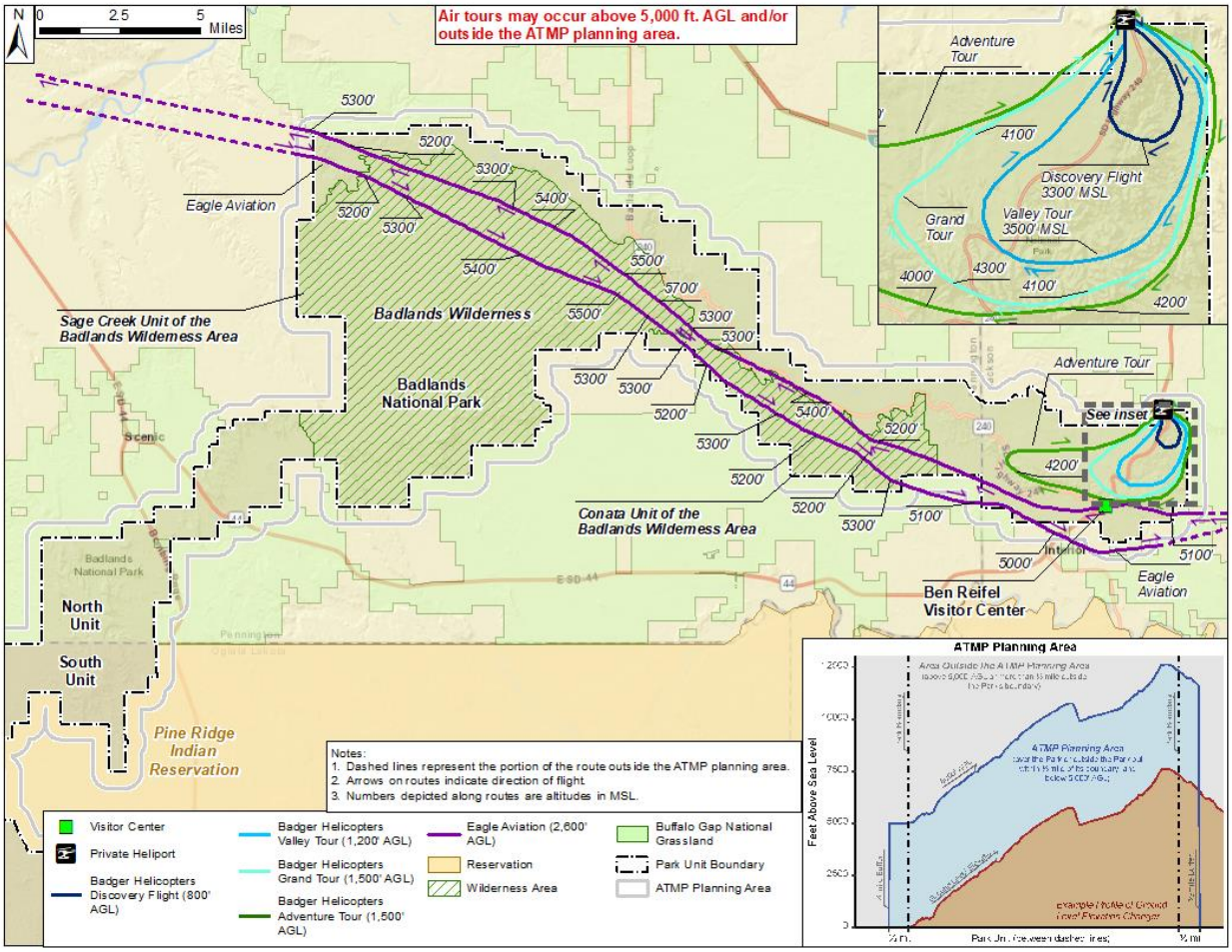

Figure 4. Alternatives 3 and 4.

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
TOTAL	**1,425**	**639**	**5**

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.

Alternative Attributes	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
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.	Badger Helicopters: 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 would occur and could change air tour allocations. The establishment of the ATMP would result in the termination of IOA for the Park and Pine Ridge Indian Reservation.	Badger Helicopters: 637 flights annually; BHT- 206B, BHT-47-G3B1, R-44-II, R-66-66 Eagle Aviation: Two flights annually; Cessna 172, Cessna 206 Competitive bidding would occur and could change air tour allocations. The establishment of the ATMP would result in the termination of IOA for the Park and Pine Ridge Indian Reservation.

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}) [10] 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})[11] (see Appendix F, *Noise Technical Analysis*). The result of this process is the Cumulative Existing Ambient (Figure 6).

[10] 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.

[11] 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.

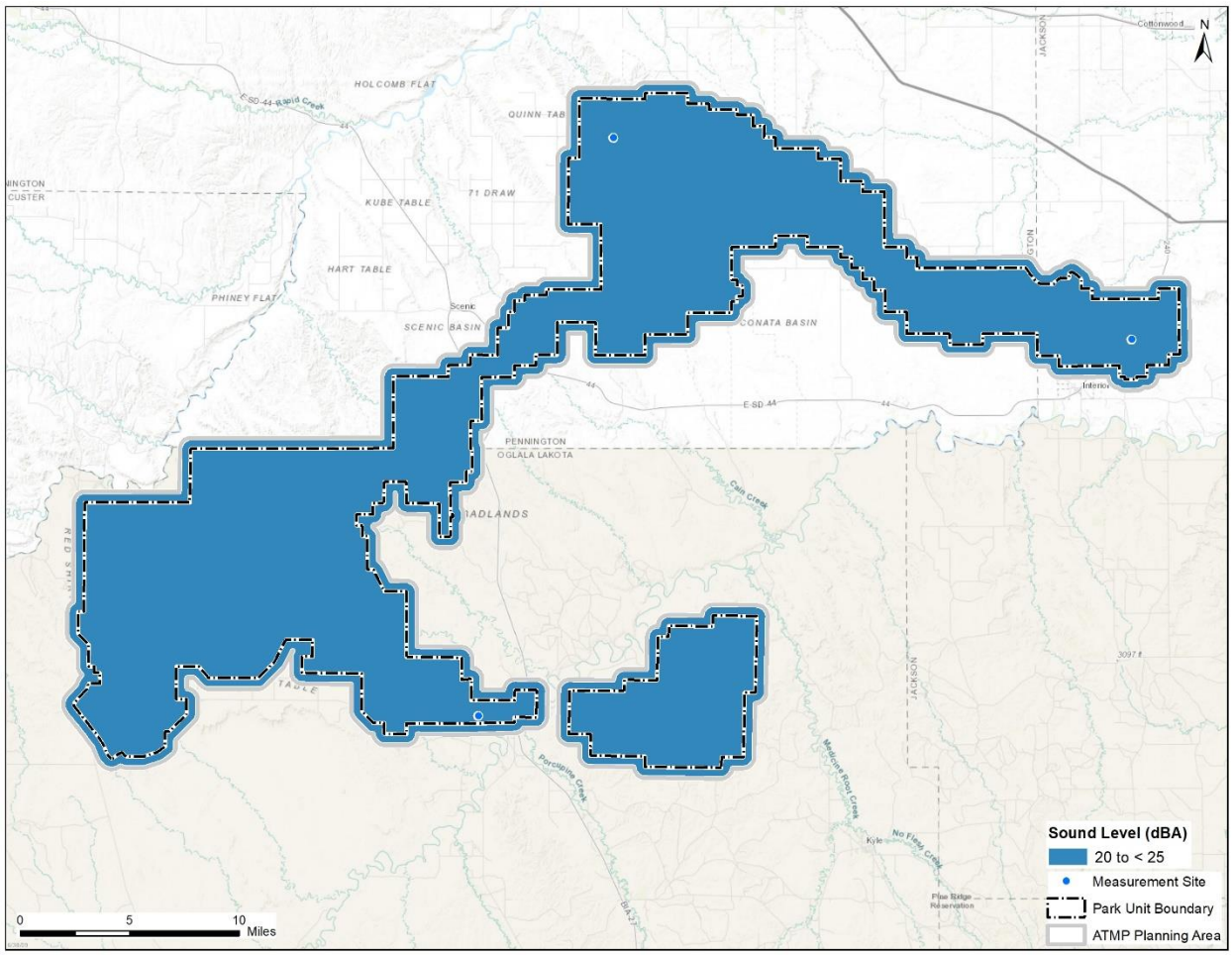

Figure 5. Ambient Map – Natural Ambient L_{50}.

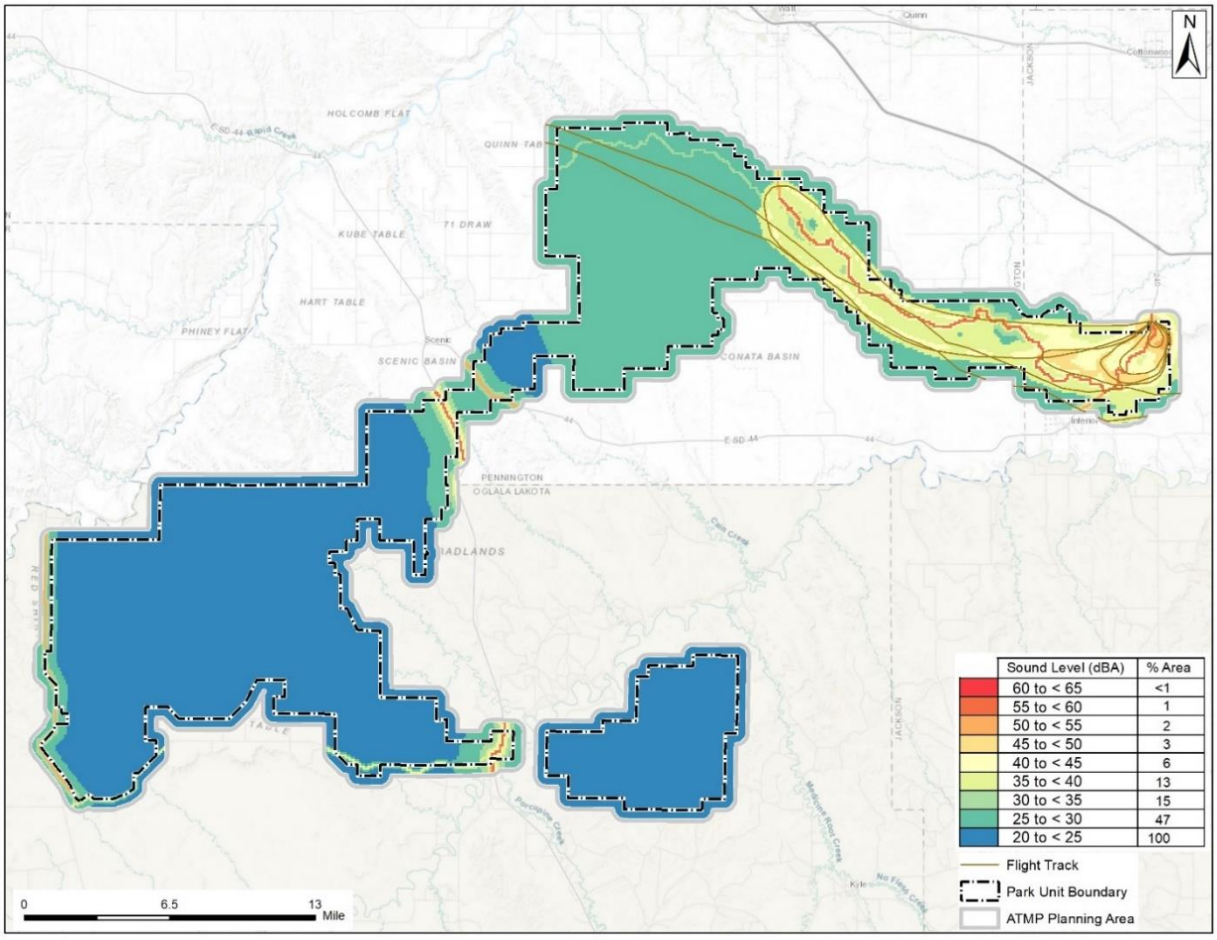

Figure 6. Cumulative Existing Ambient for Current Conditions.

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, $L_{Aeq, 12\ hr}$	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)	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. Note: Both $L_{Aeq, 12hr}$ and DNL characterize: • Increases in both the loudness and duration of noise events • The number of noise events during specific time period (12-hours for $L_{Aeq, 12hr}$ and 24-hours for DNL) If there are no nighttime events, then $L_{Aeq, 12hr}$ 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. 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.
Time Audible Natural Ambient	The total time (in minutes) that aircraft noise levels are audible to an attentive listener with normal hearing under natural ambient conditions. The natural ambient is the sound level exceeded 50 percent of the time L_{50}, 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.
Time Above 35 dBA	The amount of time (in minutes) that aircraft sound levels are above a given threshold (i.e., 35 dBA). In quiet settings, outdoor sound levels exceeding this level degrade experience in outdoor performance venues (American National Standards

	Institute (ANSI), 2007); blood pressure increases in sleeping humans (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[12] to

[12] 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.

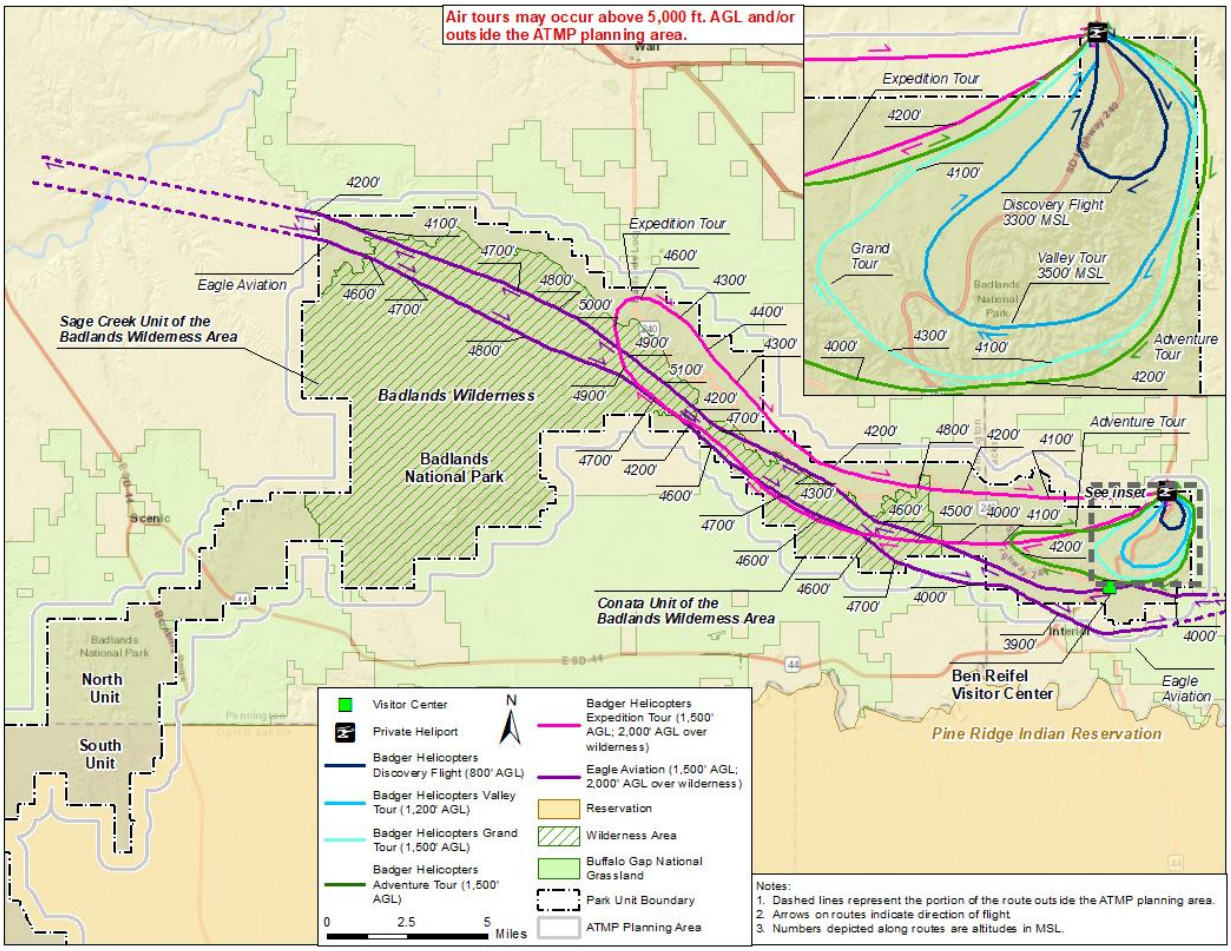

Figure 7. Air Tour Routes Modeled for the No Action Alternative.

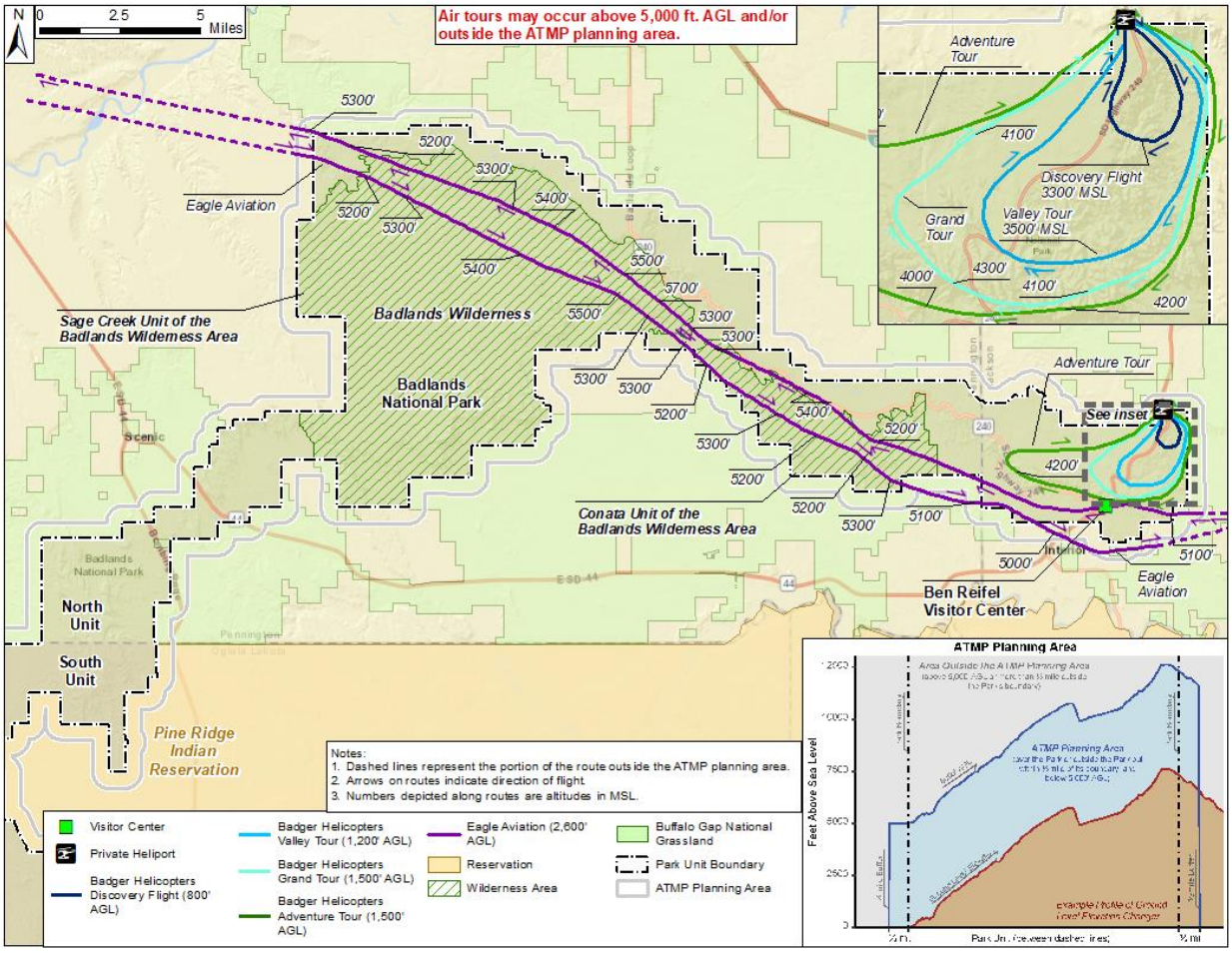

Figure 8. Air Tour Routes Modeled for Alternatives 3 and 4.

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[13] 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,

[13] 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
Discovery Flight	Robinson R-44	7	7	5
Valley Tour	Robinson R-44	1	1	0
Grand Tour	Robinson R-44	4	4	1
Adventure Tour	Robinson R-44	3	3	1
Expedition Tour	Robinson R-44	1	NA	NA
Eagle Aviation route	Cessna 206	1	1	1
	Total	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	• Maximum value <60 dBA • Most portions (89%) of the ATMP planning area would continue to be <35 dBA

Day-night Average Sound Level	• DNL would be 3 dB less than the 12-hour equivalent sound level, and therefore less than 60 dB
Time Audible Natural Ambient	• 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* • More than half (62%) of the ATMP planning area would experience audible air tour noise for more than 15 minutes a day (non-contiguous) • 94% of the ATMP planning area would continue to experience audible air tour noise
Time Above 35 dBA	• 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 • 35% of the ATMP planning area would experience air tour noise above 35 dBA • 65% of the ATMP planning area would not experience air tour noise above 35 dBA
Time Above 52 dBA	• 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). • At the Ben Reifel Visitor Center, noise above 52 dBA would occur for less than 5.7 minutes a day
Maximum Sound Level	• 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 (*Noise Technical Analysis,* Table 6).

* 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.

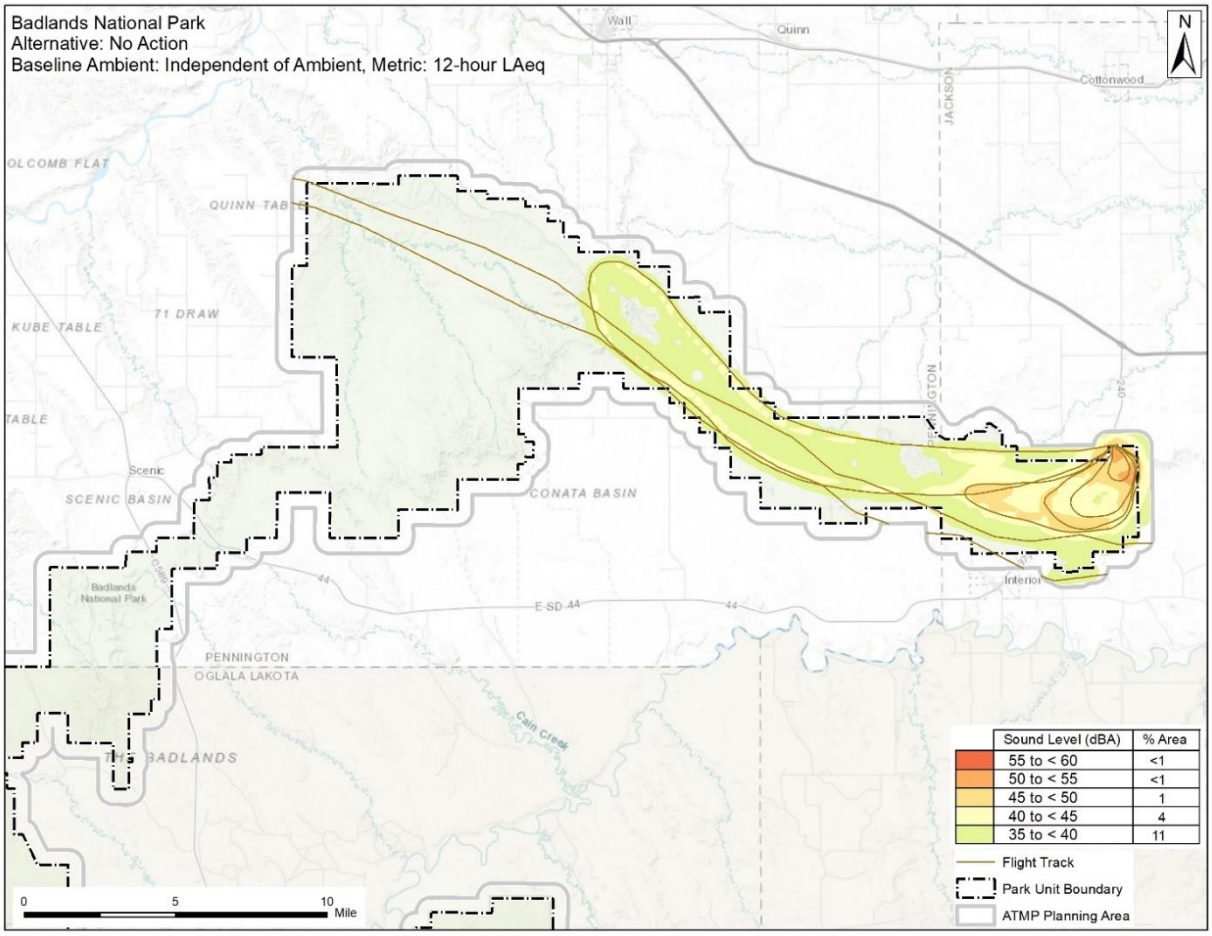

Figure 9. 12-hour Equivalent Sound Level ($L_{Aeq,12h}$) Map for Alternative 1 (No Action Alternative).

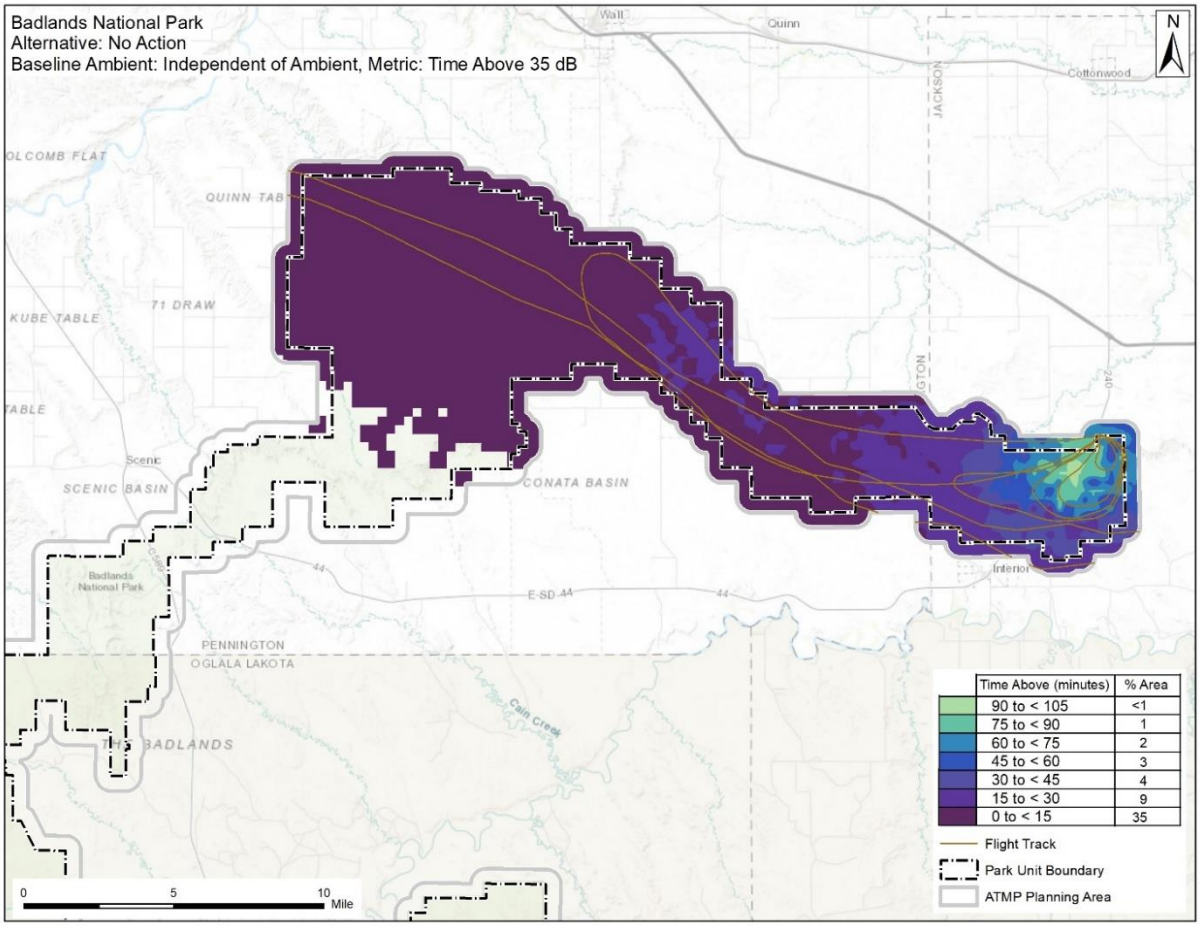

Figure 10. Time Above 35 dBA for Alternative 1 (No Action Alternative).

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.

Metric	**Alternative 3**
12-hour Equivalent Sound Level	• Maximum value <60 dBA • Most portions (96%) of the ATMP planning area would be <35 dBA
Day-night Average Sound Level	• DNL would be 3 dB less than the 12-hour equivalent sound level, and therefore less than 60 dB
Time Audible Natural Ambient	• 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* • More than half (65%) of the ATMP planning area would experience audible air tour noise for more than 15 minutes a day (non-contiguous)
Time Above 35 dBA	• 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 • 36% of the ATMP planning area would experience noise above 35 dBA
Time Above 52 dBA	• 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).

	• At the Ben Reifel Visitor Center, noise above 52 dBA would occur for less than 5.4 minutes a day
Maximum Sound Level	• 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 (*Noise Technical Analysis,* Table 7).

* 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.

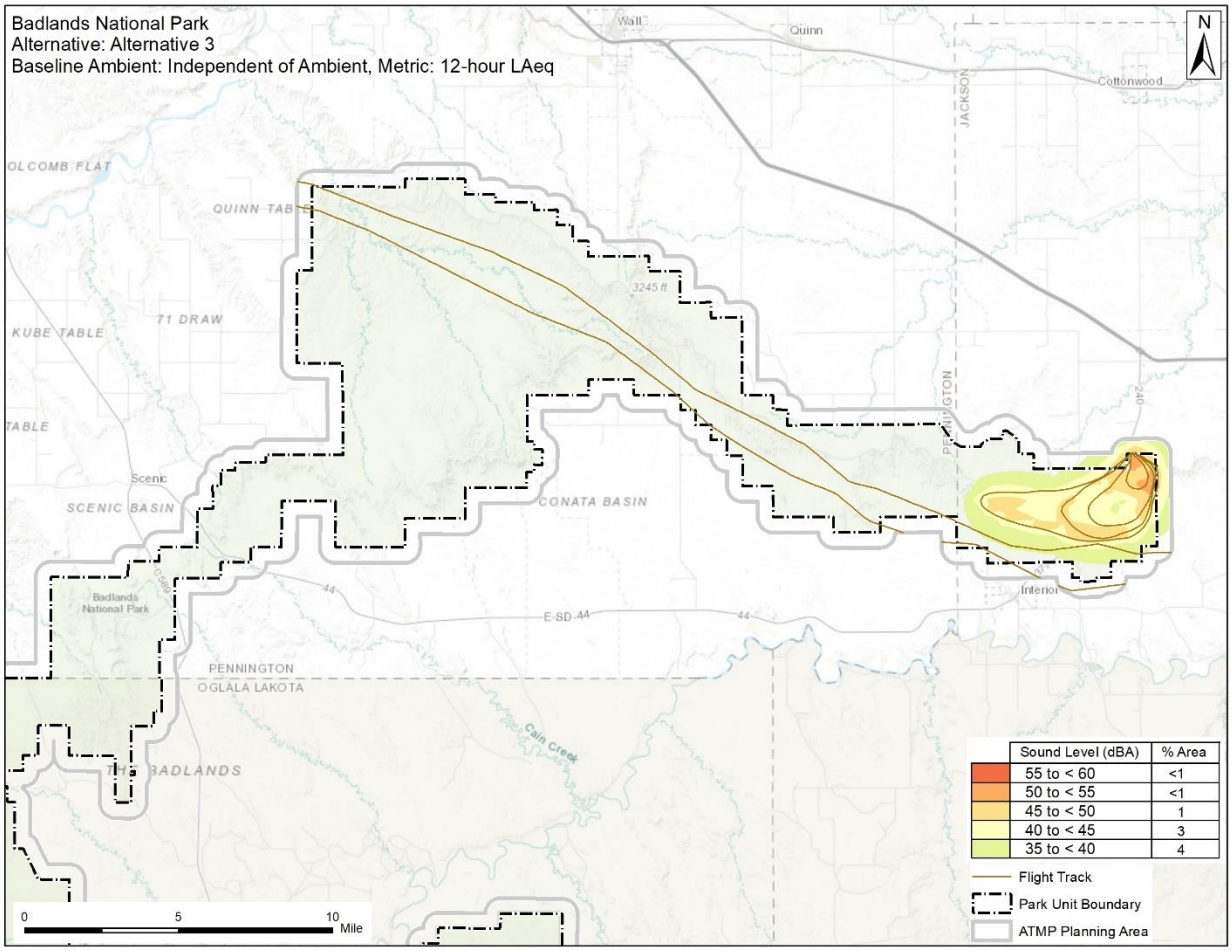

Figure 11. 12-hour Equivalent Sound Level ($L_{Aeq,12h}$) Map for Alternative 3.

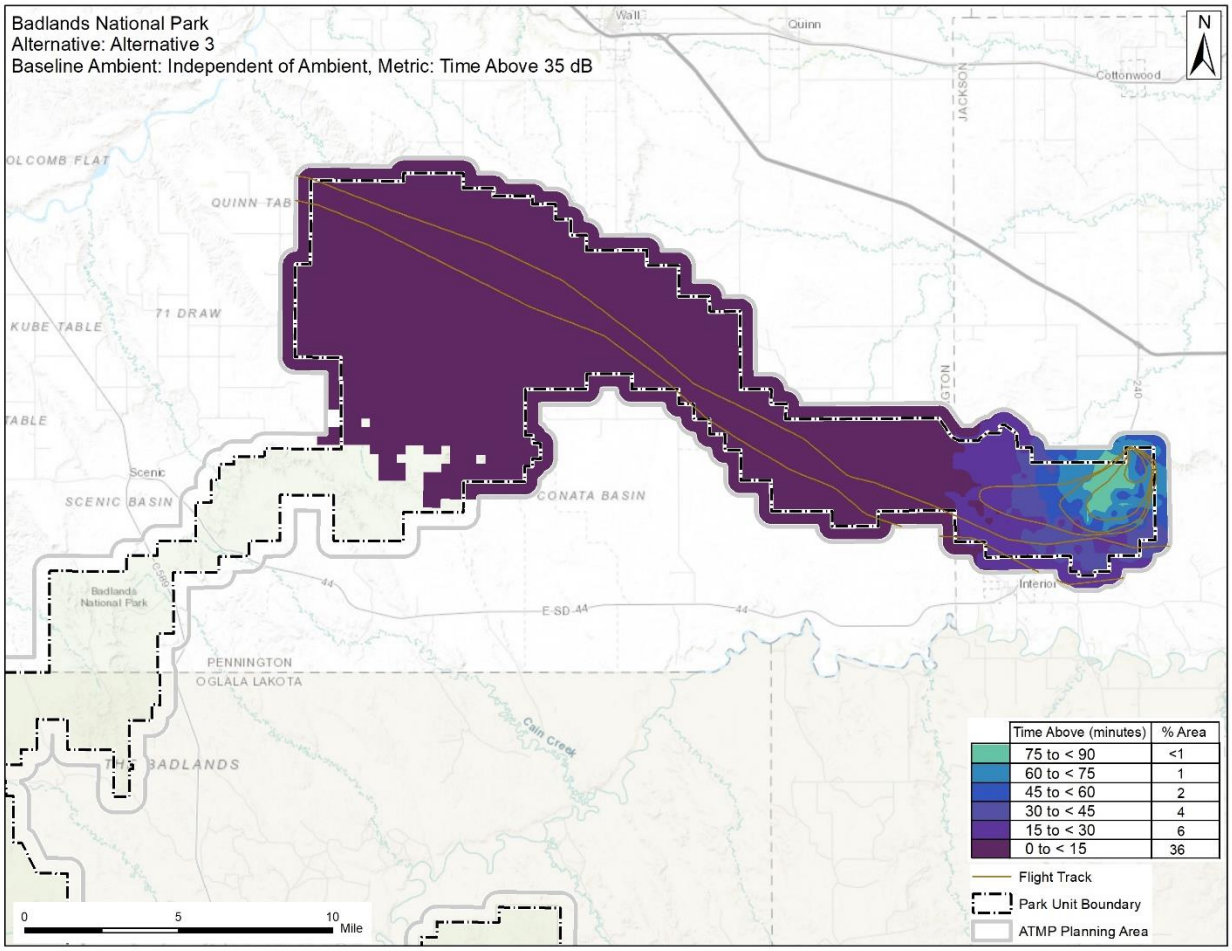

Figure 12. Time Above 35 dBA for Alternative 3.

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

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

- 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 $10*\log_{10}(12/n)$ 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 $10*\log_{10}(12/8) = 1.8$ 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, No*ise 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.

Metric	**Alternative 4**
12-hour Equivalent Sound Level	• Maximum value <45 dBA • Most portions (98%) of the ATMP planning area would be <35 dBA
Day-night Average Sound Level	• DNL would be 3 dB less than the 12-hour equivalent sound level, and therefore less than 45 dB

Time Audible Natural Ambient	• 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* • 78% of the ATMP planning area would experience audible air tour noise on days when air tours occurred
Time Above 35 dBA	• 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 • 36% of the ATMP planning area would experience noise above 35 dBA
Time Above 52 dBA	• 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). • At the Ben Reifel Visitor Center, noise above 52 dBA would occur for less than 2.9 minutes a day
Maximum Sound Level	• 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).

* 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.

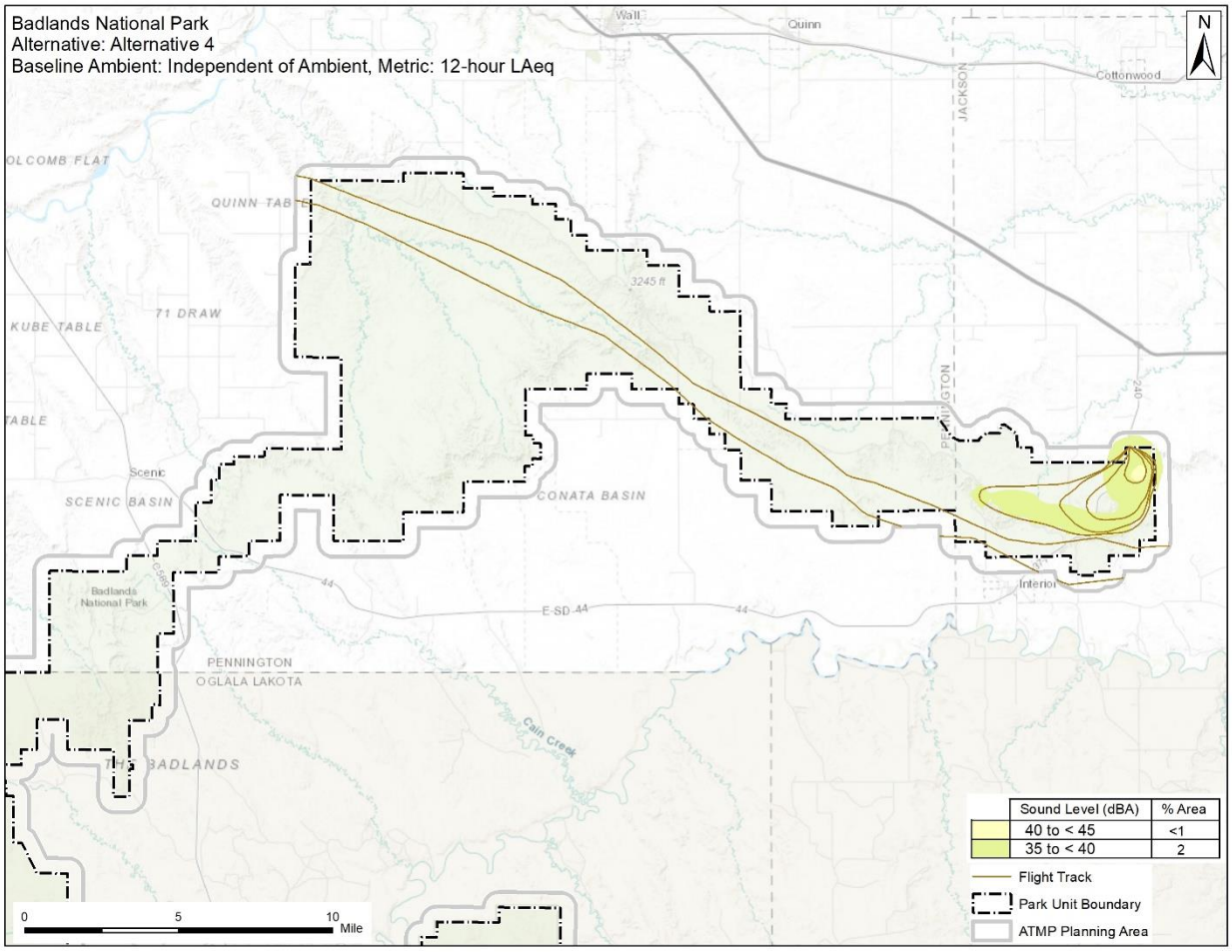

Figure 13. 12-hour Equivalent Sound Level ($L_{Aeq,12h}$) Map for Alternative 4.

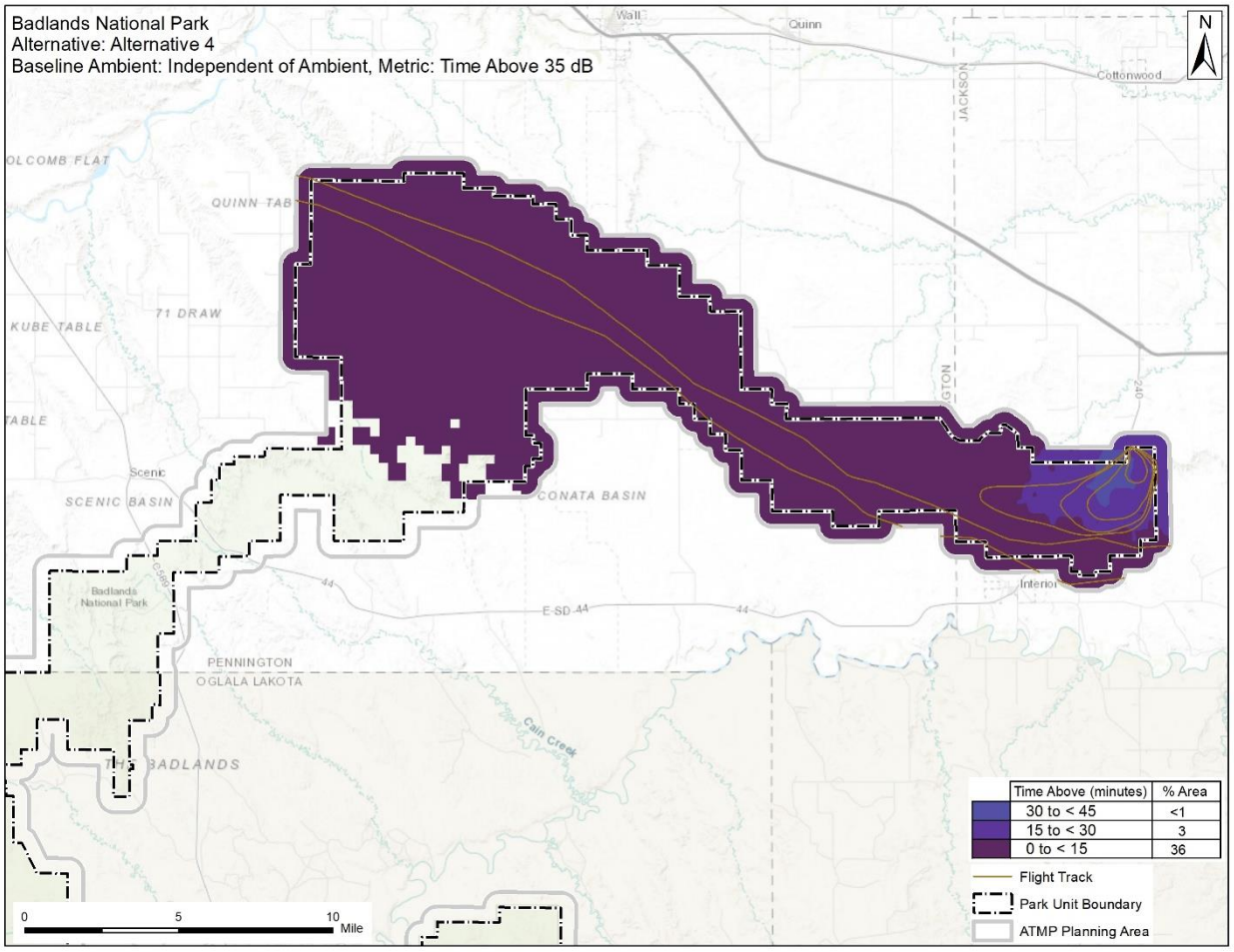

Figure 14. Time Above 35 dBA for Alternative 4.

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

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

- 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 $10*\log_{10}(12/n)$ 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 $10*\log_{10}(12/8) = 1.8$ 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_2), water vapor (H_2O), methane (CH_4), nitrous oxide (N_2O), and ozone (O_3). The EPA data indicates that commercial aviation contributed to 6.6% of CO_2 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_2 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.

Criteria Pollutant	**Total Annual Emissions (TPY)**
Carbon monoxide (CO)	28.9
Lead (Pb)	0.014
Nitrogen dioxide (NO_2)	0.005
Particulate matter: aerodynamic diameter ≤ 2.5 µm ($PM_{2.5}$)	0.002
Particulate matter: aerodynamic diameter ≤ 10 µm (PM_{10})	0.002
Sulfur dioxide (SO_2)	0.023

Total annual GHG emissions for the No Action Alternative are modeled to be 55.2 metric tons (MT) of CO_2. 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 12and 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.

Criteria Pollutant	**Change in TPY as Compared to the No Action Alternative***
Carbon monoxide (CO)	-6.69
Lead (Pb)	-0.003
Nitrogen dioxide (NO_2)	-0.001

Particulate matter: aerodynamic diameter ≤ 2.5 µm ($PM_{2.5}$)	<-0.001
Particulate matter: aerodynamic diameter ≤ 10 µm (PM_{10})	<-0.001
Sulfur dioxide (SO_2)	-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_2 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.

Criteria Pollutant	**Change in TPY as Compared to No Action Alternative***
Carbon monoxide (CO)	-21.2
Lead (Pb)	-0.010
Nitrogen dioxide (NO_2)	-0.003

Particulate matter: aerodynamic diameter ≤ 2.5 µm ($PM_{2.5}$)	-0.001
Particulate matter: aerodynamic diameter ≤ 10 µm (PM_{10})	-0.001
Sulfur dioxide (SO_2)	-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_2 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 (*Zenaida 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 (USWFS, 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 aesticum*), 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[14], which analyzed the effects of revised incidental take permit regulations. In 2022, USFWS published a proposed rule[15] 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

[14] https://www.fws.gov/media/final-programmatic-environmental-impact-statement-eagle-rule-revision

[15] 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).

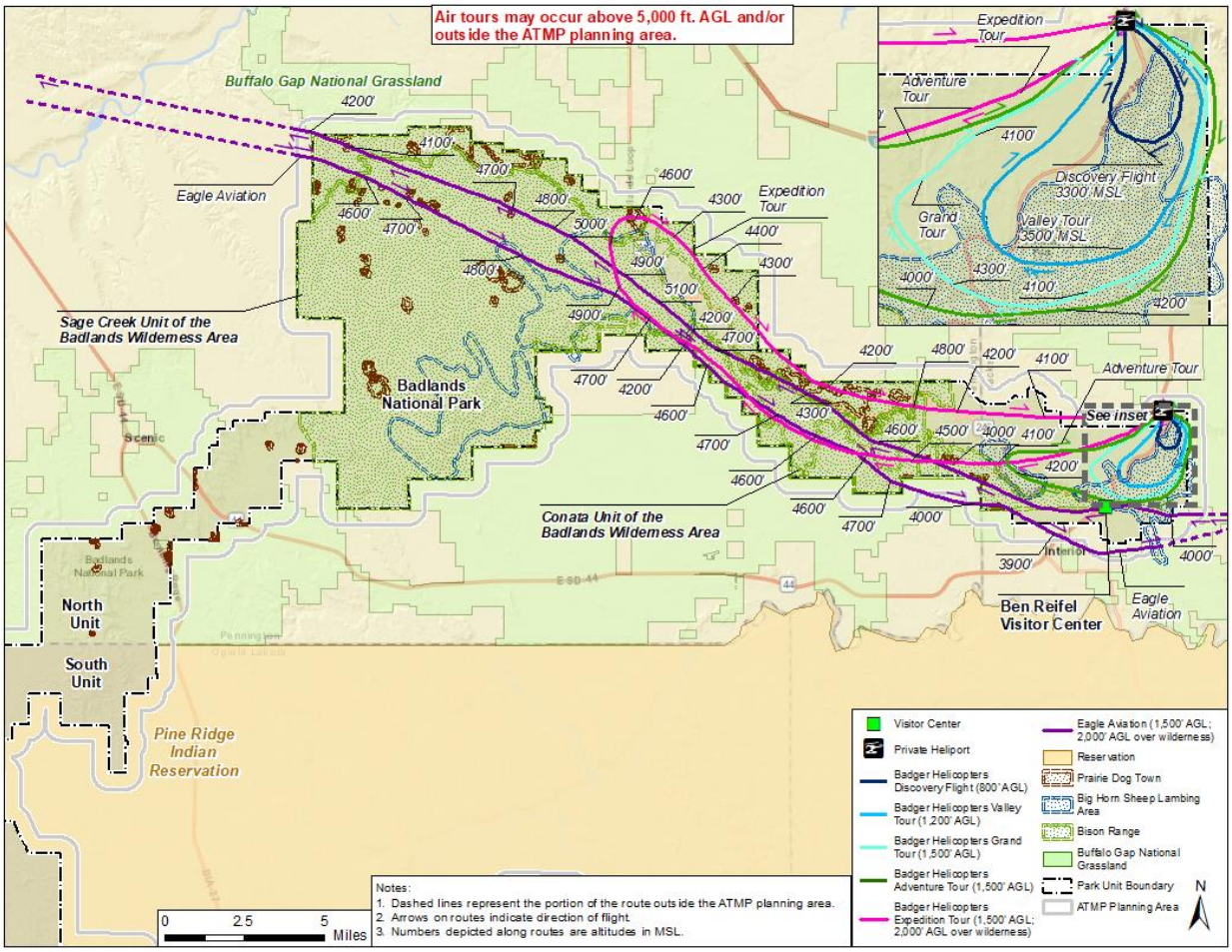

Figure 15. Affected Environment for Biological Resources.

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.

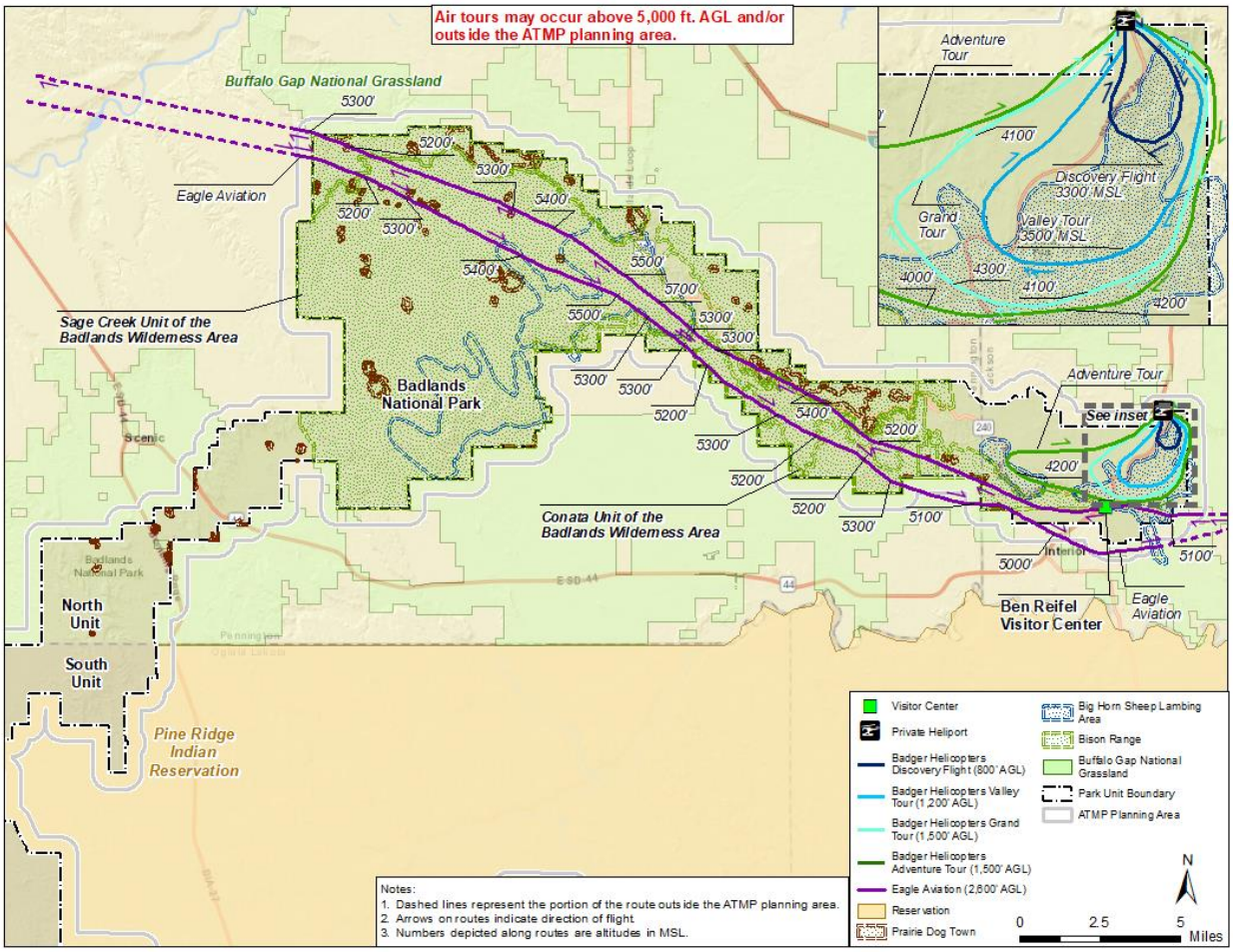

Figure 16. Biological Resources Environmental Consequences for Alternatives 3 and 4.

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.

Property Name	Property Type	Eligibility Status
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*.

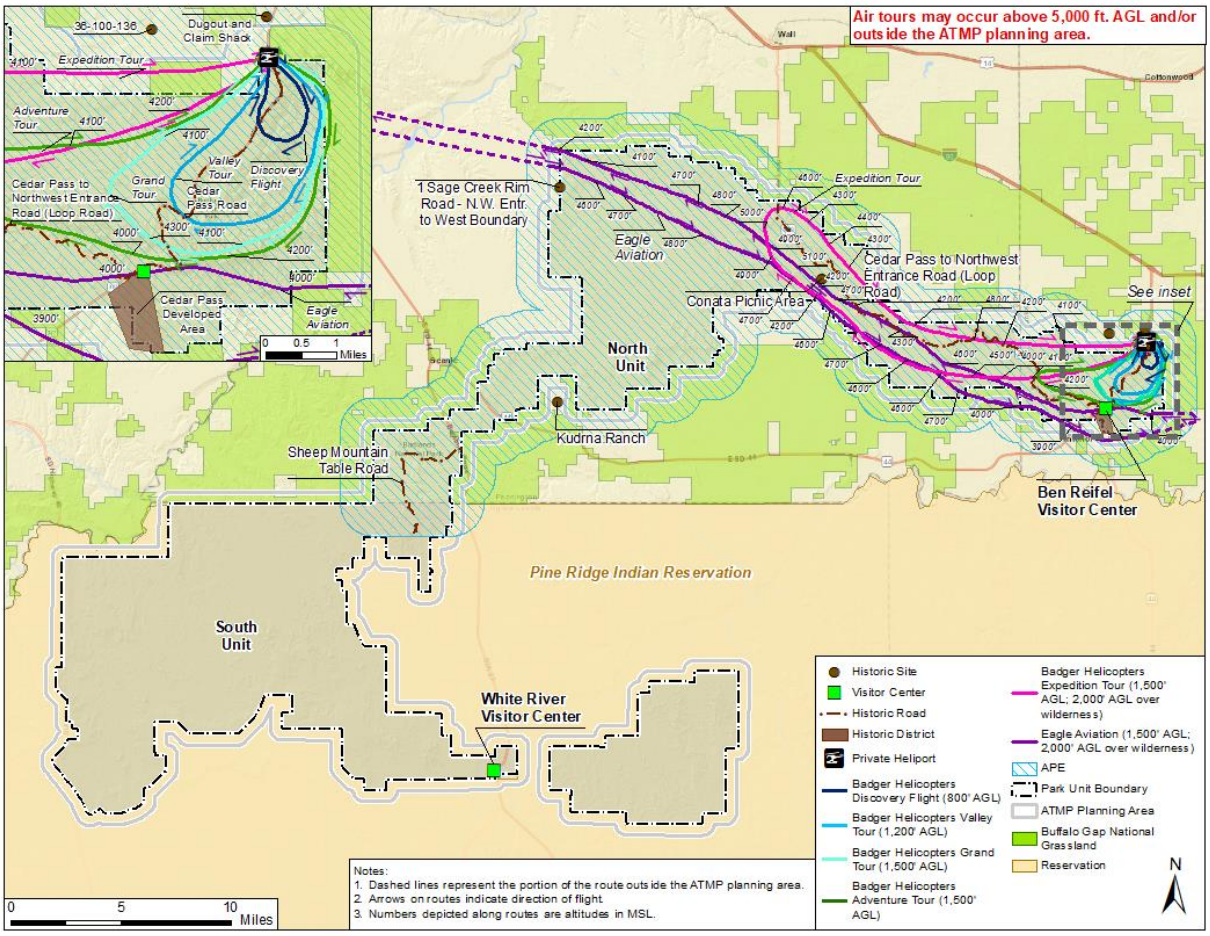

Figure 17. Affected Environment for Cultural Resources.

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.

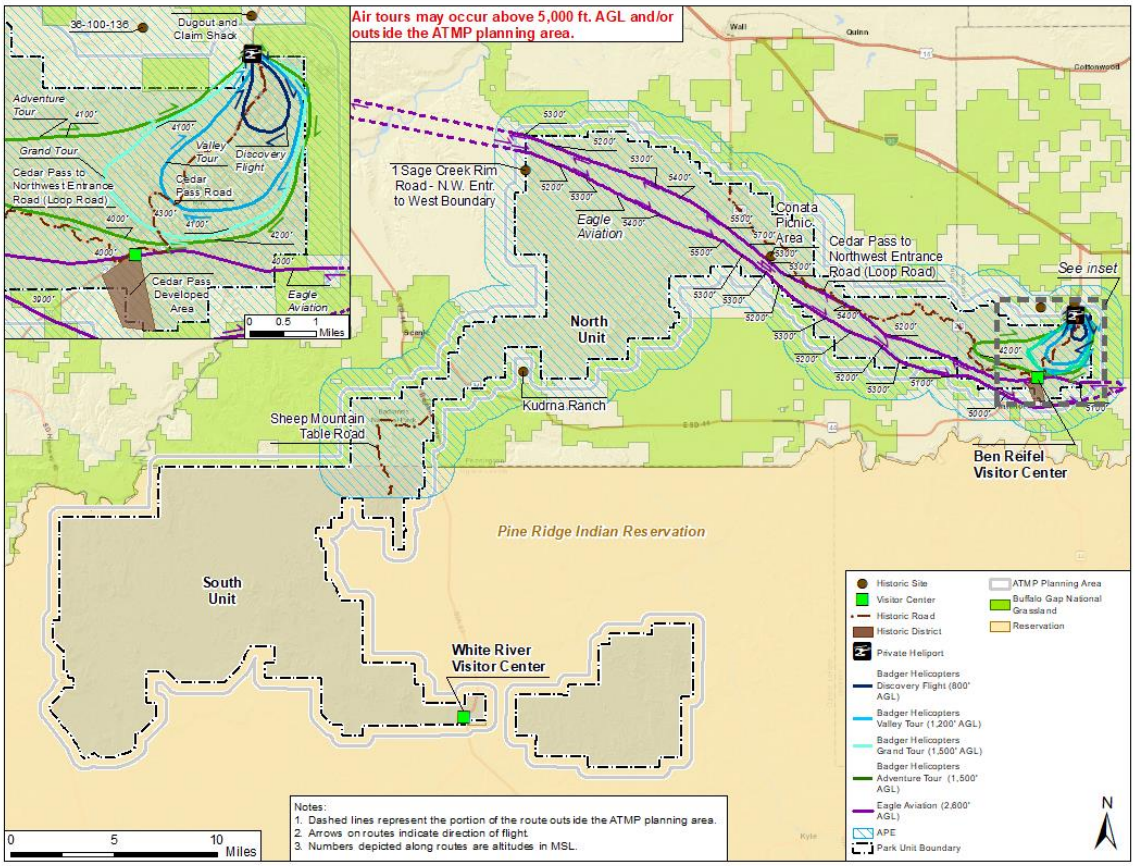

Figure 18. Cultural Resources Environmental Consequences for Alternatives 3 and 4.

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[16]:

- **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.

[16] 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 untrammeled 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.

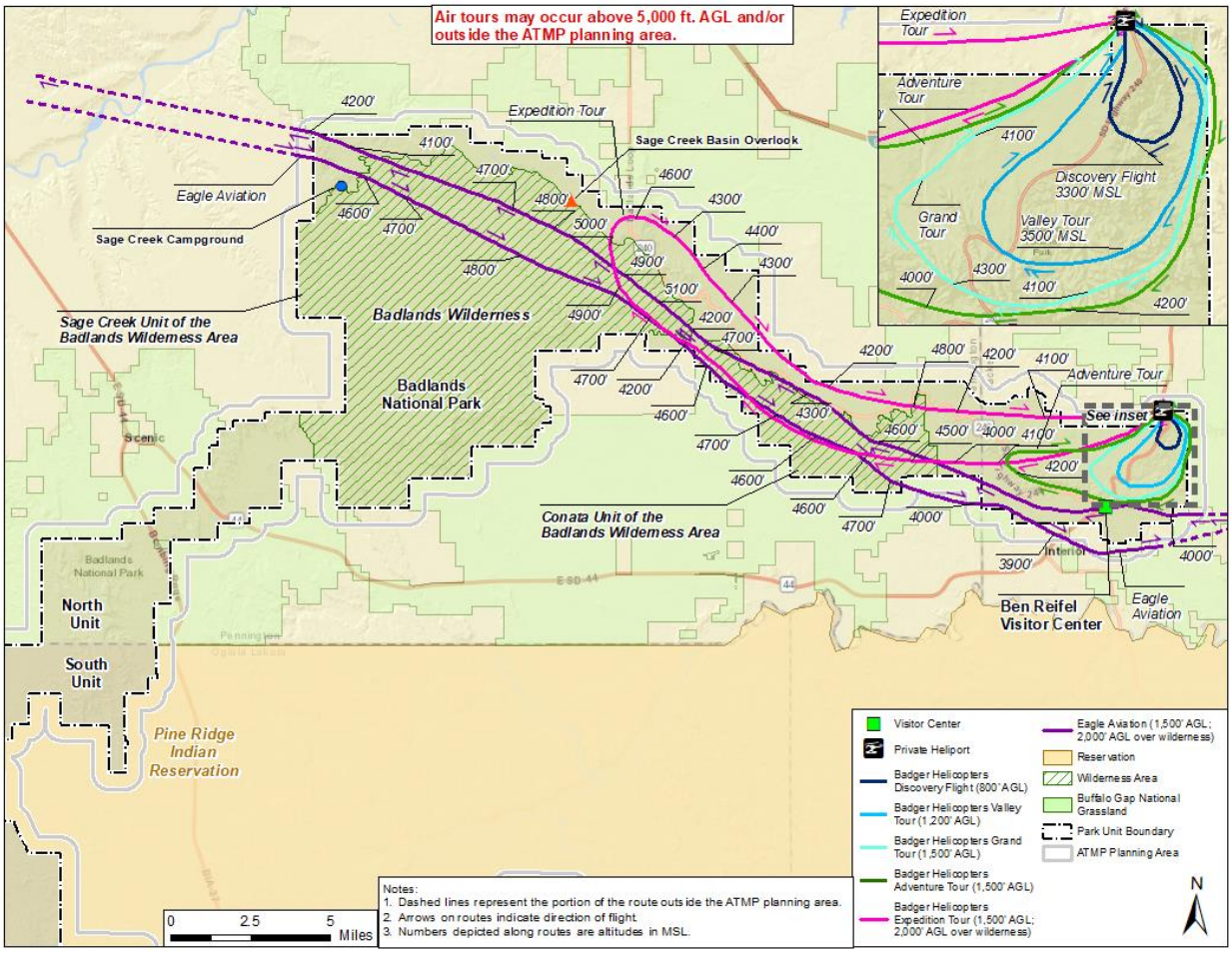

Figure 19. Affected Environment for Wilderness.

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.

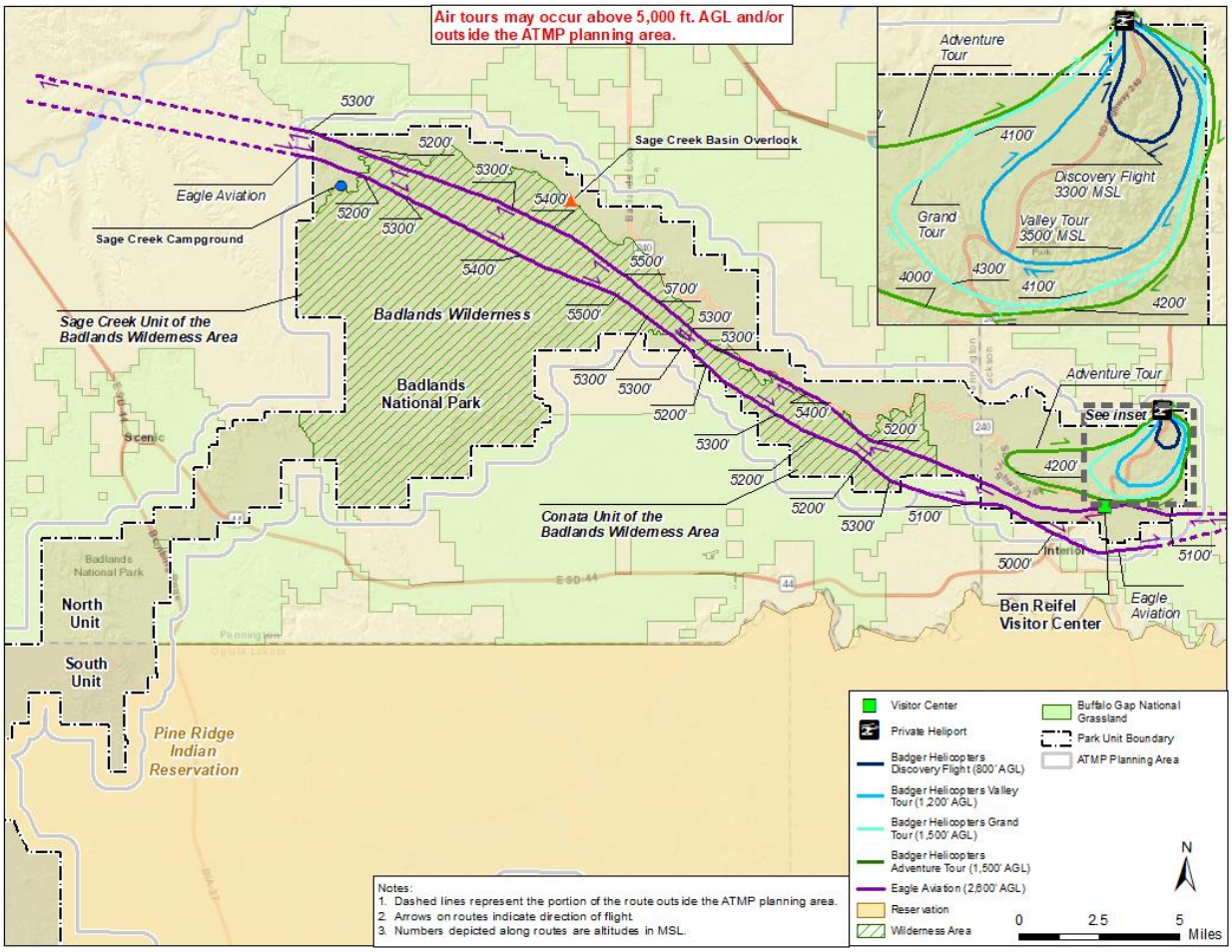

Figure 20. Wilderness Environmental Consequences for Alternatives 3 and 4.

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 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.[17] 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).

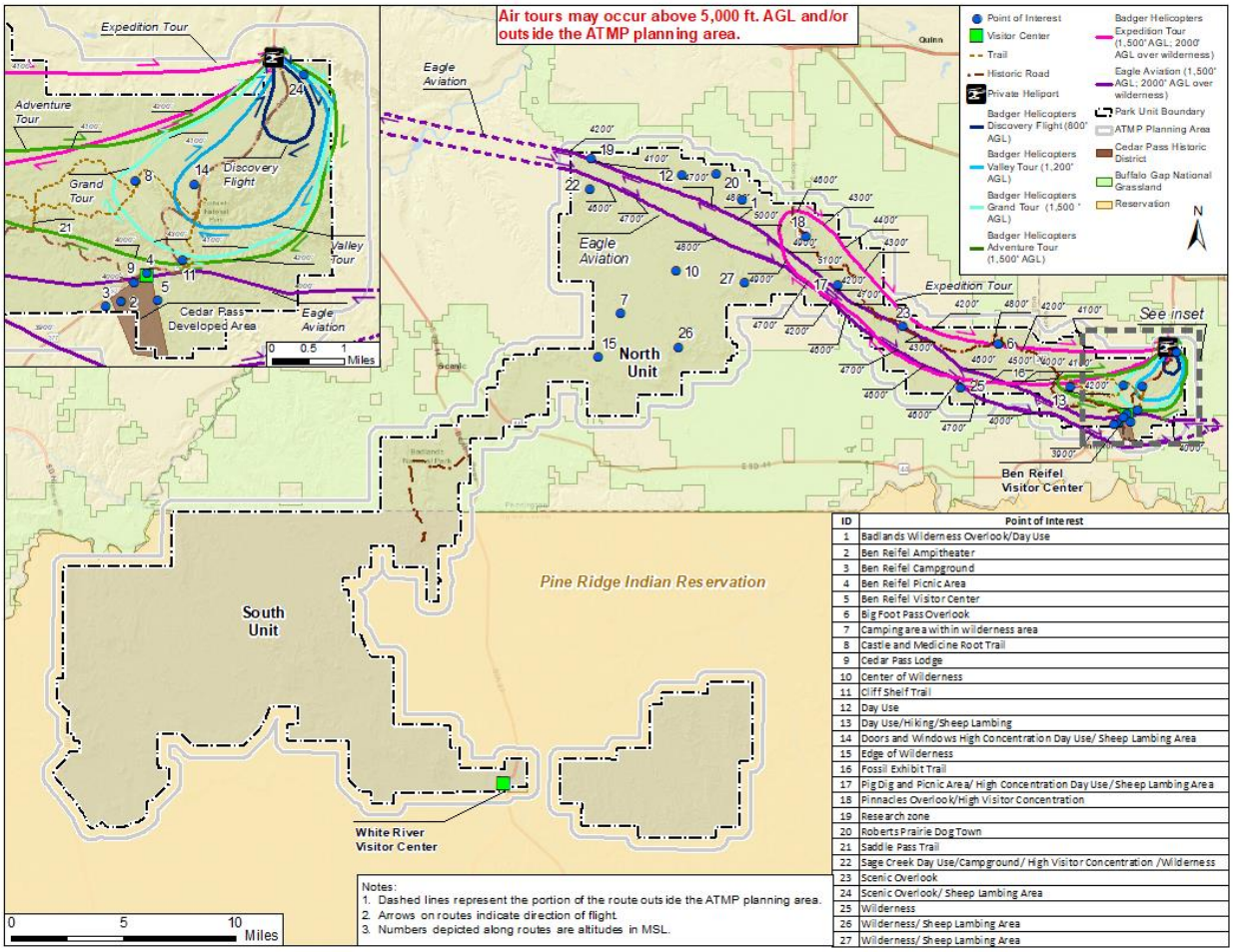

Figure 21. Affected Environment for Visitor Use and Experience.

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

[17] 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.

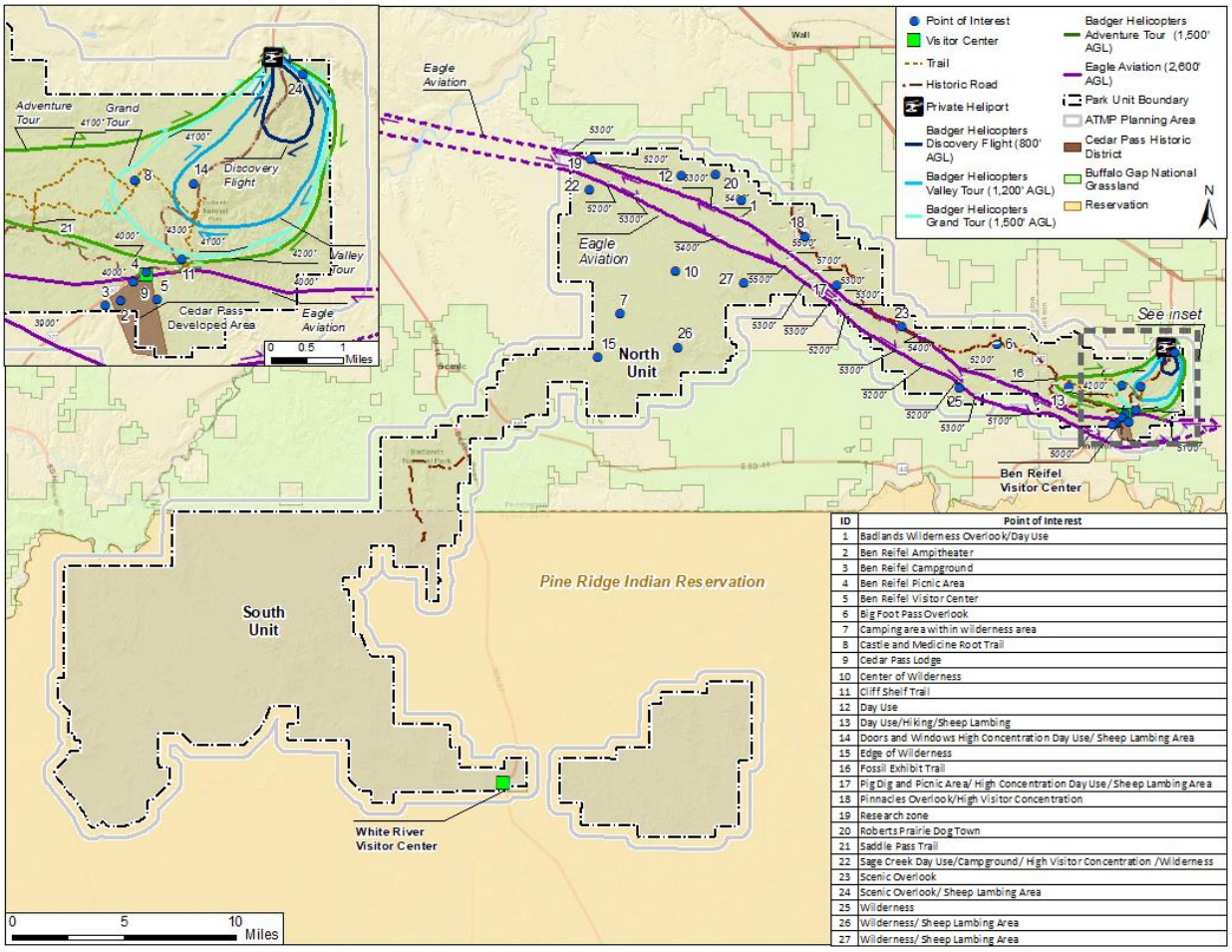

Figure 22. Visitor Use and Experience Environmental Consequences for Alternatives 3 and 4.

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.

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

Source: ACS 2016-2020.

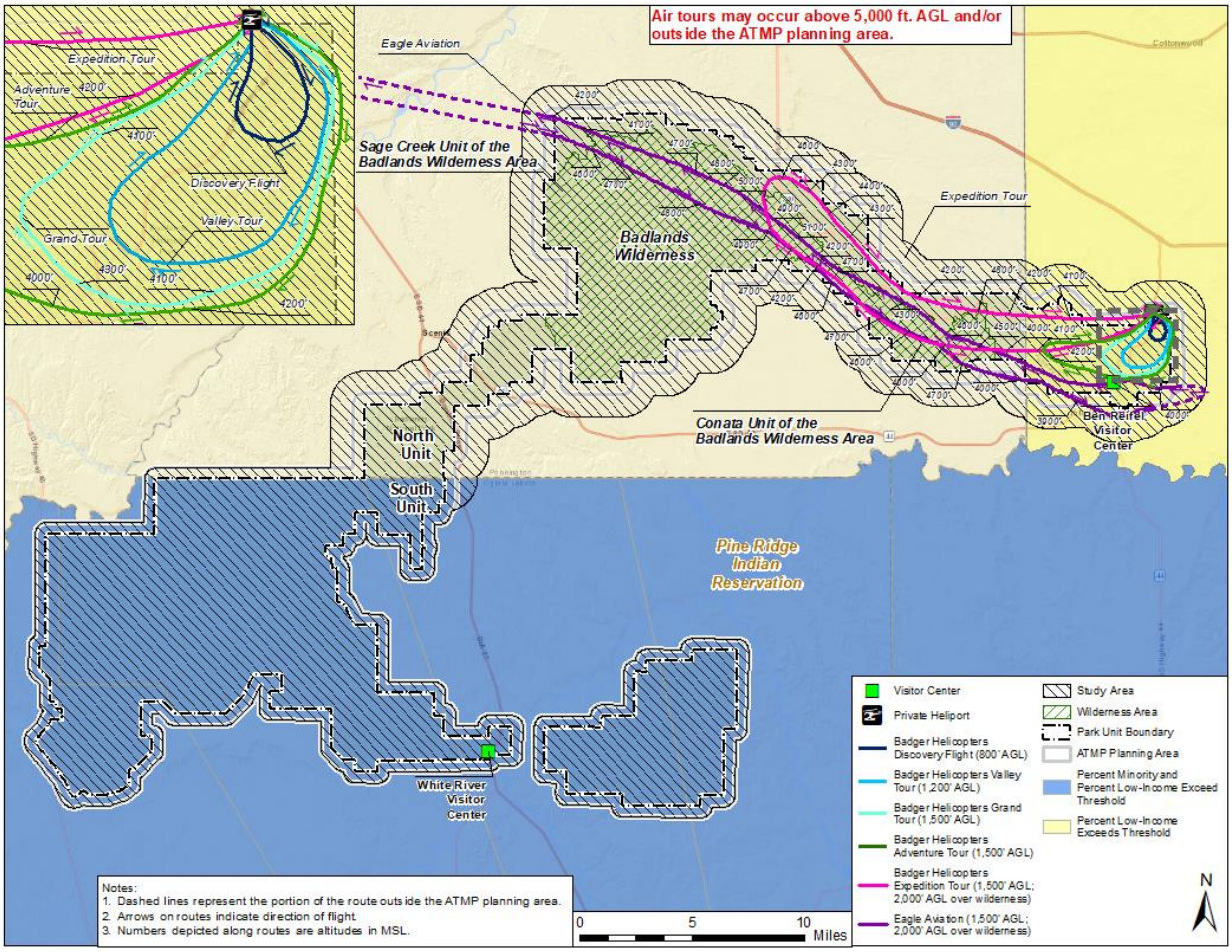

Figure 23. Affected Environment for Environmental Justice.

Socioeconomics

This section describes the socioeconomics 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 socioeconomics 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.[18] 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 ConsequencesFOR 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_2.

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.

[18] 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 Sections3.1.2, 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_2.

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.

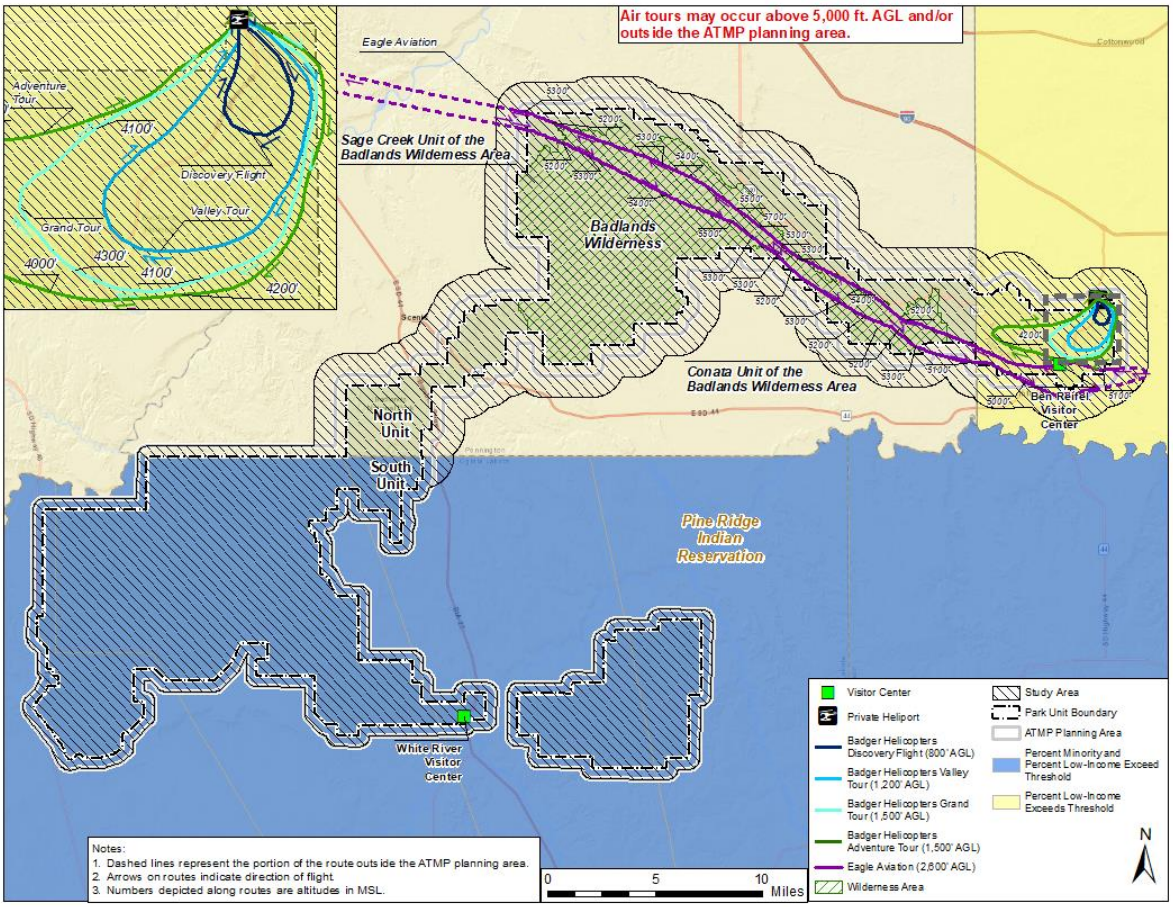

Figure 24. Environmental Justice Environmental Consequences for Alternatives 3 and 4.

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_2 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.

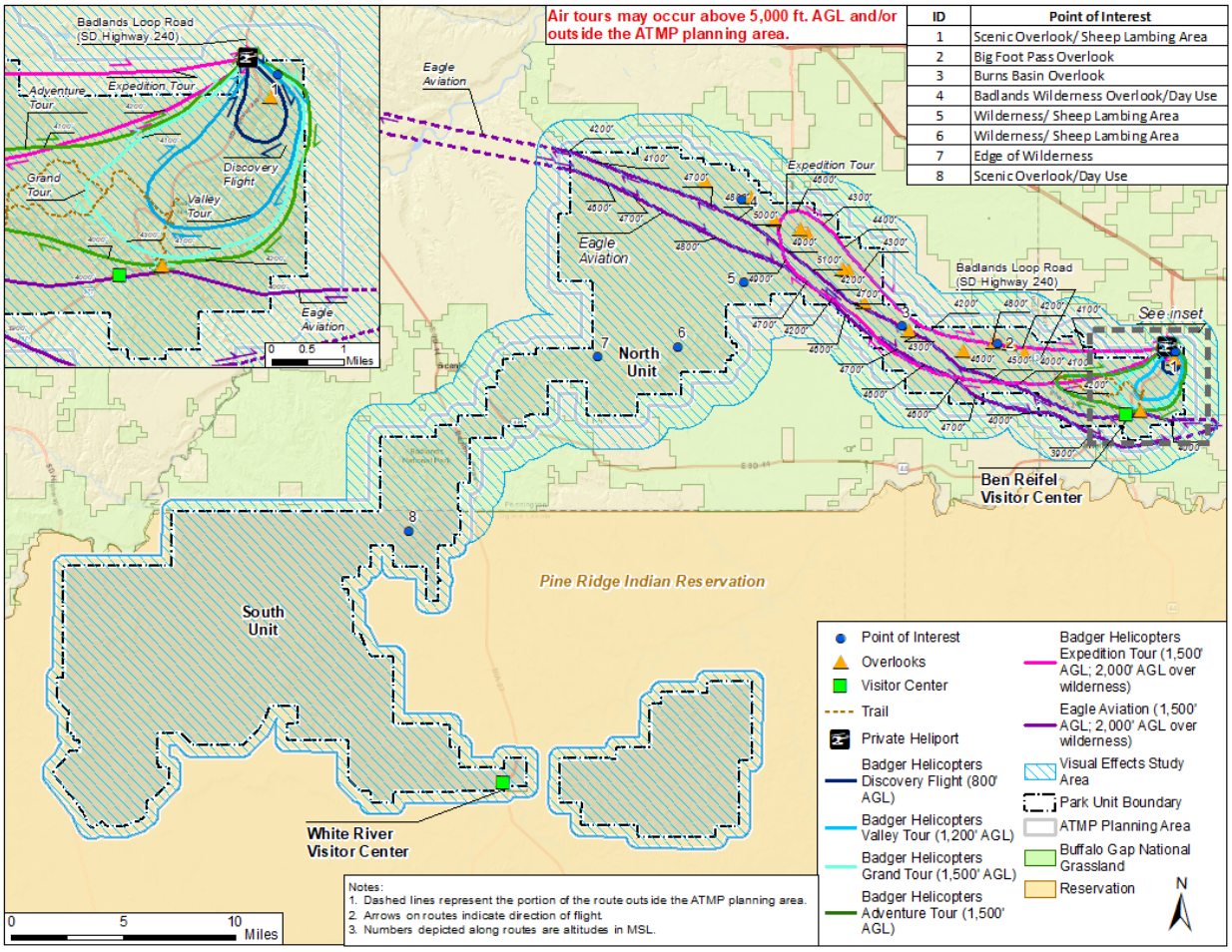

Figure 25. Affected Environment for Visual Effects.

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 overflown 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.

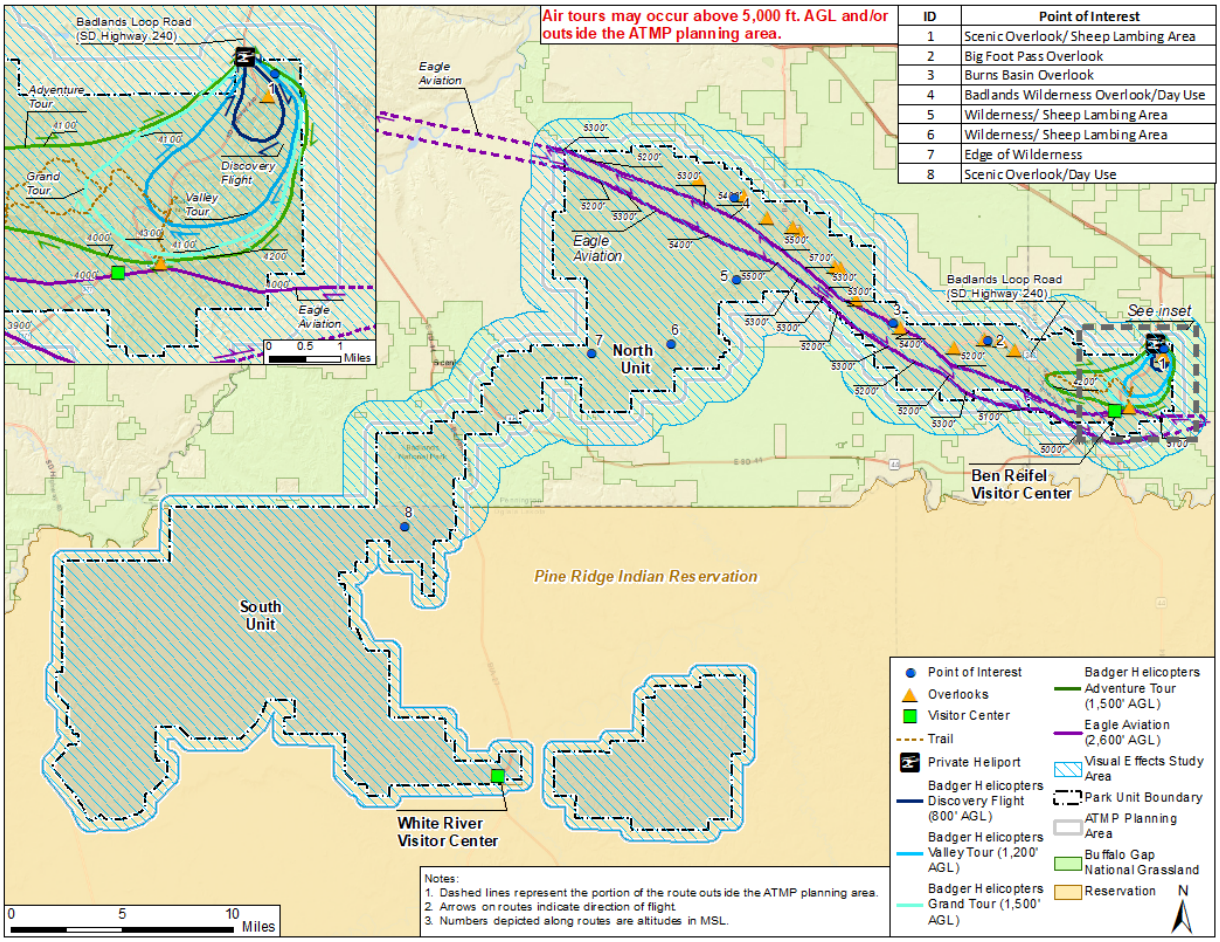

Figure 26. Visual Effects Environmental Consequences for Alternatives 3 and 4.

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.[19] 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

[19] 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 quality 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.[20] 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.

Property Name	**Property Type**
Badlands National Park	National Park
Buffalo Gap National Grassland	National Grassland

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

[20] 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.

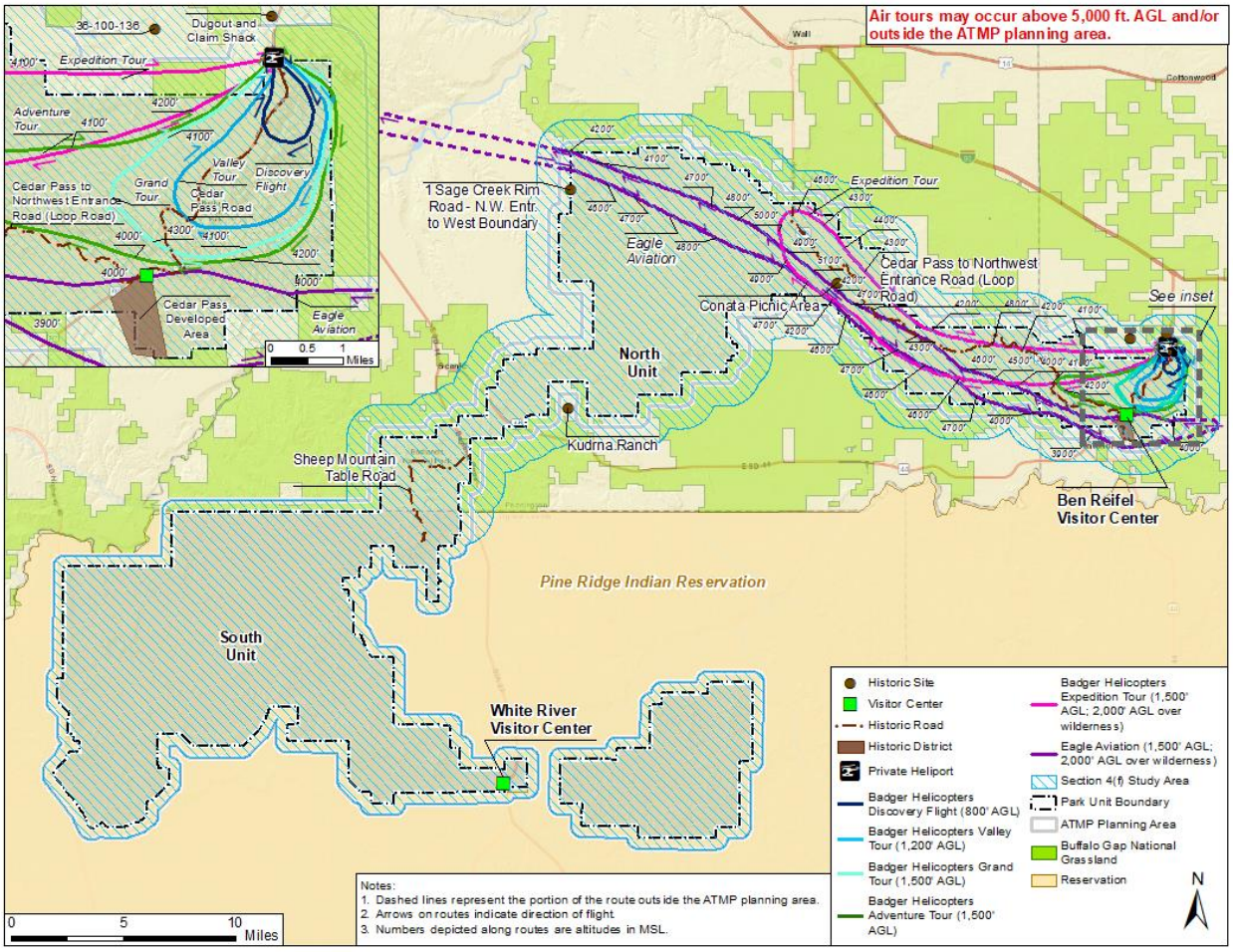

Figure 27. Affected Environment for Section 4(f) Properties.

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[21] 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).

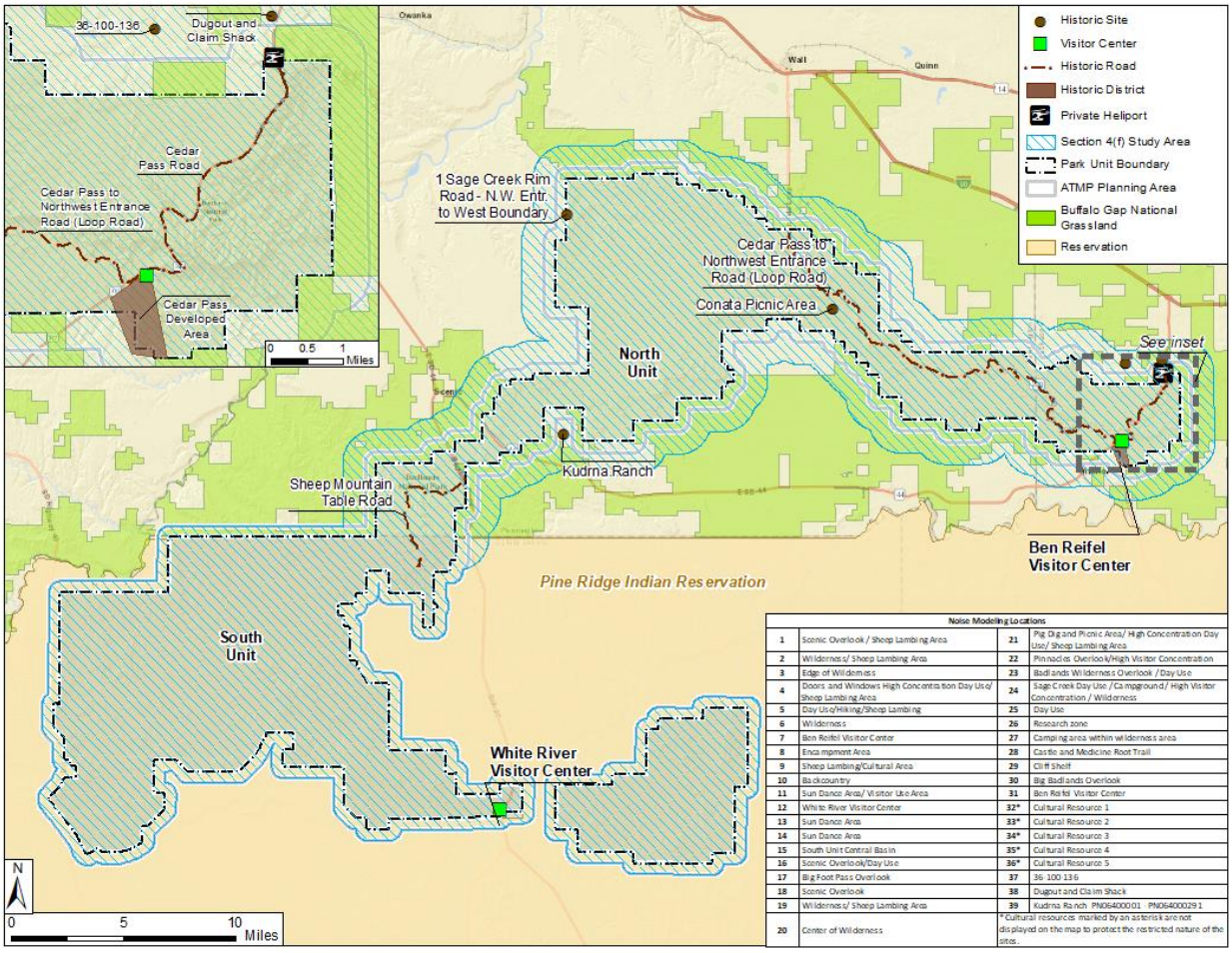

Figure 28. Section 4(f) Environmental Consequences for Alternative 2.

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.

[21] 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).

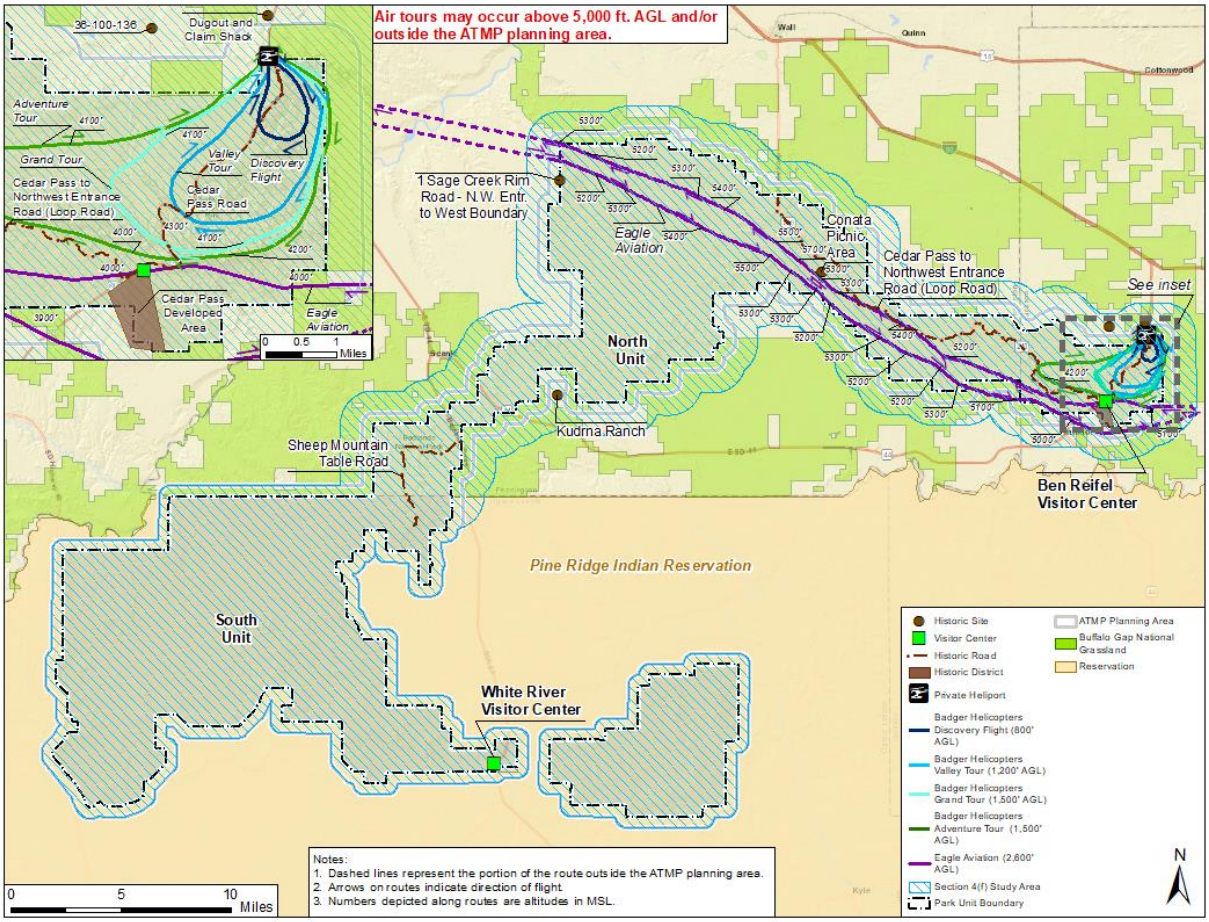

Figure 29. Section 4(f) Environmental Consequences for Alternative 3 and Alternative 4.

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[22] 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.[23, 24] 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

[22] 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.

[23] 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).

[24] 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[25] 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.[23, 24] 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

[25] 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	• 12-hr equivalent sound level: Maximum <60 dBA; <35 dBA in 89% of the ATMP planning area. • DNL: <60 dB • 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 >15 minutes a day; audible in 94% of ATMP planning area. • Time above 35 dBA: Maximum 105 minutes per day; >35 dBA in 35% of the ATMP planning area; <1% of the ATMP planning area 90-105 minutes; <35 dBA in 65% of the ATMP planning area. • Maximum time above 52 dBA: 21.2 minutes at location point #1 (Scenic Overlook / Sheep Lambing Area). • Maximum sound level in ATMP planning area: 76.9 dBA at location	• 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. • Indirect noise impacts may occur due to air tours displaced outside the ATMP planning area.	• 12-hr equivalent sound level: Maximum <60 dBA; <35 dBA in 96% of the ATMP planning area. • DNL: <60 dB • 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 >15 minutes a day. • Time above 35 dBA: Maximum 90 minutes a day; <1% of the ATMP planning area 75-90 minutes a day; >35 dBA in 36% of ATMP planning area. • Maximum time above 52 dBA: 21.2 minutes at location point #1 (Scenic Overlook / Sheep Lambing Area). • Maximum sound level in ATMP planning area: 76.9 dBA at location point #30 (Big Badlands Overlook). • Indirect noise impacts may occur due to air	• 12-hr equivalent sound level: Maximum <45 dBA; <35 dBA in 98% of the ATMP planning area. • DNL: <45 dB • 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. • Time above 35 dBA: Maximum 45 minutes a day; <1% of the ATMP planning area 30-45 minutes a day; >35 dBA in 36% of ATMP planning area. • Maximum time above 52 dBA: 8.6 minutes at location point #1 (Scenic Overlook / Sheep Lambing Area). • Maximum sound level in ATMP planning area: 76.2 dBA at location point #29 (Cliff Shelf). • Indirect noise impacts may occur due to air tours being displaced

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
	point #30 (Big Badlands Overlook). • No indirect effects expected.		tours being displaced outside the ATMP planning area.	outside the ATMP planning area.
Air Quality and Climate Change	• Criteria pollutants: 29 TPY • GHG emissions: 55.2 MT of CO_2 per year • Would not cause NAAQS exceedance or increase the frequency or severity of any existing violations. • No indirect effects expected.	• Reduction in criteria pollutants: 29 TPY • Reduction of GHG emissions: 55.2 MT of CO_2 per year • Would not cause NAAQS exceedance or increase the frequency or severity of any existing violations. • 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. • 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.	• Reduction in criteria pollutants: 7 TPY • Reduction in GHG emissions: 12.6 MT CO_2 per year • Would not cause NAAQS exceedance or increase the frequency or severity of any existing violations. • 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. • 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.	• Reduction in criteria pollutants: 21 TPY • Reduction in GHG emissions: 40.5 MT CO_2 per year • Would not cause NAAQS exceedance or increase the frequency or severity of any existing violations. • 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. • 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.
Biological Resources	• Commercial air tour noise would continue to affect wildlife within the ATMP planning area. • Time above 35 dBA: <105 minutes in portions of ATMP planning area. • Not expected to result in indirect effects to wildlife.	• 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.	• 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	• 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.

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
			active during dawn and dusk. • Time above 35 dBA: <90 minutes per day in entire ATMP planning area. • Could result in indirect effects to wildlife due to air tour displacement outside the ATMP planning area.	AGL) to protect species active during dawn and dusk. • Seasonal restrictions: Air tours permitted July 1 – Sept. 30 to minimize impacts on peregrine falcons and bighorn sheep lamb rearing. • Time above 35 dBA: <45 minutes per day in entire ATMP planning area. • Could result in indirect effects to wildlife due to air tour displacement outside the ATMP planning area.
Cultural Resources	• Cultural resources would continue to be impacted by air tours, as noise and visual effects would impact the feeling and setting of cultural resources. • Time above 35 dBA: <105 minutes per day in entire ATMP planning area. • 12-hr equivalent sound level: 50.7 dBA at location point #30 (Big Badlands Overlook). • Not expected to result in indirect effects to cultural resources within the APE.	• Would reduce the noise and remove visual intrusions from the setting of cultural resources within the APE. • Could result in some indirect impacts to cultural resources within the APE.	• Would reduce noise and visual impacts that could detract from the feeling and setting of cultural resources within the APE. • 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. • 12-hr equivalent sound level: 50.7 dBA at location point #30 (Big Badlands Overlook). • Time above 35 dBA: <90 minutes per day in entire ATMP planning area. • Could result in air tour displacement outside the ATMP planning area.	• Would reduce noise and visual impacts that could detract from the feeling and setting of cultural resources within the APE. • 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. • 12-hr equivalent sound level: 47.8 dBA at location point #30 (Big Badlands Overlook). • Time above 35 dBA: <45 minutes per day in entire ATMP planning area.

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
				• Could result in air tour displacement outside the ATMP planning area.
Wilderness	• Air tour noise within and near the Wilderness detracts from the natural quality and opportunity for solitude. • Time audible within Wilderness: <165 minutes per day in eastern extent of Wilderness. • No indirect effects expected.	• Offers the greatest protection of Wilderness, since commercial air tours would not be able to fly over Wilderness. • 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.	• Would reduce noise impacts that would detract from the natural quality and opportunities for solitude within Wilderness. • 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. • Time audible within Wilderness: <120 minutes per day in Wilderness. • 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.	• Would reduce noise impacts that would detract from the natural quality and opportunities for solitude within Wilderness. • 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. • Time audible within Wilderness: <60 minutes per day in Wilderness. • 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.
Visitor Use and Experience and Other Recreational Opportunities	• Impacts to interpretive programs at the Ben Reifel Visitor Center due to sound levels from air tours resulting in speech interference and	• Offers the greatest protection of visitor use and experience for the greatest number of visitors, but eliminates air tours within the	• Daily (16) limits on air tours; elimination of Expedition Tour; and increased minimum altitude of Eagle Aviation route (2,600 ft.	• Annual (639) and daily (8) limits on air tours; seasonal restrictions: air tours permitted July 1 – Sept. 30; elimination of Expedition Tour; and

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
	inability to hear natural sounds. • 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. • Maintains the current availability of air tours for those that wanted to view the Park from an aerial vantage point. • 94% of ATMP planning area would experience audible air tour noise at some point in the day. • Audible air tour noise <165 minutes a day in areas most heavily used by visitors. • Time above 52 dBA: <6 minutes per day at the Ben Reifel Visitor Center. • No indirect effects expected.	ATMP planning area. • Air tours occurring outside the ATMP planning area may result in noise in other areas near those flights which could affect the visitor experience. • Indirect impacts to visitor experience and points of interest could occur if flights were displaced to outside the ATMP planning area.	AGL) within the ATMP planning area would reduce impacts. • Indirect impacts to visitor experience and points of interest could occur if flights were displaced to outside the ATMP planning area. • Limits the availability of air tours for those interested in viewing the Park from an aerial perspective. • 96% of ATMP planning area would experience audible air tour noise at some point in the day. • Audible air tour noise <135 minutes a day in areas most heavily used by visitors. • Time above 52 dBA: <5.4 minutes per day at the Ben Reifel Visitor Center.	increased minimum altitude of Eagle Aviation route (2,600 ft. AGL) within the ATMP planning area would reduce impacts. • Indirect impacts to visitor experience and points of interest could occur if flights were displaced to outside the ATMP planning area. • Limits the availability of air tours for those interested in viewing the Park from an aerial perspective. • 78% of ATMP planning area would experience audible air tour noise at some point. • Audible air tour noise <75 minutes a day in areas most heavily used by visitors. • Time above 52 dBA: <3 minutes per day at the Ben Reifel Visitor Center.
Environmental Justice and Socioeconomics	• 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. • DNL: <60 dB • 55.2 MT CO_2 • Peak month average day: 17 air tours	• 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. • 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.	• 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. • 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. • DNL: <60 dB	• 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. • Would not result in disproportionately high and adverse impacts to EJ populations or impact those populations in

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
			• 42.6 MT CO_2 • 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.	ways that are unique to those EJ populations. • DNL: <60 dB • 14.8 MT CO_2 • 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.
Visual Effects	• Air tours would continue to impact viewsheds primarily along Loop Road and Sage Creek Rim Road. • No indirect effects expected. • Peak month average day: 17 air tours	• Alternative 2 would provide the greatest protection to Park viewsheds and would benefit visual resources and visual character within the visual effects study area. • Indirect impacts to viewsheds could occur if flights were displaced outside the ATMP planning area.	• 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. • Indirect impacts to viewsheds could occur if flights were displaced outside the ATMP planning area.	• 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. • Indirect impacts to viewsheds could occur if flights were displaced outside the ATMP planning area.
DOT Section 4(f) Resources	• After consultation with the NPS, the FAA determined that the No Action Alternative would result in substantial impairment to Section 4(f) resources.	• No substantial impairment of Section 4(f) resources in the Section 4(f) study area. • No “constructive use” to any Section 4(f) properties.	• 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. • No substantial impairment of Section 4(f) resources in the Section 4(f) study area. • No “constructive use” to any Section 4(f) properties.	• 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. • No substantial impairment of Section 4(f) resources in the Section 4(f) study area.

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
			• DNL: <60 dB • Time above 35 dBA: <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 <1% of the ATMP planning area. • Time above 52 dBA: Not anticipated to exceed 21.2 minutes per day.	• No "constructive use" to any Section 4(f) properties. • DNL: <45 dB • Time above 35 dBA: <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 <1% of the ATMP planning area. • Time above 52 dBA: Not anticipated to exceed 8.6 minutes per day.