

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

List of Appendices

Appendix A: References

Appendix B: List of Acronyms, Abbreviations, and Glossary

Appendix C: List of Preparers

Appendix D: Distribution List

Appendix E: Environmental Impact Analysis Methods

Appendix F: Noise Technical Analysis

Appendix G: Cultural Resources Consultation and Summary

Appendix H: Section 7 No Effect Memo

Appendix I: Section 4(f) Analysis

Appendix J: Public Scoping Newsletter and Comment Summary Report

APPENDIX A

References

Amberg, S. et al. (2012). Badlands National Park: Climate change vulnerability assessment. Natural Resource Report. Natural Resources Report NPS/BADL/NRR—2012/205. National Park Service. Fort Collins, Colorado.

American Community Survey (ACS). (2016-2020). *QuickFacts: South Dakota; Jackson County, South Dakota*. U.S. Census Bureau.
<https://www.census.gov/quickfacts/fact/table/SD,jacksoncountysouthdakota/PST045221>

ACS. (2016-2020). *QuickFacts: South Dakota; Oglala Lakota County, South Dakota*. U.S. Census Bureau.
<https://www.census.gov/quickfacts/fact/table/oglalalakotacountysouthdakota,SD/PST045222>

ACS. (2016-2020). *QuickFacts: South Dakota; Pennington County, South Dakota*. U.S. Census Bureau.
<https://www.census.gov/quickfacts/fact/table/penningtoncountysouthdakota,SD/PST045222>

ACS. (2020). ACS Pums 5-year estimate. U.S. Census Bureau.
<https://www.census.gov/programs-surveys/acs/technical-documentation/pums.html>

American National Standards Institute, Inc. (ANSI). (2007). Quantities and procedures for description and measurement of environmental sound — Part 5: Sound level descriptors for determination of compatible land use. *Acoustical Society of America*, ASA S12.9-2007/PART 5 (R2020), 1-20. https://www.techstreet.com/standards/asa-s12-9-2007-part-5-r2020?product_id=1534045

ANSI. (2010). Acoustical performance criteria, design requirements, and guidelines for schools, Part 1: Permanent schools. *Acoustical Society of America*, ANSI/ASA S12.60-2002/Part 1.
[https://webstore.ansi.org/preview-pages/ASA/preview_ANSI+ASA+S12.60+Part+1-2010+\(R2020\).pdf](https://webstore.ansi.org/preview-pages/ASA/preview_ANSI+ASA+S12.60+Part+1-2010+(R2020).pdf)

Anderson, B.A. (2007). A literature review of the effects of helicopter disturbance and noise on selected wildlife species. https://catalog.northslopescience.org/dataset/766359ff-18ff-4ccf-aef3-8af228158d5f/resource/079ee112-cd69-4ca8-8963-1ffd9f684fcb/download/anderson_2007_abr.helicopter.disturbance.biblio.pdf

Benfield, J., Taff, B.D., Weinzimmer, D., & Newman, P. (2018). Motorized recreation sounds influence nature scene evaluations: The role of attitude moderators. *Frontiers in Psychology*, 9:495. <https://doi.org/10.3389/fpsyg.2018.00495>

Birek, J.J., White, C.M., Drilling, N.E., Van Lanen, N.J., Pavlacky Jr., D.C., Blakesley, J.A., Sparks, R.A., Fogg, J.A., McLaren, M.F., & Hanni, D.J. (2014). Monitoring the birds of Badlands National Park: 2011 report. Natural Resource Technical Report NPS/NGPN/NRTR—2014/836. National Park Service, Fort Collins, Colorado.

Borrie, W.T., and Roggenbuck, J.W. (2001). The dynamic, emergent, and multi-phasic nature of on-site Wilderness experiences. *Journal of Leisure Research*, 33(2), 202–228.

<https://doi.org/10.1080/00222216.2001.11949938>

Breck, S.W. (2019). Understanding coyote predation on black-footed ferrets: resource selection and non-lethal tool evaluation. Research Permit and Reporting System.

<https://irma.nps.gov/DataStore/Reference/Profile/2259735>

Bunkley, J.P., and Barber, J.R. (2015). Noise reduces foraging efficiency in pallid bats (*Antrozous pallidus*). *Ethology*, 121, 1116–1121.

Bureau of Indian Affairs. (2022). Pine Ridge Agency. <https://www.bia.gov/regional-offices/great-plains/south-dakota/pine-ridge-agency>

Caven, A.J., Rabbe, M., Malzahn, J., & Lacy, A.E. (2020). Trends in the occurrence of large whooping crane groups during migration in the great plains, USA. *Heliyon*, 6(4).

<https://doi.org/10.1016/j.heliyon.2020.e03549>

Colorado Parks and Wildlife, Department of Natural Resources. (2020). Recommended buffer zones and seasonal restrictions for Colorado raptors.

<https://cpw.state.co.us/Documents/WildlifeSpecies/LivingWithWildlife/Raptor-Buffer-Guidelines.pdf>

Davis, A. K., Schroeder, H., Yeager, I., & Pearce, J. (2018). Effects of simulated highway noise on heart rates of larval monarch butterflies, *Danaus plexippus*: implications for roadside habitat suitability. *Biology letters*, 14(5), 20180018.

Department of Interior and NPS (1995). Report on effects of aircraft overflights on the National Park System. *Report to Congress*, 1.1-10.23.

<https://www.nonoise.org/library/npreport/intro.htm>

Environmental Protection Agency (EPA), Office of Noise Abatement and Control (EPA). (1974). Information on levels of environmental noise requisite to protect public health and welfare with an adequate margin of safety. <https://www.nrc.gov/docs/ML1224/ML12241A393.pdf>

EPA. (2008). National Air Quality Monitoring Program fact sheets.

<https://www3.epa.gov/ttnamti1/files/ambient/pm25/qa/vol2appb.doc>

EPA. (2015). Inventory of U.S. greenhouse gas emissions and sinks: 1990-2013.

<https://www.epa.gov/sites/default/files/2016-03/documents/us-ghg-inventory-2015-main-text.pdf>

Federal Aviation Administration (FAA). (2015). 1050.1F Environmental Impacts: Policies and Procedures.

https://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.current/documentnumber/1050.1

FAA. (2020). 1050.1F Desk Reference.

https://www.faa.gov/sites/faa.gov/files/about/office_org/headquarters_offices/apl/desk-ref.pdf.

Ferguson, L.A. (2018). *Strategies for managing natural sounds for human experience and ecosystem services* [Unpublished doctoral dissertation]. The Pennsylvania State University. https://etda.libraries.psu.edu/files/final_submissions/17621

Fisichelli, N.A., Schuurman, G.W., Symstad, A., Ray, A., Miller, B.W., Cross, M., & Rowland, E. (2016). Resource management and operations in southwest South Dakota: climate change scenario planning workshop summary January 20-21, 2016, Rapid City, SD. Page Natural Report NPS/NRSS/NRR - 2016/1289. Fort Collins, CO. Francis, C.D., Kleist, N.N.J., Ortega, C.P., Cruz, A. (2012). Noise pollution alters ecological services: enhanced pollination and disrupted seed dispersal. *Proceedings of the Royal Society. B.* 279(739). <http://doi.org/10.1098/rspb.2012.0230>.

Gallardo Cruz, K.V., Paxton, K.L. & Hart, P.J. (2021). Temporal changes in songbird vocalizations associated with helicopter noise in Hawaii's protected natural areas. *Landscape Ecology*, 36, 829–843. <https://link.springer.com/article/10.1007/s10980-020-01179-2>

Gates, C.C., Freese, C.H., Gogan, P.J.P., & Kotzman, M. (2010). American Bison: status survey and conservation guidelines 2010. Global Biodiversity. Gland, Switzerland: IUCN.

Gutzwiller, K.J., D'Antonio, A.L., & Monz, C.A. (2017). Wildland recreation disturbance: Broad-scale spatial analysis and management. *Frontiers in Ecology and the Environment*, 15(9), 517–524. <https://doi.org/10.1002/fee.1631>

Haas, G.E., and Wakefield, T.J. (1998). National parks and the American public: a national public opinion survey on the National Park System. Washington D.C. and Fort Collins, CO.: National Parks and Conservation Association and Colorado State University.

Haralabidis A.S., Dimakopoulou, K., Vigna-Taglianti, F., Giampaolo, M., Borgini, A., Dudley, M., Pershagen, G., Bluhm, G., Houthuijs, D., Babisch, W. Velonakis, M., Katsouyanni, K. & Jarup, L. (2008). Acute effects of night-time noise exposure on blood pressure in populations living near airports. *European Heart Journal*, 29(5), 658-664. <https://academic.oup.com/eurheartj/article/29/5/658/440015>

Hartup, B.K., Olsen, G.H., and Czekala, N.M. (2005). Fecal corticoid monitoring in whooping cranes (*Grus americana*) undergoing reintroduction. *Zoo Biology: Published in affiliation with the American Zoo and Aquarium Association*, 24(1), 15-28.

Intergovernmental Panel on Climate Change (IPCC). (2022). Climate Change 2022: Impacts, adaptation, and vulnerability. Contribution of working group II to the sixth assessment report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press. In Press.

Johns, B.W. (2010). Aerial survey techniques for breeding whooping cranes. *Proceedings of the Eleventh North American Crane Workshop, Sep 23-27, 2008, Wisconsin Dells, Wisconsin* (Baraboo, WI: North American Crane Working Group, 2010), pp. 83-88.

Keller, B.J., and Bender, L.C. (2007). Bighorn sheep response to road-related disturbances in Rocky Mountain National Park, Colorado. *The Journal of Wildlife Management*, 71(7), 2329-2337.

Kotliar, N.B., Baker, B.W., Whicker, A.A., & Glenn, P. (1999). A critical review of the assumptions about the prairie dog as a keystone species. *Environmental Management*, 24(2), 177-192.
<https://doi.org/10.1007/s002679900225>

Kunc, H.P., McLaughlin, K.E., & Schmidt, R. (2016). Aquatic noise pollution: Implications for individuals, populations, and ecosystems. *Proceedings of the Royal Society B: Biological Sciences*, 283(1836). <https://pubmed.ncbi.nlm.nih.gov/27534952/>

Kunc, H.P., and Schmidt, R. (2019). The effects of anthropogenic noise on animals: A meta-analysis. *Biology Letters*, 15(11), 20190649. <https://doi.org/10.1098/rsbl.2019.0649>

Landres, P., Barns, C., Boutcher, S., Devine, T., Dratch, P., Lindholm, A., Merigliano, L., Roeper, N., & Simpson, E. (2015). Keeping it wild 2: an updated interagency strategy to monitor trends in Wilderness character across the National Wilderness Preservation System. Gen. Tech. Rep. RMRS-GTR-340. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 114 p. DOI: <https://doi.org/10.2737/RMRS-GTR-340>

Lee, C.S.Y., Fleming, G.G., Roof, C.J., MacDonald, J.M., Scarpone, C.J., Malwitz, A.R., & Baker, G. (2016). Mount Rushmore National Memorial: baseline ambient sound levels 2003.
<https://irma.nps.gov/DataStore/Reference/Profile/2233371>

Lee, C., et al. (2022). Aviation environmental design tool (AEDT) technical manual, version 3e. DOT-VNTSC-FAA-22-04. https://aedt.faa.gov/Documents/AEDT3e_TechManual.pdf

Licht, D.S. (2017). Bison conservation in Northern Great Plains National Parks: no need to panic. *Great Plains Research*, 27(2):83-92

Luo, J., Siemers, B.M., & Koselj, K. (2015). How anthropogenic noise affects foraging. *Global Change Biology*, 21, 3278–3289.

Lynott, M.J. (2012). Status of knowledge about BADL archeological sites. Letter to Superintendent, Badlands National Park. On file at Badlands National Park.

Mace, B.L., Corser, G.C., Zitting, L., & Denison, J. (2013). Effects of overflights on the national park experience. *Journal of Environmental Psychology*, 35, 30-39.
<https://doi.org/10.1016/j.jenvp.2013.04.001>

Maddox, M. L. (2022). Winter acoustic bat monitoring: 2021-2022 results from Mount Rushmore National Memorial, Badlands National Park, Devils Tower National Monument, and Wind Cave National Park. Natural Resource Data Series NPS/MORU/NRDS—2022/1358. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/nrds-2293496>.

McDonald, C.D., Baumgarten, R.M. & Iachan, R. (1995). Aircraft management studies: National Park Service visitors survey. *National Park Service, U.S. Department of the Interior*, HMMH Report No. 290940.12; NPOA Report No. 94-2. <https://ntrl.ntis.gov/NTRL/dashboard/searchResults/titleDetail/PB95196002.xhtml>

McDonald, L.J., Howlin, S., & Goodman, C. (2015). Range-wide monitoring of black-tailed prairie dogs in the United States: pilot study. Technical report. <http://dx.doi.org/10.13140/RG.2.1.4063.9762>

Merchan, C.I., Diaz-Balteiro, L., & Soliño, M. (2014). Noise pollution in national parks: soundscape and economic valuation. *Landscape and Urban Planning*, 123, 1–9. <https://doi.org/10.1016/j.landurbplan.2013.11.006>

Miller, B.J., Reading, R.P., Biggins, D.E., Detling, J.K., Forrest, S.C., Hoogland, J.L., Javersak, J., Miller, S.D., Proctor, J., Truett, J., & Uresk, D.W. (2007). Prairie dogs: an ecological review and current biopolitics. *Journal of Wildlife Management*, 71(8), 2801–2810. <https://www.jstor.org/stable/4496405>

Miller, Z., Taff, B.D., & Newman, P. (2018). Visitor experiences of wilderness soundscapes in Denali National Park and Preserve. *International Journal of Wilderness*, 24(2). <https://ijw.org/2018-visitor-experiences-of-Wilderness-soundscapes/>

National Park Service and Northern Great Plains Network. (2017). 2016 landbird monitoring Badlands National Park. National Park Service. <https://irma.nps.gov/DataStore/DownloadFile/580634>

NPS. (1992). National Register Bulletin 38. National Park Service. <https://www.nps.gov/subjects/nationalregister/upload/NRB38-Completeness.pdf>

NPS. (2003). Fire monitoring handbook. Badlands National Park. National Park Service. <https://www.nps.gov/orgs/1965/upload/fire-effects-monitoring-handbook.pdf>

NPS. (2006). Management Policies. National Park Service. https://www.nps.gov/subjects/policy/upload/MP_2006.pdf

NPS. (2012). South Unit Badlands National Park: final general management plan and environmental impact statement. National Park Service. <https://parkplanning.nps.gov/showFile.cfm?projectID=17543&MIMETType=application%252Fpdf&filename=BADL%5FGMP%5Fcomplete%2Epdf&sfid=132295>

NPS. (2016). North Unit bison resource stewardship plan / environmental assessment. National Park Service.

<https://parkplanning.nps.gov/document.cfm?parkID=117&projectID=35171&documentID=73724>

NPS. (2017). Foundation document – Badlands National Park.

<http://npshistory.com/publications/foundation-documents/badl-fd-2017.pdf>

NPS. (2018a). Badlands National Park rehabilitation of Loop Road at Dillon Pass and Bigfoot environmental assessment. National Park Service.

<https://parkplanning.nps.gov/showFile.cfm?projectID=61823&MIMEType=application%252Fpdf&filename=rpt%5Fbadl%5Fdraft%5Fea%5Fpublic%5Frelease%5F20180713%5FReduced%2Epdf&sfid=334488>

NPS. (2018b). Cedar Pass development concept plan and environmental assessment. National Park Service.

<https://parkplanning.nps.gov/document.cfm?parkID=117&projectID=79354&documentID=90827>

NPS. (2020a). Class I areas. <https://www.nps.gov/subjects/air/class1.htm>

NPS. (2020b). Badlands birds. <https://www.nps.gov/articles/000/birds-badl.htm>

NPS. (2021a). *Peregrine falcon*. National Park Service. <https://www.nps.gov/articles/peregrine-falcon.htm>

NPS (2021b). National Park Service visitor use statistics.

[https://irma.nps.gov/Stats/SSRSReports/Park%20Specific%20Reports/Annual%20Park%20Recreation%20Visitation%20\(1904%20-%20Last%20Calendar%20Year\)?Park=BADL](https://irma.nps.gov/Stats/SSRSReports/Park%20Specific%20Reports/Annual%20Park%20Recreation%20Visitation%20(1904%20-%20Last%20Calendar%20Year)?Park=BADL)

NPS. (2022). Things to do.

<https://www.nps.gov/badl/planyourvisit/things2do.htm>

Nordmeyer, D.L. (1999). Effects of jet aircraft overflights and other potential disturbances on behavioral responses and productivity of nesting peregrine falcons.

Palmer, A.G., Nordmeyer, D.L., & Roby, D.D. (2003). Effects of jet aircraft overflights on parental care of peregrine falcons. *Wildlife Society Bulletin*, 499-509.

Rabin, L.A., McCowan, B., Hooper, S.L., & Owings, D.H. (2003). Anthropogenic noise and its effect on animal communication: an interface between comparative psychology and conservation biology. *International Journal of Comparative Psychology*, 16(2).

Rapoza, A., Sudderth, E., & Lewis, K. (2015). The relationship between aircraft noise exposure and day-use visitor survey responses in backcountry areas of national parks. *The Journal of the Acoustical Society of America*, 138(4), 2090–2105. <https://doi.org/10.1121/1.4929934>

Redford, K.H., and Fearn, E. (2007). Ecological future of bison in North America: a report from a multi-stakeholder, transboundary meeting. (K. H. Redford and E. Fearn, Eds.). WCS Working Paper No. 30.

Richardson, C. and Miller, C. (1997). Recommendations for protecting raptors from human disturbance: A review. *Wildlife Society Bulletin*, 25(3), 634-638.

Roby, D.D., Murphy, S.M., Ritchie, R.J., Smith, M.D., & Palmer, A.G. (2002). The effects of noise on birds of prey: a study of peregrine falcons (*Falco peregrinus*) in Alaska. Oregon Cooperative Fishery Research Unit Corvallis.

Santymire, R.M., Ali, N., Marinari, P.E., and Livieri, T.M. (2021). Using hair cortisol analysis to understand the biological factors that affect black-footed ferret (*Mustela nigripes*) stress physiology. *Conservation Physiology*, 9(1), coab033.

Schaub A., Ostwald, J., & Siemers, B.M. (2008). Foraging bats avoid noise. *Journal of Experimental Biology*, 211, 3174–3180.

Shannon, G., McKenna, M.F., Angeloni, L.M., Crooks, K.R., Fristrup, K.M., Brown, E., Warner, K.A., Nelson, M.D., White, C., Briggs, G., McFarland, S., & Wittemyer, G. (2016). A synthesis of two decades of research documenting the effects of noise on wildlife. *Biological Reviews*, 91(4), 982-1005. <https://doi.org/10.1111/brv.12207>

Siemers, B.M., and Schaub, A. (2011). Hunting at the highway: traffic noise reduces foraging efficiency in acoustic predators. *Proceedings of the Royal Society of London B Biological Sciences*, 278, 1646–1652.

Simmons, T., and J.H. Grammann. (2001). Badlands National Park visitor study: summer 2000. Visitor Services Project Cooperative Park Studies Unit, University of Idaho.

South Dakota Department of Game, Fish, and Parks. (2022). Biennial commission review of SD Threatened and Endangered Species List. https://gfp.sd.gov/userdocs/docs/te_draft_status_reviews_2022_revision_final.pdf

Sproat, K.K., Martinez, N.R., Smith, T.S., Sloan, W.B., Flinders, J.T., Bates, J. W., ... & Bleich, V. C. (2020). Desert bighorn sheep responses to human activity in south-eastern Utah. *Wildlife Research*, 47(1), 16-24.

Stalmaster, M.V., and Kaiser, J.L. (1997). Flushing responses of wintering bald eagles to military activity. *The Journal of Wildlife Management*, 1307-1313.

Stockwell, C.A., Bateman, G.C., & Berger, J. (1991). Conflicts in national parks: a case study of helicopters and bighorn sheep time budgets at the Grand Canyon. *Biological Conservation*, 56(3), 317-328.

Sutter, P. (2004). *Driven wild: how the fight against automobiles launched the modern wilderness movement*. Seattle, WA, and London, UK: University of Washington Press.

Thomas, C.D., Cameron, A., Green, R.E., Bakkenes, M., Beaumont, L.J., Collingham, Y.C., Erasmus, B.F.N., de Siqueira, M.F., Grainger, A., Hannah, L., Hughes, L., Huntley, B., van Jaarsveld, A.S., Midgley, G.F., Miles, L., Ortega-Huerta, M.A., Peterson, A.T., Phillips, O.L., & Williams, S.E. (2004). Extinction risk from climate change. *Nature*, 427:145-148.

<https://www.nature.com/articles/nature02121>

Thomas, C.C., and Koontz, L. (2020). 2019 National Park visitor spending effects: economic contributions to local communities, states, and the nation. Natural Resource Report NPS/NRSS/EQD/NRR—2020/2110.

https://www.nps.gov/nature/customcf/NPS_Data_Visualization/docs/NPS_2019_Visitor_Spending_Effects.pdf.

Thomas, C.C., Flyr, M., & Koontz, L. (2022). 2021 National Park visitor spending effects: economic contributions to local communities, states, and the nation. Natural Resource Report NPS/NRSS/EQD/NRR—2022/2395. <https://www.nps.gov/subjects/socialscience/vse.htm>

Tyack, P. L., Thomas, L., Costa, D. P., Hall, A. J., Harris, C. M., Harwood, J., ... & Southall, B. L. (2022). Managing the effects of multiple stressors on wildlife populations in their ecosystems: developing a cumulative risk approach. *Proceedings of the Royal Society B*, 289(1987), 20222058.

U.S. Department of Agriculture. (2021). Agriculture is No. 1 in South Dakota.

<https://www.usda.gov/media/blog/2019/07/26/agriculture-no1-south-dakota>

U.S. Fish & Wildlife Service (USFWS). (2007). *National bald eagle management guidelines*. https://www.fws.gov/sites/default/files/documents/national-bald-eagle-management-guidelines_0.pdf

USFWS. (2009). Endangered and threatened wildlife and plants; 12-month finding on a petition to list the black-tailed prairie dog as threatened or endangered. Federal Register 74:63343–63366.

USFWS. (2020). Monarch (*Danaus plexippus*) species status assessment report. V2.1 96 pp + appendices. <https://www.fws.gov/media/monarch-butterfly-species-status-assessment-ssa-report>

USFWS. (2021). Endangered and threatened wildlife and plants; Initiation of 5-year status reviews of 23 species in the southwest.

<https://www.federalregister.gov/documents/2021/05/05/2021-09379/endangered-and-threatened-wildlife-and-plants-initiation-of-5-year-status-reviews-of-23-species-in>

USFWS. (2022a). Endangered and threatened wildlife and plants; endangered species status for northern long-eared bat. CFR 50 Part 17. Vol. 87 (56). Docket No. FWS–R3–ES–2021–0140;

FF09E21000 FXES1111090FEDR 223. <https://www.govinfo.gov/content/pkg/FR-2022-03-23/pdf/2022-06168.pdf#page=1>

USFWS. (2022b). Endangered and threatened wildlife and plants; endangered species status for tricolored bat. CFR 50 Part 17. Vol. 87. Docket No. FWS-R5-ES-2021-0163

USFWS. (2022c). *Plains bison*. U.S. Fish and Wildlife Service. <https://fws.gov/species/plains-bison-bison-bison-bison>

Watson, J.W. (1993). Responses of nesting bald eagles to helicopter surveys. *Wildlife Society Bulletin (1973-2006)*, 21(2), 171-178.

Weinzimmer, D., Newman, P., Taff, D., Benfield, J., Lynch, E., & Bell, P. (2014). Human responses to simulated motorized noise in national parks. *Leisure Sciences*, 36(3), 251–267. <https://doi.org/10.1080/01490400.2014.888022>

Werdel, T.J., Jenks, J.A., Besser, T.E., Kanta, J.T., Lehman, C.P., & Frink, T.J. (2020). Restoration of a bighorn sheep population impeded by *Mycoplasma ovipneumoniae* exposure. *Restoration Ecology*, 28(2), 387-395.

Wieseler, A.J. (2021). *An Evaluation of the Bighorn Sheep Population in Badlands National Park*. South Dakota State University. <https://www.proquest.com/openview/8a5888c5fd682bca91ef8582540e9bcf/1?pq-origsite=gscholar&cbl=18750&diss=y>

APPENDIX B

List of Acronyms, Abbreviations, and Glossary

Acronyms and Abbreviations

AAD	Average Annual Day
The Act	National Parks Air Tour Management Act of 2000
ACS	American Community Survey
AEDT	Aviation Environmental Design Tool
AGL	Above Ground Level
ANSI	American National Standards Institute
APE	Area of Potential Effects
ATMP	Air Tour Management Plan
ATMP planning area	The area within which an ATMP regulates commercial air tours over a national park or within ½-mile outside the park's boundary during which the aircraft flies below 5,000 ft. AGL.
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH ₄	Methane
CO ₂	Carbon Dioxide
CR GRID	Cultural Resource Geographic Research Information Display database
dB	Decibels
dBA	Decibels (A-weighted scale)
DDT	Dichloro-diphenyl-trichloroethane
DNL	Day-night Average Sound Level (denoted by the symbol L_{dn})
DOT	United States Department of Transportation
EA	Environmental Assessment
EJ	Environmental Justice
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
ft.	Feet
FR	Federal Register
FSDO	Flight Standards District Office
GHG	Greenhouse Gas
H ₂ O	Water Vapor
IOA	Interim Operating Authority
IPCC	Intergovernmental Panel on Climate Change
L ₅₀	The median or L ₅₀ sound level (in decibels) is the sound level exceeded 50 percent of the day
L _{Aeq}	Equivalent Continuous Sound Level
L _{dn}	Day-night Average Sound Level
L _{max}	The loudest sound level, in dBA, generated by the loudest event
MBTA	Migratory Bird Treaty Act
MSL	Mean Sea Level
MT	Metric Tons

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

APPENDIX C

List of Preparers

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

U.S. DOT Federal Aviation Administration

- Shawna Barry
- Eric Elmore
- Sandra Fox
- Sheri Lares
- Keith Lusk
- Judith Walker

U.S. Department of the Interior/National Park Service

- Adam Beeco
- Kathy Boden
- Tokey Boswell
- Michelle Carter
- Eddie Childers
- Dorothy Firecloud
- Christine Gabriel
- Lindsay Gillham
- Milton Haar
- Albert LeBeau
- Rene Ohms
- Casey Osback
- Brenda Todd
- Eric Veach

U.S. DOT Volpe National Transportation Systems Center

- Rebecca Blatnica
- Leah Epstein
- Kathering Giraldo
- Shauna Haas
- Shelby Hanchera
- Amy Hootman
- Symone Howard
- Karimeh Juma
- Mary Kelly
- Cynthia Lee
- Brent Lignell
- Briana Litchholt
- Travis Mast
- Anjulee Mittelman
- Jennifer Papazian

- Amanda Rapoza
- Kaitlyn Rimol
- Matthew Simon

APPENDIX D

Distribution List

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

Federal Agencies

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

South Dakota State Agencies

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

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

Oglala Lakota, Pennington, and Jackson County and Local Agencies

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

Community Organizations, Associations, Businesses, and Interest Groups

- South Dakota Wing – Civil Air Patrol

Tribal Nations

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

- Yankton Sioux Tribe of South Dakota

Public Review

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

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

APPENDIX E

Environmental Impact Analysis Methods

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

Environmental Impact Analysis Methodologies

1.0 Introduction and Overview

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

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

Under the National Parks Air Tour Management Act of 2000 (the Act) and its implementing regulations an ATMP regulates commercial air tours over a national park or within ½-mile outside the park's boundary during which the aircraft flies below 5,000 feet (ft.) above ground level (AGL) (ATMP planning area). Air tours outside of the ATMP planning area are not regulated under the ATMP. Unless otherwise noted, the study area for each environmental impact category is the ATMP planning area.

2.0 Environmental Baseline and Impact Analysis for the No Action Alternative

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

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

variation across years and takes into account the most recent years prior to the COVID-19 pandemic. The 2020 COVID-19 pandemic resulted in atypical commercial air tour operations, which does not represent the conditions in a typical year. The agencies also decided against using 2021 or 2022 data due to continued abnormalities associated with the COVID-19 pandemic and the unavailability of reporting data for 2021 or 2022 during most of the planning effort.

The No Action Alternative represents a continuation of existing air tour conditions over the Park. The Act provided for existing commercial air tour operations occurring at the time the law was enacted to continue until an ATMP for the Park was implemented by expressly requiring the FAA to grant interim operating authority (IOA) to existing operators.^{1,2} Flights up to IOA are not considered part of the No Action Alternative, as flights at these levels are not reasonably foreseeable based on reporting data. The affected environment for each environmental impact category discloses existing conditions of commercial air tours over the Park as it relates to resources within the study area for each category. Impact analysis for the No Action Alternative discloses the effects on the environment that would occur with existing conditions carried into the future. There are no designated routes under the No Action Alternative, but for the purpose of defining the No Action Alternative for analysis, route information provided by operators is used to define the routes for this alternative. There are no altitude restrictions under the No Action Alternative.

3.0 Impacts Considered

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

3.1. Direct Effects

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

3.2. Indirect Effects

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

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

¹ 49 U.S.C. § 40128(c)(2)(A)(i-ii)

² Federal Register, Vol. 70, No. 194, October 7, 2005, page 58778

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

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

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

3.3. Cumulative Effects

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

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

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

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

4.0 Analysis Methodology by Environmental Impact Category

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

4.1. Noise and Noise-Compatible Land Use

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

4.1.1. Noise Modeling

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

Table 1. Primary metrics used for the noise technical analysis

Metric	Relevance and citation
Equivalent sound level, $L_{Aeq, 12\text{ hr}}$	The logarithmic average of commercial air tour sound levels, in dBA, over a 12-hour day. The selected 12-hour period is 7 AM to 7 PM to represent typical daytime commercial air tour operating hours.
Day-night average sound level, L_{dn} (or DNL)	<p>The logarithmic average of sound levels, in dBA, over a 24-hour day, DNL takes into account the increased sensitivity to noise at night by including a 10 dB penalty on noise events occurring between 10 PM and 7 AM local time.</p> <p>Note: Both $L_{Aeq, 12\text{ hr}}$ and DNL characterize:</p> <ul style="list-style-type: none"> Increases in both the loudness and duration of noise events The number of noise events during specific time period (12 hours for $L_{Aeq, 12\text{ hr}}$ and 24-hours for DNL) <p>If there are no nighttime events, then $L_{Aeq, 12\text{ hr}}$ is arithmetically three dBA higher than DNL as the events are averaged over 24 hours instead of 12 hours.</p> <p>The FAA's (2015, Exhibit 4-1) indicators of significant impacts are for an action that would increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe.</p>

Time Audible Natural Ambient	<p>The total time (minutes) that aircraft noise levels are audible to an attentive listener with normal hearing under natural ambient conditions.</p> <p>The natural ambient is the sound level exceeded 50 percent of the time 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.</p>
Time Above 35 dBA	<p>The amount of time (in minutes) that aircraft sound levels are above a given threshold (i.e., 35 dBA).</p> <p>In quiet settings, outdoor sound levels exceeding this level degrade experience in outdoor performance venues (American National Standards Institute (ANSI), 2007)⁴; blood pressure increases in sleeping humans (Haralabidis et al., 2008)⁵; maximum background noise level inside classrooms (ANSI/Acoustical Society of America S12.60/Part 1-2010)⁶.</p>
Time Above 52 dBA	<p>The amount of time (in minutes) that aircraft sound levels are above a given threshold (i.e., 52 dBA).</p> <p>At this background sound level, normal voice communication at five meters (two people five meters apart), or a raised voice to an audience at ten meters would result in 95% sentence intelligibility (United States Environmental Protection Agency, Office of Noise Abatement and Control, 1974)⁷. This metric represents the level at which one may reasonably expect interference with Park interpretive programs, activities that require communication from a distance and other general visitor communication.</p>
Maximum sound level, L_{max}	<p>The loudest sound level, in dBA, generated by the loudest event; it is event-based and is independent of the number of operations. L_{max} does not provide any context of frequency, duration, or timing of exposure.</p>

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

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

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

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

4.1.2. Indirect Effects

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

The analysis consists of two separate components:

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

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

4.1.3. Cumulative Effects

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

4.2. Air Quality and Climate Change

4.2.1. Air Quality Analysis

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

- Carbon monoxide (CO)
- Lead (Pb)
- Nitrogen dioxide (NO₂)
- Ozone (O₃)⁹
- Particulate matter: aerodynamic diameter $\leq 2.5 \mu\text{m}$ (PM_{2.5})¹⁰ and aerodynamic diameter $\leq 10 \mu\text{m}$ (PM₁₀)
- Sulfur dioxide (SO₂)

The EPA designates geographic areas¹¹ based on their relation to the NAAQS by pollutant:

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

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

4.2.2. Study Area and Data Sources

The study area for the air quality analysis corresponds with the ATMP planning area. The study area is compared with geographic information systems (GIS) data in EPA's Green Book¹³ to confirm attainment status (attainment, nonattainment, or maintenance by pollutant). The FAA's AEDT is used to derive emission rates for aircraft used in air tours over the Park. The route lengths by aircraft type and number of annual operations by aircraft type are derived from operator reporting data.

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

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

¹⁰ Sulfur dioxide (SO₂), NOX, VOC, and ammonia are considered precursors to PM_{2.5}.

¹¹ Current Nonattainment Counties for All Criteria Pollutants:

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

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

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

4.2.3. Methodology for Analyzing Air Quality Impacts

The impact analysis for air quality consists of five steps:

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

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

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

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

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

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

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

To highlight the potential impacts to ambient air quality for all criteria pollutants, the emissions results are compared with the EPA's General Conformity *de minimis* thresholds for the most stringent¹⁴ nonattainment areas. EPA's General Conformity *de minimis* thresholds represent a surrogate for impacts to ambient air quality. If emissions estimates for all pollutants in the ATMP planning area are below *de minimis* thresholds, the proposed air tours are expected to result in negligible impacts to air quality.

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

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

¹⁴ The most stringent non-attainment areas (i.e., lowest *de minimis* thresholds) are categorized as "extreme" for ozone (VOCs or NOX) and "serious" for particulate matter (PM₁₀, PM_{2.5}, NOX, VOC, and SO₂; ammonia is not considered for aircraft emissions as they relate to ATMPs).

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

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

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

4.2.4. Climate Change Analysis

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

4.2.5. Study Area and Data Sources

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

4.2.6. Methodology for Analyzing Greenhouse Gas Impacts

The GHG analysis includes the following four steps:

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

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

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

The latest version of AEDT is used to develop a CO₂ equivalents (CO₂e) emission factor in metric tons of emissions per gallon of fuel (MT CO₂/gal) for each aircraft. CO₂e emission factors in AEDT are calculated based on the quantity of aircraft fuel burned. Since the proposed action involves only aircraft operations, MT CO₂e will be assumed to be the same as the aircraft MT CO₂.¹⁵

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

¹⁵ FAA 1050.1F Desk Reference. February 2020. Section 3.3 Environmental Consequences – Climate.

For each aircraft type operating over the ATMP planning area, the CO₂e emissions (MT per year) are calculated by multiplying the annual fuel burn (step 1) by the aircraft-specific emission factor (step 2). The sum of emissions across all aircraft types represents the total emissions (by alternative) for the ATMP planning area.

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

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

4.3. Biological Resources

The study area for biological resources includes the ATMP planning area. To the extent that habitat and species occurrences correlate, impacts to biological resources are expected to be similar within the ATMP planning area. Therefore, if habitat exists for a species but occurrence is unknown, the assumption is that the species could be present and has been analyzed accordingly.

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

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

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

4.4. Cultural Resources

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

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

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

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

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

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

4.5. Wilderness

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

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

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

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

4.6. Visitor Use and Experience and Other Recreational Opportunities

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

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

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

4.7. Environmental Justice and Socioeconomics

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

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

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

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

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

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

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

4.8. Visual Effects

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

Visual resources may include structures or objects that identify landscape features that are visually important or have unique characteristics. In addition, visual resources can include the cohesive collection of various individual visual resources that can be viewed at once or in concert from the area

surrounding the site of the alternatives. Visual character refers to the overall visual makeup of the existing environment where the alternatives are located.

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

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

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

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

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

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

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

APPENDIX F

Noise Technical Analysis

Noise Technical Analysis: Badlands National Park

January 2023

Contents

List of Figures	3
List of Tables	3
1. Introduction	5
2. Modeled Noise Metrics.....	6
3. Affected Environment.....	8
Ambient Map Data.....	10
4. Noise Model Method	12
Aircraft Data.....	13
5. Model Output.....	15
6. Noise Model Results / Environmental Consequences	18
Alternative 1 (No Action Alternative)	18
Alternative 3	23
Alternative 4	28
7. Comparison of Alternatives by Metric	32
8. Indirect Effects of Potential Displacement of Air Tours Outside of the ATMP Planning Area	40
Indirect Effects to ATMP Planning Area.....	40
Indirect Effects outside the ATMP Planning Area.....	41
9. Literature Cited	42

List of Figures

Figure 1. Comparative Sound Levels.....	6
Figure 2. Ambient map – Natural Ambient L_{50}	10
Figure 3. Ambient map – Existing Ambient without Air Tours L_{50}	11
Figure 4. Cumulative Existing Ambient for Existing Conditions	12
Figure 5. Air Tour Routes for modeling the No Action Alternative.....	13
Figure 6. Air Tour Routes for modeling Alternatives 3 and 4	14
Figure 7. Location Points Modeled	16
Figure 8. 12-hour equivalent sound level ($L_{Aeq,12h}$) map for the No Action Alternative.....	18
Figure 9. Time audible (for natural ambient) map for the No Action Alternative.....	19
Figure 10. Time Above 35 dBA map for the No Action Alternative	20
Figure 11. 12-hour equivalent sound level ($L_{Aeq,12h}$) map for Alternative 3	23
Figure 12. Time Audible (for natural ambient) map for Alternative 3.....	24
Figure 13. Time Above 35 dBA map for Alternative 3	25
Figure 14. 12-hour equivalent sound level ($L_{Aeq,12h}$) map for Alternative 4	28
Figure 15. Time Audible (for natural ambient) map for Alternative 4.....	29
Figure 16. Time Above 35 dBA map for Alternative 4	30

List of Tables

Table 1. Subjective Effect of Change in Sound Level	5
Table 2. Primary metrics used for the noise analysis.....	7
Table 3. Acoustic Conditions	9
Table 4. Aircraft, Routes and Number of Operations Modeled.....	15
Table 5. Location points modeled.....	17

Table 6. Location point results - No Action Alternative	21
Table 7. Location point results for Alternative 3	26
Table 8. Location point results for Alternative 4	31
Table 9. Comparison of contour results for 12-hour Equivalent Sound Level.....	34
Table 10. Comparison of contour results for Time Audible for Natural Ambient	34
Table 11. Comparison of contour results for Time Above 35 dBA	34
Table 12. Comparison of location point results for 12-hour Equivalent Sound Level	35
Table 13. Comparison of location point results for Time Audible for Natural Ambient.....	36
Table 14. Comparison of location point results for Time Above 35 dBA.....	37
Table 15. Comparison of location point results for Time Above 52 dBA.....	38
Table 16. Comparison of location point results for Maximum Sound Level.....	39
Table 17. Overflight sound exposure levels and number of daily flights of each aircraft type that would generate a cumulative noise exposure level at or above DNL 65 dB	41
Table 18 Number of daily flights of each aircraft type that would generate a cumulative noise exposure level at or above DNL 65 dB for the aircraft types and fleet mix distribution within the 2017-2019 PMAD	42

1. Introduction

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

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

Table 1. Subjective Effect of Change in Sound Level

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

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

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

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

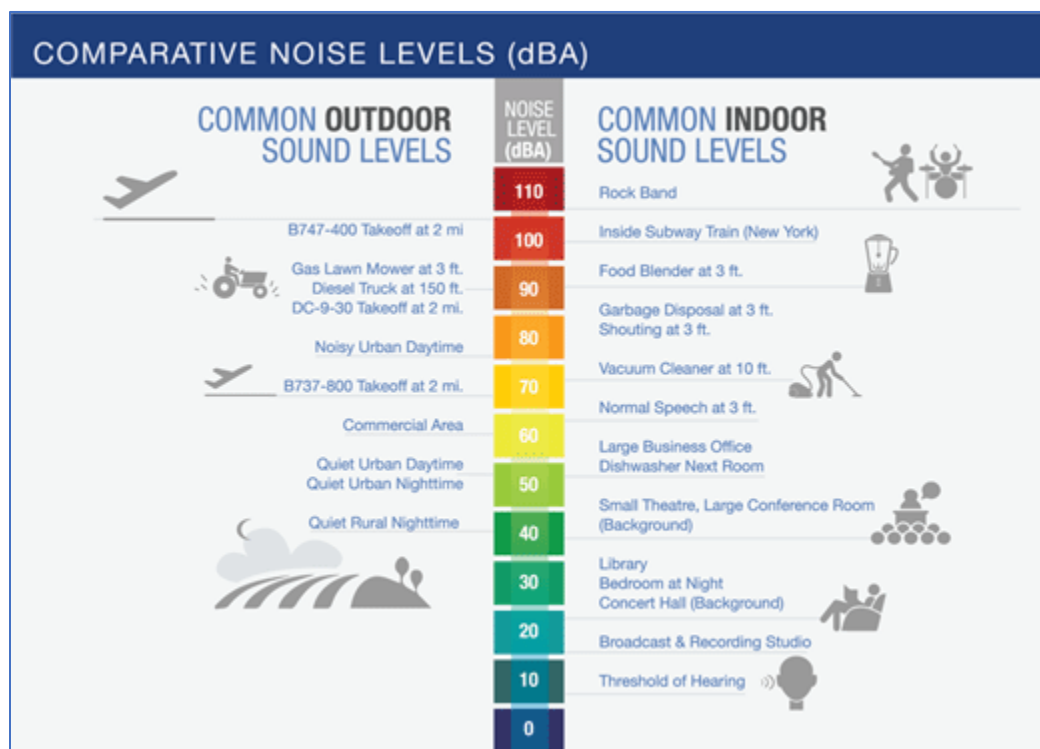


Figure 1. Comparative Sound Levels²

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

2. Modeled Noise Metrics

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

² Source: https://www.faa.gov/regulations_policies/policy_guidance/noise/basics/

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

Table 2. Primary metrics used for the noise analysis

Metric	Relevance and citation
Equivalent sound level, $L_{Aeq, 12\text{ hr}}$	<p>The logarithmic average of commercial air tour sound levels, in dBA, over a 12-hour day. The selected 12-hour period is selected to represent typical daytime commercial air tour operating hours.</p> <p>If air tours are restricted to operating within a window that is less than 12 hours, e.g., from 3 hours after sunrise until 3 hours before sunset, the equivalent sound level will be greater by a factor equal to $10 \cdot \log_{10}(12/n)$ where n is the number of hours of operation. For example, if the window is 8 hours, then the 8-hour equivalent sound level will be equal to $10 \cdot \log_{10}(12/8) = 1.8$ dBA greater than the 12-hour equivalent sound level.</p>
Day-night average sound level, L_{dn} (or DNL)	<p>The logarithmic average of sound levels, in dBA, over a 24-hour day, DNL takes into account the increased sensitivity to noise at night by including a 10 dB penalty between 10 PM and 7 AM local time.</p> <p>Note: Both $L_{Aeq, 12\text{ hr}}$ and DNL characterize:</p> <ul style="list-style-type: none"> Increases in both the loudness and duration of noise events The number of noise events during specific time period (12 hours for $L_{Aeq, 12\text{ hr}}$ and 24-hours for DNL) <p>If there are no nighttime events, then $L_{Aeq, 12\text{ hr}}$ is arithmetically three dBA higher than DNL.</p> <p>The FAA's (2015, Exhibit 4-1) indicators of significant impacts are for an action that would increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe.</p>
Time Audible Natural Ambient	<p>The total time (minutes) that aircraft noise levels are audible to an attentive listener with normal hearing under natural ambient conditions.</p> <p>The median natural ambient is the sound level exceeded 50 percent of the time (L_{50}), determined from the natural sound conditions found in a study area, including all sounds of nature (i.e., wind, streams, wildlife, etc.), and excluding all human and mechanical sounds. Time audible does not indicate how loud the event is, only if it might be heard.</p>

Metric	Relevance and citation
Time Above 35 dBA	<p>The amount of time (in minutes) that aircraft sound levels are above a given threshold (i.e., 35 dBA).</p> <p>In quiet settings, outdoor sound levels exceeding 35 dBA degrade experience in outdoor performance venues (American National Standards Institute (ANSI), 2007). This level is also shown to cause blood pressure increases in sleeping humans (Haralabidis et al., 2008); as well as exceeding recommended maximum background noise level inside classrooms (ANSI S12.60/Part 1-2010).</p>
Time Above 52 dBA	<p>The amount of time (in minutes) that aircraft sound levels are above a given threshold (i.e., 52 dBA).</p> <p>This metric represents the level at which one may reasonably expect interference with park interpretive programs. At this background sound level (52 dBA), normal voice communication at five meters (two people five meters apart), or a raised voice to an audience at ten meters would result in 95% sentence intelligibility (United States Environmental Protection Agency, Office of Noise Abatement and Control, 1974).</p>
Maximum sound level, L_{max}	<p>The loudest sound level, in dBA, generated by the loudest event; it is event-based and is independent of the number of operations. L_{max} does not provide any context of number of events, duration, or timing of exposure.</p>

3. Affected Environment

NPS defines acoustic resources as physical sound sources, including both natural sounds (wind, water, wildlife, vegetation) and cultural and historic sounds (battle reenactments, tribal ceremonies, quiet reverence). The acoustic environment is the combination of all the acoustic resources within a given area. This includes natural sounds and cultural sounds, as well as non-natural human-caused sounds. Soundscape can be defined as the human perception of those physical sound resources.

Natural sounds are also part of the biological or other physical resource components of the Park. Examples include:

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

One of the natural resources of the Park is the natural soundscape, also referred to as the natural ambient or “natural quiet.” The natural ambient includes all of the naturally occurring sounds of the Park, as well as the quiet associated with certain environments, still nights and certain seasons. An important part of the mission of the NPS is to preserve or restore the natural soundscapes associated with units of the National Park System (NPS Management Policies, 4.9 Soundscape Management).

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

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

Table 3. Acoustic Conditions

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

Ambient Map Data

From the detailed data collected in 2003, an ambient “map” of the natural soundscape³ of the ATMP planning area was developed to be used in computer modeling (Figure 2). Lee et al., 2016 provides further technical detail on the acoustical monitoring and development of the ambient map.

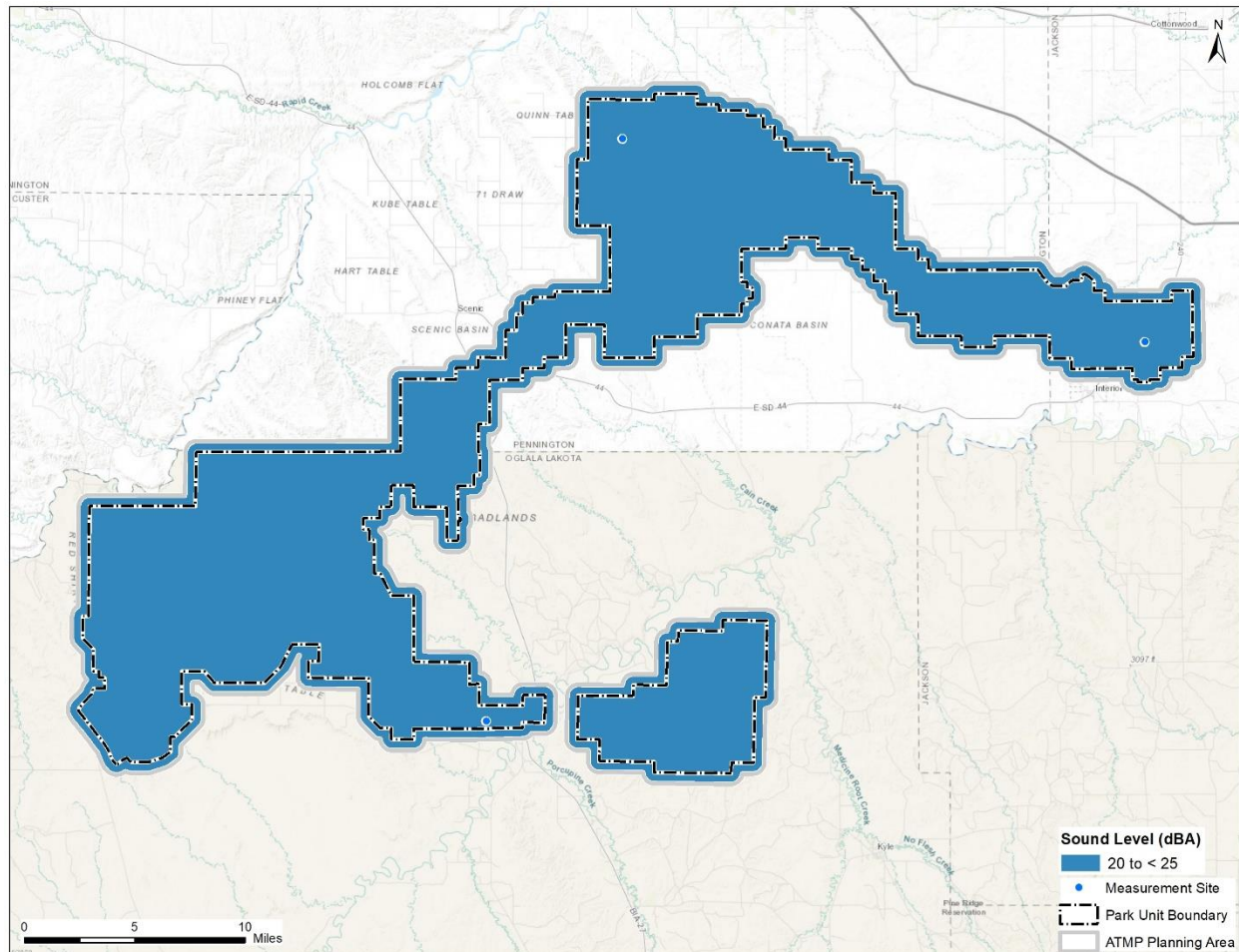


Figure 2. Ambient map – Natural Ambient L₅₀

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

³ Natural Ambient/Soundscape (L₅₀): The sound level exceeded 50 percent of the time determined from the natural sound conditions found in a study area, including all sounds of nature (i.e., wind, streams, wildlife, etc.), and excluding all human and mechanical sounds. All ambient data were based on a 12-hour time period, i.e., 7 AM to 7 PM, which are the typical operating hours for air tours.

Ambient without Air Tours shown in Figure 3. The Existing Ambient without Air Tours is defined as the composite, all-inclusive sound associated with a given environment, excluding the sound source of interest, in this case, commercial air tour aircraft. It does include all other human-caused sound sources that were audible at the measurement site; visitors, vehicles, amphitheater announcements, commercial jets, and general aviation aircraft. The result of this process is the Cumulative Existing Ambient (Figure 4).

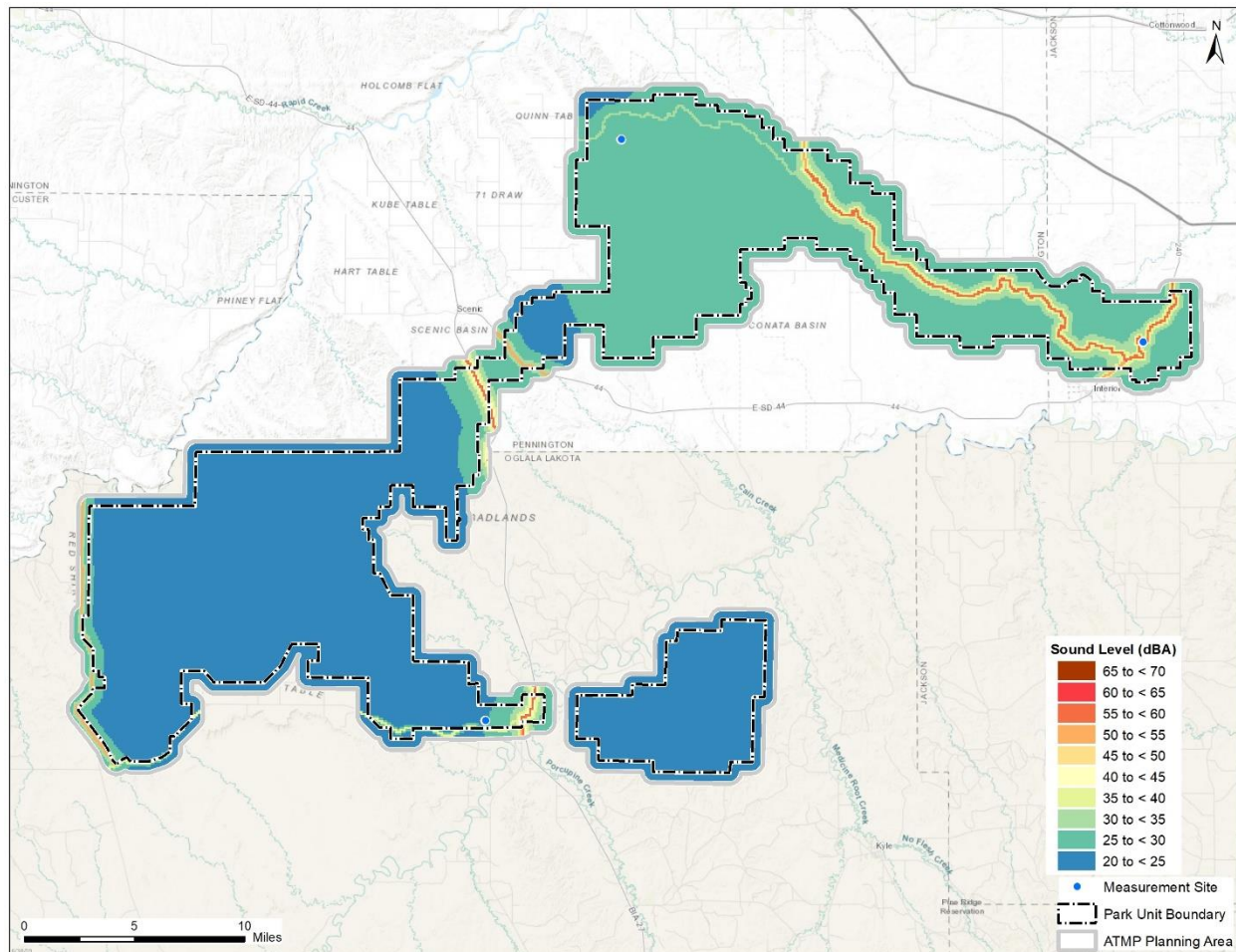


Figure 3. Ambient map – Existing Ambient without Air Tours L₅₀⁴

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

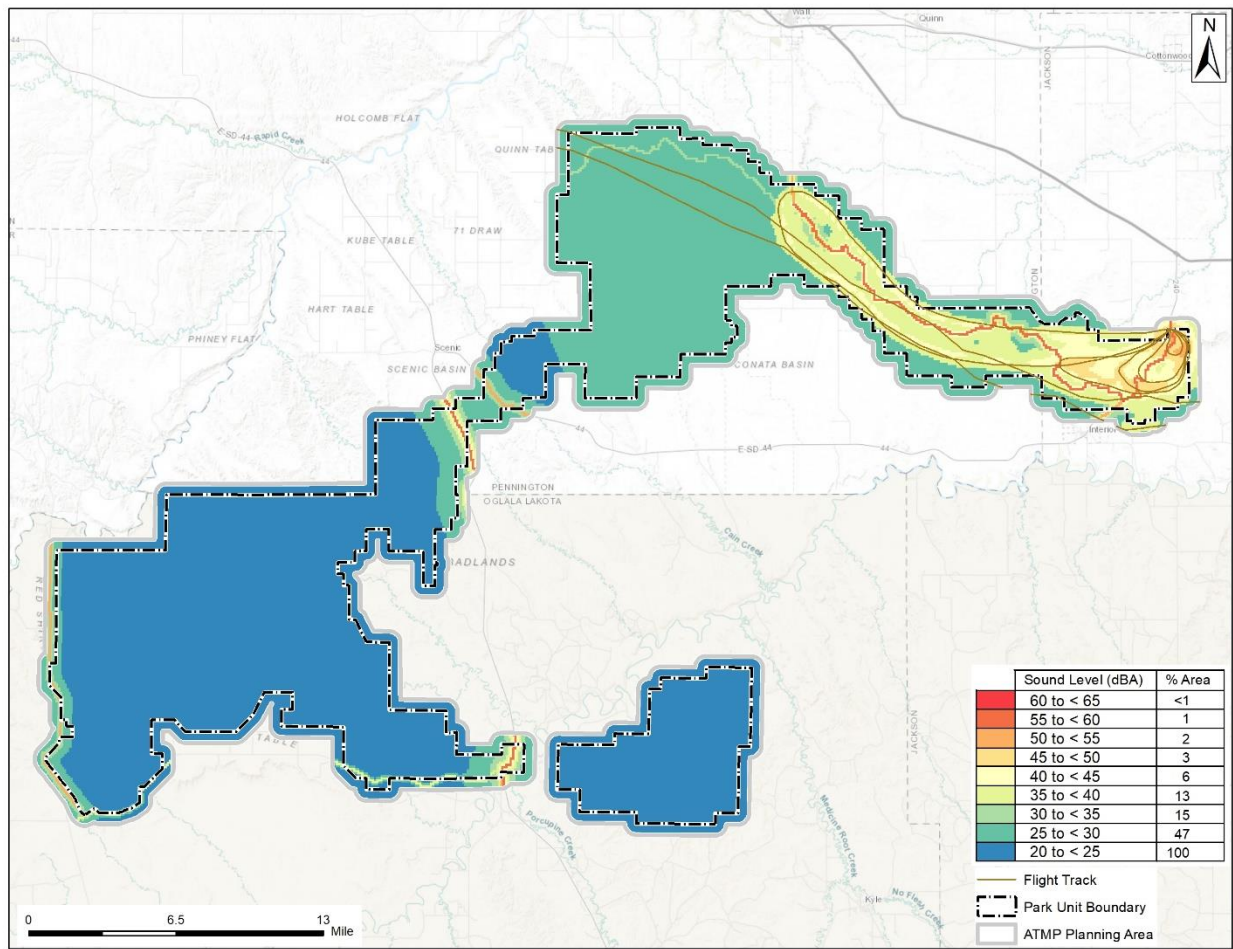


Figure 4. Cumulative Existing Ambient for Existing Conditions

4. Noise Model Method

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

The noise model requires detailed information regarding the aircraft source, operational, and flight route information (obtained from the air tour operators), as well as other information⁵ to compute

⁵ The noise model accounts for a number of effects over the propagation path between the aircraft source and receptor. Attenuation due to line-of-sight blockage from terrain features is computed utilizing terrain data obtained from the U.S. Geological Survey along with algorithms documented in SAE Aerospace Information Report

various noise metrics that can be used to assess the potential impacts of noise from commercial air tours on the acoustic environment of a park.

Aircraft Data

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

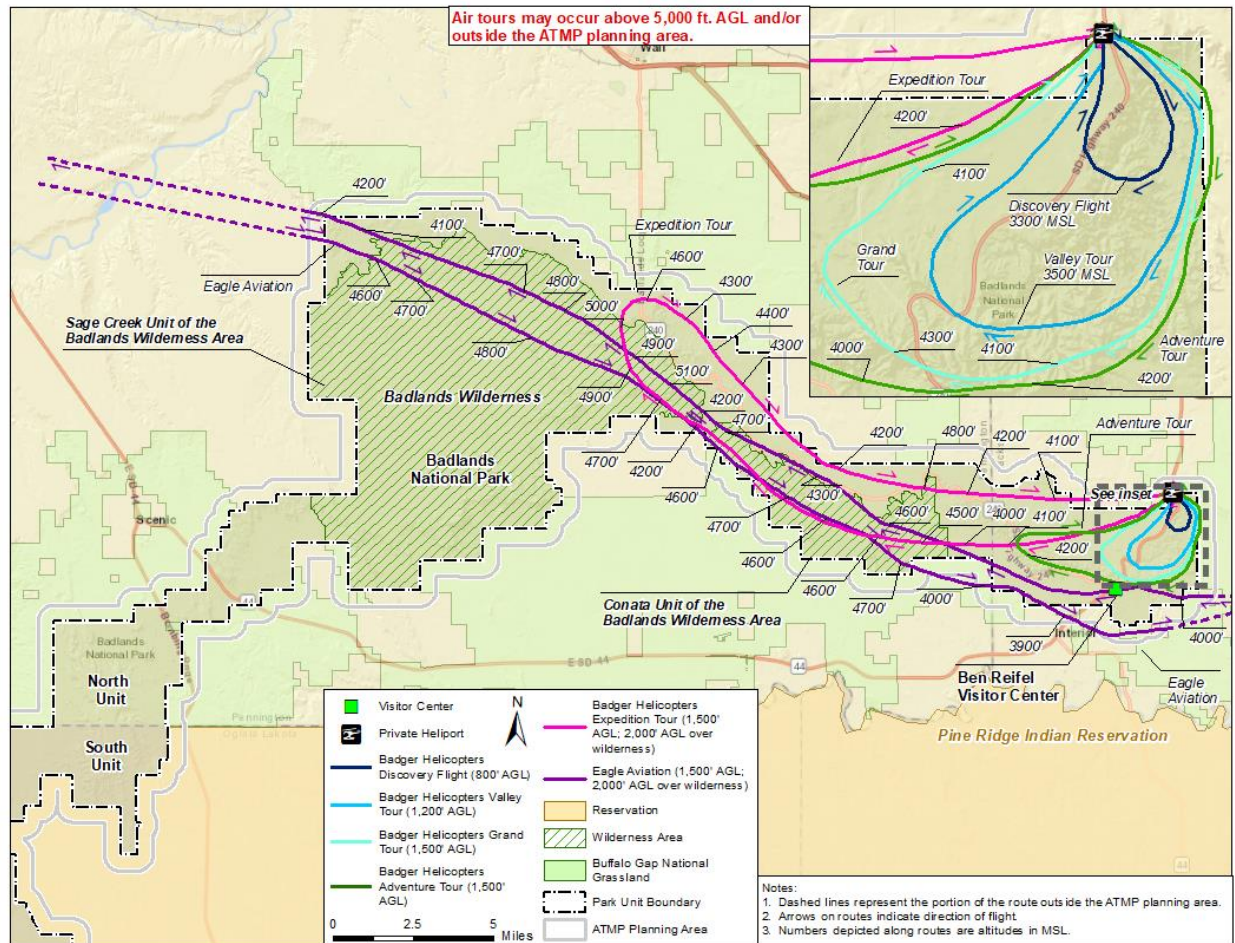


Figure 5. Air Tour Routes for modeling the No Action Alternative

(AIR) 6501. Atmospheric absorption is based on the 2012-2021 average temperature of 76 degrees Fahrenheit and 71% relative humidity and computed according to SAE-ARP-5534.

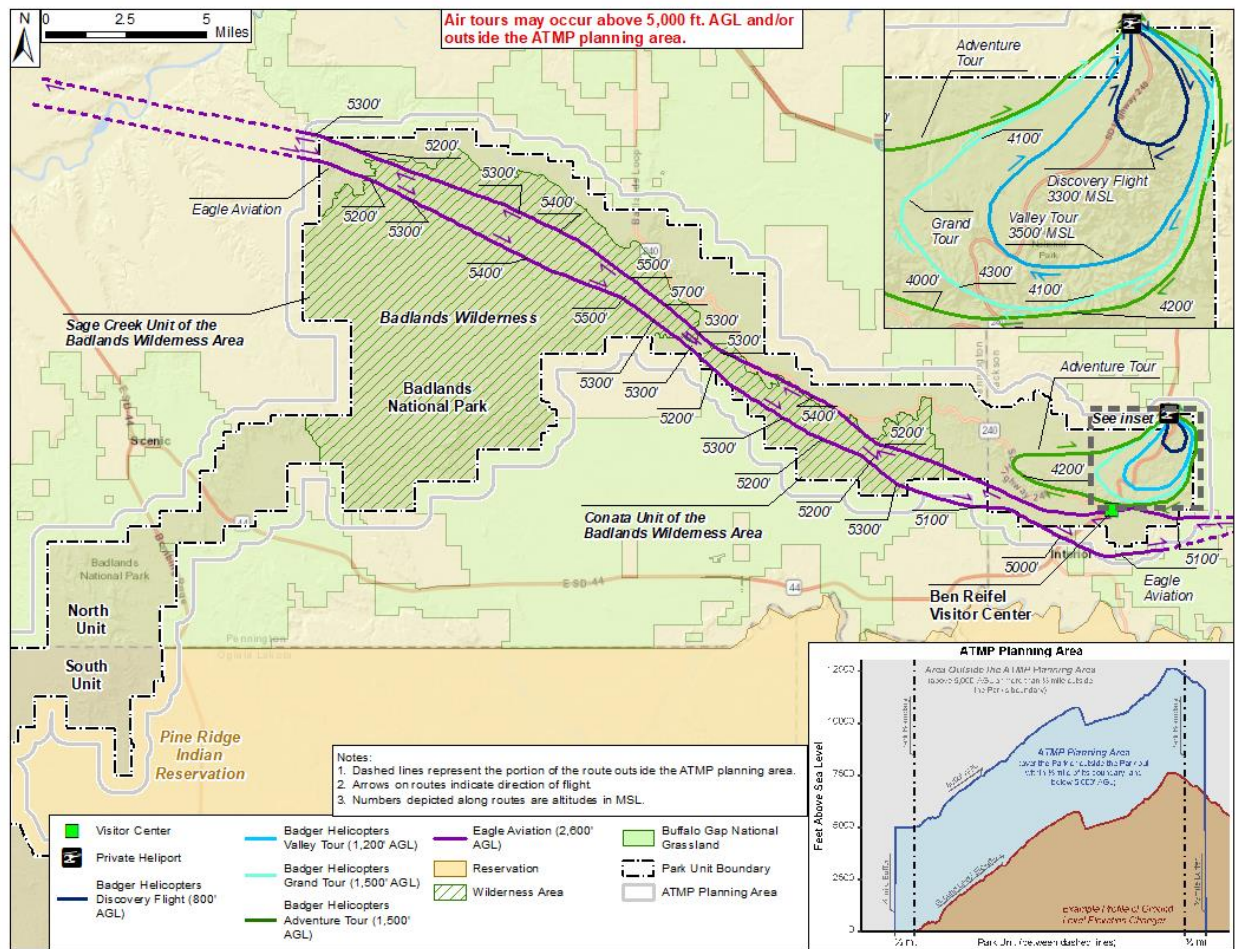


Figure 6. Air Tour Routes for modeling Alternatives 3 and 4

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

The analysis for the No Action Alternative is based on a peak month, average day⁶ (PMAD) of commercial air tour activity. For the three-year average of commercial air tour activity from 2017-2019, the PMAD was identified in terms of number of operations, and then further assessed for the type of aircraft and route flown to ensure it is a reasonable representation of the commercial air tour activity over the Park. For the ATMP planning area, the PMAD was identified as summarized in Table 4. Altitudes were modeled based on information provided by the operators.

⁶As required by FAA policy, the FAA typically represents yearly conditions as the Average Annual Day (AAD). However, it was determined that a peak month, average day (PMAD) representation of the operations would more adequately allow for disclosure of any potential impacts. PMAD has therefore been used as a conservative representation of assessment of AAD conditions.

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

Table 4. Aircraft, Routes and Number of Operations Modeled

Route	Aircraft	No Action Alternative (2017-2019 PMAD)	Alternative 3	Alternative 4
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

5. Model Output

Two types of analyses were performed using FAA’s AEDT, Version 3e: 1) contour analysis and 2) representative location point analysis. A noise contour presents a graphical illustration or “footprint” of the area potentially affected by the noise. Location point results present the metric results at specific points of interest. The NPS provided a list of 31 location points, geographically located across the ATMP planning area, where noise levels were to be evaluated. In addition, noise levels were evaluated at 8 cultural resource and historic property locations (points 32-39) outside⁷ the ATMP planning area. These locations are listed in Table 5 and shown geographically in Figure 7.

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

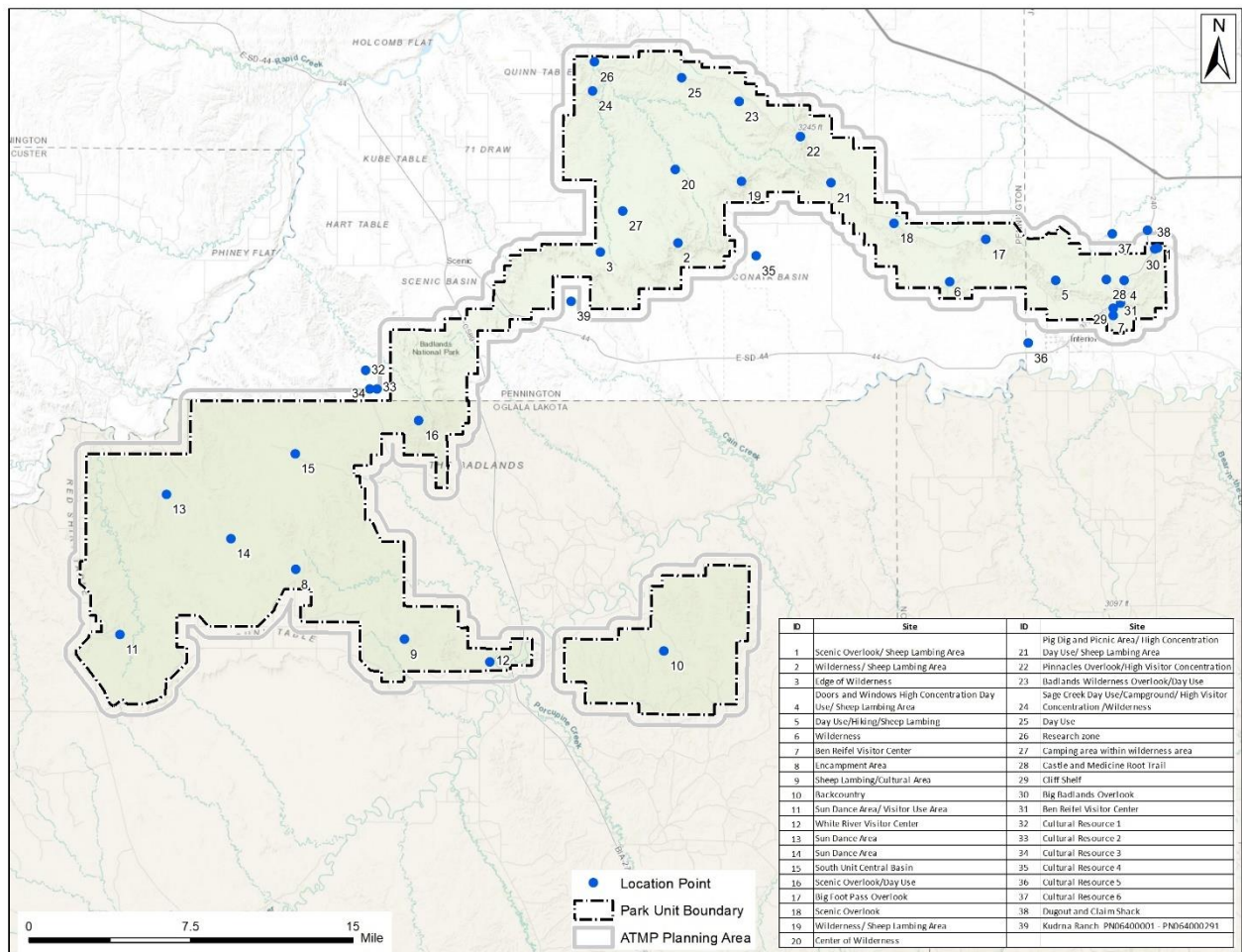


Figure 7. Location Points Modeled

Table 5. Location points modeled

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

*Location point is outside the ATMP planning area.

6. Noise Model Results / Environmental Consequences

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

Alternative 1 (No Action Alternative)

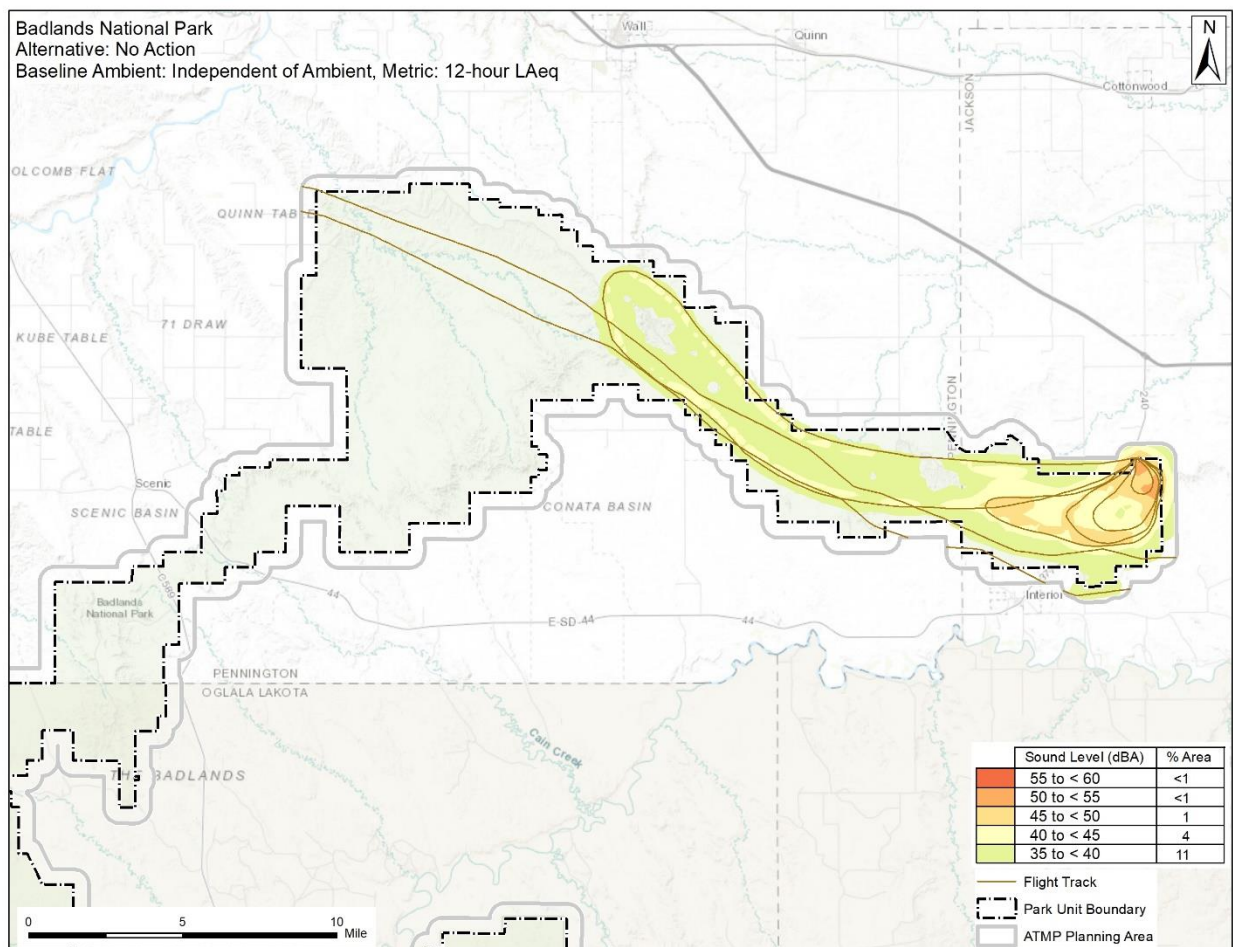


Figure 8. 12-hour equivalent sound level ($L_{Aeq,12h}$) map for the No Action Alternative

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

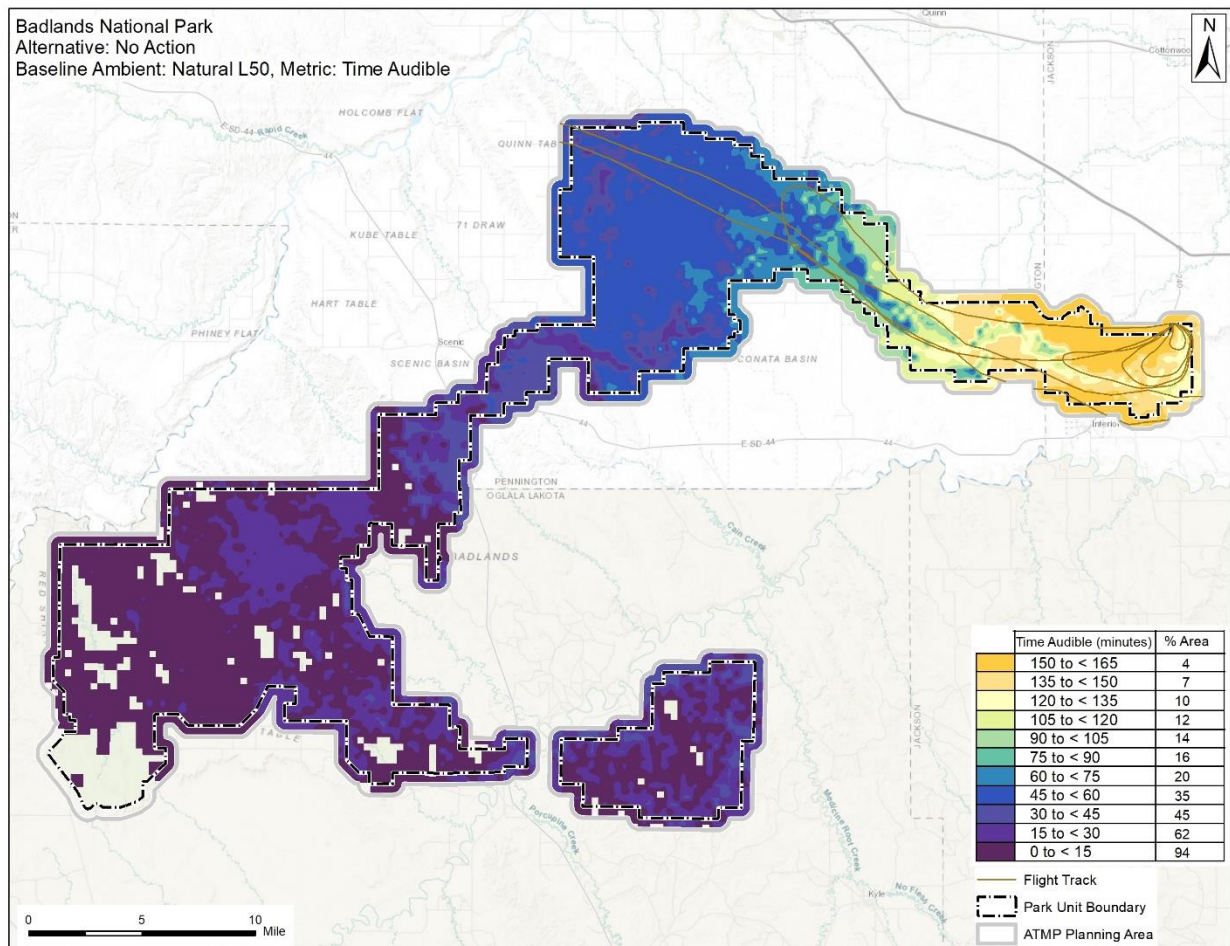


Figure 9. Time audible (for natural ambient) map for the No Action Alternative

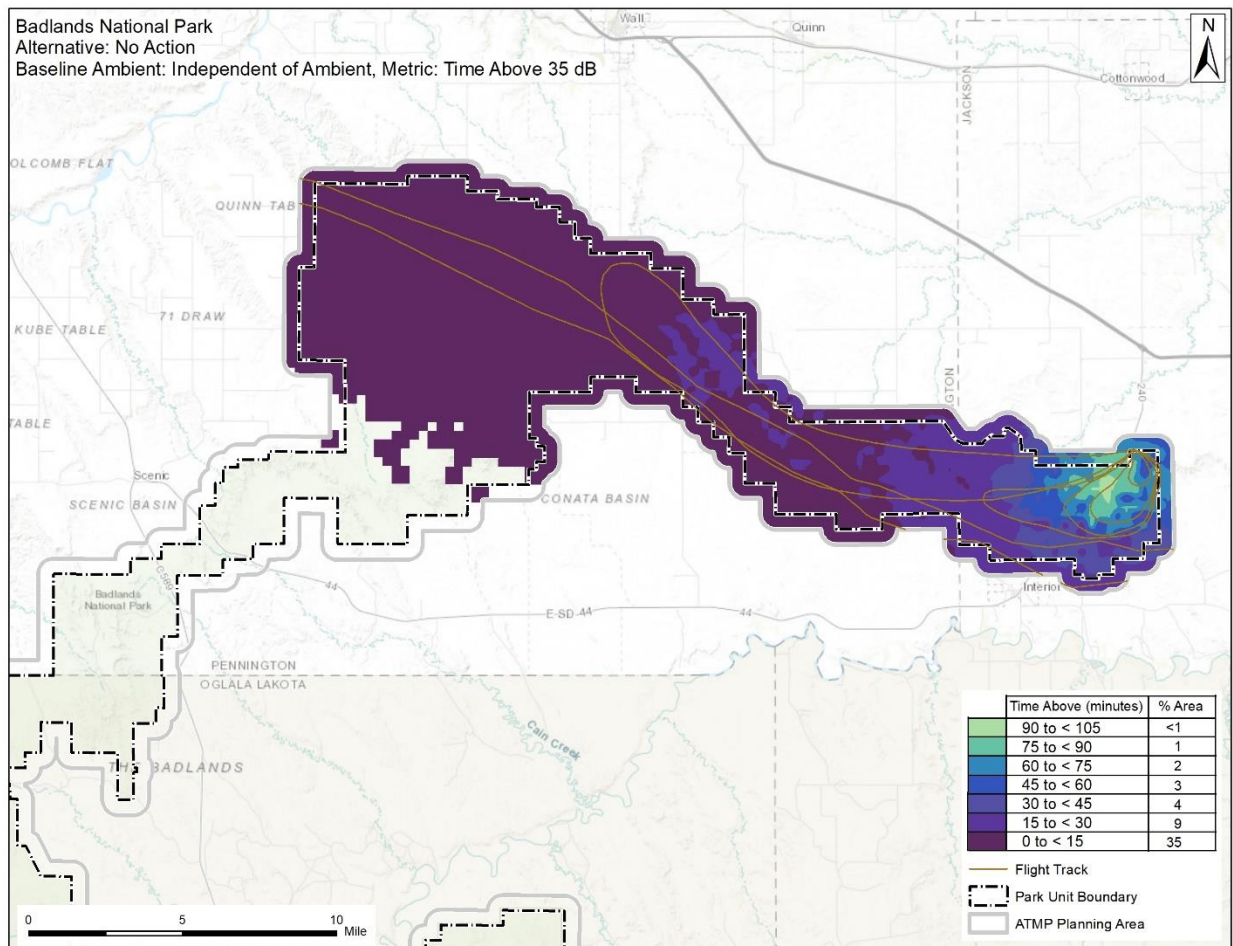


Figure 10. Time Above 35 dBA map for the No Action Alternative

Table 6. Location point results - No Action Alternative

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

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

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

**Location point is outside the ATMP planning area.

Alternative 3

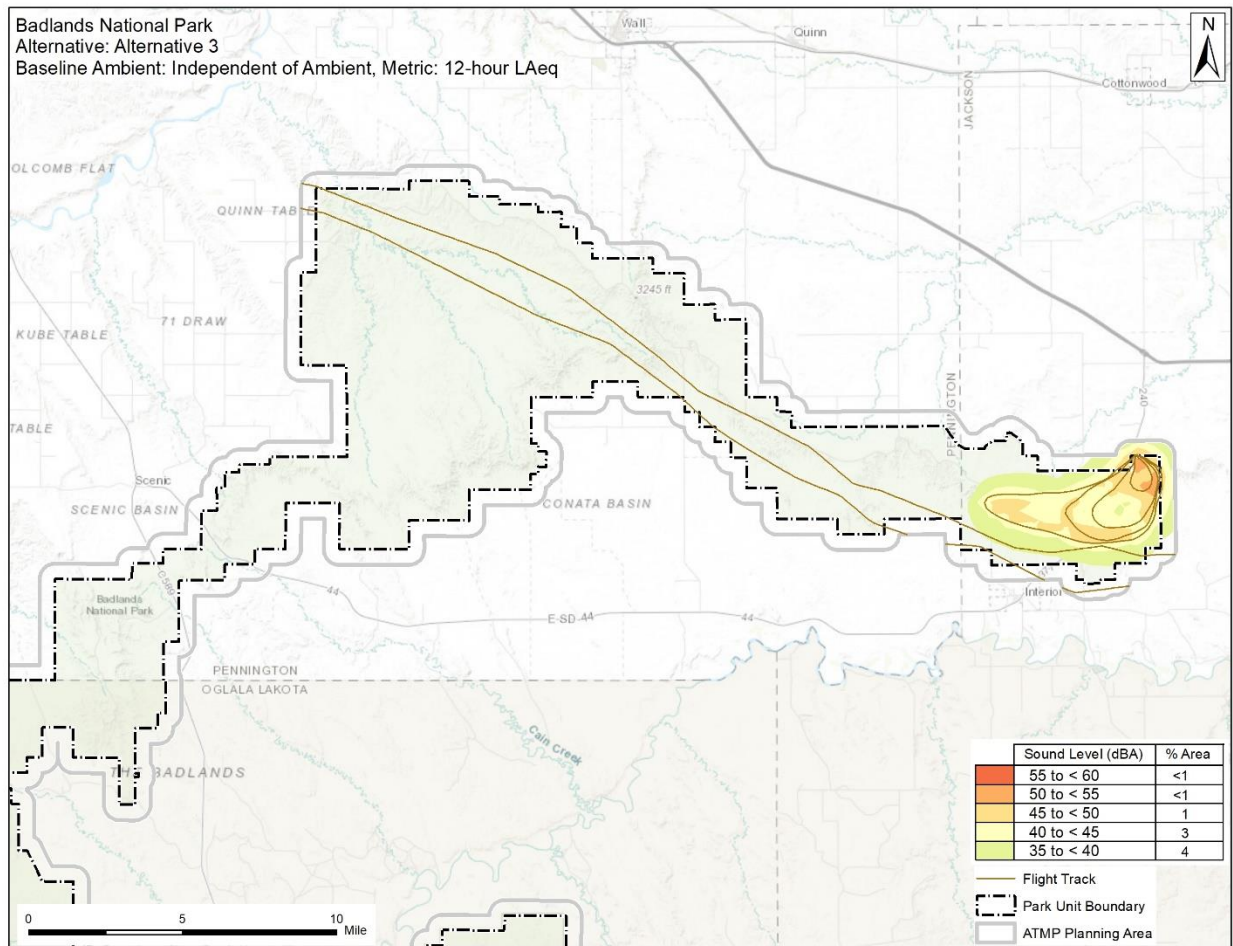


Figure 11. 12-hour equivalent sound level ($L_{Aeq,12h}$) map for Alternative 3

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

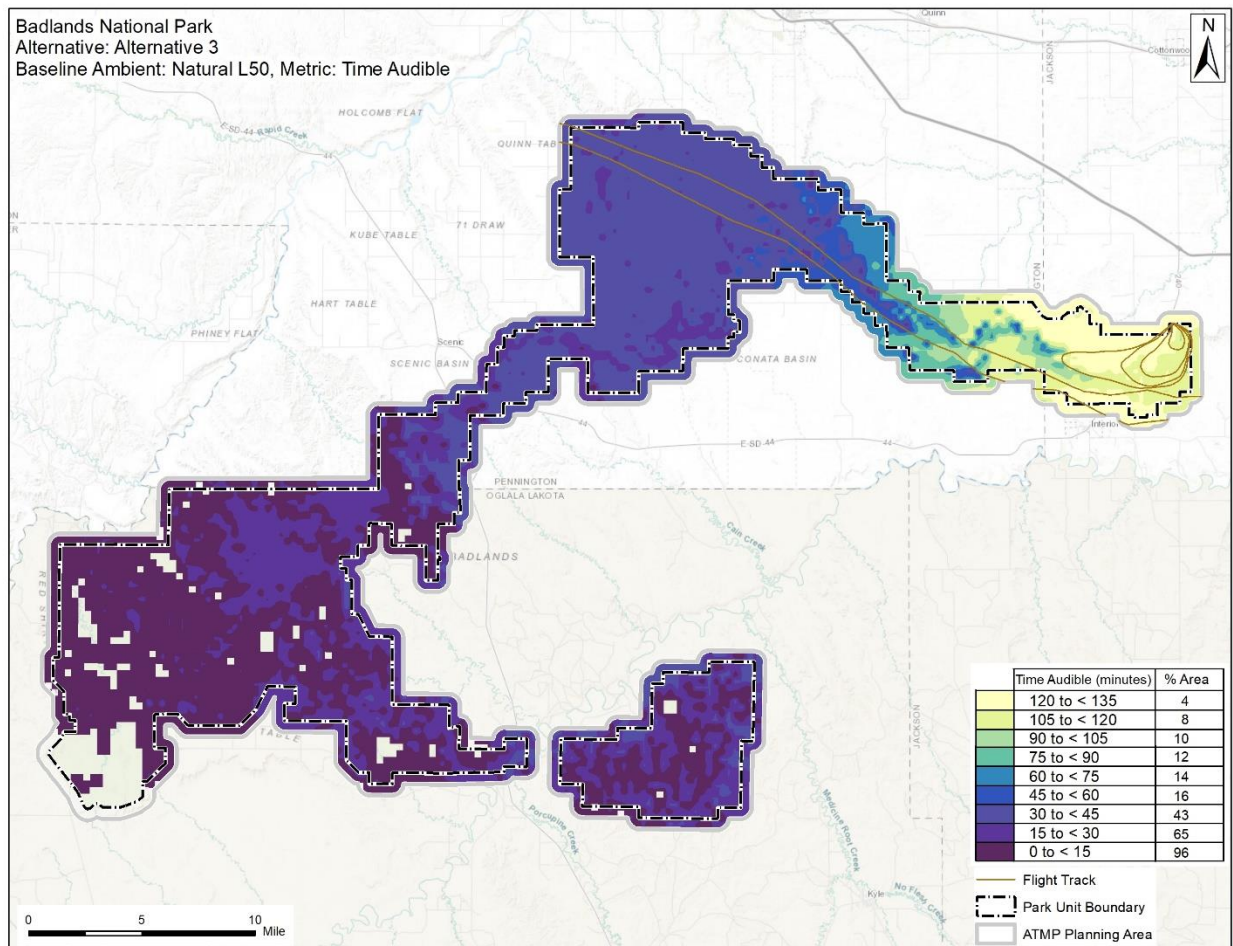


Figure 12. Time Audible (for natural ambient) map for Alternative 3

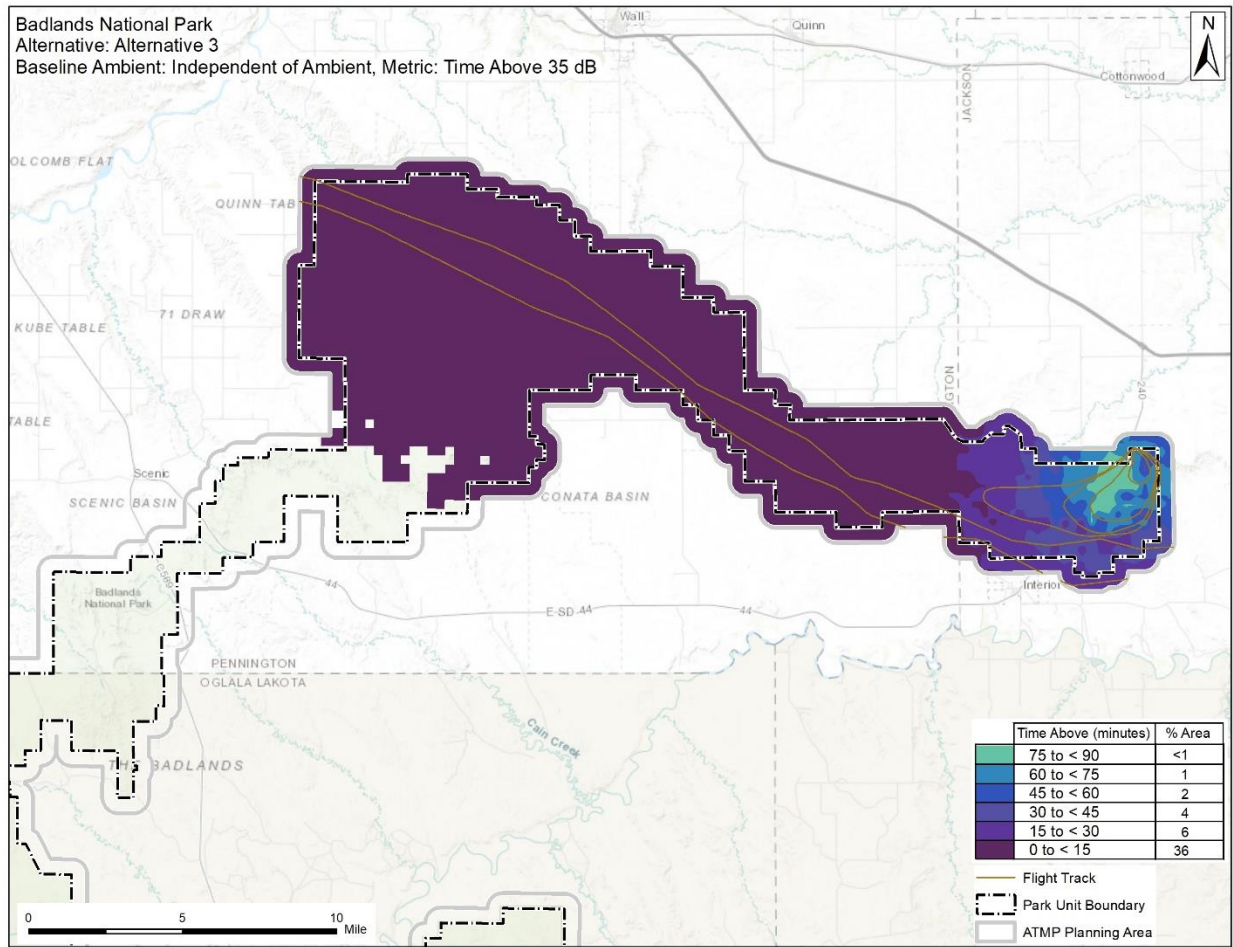


Figure 13. Time Above 35 dBA map for Alternative 3

Table 7. Location point results for Alternative 3

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

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

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

**Location point is outside the ATMP planning area.

Alternative 4

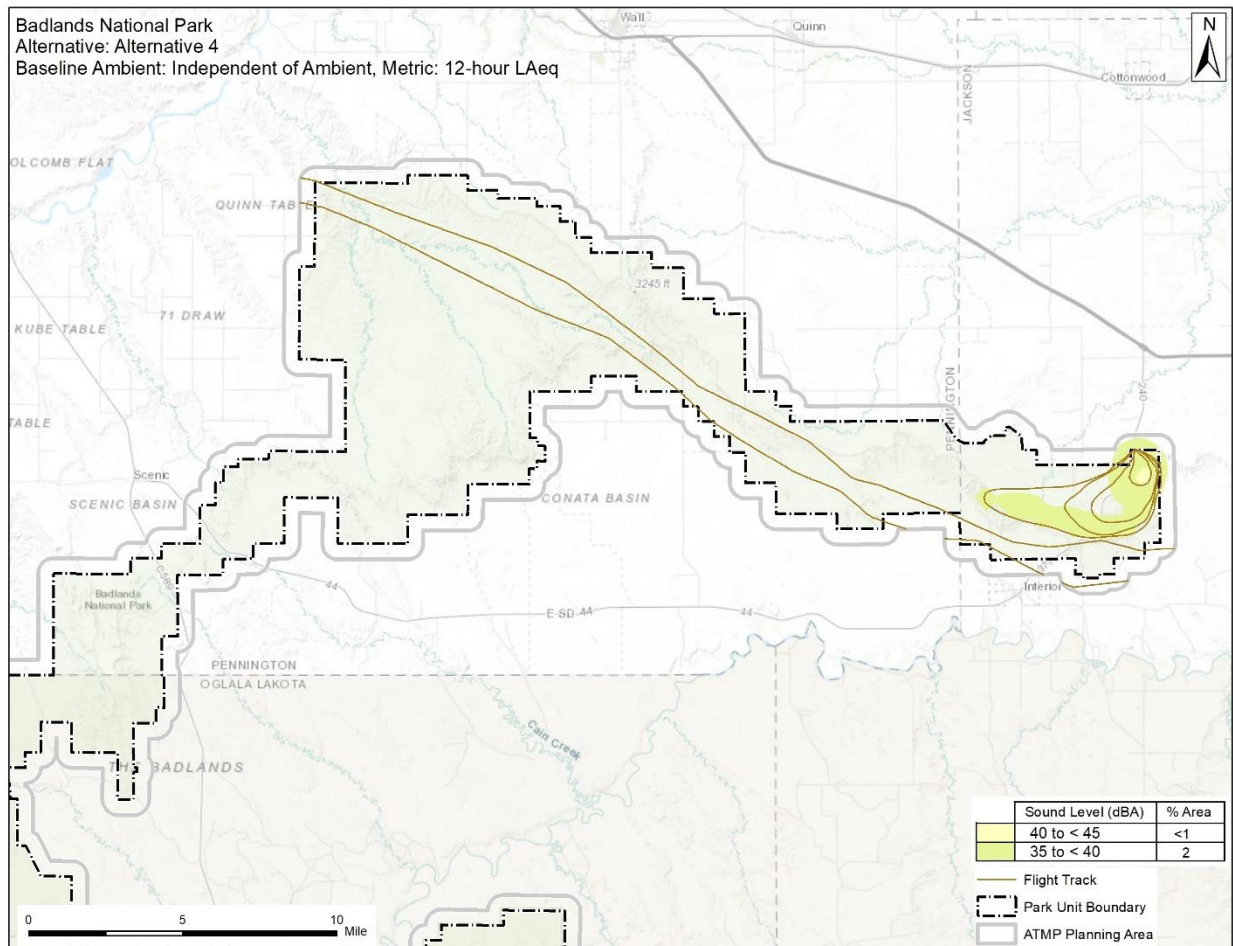


Figure 14. 12-hour equivalent sound level ($L_{Aeq,12h}$) map for Alternative 4

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

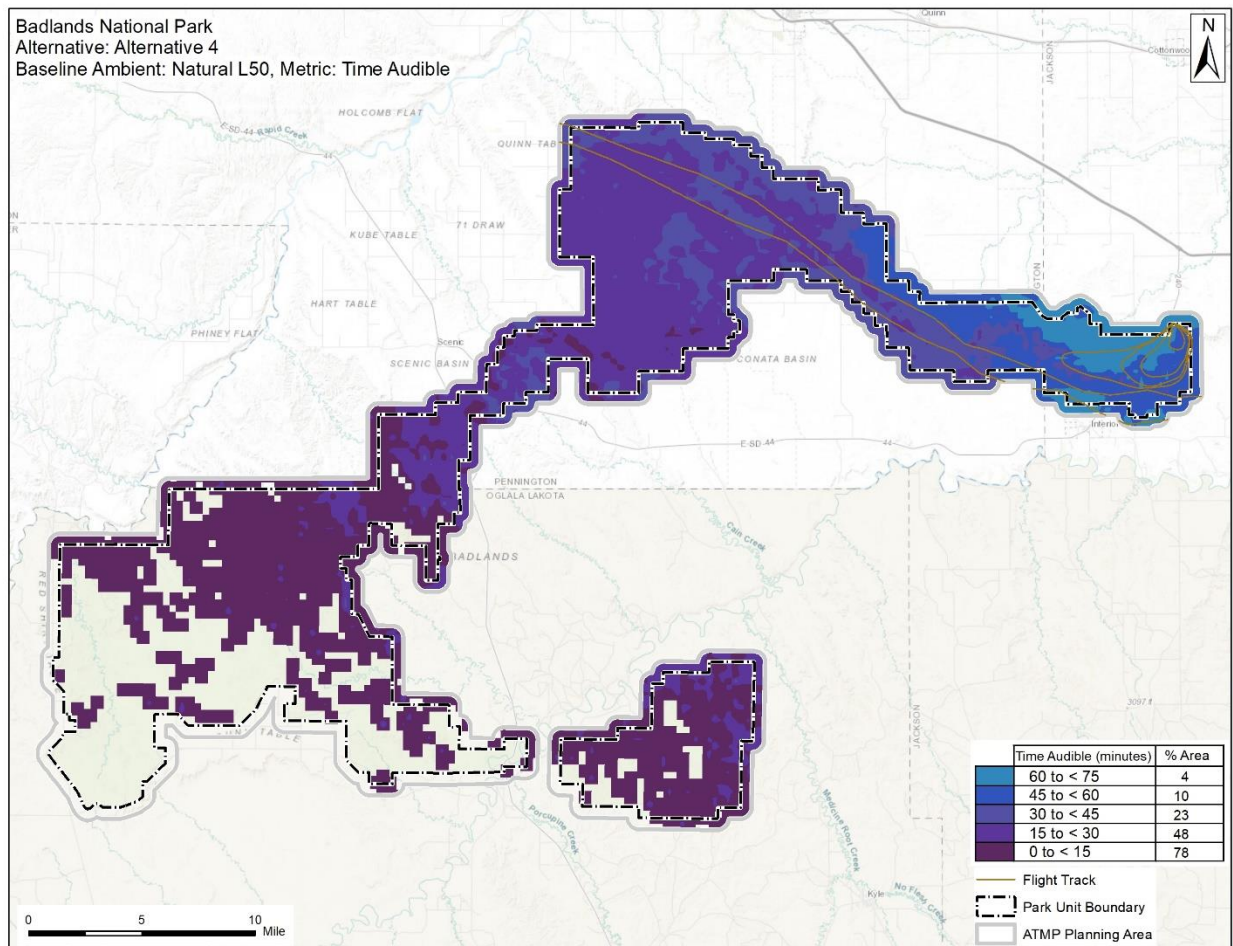


Figure 15. Time Audible (for natural ambient) map for Alternative 4

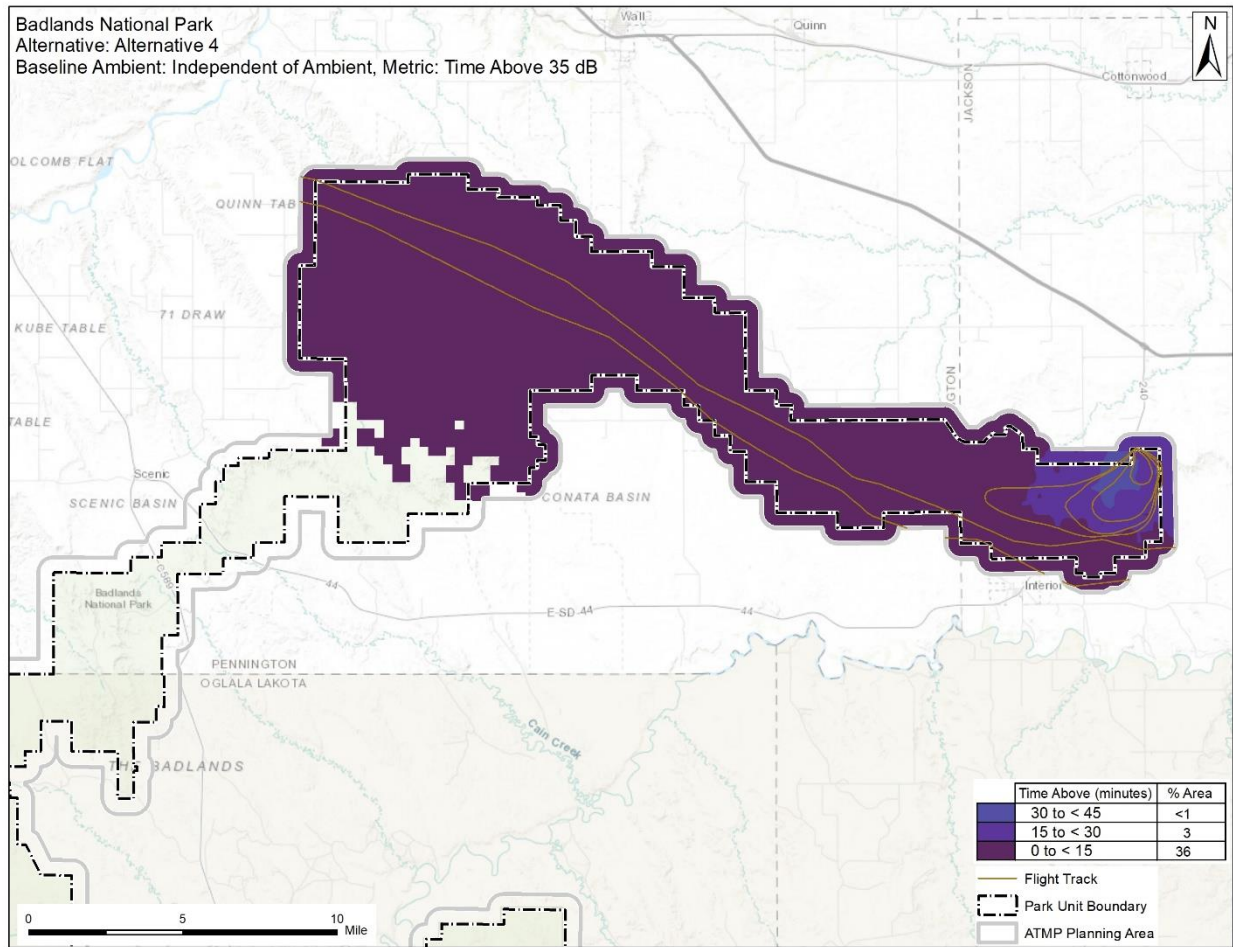


Figure 16. Time Above 35 dBA map for Alternative 4

Table 8. Location point results for Alternative 4

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

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

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

**Location point is outside the ATMP planning area.

7. Comparison of Alternatives by Metric

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

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

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

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

Time Audible Natural Ambient (Table 10 and Table 13)

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

Time Above 35 (Table 11 and Table 14)

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

Time Above 52 (Table 15)

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

Maximum Sound Level (Table 16)

- Since this metric represents the loudest sound level, in dBA, generated by the loudest event and is independent of the number of operations, there would be little to no change in the maximum sound level between alternatives.
- Under **Alternative 3**, locations under or near the Expedition Tour (eliminated under Alternative 3) would experience a reduction in maximum sound level; the largest being 15 dBA at point 17 (Big Foot Pass Overlook). Points 6, 18, 21, 22, 26, and 37 would experience a reduction in maximum sound level greater than 3 dBA.
- Under **Alternative 4**, locations 4, 17, 22, 26, and 37 would experience a reduction in maximum sound level greater than 3 dBA.

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

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

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

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

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

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

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

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

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

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

**Location point is outside the ATMP planning area.

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

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

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

**Location point is outside the ATMP planning area.

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

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

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

**Location point is outside the ATMP planning area.

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

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

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

**Location point is outside the ATMP planning area.

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

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

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

**Location point is outside the ATMP planning area.

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

For alternatives that limit the number of flights per year to a level below existing conditions (1,425 flights per year) or limit the number of routes on which air tours could be conducted within the ATMP planning area, it is reasonably foreseeable that current air tour operators could seek to make up lost revenue in other ways. One of the ways that operators could potentially generate revenue is by offering air tours outside of the ATMP planning area, as these would not be regulated by the ATMP. This type of shift in air tour activity is referred to as “air tour displacement,” and could consist of air tour operators shifting routes or altitudes to just outside the ATMP planning area, or over the ATMP planning area at or above 5,000 ft. AGL. This could result in impacts to resources to the extent that they are present near the locations where displaced air tours would occur.

Indirect Effects to ATMP Planning Area

Displaced air tours, if any, above the ATMP planning area (above 5,000 ft. AGL) would result in noise within the ATMP planning area. Compared to current conditions, the noise would be spread over a larger geospatial area and would be audible for a longer period, but at lower intensity. Thus, under Alternatives 2, 3, and 4, some locations within the ATMP planning area may experience less intense noise but for a longer period when compared to current conditions. Additionally, other locations within the ATMP planning area not currently experiencing air tour noise may experience some noise under these alternatives when compared to current conditions. However, in these cases, the intensity of noise would likely be low given the aircraft altitude; any noise that might result could also be more easily masked by opportunistic sounds such as wind and various anthropogenic noise sources. In summary, while the area of noise could be greater under these alternatives, the intensity of noise, especially when compared to current conditions at locations near or directly below existing air tour routes, would be less.

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

Indirect Effects outside the ATMP Planning Area

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

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

Analysis for aircraft with loudest noise level

The aircraft with the loudest noise level⁸ currently operating at the Park is the Robinson R-44. For overflight operations at 500 ft. AGL, the number of operations over a 12-hour period to exceed a DNL 65 dB level is 1,086 (see Table 17). Other aircraft operating at the Park are the Cessna 206. The number of daily operations to exceed a DNL 65 dB level for this aircraft is 1,306.

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

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

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

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

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

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

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

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

9. Literature Cited

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

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

Federal Aviation Administration (2015). FAA Order 1050.1F, Environmental impacts: Policies and procedures. *U.S. Department of Transportation*, 1.1-11.4. https://www.faa.gov/documentLibrary/media/Order/FAA_Order_1050_1F.pdf

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

Lee Cynthia S.Y., Fleming, Gregg G., Roof, Christopher J., MacDonald John M., Scarpone Christopher J., Malwitz, Andrew R., and Baker, Gary, 2016, Badlands National Park: Baseline Ambient Sound Levels 2003, DOT-VNTSC-FAA-06-12, DOT/FAA/AEE/2016-04. <https://irma.nps.gov/DataStore/Reference/Profile/2233367>

Lee, C., et al. (2022). Aviation Environmental Design Tool (AEDT Technical Manual, Version 3e. DOT-VNTSC-FAA-22-04. https://aedt.faa.gov/Documents/AEDT3e_TechManual.pdf

Society of Automotive Engineers (SAE) International, Committee A-21, Aircraft Noise, Method for Modeling Line-of-Sight Blockage of Aircraft Noise, Aerospace Information Report No. 6501, Warrendale, PA: SAE International, February 2020.

Society of Automotive Engineers (SAE) International, Committee A-21, Aircraft Noise, Application of Pure-Tone Atmospheric Absorption Losses to One-Third Octave-Band Data, Aerospace Recommended Practice No. 5534, Warrendale, PA: SAE International, August 2013.

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

APPENDIX G

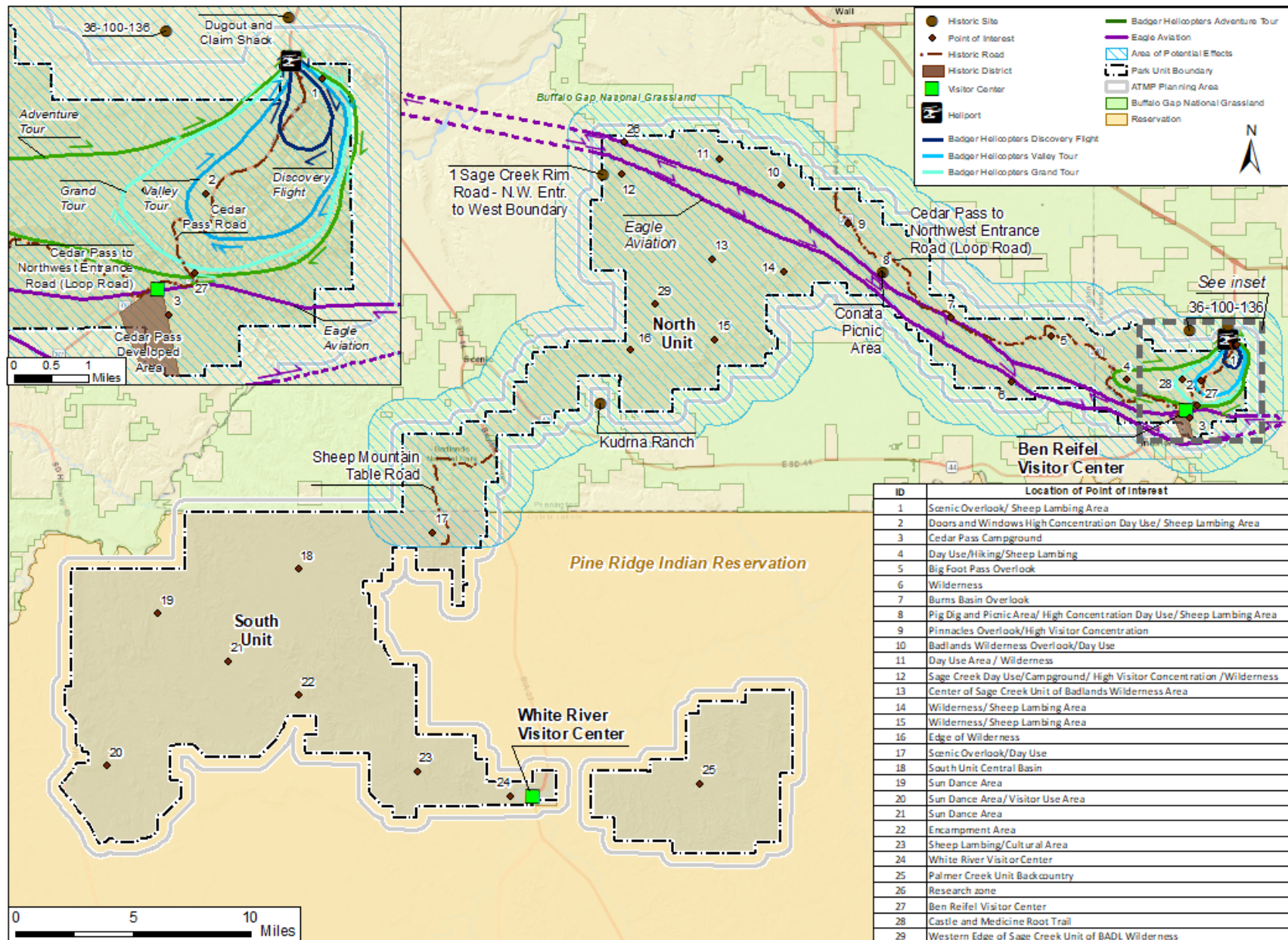
Cultural Resources Consultation and Summary

Appendix G: Cultural Resources Consultation and Summary

Historic Property List

Section 106 Consultation Correspondence

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



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

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

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

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

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

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

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

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



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



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

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

NATIONAL PARKS AIR TOUR MANAGEMENT PROGRAM

April 12, 2021

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

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

Dear Mr. Spencer:

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

In response to a May 1, 2020 court order, the agencies are working to complete all of the ATMPs by August 31, 2022.¹ The ATMPs are being developed in accordance with the National Parks Air Tour Management Act (NPATMA). NPATMA directs the agencies to either enter into voluntary agreements with air tour operators or establish ATMPs for national parks and adjacent tribal lands where commercial air tour operations are conducted or proposed, subject to certain exceptions not relevant here.

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

¹ For more information about the court order and proposed plan, see:
https://www.faa.gov/about/office_org/headquarters_offices/arc/programs/air_tour_management_plan/

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

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

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

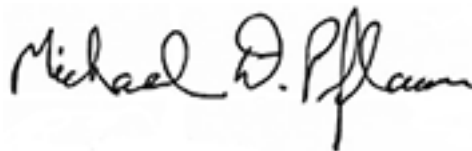
https://www.faa.gov/about/office_org/headquarters_offices/arc/programs/air_tour_management_plan/. During the next phase of consultation, we will seek your input regarding the Area of Potential Effect and the identification of historic properties.

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

Sincerely,



Rebecca MacPherson
Regional Administrator
Great Lakes Region
Federal Aviation Administration



Michael Pflaum
Superintendent
Badlands National Park
National Park Service



Michelle Wheatley
Superintendent
Mount Rushmore National Memorial
National Park Service

Attachment A: List of Tribes

ATTACHMENT A
TRIBAL CONSULTATION LIST

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



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

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

NATIONAL PARKS AIR TOUR MANAGEMENT PROGRAM

October 28, 2022

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

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

Dear Mr. Spencer:

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

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

Description of the Undertaking

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

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

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

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

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

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

Potential Undertakings

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

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

¹ Altitude expressed in units above ground level is a measurement of the distance between the ground surface and the aircraft, whereas altitude expressed in median sea level (MSL) refers to the altitude of aircraft above sea level, regardless of the terrain below it. Aircraft flying at a constant MSL altitude would simultaneously fly at varying AGL altitudes, and vice versa, assuming uneven terrain is present below the aircraft.

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

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

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

Proposed Area of Potential Effects

The APE as defined at 36 CFR 800.16(d) is the geographic area or areas within which the undertaking may directly or indirectly cause alterations in the character or use of any historic properties, if any such properties exist. The proposed FAA and NPS approval of the ATMP does not require land acquisition, construction, or ground disturbance, and the FAA anticipates no physical effects to historic properties. The FAA is therefore focusing its assessment on the potential introduction of visual or audible elements that could diminish the integrity of any identified significant historic properties.³

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

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

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

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

Preliminary Historic Property Identification

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

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

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

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

Preliminary Effects Assessment

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

Review Request

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

Sincerely,

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

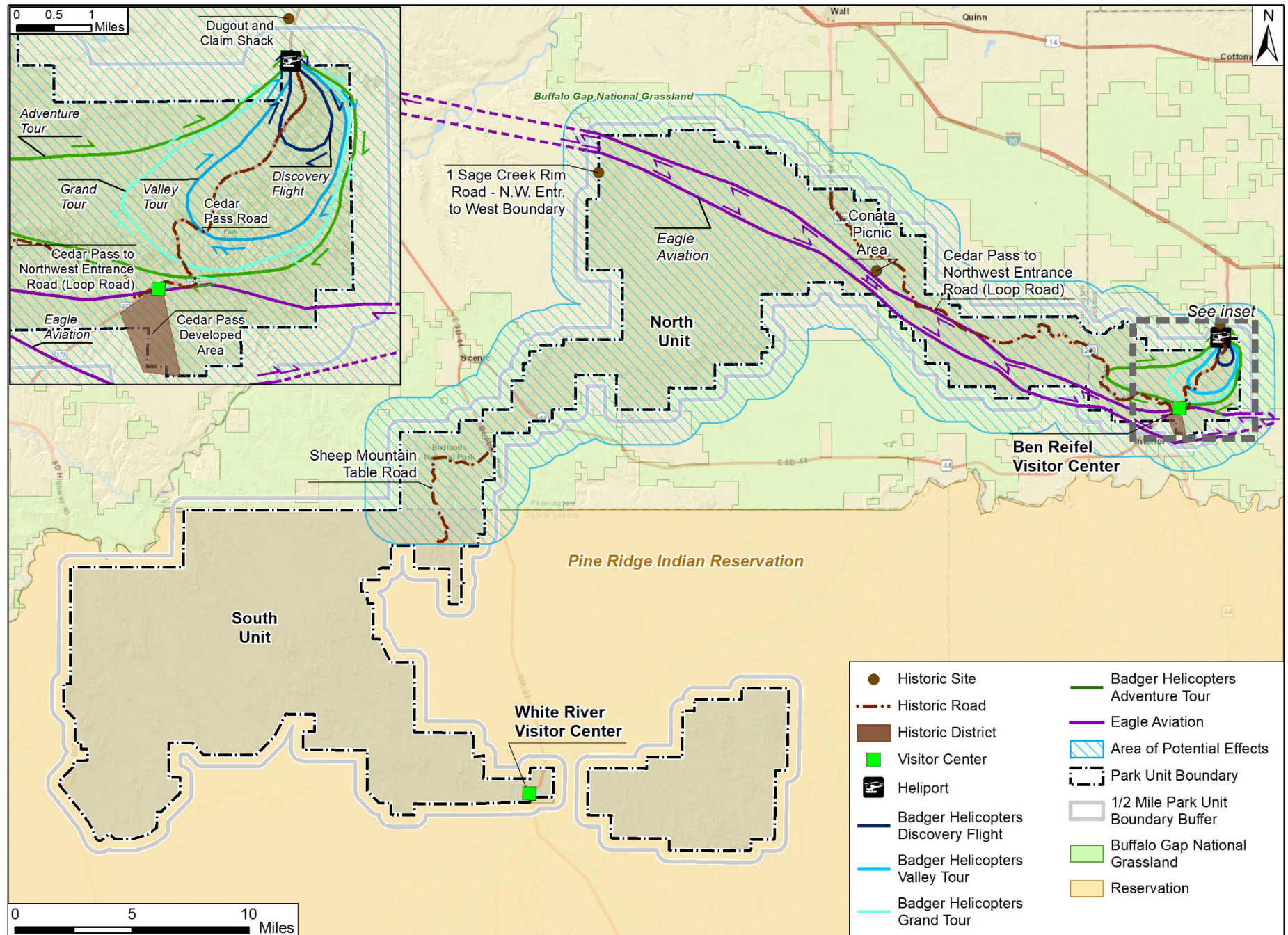
Judith Walker
Federal Preservation Officer
Senior Environmental Policy Analyst
Environmental Policy Division (AEE-400)
Federal Aviation Administration

Attachments

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

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

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



ATTACHMENT B

SUMMARY OF ALTERNATIVE ELEMENTS

Alternative Attributes	Alternative 2 (No Air Tours in the Planning Area ⁴)	Alternative 3 (Operational Modifications to Existing Air Tours)	Alternative 4 (Reduction of Air Tours)
General Description and Objectives	Prohibits air tours within the ATMP planning area to maximize Park resource protection. Air tours could still continue to fly outside the ATMP planning area (i.e., above 5,000 ft. AGL or more than ½-mile outside of the Park's boundary).	Restricts air tour operations within the ATMP planning area. Primarily, the conditions in this alternative include annual and daily caps, designated routes, and required minimal altitudes.	Restricts and reduces air tour operations within the ATMP planning area. Primarily, the conditions in this alternative include annual and daily caps, designated routes, and required minimal altitudes.
Annual/Daily Number of Flights	None in ATMP planning area.	The annual number of flights would be limited to 1,425 total flights per year across both operators. The daily number of flights may not exceed 16 tours per day across both operators. There would be annual and daily limitations for each operator.	The annual number of flights would be limited to 1,055 total flights per year across both operators. The daily number of flights may not exceed 8 tours per day across both operators. There would be annual and daily limitations for each operator.
Routes	None in ATMP planning area.	Four routes for the helicopter operator and one route for the fixed-wing operator all with varying distances and altitudes. Badger Route 5 – Expedition Tour would be prohibited under this alternative.	Same as Alternative 3.

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

Alternative Attributes	Alternative 2 (No Air Tours in the Planning Area⁴)	Alternative 3 (Operational Modifications to Existing Air Tours)	Alternative 4 (Reduction of Air Tours)
Minimum Altitudes	No minimum altitude would be set. However, flights over the Park that are above 5,000 ft. AGL could occur as they are outside the ATMP planning area. Flights more than ½-mile outside the Park boundary are similarly outside the ATMP planning area and could occur.	Minimum 2,600 ft. AGL for fixed-wing aircraft, and minimum 800 ft. AGL to 1,500 ft. AGL for helicopter aircraft.	Same as Alternative 3.
Time of Day	N/A	One hour after sunrise to one hour before sunset for non-QT flights.	Same as Alternative 3.
Seasonal Restrictions	N/A	Air tours would be permitted to occur from May 1 through September 30, for 152 total days each year.	Same as Alternative 3.
Day of Week	N/A	Air tours may fly any day of the week from May 1 to September 30.	Same as Alternative 3.
Quiet Technology (QT) Incentives	N/A	Air tours operators are incentivized to adopt QT by being extended the opportunity to fly sunrise through sunset for QT flights.	Same as Alternative 3.
Operator Training and Education	N/A	Mandatory if requested and/or made available by the FAA or the NPS.	Same as Alternative 3.
Annual Meeting	N/A	Mandatory if requested and/or made available by the FAA or the NPS.	Same as Alternative 3.
Restrictions for Particular Events	N/A	In addition to seasonal restrictions, the NPS can establish temporary no-fly periods and must provide 30 days notice to operators of the no-fly periods. Events may include tribal ceremonies or other similar events.	Same as Alternative 3.

Alternative Attributes	Alternative 2 (No Air Tours in the Planning Area⁴)	Alternative 3 (Operational Modifications to Existing Air Tours)	Alternative 4 (Reduction of Air Tours)
Adaptive Management	N/A	Adaptive management actions may be taken as long as their impacts are within the impacts already analyzed by the agencies.	Same as Alternative 3.
Operators, Initial Allocation of Air Tours, Aircraft Types, and Interim Operating Authority	The establishment of the ATMP will result in the termination of all the interim operating authority (IOA) for the Park and tribal lands that is currently in place. See p. 6 of the September 2022 newsletter for a description of IOA.	Badger Helicopter: 1,423 flights annually; BHT-206B, BHT-47-G3B1, R-44-II, R-66-66 Eagle Aviation: two flights annually; Cessna 172, Cessna 206 Competitive bidding could occur and change air tour allocations. The establishment of the ATMP will result in the termination of all IOA for the Park and tribal lands.	Badger Helicopter: 1,053 flights annually; BHT-206B, BHT-47-G3B1, R-44-II, R-66-66 Eagle Aviation: two flights annually; Cessna 172, Cessna 206 Competitive bidding could occur and change air tour allocations. The establishment of the ATMP will result in the termination of all IOA for the Park and for tribal lands.
Amendments	The ATMP may be amended at any time if the NPS, by notification to the FAA, determines that the ATMP is not adequately protecting Park resources and/or visitor enjoyment; or if the FAA, by notification to the NPS, determines that the ATMP is adversely affecting aviation safety and/or the national aviation system; or, if the agencies determine that appropriate changes to the ATMP are necessary to address new information or changed circumstances.	The ATMP may be amended at any time: if the NPS, by notification to the FAA and the operator(s), determines that the ATMP is not adequately protecting Park resources and/or visitor enjoyment; if the FAA, by notification to the NPS and the operator(s), determines that the ATMP is adversely affecting aviation safety and/or the national aviation system; or, if the agencies determine that appropriate changes to the ATMP are necessary to address new information or changed circumstances that cannot be addressed through adaptive management.	Same as Alternative 3.

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

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

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

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

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

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



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

NATIONAL PARKS AIR TOUR MANAGEMENT PROGRAM

March 14, 2023

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

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

Dear Ted Spencer:

Introduction

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

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

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

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

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

Description of the Undertaking

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

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

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

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

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

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

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

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

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

SUMMARY OF ATMP ELEMENTS

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

² Altitude expressed in units above ground level (AGL) is a measurement of the distance between the ground surface and the aircraft, whereas altitude expressed in median sea level (MSL) refers to the altitude of aircraft above sea level, regardless of the terrain below it. Aircraft flying at a constant MSL altitude would simultaneously fly at varying AGL altitudes, and vice versa, assuming uneven terrain is present below the aircraft.

Day of Week	N/A
Seasonal	N/A
Quiet Technology (QT) Incentives	N/A
Annual Meeting, Operator Training and Education	N/A
Restrictions for Particular Events	N/A
Adaptive Management	N/A
Initial Allocation, Aircraft Type, Competitive Bidding, and New Entrants	N/A
Monitoring and Enforcement	Monitoring would occur to ensure operators are complying with the terms and conditions of the ATMP.
Interim Operating Authority³	Goes away and operations must be consistent with the ATMP.

Area of Potential Effects (APE)

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

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

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

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

Summary of Section 106 Consultation with Tribes

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

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

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

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

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

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

Identification of Historic Properties

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

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

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

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

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

resources are not further described in this letter because feeling and setting are not characteristics that make these properties eligible for listing on the National Register and there is no potential for the undertaking to affect these resources.

Assessment of Effects

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

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

It is difficult to predict with specificity if, where, and to what extent any displaced air tours would result in impacts in different and/or new areas because of the undertaking. Due to the undertaking, it is reasonably foreseeable that operators would continue to utilize the helipad near the boundary of the ATMP planning area to conduct tours over other areas that are outside the ATMP planning area. If air tour displacement occurred, the number of tours offered from this helipad could increase if operators chose to offer more tours over other regional points of interest, which could result in indirect noise effects to cultural resources in this area such as Cedar Pass Road, Cedar Pass Developed Area, and the Dugout and Claim Shack. Therefore, the undertaking may result in some indirect impacts to cultural resources within the APE that could occur from the noise and visual effects associated with these displaced flights.

Assessment of Noise Effects

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

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

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

For purposes of assessing noise impacts from commercial air tours on the acoustic environment of the Parks under NEPA, the FAA noise evaluation is based on Yearly⁴ Day Night Average Sound Level (L_{dn} or DNL); the cumulative noise energy exposure from aircraft over 24 hours. The DNL analysis indicates that the undertaking would not result in any noise impacts that would be “significant” or “reportable” under the FAA’s policy for NEPA.⁵

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

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

Displaced air tours, if any, above the ATMP planning area (at or above 5,000 ft. AGL) would result in noise within the ATMP planning area. Compared to current conditions, the noise would be spread over a

⁴ Yearly conditions are represented as the Average Annual Day (AAD)

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

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

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

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

Assessment of Visual Effects

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

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

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

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

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

Finding of No Adverse Effect Criteria

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

Proposed Finding and Request for Review and Concurrence

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

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

Sincerely,

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

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

Attachments

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

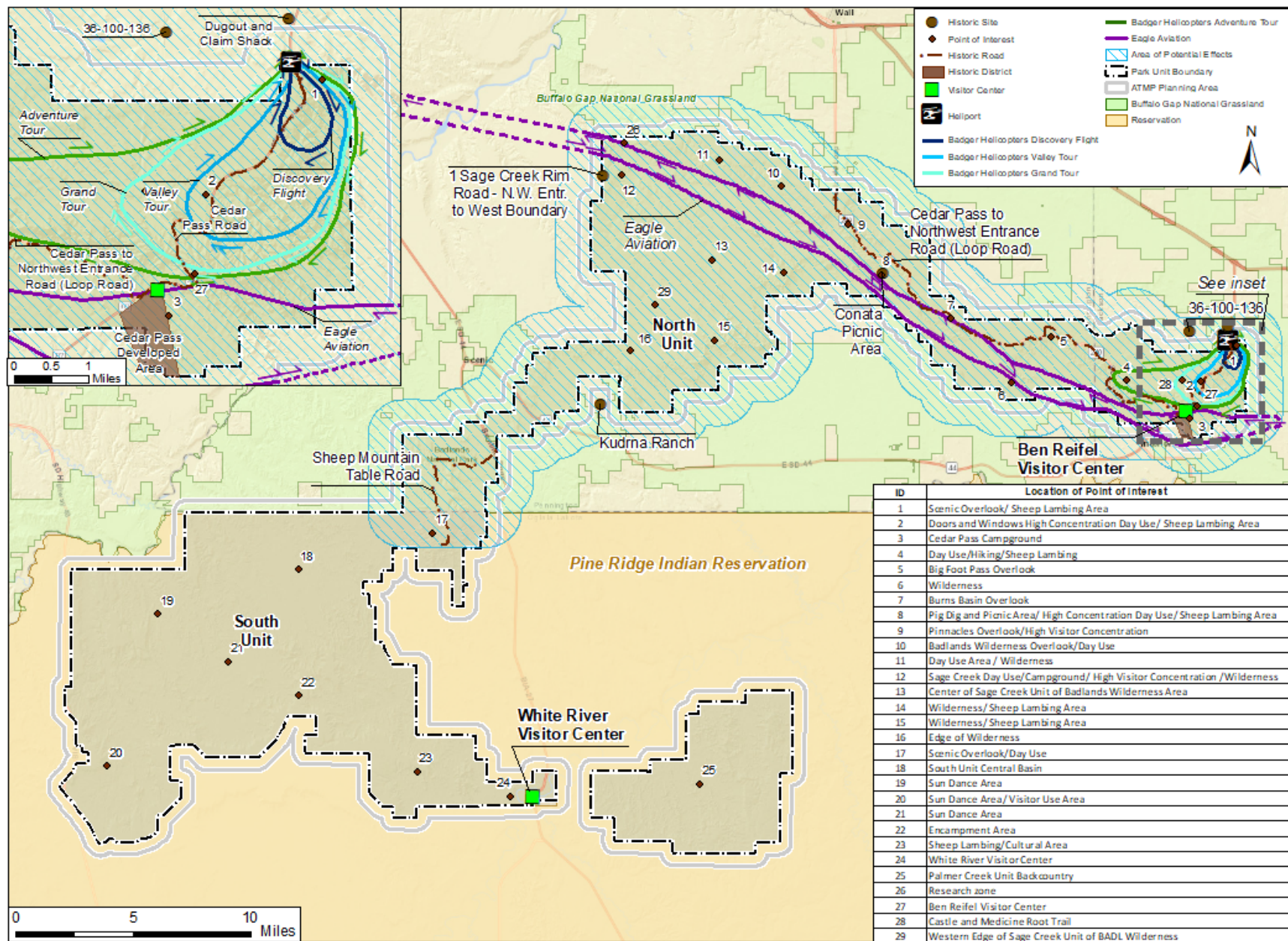
ATTACHMENT A
List of Consulting Parties

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

ATTACHMENT B

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

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



ATTACHMENT C

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

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

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

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

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

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

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

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

ATTACHMENT D

Summary of Noise Technical Analysis from NEPA Review

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

Metric	Relevance and citation
Equivalent sound level, $L_{Aeq, 12\text{ hr}}$	The logarithmic average of commercial air tour sound levels, in dBA, over a 12-hour day. The selected 12-hour period is selected to represent typical daytime commercial air tour operating hours.
Day-night average sound level, L_{dn} (or DNL)	<p>The logarithmic average of sound levels, in dBA, over a 24-hour day, DNL takes into account the increased sensitivity to noise at night by including a 10 dB penalty between 10 PM and 7 AM local time.</p> <p>Note: Both $L_{Aeq, 12\text{ hr}}$ and DNL characterize:</p> <ul style="list-style-type: none"> Increases in both the loudness and duration of noise events The number of noise events during specific time period (12 hours for $L_{Aeq, 12\text{ hr}}$ and 24-hours for DNL) <p>If there are no nighttime events, then $L_{Aeq, 12\text{ hr}}$ is arithmetically three dBA higher than DNL.</p> <p>The FAA's (2015, Exhibit 4-1) indicators of significant impacts are for an action that would increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe.</p>
Time Above 35 dBA ⁷	<p>The amount of time (in minutes) that aircraft sound levels are above a given threshold (i.e., 35 dBA)</p> <p>In quiet settings, outdoor sound levels exceeding 35 dB degrade experience in outdoor performance venues (American National Standards Institute (ANSI), 2007). This level is also shown to cause blood pressure increases in sleeping humans (Haralabidis et al., 2008); as well as exceeding recommended maximum background noise level inside classrooms (ANSI S12.60/Part 1-2010).</p>
Time Above 52 dBA	<p>The amount of time (in minutes) that aircraft sound levels are above a given threshold (i.e., 52 dBA)</p> <p>This metric represents the level at which one may reasonably expect interference with park interpretive programs. At this background sound level (52 dB), normal voice communication at five meters (two people five meters apart), or a raised voice to an audience at ten meters</p>

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

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

Aircraft, Routes and Number of Operations Modeled

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

Two types of analyses were performed using FAA’s AEDT, Version 3e: 1) contour analysis and 2) representative location point analysis. A noise contour presents a graphical illustration or “footprint” of the area potentially affected by the noise. Location point results present the metric results at specific points of interest. The NPS provided a list of 31 location points, geographically located across the planning area, where noise levels were to be evaluated. In addition, noise levels were evaluated at 8 cultural resource and historic property locations (points 32-39) outside⁸ the ATMP planning area. These locations are geographically shown in Figure 1 and listed in Figure 2.

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

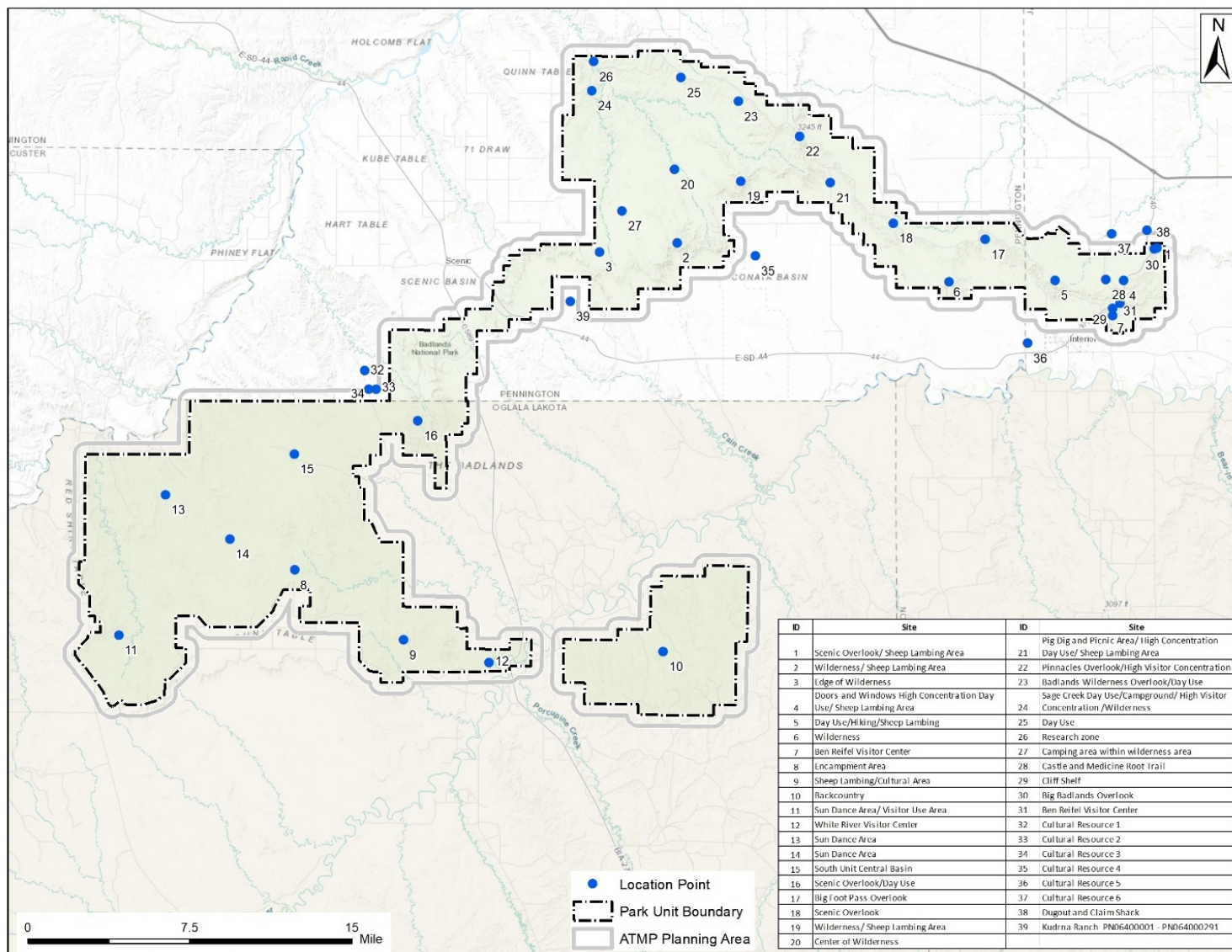


Figure 1. Location Points Modeled

Figure 2. Location point results – Existing Conditions

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

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

*Location points outside the ATMP planning area

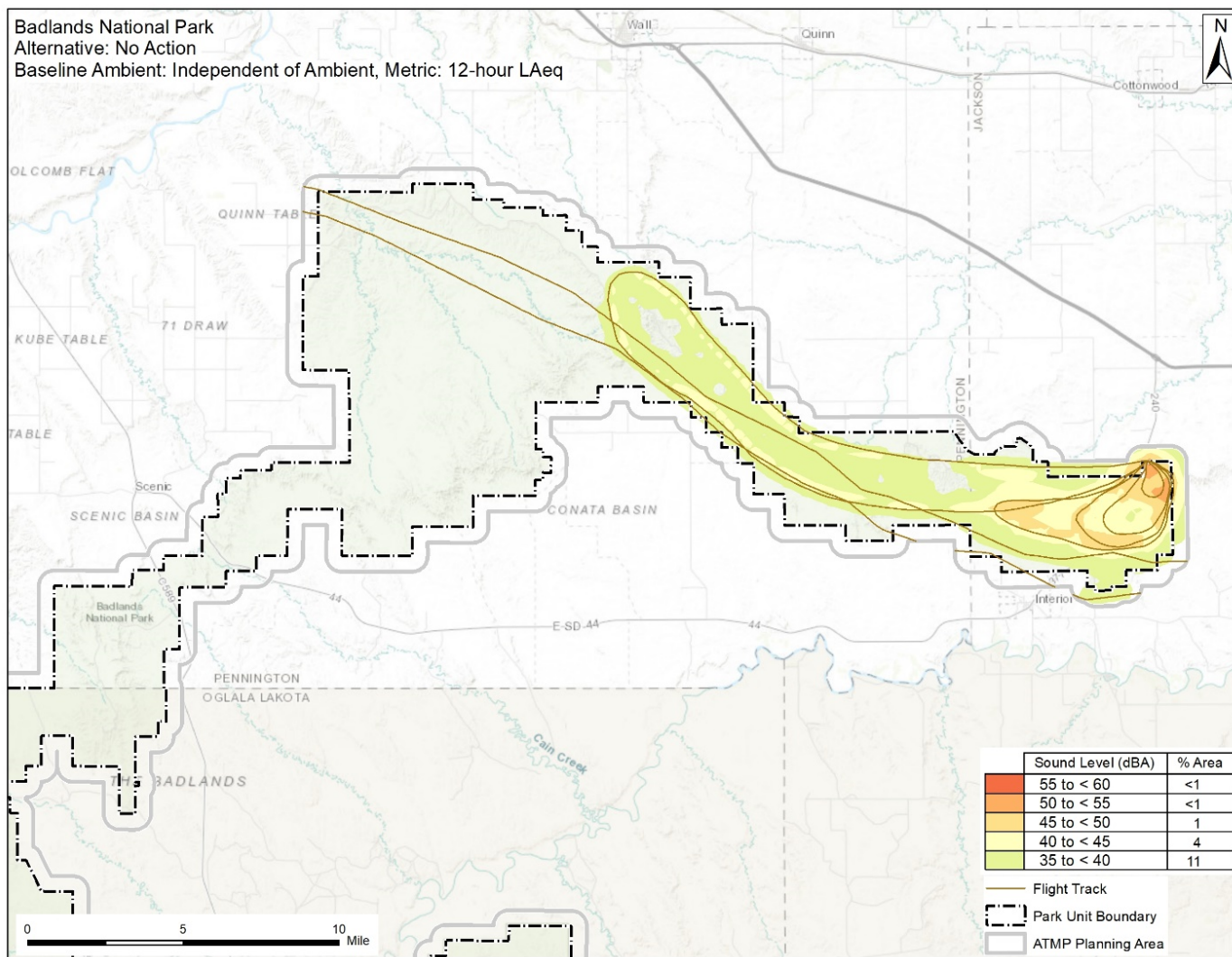


Figure 3. 12-hour equivalent sound level ($L_{Aeq,12h}$) map for existing conditions
 As there are no nighttime events, DNL will be 3 dB less than the 12-hour equivalent sound level.

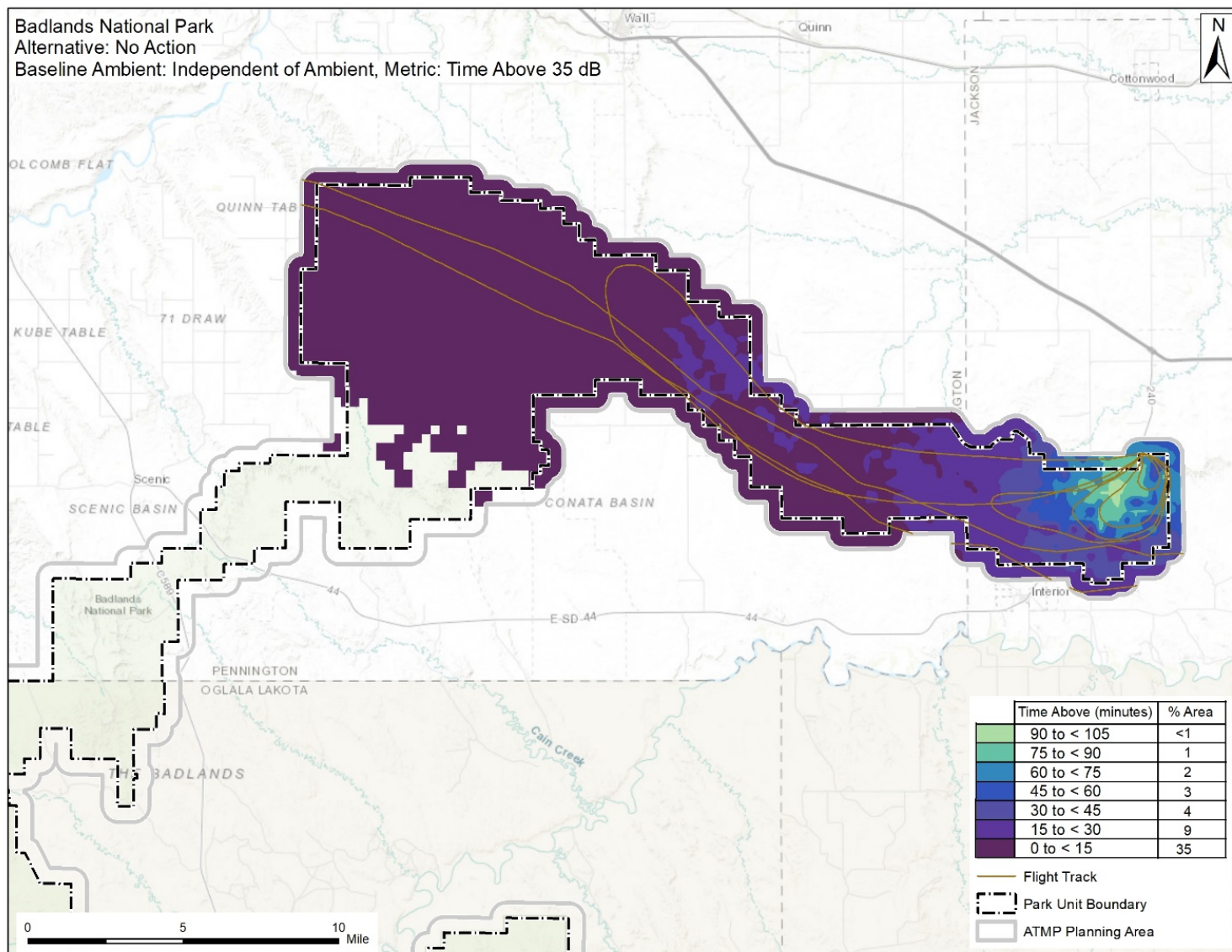


Figure 4. Time Above 35 dBA map for existing conditions

APPENDIX H

Section 7 No Effect Memo



United States Department of the Interior

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



In Reply Refer To:

April 17, 2023

Project Code: 2023-0069795

Project Name: Badlands National Park - Air Tour Management Plan

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Grant, Marshall, Roberts.

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

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

Attachment(s):

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

OFFICIAL SPECIES LIST

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

This species list is provided by:

South Dakota Ecological Services Field Office

420 South Garfield Avenue, Suite 400

Pierre, SD 57501-5408

(605) 224-8693

PROJECT SUMMARY

Project Code: 2023-0069795

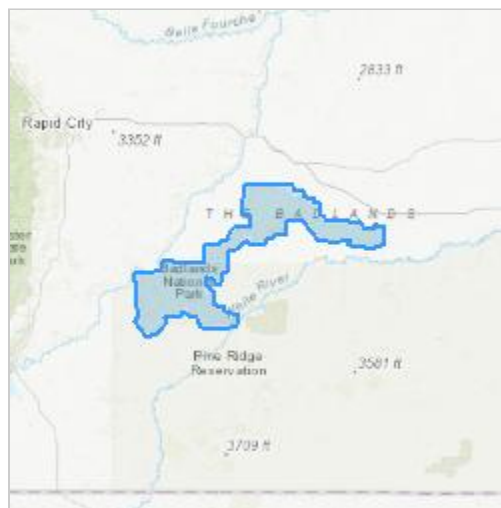
Project Name: Badlands National Park - Air Tour Management Plan

Project Type: Recreation Operations

Project Description: The Federal Aviation Administration (FAA) and the National Park Service (NPS) are working together to develop an air tour management plan (ATMP) pursuant to the National Parks Air Tour Management Act of 2000. The National Parks Air Tour Management Act applies to all commercial air tour operations over a unit of the National Park System and requires the FAA, in cooperation with the NPS, to develop an ATMP or Voluntary Agreement for parks and tribal lands where operators have applied to conduct commercial air tours.

Project Location:

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



Counties: South Dakota

ENDANGERED SPECIES ACT SPECIES

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

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

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

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

MAMMALS

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

BIRDS

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

INSECTS

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

FLOWERING PLANTS

NAME	STATUS
Western Prairie Fringed Orchid <i>Platanthera praeclara</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1669	Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

-
1. The [Migratory Birds Treaty Act](#) of 1918.
 2. The [Bald and Golden Eagle Protection Act](#) of 1940.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern \(BCC\)](#) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Baird's Sparrow <i>Ammodramus bairdii</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5113	Breeds May 20 to Aug 15
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Dec 1 to Aug 31

NAME	BREEDING SEASON
Black Tern <i>Chlidonias niger</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3093	Breeds May 15 to Aug 20
Black-billed Cuckoo <i>Coccyzus erythrophthalmus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Bobolink <i>Dolichonyx oryzivorus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Chestnut-collared Longspur <i>Calcarius ornatus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 10
Ferruginous Hawk <i>Buteo regalis</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/6038	Breeds Mar 15 to Aug 15
Franklin's Gull <i>Leucophaeus pipixcan</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Lark Bunting <i>Calamospiza melanocorys</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 10 to Aug 15
Lesser Yellowlegs <i>Tringa flavipes</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Lewis's Woodpecker <i>Melanerpes lewis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9408	Breeds Apr 20 to Sep 30
Long-eared Owl <i>asio otus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3631	Breeds Mar 1 to Jul 15
Marbled Godwit <i>Limosa fedoa</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds May 1 to Jul 31

NAME	BREEDING SEASON
Prairie Falcon <i>Falco mexicanus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/4736	Breeds Mar 1 to Jul 31
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Sprague's Pipit <i>Anthus spragueii</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8964	Breeds May 10 to Aug 31
Western Grebe <i>aechmophorus occidentalis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/6743	Breeds Jun 1 to Aug 31
Willet <i>Tringa semipalmata</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum

probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

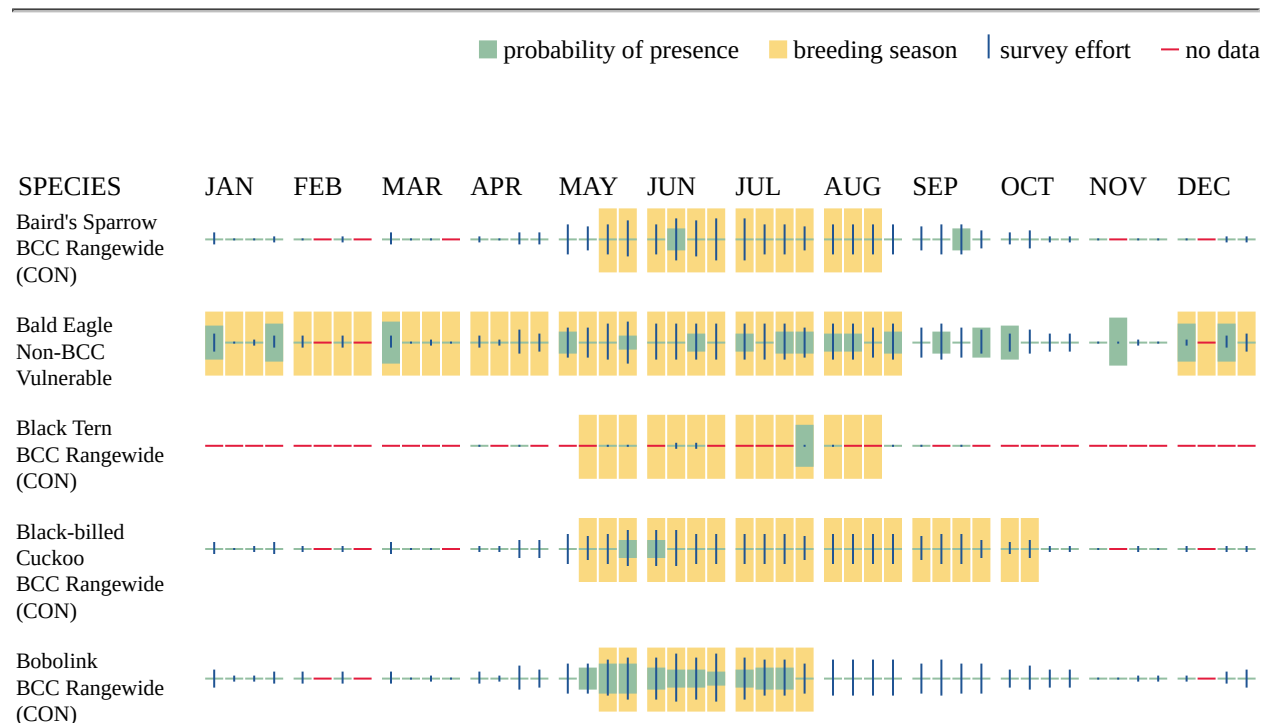
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>

- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

MIGRATORY BIRDS FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look

at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be

aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

WETLANDS

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

WETLAND INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED.
PLEASE VISIT [HTTPS://WWW.FWS.GOV/WETLANDS/DATA/MAPPER.HTML](https://www.fws.gov/wetlands/data/mapper.html) OR CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

IPAC USER CONTACT INFORMATION

[REDACTED]

LEAD AGENCY CONTACT INFORMATION

[REDACTED]



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



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

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

NATIONAL PARKS AIR TOUR MANAGEMENT PROGRAM

April 23, 2023

Re: Section 7 Endangered Species Act No Effect Determination for Badlands National Park Air Tour Management Plan

The Federal Aviation Administration (FAA), in cooperation with the National Park Service (NPS) (collectively, the agencies), is developing an Air Tour Management Plan (ATMP) for Badlands National Park (the Park). The agencies are preparing documentation for the ATMP in accordance with the National Parks Air Tour Management Act of 2000 (NPATMA) and other applicable laws. This memorandum documents the agencies' *No Effect* determination associated with the proposed action for the purpose of compliance with Section 7 of the Endangered Species Act (ESA). In addition, this memorandum documents the analysis for birds protected under the Migratory Bird Treaty Act (MBTA) and other species of concern.

Action Area

The action area is the area that includes all direct and indirect effects within the ATMP planning area, which includes the Park and the area within a ½-mile outside the Park's boundary. Figure 1 depicts the action area for the North Unit of the Park, the only portion of the Park where air tours occur under existing conditions. The South Unit of the Park is Oglala Lakota tribal land, and no air tours are permitted or proposed over the South Unit. A commercial air tour subject to the ATMP is any flight, conducted for compensation or hire in a powered aircraft where a purpose of the flight is sightseeing over the Park, during which the aircraft flies:

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

As air tours outside of the action area are outside the jurisdiction of the ATMP and not subject to NPATMA, there would be no limitations on the annual number of air tours that could occur, and no designated routes could be set outside of the action area.

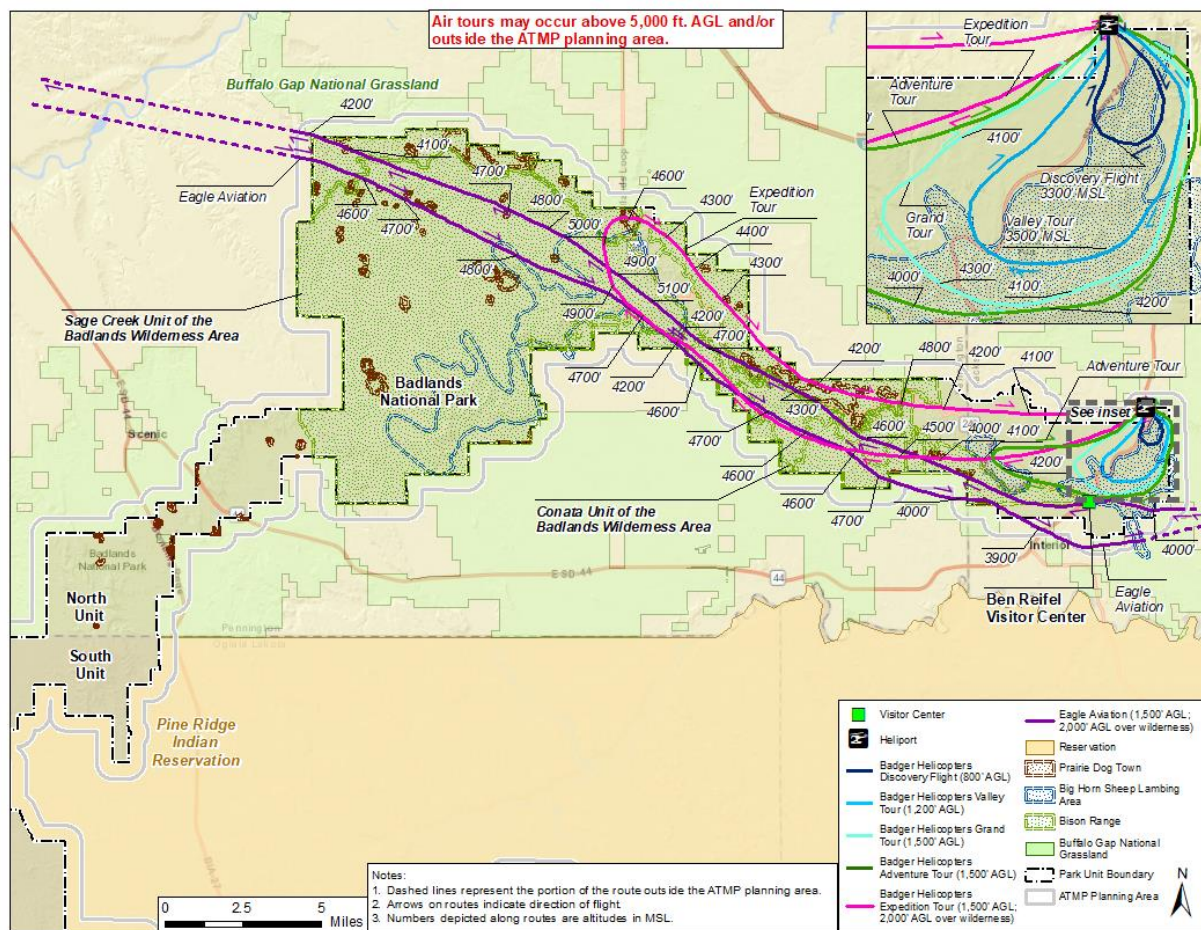


Figure 1. Species Habitat and Commercial Air Tour Routes Under Existing Conditions at Badlands National Park

Description of Proposed Action

The proposed action is implementation of an ATMP for the Park which establishes conditions for the management of commercial air tour operations. The ATMP will remain in effect until amended, at which time the agencies would reinstate consultation pursuant to 50 CFR 402.16. The relevant operating parameters of the draft ATMP are discussed in detail below.

The proposed action prohibits commercial air tours within the action area (below 5,000 ft. AGL over the Park and outside the Park within ½-mile of its boundary). Except when necessary for takeoff or landing from the privately owned heliport on the boundary of the action area, in an emergency or to avoid unsafe conditions, or unless otherwise authorized for a specified purpose, commercial air tour operators would not be allowed to enter the action area.

Air tours could be conducted only outside the action area. Air tours outside of the action area are not subject to NPATMA and are therefore not regulated under the draft ATMP. An unknown number of air tours may continue to fly more than ½-mile outside of the Park’s boundary, or over the ATMP planning area at or above 5,000 ft. AGL. There would be no limitations on the number of such air tours that could occur.

Aircraft monitoring and enforcement would occur under the proposed action to ensure that commercial air tour operators are complying with the terms and conditions of the draft ATMP by not conducting tours under 5,000 ft. AGL over the action area. The NPS and the FAA would both be responsible for the monitoring and oversight of implementation of the ATMP.

Listed Species Evaluated for Effects

The U.S. Fish and Wildlife Service’s (USFWS) Information for Planning and Consultation (IPaC) tool and the NPS species list were used to assess the potential for any federally listed species or designated critical habitat that may occur within the action area. Based on this review, the agencies identified the following species and/or critical habitat that may occur within the action area (see Table 1).

The agencies analyzed potential impacts to all federally listed species with suitable habitat within the action area with a focus on several federally listed species, some of which are noise sensitive species that occur within the action area (see Table 1).

Because the proposed action would prohibit commercial air tours within the action area, it is reasonably foreseeable that current air tour operators could offer air tours outside of the action area, as the areas beyond the action area would not be regulated by the draft ATMP. This type of shift in air tour activity is referred to as “air tour displacement,” and could consist of air tour operators shifting routes or altitudes to just outside the action area, some of which could result in impacts to wildlife to the extent that they are present near the locations where the displaced air tours would occur. It is difficult to predict with specificity if, where, and to what extent any air tours would be displaced to areas outside the action area, including at altitudes at or above 5,000 ft. AGL. However, air tours outside of the action area are outside the jurisdiction of the ATMP and not subject to NPATMA.

Table 1. Listed Species Potentially Occurring in the Action Area with No Effect Determination

Mammals Scientific Name	Mammals Common Name	Mammals Status (Federal)	Mammals Critical Habitat (Y/N)	Mammals Occurrence in the Park
<i>Mustela nigripes</i>	Black-footed Ferret	Endangered	N	Present
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	Endangered	N	Present
<i>Perimyotis subflavus</i>	Tricolored Bat	Proposed – Endangered	N	Present
Birds Scientific Name	Birds Common Name	Birds Status (Federal)	Birds Critical Habitat (Y/N)	Birds Occurrence in the Park
<i>Calidris canutus rufa</i>	Red Knot	Threatened	N	Not Present

<i>Grus americana</i>	Whooping Crane	Endangered	N	Unknown
Insects Scientific Name	Insects Common Name	Insects Status (Federal)	Insects Critical Habitat (Y/N)	Insects Occurrence in the Park
<i>Danaus plexippus</i>	Monarch	Candidate	N	Unknown
Flowering Plants Scientific Name	Flowering Plants Common Name	Flowering Plants Status (Federal)	Flowering Plants Critical Habitat (Y/N)	Flowering Plants Occurrence in the Park
<i>Platanthera praeclara</i>	Western Prairie Fringed Orchid	Threatened	N	Not Present

Table 1 includes the Section 7 determination for each species listed under the ESA. The proposed action does not involve disturbance or other activities with the potential to modify aquatic or terrestrial habitat. Therefore, the agencies determined the proposed action will have *No Effect* on mammals, birds, insects, and flowering plants.

Black-footed Ferret

The black-footed ferret (*Mustela nigripes*) is the only ferret native to North America and is listed as endangered under the ESA. It is a nocturnal mammal that lives underground in prairie dog colonies. The breeding season for the black-footed ferret occurs from March to April, and their litter size is three to four kits. This species was listed as endangered in 1967, and was grandfathered into the ESA in 1973. Later thought to be extinct, a remnant population was rediscovered in Wyoming in 1981 and the remaining 18 individuals were removed for captive breeding (NPS, 2012). An aggressive captive breeding program allowed the population to recover enough that reintroductions began in 1991 and extended to the Park in 1994. The successful experimental population at the Park is now self-sustaining, and the Park and nearby Buffalo Gap National Grasslands host the largest wild population of black-footed ferrets, which is estimated to be 115 individuals (Breck, 2019). The Park has one of the only self-sustaining black-footed ferret populations in the world, where this population does not need to be supplemented by ferrets raised in captivity. The largest captive population of black-footed ferrets is located in the National Black-Footed Ferret Conservation Center in Colorado, one of six captive breeding facilities in North America.

Black-footed ferrets depend largely on the prairie dog population, as they live in prairie dog colonies and prairie dogs make up most of their diet. Dependence on prairie dogs for habitat and food was a critical factor in black-footed ferret population decline and is a continual challenge for the successful recovery of this species. Other threats to this species beyond prairie dog population control include habitat conversion, sylvatic plague, drought, and predation by larger mammals. Black-footed ferret populations within the action area are stable. Within the action area, black-footed ferret populations are concentrated in the Conata Basin.

Effect Determination

In consideration of the noise sensitivity of this species, black-footed ferrets that become habituated to human disturbance such as noise could have higher hair cortisol concentrations, which is an indicator of stress (Santymire et al., 2021). However, under the proposed action, commercial air tours would not be conducted within the action area. The intensity and likely presence of noise from commercial air tours would be less than those present under existing conditions. The agencies believe that the proposed action is sufficiently protective of this species. Therefore, the agencies have determined the proposed action would have **No Effect** on the black-footed ferret.

Northern Long-eared Bat

The northern long-eared bat (*Myotis septentrionalis*) is listed as endangered¹ under the ESA (87 FR 73488). Northern long-eared bats are nocturnal and emerge at dusk to forage for insects in the understories of trees. Delayed fertilization occurs in spring, and the breeding season occurs from later summer to fall. They spend the remainder of the year in forested habitat.

NPS conducted bat monitoring at the Park from mid-October to February of 2021-2022 in order to track winter bat activity and identify areas of importance to wintering bats. Survey methods included mist-netting, emergence counts, radio telemetry, and acoustic monitoring; the area of greatest winter bat activity occurs in the southeast region of the North Unit (Maddox, 2022).

The most significant threat to this species is white-nose syndrome, followed by collisions with wind turbines, climate change, and habitat loss. White nose syndrome disrupts hibernation and has caused populations of northern long-eared bats to decline 97-100% across 79% of their range, while mortality from wind turbines poses a risk to northern long-eared bats across almost half of their range (USFWS, 2022a). Stressors to this species, compounded with their low reproduction rate of one pup per year, are expected to cause a 95% decline of northern-long eared bat abundance throughout their range by 2030. As such, the USFWS uplisted this species from threatened to endangered in 2023. Although there have been no detections of white nose syndrome in bat species at the Park, the fungus that causes white nose syndrome was detected at the Park in 2017.

Effect Determination

Anthropogenic noise has been found to reduce foraging success of bats (Siemers and Schaub, 2011; Luo et al., 2015). When exposed to played-back traffic and gas compressor station noise at 58-76 dBA and low-level amplified noise at 35 dBA, pallid bats (*Antrozous pallidus*) experienced increases in the amount of time it took to locate prey-generated sounds (Bunkley and Barber, 2015). The greater mouse-eared bat (*Myotis myotis*) had showed decreased foraging efficiency when exposed to broadband computer-generated noise at a sound pressure level of 80 dB (which corresponds to sounds occurring 10 – 15 meters (33 - 49 ft.) away; bats will avoid foraging areas with these conditions in favor for quieter foraging areas (Schaub et al., 2008). Northern long-eared bats have been documented utilizing artificial bat houses near airports for roosting (Whitaker et al., 2004), while other endangered bats such as the

¹The effective date of a final rule amending 50 CFR Part 17 to reclassify the northern long-eared bat as endangered was delayed until March 31, 2023.

Indiana bat (*Myotis sodalis*) focused foraging activity near forested areas in response to increases in developed land around airports (Divoll and O'Keefe, 2018).

Under the proposed action, commercial air tours would not be conducted within the action area which would eliminate this source of noise from the action area. Therefore, there would be a direct beneficial effect on the northern long-eared bat in the Park since the intensity and likely presence of noise from commercial air tours would be less than those present under existing conditions. The agencies believe that the proposed action is sufficiently protective of this species and therefore have determined that the proposed action would have **No Effect** on northern long-eared bat.

Tricolored Bat

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

Threats to tricolored bats include white nose syndrome, collisions with wind turbines, habitat loss and disturbance, and climate change. Colonies of tricolored bats are vulnerable to extirpations from white noise syndrome and other stressors due to their low reproduction rate of two pups per year and high philopatry (tending to return to or remain near a particular site or area). White nose syndrome is the most prominent threat to this species, and it is estimated that abundance of tricolored bats will decrease by 81% across their range over the next ten years (USFWS, 2022b). Although there have been no detections of white nose syndrome at the Park, the fungus that causes white nose syndrome was detected in other species at the Park in 2017. Low abundances also increase the loss of genetic diversity which would further lessen the ability of the tricolored bat to adapt to changes in their environment.

The tricolored bat was not detected during 2021-2022 winter bat monitoring in the Park, which could be due to the fact that this species was only recently documented in the region and because their calls may have been overlooked during manual review. In addition to acoustic monitoring, other survey methods included mist-netting, emergence counts, and radio telemetry. According to these surveys conducted at several locations in the Park, the area of greatest winter bat activity occurs in southeast region of the North Unit (Maddox, 2022).

Effect Determination

As discussed above, anthropogenic noise can impact foraging success and patterns of bats (Siemers and Schaub, 2011; Luo et al., 2015), while other species of bats have been documented roosting and foraging near airports (Whitaker et al., 2004; Divoll and O'Keefe, 2018). However, under the proposed action, commercial air tours would not be conducted within the action which would eliminate this source of noise from the action area. Therefore, there would be a direct beneficial effect on the

tricolored bat since the intensity and likely presence of noise from commercial air tours would be less than under existing conditions. The agencies believe that the proposed action is sufficiently protective of this species and therefore have determined the proposed action would have **No Effect** on the tricolored bat.

Red Knot

The red knot (*Calidris canutus rufa*) is listed as threatened under the ESA and is a robin-like shorebird in the sandpiper family. They fly thousands of miles to and from the Arctic tundra where they nest in large flocks. As such, stopover sites such as South Dakota, where knots occupy inland saline lakes and freshwater marshes, are vital for successful migratory patterns. However, this species has not been observed within the Park, and no habitat for the red knot is located within the action area. Red knots migrate at dawn and dusk. Females lay eggs from June to July and depart the northern breeding grounds around mid-July shortly after chicks hatch, where adults and juveniles migrate separately to southern wintering habitats.

Their diet consists of invertebrates, marine worms, and crustaceans, in addition to horseshoe crab eggs along the eastern seaboard of the United States that support 50-80% of migrating red knots every year (USFWS, 2022c). Overharvesting of horseshoe crabs limited the food supply for migrating red knots, causing their survival rates to decrease and populations to decline from 67,546 individuals in 1985 to 14,800 individuals in 2008 (Niles et al., 2009). Restrictions on horseshoe crab harvests have not resulted in recovered or increasing population sizes for horseshoe crabs and subsequently red knots, so both of these species continue to decline in number (Niles et al., 2009). Additional threats to red knots include sea level rise and coastal development that jeopardize coastal stopover habitat where red knots forage and rest during migration.

Effect Determination

In a study considering the noise sensitivity of this species, areas with more aircraft noise had lower abundances of red knots compared to areas with fewer overflights, and restlessness among birds who resided in these noisier areas was greater on days that had a greater number of aircraft overflights (Koolhaas, 1993).

The red knot has not been documented in the Park, and no suitable habitat for the species occurs within the Park. Under the proposed action, commercial air tours would not be conducted within the action area which would eliminate this source of noise from the planning area. Therefore, since the species is not present or likely to become present and commercial air tours would not occur within the action area, the agencies have determined that the proposed action would have **No Effect** on the red knot.

Whooping Crane

The whooping crane (*Grus americana*) is listed as endangered under the ESA. The whooping crane is an omnivore with a diet that consists primarily of smaller aquatic animals that varies by season. There are records of sightings near the Park, but no observations of this species within the Park. Whooping cranes breed, migrate, winter, and forage in a variety of habitats including estuaries, coastal marches, tidal flats. Within the action area, they are generally observed at inland marshes, lakes, pastures, and ponds. Whooping cranes cannot land in trees, and therefore do not use them, but opt for habitats with more

vegetative cover during molting that occurs every two to three years and renders them flightless. This species mates for life and lays eggs from late April to mid-May, with a typical clutch size of two eggs.

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

Effect Determination

In consideration of the noise sensitivity of this species, whooping cranes that were introduced to aircraft as juveniles did not have increased stress responses when exposed to novel stimuli such as aircraft introduction or engine noise (Hartup et al., 2005), but increased aircraft rotor noise caused cranes to stand when aircraft were used during population sampling (Johns, 2010).

Under the proposed action, commercial air tours would not be conducted within the action area which would eliminate this source of noise from the action area. Therefore, there would be a direct beneficial effect to whooping cranes since the intensity and likely presence of noise from commercial air tours would be less than those present under existing conditions. The agencies believe that the proposed action is sufficiently protective of species. Although whooping cranes could stop at the Park during migration, there are no records of bird sightings within the Park. Therefore, the agencies have determined that the proposed action would have **No Effect** on the whooping crane.

Monarch

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

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

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

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

Effect Determination

In consideration of the noise sensitivity of this species, monarch butterfly larvae exposed to short-term traffic noise showed increased heart rates, while larvae exposed to 7 to 12 days of continuous traffic noise showed no increased heart rates, suggesting that larvae could become desensitized or habituated to chronic exposure to anthropogenic noise (Davis et al., 2018).

Although the monarch has not been documented in the Park, the Park falls within its known range. It is possible that the species occurs but has not yet been identified in the Park. Under the proposed action, commercial air tours would not be conducted within the action area, which would eliminate this source of noise from the action area. The agencies believe that the proposed action is sufficiently protective of this species. Therefore, the agencies have determined that the proposed action would have **No Effect** on the monarch butterfly.

Summary of Determinations for ESA-Listed Species

A *No Effect* determination under the ESA means that there would be no consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other connected activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action.

As discussed, the proposed action prohibits air tours within the action area, which provides the greatest protection to threatened and endangered species. Therefore, the ATMP results in no meaningful, measurable, or noticeable impacts on the species listed in Table 1. In accordance with Section 7 of the ESA, the agencies have determined that the proposed action will have **No Effect** on black-footed ferret (*Mustela nigripes*), northern long-eared bat (*Myotis septentrionalis*), tricolored bat (*Perimyotis subflavus*), red knot (*Calidris canutus rufa*), whooping crane (*Grus americana*), and monarch butterfly (*Danaus plexippus*).

Species Protected under the MBTA

The agencies also analyzed potential impacts to non-ESA listed species that are protected under the MBTA, including bald eagles (*Haliaeetus leucocephalus*) and peregrine falcons (*Falco peregrinus*) (see Table 2).

Because the proposed action would prohibit commercial air tours within the action area, it is reasonably foreseeable that current air tour operators could offer air tours outside of the action area, as the areas beyond the action area would not be regulated by the draft ATMP. It is difficult to predict with specificity if, where, and to what extent any air tours would be displaced to areas outside the action area, including at altitudes at or above 5,000 ft. AGL. However, air tours outside of the action area are outside the jurisdiction of the ATMP and not subject to NPATMA.

Based on the analysis below, there would be no impacts from the proposed action on species protected under the MBTA.

Table 2. Species Protected Under the Migratory Bird Treaty Act Potentially Occurring in the Action Area

Scientific Name	Common Name	Occurrence in the Park
<i>Falco peregrinus</i>	Peregrine Falcon	Unknown
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Unknown

Peregrine Falcon

Peregrine falcons (*Falco peregrinus*) are present in the Park and are considered an uncommon, migratory native avian species. This species nests along remote cliffs and ledges, where their nests, called scrapes, are just small depressions in gravel. Nesting occurs in the spring and their clutch size is two to three eggs.

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

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

1997; Colorado Division of Wildlife, 2020). Under the proposed action, no impacts to peregrine falcons would occur.

Bald Eagle

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

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

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

Noise from air tours may impact wildlife in a number of ways: altered vocal behavior, breeding relocation, changes in vigilance and foraging behavior, and impacts on individual fitness and the structure of ecological communities (Shannon et al., 2015, Kunc and Schmidt, 2019). Under the proposed action, commercial air tours will not be conducted in the action area and therefore are not expected to impact bald eagles or inhibit foraging, feeding, breeding or nesting.

Other Species of Concern

The agencies also analyzed potential impacts to non-ESA listed species that are considered other species of concern, including the swift fox (*Vulpes velox*).

Swift Fox

The swift fox is a small-sized member of the dog family and are most active at night. Black markings on the sides of their snout can distinguish swift foxes from young coyotes. Their breeding season is February to March, and pups are born in April and May but do not emerge above ground from their natal den until early fall. Dens are located in hilltops, ridges, pastures, rangeland, or prairie dog

colonies. In some regions, their diet consists of prairie dogs; swift foxes are often associated with prairie dog colonies, and abundance of swift fox may decline with prairie dog abundance (Uresk and Sharps, 1986).

Historically, this species was locally abundant through the shortgrass and mixed grass prairies of the Great Plains. Abundances declined in the early 1900s due to conversion of native prairie to agriculture, incidental take from predator control aimed at coyotes and wolves, and unregulated hunting and trapping. From 1995 to 2001, swift foxes were a candidate species under the ESA (South Dakota Department of Game, Fish, and Parks, 2022).

The Park was one of four reintroduction sites for swift foxes in South Dakota, but reintroduction was not considered successful and there have been no observations within the Park. From 2003 to 2006, 114 individuals were released. The greatest threat to this population and the limiting factor to its growth is interspecific competition with coyotes and red foxes. Swift foxes are listed as threatened at the state level in South Dakota and monitored by the South Dakota Natural Heritage Program. Although the Park has suitable habitat for swift fox, this species have not been recently observed within the Park. Based on the analysis, there would be no impacts from the proposed action on other species of concern, including the swift fox.

Literature Cited

- Breck, S.W. (2019). Understanding coyote predation on black-footed ferrets: resource selection and non-lethal tool evaluation. Research Permit and Reporting System.
<https://irma.nps.gov/DataStore/Reference/Profile/2259735>
- Bunkley, J.P., and Barber, J.R. (2015). Noise reduces foraging efficiency in pallid bats (*Antrozous pallidus*). *Ethology*, 121, 1116–1121.
- Caven, A. J., Rabbe, M., Malzahn, J., & Lacy, A. E. (2020). Trends in the occurrence of large whooping crane groups during migration in the great plains, USA. *Heliyon*, 6(4).
<https://doi.org/10.1016/j.heliyon.2020.e03549>
- Colorado Parks and Wildlife, Department of Natural Resources. (2020). Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors.
<https://cpw.state.co.us/Documents/WildlifeSpecies/LivingWithWildlife/Raptor-Buffer-Guidelines.pdf>
- Davis, A. K., Schroeder, H., Yeager, I., & Pearce, J. (2018). Effects of simulated highway noise on heart rates of larval monarch butterflies, *Danaus plexippus*: implications for roadside habitat suitability. *Biology letters*, 14(5), 20180018.
- Divoll, T. J., and O’Keefe, J. M. (2018). Airport expansion and endangered bats: development and mitigation actions near the Indianapolis international airport. *Transportation Research Record*, 2672(29), 12-22.
- Hartup, B. K., Olsen, G. H., & Czekala, N. M. (2005). Fecal corticoid monitoring in whooping cranes (*Grus americana*) undergoing reintroduction. *Zoo Biology: Published in affiliation with the American Zoo and Aquarium Association*, 24(1), 15-28.
- Johns, B. W. (2010). Aerial survey techniques for breeding whooping cranes. *Proceedings of the Eleventh North American Crane Workshop, Sep 23-27, 2008, Wisconsin Dells, Wisconsin* (Baraboo, WI: North American Crane Working Group, 2010), pp. 83-88.
- Koolhaas, A., Dekinga, A., & Piersma, T. (1993). Disturbance of foraging knots by aircraft in the Dutch Wadden Sea in August-October 1992. *Wader Study Group Bulletin*, 68:20–22.
- Kunc, H.P., and Schmidt, R. (2019). The effects of anthropogenic noise on animals: a meta-analysis. *Biology. Letters.*, 15:20190649. <http://dx.doi.org/10.1098/rsbl.2019.0649>
- Luo, J., Siemers, B.M., & Koselj, K. (2015). How anthropogenic noise affects foraging. *Global Change Biology*, 21, 3278–3289.
- Maddox, M. L. (2022). Winter acoustic bat monitoring: 2021-2022 results from Mount Rushmore National Memorial, Badlands National Park, Devils Tower National Monument, and Wind Cave National

Park. Natural Resource Data Series NPS/MORU/NRDS—2022/1358. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/nrds-2293496>.

NPS. (2012). South Unit Badlands National Park: Final general management plan and environmental impact statement. National Park Service.

<https://parkplanning.nps.gov/showFile.cfm?projectID=17543&MIMEType=application%252Fpdf&filename=BADL%5FGMP%5Fcomplete%2Epdf&sfid=132295>

NPS. (2021). *Peregrine falcon*. National Park Service. <https://www.nps.gov/articles/peregrine-falcon.htm>

Niles, L. J., Bart, J., Sitters, H. P., Dey, A. D., Clark, K. E., Atkinson, P. W., ... & Veitch, C. R. (2009). Effects of horseshoe crab harvest in Delaware Bay on red knots: are harvest restrictions working? *BioScience*, 59(2), 153-164.

Nordmeyer, D. L. (1999). Effects of jet aircraft overflights and other potential disturbances on behavioral responses and productivity of nesting peregrine falcons.

Palmer, A. G., Nordmeyer, D. L., & Roby, D. D. (2003). Effects of jet aircraft overflights on parental care of peregrine falcons. *Wildlife Society Bulletin*, 499-509.

Richardson, C. and Miller, C., (1997). Recommendations for protecting raptors from human disturbance: A review. *Wildlife Society Bulletin*, 25(3), 634-638

Roby, D. D., Murphy, S. M., Ritchie, R. J., Smith, M. D., & Palmer, A. G. (2002). The effects of noise on birds of prey: A study of Peregrine Falcons (*Falco peregrinus*) in Alaska. Oregon Cooperative Fishery Research Unit Corvallis.

Santymire, R. M., Ali, N., Marinari, P. E., & Livieri, T. M. (2021). Using hair cortisol analysis to understand the biological factors that affect black-footed ferret (*Mustela nigripes*) stress physiology. *Conservation Physiology*, 9(1), coab033.

Schaub A., Ostwald, J., & Siemers, B.M. (2008). Foraging bats avoid noise. *Journal of Experimental Biology*, 211, 3174–3180.

Shannon, G., McKenna, M.F., Angeloni, L.M., Crooks, K.R., Fristrup, K.M., Brown, E., Warner, K.A., Nelson, M.D., White, C., Briggs, J., Mcfarland, S., & Wittemyer, G. (2015). A synthesis of two decades of research documenting the effects of noise on wildlife. *Biological Reviews*.

Siemers, B.M., and Schaub, A. (2011). Hunting at the highway: traffic noise reduces foraging efficiency in acoustic predators. *Proceedings of the Royal Society of London B Biological Sciences*, 278, 1646–1652.

South Dakota Department of Game, Fish, and Parks. (2022). Biennial Commission Review of SD Threatened and Endangered Species List.

https://gfp.sd.gov/userdocs/docs/te_draft_status_reviews_2022_revision_final.pdf

USFWS. (2020). Monarch (*Danaus plexippus*) species status assessment report. V2.1 96 pp + appendices. <https://www.fws.gov/media/monarch-butterfly-species-status-assessment-ssa-report>

USFWS. (2021). Endangered and threatened wildlife and plants; Initiation of 5-year status reviews of 23 species in the southwest. <https://www.federalregister.gov/documents/2021/05/05/2021-09379/endangered-and-threatened-wildlife-and-plants-initiation-of-5-year-status-reviews-of-23-species-in>

USFWS. (2022a). Endangered and threatened wildlife and plants; endangered species status for northern long-eared bat. CFR 50 Part 17. Vol. 87 (56). Docket No. FWS–R3–ES–2021–0140; FF09E21000 FXES1111090FEDR 223. <https://www.govinfo.gov/content/pkg/FR-2022-03-23/pdf/2022-06168.pdf#page=1>

USFWS. (2022b). Endangered and threatened wildlife and plants; endangered species status for tricolored bat. CFR 50 Part 17. Vol. 87. Docket No. FWS-R5-ES-2021-0163

USFWS. (2022c). *Red knot*. U.S. Fish and Wildlife Service. <https://fws.gov/species/red-knot-calidris-canutus>.

Uresk, D.W., and Sharps, J.C. (1986). Denning habitat and diet of the swift fox in western South Dakota. *The Great Basin Naturalist*, 46, 249-253.

Whitaker Jr, J. O., Sparks, D. W., & Brack Jr, V. (2004, January). Bats of the Indianapolis International Airport area, 1991-2001. In *Proceedings of the Indiana Academy of Science* (Vol. 113, No. 2, pp. 151-161).

APPENDIX I

Section 4(f) Analysis

Section 4(f) Analysis

Section 4(f) Parks and Recreational Areas

Table 1 lists Section 4(f) parks and recreational areas identified in the Section 4(f) study area. All data sources were accessed the week of February 13, 2023. Information on coordination with Officials with Jurisdiction is located in Table 4.

Table 1. Section 4(f) parks and recreational resources in the study area

Property Name	Official(s) with Jurisdiction	Property Type	Description	Approximate Size
Badlands National Park	National Park Service	National Park	Badlands National Park is located in southwestern South Dakota and known for its eroded buttes and pinnacles. The geologic deposits contain one of the world's richest fossil beds and the Park protects an expanse of mixed-grass prairie where bison, bighorn sheep, prairie dogs, and black-footed ferrets live today.	242,756 ac (entirely within study area)
Buffalo Gap National Grassland	U.S. Forest Service	National Grassland	Buffalo Gap is the second largest National Grassland. It is additionally composed of mixed prairie and chalky badlands. Black-footed ferrets were successfully reintroduced in the Grassland as a sustainable population.	655,000 ac (62,400 ac in study area)

Noise Effects Analysis on Section 4(f) Resources

Noise modeling for the Park included two types of analyses: contour analysis and representative location point analysis. A noise contour presents a graphical illustration or “footprint” of the area potentially affected by the noise. Contours were developed for the following metrics: 12-Hour equivalent sound level, time audible for natural ambient, and time above 35 decibels, A-weighted (dBA). Location point results present the metric results at specific points of interest. The National Park Service (NPS) provided a list of 44 location points, geographically located across the entire Park, where noise levels were to be evaluated. Location point analysis was conducted for the same set of metrics, as well as time above 52 dBA and the maximum sound level. Refer to Appendix F, *Noise Technical Analysis*.

To assess time above 52 dBA at Section 4(f) resources under Alternative 3 and Alternative 4, location points within 1.5 miles of each Section 4(f) resource were identified. These location points are listed in Table 3 for each Section 4(f) resource and the corresponding time above 52 dBA. The time above 52 dBA at each location point and the range of time above 52 dBA at Section 4(f) resources based on nearby location points were then calculated and reported as high and low values. This range is reported in Table 2 for each Section 4(f) property. See Figure 1 for a map of location points and Section 4(f) resources at the Park.

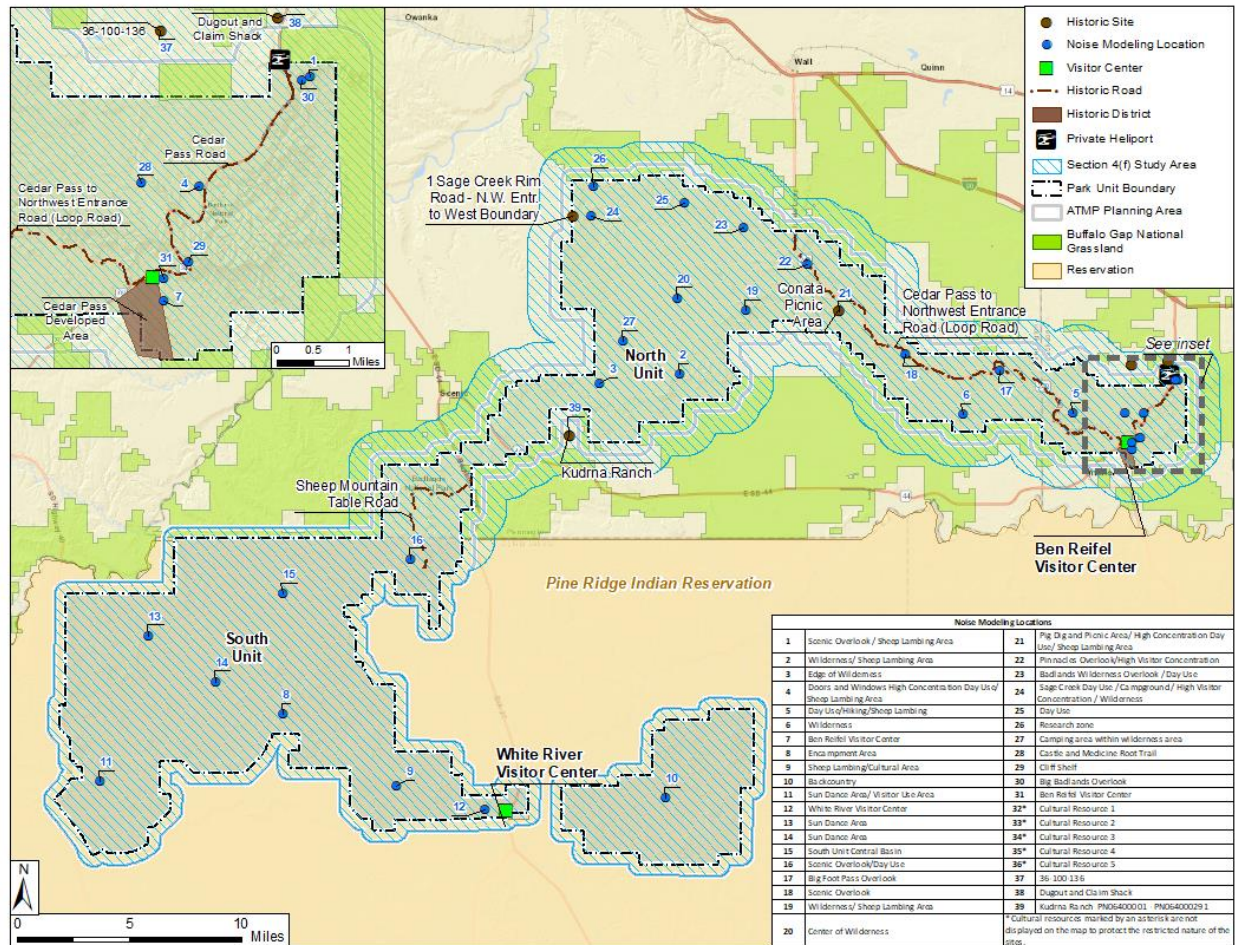


Figure 1. Section 4(f) resources and location points in the Section 4(f) study area.

Table 2 shows the low and high modelled time above 52 dBA values under Alternative 3 and Alternative 4 at each Section 4(f) resource. Table 3 shows the distance between each Section 4(f) resource and nearby location point and the time above 52 dBA at the corresponding location point. A distance of 0.00 miles indicates that the location point falls within the Section 4(f) property. The longest time above 52 dBA in the Section 4(f) study area on days when air tours occur is 21.2 minutes under Alternative 3 and 8.6 minutes under Alternative 4.

Table 2. Low and high modelled values for Time Above 52 dBA under Alternative 3 and Alternative 4 for Section 4(f) resources.

Section 4(f) Resource	Time Above 52 dBA – Low (minutes) under Alternative 3	Time Above 52 dBA – High (minutes) under Alternative 3	Time Above 52 dBA – Low (minutes) under Alternative 4	Time Above 52 dBA – High (minutes) under Alternative 4
1 Sage Creek Rim Road - N.W. Entr. to West Boundary	0.8	0.8	0.9	0.9
36-100-136	0.1	0.1	0	0
Buffalo Gap National Grassland	0	21.2	0	8.6
Cedar Pass Developed Area	5.4	16.7	2.7	5
Cedar Pass Road	5.4	21.2	2.6	8.6
Cedar Pass to Northwest Entrance Road (Loop Road)	0	16.7	0	5
Conata Picnic Area	0.7	0.7	1.1	1.1
Dugout and Claim Shack	6.6	21.2	2.6	8.6
Kudrna Ranch	0	0	0	0
Sheep Mountain Table Road	0	0	0	0

Table 3. Section 4(f) resources and corresponding location point data for air tours under Alternative 3 and Alternative 4.

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA under Alternative 3 (Minutes)	Time Above 52 dBA under Alternative 4 (Minutes)
1 Sage Creek Rim Road - N.W. Entr. to West Boundary	24	24. Sage Creek Day Use / Campground / High Visitor Concentration / Wilderness	0.87	0.8	0.9
36-100-136	37	37. Cultural Resource 6**	<1.5	0.1	0
Buffalo Gap National Grassland	1	1. Scenic Overlook / Sheep Lambing Area	0.19	21.2	8.6
Buffalo Gap National Grassland	2	2. Wilderness/ Sheep Lambing Area	1.14	0	0
Buffalo Gap National Grassland	3	3. Edge of Wilderness	1.22	0	0
Buffalo Gap National Grassland	4	4. Doors and Windows High Concentration Day Use/ Sheep Lambing Area	1.21	11.6	3.3
Buffalo Gap National Grassland	5	5. Day Use/Hiking/Sheep Lambing	1.39	10.3	3.8
Buffalo Gap National Grassland	6	6. Wilderness	0.54	0.7	0.7
Buffalo Gap National Grassland	7	7. Ben Reifel Visitor Center	0.81	5.4	2.9
Buffalo Gap National Grassland	17	17. Big Foot Pass Overlook	0.78	0	0
Buffalo Gap National Grassland	18	18. Scenic Overlook	1.31	1	1
Buffalo Gap National Grassland	21	21. Pig Dig and Picnic Area/ High Concentration Day Use/ Sheep Lambing Area	1.38	0.7	1.1
Buffalo Gap National Grassland	22	22. Pinnacles Overlook/High Visitor Concentration	1.06	0.5	0.3

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA under Alternative 3 (Minutes)	Time Above 52 dBA under Alternative 4 (Minutes)
Buffalo Gap National Grassland	23	23. Badlands Wilderness Overlook / Day Use	0.9	0	0.6
Buffalo Gap National Grassland	25	25. Day Use	1.09	0.6	0.6
Buffalo Gap National Grassland	26	26. Research zone	0.26	1.1	1.1
Buffalo Gap National Grassland	28	28. Castle and Medicine Root Trail	1.19	16.7	5
Buffalo Gap National Grassland	29	29. Cliff Shelf	1.24	11.6	4.3
Buffalo Gap National Grassland	30	30. Big Badlands Overlook	0.24	15.8	6.5
Buffalo Gap National Grassland	31	31. Ben Reifel Visitor Center	1.11	7.1	2.7
Buffalo Gap National Grassland	32	32. Cultural Resource 1**	<1.5	0	0
Buffalo Gap National Grassland	33	33. Cultural Resource 2**	<1.5	0	0
Buffalo Gap National Grassland	34	34. Cultural Resource 3**	<1.5	0	0
Buffalo Gap National Grassland	35	35. Cultural Resource 4**	<1.5	0	0
Buffalo Gap National Grassland	36	36. Cultural Resource 5**	<1.5	0	0
Buffalo Gap National Grassland	37	37. Cultural Resource 6**	<1.5	0.1	0
Buffalo Gap National Grassland	38	38. Dugout and Claim Shack**	0.15	6.6	2.6
Buffalo Gap National Grassland	39	39. Kudrna Ranch PN06400001 - PN064000291**	0.37	0	0
Cedar Pass Developed Area	4	4. Doors and Windows High Concentration Day Use/ Sheep Lambing Area	1.34	11.6	3.3
Cedar Pass Developed Area	7	7. Ben Reifel Visitor Center	0.03	5.4	2.9

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA under Alternative 3 (Minutes)	Time Above 52 dBA under Alternative 4 (Minutes)
Cedar Pass Developed Area	28	28. Castle and Medicine Root Trail	1.25	16.7	5
Cedar Pass Developed Area	29	29. Cliff Shelf	0.48	11.6	4.3
Cedar Pass Developed Area	31	31. Ben Reifel Visitor Center	0.09	7.1	2.7
Cedar Pass Road	1	1. Scenic Overlook / Sheep Lambing Area	0.28	21.2	8.6
Cedar Pass Road	4	4. Doors and Windows High Concentration Day Use/ Sheep Lambing Area	0.09	11.6	3.3
Cedar Pass Road	7	7. Ben Reifel Visitor Center	0.72	5.4	2.9
Cedar Pass Road	28	28. Castle and Medicine Root Trail	0.57	16.7	5
Cedar Pass Road	29	29. Cliff Shelf	0.22	11.6	4.3
Cedar Pass Road	30	30. Big Badlands Overlook	0.16	15.8	6.5
Cedar Pass Road	31	31. Ben Reifel Visitor Center	0.41	7.1	2.7
Cedar Pass Road	38	38. Dugout and Claim Shack**	0.72	6.6	2.6
Cedar Pass to Northwest Entrance Road (Loop Road)	4	4. Doors and Windows High Concentration Day Use/ Sheep Lambing Area	0.97	11.6	3.3
Cedar Pass to Northwest Entrance Road (Loop Road)	5	5. Day Use/Hiking/Sheep Lambing	0.59	10.3	3.8
Cedar Pass to Northwest Entrance Road (Loop Road)	7	7. Ben Reifel Visitor Center	0.42	5.4	2.9
Cedar Pass to Northwest	17	17. Big Foot Pass Overlook	0.21	0	0

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA under Alternative 3 (Minutes)	Time Above 52 dBA under Alternative 4 (Minutes)
Entrance Road (Loop Road)					
Cedar Pass to Northwest Entrance Road (Loop Road)	18	18. Scenic Overlook	0.08	1	1
Cedar Pass to Northwest Entrance Road (Loop Road)	21	21. Pig Dig and Picnic Area/ High Concentration Day Use/ Sheep Lambing Area	0.7	0.7	1.1
Cedar Pass to Northwest Entrance Road (Loop Road)	22	22. Pinnacles Overlook/High Visitor Concentration	0.07	0.5	0.3
Cedar Pass to Northwest Entrance Road (Loop Road)	28	28. Castle and Medicine Root Trail	1.08	16.7	5
Cedar Pass to Northwest Entrance Road (Loop Road)	29	29. Cliff Shelf	0.05	11.6	4.3
Cedar Pass to Northwest Entrance Road (Loop Road)	31	31. Ben Reifel Visitor Center	0.11	7.1	2.7
Conata Picnic Area	21	21. Pig Dig and Picnic Area/ High Concentration Day Use/ Sheep Lambing Area	0.1	0.7	1.1
Dugout and Claim Shack	1	1. Scenic Overlook / Sheep Lambing Area	0.94	21.2	8.6
Dugout and Claim Shack	30	30. Big Badlands Overlook	0.93	15.8	6.5
Dugout and Claim Shack	38	38. Dugout and Claim Shack**	0.0	6.6	2.6
Kudrna Ranch	39	39. Kudrna Ranch PN06400001 - PN064000291**	0.0	0	0

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA under Alternative 3 (Minutes)	Time Above 52 dBA under Alternative 4 (Minutes)
Sheep Mountain Table Road	16	16. Scenic Overlook/Day Use	0.42	0	0

** Location points outside of the ATMP planning area.

Table 4. Distribution to Officials with Jurisdiction for Section 4(f) resources.

Entity Name	Address
National Park Service	25216 Ben Reifel Road Interior, SD 57750
U.S. Forest Service	1801 Hwy. #18 Truck Bypass Hot Springs, SD 57747

APPENDIX J

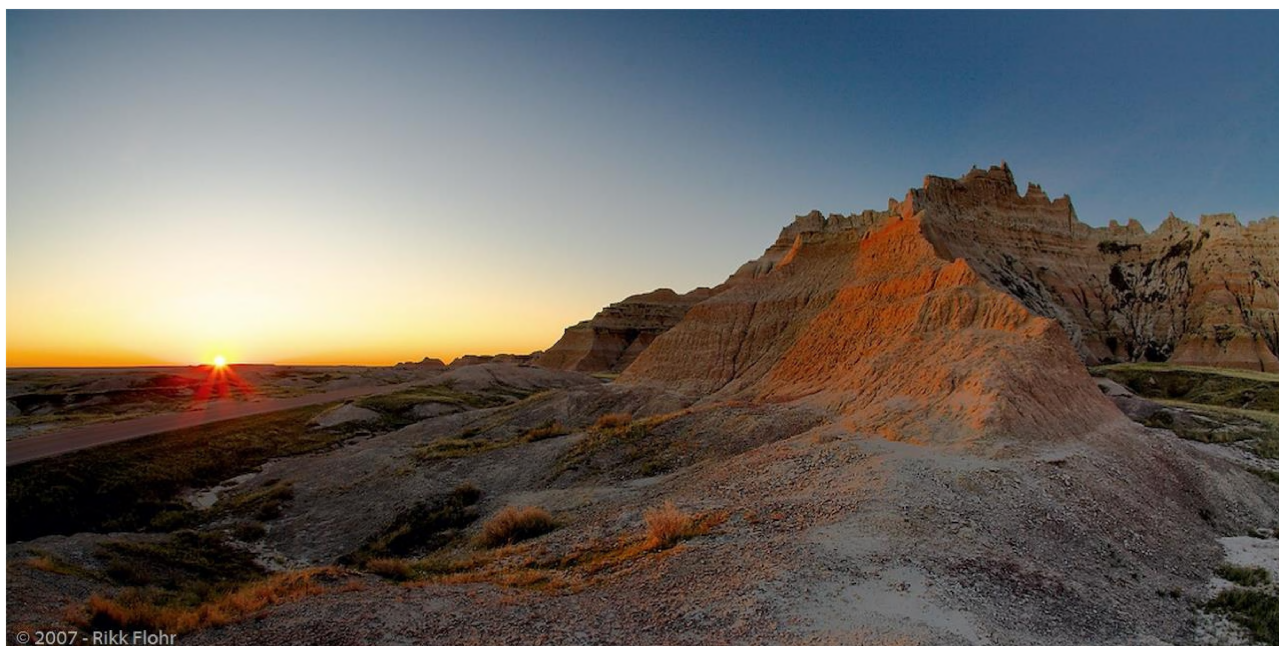
Public Scoping Newsletter and Comment Summary Report



Public Scoping Comment Report

Badlands National Park Air Tour Management Plan

December 2022



This Page Intentionally Left Blank

CONTENTS

INTRODUCTION AND BACKGROUND.....	1
METHODS	2
COMMENT SUMMARY.....	4
CONCERN STATEMENTS.....	6
IMPACTS	6
Adverse Impacts: Soundscape Impacts.....	6
Adverse Impacts: Visitor Use and Experience / Recreation	6
Adverse Impacts: Socioeconomics	7
Adverse Impacts: Wildlife/Biological Impacts.....	7
Adverse Impacts: Wilderness Character Impacts.....	7
Adverse Impacts: Cultural Resource Impacts.....	8
Adverse Impacts: Visual Impacts.....	8
Adverse Impacts: Equity.....	8
Adverse Impacts: Climate Change / Greenhouse Gases / Air Quality.....	8
Adverse Impacts: Other	8
Tribal Concerns	8
ALTERNATIVES	8
Alternatives: Support Alternative 1 - No Action	8
Alternatives: Oppose Alternative 1 - No Action	9
Alternatives: Support Alternative 2 - No Air Tours in Planning Area	9
Alternatives: Oppose Alternative 2 - No Air Tours in Planning Area.....	9
Alternatives: Support Alternative 3 - Mitigation Measures	9
Alternatives: Oppose Alternative 3 - Mitigation Measures	9
Alternatives: Support Alternative 4 - Reduction of Air Tours in Planning Area	10
Alternatives: Oppose Alternative 4 - Reduction of Air Tours in Planning Area.....	10
ATMP ELEMENTS	10
ATMP Elements: Annual Number of Air Tours.....	10
ATMP Elements: Routes and Altitudes	10
ATMP Elements: Aircraft Type	10
ATMP Elements: Day/Time	10
ATMP Elements: Other.....	11
PROCESS	11
Process Comments: Alternatives Considered	11
Process Comments: NEPA.....	11

Process Comments: Other	12
MISCELLANEOUS	12
Benefits of Air Tours.....	12
Wrong Park: Substantive Comment	12
Non-Substantive.....	12
Non-Substantive Comment: Oppose Air Tours Continuing	12
Non-Substantive Comment: Other	12

TABLES

Table 1. Number of Comments by Topic	4
--	---

APPENDIX

A Scoping Newsletter

INTRODUCTION AND BACKGROUND

The National Park Service (NPS) and Federal Aviation Administration (FAA) are preparing an Air Tour Management Plan (ATMP), which would regulate commercial air tours conducted over Badlands National Park (park) pursuant to the National Parks Air Tour Management Act (Act) of 2000. The act requires that the Federal Aviation Administration, in cooperation with the National Park Service (collectively, the agencies), establish an ATMP or voluntary agreement for each national park system unit for which one or more applications to conduct commercial air tours has been submitted, unless that unit is exempt from this requirement because 50 or fewer commercial air tour operations are conducted over the park on an annual basis, 49 *United States Code* (USC) § 40128(a)(5). The objective of the ATMP development process is to develop acceptable and effective measures to mitigate or prevent the significant adverse impacts, if any, of commercial air tours on natural and cultural resources, wilderness character, visitor experience, and tribal lands.

An environmental assessment (EA) is being completed in compliance with the National Environmental Policy Act (NEPA) to analyze a range of alternatives and evaluate potential issues and impacts. This plan will also be conducted in accordance with section 106 of the National Historic Preservation Act (NHPA) and other applicable laws, regulations, and policies. This report summarizes comments, feedback, and input received from the public during scoping for this ATMP environmental assessment.

Scoping was conducted by an interdisciplinary team of NPS and FAA planners, scientists, cultural resource specialists, and managers. Scoping is a process that federal agencies pursue in the early stages of preparing environmental analyses and is intended to encourage public participation and solicit public input on the scope and significance of a proposed action (see the *Code of Federal Regulations* [CFR], Title 40, Part 1501.7). Comments received during scoping help the agencies identify issues and concerns and allow the agencies to refine or dismiss alternatives and potentially consider new alternatives. Public input received during scoping is also used to inform the environmental analysis in the environmental assessment.

The agencies notified the public of the scoping period through a park news release, notices on the park's website and social media, and e-mails. Comments were accepted from September 6 through October 6, 2022. The agencies posted a newsletter describing the potential alternatives to the NPS Planning, Environment, and Public Comment (PEPC) website at the start of the scoping period and attached the newsletter to the notification e-mails. The newsletter on potential alternatives provided a project introduction, the purpose and need for the project, resources for consideration in the environmental assessment, elements common to all alternatives, and an overview of four potential alternatives, including routes, altitudes, time-of-day restrictions, restrictions for particular events, maximum numbers of flights, or other provisions. The potential draft alternatives also include a justification for the provisions and conditions designed to protect park resources and visitor experience.

METHODS

Comment analysis is a process used to compile and combine similar public comments into a format to be used by decision makers and the planning team. Comment analysis assists the team in organizing, clarifying, and addressing technical information pursuant to NEPA regulations. It also aids in identifying the alternatives, topics, and issues to be evaluated and considered throughout the planning process.

The comment analysis process includes five steps:

1. Develop a coding structure.
2. Use a comment database for comment management.
3. Read and code public comments.
4. Interpret and analyze the comments to identify issues and themes.
5. Prepare a comment summary.

The agencies developed a coding structure to organize comments into logical groups by topics and issues. The coding structure was derived from an analysis of the range of topics discussed during internal agency scoping, past planning documents, and the comments themselves.

The agencies used the NPS PEPC database to manage the comments. The database stores the full text of all correspondence, facilitates coding of comments by topic and issue, and includes several other tools and report functions.

A **correspondence** is the entire document received from a commenter. It can be in the form of a letter, e-mail, fax, written comment form, note card, open house transcript, or petition. Correspondences were entered directly into PEPC by the commenter. A **comment** is a portion of the text within a correspondence that addresses a single subject. It could include information such as an expression of support or opposition to the use of a potential management tool, additional data regarding an existing condition, or an opinion debating the adequacy of the analysis.

The agencies read all correspondences and assigned a code to all substantive comments within the correspondence. **Substantive comments** are comments that do one or more of the following:

- Question, with reasonable basis, the accuracy of information in the environmental assessment.
- Question, with reasonable basis, the adequacy of environmental analysis.
- Present reasonable alternatives other than those presented in the environmental assessment.
- Cause changes or revisions in the proposal.

In other words, they raise, debate, or question a point of fact or policy. Comments in favor of or against the proposed action or alternatives, or comments that only agree or disagree with NPS policy, are not considered substantive.

The agencies wrote one or more **concern statements** (written summaries) for each code that summarized the comments received and included representative quotes directly from the comments.

Although the analysis process attempts to capture the full range of public concerns, this content analysis report should be used with caution. Comments from people who chose to respond do not necessarily represent the sentiments of the entire public. Furthermore, this was not a vote counting

process, and the emphasis was on the content of the comment rather than the number of times a comment was received. This report is intended to be a summary of the comments received rather than a statistical analysis.

COMMENT SUMMARY

The agencies received 43 correspondences, of which two were duplicates. No form letters were received. The agencies coded 100 comments by topic. Some comments received more than one code. Table 1 lists the number and proportion of comments by topic. Adverse impacts on visitor use and experience (28) and soundscape (24) and support for alternative 2 (no air tours) (22) were the most common comment topics.

Table 1. Number of Comments by Topic

Topic	Number of Comments	Percentage
Impacts		
Adverse Impacts: Soundscape	24	12.5%
Adverse Impacts: Visitor Use and Experience	28	14.6%
Adverse Impacts: Socioeconomics	5	2.6%
Adverse Impacts: Wildlife / Biological	5	2.6%
Adverse Impacts: Wilderness Character	6	3.1%
Adverse Impacts: Cultural Resources	4	2.1%
Adverse Impacts: Visual	6	3.1%
Adverse Impacts: Equity	6	3.1%
Adverse Impacts: Climate Change / Greenhouse Gases / Air Quality	2	1.0%
Adverse Impacts: Other	2	1.0%
Tribal Concerns	5	2.6%
Alternatives		
Alternatives: Support Alternative 1 – No Action	3	1.6%
Alternatives: Oppose Alternative 1 – No Action	1	0.5%
Alternatives: Support Alternative 2 – No Air Tours in Planning Area	22	11.5%
Alternatives: Oppose Alternative 2 – No Air Tours in Planning Area	0	0.0%
Alternatives: Support Alternative 3 – Mitigation Measures	0	0.0%
Alternatives: Oppose Alternative 3 – Mitigation Measures	0	0.0%
Alternatives: Support Alternative 4 – Reduction of Air Tours In Planning Area	1	0.5%
Alternatives: Oppose Alternative 4 – Reduction of Air Tours in Planning Area	0	0.0%
ATMP Elements		
ATMP Elements: Annual Number of Air Tours	8	4.2%
ATMP Elements: Routes and Altitudes	8	4.2%
ATMP Elements: Aircraft Type	9	4.7%
ATMP Elements: Day / Time	7	3.6%
ATMP Elements: Other	2	1.0%
Process		
Process Comments: Alternatives Considered	6	3.1%
Process Comments: NEPA	12	6.3%
Process Comments: Other	8	4.2%
Miscellaneous		
Benefits Of Air Tours	6	3.1%

Topic	Number of Comments	Percentage
Duplicate Correspondence	2	1.0%
Non-Substantive		
Non-Substantive Comment: Oppose Air Tours Continuing	3	1.6%
Non-Substantive Comment: Other	1	0.5%

CONCERN STATEMENTS

Concern statements, summarizing comments received by topic, are presented below.

IMPACTS

Adverse Impacts: Soundscape Impacts

- Commenters stated that air tours create adverse impacts on the soundscape of the park due to noise, which interferes with visitors' enjoyment of the park by drowning out natural sounds, disturbing peace and quiet, and being artificial in nature. Some of these commenters note that visitors should enjoy the park via more traditional means on the ground, and some commenters suggest that air tours should not be allowed.
- Commenters note that reserving the national parks for wilderness and quiet is important as wild places become rare.
- Commenters suggested that air tours are quieter than cars and motorcycles. Commenters suggested that noise from a helicopter overhead is not any more distracting than the noise from a group of loud people nearby on a trail.
- Commenters requested that the NPS subject matter experts on noise and NEPA analysis are active participants in preparing the impact analysis.
- Commenters suggested that the National Park Service consider several references related to noise impacts during the preparation of the environmental assessment, for which they provided links. The commenters requested that the National Park Service collect new ambient sound data and compare it to data collected in the past in order to be able to measure the effectiveness of the plan.
- Commenters note concern that helicopter flights are concentrated in the highly visited area of Cedar Pass and cite FAA Advisory Circular AC No: 91-36D, which recommends noise-producing aircraft fly no lower than 2,000 feet above ground level (AGL) over noise-sensitive areas. They also requested that the National Park Service provide modeling or air contour map analysis to support air tours.
- Commenters state that alternative 4 would allow helicopter air tours to fly from one hour after sunrise until one hour before sunset for non-quiet technology flights and from sunrise to sunset for quiet technology flights, which is the same as alternative 3. Commenters suggest that the proposed schedule would make it difficult for visitors to experience the Cedar Pass area during quieter times of day when helicopter tours are not occurring.
- Commenters recommend that in alternative 4 the National Park Service consider time of day restrictions that would only allow air tours to fly from three hours after sunrise until three hours before sunset, which would triple the amount of air tour free time and provide a greater range of attributes to evaluate and compare in the environmental assessment. Commenters request that the National Park Service provide quiet technology and financial feasibility analysis in the environmental assessment.

Adverse Impacts: Visitor Use and Experience / Recreation

- Commenters suggest that air tours have an adverse impact on the visitor experience because they:

- Disrupt the experience of enjoying quiet;
 - Disturb the experience of solitude;
 - Disrupt the experience of peacefulness;
 - Add an unwanted element of society/civilization into a natural setting;
 - Detract from experiencing beauty of landscape or wildlife;
 - Interrupt the experience of being in wilderness; and
 - Allow the minority of visitors who can afford air tours to adversely affect the visitor experience of those who cannot.
- Commenters suggest that the park's foundation document provides important context for the ATMP planning process about significance and fundamental resources that could be adversely affected by air tour management.
 - Commenters suggested that the number of park visitors potentially impacted by air tours should be analyzed by location in the environmental assessment.
 - Commenters suggest that the impact analysis for visitor use and experience should include a discussion of relevant reference material, available data, such as previous surveys, as well as a review of relevant scientific literature related to the impacts of aircraft noise.
 - Commenters suggest that ensuring commercial air tour operators are complying with the terms and conditions of the ATMP would be difficult and may result in impacts on visitor experience.

Adverse Impacts: Socioeconomics

- Commenters expressed concern about loss of business and employment that would negatively impact the economy of small towns, such as Keystone and Interior, and the State of South Dakota if air tours were stopped. Preventing tours would be a disruption of a tradition of safe tours in the Badlands since the 1960s.
- Commenters suggested that air tours are about private business making a profit, which is not the purpose of the national parks.

Adverse Impacts: Wildlife/Biological Impacts

- Commenters expressed concern that air tours would adversely impact wildlife, including bighorn sheep, raptors, and mountain lions.
- Commenters suggested that the park's foundation document provides important context for the ATMP planning process about the park's significance and fundamental resources, which could affect wildlife native to the mixed-grass prairie.
- Commenters encourage the National Park Service to identify reference materials and data used during the preparation of the proposed action. Commenters provided a suggested list.

Adverse Impacts: Wilderness Character Impacts

- Commenters suggested that wilderness impact analysis should include a discussion of available data and relevant scientific literature related to the impacts of aircraft noise, and that adverse impacts be addressed under all alternatives.

- Commenters suggest that air tours conflict with the park’s stated purposes including preserving conditions that allow visitors to enjoy the wilderness in solitude.

Adverse Impacts: Cultural Resource Impacts

- Commenters suggested that the environmental assessment’s evaluation of potential impacts of air tours on several key resources, including cultural resources, should be the primary basis for determining an appropriate level of air tours. Commenters recommend that chapter 1 of the environmental assessment include a section summarizing applicable laws, including the NPS Organic Act and the park’s enabling legislation.
- Commenters highlight that archeological and ethnographic resources are identified as fundamental resources and values in the park’s foundation document, which could be adversely affected by commercial air tours. The park is also responsible for protecting places of spiritual and historical importance to the Lakota people.
- Commenters provided references that could be used to assess impacts on cultural resources.

Adverse Impacts: Visual Impacts

- Commenters suggest that scenery at the park, which is documented in the park’s foundation document, could be adversely affected by commercial air tours.
- Commenters suggest that the impact analysis for visual resources should include a discussion of available data, such as previous sound surveys, as well as a review of relevant scientific literature related to the impacts of aircraft noise on specific resources.

Adverse Impacts: Equity

- Commenters suggested that air tours can provide opportunities for individuals and groups with disabilities that may not otherwise be able to see the park. Limiting flights could discriminate against elderly, very young, and disabled individuals.
- Commenters suggested that the price of an air tour is too costly for most visitors.

Adverse Impacts: Climate Change / Greenhouse Gases / Air Quality

- Commenters suggested that air tours produce air pollution.

Adverse Impacts: Other

- Commenters suggest that the National Parks Overflights Advisory Group (NPOAG) should be involved in developing ATMPs to provide industry safety expertise because exclusion could result in safety impacts.

Tribal Concerns

- Commenters suggested that the ATMP should specifically address tribal concerns, and that the National Park Service should engage in consultation beyond sending a copy of the plan.
- Commenters suggest that air tours over the Badlands is a violation of sacred space to the indigenous people who claim spiritual beliefs associated with lands in the park.

ALTERNATIVES

Alternatives: Support Alternative 1 – No Action

Commenters expressed support for alternative 1 – no action for the following reasons:

- Tour operators have safely operated in this airspace for decades.
- The national park system is intended to be shared among all Americans.
- The aircraft are seen and heard for a small proportion of the day and are no more distracting than cars or trucks on the adjacent highways.
- Further restrictions would limit the ability of many people to see the full extent of the parklands with no significant improvement to the experience of others.

Alternatives: Oppose Alternative 1 – No Action

Commenters agree that the no-action alternative is not selectable for the reasons stated in the newsletter. Commenters question whether the maximum theoretical number of flights (4,117) could serve as a valid basis for comparison with the proposed action alternatives because the no-action alternative should accurately describe the environmental impacts of not taking an action under consideration. Commenters suggest that the National Park Service likely has useful information and data regarding actual impacts of the existing number of flights (1,425) that would allow for a meaningful analysis and comparison of the baseline to the action alternatives. In contrast, there is likely no such existing information to document the potential impacts of a much higher number of flights (4,117) that could theoretically occur under the Interim Operating Authorities (IOAs), but has not. Lastly, commenters believe such a comparison (to a much higher theoretical number) would only serve to make alternative 3, which would allow the most flights of any action alternative, appear more acceptable than it really is in terms of the relative severity of its impacts. Commenters recommend that the National Park Service consider existing number of flights with current operating parameters as the no-action alternative in the environmental assessment.

Alternatives: Support Alternative 2 – No Air Tours in Planning Area

- Commenters support alternative 2, but they are concerned that the alternative includes a provision that the ATMP may be amended at any time if either agency notifies the other agency. Commenters request the amendment provision in this alternative be removed, so that a decision to eliminate air tours at the park is final and cannot be easily reversed without the agencies re-initiating and completing a new planning process.
- Commenters support alternative 2 because air tours adversely affect visitor experience and wildlife. Commenters suggest that the National Park Service has the authority under the National Parks Air Tour Management Act to decide when air tours are adversely impacting natural and cultural resources. Commenters suggest that the National Park Service should select alternative 2 to comply with the Organic Act and other relevant federal laws.

Alternatives: Oppose Alternative 2 – No Air Tours in Planning Area

No comments.

Alternatives: Support Alternative 3 – Mitigation Measures

No comments.

Alternatives: Oppose Alternative 3 – Mitigation Measures

No comments.

Alternatives: Support Alternative 4 – Reduction of Air Tours in Planning Area

- Commenters support the reductions in total number of flights allowed under alternative 4. However, commenters are concerned that alternative 4 is essentially the same as alternative 3, except for the reduction in flights. Commenters recommend that the National Park Service consider different levels of intensity among alternatives, allowing for a more meaningful analysis.

Alternatives: Oppose Alternative 4 – Reduction of Air Tours in Planning Area

No comments.

ATMP ELEMENTS

ATMP Elements: Annual Number of Air Tours

- Commenters expressed support for the decrease in number of flights in alternative 4 because it would best decrease the cumulative impacts of air tours.
- Commenters expressed concern that alternative 3 provides no meaningful reduction in the number of flights and would have the greatest adverse impacts of the action alternatives.
- Commenters requested a moderate increase in air traffic in the ATMP to allow for growth in numbers of visitors.

Air Tour Management Plan Elements: Routes and Altitudes

- Commenters noted that all of the helicopter routes are concentrated over the Cedar Pass area.
- Commenters suggested that alternatives 3 and 4 are too similar, including the routes being the same.
- Commenters suggest that the agencies should involve the National Parks Overflights Advisory Group in designing routes for the ATMP.

Air Tour Management Plan Elements: Aircraft Type

- Commenters noted that the ATMP should include consideration of future technology, quieter aircraft such as electric propulsion airplanes, dirigibles, and balloons.

Air Tour Management Plan Elements: Day/Time

- Commenters suggest that the National Park Service consider time of day restrictions that would only allow air tours to fly from three hours after sunrise until three hours before sunset in order to increase the amount of quiet time and provide a greater range of attributes to evaluate in the environmental assessment.
- Commenters note that adding one hour of available flight time after sunrise and one hour before sunset, for a maximum of 16 flights per day, as a quiet technology incentive is not sufficient to offset the millions of dollars that the technology costs.
- Commenters suggest that quiet technology incentives allowing air tours to fly at sunrise and sunset adversely impact the views of visitors on the ground experiencing sunrise and sunset.
- Commenters suggested that flying helicopters in low light conditions near sunrise and sunset presents a safety risk.

Air Tour Management Plan Elements: Other

- Commenters suggest that the National Park Service clarify in the plan whether or not air tour operator training is required.

PROCESS

Process Comments: Alternatives Considered

- Commenters agree with the NPS determination, described in the ‘alternatives dismissed’ section of the newsletter that, ‘the existing number of air tours with current operating parameters’ would result in unacceptable impacts.
- Commenters suggest that the alternatives 3 and 4 are too similar. Commenters recommend that the National Park Service consider varying attributes between the alternatives that are most likely to contribute to impacts.
- Commenters suggest that dismissing alternatives, as described in the newsletter, is premature because the results of the environmental assessment were not considered.

Process Comments: National Environmental Policy Act

- Commenters suggest that the plan include monitoring of park management objectives. Monitoring should also consider the cumulative impacts of all the sources of impact.
- Commenters are concerned that the National Park Service didn’t comply with applicable NEPA guidance by issuing numerous previous ATMPs without considering a reasonable range of alternatives and without preparing any sort of NEPA compliance for public review.
- Commenters suggest that under the act, air tours are essentially a discretionary activity subject to agency approval. Commenters suggest that to the best of their knowledge, the National Park Service has never formally considered or determined whether commercial air tours are an appropriate use for Badlands. Commenters recommend that the environmental assessment include an appropriate use analysis as described in *NPS Management Policies 2006*, section 1.5.
- Commenters suggest that the environmental assessment should include an impairment determination for the proposed action as described in *NPS Management Policies 2006*, section 1.4.7. The National Park Service should apply a standard that offers greater assurance that impairment will not occur.
- Commenters suggest that the environmental assessment should identify its preparers as well as the respective roles of the agencies in the NEPA process. Commenters suggest that it is confusing which agency is actually coordinating preparation of the environmental assessment and serves as the lead agency and which agency serves as the cooperating agency. Commenters urge the National Park Service to play an active role.
- Commenters suggest that the environmental assessment should identify the NPS preferred alternative as well as the environmentally preferable alternative. The value of the National Park Service identifying both is that it would add transparency to a less than transparent public process for the past 20 years.

- Commenters note that the scoping newsletter states that current air tours at the park impede the National Park Service's ability to fully meet the park's purposes of protecting wilderness character and values, natural resource protection, soundscape, and interpreting natural and cultural resources. Commenters question how this was determined prior to analyzing impacts in the environmental assessment and suggest that it is a premature determination.
- Commenters suggest that the National Park Service should establish and explain levels of significance in the environmental assessment.

Process Comments: Other

- Commenters suggest that the agencies need to consider input from stakeholders, operators, and NPOAG, and they feel that NPOAG has not been appropriately involved in previous planning.
- Commenters note that the laws and policies governing the NPS mission and duties are grounded in the Organic Act to conserve park resources and provide for their use and enjoyment, "in such a manner and by such means as will leave them unimpaired" for future generations.

MISCELLANEOUS

Benefits of Air Tours

- Commenters suggest that flights over the park should not be limited because they provide a fun and safe way for people to enjoy views of the park and allow access to visitors with less mobility.
- Commenters suggest that air tours are an important option for visitors to experience natural and human-made landmarks. Commenters suggest that air tours have the least impact because they reduce congestion and demand on park surface infrastructure.

Wrong Park: Substantive Comment

No comments.

NON-SUBSTANTIVE

Non-Substantive Comment: Oppose Air Tours Continuing

- Commenters recommend that the National Park Service ask Congress to change the law to ban air tours over national parks to preserve some of the last remaining quiet places in the United States.

Non-Substantive Comment: Other

No comments.

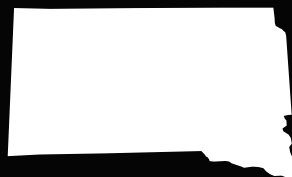
APPENDIX A
Scoping Newsletter

This Page Intentionally Left Blank



Badlands National Park

September 2022
Newsletter



Air Tour Management Plan
Potential Alternatives for Public Comment

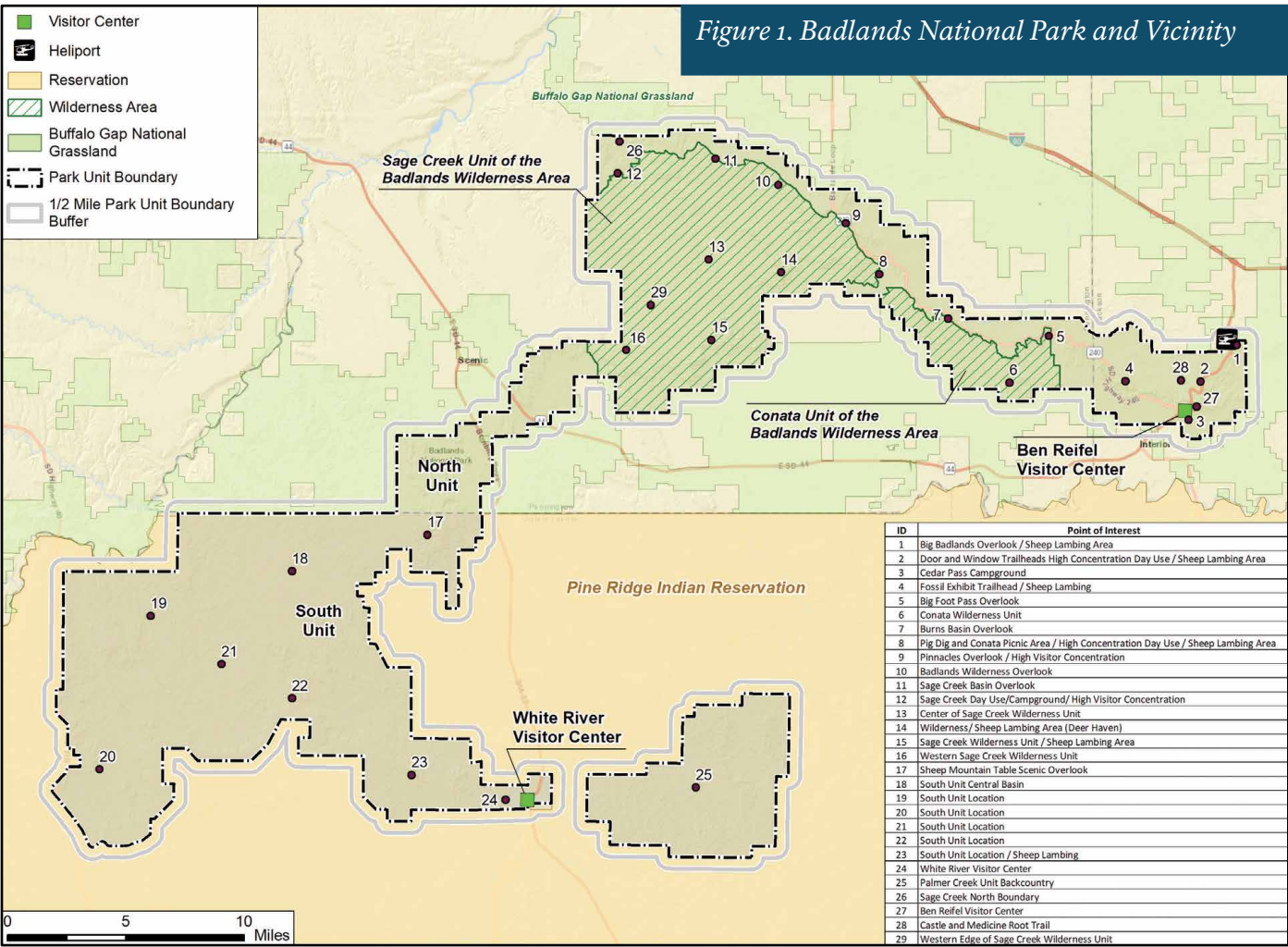
The Federal Aviation Administration (FAA) and the National Park Service (NPS) are working together to present potential alternatives for an air tour management plan for Badlands National Park (Park). Public and stakeholder feedback during this phase is critical. This document will explain:

- Commercial air tour operations
- Requirements for a plan for the Park
- Potential alternatives being considered for the plan
- How the public and stakeholders can provide feedback

Badlands National Park

Badlands National Park is located in western South Dakota, 70 miles east of Rapid City. The Park (originally Badlands National Monument) was established in 1939, and totals 242,756 acres.

The North Unit includes the 64,250-acre Badlands Wilderness Area (Figure 1). The South Unit is located within the Pine Ridge Indian Reservation, and is managed by the NPS in cooperation with the Oglala Sioux Tribe under a 1976 Memorandum of Agreement.



Project Introduction

This document presents potential alternatives for the Badlands National Park Air Tour Management Plan (ATMP) Environmental Assessment (EA) for public and stakeholder input. As applied to Badlands National Park, the term commercial air tour operation is defined as any flight conducted for compensation or hire in a powered aircraft, where a purpose of the flight is sightseeing over the Park or outside the Park but within 1/2 mile of its boundary during which the aircraft flies below 5,000 feet (ft.) above ground level (AGL). Altitude expressed in mean sea level (MSL) refers to the altitude of an aircraft above sea level, regardless of the terrain below it, whereas altitude expressed in AGL is a measurement of the distance between the ground surface and the aircraft.

Air tours have been occurring over the Park since before the year 2000.

The National Parks Air Tour Management Act (the Act) of 2000 requires the FAA, in cooperation with the NPS, to develop an ATMP for parks and tribal lands where operators have applied to conduct commercial air tours. The objective of the ATMP, under the Act, is to develop acceptable and effective measures to mitigate or prevent the significant adverse impacts of commercial air tour operations on the Park's natural and cultural resources, tribal sacred sites and ceremonial areas, wilderness character, and visitor experience.

As part of the public scoping process pursuant to the National Environmental Policy Act (NEPA), the FAA and the NPS invite public input on potential alternatives. Public and stakeholder input will be used to further refine or dismiss alternatives and potentially to consider new alternatives. Public input will also be used to inform the environmental analysis. Alternatives

that are carried forward and analyzed in the EA are expected to be available for public review and comment early next year.

Purpose and Need for the Project

Under NEPA, alternatives must meet the Purpose (i.e., objective) and Need for the project.

Purpose

To comply with the *National Parks Air Tour Management Act of 2000 (the Act)* and other applicable laws, consistent with the *Plan and Schedule for Completion of Air Tour Management Plans at Twenty-Three Parks* approved by the U.S. Court of Appeals for the District of Columbia Circuit on November 20, 2020, in Case No. 19-1044, *In Re Public Employees for Environmental Responsibility and Hawai'i Coalition Malama Pono*.

Need

The Act requires an ATMP or voluntary agreement for the Park. Air tours have the potential to impact natural and cultural resources, wilderness character, and visitor experience. The Act requires that the FAA and the NPS develop acceptable and effective measures to mitigate or prevent significant adverse impacts, if any, of commercial air tour operations on natural and cultural resources, wilderness character, visitor experience, and tribal lands. Cultural and ethnographic resources that may be protected under an ATMP include traditional cultural properties, tribal sacred sites, and ceremonial areas. In order to address impacts from commercial air tours the agencies have decided to prepare an ATMP for the Park.

Resources for Consideration in the EA

The agencies propose to analyze the potential impacts of each alternative on the following resources:

- Air quality
- Biological resources
- Climate (climate change and greenhouse gas emissions)
- Cultural resources (historic buildings, historic districts, archeological resources)
- Ethnographic resources (sacred sites, traditional cultural properties, cultural landscapes, traditional uses)
- Department of Transportation Act, Section 4(f) properties
- Noise and compatible land use (acoustic environment and Park soundscape)
- Visitor experience
- Socioeconomics, Children's Environmental Health and Safety Risk, and Environmental Justice
- Visual effects (visual resources and visual character)
- Wilderness



Elements Common to All Alternatives for the Badlands National Park ATMP

All alternatives being considered for selection for the Badlands National Park ATMP will incorporate the following:

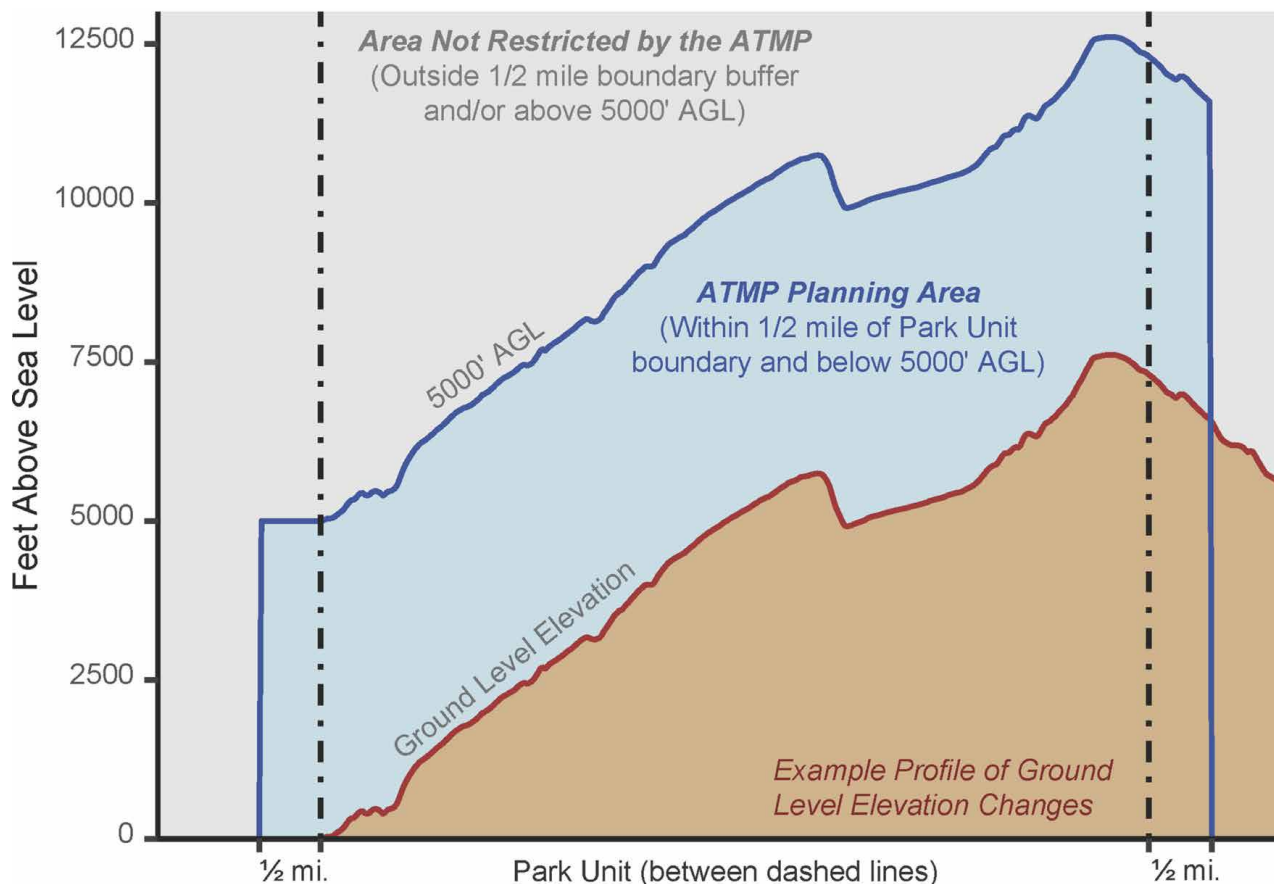
ATMP Planning Area

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



ATMP planning area. Air tours outside of the ATMP planning area are not subject to the Act and are therefore not regulated under the ATMP. Thus, there would be no limitations on the annual number of air tours or routes that could occur outside the ATMP planning area under any alternative. Refer to the figure below for a geographic depiction of the ATMP planning area. In addition, although they may occur within the ATMP planning area, general aviation flights, overflights by commercial airlines, and military flights would not be regulated by the ATMP because they are not commercial air tours subject to regulation under the Act.

Geographic Areas Covered by the ATMP



Interim Operating Authority

Commercial air tours over the Park are currently conducted under interim operating authority (IOA) that the Act required the FAA to grant air tour operators. Interim operating authority does not provide any operating parameters (routes, altitudes, etc.) for commercial air tours other than an annual limit. Under the Act, IOA for a park terminates after an ATMP is established for that park.



Monitoring and Enforcement

All air tour operators are required to report the number of commercial air tour operations they have conducted within the ATMP planning area to the FAA and NPS.



The operators must provide the date and time each tour occurred, the make/model of aircraft used, and the route on which the tour was conducted.

Minimum Altitudes

The range of altitudes examined in the alternatives will be from 800 to 1,500 ft. AGL for helicopters and 1,500 to 2,600 ft. AGL for fixed-wing aircraft.



Flight Routes

The maps included in the potential alternatives show flight routes where air tours could occur within the ATMP planning area.



Flight routes within the ATMP planning area are represented by a line. The flight lines will be used for noise modeling purposes in the impact analysis.

FAA Airspace Authority

The FAA has authority for all airspace matters, including any enforcement actions for violations under the ATMP, which the agency would process in accordance with existing FAA procedures and regulations.



Fee Collection

The NPS is authorized by the Omnibus Budget Reconciliation Act of 1993 (54 U.S.C. § 100904) to collect commercial tour use fees for all aircraft conducting tours in the airspace over certain parks. The Park does not currently collect fees from air tour operators and does not propose to begin fee collection from air tour operators at this time.



Potential Alternatives

The agencies have considered a range of reasonable alternatives that are technically and economically feasible, meet the purpose and need for the project, and the goals of the agencies. The alternatives are discussed in detail below and summarized in Table 6.

Alternatives Considered and Dismissed

The agencies considered but dismissed alternatives that would allow air tour operations above existing reported numbers as well as current operating parameters at existing numbers. Existing air tour reporting figures are displayed in Table 1 below. These alternatives were dismissed from further consideration because the NPS determined they would result in unacceptable impacts to the Park's natural and cultural resources, wilderness character, and visitor enjoyment under the NPS 2006 Management Policies 1.4.7.1, and do not meet the purpose and need for the plan.

The Park's purpose includes preserving and interpreting: the history, culture, and heritage of the Sioux Nation and Lakota people and traditionally associated Tribal Nations; the contemporary history of use and settlement, wilderness character and values; and the unique landforms, scenery, and natural resources of the Park (see Foundation Document). Noise from

additional or current levels of air tours without changing operating parameters inhibits the NPS's ability to meet these purposes.

Noise from air tours negatively impacts existing sacred sites within the Park that are associated with Tribal Nations, as well as the visitor experience and interpretation of the cultural and natural resources of the Park. The NPS is required to avoid such impacts to sacred sites to the extent possible (NPS 2006 Management Policies 5.3.5.3.2 and 5.3.1.1). Additionally, current air tours over the Park impede the NPS's ability to fully meet the Park's purposes of protecting wilderness character and values, natural resource protection (including the acoustic environment), and interpreting the natural and cultural resources of the Park.

Noise from air tours over the Badlands Wilderness interferes with the opportunity for solitude and detracts from the natural quality of wilderness. The existing air tour operations also diminish visitor opportunities to learn about and be inspired by Park resources and values through interpretation and interfere with the atmosphere of peace and tranquility and the natural soundscapes in the Park and Badlands Wilderness (see NPS Management Policies 4.9).

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

Bison at Badlands



Alternative 1 — No Action/No ATMP

Objective

A no action alternative is required by the Council on Environmental Quality and NEPA regulations.

The no action alternative provides a basis for comparison but is not a selectable alternative because it does not meet the purpose and need for the ATMP and is not in compliance with the Act. The agencies have decided to comply with the Act by developing an ATMP for the Park.

Description

The no action alternative is what happens if the agencies do not adopt an ATMP. The no action alternative would allow a continuation of air tours under IOA without implementation of an ATMP or voluntary agreement. Under the no action alternative, air tour numbers would be expected to vary from year to year, likely consistent with reported numbers over the past three to five years. Air tour numbers from 2017 to 2019 are listed in Table 1.

Under the no action alternative operators could fly up to their IOA, 4,117 air tours per year. IOA includes only an annual cap on the number of commercial air tours that may be conducted by an operator but does not represent the actual number of air tours conducted and does not designate the route(s), time-of-day, altitude(s), or other conditions for such tours.

Number of Flights Each Year

Alternative 1 represents a continuation of air tours that are currently flown and allowed under existing law, including each company's IOA as granted by the FAA (70 Fed. Reg. 36,456 (June 23, 2005)) and applicable regulations that govern aviation safety (14 CFR Part 136).

Two commercial air tour operators currently hold IOA to fly up to a combined total of 4,117 annual commercial air tours over the Park and outside the Park but within 1/2 mile of its boundary, including Oglala Lakota Tribal lands within that area (see Table 1). Under this no action alternative, IOA would remain in place. Though no commercial air tours are currently conducted over the South Unit of the Park or within the 1/2 mile of the South Unit's boundary, including Oglala Lakota Tribal lands within the area, under this alternative any operator with IOA for the Park could conduct such tours.

Since reporting began in 2013, the total number of commercial air tours reported over the Park each year has ranged from 962 (reported in 2013) to 1,729 (reported in 2018). The operators may not exceed their respective IOA limitation in any given year.

The average annual number of commercial air tours conducted over the Park from 2017-2019 for all operators is 1,425. The agencies consider the 2017-2019, three-year average, the existing baseline for the purposes of understanding the existing number of commercial air tour flights over the Park. These years were selected because they reflected relatively current air tour conditions, represented reliable operator

Alternative 1 — No Action/No ATMP

reporting of air tours, accounted for variations across multiple years, and excluded 2020 which was atypical due to the COVID-19 pandemic. The agencies also decided against using 2021 data due to continued abnormalities associated with the COVID-19 pandemic and the unavailability of reporting data for 2021 during most of the planning effort.

Routes and Altitudes

There are no designated flight routes or no-fly zones under the no action alternative. The figure for this alternative (Figure 2) depicts general route information provided by current commercial air tour operators, but operators could change routes without notice.

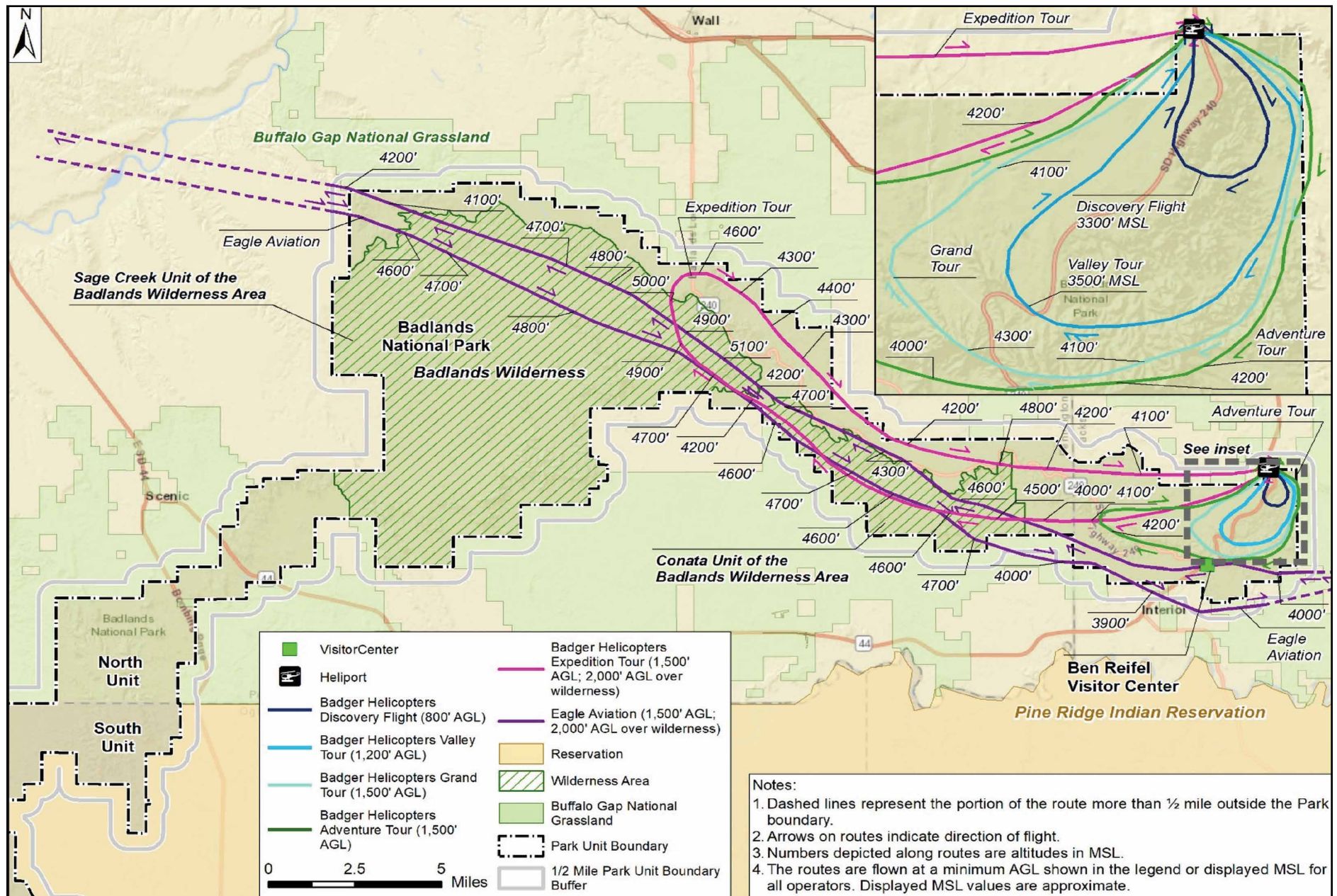
Operators, Aircraft Types, Interim Operating Authority

The two commercial operators that hold IOA for the Park reported flying commercial air tours over the Park between 2013 and 2019. Badger Helicopters, Inc. (Badger) flies helicopters, and Eagle Aviation, Inc. (Eagle) flies fixed-wing aircraft. Badger flies five loop routes that originate outside the northeast corner of the Park, adjacent to the Park boundary, and vary in length from approximately 3 miles to over 40 miles. Eagle flies one route down-and-back along the north unit of the Park. The following table (Table 1) summarizes each operator's aircraft type, IOA for the Park, and average number of reported air tours over the Park from 2017-2019.

Table 1. Existing air tour operators and reported air tours.

Operator	Aircraft Type	2017 Reported Tours	2018 Reported Tours	2019 Reported Tours	3-year Reported Average No. of Air Tours (2017-2019)	Interim Operating Authority (IOA)
Badger Helicopters, Inc.	BHT-206B, BHT-47-G3B1, R-44-II, R-66-66 (helicopters)	1,190	1,729	1,349	1,423	4,099
Eagle Aviation, Inc.	Cessna 172, Cessna 206 (fixed-wing)	4	0	0	2	18
		1,194	1,729	1,349	1,425	4,117

Figure 2. Alternative 1 — No Action/No ATMP



Alternative 2 — No Air Tours in the Planning Area

Objective

Alternative 2 — No Air Tours in the Planning Area would provide the greatest protection for the purposes, resources, and values of the Park. The Park holds and protects numerous resources and values including: sites of spiritual and cultural significance to Native Americans and traditional cultural practices; threatened and endangered species and other wildlife sensitive to noise; Congressionally designated wilderness and visitor opportunities for solitude; ground-based visitor experiences; scenic qualities, and natural sounds.

This alternative supports the following Park management objectives:

- Park acoustic resources support an outstanding visitor experience and opportunities to hear and enjoy natural sounds.
- Acoustic resources of the Park are maintained such that the following aspects of wilderness character area is preserved; solitude or primitive and unconfined recreation, including remoteness from sights and sounds; untrammelled or wildness; naturalness; undeveloped; other features or values.
- Parks are able to conduct, and visitors are able to experience, interpretive programming with minimal interference due to noise.
- Natural sounds are protected to conserve healthy and robust wildlife populations; biological and ecological processes prevail.

- Traditional and cultural resources are preserved to facilitate ongoing connection and use of these resources by traditionally associated communities.

Description

Alternative 2 would prohibit air tours within the ATMP planning area, except for the purpose of takeoff and landing at a helipad operated by Badger that is within the ½ mile of the Park boundary. The ATMP planning area includes the airspace below 5,000 ft. AGL and within ½-mile of the Park boundary. The Park itself and all areas within ½ mile of the Park boundary would be designated as an area to remain free of commercial air tours under 5,000 ft. AGL.

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

Routes and Altitudes

The figure for this alternative (Figure 3) depicts a prohibition on all air tours within the ATMP planning area. Air tours could be conducted only outside the ATMP planning area. Based on current air tour activity, it is unknown if operators would begin conducting air tours outside of the Park. The actual flight path and number of air tours outside the ATMP planning area would vary due to operator preference and weather conditions at the time of the air tour.

Alternative 2 — No Air Tours in the Planning Area

This alternative could result in some current air tour operators shifting routes to other areas outside the Park that may also be significant to Tribes.¹

Monitoring and Enforcement

Aircraft monitoring and enforcement would occur to ensure that commercial air tour operators are complying with the terms and conditions of the ATMP. The NPS and the FAA are both responsible for the monitoring and oversight of the ATMP. If the NPS identifies instances of non-compliance, the NPS will report such findings to the FAA's local Flight Standards District Office (FSDO). The FSDO will investigate all substantiated reports of noncompliance. The public may also report allegations of non-compliance with the ATMP to the FSDO, which may result in an FAA investigation.

¹ During consultation, a number of Tribes stated that they consider the Badlands and Black Hills a traditional cultural landscape; a large scale area containing many linked features that have religious and cultural significance.

Amendment

The ATMP may be amended at any time if the NPS, by notification to the FAA, determines that the ATMP is not adequately protecting Park resources and/or visitor enjoyment; or if the FAA, by notification to the NPS, determines that the ATMP is adversely affecting aviation safety and/or the national aviation system; or, if the agencies determine that appropriate changes to the ATMP are necessary to address new information or changed circumstances.

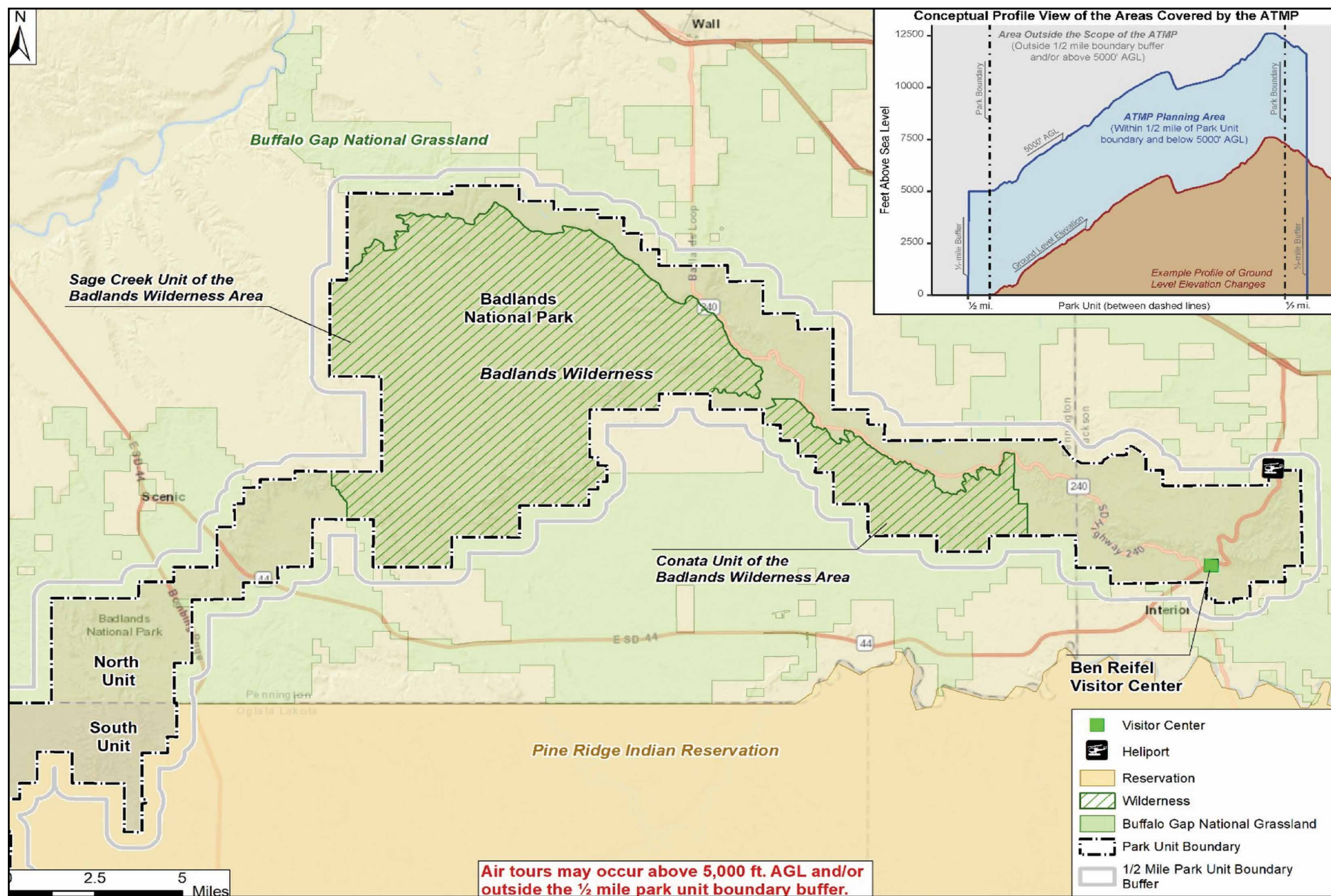
IOA

The establishment of an ATMP for Alternative 2 (No Air Tours in the Planning Area) would result in the termination of all IOA for both the Park and tribal lands. Air tour operators' operation specifications (OpSpecs) will be updated accordingly. OpSpecs are a set of rules that an operator must follow.

Badlands Landscape



Figure 3. Alternative 2 — No Air Tours in the Planning Area



Alternative 3 — Operational Modifications to Existing Air Tours

Objective

The NPS developed Alternative 3 - Operational Modifications to Existing Air Tours to provide an alternative most similar to existing air tour operations, with mitigations to avoid or minimize impacts to natural and cultural resources and visitor experience.

Similar to Alternative 2 – No Air Tours in the Planning Area, Park management objectives would also apply. The FAA reviewed the alternative to ensure it would not adversely affect aviation safety.

Description

Alternative 3 would restrict air tour operations within the ATMP planning area. Primarily, the conditions in this alternative include annual and daily caps, designated routes, and required minimal altitudes.

Caps on Numbers of Flights Allowed Annually and Daily

The annual number of flights would be limited to 1,425 total flights per year across both operators, consistent with the reported average of air tours for 2017, 2018, and 2019. The daily number of flights may not exceed 16 tours per day across both operators. There would be annual and daily limitations for each operator (see Table 2).

Routes and Altitudes

Alternative 3 includes four routes for the helicopter operator and one route for the fixed-wing operator all with varying distances and altitudes across the ATMP planning area (see Table 3). These five routes are consistent with what operators currently fly (see Figure 4). While some helicopter routes have seemingly low altitudes, this is due to the helipad being just outside of the Park boundary and the short distance of each looped route. The helicopter would only be able to reach the minimum altitude listed for a brief period before having to turn around and begin descent. Badger Route 5 – Expedition Tour would not be authorized under this alternative due to its extended length and time spent over designated wilderness.

Time of Day, Day of Week, and Seasonal Restrictions

Commercial air tours would be permitted to operate one hour after sunrise until one hour before sunset, as defined by the National Oceanic and Atmospheric Administration (NOAA), except for the quiet technology incentive below. Sunrise and sunset data are available from the NOAA Solar Calculator.

Air tours would be permitted to occur from May 1 through September 30, for 152 total days each year. Air tours could occur any day of the week.

Alternative 3 — Operational Modifications to Existing Air Tours

Quiet Technology Incentives

The Act requires that the ATMP include incentives for the adoption of quiet technology by commercial air tour operators. The ATMP for this alternative would incentivize the use of quiet technology aircraft by commercial air tour operators. Operators that have converted to quiet technology aircraft may request to be allowed to conduct air tours beginning at sunrise or ending at sunset on all days that flights are authorized.

Because aviation technology continues to evolve and advance and FAA updates its noise certification standards periodically, the aircraft eligible for this incentive will be analyzed on a case-by-case basis at the time of the operator's request to be considered for this incentive. The NPS will periodically monitor Park conditions and coordinate with FAA to assess the effectiveness of this incentive. If implementation of this incentive results in unanticipated effects on Park resources or visitor experience, further agency action may be required to ensure the protection of Park resources and visitor experience.

Restrictions for Particular Events

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

Adaptive Management

Adaptive management allows for minor modifications to the ATMP without a formal ATMP amendment if the impacts of such changes are within the impacts already analyzed by the agencies under the National Environmental Policy Act, the National Historic Preservation Act, and the Endangered Species Act. Adjustments to the number of commercial air tours allocated to individual operators as a result of the competitive bidding process and minor changes to routes, altitudes, or other operating parameters are examples of adaptive management measures that may not require a formal ATMP Amendment. Such modifications may be made if: 1) the NPS determines that they are necessary to avoid adverse impacts to Park resources, values, or visitor experiences; 2) the FAA determines the need for such changes due to safety concerns; or 3) the agencies determine that appropriate, minor changes to the ATMP are necessary to address new information or changed circumstances.

Operator Training and Education

When made available by Park staff, operators/pilots would be required to take at least one training course per year conducted by NPS staff. The training would include Park information that operators can use to further their own understanding of Park priorities and management objectives as well as enhance the interpretive narrative and increase understanding the Park by air tour clients.

Alternative 3 — Operational Modifications to Existing Air Tours

Annual Meeting

At the request of either of the agencies, the Park staff, the local FAA FSDO, and all operators would be required to meet once per year to discuss the implementation of the ATMP and any amendments or other changes to the ATMP. This annual meeting could be conducted in conjunction with any required annual training.

The annual meeting will facilitate effective implementation of the ATMP because it would be used to review and discuss implementation of the ATMP between Park staff, local FAA FSDO, and all operators. It will thus serve to ensure that air tour operators remain informed regarding the terms and conditions of the ATMP, including any adaptive management measures or amendments, and are made aware of new or reoccurring concerns regarding Park resources.

Competitive Bidding

The Act states whenever an ATMP limits the number of commercial air tour operations during a specified time frame, a competitive bidding process must occur pursuant to the criteria set forth in 49 U.S.C. § 40128(a)(2)(B) and other criteria developed by the agencies. Since the number of flights would be limited for this alternatives, competitive bidding could be conducted, if appropriate.

In the time period between the finalization of an ATMP and the completion of a competitive bidding process, commercial air tour operators would be allocated a certain number of commercial air tours over the Park, referred to as the initial allocation.

Competitive bidding may also be appropriate to address: a new entrant application; a request by an existing operator for additional operating authority; consideration by the agencies of Park-specific resources, impacts, or safety concerns; or for other reasons. The Act directs

the agencies to consider various factors during the competitive bidding process including known resource issues, reporting, and compliance concerns.

Operators, Initial Allocation of Air Tours, Aircraft Types, and Interim Operating Authority

Upon finalization of the ATMP, the number of flights authorized to occur each year would be proportionally allocated to each of the two operators that have reported operations over the Park in the period from 2017-2019 (Table 2). Each operator's aircraft types would reflect those reported in the period from 2017-2019. The initial allocation would be used until a competitive bidding process could occur, if necessary. IOA will be terminated when the operators' OpSpecs are updated, which will occur within 90 days of signing of an ATMP.

New Entrant

For the purposes of the ATMP, a "new entrant" is a commercial air tour operator that has not been granted any operations under the ATMP or that no longer holds operations under the ATMP at the time of the application. New entrants must apply for and be granted operating authority before conducting commercial air tours over the ATMP planning area.

The FAA and the NPS will publish additional information for interested parties about the form and required content of a new entrant application. The FAA and the NPS will jointly consider new entrant applications and determine whether to approve such applications. Review of applications submitted prior to the effective date of the ATMP will commence within six months of the effective date. Applications submitted after that time will be considered no less frequently than every three years from the effective date of the ATMP.

Alternative 3 — Operational Modifications to Existing Air Tours

If any new entrant is granted operating authority under the ATMP, the FAA will issue OpSpecs (and, if necessary, will revise OpSpecs of operators whose allocation of operating authority changes due to accommodation of a new entrant) within 90 days of the publication of an amended ATMP or of the effective date of ATMP changes implemented through the adaptive management process.

Monitoring and Enforcement

All air tour operators are required to report to the FAA and the NPS, on a semi-annual basis, the number of commercial air tour operations they have conducted within the ATMP planning area. In addition to these reports, operators will also include flight monitoring data and such other information as the FAA and the NPS may request.

Aircraft monitoring and enforcement would occur to ensure that commercial air tour operators are complying with the terms and conditions of the ATMP. The NPS and the FAA are both responsible for the monitoring and oversight of the ATMP. If the NPS identifies instances of non-compliance, the NPS will report such findings to the FAA's local FSDO. The FSDO will investigate all substantiated reports of noncompliance. The public may also report allegations of non-compliance with the ATMP to the FSDO, which may result in an FAA investigation.

Amendment

The ATMP may be amended at any time: if the NPS, by notification to the FAA and the operator(s), determines that the ATMP is not

adequately protecting Park resources and/or visitor enjoyment; if the FAA, by notification to the NPS and the operator(s), determines that the ATMP is adversely affecting aviation safety and/or the national aviation system; or, if the agencies determine that appropriate changes to the ATMP are necessary to address new information or changed circumstances that cannot be addressed through adaptive management.

The FAA and the NPS will jointly consider requests to amend the ATMP from interested parties. Requests must be made in writing and submitted to both the FAA and the NPS. Requests must also include justification that includes information regarding how the requested amendment: is consistent with the objectives of the ATMP with respect to protecting Park resources, tribal lands, or visitor use and enjoyment; and would not adversely affect aviation safety or the national aviation system. The FAA and the NPS will publish additional information for interested parties about the form and manner for submitting a request.

Increases to the total number of air tours authorized per year under the ATMP resulting from accommodation of a new entrant application or a request by an existing operator will require an amendment to the ATMP and additional environmental review. Notice of all amendments to the ATMP will be published in the Federal Register for notice and comment.

Alternative 3 — Operational Modifications to Existing Air Tours

Table 2. Alternative 3 operators and annual cap, daily cap, and number of routes

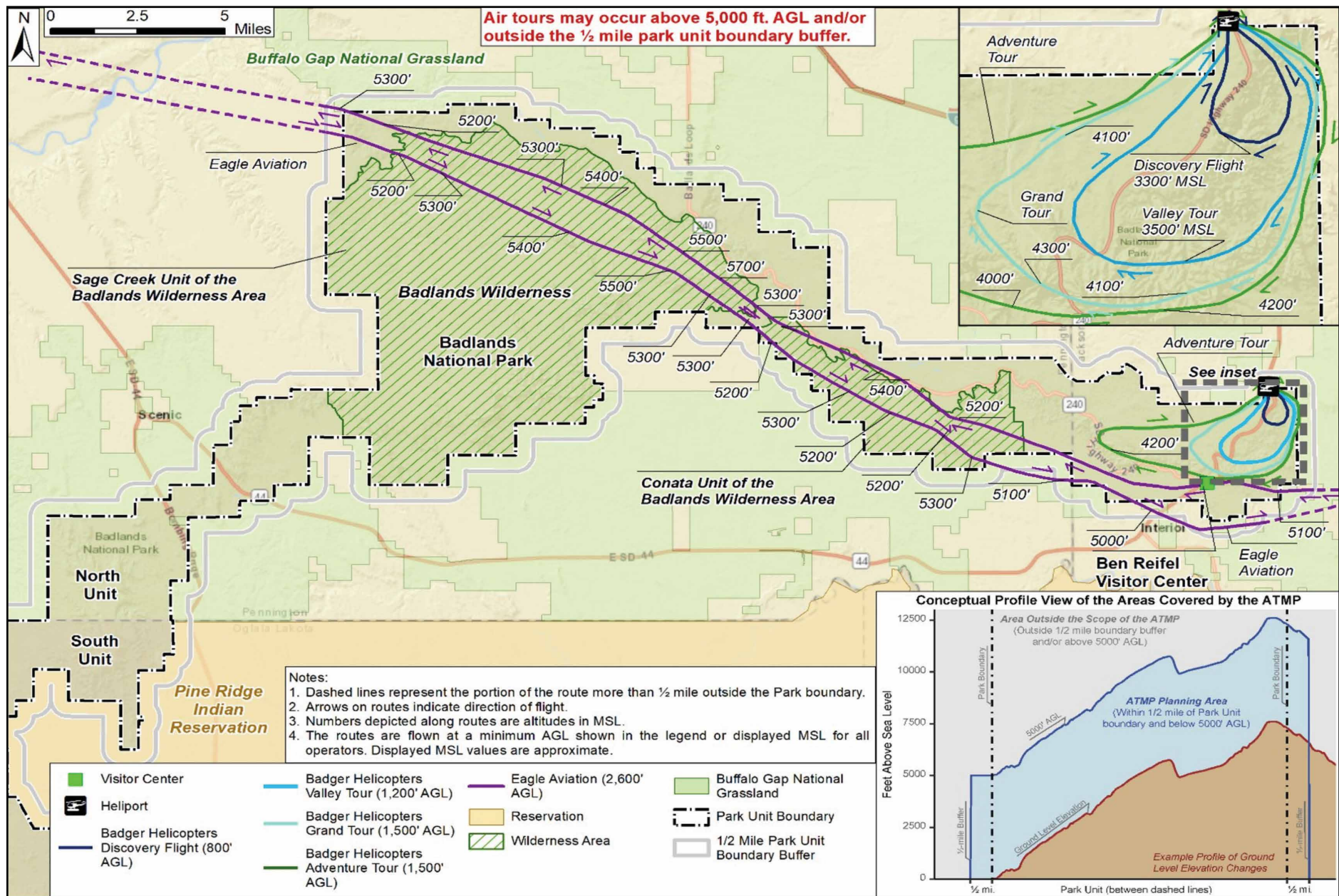
Operator	Aircraft Type	3-year Reported Average No. of Air Tours (2017-2019)	Alternative 3 Allocations	Daily Cap	Number of Routes
Badger Helicopters, Inc.	BHT-206B, BHT-47-G3B1, R-44-II, R-66-66 (helicopter)	1,423	1,423	15	4
Eagle Aviation, Inc.	Cessna 172, Cessna 206 (fixed-wing)	2	2	1	1
		1,425	1,425	16	5

Table 3. Alternative 3 operator routes, altitude, and aircraft type conditions

Route Name	Altitude	Aircraft Type	Operator
BADL-1/Discovery	3,300 ft. MSL/800 ft. AGL	Helicopter	Badger Helicopter
BADL-2/Valley Tour	3,500 ft. MSL/1,200 ft. AGL	Helicopter	Badger Helicopter
BADL-3/Grand Tour	4,000 – 4,200 ft. MSL/1,500 ft. AGL	Helicopter	Badger Helicopter
BADL-4/Adventure Tour	4,200 – 4,400 ft. MSL/1,500 ft. AGL	Helicopter	Badger Helicopter
Eagle Aviation Route	4,100 – 5,000 ft. MSL/2,600 ft AGL	Fixed-wing	Eagle Aviation



Figure 4. Alternative 3 — Operational Modifications to Existing Tours



Alternative 4 — Reduction of Air Tours

Objective

The NPS developed Alternative 4 – Reduction of Air Tours, to provide an alternative that improves the acoustic environment of the Park by reducing the number of existing air tour operations but not eliminating air tours (see Figure 5).

Similar to Alternative 2 - No Air Tours in the Planning Area and Alternative 3 - Operational Modifications to Existing Tours, Park management objectives would also apply. The FAA reviewed the alternative to ensure it does not adversely affect aviation safety.

Description

Alternative 4 would restrict and reduce air tour operations within the ATMP planning area. Primarily, the conditions in this alternative include annual and daily caps, designated routes, and required minimal altitudes.

Caps on Numbers of Flights Allowed Annually and Daily

The total number of commercial air tours would be limited to 1,055 total flights per year which is an approximately 26% reduction from existing annual air tours. The daily number of flights may not exceed 8 tours per day. There would be annual and daily limitations for each operator (see Table 4).

Conditions that are the Same as Alternative 3:

- Routes and Altitudes
- Time of Day, Day of Week, and Seasonal Restrictions
- Quiet Technology (QT) Incentives
- Restrictions for Particular Events
- Adaptive Management
- Operator Training and Education
- Annual Meeting
- Competitive Bidding
- Operators, Initial Allocation of Air Tours, Aircraft Types, and Interim
- Operating Authority
- New Entrant
- Monitoring and Enforcement
- Amendment

Alternative 4 — Reduction of Air Tours

Table 4. Alternative 4 operators and annual cap, daily cap, and number of routes

Operator	Aircraft Type	3-year Reported Average No. of Air Tours (2017-2019)	Alternative 4 Allocations	Daily Cap	Number of Routes
Badger Helicopters, Inc.	BHT-206B, BHT-47-G3B1, R-44-II, R-66-66 (helicopter)	1,423	1,053	7	4
Eagle Aviation, Inc.	Cessna 172, Cessna 206 (fixed-wing)	2	2	1	1
		1,425	1,055	8	5

Table 5. Alternative 4 operator routes, altitude, and aircraft type conditions

Route Name	Altitude	Aircraft Type	Operator
BADL-1/Discovery	3,300 ft. MSL/800 ft. AGL	Helicopter	Badger Helicopter
BADL-2/Valley Tour	3,500 ft. MSL/1,200 ft. AGL	Helicopter	Badger Helicopter
BADL-3/Grand Tour	4,000 – 4,200 ft. MSL/1,500 ft. AGL	Helicopter	Badger Helicopter
BADL-4/Adventure Tour	4,200 – 4,400 ft. MSL/1,500 ft. AGL	Helicopter	Badger Helicopter
Eagle Aviation Route	4,100 – 5,000 ft. MSL/2,600 ft. AGL	Fixed-wing	Eagle Aviation



Figure 5. Alternative 4 — Reduction of Air Tours

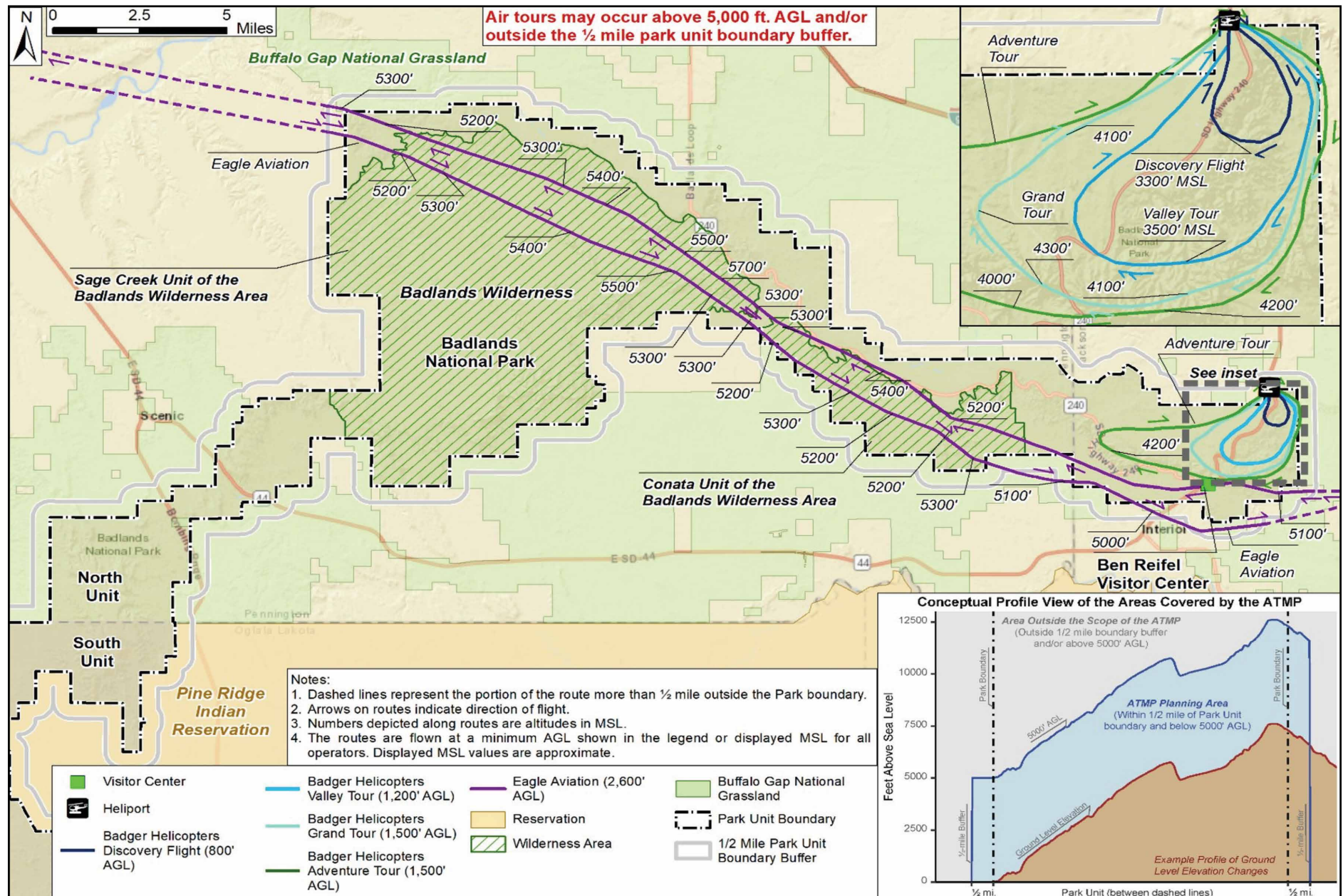


Table 6. Summary of Alternative Elements

Alternative Attributes	Alternative 1 (No Action/No ATMP)	Alternative 2 (No Air Tours in the Planning Area)	Alternative 3 (Operational Modifications to Existing Air Tours)	Alternative 4 (Reduction of Air Tours)
General Description and Objectives	Allows a continuation of air tours under IOA without implementation of an ATMP or voluntary agreement. Does not comply with the Act.	Prohibits air tours within the ATMP planning area to maximize Park resource protection. Air tours could still continue to fly outside the ATMP planning area (i.e., above 5,000 ft. AGL or more than ½-mile outside of the Park's boundary).	Restricts air tour operations within the ATMP planning area. Primarily, the conditions in this alternative include annual and daily caps, designated routes, and required minimal altitudes.	Restricts and reduces air tour operations within the ATMP planning area. Primarily, the conditions in this alternative include annual and daily caps, designated routes, and required minimal altitudes.
Annual/Daily Number of Flights	Leaves IOA in place, allowing the potential for up to 4,117 commercial air tours each year. Actual number of tours has historically ranged from 962 to 1,729 flights per year, or an average of 1,425 flights (based on 2017-2019 reporting).	None in ATMP planning area.	The annual number of flights would be limited to 1,425 total flights per year across both operators. The daily number of flights may not exceed 16 tours per day across both operators. There would be annual and daily limitations for each operator.	The annual number of flights would be limited to 1,055 total flights per year across both operators. The daily number of flights may not exceed 8 tours per day across both operators. There would be annual and daily limitations for each operator.
Routes	No mandatory routes or no-fly zones. See map for depiction of reported routes and actual operations, though operators may change routes or altitude without notice.	None in ATMP planning area.	Four routes for the helicopter operator and one route for the fixed-wing operator all with varying distances and altitudes. Badger Route 5 – Expedition Tour would be prohibited under this alternative.	Same as Alternative 3.
Minimum Altitudes	No mandatory minimum altitudes. See map for depiction of reported operations, though operators may change altitude without notice.	No minimum altitude would be set. However, flights over the Park that are above 5,000 ft. AGL could occur as they are outside the ATMP planning area. Flights more than ½-mile outside the Park boundary are similarly outside the ATMP planning area and could occur.	Minimum 2,600 ft. AGL for fixed-wing aircraft, and minimum 800 ft. AGL to 1,500 ft. AGL for helicopter aircraft.	Same as Alternative 3.

Continuation of Table 6. Summary of Alternative Elements

Alternative Attributes	Alternative 1 (No Action/No ATMP)	Alternative 2 (No Air Tours in the Planning Area)	Alternative 3 (Operational Modifications to Existing Air Tours)	Alternative 4 (Reduction of Air Tours)
Time of Day	No Restrictions.	N/A	One hour after sunrise to one hour before sunset for non-QT flights.	Same as Alternative 3.
Seasonal Restrictions	No Restrictions.	N/A	Air tours would be permitted to occur from May 1 through September 30, for 152 total days each year.	Same as Alternative 3.
Day of Week	No Restrictions.	N/A	Air tours may fly any day of the week from May 1 to September 30.	Same as Alternative 3.
Quiet Technology (QT) Incentives	None.	N/A	Air tours operators are incentivized to adopt QT by being extended the opportunity to fly sunrise through sunset for QT flights.	Same as Alternative 3.
Operator Training and Education	None.	N/A	Mandatory if requested and/or made available by the FAA or the NPS.	Same as Alternative 3.
Annual Meeting	None.	N/A	Mandatory if requested and/or made available by the FAA or the NPS.	Same as Alternative 3.
Restrictions for Particular Events	None.	N/A	In addition to seasonal restrictions, the NPS can establish temporary no-fly periods and must provide 30 days notice to operators of the no-fly periods. Events may include tribal ceremonies or other similar events.	Same as Alternative 3.

Continuation of Table 6. Summary of Alternative Elements

Alternative Attributes	Alternative 1 (No Action/No ATMP)	Alternative 2 (No Air Tours in the Planning Area)	Alternative 3 (Operational Modifications to Existing Air Tours)	Alternative 4 (Reduction of Air Tours)
Adaptive Management	None.	N/A	Adaptive management actions may be taken as long as their impacts are within the impacts already analyzed by the agencies.	Same as Alternative 3.
Operators, Initial Allocation of Air Tours, Aircraft Types, and Interim Operating Authority	<p>Two operators hold IOA for 4,117 air tours each year.</p> <p>Badger Helicopter: BHT-206B, BHT-47-G3B1, R-44-II, R-66- 66</p> <p>Eagle Aviation: Cessna 172, Cessna 206</p> <p>Aircraft type used by operators could change under this alternative.</p>	The establishment of the ATMP will result in the termination of all IOA for the Park and tribal lands.	<p>Badger Helicopter: 1,423 flights annually; BHT-206B, BHT-47-G3B1, R-44-II, R-66- 66</p> <p>Eagle Aviation: two flights annually; Cessna 172, Cessna 206</p> <p>Competitive bidding could occur and change air tour allocations.</p> <p>The establishment of the ATMP will result in the termination of all IOA for the Park and tribal lands.</p>	<p>Badger Helicopter: 1,053 flights annually; BHT-206B, BHT-47-G3B1, R-44-II, R-66- 66</p> <p>Eagle Aviation: two flights annually; Cessna 172, Cessna 206</p> <p>Competitive bidding could occur and change air tour allocations.</p> <p>The establishment of the ATMP will result in the termination of all IOA for the Park and for tribal lands.</p>
Amendments	None.	The ATMP may be amended at any time if the NPS, by notification to the FAA, determines that the ATMP is not adequately protecting Park resources and/or visitor enjoyment; or if the FAA, by notification to the NPS, determines that the ATMP is adversely affecting aviation safety and/or the national aviation system; or, if the agencies determine that appropriate changes to the ATMP are necessary to address new information or changed circumstances.	The ATMP may be amended at any time: if the NPS, by notification to the FAA and the operator(s), determines that the ATMP is not adequately protecting Park resources and/or visitor enjoyment; if the FAA, by notification to the NPS and the operator(s), determines that the ATMP is adversely affecting aviation safety and/or the national aviation system; or, if the agencies determine that appropriate changes to the ATMP are necessary to address new information or changed circumstances that cannot be addressed through adaptive management.	Same as Alternative 3.

Glossary

The Act	National Parks Air Tour Management Act of 2000
AGL	Above Ground Level
ATMP	Air Tour Management Plan
EA	Environmental Assessment
FAA	Federal Aviation Administration
FSDO	Flight Standards District Office
IOA	Interim Operating Authority
MSL	Mean Sea Level
NEPA	National Environmental Policy Act
NPS	National Park Service
Park	Badlands National Park
PEPC	Planning, Environment & Public Comment System
OpSpecs	Operations Specifications
QT	Quiet Technology



Prairie Dog at Badlands

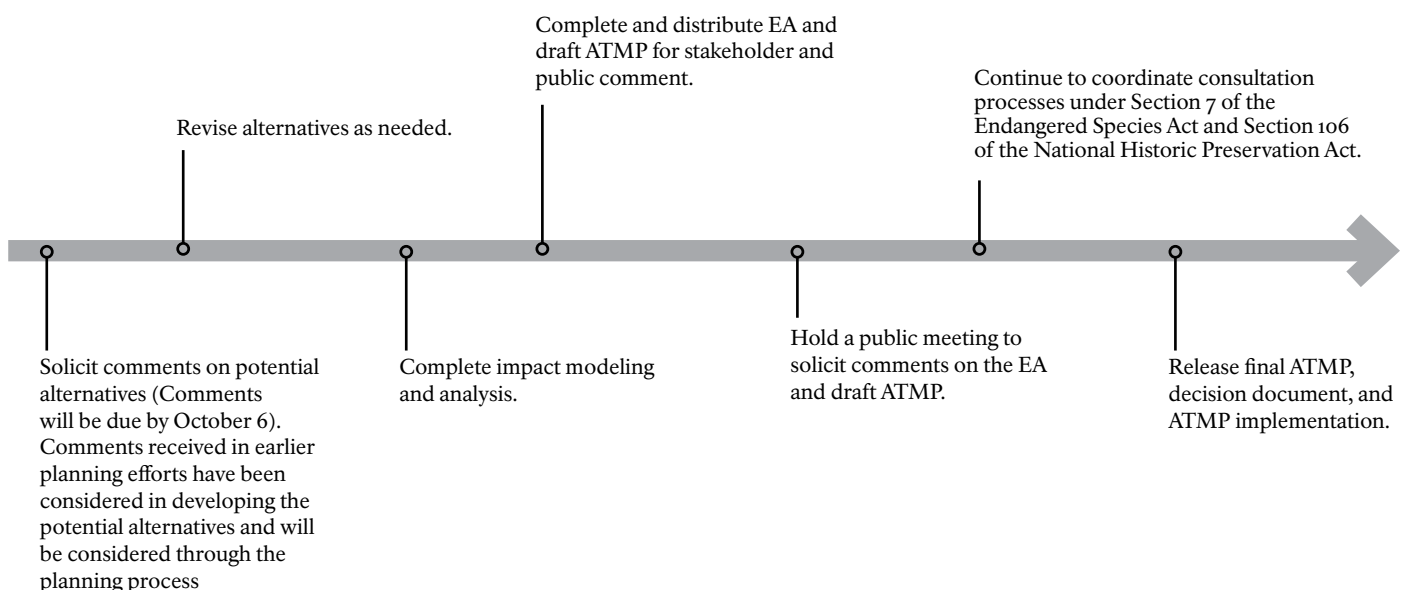
Next Steps

This public scoping period represents the first opportunity to be involved in the current planning process. During this scoping period, the project planning team would like to receive comments on the potential alternatives. After this public scoping process has concluded, the agencies will prepare an EA to comply with NEPA and a draft ATMP. Important steps in the planning process are in the graphic below.

The FAA and the NPS are also identifying resources that are listed in or eligible for listing in the National Register of Historic Places that could be affected by air tours operating under the proposed ATMP. This includes any historic districts, sites, buildings, structures, objects or landscapes, including traditional cultural properties. If members of the public have any information on historic properties that they believe would be helpful in this effort, including properties outside of the Park, we welcome that assistance.

The FAA and the NPS are also seeking to identify additional individuals or organizations that may be interested in participating in Section 106 of the National Historic Preservation Act consultations for the ATMP as consulting parties. We want to ensure that we include anyone that may have information or expertise to share.

Should you have information you wish to provide regarding historic properties or are interested in participating in the Section 106 review process as a consulting party, please contact Sheri G. Lares at 701.323.7388 or sheri.lares@faa.gov and copy the ATMP Team at ATMPTeam@dot.gov. Please note that this contact information is only for correspondence related to the Section 106 process, and comments not related to the Section 106 process will not be accepted or relayed via email. Instructions for general public comment on the potential alternatives described in this newsletter are provided below.



Instructions for Public Comment

Please comment on any alternative and/or alternative element described above. The agencies are seeking substantive comments that describe why something will or will not work, provide new ideas or factual information to correct or adjust assumptions made, or present reasonable alternatives other than those described. Comments that merely support or oppose the proposals are not considered substantive. Commenters may wish to consider the following questions:

- What elements of the alternatives do you think are most important? Why?
- What other information should the planning team consider when analyzing the alternatives?
- Are there other elements or ideas that should be considered and analyzed that are not already presented? What is missing, and why should it be considered?
- Are there other resources or impact topics that should be considered in the analysis?
- What other comments and suggestions do you have?

Comment submission using the Planning, Environment & Public Comment (PEPC) system is preferred, although written comments sent via postal mail will also be accepted. If you do not have access to a computer, use the attached comment form, following directions on the form. Comments will not be accepted via email.

Comments may be submitted using the PEPC system (<https://parkplanning.nps.gov/BadlandsATMP>) by October 6, 2022 at 11:59 PM MT.

Written comments may be sent via postal mail to the following address:

Volpe National Transportation Systems Center
Kaitlyn Rimol, V-326
Attn: Badlands National Park ATMP
55 Broadway
Cambridge, MA 02142



Send Us Your Comments!

PLEASE SUBMIT YOUR COMMENTS BY OCTOBER 6, 2022 AT 11:59 PM MT.

Please submit comments electronically by visiting: <https://parkplanning.nps.gov/Badlands>
Once on the website, select “Open for Comment” to provide your thoughts on these preliminary alternatives. If you do not have access to a computer, you can send us your comments on this comment form.

Do you wish to remain on the mailing list for the Air Tour Management Plan ? ☐ YES ☐ NO

Please print your name and address in the space provided. If the mailing label we used is incorrect, please indicate any corrections in the space below. To keep our mailing list accurate, please check the boxes below that apply.

- ☐ Change my address.
- ☐ Add my name to the mailing list.
- ☐ Remove my name from the mailing list.
- ☐ Send me information by e-mail.

Name: _____

Organization, if any: _____

Mailing Address: _____

City/State/Zip: _____

Email: _____

Below, please write any comments or feedback related to information provided in this newsletter. Please include additional sheets of paper as necessary. When complete, please fold this form in half, showing the preprinted address on the outside, tape it closed (no staples please), add postage, and drop in the mail.

Comments will not be accepted by fax, e-mail, or any other way than those specified above. Bulk comments in any format (hard copy or electronic) submitted on behalf of others will not be accepted. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you can ask us to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Name: _____

Address: _____

**ADD
POSTAGE
HERE**

Volpe National Transportation Systems Center
Kaitlyn Rimol, V-326
Attn: Badlands National Park ATMP
55 Broadway
Cambridge, MA 02142

Volpe National Transportation Systems Center
Kaitlyn Rimol, V-326
Attn: Badlands National Park ATMP
55 Broadway
Cambridge, MA 02142