

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

Table of Contents

1	PURPOSE AND NEED	1
1.1	INTRODUCTION	1
1.2	BACKGROUND.....	2
1.3	PROPOSED ACTION	3
1.4	PURPOSE AND NEED	3
1.5	ENVIRONMENTAL IMPACT CATEGORIES NOT ANALYZED IN DETAIL	4
2	ALTERNATIVES.....	8
2.1	ALTERNATIVES DEVELOPMENT	8
2.2	ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER STUDY.....	9
2.2.1	<i>Air Tours at or above Existing Levels.....</i>	<i>9</i>
2.3	ATMP PLANNING AREA FOR THE DEVELOPMENT OF THE ALTERNATIVES	10
2.4	ALTERNATIVE 1 (NO ACTION ALTERNATIVE)	11
2.4.1	<i>Commercial Air Tours per Year</i>	<i>12</i>
2.4.2	<i>Commercial Air Tour Routes and Altitudes.....</i>	<i>13</i>
2.4.3	<i>Commercial Air Tour Operators and Aircraft Types.....</i>	<i>13</i>
2.5	ALTERNATIVE 2	15
2.5.1	<i>Commercial Air Tour Routes and Altitudes.....</i>	<i>16</i>
2.5.2	<i>Monitoring and Enforcement.....</i>	<i>17</i>
2.6	ALTERNATIVE 3 (PREFERRED ALTERNATIVE)	18
2.6.1	<i>Commercial Air Tours per Year</i>	<i>19</i>
2.6.2	<i>Commercial Air Tour Route and Altitudes.....</i>	<i>20</i>
2.6.3	<i>Commercial Air Tour Aircraft Type.....</i>	<i>21</i>
2.6.4	<i>Commercial Air Tour Day/Time.....</i>	<i>21</i>
2.6.5	<i>Restrictions for Particular Events.....</i>	<i>21</i>
2.6.6	<i>Additional Requirements.....</i>	<i>22</i>
2.6.7	<i>Quiet Technology Incentives</i>	<i>24</i>
2.6.8	<i>Initial Allocation and Competitive Bidding.....</i>	<i>24</i>

2.7	SUMMARY COMPARISON OF THE ATMP ALTERNATIVES.....	26
3	AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES	29
3.1	NOISE AND NOISE-COMPATIBLE LAND USE.....	29
3.1.1	<i>Affected Environment</i>	<i>30</i>
3.1.2	<i>Environmental Consequences</i>	<i>34</i>
3.2	AIR QUALITY AND CLIMATE CHANGE	46
3.2.1	<i>Affected Environment</i>	<i>46</i>
3.2.2	<i>Environmental Consequences</i>	<i>47</i>
3.3	BIOLOGICAL RESOURCES	50
3.3.1	<i>Affected Environment</i>	<i>51</i>
3.3.2	<i>Environmental Consequences</i>	<i>61</i>
3.4	CULTURAL RESOURCES	69
3.4.1	<i>Affected Environment</i>	<i>71</i>
3.4.2	<i>Environmental Consequences</i>	<i>79</i>
3.5	WILDERNESS	86
3.5.1	<i>Affected Environment</i>	<i>87</i>
3.5.2	<i>Environmental Consequences</i>	<i>91</i>
3.6	VISITOR USE AND EXPERIENCE AND OTHER RECREATIONAL OPPORTUNITIES.....	96
3.6.1	<i>Affected Environment</i>	<i>96</i>
3.6.2	<i>Environmental Consequences</i>	<i>99</i>
3.7	ENVIRONMENTAL JUSTICE AND SOCIOECONOMICS	105
3.7.1	<i>Affected Environment</i>	<i>106</i>
3.7.2	<i>Environmental Consequences</i>	<i>110</i>
3.8	VISUAL EFFECTS	115
3.8.1	<i>Affected Environment</i>	<i>116</i>
3.8.2	<i>Environmental Consequences</i>	<i>117</i>
3.9	COASTAL RESOURCES	121
3.9.1	<i>Affected Environment</i>	<i>122</i>
3.9.2	<i>Environmental Consequences</i>	<i>122</i>
3.10	DEPARTMENT OF TRANSPORTATION (DOT) ACT SECTION 4(F) RESOURCES	124
3.10.1	<i>Affected Environment</i>	<i>124</i>

3.10.2	<i>Environmental Consequences</i>	126
3.11	SUMMARY OF ENVIRONMENTAL CONSEQUENCES.....	131

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 Methodology
Appendix F: Noise Technical Analysis
Appendix G: Cultural Resources Consultation and Summary
Appendix H: Section 7 Consultation
Appendix I: Section 4(f) Analysis
Appendix J: Public Scoping Newsletter and Comment Summary Report
Appendix K: CZMA Compliance

List of Figures

Figure 1. Graphic depiction of the ATMP planning area	11
Figure 2. Alternative 1 (No Action)	15
Figure 3. Alternative 2.....	18
Figure 4. Alternative 3.....	25
Figure 5. Natural Ambient L_{50}	33
Figure 6. 12-hour Cumulative Existing Ambient Sound Level (Daytime) for Current Conditions	34
Figure 7. 12-hour Equivalent Sound Level ($L_{Aeq,12h}$) for No Action Alternative.....	38
Figure 8. Time Above 35 dBA for No Action Alternative	39
Figure 9. 12-hour Equivalent Sound Level ($L_{Aeq,12h}$) for Alternative 3.....	41
Figure 10. Time Above 35 dBA for Alternative 3	42
Figure 11. Affected Environment for Biological Resources	61
Figure 12. Biological Resources Environmental Consequences for Alternative 3	67
Figure 13. Affected Environment for Cultural Resources	79
Figure 14. Cultural Resources Environmental Consequences for Alternative 3.....	84
Figure 15. Affected Environment for Wilderness	89
Figure 16. Wilderness Environmental Consequences for Alternative 3	94
Figure 17. Affected Environment for Visitor Use and Experience	99
Figure 18. Visitor Use and Experience Environmental Consequences for Alternative 3.....	104
Figure 19. Affected Environment for Environmental Justice.....	108
Figure 20. Environmental Justice Environmental Consequences for Alternative 3	114
Figure 21. Affected Environment for Visual Effects.....	117
Figure 22. Visual Effects Environmental Consequences for Alternative 3	120
Figure 23. Affected Environment for Section 4(f) Properties.....	126
Figure 24. Section 4(f) Environmental Consequences for Alternative 3	130

List of Tables

Table 1. Commercial Air Tour Operators, Aircraft Type, Reported Tours, and IOA.	14
Table 2. Summary Comparison of the ATMP Alternatives.	26
Table 3. Primary Metrics Used for the Noise Analysis.	35
Table 4. Summary of Noise Modeling Metric Results Under the No Action Alternative.	37
Table 5. Summary of Noise Modeling Metric Results for Alternative 3.	40
Table 6. Summary of Criterial Pollutant Annual Emissions in Tons per Year (TPY) Under the No Action Alternative.	48
Table 7. Summary of Change in Criterial Pollutant Annual Emissions in TPY Under Alternative 3 as Compared to No Action Alternative.	49
Table 8. National Register Listed, Eligible, and Potentially Eligible Properties within the APE and Section 4(f) Resources.	78
Table 9. Time Above 52 dBA for Park Visitor Centers and Corresponding Location Points Under the No Action Alternative.	100
Table 10. Time Above 52 dBA for Park Visitor Centers and Corresponding Location Points Under Alternative 3.	102
Table 11. Minority and Low-income Population Data within Maui County and the Study Area	107
Table 12. Section 4(f) Resources.	125
Table 13. Summary of Environmental Consequences of the ATMP Alternatives.	131

1 PURPOSE AND NEED

1.1 Introduction

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

The Act requires the FAA, in cooperation with the NPS, to develop an ATMP or Voluntary Agreement for parks and tribal lands where operators have applied to conduct commercial air tours. The Act provided for existing commercial air tour operations occurring at the time the law was enacted to continue until an ATMP for the park was implemented by expressly requiring the FAA to grant interim operating authority (IOA) to existing operators.^{1,2} Currently, there are five commercial air tour operators that conduct air tours over the Park, although there are six operators with combined IOA for 25,827 commercial air tours annually. IOA includes only an annual cap on the number of commercial air tours that may be conducted by an operator, but does not designate the routes, time-of-day, altitudes, or other conditions for such tours.

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

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

¹ 49 U.S.C. § 40128(c)(2)(A)(i-ii)

² 70 Fed. Reg. 58,778 (Oct. 7, 2005).

½-mile outside the Park’s boundary during which the aircraft flies below 5,000 feet (ft.) above ground level (AGL).

1.2 Background

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

In order to conduct the planning processes consistent with the Court’s decision, the agencies formally terminated longstanding ATMP planning process for several parks via a September 3, 2020 Federal Register notice.³ The previous planning process for an ATMP for the Park was initiated in 2003. In 2004, the FAA published a notice of the agencies’ intent to prepare an EA for that ATMP.⁴ In 2006, the FAA published a notice of intent to prepare an environmental impact statement for that ATMP.⁵ Due to the passage of the 2012 amendments to the Act, work on the previous planning process was paused until the time it was terminated in order to initiate the current planning process.

On February 28, 2022, the FAA and the NPS initiated a 30-day NEPA public scoping process and put forth three potential ATMP alternatives for public and stakeholder review and comment. The comments received were used to further refine or dismiss alternatives as described in this draft EA and were also used to inform the environmental analysis. Refer to Appendix J, *Public Scoping Newsletter and Comment Summary Report*, for more information.

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

⁴ Environmental Assessments for the Air Tour Management Plan Program at Haleakalā National Park, Hawai’i Volcanoes National Park, Pu’ukoholā Heiau National Historic Site, Kaloko-Honokōhau National Historical Park, Kalaupapa National Historical Park, and Pu’uhonua O Honaunau National Historical Park, 69 Fed. Reg. 9,420 (February 27, 2004).

⁵ Notice of intent to prepare an Environmental Impact Statement (EIS) and initiation of public and agency scoping for the Haleakalā National Park Air Tour Management Plan, 71 Fed. Reg. 66,575 (November 15, 2006).

1.3 Proposed Action

The proposed action is to implement an ATMP for the Park. The Act defines an ATMP as a plan used to develop acceptable and effective measures to mitigate or prevent the significant adverse impacts, if any, of commercial air tour operations upon natural and cultural resources, visitor experiences, and tribal lands. An ATMP describes conditions for the conduct of air tour operations over a park, including routes, altitudes, time-of-day restrictions, restrictions for particular events, maximum numbers of flights, or other provisions. The Act and implementing regulations found in 14 CFR Part 136 state that the ATMP for a park:

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

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

1.4 Purpose and Need

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

Need: The Act requires an ATMP or voluntary agreement to be developed for the Park. Air tours have the potential to impact natural and cultural resources, 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 landscapes and resources, Wilderness character, visitor experience, and Native Hawaiian Traditional Cultural Properties (TCPs) including Native Hawaiian sacred landscapes, sites, and ceremonial areas.

1.5 Environmental Impact Categories Not Analyzed in Detail

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

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

Biological Resources (Fish, Plants, and Invertebrates)

The ATMP would not result in ground disturbance or in-water activities that could affect plants, fish, or invertebrates. The proposed minimum altitude (2,000 ft. AGL over land and 3,000 ft. AGL over the ocean) included in the action alternative under which commercial air tours would be permitted within the ATMP planning area creates sufficient separation between commercial air tours and fish such that impacts are not expected to occur, either directly or indirectly.

Noise from aircraft have been demonstrated to influence the behavior of ecologically significant pollinators and seed dispersers in natural and human altered landscapes (Francis et al., 2012; Gallardo et al., 2021). Specifically, Francis et al. studied the effect of compressor noise running continuously and generating noise at high amplitudes (greater than 95 decibels at a distance of 1 meter). Within the study, experimental sites were established 125-150 meters from the noise source. Noise exposure had an indirect positive effect on pollination by hummingbirds, but an indirect negative effect on piñon pine seedling establishment by altering the composition of animals preying upon or dispersing seeds. In contrast to this experimental design, commercial air tours do not generate continuous noise, and the proposed minimum altitudes (2,000 ft. AGL over land and 3,000 ft. AGL over the ocean) in the action alternative under which air tours would be permitted in the ATMP planning area provide much greater spatial separation as compared to the study sites. Therefore, the agencies have determined that noise associated with the ATMP is unlikely to result in impacts to plants or plant pollination.

Native invertebrates in Hawai'i are largely restricted to areas of predominantly native vegetation (Magnacca and Foote, 2006) and insects comprise 87% of the invertebrate fauna of the Park. Many native Hawaiian insects are host-specific and could be in danger of extirpation because many native Hawaiian host plants are rare or endangered (e.g., Haleakalā silverswords). These native plant-dependent insects (e.g., *Drosophila*, moths, and planthoppers) are in turn hosts of native specialist predators and parasitoids (e.g., *Sierola*), which can follow their host into extinction (Fung Associates and SWCA Environmental Consultants, 2019). The minimum proposed altitudes included in the action alternative in which air tours would be permitted within the ATMP planning area (2,000 ft. AGL over land and

3,000 ft. AGL over the ocean) create sufficient separation between commercial air tours and invertebrates such that impacts are not expected to occur, either directly or indirectly.

Air tours could result in some effects on air quality, such as emissions or the potential for low-flying aircraft to generate dust, which could indirectly affect plants. While air quality is a topic that is analyzed in detail in this draft EA, the minimum altitudes considered by the action alternative in which air tours would be permitted within the ATMP planning area (2,000 ft. AGL over land and 3,000 ft. AGL over the ocean) create sufficient separation between plants and aircraft such that it is unlikely that the dust or changes in air quality would have a meaningful effect on plants.

In summary, for these reasons, the agencies have dismissed these resources from detailed analysis.

Children's Environmental Health and Safety Risks

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

Hazardous Materials, Solid Waste, and Pollution Prevention

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

In order to limit potential impacts to Park resources in the event of an emergency landing inside the Park, once the aircraft has safely landed and any medical or other emergency issues have been addressed, the operator would immediately notify the Park through park dispatch of the incident and location. Prior approval from the Park superintendent or designee would be required for the removal or take off of the landed aircraft in order to coordinate joint resources for the safety of visitors and Park resources (36 CFR 2.17). Prior approval from the Park superintendent or designee would be required for any non-emergency landing of aircraft within

the Park boundaries, including replacement aircraft deployed to retrieve passengers who are not able to exit via ground transportation.

If an air tour crash occurs, the NPS or a cooperating emergency response agency such as Maui Police or Fire Departments, or the U.S. Coast Guard would respond as soon as possible to provide life-saving search and rescue efforts. If the crash resulted in fire or hazardous materials contamination, responding personnel would attempt to secure the area and control the fire or contain potential contaminants while mitigating impacts to Park resources to the greatest extent possible. The Park's Fire Management Plan (NPS, 2022) would guide fire response and associated resource protection. Assessment of resource damage, initiation of restoration, and financial compensation sought would be guided by the System Unit Resource Protection Act, 54 U.S.C. § 100721 et. seq.

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

Farmlands

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

Land Use

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

Natural Resources and Energy Supply

Commercial air tours have been ongoing within the ATMP planning area prior to enactment of the Act. The ATMP would not result in the extraction of resources from the Park or cause measurable increases in the consumption of energy resources that would exceed available or

future supplies of natural or energy resources. Therefore, this topic is not analyzed in detail in this draft EA.

Visual Effects – Light Emissions

Commercial air tours do not fly at night as it creates safety concerns when flying in areas with little artificial light on the ground surface, and points of interest that could otherwise be seen from an air tour are not visible at night. Any lights from commercial air tour aircraft are not likely to be noticeable. Therefore, light emissions are not expected to occur as a result of the ATMP and this topic has not been analyzed in detail in this draft EA.

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

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

2 ALTERNATIVES

2.1 Alternatives Development

Prior to public scoping, the preliminary ATMP alternatives were developed primarily by an NPS interdisciplinary team comprised of subject matter experts from the NPS's Natural Sounds and Night Skies Division, Environmental Quality Division, Pacific West Regional Office, and the Park. In developing the alternatives, the team considered the noise impacts of existing air tour routes and operations, the Park's cultural and natural resources, and the Park's existing and natural acoustic environment, visitor experience, and visual resources, as well as potential protective measures that could be included in an ATMP. The alternatives identified by the NPS and justifications for restrictions on commercial air tours were reviewed by the FAA, including the FAA's local Flight Standards District Office (FSDO) who noted any aviation safety concerns.

The agencies also conducted a preliminary environmental analysis earlier in the planning process to identify the appropriate level of NEPA review for a draft ATMP. In 2021, using routes, altitudes, reporting data provided by commercial air tour operators, and other relevant information, the agencies modeled existing air tour conditions over the Park using the FAA's Aviation Environmental Design Tool (AEDT), a software system that models aircraft performance in space and time to estimate fuel consumption, emissions, noise, and air quality. This information was then considered, in addition to acoustic monitoring information, and analyzed by the NPS's interdisciplinary team. The FAA, in coordination with the NPS, also initiated consultation pursuant to Section 106 of the National Historic Preservation Act of 1966 (NHPA) (54 U.S.C. §§ 300101 et seq.), including consultation with Native Hawaiian individuals and Native Hawaiian Organizations (NHOs). The input from consultation and preliminary environmental analysis was used to further refine or dismiss potential alternatives prior to the public scoping period. Ultimately, three potential alternatives (Alternative 1: No Action, Alternative 2 which would not permit air tours within the ATMP planning area, and Alternative 3 which would permit limited numbers of air tours in the ATMP planning area) were released for review and comment during the public scoping period in February 2022. Refer to the public scoping newsletter in Appendix J for details on the alternatives included in public scoping.

As further discussed in Section 2.4, Alternative 1 (No Action Alternative), after the public scoping period, the agencies refined the No Action Alternative to be the three-year average instead of IOA, recognizing that IOA is not reasonably foreseeable. As a result of the comments received from the February 2022 public scoping period, the agencies also refined the route and altitudes in Alternative 3. There were no changes made to Alternative 2, no air tours within the ATMP planning area, as shared during public scoping. The three alternatives presented in this draft EA, including the No Action Alternative, represent the refined alternatives following the public scoping period. Refer to Appendix J, *Public Scoping Newsletter and Comment Summary Report*, for additional details on the alternatives that were released for public scoping.

Alternatives may be further developed or modified through the NEPA process in response to public, consulting party, and agency comments on this draft EA and draft ATMP.

2.2 Alternatives Considered but Eliminated from Further Study

2.2.1 Air Tours at or above Existing Levels

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

The NPS determined the existing level of air tours is inconsistent with the Park's purpose and values as described in its Foundation Document (NPS, 2015a), which states:

For the inspiration of current and future generations, Haleakalā National Park protects a wild volcanic landscape with a wide array of fragile and diverse native ecosystems, including plant and animal species found nowhere else on earth. Our stewardship perpetuates the unique and continuing connections between Hawaiian culture and this sacred and evolving land.

Existing air tour operations result in frequent and loud noise disruptions in many areas of the Park. Noise and visual effects from air tours negatively impact existing Native Hawaiian sacred sites and landscapes, as well as the feeling and setting of other historic properties throughout the Park. The NPS Management Policies direct the NPS to avoid adversely affecting the physical integrity of sacred sites to the extent practicable (NPS Management Policies § 5.3.5.3.2, 2006). Additionally, culturally appropriate sounds are important elements of the national park experience in many parks, and therefore, the NPS is directed to “prevent inappropriate or excessive types and levels of sound (noise) from unacceptably impacting the ability of the soundscape to transmit the cultural and historic resource sounds associated with park purposes” (NPS Management Policies § 5.3.1.7, 2006). Native Hawaiians who were consulted, and part of the ethnographic study, have consistently noted the persistent air tours over the Park unreasonably interfere with ceremonies conducted by Native Hawaiian practitioners at these sacred sites, as well as archaeological sites and historic trails (Prasad and Tomonari-Tuggle, 2008).

Existing air tours over the Park also directly interfere with resource management activities (such as acoustic based bird surveys) which impedes the NPS's ability to fully meet the Park's purpose of preserving endemic Hawaiian ecosystems and does not support the perpetuation of biological diversity and ecological integrity which are fundamental resources and values of the Park (see the Park's Foundation Document (NPS, 2015a)). A recent study in Hawai'i documents that loud, frequent helicopter noise results in changes in avian vocalization (Gallardo Cruz et al.,

2021). Helicopter noise could detrimentally affect physiology, pairing and breeding success, and territory size of birds by limiting communication between individuals (Habib et al., 2007; Nemeth and Brumm, 2010; Halfwerk et al., 2011; Kleist et al., 2018). These effects could have a greater impact on Hawaiian endemic species, many of which are federally listed under the Endangered Species Act (ESA) and already face a number of stressors (Atkinson and Lapointe, 2009; Pratt et al., 2009; LaPointe et al., 2010), compared to non-native species. The existing level of air tours also diminishes visitor opportunities to learn about and be inspired by Park resources and values, and the NPS has determined it unreasonably interferes with Park programs, activities, the atmosphere of peace and tranquility and the natural soundscapes in Wilderness (see 2006 NPS Management Policies 1.4.7.1). Existing air tours repeatedly interrupt and, as determined by the NPS, unreasonably interfere with interpretive programs and visitor activities at the Haleakalā Summit, in Kīpahulu and in the Haleakalā Crater, which may impede visitors from enjoying and learning about existing Park resources. Natural quiet is a foundational resource for the Park and a primary reason for visitation. Air tours currently disrupt natural quiet throughout the Park. Additionally, as determined by the NPS, existing air tour operations unreasonably interfere with the natural soundscape maintained within the Haleakalā Wilderness. Persistent noise within Wilderness interferes with the opportunity for solitude and detracts from the undeveloped and natural qualities of Wilderness.

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

2.3 ATMP Planning Area for the Development of the Alternatives

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

There are two districts in the Park: the Summit District and the Kīpahulu District. The Summit District includes a portion of Haleakalā Highway (known as Crater Road within the Park), Haleakalā Crater, Kaupō Gap, and Nu‘u. The Kīpahulu District includes ‘Ohe‘o Gulch, Kīpahulu Valley, Manawainui, and Ka‘āpahu.

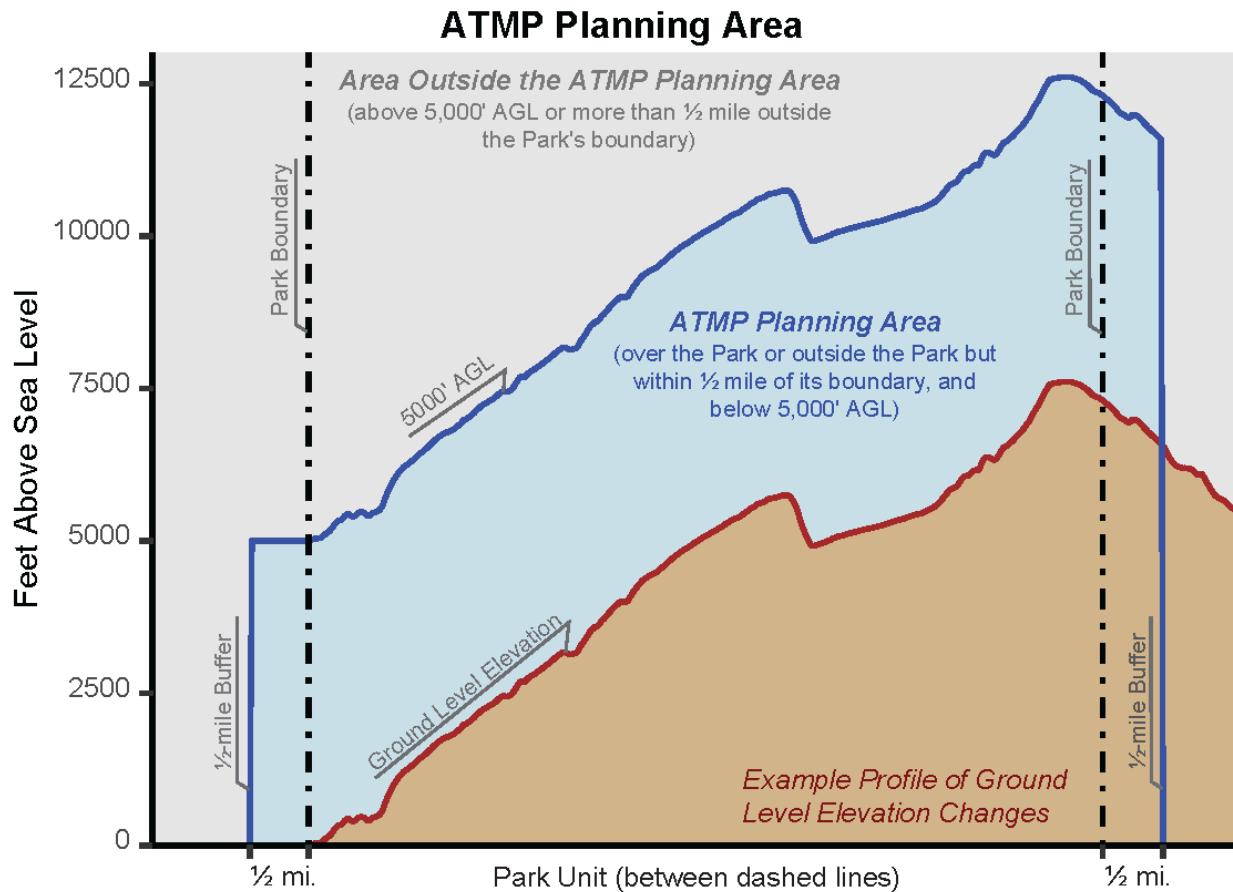


Figure 1. Graphic depiction of the ATMP planning area

2.4 Alternative 1 (No Action Alternative)

The No Action Alternative represents a continuation of what is currently flown under existing law including applicable regulations that govern aviation safety (14 CFR Part 136, Appendix A, Special Operating Rules for Air Tour Operators in the State of Hawai‘i (formerly Special Federal Aviation Regulation 71)) and any FAA exceptions issued to individual operators as outlined by the 2008 FAA Hawai‘i Air Tour Common Procedures Manual (Hawai‘i Common Procedures Manual).⁶

⁶ Hawai‘i Air Tour Common Procedures Manual, FAA Document Number: AWP13-136A, 2008, https://www.faa.gov/about/office_org/field_offices/fsdo/hnl/local_more/media/hawaii_air_tour_common_proc.pdf

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

2.4.1 Commercial Air Tours per Year

Six commercial air tour operators currently hold IOA to fly up to a combined total of 25,827 commercial air tours per year over the Park (see Table 1). The yearly average number of commercial air tours conducted over the Park from 2017-2019 across all operators is 4,824. The agencies consider the 2017-2019, three-year average, the existing baseline for the purposes of understanding the existing number of commercial air tours over the Park. The requirement for commercial air tour operators to report annual commercial air tour operations to the agencies was implemented in 2013. Reporting data from 2013 and 2014 are considered incomplete as reporting protocols were not fully in place at that time and likely do not accurately reflect the number of air tours conducted. Flight numbers from a single year were not chosen as the existing baseline because the three-year average accounts for both variation across years and takes into account the most recent pre-pandemic years. Reporting data from 2020 was not used because the 2020 COVID-19 pandemic resulted in lower than normal commercial air tour operations due to travel restrictions and closures in the State of Hawai'i, which does not represent the conditions in a typical year. The agencies also decided against using 2021 or 2022 data due to continued abnormalities associated with the COVID-19 pandemic and the unavailability of reporting data for 2021 or 2022 during most of the planning effort.

Although 25,827 commercial air tours per year are authorized under IOA, the operations reported by air tour operators reflect an average of 4,824 commercial air tours per year. While it is possible that air tour operations could increase to the level authorized by IOA and thus dramatically change potential impacts to Park resources, the data does not support such changes in the way commercial air tour operations have occurred over the reporting years. The three-year average of commercial air tours from 2017-2019 is 4,824 per year, which is less than 20 percent of IOA, and reflective of data collected. The agencies determined that air tour operations up to current IOA is not reasonably expected to occur within the life of the plan because IOA was based on numbers reported by operators more than 20 years ago and does not represent the most current or reliable operational data. There is no verifiable data demonstrating that operators have ever flown the number of commercial air tours authorized by IOA or will fly this number of tours in the future. Thus, the No Action Alternative is a continuation of existing conditions and uses the three-year average of flights from 2017-2019 for this draft EA analysis and impacts of IOA are not analyzed nor included as the baseline condition.

2.4.2 Commercial Air Tour Routes and Altitudes

There are no designated flight routes or no-fly zones under the No Action Alternative. The figure for this alternative (Figure 2) depicts both general route information provided by current commercial air tour operators and Automatic Dependent Surveillance-Broadcast (ADS-B) flight tracking data of likely commercial air tour operations over and adjacent to the Park. Likely commercial air tour operations are dispersed around the generalized routes provided by operators depicted on Figure 2. The ADS-B tracking data is more reflective of existing operations for various reasons including deviations that may occur due to weather. There are currently no route limitations on air tours and routes may change, depending on an operator's preference to change routes or fly higher or lower than they currently are flying. For purposes of defining the No Action Alternative, the route information in Figure 2 is considered in this draft EA.⁷

Air tour operators authorized to fly below 1,500 ft. AGL (14 CFR Part 136, Appendix A, Special Operating Rules for Air Tour Operators in the State of HI) within the ATMP planning area must comply with requirements such as training and limitations set forth by the FAA in the Hawai'i Common Procedures Manual. Minimum altitudes for commercial air tours within the ATMP planning area are flown in accordance with the Hawai'i Common Procedures Manual, from 500-1,500 ft. AGL, weather dependent and contingent on location over the island. In most locations over the Park, the Hawai'i Common Procedures Manual requires helicopters to fly at a minimum 500 ft. AGL. Refer to Figure 2 for details.

All air tour operators are required to report to the FAA and the NPS⁸, on a semi-annual basis, the number of commercial air tour operations they have conducted within the ATMP planning area. 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. Air tour fee payment is required for commercial air tour operations conducted over the Park under 54 U.S.C. § 100904(f).

2.4.3 Commercial Air Tour Operators and Aircraft Types

Five of the six operators that hold IOA for the Park reported flying commercial air tours over the Park between 2013 and 2020. All five operators that have reported conducting commercial air tours over the Park during this period fly helicopters (not fixed-wing aircraft). Air tours occur year-round on an average of 345 days per year based on 2017-2019 reporting activity. Table 1

⁷ A 1998 Letter of Agreement between the Park and the Hawai'i Air Tour Association (Maui) was established with one of the main provisions prohibiting air tours over Haleakalā Crater. Recent flight tracking data indicates that air tours over the Park are primarily conducted in compliance with that agreement (see Beeco et al., 2020) although Park staff have reported occasional flights over Haleakalā Crater in the past.

⁸ See *Air Tour Reporting Guidance Memo* (2020), https://www.faa.gov/about/office_org/headquarters_offices/ara/programs/air_tour_management_plan/program_information

summarizes each operator's aircraft type, IOA, reported tours, and 2017-2019 average number of reported tours over the Park:

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

Operator	Aircraft Type	2013	2014	2015	2016	2017	2018	2019	2020 ⁹	2017-2019 Average	# of Air Tours IOA
Aris, Inc. (Air Maui Helicopter Tours)	AS350BA	1,230	1,090	721	818	905	863	735	87	834	3,996
Hawai'i Helicopters, Inc.	AS350B2	476	424	380	476	516	328	283	13	376	5,682
Helicopter Consultants of Maui, Inc. (Blue Hawaiian Helicopters)	AS350B2, EC130 T2, EC130 B4	1,966	2,550	2,376	2,334	2,100	2,503	2,740	416	2,448	8,348
Schuman / Makani Kai	No Data	0	0	0	0	0	0	0	0	0	25
Sunshine Helicopters, Inc.	AS350BA	959	868	927	679	881	703	775	76	786	4,853
Alaka Aviation, Inc. (Alexair, Maverick)	EC130B4	N/A	0	139	282	437	360	342	55	380	2,923
TOTAL		4,631	4,932	4,543	4,589	4,839	4,757	4,875	647	4,824	25,827

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

⁹ Based on unpublished reporting data.

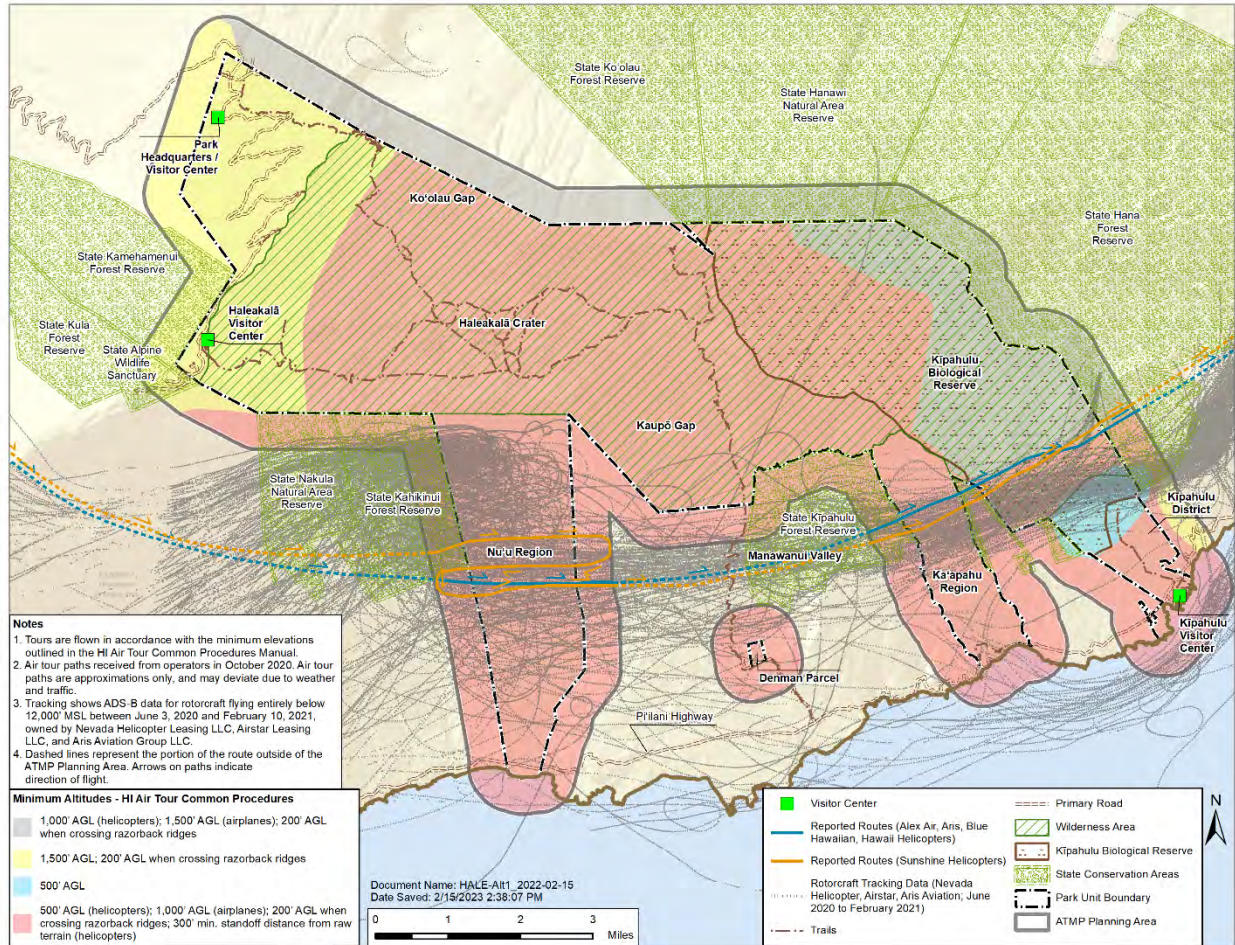


Figure 2. Alternative 1 (No Action)

2.5 Alternative 2

Alternative 2 provides the greatest level of protection for the purposes, resources, and values of the Park because it would not authorize air tours in the ATMP planning area. This includes the summit of Haleakalā (meaning rim and crater), a TCP which holds spiritual and cultural significance to Native Hawaiians; threatened and endangered species and other wildlife sensitive to noise; Congressionally designated Wilderness and visitor opportunities for solitude; visitor experience; Native Hawaiian traditional cultural practices; scenic qualities, and natural sounds.

The following objectives were considered by the NPS in the development of this alternative: protect cultural resources, reduce impacts to biological resources, protect Wilderness values, and avoid or reduce impacts to Wilderness values, cultural resources, natural soundscapes, wildlife and visitor use by reducing the number of commercial air tours per year over the Park as compared to existing conditions.

Alternative 2 would prohibit commercial air tours within the ATMP planning area no later than 180 days after the ATMP is signed by all required signatories from both agencies (its effective date). Operators would be permitted to continue to conduct air tours within the ATMP planning area up to the limit of their IOA until operations specifications are amended to incorporate the ATMP's operating parameters which would occur no later than 180 days after the effective date of the ATMP. All IOA for the Park would terminate by operation of law 180 days after the establishment (effective date) of the ATMP, 49 U.S.C. 40128(c)(2)(E), after which time no operator could continue to rely on any operations specifications issued under IOA as authority to conduct commercial air tours within the ATMP planning area. Operations specifications would be rescinded or amended to incorporate the operating parameters set forth in the ATMP within 180 days after the effective date of the ATMP.

Air tours outside of the ATMP planning area (i.e., at or above 5,000 ft. AGL or more than ½-mile outside the Park boundary) are not subject to the Act and are therefore not regulated under the ATMP. Thus, there would be no limitations on the number of air tours that could occur outside the ATMP planning area. Routes outside of the ATMP planning area are difficult to predict and are necessarily speculative. Operators could continue along current routes outside the ATMP planning area, could fly along current routes but above 5,000 ft. AGL, or routes could vary greatly due to operator preference and weather conditions at the time of the air tour. Refer to Figure 3 for a depiction of this alternative.

Aircraft monitoring and enforcement would still occur under this alternative to ensure that commercial air tour operators are complying with the terms and conditions of the ATMP by not conducting commercial air tours within the ATMP planning area. The NPS and the FAA would both be responsible for the monitoring and oversight of the ATMP.

The FAA reviewed the alternative to ensure it is safe (See Section 2.1, Alternatives Development).

2.5.1 Commercial Air Tour Routes and Altitudes

Air tours could be conducted only outside the ATMP planning area. An unknown number of air tours originating on Maui Island may continue to fly more than ½-mile outside of the Park's boundary at or above minimum altitudes ranging from 500 to 1,500 ft. AGL, depending on location on the island, in accordance with the Hawai'i Common Procedures Manual. Operators may continue to fly to points of interest on the island outside of the ATMP planning area where they already fly or fly routes over or around the ATMP planning area similar to existing flights paths but outside of the ATMP planning area.

Some air tour operators may choose to fly air tours just above the ATMP planning area at or above 5,000 ft. AGL. Over some areas of the ATMP planning area, this would be impractical due to the high elevation of the terrain because it would require operators to fly above 10,000

ft. mean sea level (MSL).¹⁰ Supplemental oxygen use is required in unpressurized aircraft flying over 10,000 ft. MSL for more than 30 minutes (14 CFR § 135.89, § 135.157); therefore, it is unlikely air tours would fly higher for extended periods of time. The actual flight path of air tours outside the ATMP planning area would vary based on operator preference and weather conditions at the time of the air tour. The preciseness of routes and altitudes for tours flown on alternative routes are generally subject to Visual Flight Rules,¹¹ which is based on the principle of “see and avoid”, and therefore may vary greatly.

2.5.2 Monitoring and Enforcement

Aircraft monitoring and enforcement would occur to ensure that commercial air tour operators are complying with the terms and conditions of the ATMP. The NPS would conduct ADS-B aircraft monitoring when possible and work with the FAA to identify and respond to any instances of noncompliance. The agencies would both be responsible for the monitoring and oversight of the ATMP. If the NPS identifies instances of noncompliance, the NPS would report such findings to the FAA’s Honolulu FSDO. The FSDO would investigate and respond to all written reports consistent with applicable FAA guidance. The public may also report allegations of noncompliance with the ATMP to the FSDO, which may result in an FAA investigation. FAA determination of noncompliance may result in legal enforcement actions. Any violation of operations specifications would be treated in accordance with FAA Order 2150.3, *FAA Compliance and Enforcement Program*.

¹⁰ Altitude expressed in units AGL is a measurement of the distance between the ground surface and the aircraft, whereas altitude expressed in MSL refers to the altitude of an aircraft above sea level, regardless of the terrain below it. Aircraft flying at a constant MSL altitude would simultaneously fly at varying AGL altitudes, and vice versa, assuming uneven terrain is present below the aircraft. Refer to Figure 1 for a depiction of this concept as it applies to the ATMP planning area.

¹¹ FAA Advisory Circular 91-36D Visual Flight Rules Flight Near Noise-Sensitive Areas

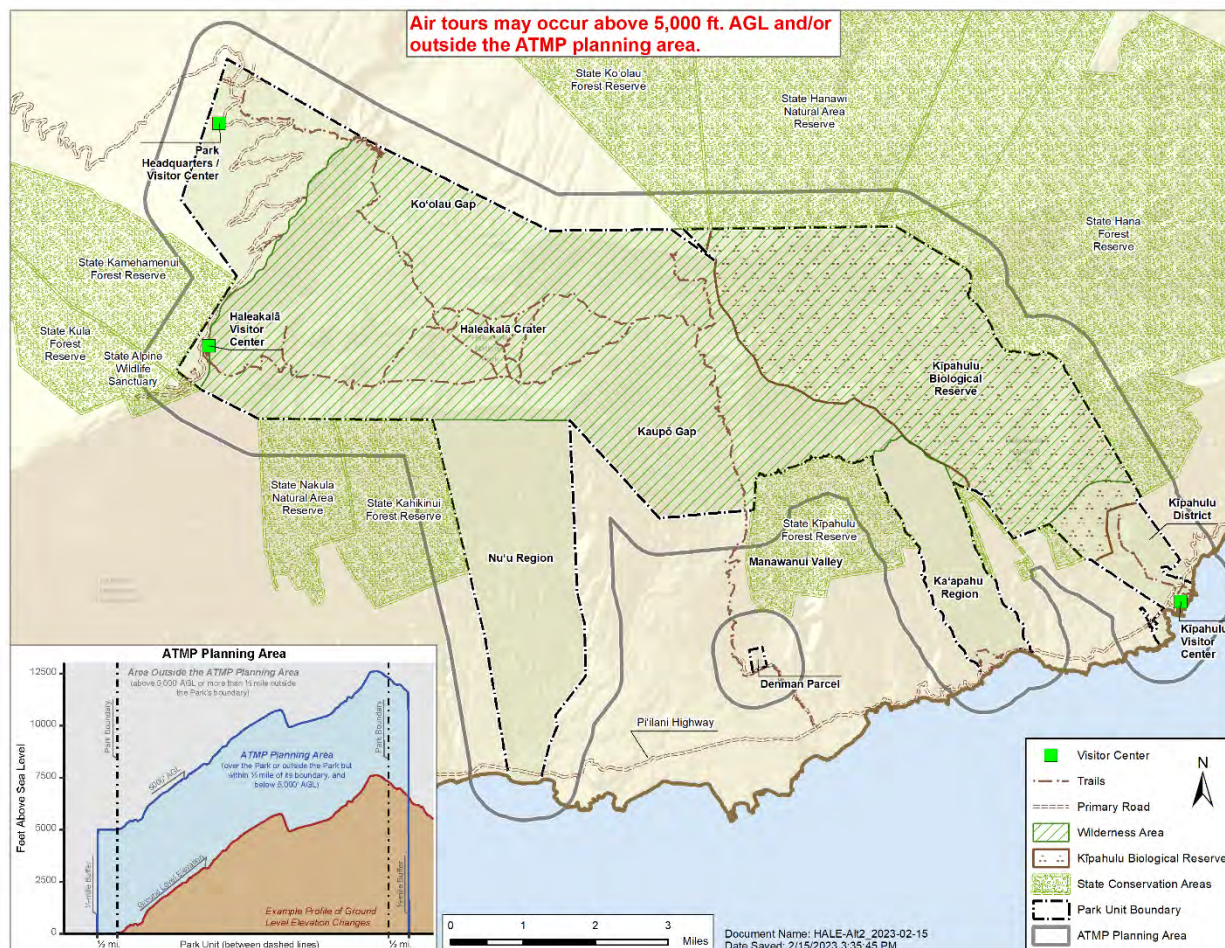


Figure 3. Alternative 2

2.6 Alternative 3 (Preferred Alternative)

The NPS developed Alternative 3 to protect Wilderness values, cultural resources, natural soundscapes, wildlife, and to improve visitor enjoyment of the Park (visitor use) while providing opportunities for air tours to be conducted over the Park. The following objectives were considered by the NPS in the development of this alternative:

- *Protect cultural resources.* The single flight path would avoid identified culturally significant areas, including those used by traditional cultural practitioners, the Kīpahulu Historic District, Crater Historic District, the Kapahu Living Farm, and cultural fishing access and use in certain coastal areas (Prasad and Tomonari-Tuggle, 2008).
- *Reduce impacts to biological resources.* The single flight path avoids the Kīpahulu Biological Reserve and reduces impacts to forest birds and 'ua'u by maintaining mid-slope elevations (i.e., staying below 4,000 ft. contour line elevations). Thus, the designated route would shift air tours away from key avian habitat. The flight path

would also allow lower altitude flights through a specific location over the Park in order to move existing air tours away from cliff-nesting seabirds and forest birds of the Manawainui plateau.

- *Improve visitor experience and protect Wilderness values.* The single flight path avoids the Keonehe'ehe'e (Sliding Sands) Trailhead at the visitor center parking lot, Waimoku Falls and lower Kīpahulu area including the Visitor Center, and the Halemau'u Trail switchback areas for protection of Wilderness values and improved visitor use conditions.
- Avoid or prevent unacceptable impacts to Wilderness values, cultural resources, natural soundscapes, wildlife, and visitor use by reducing the number of commercial air tours per year over the Park and adding time-of-day restrictions as compared to existing conditions.

Refer to Figure 4 for a depiction of this alternative. The FAA reviewed the alternative to ensure it is safe.

2.6.1 Commercial Air Tours per Year

Alternative 3 would authorize 2,412 commercial air tours per year within the ATMP planning area. Thus, it would authorize 50% of the existing number of flights to travel within the ATMP planning area based on the three-year average of reporting data from 2017-2019. The number of air tours authorized per year was selected to reduce impacts to noise sensitive areas in the Park including those with Wilderness values, cultural resources, the natural soundscape and acoustic environment, wildlife, and visitor experience, while also providing expansive views of coastal areas to air tour customers.

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

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

2.6.2 Commercial Air Tour Route and Altitudes

Alternative 3 would authorize a single one-way, west to east, flight path with a minimum altitude requirement of 2,000 ft. AGL over land and 3,000 ft. AGL over the ocean as described below:

- The first segment of the route would enter the ATMP planning area at the southern boundary of the State Kahikinui Forest Reserve at a minimum altitude of 2,000 ft. AGL. Aircraft would maintain a minimum altitude of 2,000 ft. AGL across the Nu‘u area until they exit the ATMP planning area.
- The second segment of the route would re-enter the ATMP planning area within ½ mile from the northern edge of the Park’s Denman parcel in Kaupō at a minimum altitude of 2,000 ft. AGL. Aircraft would maintain a minimum altitude of 2,000 ft. AGL until they exit the ATMP planning area.
- The third segment of the route would re-enter the ATMP planning area ½ mile from the Park’s Ka‘āpahu area at a minimum altitude of 2,000 ft. AGL. Aircraft would maintain a minimum altitude of 2,000 ft. AGL until they exit the ATMP planning area.
- The fourth segment of the route would re-enter the ATMP planning area offshore from Kīpahulu at a minimum altitude of 3,000 ft. AGL. Aircraft would maintain a minimum altitude of 3,000 ft. AGL until they exit the ATMP planning area.

The altitude restrictions are protective of marine threatened and endangered species. Vertical separation of aircraft along the route would be prohibited because it could increase noise levels and duration, and it could negatively impact visitor experience and noise sensitive cultural and natural resources. Vertical separation refers to when aircraft following the same route are “stacked,” or separated from each other by a vertical buffer. Refer to Figure 4 for a depiction of the flight corridor and altitudes. The air tour route within the ATMP planning area is represented by a line with a ¼-mile buffer on either side of the route that indicates the acceptable range of deviation that would not trigger enforcement action. Aircraft would not be required to fly the entirety of the route as long as they comply with the altitude requirements and follow the designated route over the parcels overflown.

If operators are entering or are on the route in the ATMP planning area and weather conditions do not allow them to follow the route at the prescribed altitude, they must not proceed further on the route. Operators must safely exit the route and leave the ATMP planning area. Operators may not deviate from the designated route and altitudes except as necessary for safe operation of an aircraft as determined under Federal Aviation Regulations requiring the pilot-in-command to take action to ensure the safe operation of the aircraft. Under Alternative 3, no air tours could occur within the ATMP planning area, except air tours authorized on the designated route at the designated altitudes described above. Because air tours outside of the ATMP planning area are not regulated by the ATMP, air tour routes outside of this area are difficult to predict with specificity. Operators could fly routes outside the ATMP planning area

similar to existing flight paths, or routes could vary greatly from those currently flown and would depend on operator preference and weather conditions at the time of the tour. Operators could also fly air tours just above the ATMP planning area at or above 5,000 ft. AGL; however, this may be impractical due to the high elevation of the terrain because it would require operators to fly above 10,000 ft. MSL, as discussed in Section 2.5.1.

2.6.3 Commercial Air Tour Aircraft Type

Operators would be limited to using the aircraft types reported in the period from 2017-2019 (see Table 1). Any new or replacement aircraft could not exceed the noise level produced by the aircraft being replaced. Operators would notify the FAA and the NPS in writing of any prospective new or replacement aircraft and obtain concurrence before initiating air tours with the new or replacement aircraft.

2.6.4 Commercial Air Tour Day/Time

Air tours would be permitted between the hours of 11:00 AM – 2:00 PM local time. Exceptions to these parameters for quiet technology aircraft are noted in Section 2.6.7, Quiet Technology Incentives. Air tours would be permitted on all days of the week except Sunday and Wednesday. Selecting non-consecutive days comprising one weekend day and one weekday would offer a broad range of visitors access to the natural acoustic environment and the renowned quiet of the Haleakalā Crater. Air tour operators would also be required to observe the Park's six existing commercial free days¹² as no-fly days as well as the two historically significant Hawaiian State holidays (see Section 2.6.5, Restrictions for Particular Events).

2.6.5 Restrictions for Particular Events

In addition to the weekly no-fly days of Wednesday and Sunday, Alternative 3 would establish six annual no-fly days for commercial air tours over the Park that vary from year to year. These calendar dates are generated by following the Hawaiian Moon Calendar and Makahiki Season and currently (2023) are:

1. January 6 - end of Makahiki
2. May 24 - Zenith Noon
3. June 21 - Summer Solstice
4. July 18 - Zenith Noon
5. October 27 - start of Makahiki
6. December 21 - Winter Solstice

¹² Commercial free days in this plan refer to designated days when commercial air tour operators do not operate within the ATMP planning area.

The NPS would provide notice of the six no-fly dates to all air tour operators. Additionally, two historically significant Hawai'i State holidays would be designated as no-fly days and do not vary from year to year¹³:

1. Prince Jonah Kūhiō Kalaniana'ole Day (March 26)
2. King Kamehameha I Day (June 11)

In addition to the six no-fly days that follow the Hawaiian Moon Calendar and Makahiki Season and the two no-fly days based on Hawai'i State holidays, the NPS would be allowed to establish additional temporary no-fly periods that apply to commercial air tours for other special events or planned Park management. Absent exigent circumstances or emergency operations, the NPS would provide a minimum of two months' notice to the operators in writing in advance of the no-fly period. Events may include Native Hawaiian ceremonies or other similar events.

2.6.6 Additional Requirements

- Daily Caps: Alternative 3 would limit the number of commercial air tours within the ATMP planning area to no more than 16 tours per day across all operators and limit the number of tours each operator could conduct on the days where air tours are permitted. The operator-specific limits are based on the proportional number of reported total flights per year conducted by each of the five active operators compared to the total number of air tours reported from 2017 to 2019 and the operators' annual allocations. The maximum number of commercial air tours that could be conducted on a single day would be as follows:
 - Aris, Inc. (Air Maui Helicopter Tours) – 3 air tours per day
 - Hawai'i Helicopters, Inc. – 2 air tours per day
 - Helicopter Consultants of Maui, Inc. (Blue Hawaiian Helicopters) – 6 air tours per day
 - Sunshine Helicopters, Inc. – 3 air tours per day
 - Alike Aviation, Inc. (Alexair, Maverick) – 2 air tours per day
- Hovering/Circling: This alternative would prohibit hovering and circling because it could negatively impact visitors, cultural, and natural resources, including sensitive sites.
- Adaptive Management: Adaptive management is a systematic approach for improving resource management and ensuring the continued effectiveness of the ATMP over time through the monitoring of park conditions and by learning from management actions or choices. Adaptive management is also used to address changed conditions such as if the breeding habitat of a sensitive species moves to a new area. Adaptive management of the route, frequency, and timing will be considered, analyzed, and included in this alternative for the protection of the bird movement patterns and climate change-

¹³ Unless a holiday falls on the weekend and the holiday is observed on the nearest weekday.

induced range shifts, biological reserves, Wilderness, and cultural resource condition, and visitor experience impacted by air tours. NPS would conduct monitoring to ensure that the terms and conditions of the ATMP remain consistent with Park management objectives. The FAA and the NPS would provide additional information for interested parties about the notice and process of adaptive management changes.

- Interpretive Training and Education: When made available by Park staff, operators/pilots would take at least one training course per year conducted by the NPS. The training would include the Park information that operators could use to further their own understanding of Park priorities and management objectives as well as enhance their interpretive narrative for air tour clients and increase understanding of the Park's natural and cultural resources by air tour clients. Helicopter pilots would also be required to complete the FAA Introduction to Fly Neighborly training.¹⁴ The Fly Neighborly Noise Abatement Training program, created by the FAA and endorsed by Helicopter Association International, teaches pilots and operators noise abatement procedures and situational awareness tools that can be used to minimize the effects of helicopter noise emissions.
- Annual Meeting: The Park staff, the local FAA FSDO, and all operators would be required to meet once per year at the request of either of the agencies, to discuss the implementation of the ATMP and any amendments or other changes to the ATMP.
- In-Flight Communication: For situational awareness when conducting tours within the ATMP planning area, the operators would utilize frequency 122.85 and report when they enter the ATMP planning area to begin the route and upon completion of the route.
- Reporting, Monitoring, and Enforcement: Operators would be required to equip all aircraft used for air tours with flight monitoring technology, to use flight monitoring technology during all air tours under the ATMP, and to report flight monitoring data as an attachment to the operator's semi-annual reports. FAA determination of noncompliance may result in loss of authorization to conduct commercial air tours authorized by the ATMP. Any violation of operations specifications would be treated in accordance with FAA Order 2150.3, *FAA Compliance and Enforcement Program*.¹⁵ Air tour fee payment is required for commercial air tour operations conducted over the Park under 54 U.S.C. § 100904(f). In order to streamline the payment process, reduce administrative costs, avoid accounting errors, and make it easier for private sector partners doing business with the NPS, the NPS uses the Pay.gov system, which is the U.S. Department of the Treasury's electronic payment system. Each air tour operator allocated commercial air tour operations under the ATMP would report the total number of air tours conducted in the previous month to the NPS via email to hale_commercial_manager@nps.gov no later than the 30th day of the following month. For example, the total number of air tours conducted in March must be

¹⁴ https://www.faa.gov/gslac/ALC/course_content.aspx?pf=1&preview=true&cID=500

¹⁵ https://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.information/documentID/1034329

submitted to the NPS no later than April 30th. The email should also include the name and contact information for the person who is responsible for the fee payment, including their email address, to ensure that the bill is sent to the correct person. Upon receipt of this information from an air tour operator, the NPS will send an electronic bill, via email, to the contact provided for fee payment. Detailed directions for fee payment through Pay.gov will be included with the electronic bill.

- Non-transferability of Allocations: Operations under Alternative 3 would be non-transferable.
- Emergency Landings: In the event of an emergency landing inside the Park, once the aircraft has safely landed and any medical or other emergency issues have been addressed, the operator would immediately notify the NPS through Park dispatch or emergency contacts of the incident and location. Prior approval from the Park superintendent or designee would be required for the removal or take off of the landed aircraft in order to coordinate joint resources for the safety of Park visitors and resources (36 CFR 2.17). Prior approval from the Park superintendent or designee would be required for any non-emergency landing of aircraft within the Park boundaries, including replacement aircraft deployed to retrieve passengers who are not able to exit via ground transportation.

2.6.7 Quiet Technology Incentives

The Act requires that the ATMP include incentives for the adoption of quiet technology by commercial air tour operators. This alternative incentivizes the use of quiet technology aircraft by relaxing time-of-day restrictions to allow quiet technology aircraft to fly from 11:00 AM to 4:00 PM (two hours longer than non-quiet technology aircraft) on all days that air tours are authorized. This alternative would require that, by 2033 all operators exclusively use quiet technology aircraft to conduct tours within the ATMP planning area.

2.6.8 Initial Allocation and Competitive Bidding

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

- Aris, Inc. (Air Maui Helicopter Tours) – 417 air tours
- Hawai'i Helicopters, Inc. – 188 air tours

- Helicopter Consultants of Maui, Inc. (Blue Hawaiian Helicopters) – 1,224 air tours
- Sunshine Helicopters, Inc. – 393 air tours
- Alika Aviation, Inc. (Alexair, Maverick) – 190 air tours

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

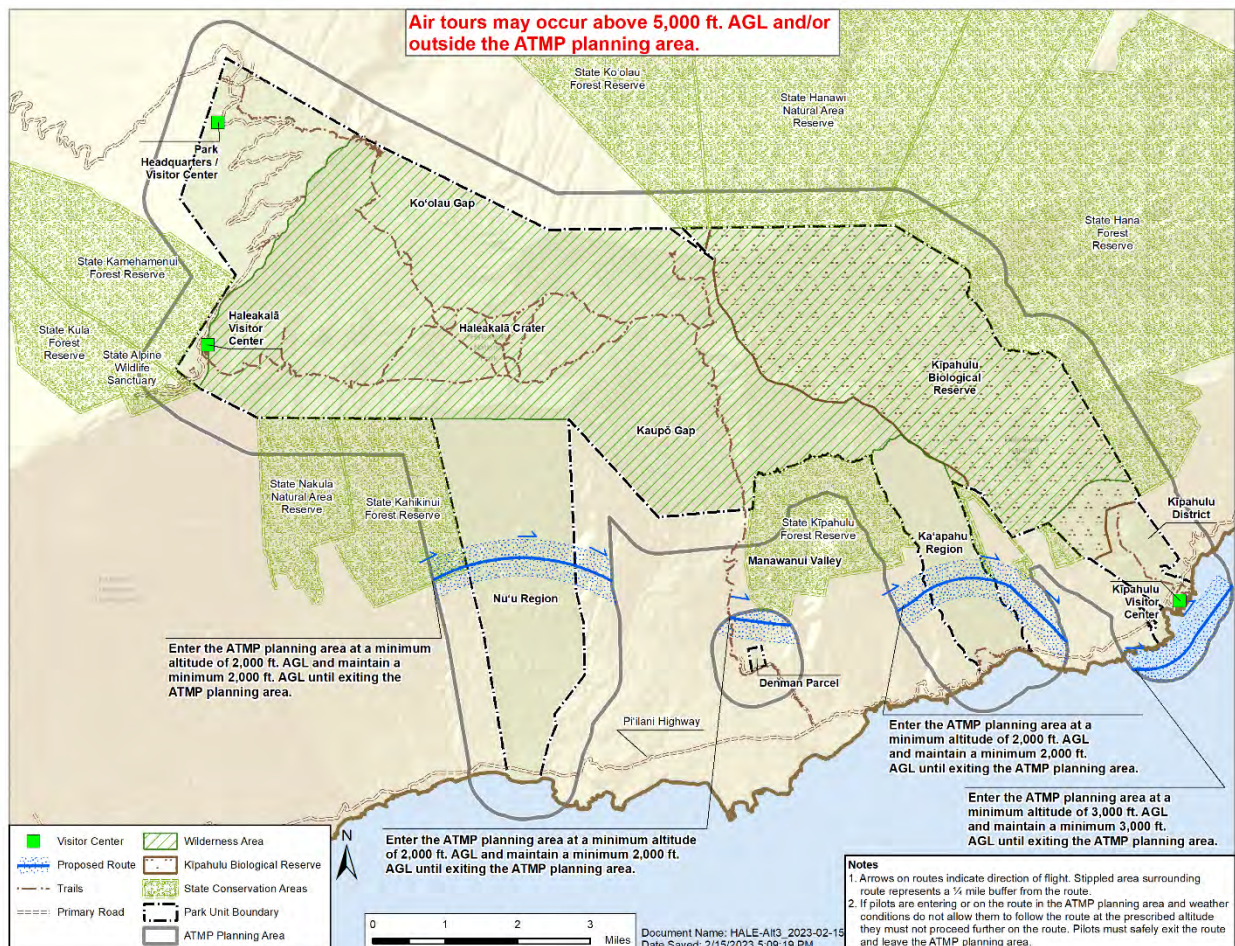


Figure 4. Alternative 3

2.7 Summary Comparison of the ATMP Alternatives

Table 2. Summary Comparison of the ATMP Alternatives.

Alternative Attributes	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred)
General Description and Objectives	Allows a continuation of air tours without implementation of an ATMP or voluntary agreement. Does not meet the purpose and need for the ATMP.	Prohibits air tours within the ATMP planning area to maximize Park resource protection. Air tours could still continue to fly outside the ATMP planning area (i.e., at or above 5,000 ft. AGL or more than ½-mile outside of the Park's boundary).	Provides a single flight path within the ATMP planning area and a reduction in the annual number of commercial air tours over the Park. Air tours could still continue to fly outside the ATMP planning area (i.e., at or above 5,000 ft. AGL or more than ½-mile outside of the Park's boundary).
Annual/Daily Number of Flights	Considers the three-year average of 4,824 flights per year (based on 2017-2019 reporting) as the existing condition.	None in ATMP planning area.	Authorizes 2,412 flights per year. Daily limit of 16 flights per day across all operators on those days where flights are allowed.
Routes	No mandatory routes or no-fly zones. See Figure 2 for depiction of reported routes and actual operations.	None in ATMP planning area. Operators may continue to fly to points of interest on the island outside of the ATMP planning area where they already fly, fly around the ATMP planning area similar to existing flights, or above the ATMP planning area (at or above 5,000 ft. AGL).	One air tour route, entering the Park from the west, south of the State Kahikinui Forest Reserve and exiting the ATMP planning area approximately 1.25 km from the Kīpahulu area and Visitor Center. This route requires operators to fly in one direction.
Minimum Altitudes	Flown in accordance with the Hawai'i Common Procedures Manual, generally between 500-1,500 ft. AGL.	Minimum required altitudes are at or above 5,000 ft. over the ATMP planning area. Operators may continue to fly to points of interest on the island outside of the ATMP planning area where they already fly or fly routes over or around the ATMP planning area similar to existing flights paths but outside of the ATMP planning area. Flights more than ½-mile outside the park boundary would continue to occur and are also outside the ATMP	Minimum 2,000 ft. AGL over land; minimum 3,000 ft. AGL over the ocean. Operators may continue to fly to points of interest on the island outside of the ATMP planning area where they already fly or fly routes over or around the ATMP planning area similar to existing flights paths but outside of the ATMP planning area. Flights more than ½-mile outside the Park boundary would continue to occur and are also outside the ATMP

Alternative Attributes	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred)
		planning area and are subject to the altitude restrictions of the Hawai'i Common Procedures Manual. Some air tour operators may choose to fly air tours above the ATMP planning area, but this would be impractical in some locations, such as over the crater, due to safety requirements for unpressurized aircraft.	planning area and are subject to the altitude restrictions of the Hawai'i Common Procedures Manual. Some air tour operators may choose to fly air tours above the ATMP planning area, but this would be impractical in some locations, such as over the crater, due to safety requirements for unpressurized aircraft.
Time of Day	No Restrictions.	N/A	On days where air tours are permitted: 11 AM – 2 PM for non-quiet technology flights. 11 AM – 4 PM for quiet technology flights.
Day of Week	No Restrictions.	N/A	No-fly days on Sunday and Wednesday.
Hovering/ Circling	No Restrictions.	N/A	Not permitted.
Quiet Technology Incentives	None.	N/A	Quiet technology flights may fly 11AM – 4PM except on no-fly days. All commercial air tours within the ATMP planning area must utilize quiet technology aircraft by 2033.
Interpretative Training and Education	None.	N/A	Mandatory. Helicopter operators would also be required to complete the FAA Introduction to Fly Neighborly training.
Annual Meeting	None.	N/A	Mandatory.
Restrictions for Particular Events	None.	N/A	Six no-fly days generated by following the Hawaiian Moon Calendar and Makahiki Season; two no-fly days on Hawai'i State holidays of historical importance with prior notice provided to operators.

Alternative Attributes	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred)
			NPS could establish restrictions for particular events with two months' notice provided to operators.
Monitoring and Enforcement	Operators report the number of tours, aircraft type, route, and day/time of tour to the FAA and the NPS on a semi-annual basis.	The NPS would conduct ADS-B aircraft monitoring and work with the FAA to respond to instances of noncompliance. The FAA FSDO would investigate all written reports of noncompliance. FAA determination of noncompliance may result in legal enforcement actions.	Operators would provide semi-annual reports, including the flight monitoring data. Additional monitoring and enforcement would occur as described in Alternative 2.
Adaptive Management	None.	N/A	Adaptive management of the route, frequency, and timing would be considered/analyzed. The NPS would conduct monitoring to ensure that the terms and conditions of the ATMP remain consistent with Park management objectives.
Operators, Initial Allocation of Air Tours, and Aircraft Types	Reflects existing conditions of five operators with reported data from 2017-2019.	N/A	The initial allocation would reflect the proportion of the annual air tours flown on average, by each of the five air tour companies from 2017-2019, and would restrict companies to the same aircraft type flown during that time. After the initial allocation, competitive bidding would occur. Any new or replacement aircraft must not exceed the noise level produced by the aircraft being replaced.

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

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

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

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

3.1 Noise and Noise-Compatible Land Use

FAA Order 1050.1F, Appendix B, paragraph B-1.3, Affected Environment, requires the FAA to identify the location and number of noise sensitive uses in addition to residences such as schools, hospitals, parks, and other recreation areas, that could be significantly impacted by noise. As defined in Paragraph 11-5.b(10) of FAA Order 1050.1F, a noise sensitive area is “[a]n area where noise interferes with normal activities associated with its use. Normally, noise sensitive areas include residential, educational, health, and religious structures and sites, and parks, recreational areas, areas with wilderness characteristics, wildlife refuges, and cultural and historical sites.” Noise sensitive areas within the ATMP planning area include the Park, cultural resources discussed in Section 3.4, parks and Section 4(f) resources discussed in Section 3.10, as well as residential areas outside of the Park boundary but within the ½ mile buffer.

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

3.1.1 Affected Environment

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

- Sounds produced by birds, such as the nēnē (Hawaiian goose), to define territories, communicate with dependent offspring, or aid in attracting mates;
- Sounds produced by bats to locate prey or navigate which are not audible to humans; and
- Sounds produced by physical processes, such as wind in the trees, wind in the bamboo forest, claps of thunder, falling water, rain, etc. (NPS Management Policies, 2006, Section 4.9)

Natural sound levels in the Park are remarkably low. Natural sounds are a fundamental resource and value of the Park. The natural soundscape is a highly desired value for park visitors and low ambient sounds play a vital role in the health of park natural ecosystems (NPS, 2015a). Visitors can experience intense quiet inside the Haleakalā Crater. It is one of the quietest areas measured in the national park system, with sound levels, at times, approaching the threshold of human hearing and as low as 10 decibels (Lynch, 2012; Wood, 2015).

One of the natural resources of the Park is the natural soundscape, also referred to as the natural ambient or "natural quiet." The natural ambient includes all naturally occurring sounds, as well as the quiet associated with still nights and certain seasons. It excludes all mechanical,

electrical and other human-caused sounds. An important part of the mission of the NPS is to preserve or restore the natural soundscapes associated with units of the national park system (NPS, 2006).

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

To characterize the natural and existing ambient (both with and without air tours), detailed sound level measurements were conducted at ten locations across the Park in 2003 (Lee et al., 2016). From the detailed data collected in 2003, an ambient “map” of the natural soundscape of the ATMP planning area was developed to be used in computer modeling (Figure 5). For more explanation for how sound is described, see *Noise Technical Analysis*, (Appendix F, Table 1). These acoustic sampling locations were chosen to be representative of the natural ecological zones or broad ecosystems of the Park and ATMP planning area. Median daytime natural ambient (L_{50}) sound levels¹⁶ ranged from 21 decibels, A-weighted (dBA)¹⁷ in backcountry areas to 45 dBA along the shoreline; median daytime existing ambient (L_{50}) sound levels for these areas exhibit similar variability, ranging from 23 dBA in the backcountry to 46 dBA in the front country where visitors are more prevalent. The median or L_{50} sound level (in decibels) is the sound level exceeded 50 percent of the day. Table 3 in the *Noise Technical Analysis* (Appendix F) contains additional breakdown of the ambient sound level data by zone.

Additional sound level measurements were conducted in 2008 and 2013, providing further information and characterization of the natural and existing ambient conditions. In 2008, data was collected at three locations (Lynch, 2012) to understand the level of air tour operations at

¹⁶ Natural Ambient (L_{50}): The sound level exceeded 50 percent of the time determined from the natural sound conditions found in a study area, including all sounds of nature (i.e., wind, streams, wildlife, etc.), and excluding all human and mechanical sounds. Ambient data were based on a 12-hour, daytime, time period, 7 AM to 7 PM, typical operating hours for air tours.

¹⁷ dBA (A-weighted decibels): Sound is measured on a logarithmic scale relative to the reference sound pressure for atmospheric sources, 20 μ Pa. The logarithmic scale is a useful way to express the wide range of sound pressures perceived by the human ear. 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 in order 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.

the time and to provide a snapshot of the acoustical conditions at the Park. The 2008 sites were located in the same general area as a selection of sites from the 2003 study to allow for potential comparisons. Similar trends were observed, where Haleakalā Crater sites were quieter during the day than Kīpahulu sites. Overall, the median natural and existing ambient levels measured at Haleakalā Crater sites in 2003 were slightly higher (3 dBA) than the 2008 study, likely due to differences in vegetation types at these locations as well as proximity to sound sources, variation in weather conditions (particularly wind patterns), and differences in methods used to compute natural ambient sound levels. Authors of the 2008 study state that these two studies present a likely range of ambient sound levels for the sampling areas in the Park. The 2013 measurements (Job, 2018) were performed to establish a baseline inventory of the newly-acquired Nu‘u unit. Results indicated that the natural ambient sound levels (L_{nat})¹⁸ during the monitoring period were 21.1 dBA during the daytime. Existing ambient sound levels (L_{50}) were slightly higher, 23.5 dBA. For details about sound levels at specific locations refer to Table 6 in Appendix F, *Noise Technical Analysis*.

The contribution of aircraft noise during sound level measurements only provides a snapshot in time at a particular location and is not necessarily a representative characterization of current conditions. Current conditions were determined by adding the noise exposure due to air tours ($L_{Aeq, 12h}$), based on a peak month average day (PMAD) and modeled using the FAA AEDT version 3e, to the Existing Ambient without Air Tours (L_{50})¹⁹ (see Appendix F, *Noise Technical Analysis*, Figure 3). The result of this process is the Cumulative Existing Ambient, Figure 6.

¹⁸ Natural Ambient (L_{nat}): Estimates what the acoustic environment would be without the contribution of anthropogenic sounds. L_{nat} and natural ambient L_{50} are similar; both are intended to characterize the acoustic environment in the absence of anthropogenic sounds. However different computational processes are used to arrive at these values, and thus different descriptor notations are used to differentiate. Natural ambient L_{50} refers to the natural ambient computation process described in Lee 2016, while L_{nat} refers to the natural ambient process described in Lynch 2012 and Job 2018. Although different, the processes are highly correlated and yield similar results; differences are generally less than 1 dB (Rapoza, 2008). Both are based on a 12-hour time period, 7 AM to 7 PM.

¹⁹ The Existing Ambient without Air Tours (L_{50}) is defined as the composite, all-inclusive sound associated with a given environment, excluding the sound source of interest, in this case, commercial air tour aircraft. It does include all other human-caused sound sources that were audible at the measurement site; hikers, visitor centers, commercial jets, general aviation aircraft, military aircraft, and administrative aircraft operations. Ambient data were based on a 12-hour, daytime, time period, 7:00 AM to 7:00 PM, typical operating hours for air tours.

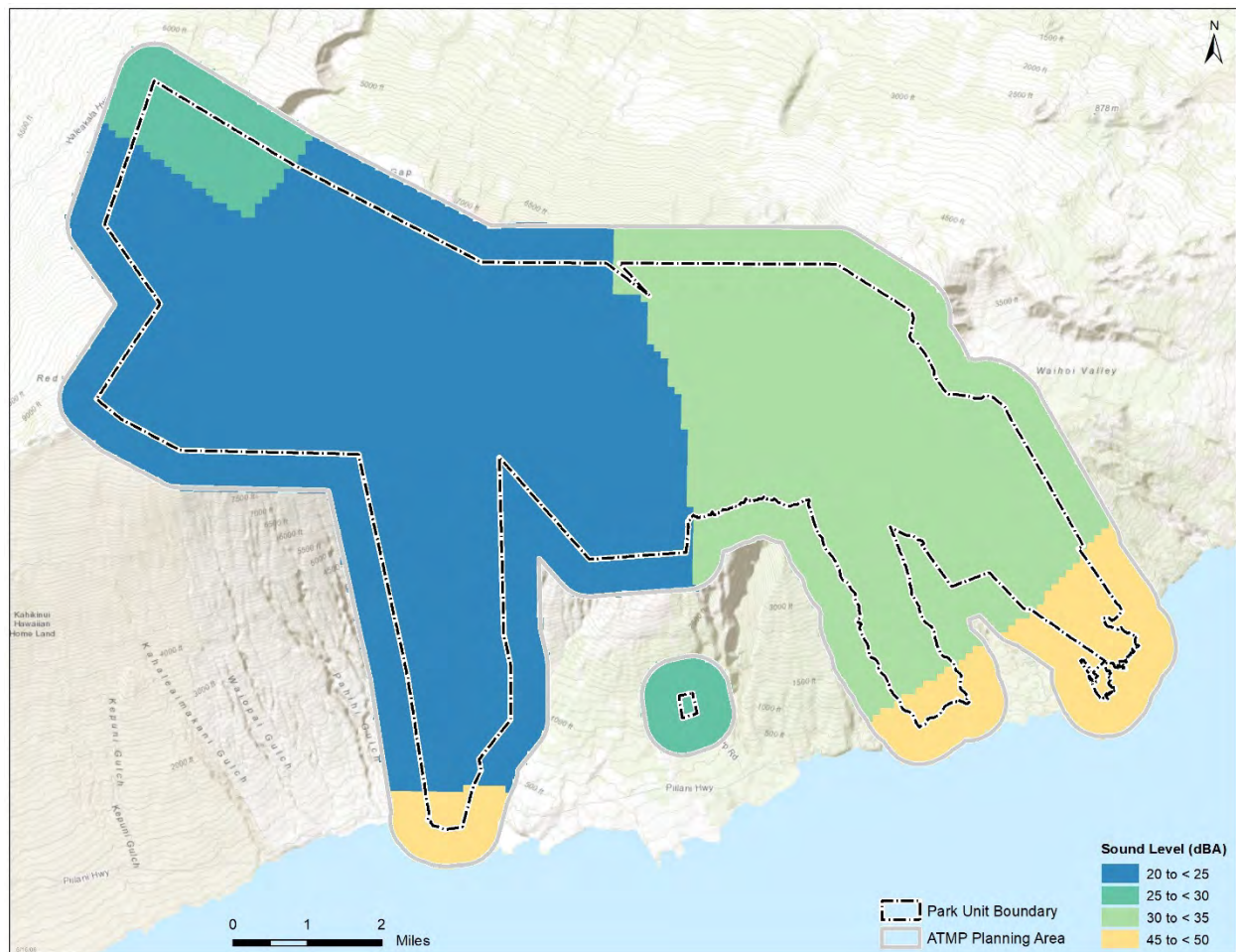


Figure 5. Natural Ambient L_{50}

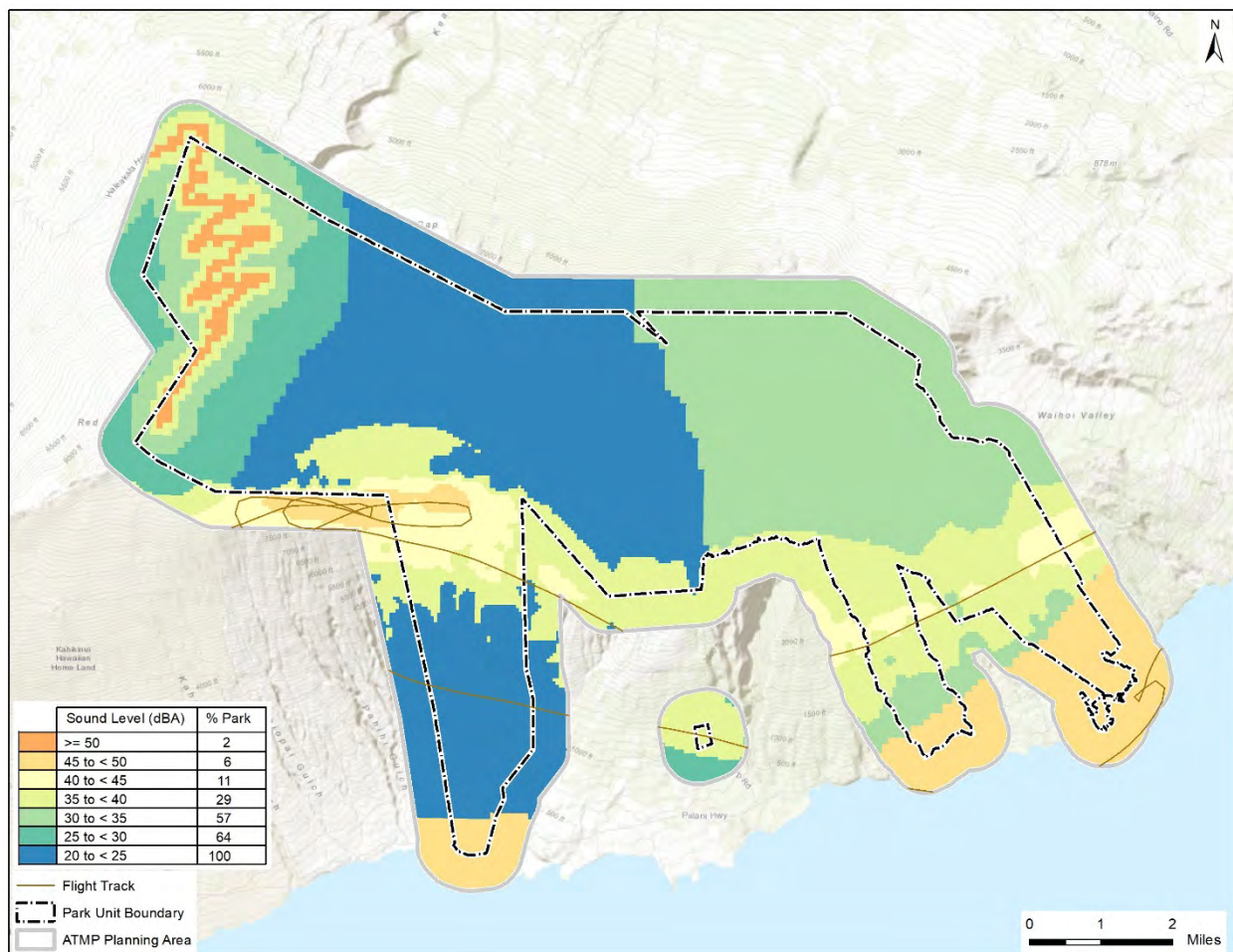


Figure 6. 12-hour Cumulative Existing Ambient Sound Level (Daytime) for Current Conditions

3.1.2 Environmental Consequences

There are numerous ways to measure the potential impacts of noise from commercial air tours on the acoustic environment, including intensity, duration, and spatial footprint of the noise. The affected environment and impact analysis uses noise metrics consistent with both FAA and NPS noise guidance. The FAA's primary noise metric established in FAA Order 1050.1F is the yearly Day-night Average Sound Level (DNL, denoted by the symbol L_{dn}) metric; the cumulative noise energy exposure from aircraft over 24 hours. The NPS considers various metrics to analyze impacts to Park resources and values from noise, including equivalent continuous sound level (L_{Aeq}), time audible (the amount of time you can hear air tour aircraft noise), the amount of time that the noise from a commercial air tour operation would be above specific sound levels that relate to different Park management objectives (e.g., 35 and 52 dBA), and maximum sound level (L_{max}). These metrics are discussed further in Table 3; a comparison of the sound levels noted in Table 3 to values for a range of everyday sounds can be found in Figure 1 of the *Noise Technical Analysis* (Appendix F).

Table 3. Primary Metrics Used for the Noise Analysis.

Metric	Relevance and citation
Equivalent sound level, $L_{Aeq, 12\text{ hr}}$	The logarithmic average of commercial air tour sound levels, in dBA, over a 12-hour day. The selected 12-hour period is 7 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); blood pressure increases in sleeping humans</p>

	(Haralabidis et al., 2008); maximum background noise level inside classrooms (ANSI/Acoustical Society of America S12.60/Part 1-2010).
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 (EPA), Office of Noise Abatement and Control, 1974). This metric represents the level at which one may reasonably expect interference with Park interpretive programs, activities that require communication from a distance and other general visitor communication.</p>
Maximum sound level, L_{max}	The loudest sound level, in dBA, generated by the loudest event; it is event-based and is independent of the number of operations. L_{max} does not provide any context of frequency, duration, or timing of exposure.

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

Alternative 1: No Action

Under the No Action Alternative, the acoustic conditions described in the affected environment would be expected to continue. Air tour noise would vary depending on how many commercial air tours are flown, but because air tour numbers are expected to stay near the three-year average, noise conditions are likely to be similar to existing conditions. Refer to Section 2.4 and the *Noise Technical Report* in Appendix F for additional details on the No Action Alternative. Modeling results for the No Action Alternative are presented in Table 4 below. See Figure 7 and Figure 8 for noise metrics results that would be experienced within the ATMP planning area under the No Action Alternative.

Table 4. Summary of Noise Modeling Metric Results Under the No Action Alternative.

Metric	No Action Alternative
12-hour Equivalent Sound Level	<ul style="list-style-type: none"> • Maximum value <50 dBA • Affected portions of the ATMP planning area would continue to be 35 to <40 dBA, representing 20% of the total area
Day-night Average Sound Level	<ul style="list-style-type: none"> • DNL would be 3 dB less than the 12-hour equivalent sound level, and therefore less than 50 dB
Time Audible Natural Ambient	<ul style="list-style-type: none"> • The maximum time that air tours may be audible would exceed 225 minutes a day*, representing less than 1% of the ATMP planning area • More than half (53%) of the ATMP planning area would experience audible air tour noise for more than 120 minutes a day (non-contiguous) • 100% of the ATMP planning area would continue to experience audible air tour noise
Time Above 35 dBA	<ul style="list-style-type: none"> • The maximum time that noise from air tours would be above 35 dBA is between 75 and 90 minutes a day, representing 1% of the ATMP planning area • 45% of the ATMP planning area would continue to experience noise above 35 dBA for more than 30 minutes a day
Time Above 52 dBA	<ul style="list-style-type: none"> • The maximum time above 52 dBA experienced across all points modeled would be 23.6 minutes • 61% of points modeled would experience time above 52 less than 1 minute
Maximum Sound Level	<ul style="list-style-type: none"> • The maximum sound level (i.e., the loudest sound level generated by the loudest event independent of the number of operations) would be 68.7 dBA at Point Location #40 (Nu'u 7500 ft. elevation)

*In this context, day refers to a 12-hour day, 7 AM to 7 PM, typical air tour operating hours.

For purposes of assessing noise impacts from commercial air tours on the acoustic environment under FAA's policy for NEPA, the analysis indicates that the resultant DNL is expected to be below 50 dB.

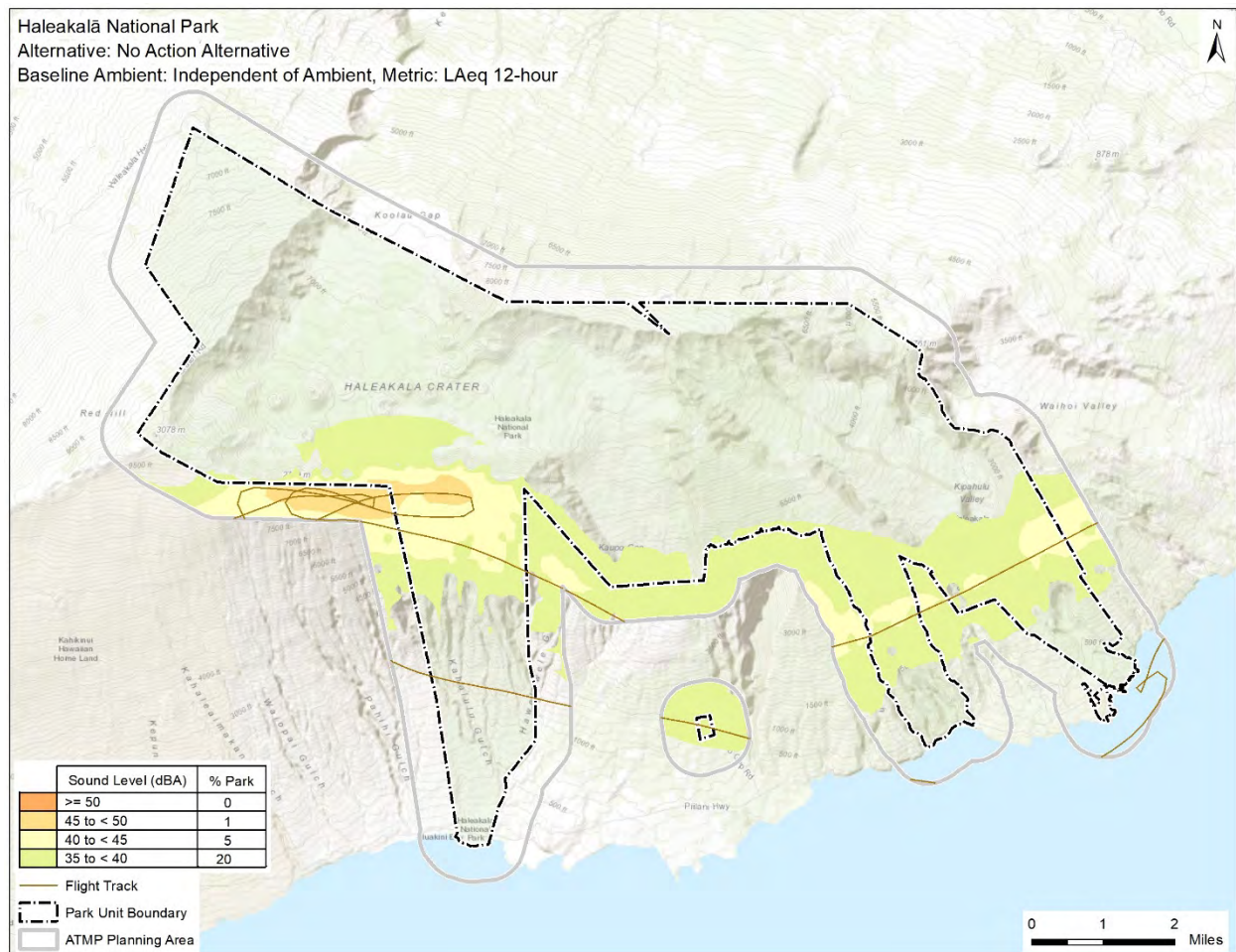


Figure 7. 12-hour Equivalent Sound Level ($L_{Aeq,12h}$) for No Action Alternative

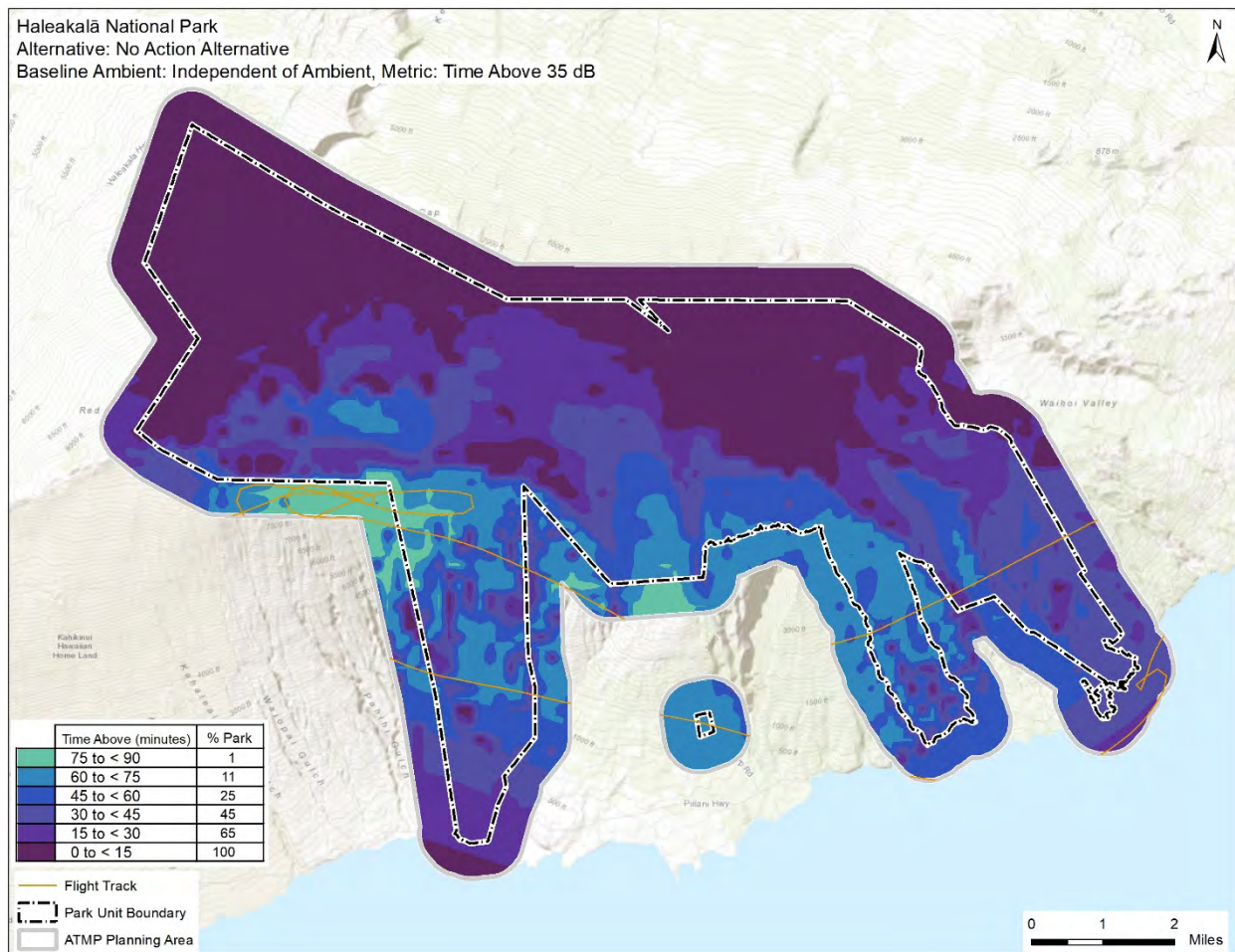


Figure 8. Time Above 35 dBA for No Action Alternative

Alternative 2

Under Alternative 2, commercial air tours would not fly within the ATMP planning area which would reduce this source of noise originating from within the ATMP planning area. Compared to current conditions, Alternative 2 would result in direct beneficial effects on the Park's acoustic environment. The acoustic impacts of Alternative 2 cannot be modeled because, although some speculation about air tour routes can be made, it is unknown where air tours would fly when outside the ATMP planning area. Alternative 2 would provide 365 days per year that are free of noise from air tours within the ATMP planning area and would reduce noise in the most noise sensitive regions of the Park resulting in direct beneficial effects compared to the No Action Alternative and Alternative 3.

Alternative 3

Compared to current conditions, Alternative 3 would result in direct beneficial effects on the Park's acoustic environment. This alternative would provide 112 days per year free of noise

from air tours within the ATMP planning area and a reduction in the overall noise footprint (average sound level over a 12-hour day) compared to current conditions. Compared to current conditions, Alternative 3 also eliminates or reduces noise in the most noise sensitive regions of the Park (refer to the *Noise Technical Analysis*, Appendix F, page 24). Table 5 summarizes the modeled noise metric results that would be experienced within the ATMP planning area under Alternative 3 and Figure 9 and Figure 10 display noise metrics results.

Table 5. Summary of Noise Modeling Metric Results for Alternative 3.

Metric	Alternative 3
12-hour Equivalent Sound Level	<ul style="list-style-type: none"> Maximum value <45 dBA Affected portions of the ATMP planning area would generally be 35 to <40 dBA, representing 6% of the total area
Day-night Average Sound Level	<ul style="list-style-type: none"> DNL would be 3 dB less than the 12-hour equivalent sound level, and therefore less than 45 dB
Time Audible Natural Ambient	<ul style="list-style-type: none"> The maximum time that air tours could be audible would be less than 105 minutes a day, representing less than 1% of the ATMP planning area More than half (54%) of the ATMP planning area would experience audible air tour noise for at least 60 minutes a day (non-contiguous)
Time Above 35 dBA	<ul style="list-style-type: none"> The maximum time that noise from air tours would be above 35 dBA is between 30 and 45 minutes a day, representing 3% of the ATMP planning area 58% of the ATMP planning area would experience noise above 35 dBA for at least 0.1 minutes a day
Time Above 52 dBA	<ul style="list-style-type: none"> The maximum time above 52 dBA experienced across all points modeled would be 9.3 minutes 73% of points modeled would experience time above 52 less than 1 minute, representing an improvement compared to the No Action Alternative as more of the modeled location points would experience noise above 52 dBA for a shorter duration.
Maximum Sound Level	<ul style="list-style-type: none"> The maximum sound level (i.e., the loudest sound level generated by the loudest event independent of the

Metric	Alternative 3
	number of operations) would be 65.0 dBA at Point Location #37 (Measurement Site ST10 (Oheo Coastal))

The resultant DNL for Alternative 3 is expected to be below 45 dB. Refer to the *Noise Technical Analysis* in Appendix F for more information.

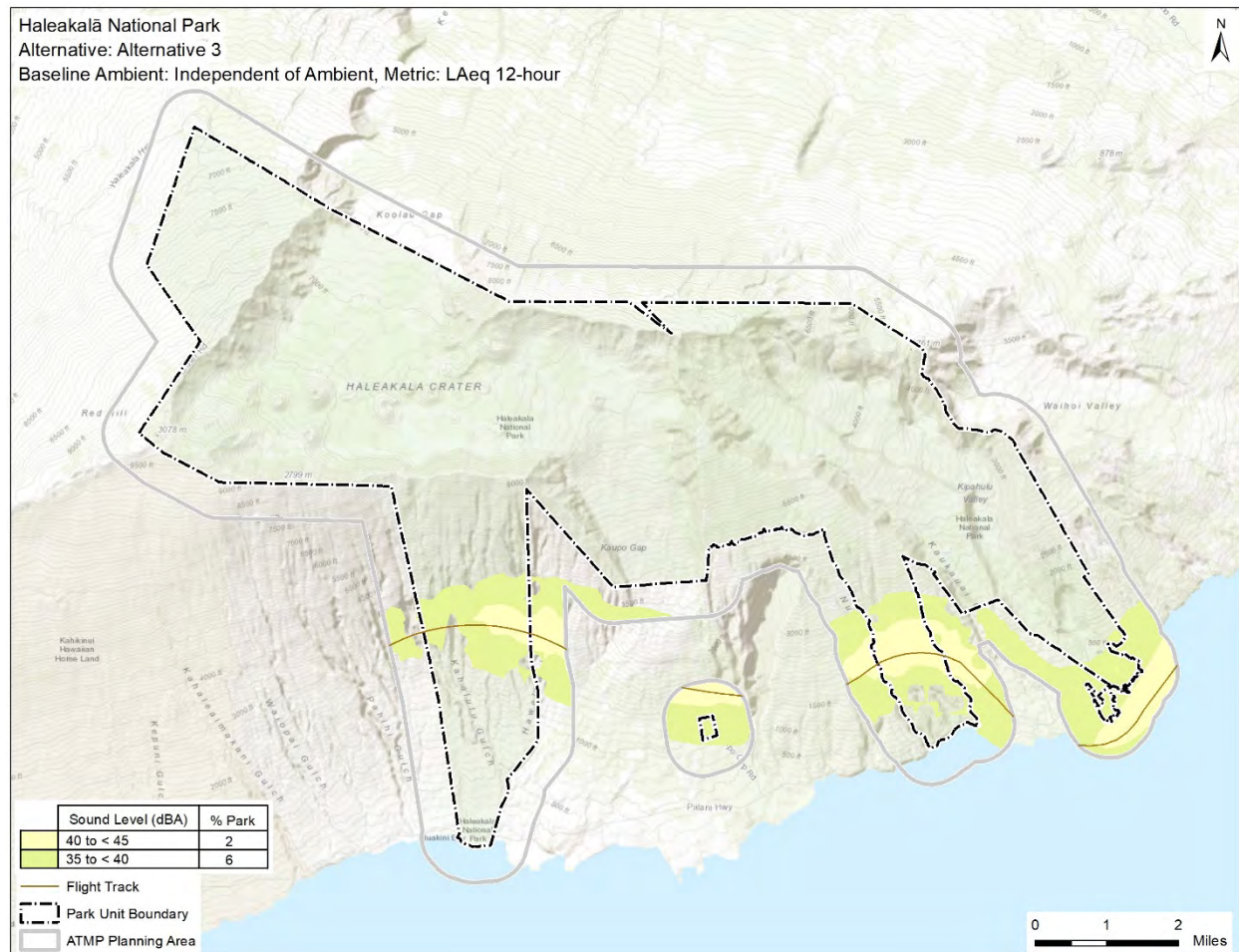


Figure 9. 12-hour Equivalent Sound Level ($LA_{eq,12h}$) for Alternative 3

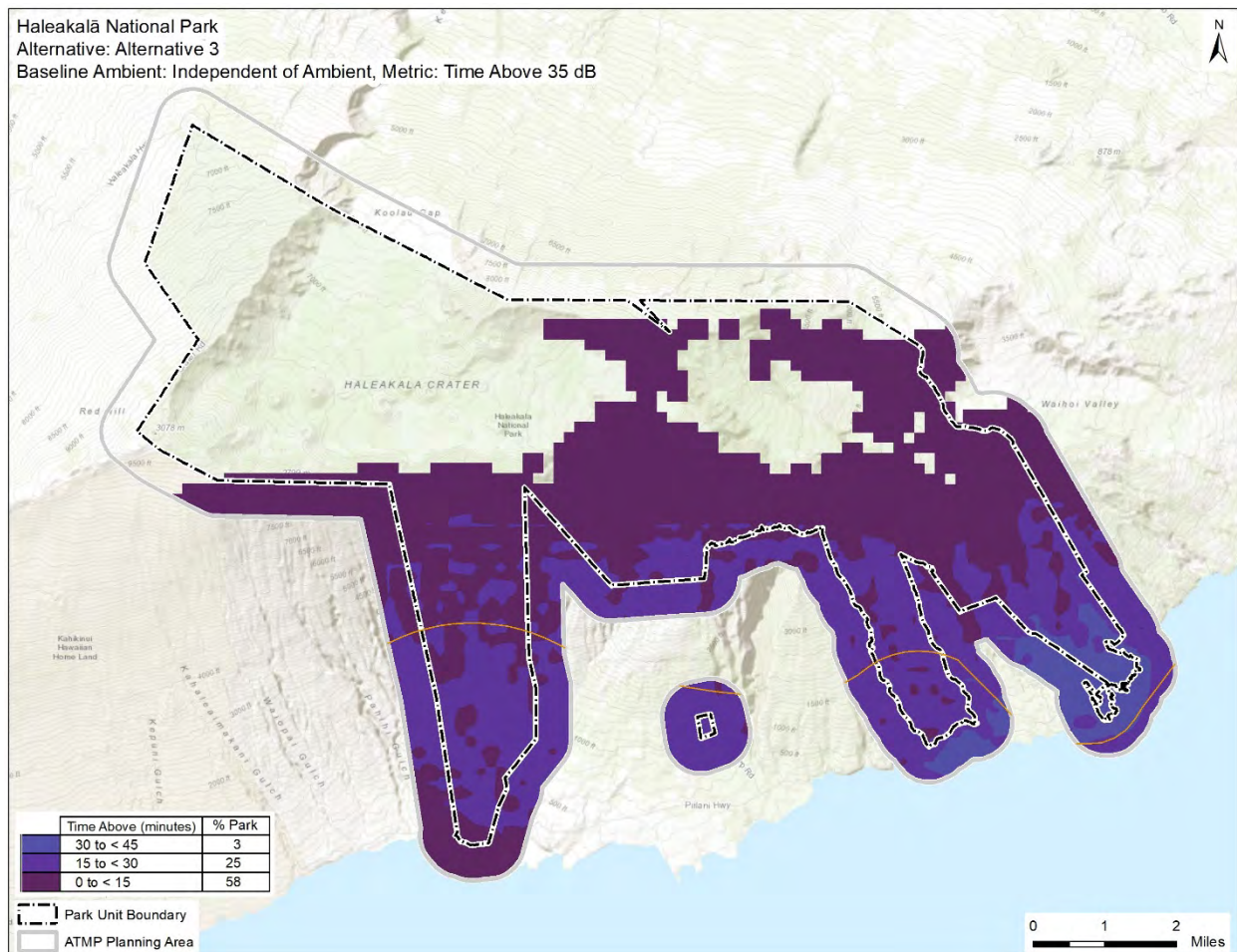


Figure 10. Time Above 35 dBA for Alternative 3

A comparison of impacts to noise and noise-compatible land use between Alternative 3 (on days when air tours would operate) and the No Action Alternative is provided below. Because the noise impacts of Alternative 2 cannot be modeled, Alternative 2 was not included in this analysis:

- 12-hour Equivalent Sound Level:** Compared to the No Action Alternative, the average sound levels under Alternative 3 would be lower for the interior regions of the Park but may be higher in coastal regions. The noise footprint for Alternative 3 potentially affects 16% less of the ATMP planning area and the equivalent sound level does not exceed 45 dBA, 5 dB less than the No Action Alternative.
- Time Audible Natural Ambient:** Compared to the No Action Alternative, the overall time audible noise footprint for Alternative 3 potentially is only 1% smaller than the No Action Alternative; however, approximately 60% of the ATMP planning area would see a potential reduction in audibility between 37 and 194 minutes. The largest reductions (90-95% less) would be at Kalahaku Overlook and Haleakalā Visitor Center. The smallest reductions (40-50% less) would be at Waimoku Falls and Lelekea Stream Bridge.

- *Time Above 35 dBA:* Compared to the No Action Alternative, the time above 35 dBA under Alternative 3 could be up to 61 minutes (85%) less. Only at one point, Waimoku Falls, is time above 35 dBA greater under Alternative 3 (2 minutes). The overall noise footprint for Alternative 3 potentially affects 42% less of the ATMP planning area.
- *Time Above 52 dBA:* Compared to the No Action Alternative, the time above 52 dBA under Alternative 3 could be up to 24 minutes (100%) less. A larger percentage of modeled points under Alternative 3 (73%) experience time above 52 dBA for less than 1 minute. However, time above 52 dBA could be greater under Alternative 3 at eight locations near the coast (ranging from 1.8 to 7.1 minutes greater). Four of those eight locations near the coast would experience an increase of less than three minutes.
- *Maximum Sound Level:* Compared to the No Action Alternative, the maximum sound levels under Alternative 3 could be lower for the interior regions of the Park (up to 40 dBA) but may be higher in coastal regions (up to 9 dBA).

Indirect and Cumulative Effects

Indirect Effects: Under the No Action Alternative, commercial air tour operations within the ATMP planning area would remain consistent with existing conditions, thus there are no indirect impacts that would be expected to occur under this alternative.

For any alternative (Alternatives 2 and 3) that limits the number of flights per year to a level below existing conditions (4,824 flights per year), 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. This could result in impacts to resources to the extent that they are present near the locations where the displaced air tours would occur.

It is difficult to predict with specificity if, where, and to what extent any air tours would be displaced to areas outside the ATMP planning area, including over the ATMP planning area at altitudes at or above 5,000 ft. AGL. The preciseness of routes and altitudes for air tours flown on displaced routes are generally subject to Visual Flight Rules, which is based on the principle of “see and avoid” and may vary greatly. It is reasonably foreseeable that operators would continue to fly to points of interest on the island outside of the ATMP planning area where they already fly, or fly routes over or around the Park similar to existing flight paths but outside of the ATMP planning area. Air tour operators are likely to continue to fly some air tours along the perimeter of the ATMP planning area where Haleakalā Crater and other Park features may be visible. If operators choose to fly above the vertical limit of the ATMP planning area, they would likely keep to an altitude close to, but at or just above 5,000 ft. AGL, as higher flights would provide limited value to a sightseeing operation. The terrain of the Park varies greatly,

from sea level at the coastline to more than 10,000 ft. elevation near the summit. Operators may choose to fly at or just above 5,000 ft. AGL over some parts of the ATMP planning area (see Figure 1 for an example profile of ground level elevation changes relative to the vertical boundaries of the ATMP planning area). However, due to the elevation of the crater, flights close to the crater at or above 5,000 ft. AGL are unlikely due to the altitude of the aircraft (likely over 10,000 ft. MSL) and safety requirements for unpressurized aircraft.²⁰

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

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

²⁰ Supplemental oxygen use is required in unpressurized aircraft flying over 10,000 ft. MSL for more than 30 minutes (14 CFR § 135.89, § 135.157); therefore, it is unlikely air tours would fly higher for extended periods of time.

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

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

As part of the cumulative effects assessment, the FAA and NPS considered other ongoing and planned actions. The Park uses helicopters to transport Park personnel to various locations for resource protection activities, rescue, and facility maintenance activities. NPS staff from the Park's Aviation Division have indicated that during the years 2017, 2018 and 2019, the Park flew 92, 99, and 98 flights respectively or an average of 96 flights each year. These flights contribute noise to the Park acoustic environment. Park staff conduct management and resource monitoring activities in remote areas of the Park. Fieldwork may last for several days to a week at a time. Helicopter use for these activities within the Park boundary average approximately 200 hours/year between 2011 and 2022. Current administrative flight locations are dispersed nearly evenly across the Park.

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

Alternatives 2 and 3 would likely result in a noticeable beneficial effect on the overall acoustic environment of the Park from reducing or eliminating air tours within the ATMP planning area since the intensity of noise directly around and below existing air tour routes will decrease as described above. Alternative 3 would result in less cumulative noise in the ATMP planning area than the No Action Alternative, given the reduced number of flights, designated routes, and other ATMP parameters. However, it could allow for more cumulative noise than Alternative 2, where flights would not be authorized in the ATMP planning area. Ongoing present and future Park management actions by the NPS would continue to occur under any of the alternatives.

3.2 Air Quality and Climate Change

3.2.1 Affected Environment

Air Quality

The Park is a designated Class I Airshed, which means that it is afforded the highest degree of protection (NPS, 2015a). The Park is removed from many sources of air pollution. However, volcanic gases and particulate emissions from active volcanic activity, approximately 100 miles away on the Island of Hawai'i, may affect air quality and visibility within the Park. Emissions of sulfur dioxide (SO₂) and other gases chemically interact with sunlight, oxygen, water, and dust to form acidic volcanic smog or "vog." Vog creates a haze that obscures visibility and can contribute to acid rain, impacting human health, natural resources, and cultural resources.

Additional emissions sources that impact air quality within the Park include marine aerosols, motor vehicles, non-road combustion engines, helicopters, and wildfires. These activities can release nitrogen oxides, particulate matter, and other pollutants that impact air quality and visibility.

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

A monitoring program was implemented at the Park over 30 years ago to assess air quality and in 2007 to monitor visibility (NPS, 2018). Particulate matter and visibility are monitored at a primary monitoring station at Haleakalā Crater through the Interagency Monitoring of Protected Visual Environments (IMPROVE) program. IMPROVE helps to address visibility degradation issues at Class I areas (UC Davis, 2022). The Haleakalā Crater monitor (ID HACR1) reports levels of particulate matter and other pollutants that contribute to haze, including ammonium nitrate, ammonium sulfate, and organic carbon. Additional particulate matter measurements are collected at a non-park monitor managed by the EPA (PAIA, MonitorID 150090024).

The Park has an air quality protocol to guide the response during periods of poor air quality. The air quality advisory level for the Park and the IMPROVE monitoring site is considered Good, which is the best classification for air quality advisories (NPS, 2022).

Greenhouse Gases

The Intergovernmental Panel on Climate Change (IPCC) estimates that aviation accounted for 4.1% of global transportation greenhouse gas (GHG) emissions (FAA, 2020). GHGs are gases that trap heat in the earth's atmosphere. Naturally occurring and anthropogenic (human-made) GHGs include carbon dioxide (CO₂), water vapor (H₂O), methane (CH₄), nitrous oxide (N₂O), and ozone (O₃). The EPA data indicates that commercial aviation contributed to 6.6% of CO₂ emissions in 2013 in the United States (EPA, 2015).

In response to the increasing need for understanding and action related to climate change impacts in the parks, the NPS launched the Climate Friendly Parks program in 2002, creating opportunities to educate staff about climate change issues, assess each park's contribution to GHG emissions, create short and long-term strategies for reducing emissions, determine potential effects of climate change on park resources, and develop skills and strategies for communicating these effects to the public (NPS, 2015c). As a part of their participation in this program, the Park developed a long-term Climate Action Plan (2010) that involved analyzing the anthropogenic carbon footprint of the Park using the EPA's Greenhouse Gas Equivalencies Calculators. Data used to perform the calculations included the amount of electricity purchased, waste sent to the landfill, and fuels consumed.

Initial findings by the NPS (NPS, 2008) show that transportation (including visitor emissions) was the largest contributor to total GHG emissions for the Park (91% of emissions); energy was the second largest contributor, with 7% of emissions; solid waste and other emission sources (such as refrigeration and air conditioning) also contributed to overall Park emissions (NPS, 2010b). These findings provide an initial overview of the carbon footprint of the Park. Further monitoring and analysis will track progress in reducing the Park's carbon footprint into the future.

3.2.2 Environmental Consequences

Alternative 1: No Action

The No Action Alternative represents existing air tour conditions. Modeling results for the No Action Alternative are presented in Table 6 for the criteria pollutants. Note that ozone is not reported as it is not directly emitted in aircraft exhaust. Pollutant emissions are based on annual flight miles and routes for each aircraft type operating within the ATMP planning area. The emission rates (pounds of emissions per mile flown) used in modeling are aircraft engine- and fuel-specific. The results in Table 6 describe baseline emissions under existing conditions; emissions under alternatives can be compared to baseline emissions to indicate potential impacts on air quality within the ATMP planning area.

Table 6. Summary of Criteria Pollutant Annual Emissions in Tons per Year (TPY) Under the No Action Alternative.

Criteria Pollutant	Total Annual Emissions (TPY)
Carbon monoxide (CO)	0.103
Lead (Pb)	0.000
Nitrogen dioxide (NO ₂)	1.040
Particulate matter: aerodynamic diameter ≤ 2.5 µm (PM _{2.5})	0.009
Particulate matter: aerodynamic diameter ≤ 10 µm (PM ₁₀)	0.009
Sulfur dioxide (SO ₂)	0.109

Total annual GHG emissions for the No Action Alternative are modeled to be 267 metric tons (MT) of CO₂. The No Action Alternative would not cause pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed.

Alternative 2

Under Alternative 2, commercial air tours would not fly within the ATMP planning area which would eliminate direct emissions within the planning area and would not cause pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed. Therefore, Alternative 2 would result in direct beneficial effects on air quality compared to the No Action Alternative, due to lower commercial air tour emissions within the ATMP planning area. Direct emissions in the Park would be expected to decrease by the amount reported in the No Action Alternative (Table 6) and would result in zero emissions from the elimination of commercial air tours within the ATMP planning area. The direct effects of this alternative would be the reduction of the emissions within the ATMP planning area reflected in Table 6; however, emissions could still be generated from displaced air tours (refer to indirect effects analysis below).

Alternative 3

Under Alternative 3, commercial air tour aircraft would still fly within the ATMP planning area; however, the total number of flights per year would be reduced and the routes flown would be modified as compared to existing conditions. Modeling results for Alternative 3 are presented in Table 7 for the criteria pollutants in terms of change in emissions as compared to the No Action Alternative. Note that ozone is not reported as it is not directly emitted in aircraft exhaust. Similar to the No Action Alternative, these results are based on annual flight miles and routes for each aircraft type and the emission rates used in modeling are aircraft engine- and fuel-specific. The results in Table 7 show that emissions from air tours for all criteria pollutants would decrease or remain unchanged under Alternative 3.

Table 7. Summary of Change in Criteria Pollutant Annual Emissions in TPY Under Alternative 3 as Compared to No Action Alternative.

Criteria Pollutant	Change in TPY as Compared to No Action Alternative*
Carbon monoxide (CO)	-0.064
Lead (Pb)	0.000
Nitrogen dioxide (NO ₂)	-0.622
Particulate matter: aerodynamic diameter ≤ 2.5 µm (PM _{2.5})	-0.005
Particulate matter: aerodynamic diameter ≤ 10 µm (PM ₁₀)	-0.005
Sulfur dioxide (SO ₂)	-0.064

*Negative values represent a reduction in total emissions.

The total change in annual GHG emissions for Alternative 3 as compared to the No Action Alternative is modeled to be a reduction of 158 MT CO₂ within the ATMP planning area. Alternative 3 would not cause pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed. Compared to the No Action Alternative, Alternative 3 would result in beneficial impacts to air quality due to lower commercial air tour emissions within the ATMP planning area. Alternative 3 could result in an approximately 60 percent reduction in both criteria pollutant and GHG emissions as compared to the No Action Alternative.

Indirect and Cumulative Effects

Indirect Effects: For any alternative that limits the number of flights per year to a level below existing conditions (4,824 flights per year), as described above, it is reasonably foreseeable that operators could potentially generate revenue by offering air tours outside of the ATMP planning area, as the areas outside this area would not be regulated by the ATMP. Some of this displaced activity could result in impacts to air quality although it is difficult to predict with specificity if, where, and to what extent any displaced air tours would result in impacts in different and/or new areas. The preciseness of routes and altitudes for tours flown on displaced routes are generally subject to Visual Flight Rules and may vary greatly.

Under the No Action Alternative, commercial air tour operations within the ATMP planning area would remain consistent with existing conditions, thus there are no indirect impacts that would be expected to occur under this alternative.

Alternatives 2 and 3 limit the number of flights per year as compared to existing conditions and would therefore have the potential to result in some displacement of air tours outside the ATMP planning area. Air tours occurring outside the ATMP planning area, if any, would not result in direct effects from emissions within the ATMP planning area. However, prevailing winds may transport some of the emissions outside the ATMP planning area to within the

ATMP planning area (i.e., indirect effects). Additionally, some areas that are not currently exposed to emissions from air tours (outside the ATMP planning area) may be exposed to emissions in these scenarios thus affecting the air quality in these areas.

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

Because of both the number of air tours and the likely dispersal of air tours outside the ATMP planning area, it is unlikely that air tours that are displaced to outside the ATMP planning area under these alternatives would result in air quality impacts under NEPA or change the current attainment status of the Park. Changes in air tour operations under these alternatives would also likely have minimal impact, if any, to regional air quality.

Cumulative Effects: The cumulative impact of an alternative is the overall air quality of the environment including existing and future emissions from sources other than air tours plus anticipated emissions from air tours under the alternative. The existing air quality in the Park is disclosed in Affected Environment Section 3.2.1. Other ongoing actions related to air quality and GHGs include: the monitoring program to assess air quality and to monitor visibility; an air quality protocol to guide the response during periods of poor air quality; and continued work related to the Climate Action Plan (2010). Alternatives 2 and 3 would likely result in no noticeable change to a slight improvement in overall air quality in the Park, with no change in the current NAAQS attainment status. Ongoing present and future park management actions by the NPS would continue to occur under any of the alternatives.

3.3 Biological Resources

The ESA is the primary federal statute regulating federally listed threatened and endangered species and critical habitat. The United States Fish and Wildlife Service (USFWS) is the federal agency responsible for administration of the ESA, the Bald and Golden Eagle Protection Act, and the Migratory Bird Treaty Act (MBTA). The National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) is the regulatory agency with oversight of the ESA for marine mammals and fishes. Jurisdiction over the Marine Mammal Protection Act (MMPA) is shared between the USFWS and the NMFS. Under the Hawai'i State Endangered Species Statute, HRS 195D, any federally listed endangered or threatened species are also listed under HRS 195D. The NPS 2006 Management Policies direct the NPS to meet its obligations under the NPS Organic Act and the ESA to both proactively conserve listed species and prevent detrimental effects on these species (NPS Management Policies § 4.4.2.3, 2006).

A threatened species is defined under the ESA as “any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” An endangered species is defined under the ESA as “any species which is in danger of extinction throughout all or a significant portion of its range.” Species designated as threatened or endangered are collectively referred to as listed species in this draft EA. Critical habitat has been designated by USFWS or NMFS as the habitat needed to support recovery of listed species.

The area of analysis for biological resources, including but not limited to species listed as threatened or endangered, in this draft EA includes the Park and areas outside the Park but within ½ mile of its boundary, also known as the ATMP planning area. This area encompasses all effects of the proposed action for biological resources. To the extent that habitat and species occurrences correlate, impacts to biological resources are expected to be similar within the ATMP planning area. Therefore, if habitat exists for a species but occurrence is unknown, the assumption is that the species could be present and will be analyzed accordingly.

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

3.3.1 Affected Environment

The Park protects a unique diversity of native wildlife species, over 90% of which are endemic to the Hawaiian Islands. Endemic species are plants or animals that exist only in one geographic region. All native mammals and several bird species in the Park are federally and state listed threatened or endangered species. The biological resources analyzed in this section include both listed and non-listed wildlife most likely to be affected by the alternatives. As discussed in Section 1.5, Environmental Impact Categories Not Analyzed in Detail, it is unlikely that plants, invertebrates, and fish species would be affected by air tours, therefore they are not considered for further analysis in this draft EA.

Federally Listed Species

Mammals

Hawaiian Hoary Bat

The Hawaiian hoary bat (*Lasiurus semotus*), or ‘ōpe‘ape‘a, is the only fully terrestrial native mammal in the Hawaiian Islands and is federally listed as endangered. ‘Ōpe‘ape‘a are found from sea level to 11,800 ft. (Bonaccorso et al., 2015), with the highest activity on Maui generally occurring in gulch, low density development, and grassland habitats (H.T. Harvey & Associates, 2020). Data indicates that ‘ōpe‘ape‘a commonly traverse and forage in large parts of the ATMP planning area and are likely to be roosting within this area. Detections were reported from

within the Park up to the summit or the vicinity of the ATMP planning area (Fraser et al., 2007; Krushelnycky et al., 2019; H.T. Harvey & Associates, 2020). Females typically give birth to twin pups from June to August which then leave the maternal roost by November.

‘Ōpe‘ape‘a are known to roost solitarily in tree foliage in a variety of tree species and in an assortment of habitats and elevations (native and non-native habitats). Roost trees are usually larger than randomly selected trees (Montoya-Aiona, 2020). ‘Ōpe‘ape‘a is vulnerable to roost disturbance during pupping and pup care (June-November). Noise exposure to bat species during daytime roosting and while rearing young can lead to abandonment of their roosts and young (California Department of Transportation, 2016). Noise from a variety of sources occurs within the Park, including from commercial air tours, over ‘ōpe‘ape‘a habitat during these sensitive months.

‘Ōpe‘ape‘a is an insectivore, and prey items include a variety of night-flying insects, primarily moths and beetles (Whitaker and Tomich, 1983; Pinzari et al., 2019; H. T. Harvey & Associates, 2020). Acoustic detection studies show seasonal patterns of habitat occupancy with increased activity in the higher elevations (higher than 3,300 ft.) during the non-breeding season (November to April), and increased activity in the low elevations during the breeding season (Bonaccorso et al., 2015).

Due to its solitary and cryptic roosting behavior (Bonaccorso et al., 2015), robust estimates of the population size and trend of the ‘ōpe‘ape‘a are currently unavailable. ‘Ōpe‘ape‘a can be injured and killed from collisions with man-made structures including barbed wire fences, wind turbines, and communication towers; however, limiting factors are poorly understood. Threats to this species include the elimination of roosting sites, habitat destruction, pesticides, and introduced species such as nonnative insects or disease.

Hawaiian Monk Seal

The endangered Hawaiian monk seal (*Neomonachus schauinslandi*), ‘īlio holo i ka uaua, is silvery gray to brownish in color with yellowish-brown ventral pelage, reaching an average length of approximately seven feet by adulthood (NMFS and NOAA, 2007). Within the Park, Hawaiian monk seals have been known to haul out and bask along the shoreline, including sightings up through 2022 (Baker and Johanos, 2004; Krushelnycky et al., 2019). Monk seal births are most common between February and August, peaking in March and April (NMFS and NOAA, 2007). The beach areas used by the seal for hauling out, pupping, and nursing are critical to the well-being of the species. This critical area also includes the first line of vegetation bordering the beaches, which provides shelter from wind and other elements.

Federally designated critical habitat for the Hawaiian monk seal, both terrestrial and marine, is located within the ATMP planning area. See Figure 11.

The Hawaiian monk seal was first listed as endangered on the Endangered Species List in 1976, where it currently remains, in addition to being protected under the MMPA. The Hawaiian

monk seal population is in a decline that has lasted over 20 years (NMFS and NOAA, 2007). Since the 1990s, a small population in the main Hawaiian Islands has increased significantly in size and now represents a quarter of the species' total population size.

The NMFS recovery plan for this species was implemented in 2007, and today their total global population is estimated to be 1,200 individuals. Although this species has a high recovery potential, the magnitude of threats has caused the current total population to be relatively small and in decline, so much so that there is concern about long-term maintenance of genetic diversity (NOAA, 2020). A study of ringed seal responses to fixed-wing airplanes and helicopters in Greenland, Born et al. (1999) found that 6% of the seals showed escape behavior in response to low altitude fixed-wing aircraft overflights at 500 ft. and responded at an average distance of 1,214 ft. in front of the aircraft. Maximum escape response was 1,970 ft. In contrast, 50% of seals showed escape behavior in response to helicopters flying at this same altitude at 1,640 ft. in front of the helicopter and showed a maximum escape distance of 4,760 ft. Although the aircraft and helicopter surveys were conducted at different locations, the magnitude of these differences indicates that seals show a heightened response to helicopters versus fixed-wing aircraft (NMFS, 2015). Other threats to this species include food limitation, entanglement, predation, infectious disease, habitat loss, and human disturbance (NMFS and NOAA, 2007).

Marine Mammals

Other marine mammals that are protected under the ESA may be present within the ATMP planning area. This includes several species of whale: blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*), Main Hawaiian Islands Insular false killer whale (*Pseudorca crassidens*), North Pacific right whale (*Eubalaena japonica*), sei whale (*Balaenoptera borealis*), and sperm whale (*Physeter macrocephalus*). Whales in the Pacific Ocean have experienced population declines due to commercial whaling throughout the 1900s. Although commercial whaling has largely been banned, populations are still recovering. Today, threats to whales include vessel strikes, interactions with fisheries, pollution, and climate change.

The Central North Pacific stock of blue whales feed in the summer throughout the Gulf of Alaska and migrate to the Hawaiian Islands in the winter. Blue whales are listed as endangered under the ESA. From 1910 to 1965, approximately 9,500 blue whales were killed from commercial whaling; their population today ranges from 38 to 81 individuals and is increasing as a result of the prohibition of commercial whaling across much of their range (NMFS, 2017).

The fin whale inhabits deep, offshore waters of all major oceans. The estimated population size for fin whales across the State of Hawai'i ranges from 27 to 58 individuals (NMFS, 2017). While population trends for the State of Hawai'i stock are undetermined, other populations of fin whales have had stable abundance, with some stocks in the Pacific Ocean increasing at a rate of 4.8% per year (NMFS, 2017). Fin whales are listed as endangered under the ESA.

The Main Hawaiian Islands Insular false killer whale is one of three stocks of false killer whales in the State of Hawai'i. Critical habitat for this species occurs throughout the Hawaiian Islands and extends approximately 50 kilometers off of the coast of each island. The population of the Main Hawaiian Islands Insular false killer has declined from 162 to 92 individuals from 2000 to 2009 and is expected to continue to decline due to threats such as inbreeding, pollution, and commercial fishery activity that increases competition for food, entanglement, and intentional harm by fishermen (NMFS, 2017). This population of false killer whale is considered to be genetically distinct to other populations of false killer whale. This species was listed as endangered under the ESA in 2012.

The North Pacific right whale is one of the most endangered whale species in the world. Critical habitat for this species is located in the Gulf of Alaska and the Southeast Bering Sea, both of which lay outside of the ATMP planning area. North Pacific right whales migrate to temperate waters, such as those surrounding the State of Hawai'i, in the winter months to reproduce. The Eastern North Pacific stock of right whales has a population that is smaller than the western stock; population size is believed to be less than 100 individuals, with several sampling studies estimating that the population size ranges from 23 to 31 whales (NMFS, 2017).

Sei whales are distributed worldwide. They winter at low latitudes for reproduction and travel to high latitudes in summer where they feed on zooplankton and school of fish. Two subspecies of sei whale are recognized, *B. b. schlegellii* in the Southern Hemisphere and *B. b. borealis* in the Northern Hemisphere, the latter of which could be present in the waters around the State of Hawai'i. Population estimates of the North Pacific population have declined from 42,000 individuals to 8,600 from 1963 to 1974 and were estimated to be 29,632 between 2010 and 2012 (NMFS, 2017). Of the three small stocks that are present in U.S. waters, the State of Hawai'i population is estimated to be 93 to 178 individuals (NMFS, 2017). Sei whales are listed as endangered under the ESA.

Sperm whales are the most abundant large whale species and found in all major oceans. They forage at higher latitudes in the summer and breed at lower latitudes during the winter. Of the three U.S. stocks of sperm whales that occur in the Pacific Ocean, the State of Hawai'i stock is estimated to be 2,539 to 3,354 individuals (NMFS, 2017). Globally, higher estimates of sperm whale abundance are approaching pre-whaling levels.

Several other cetaceans that are not listed under ESA, notably humpback whales (*Megaptera novaeangliae*), bottlenose dolphins (*Tursiops truncatus*), and spinner dolphins (*Stenella longirostris*), frequent the ATMP planning area and are protected under the MMP. The MMPA is administered under NOAA Fisheries and protects these animals from harassment including human-caused disturbance to normal behaviors.

Reptiles

Two sea turtle species protected under the ESA, the green sea turtle (*Chelonia mydas*), honu, and the hawksbill sea turtle (*Eretmochelys imbricata*), honu'ea, forage nearshore in the Kīpahulu District. Three additional ESA-protected sea turtle species could also occur in the ATMP planning area: the leatherback sea turtle (*Dermochelys coriacea*); loggerhead sea turtle (*Caretta caretta*); and olive ridley sea turtle (*Lepidochelys olivacea*). Threats to sea turtles include interactions with fisheries, poaching, and nesting habitat degradation due to coastal development.

Honu are listed as threatened under the ESA. The Central North Pacific population, which includes the State of Hawai'i, has approximately 3,710 breeding females (Seminhoff et al., 2015). More than 96% of nesting occurs at one site in the northwest Hawaiian Islands; the highly concentrated nesting population makes honu vulnerable to stochastic events and threats from climate change that impact their low-level nesting habitat (Seminhoff et al., 2015). However, monitoring over the past 40 years has indicated that overall nesting is increasing in the State of Hawai'i. Critical habitat for this species is designated around Culebra Island, Puerto Rico.

The endangered honu'ea are the second species of sea turtle that regularly nests in the Hawaiian Islands, including on Maui; although there are no known nest sites in the ATMP planning area. Although a large proportion of the known nesting sites in the Pacific are found in Hawai'i, abundance for the species is quite low (USFWS, 2013). These turtles feed in similar habitat to that of the more abundant honu. Like honu, critical habitat is designated around Culebra Island, Puerto Rico.

Leatherback sea turtles are the largest turtle in the world and highly migratory. In the Pacific Ocean, nesting is common in Mexico, Nicaragua, and Indonesia, but rare across the State of Hawai'i. Abundance estimates for leatherback sea turtles are less than 1,000 nesting females for the East Pacific population, and have been declining (NMFS and USFWS, 2020). This species is currently listed as endangered. Critical habitat for leatherback sea turtles is designated along the coasts of California, Oregon, and the southwestern coast of St. Croix in the United States Virgin Islands, all of which are located outside of the ATMP planning area.

The loggerhead sea turtle is the most abundant sea turtle that nests in the U.S and has nine distinct populations. The ATMP planning area is included under the North Pacific population; turtles mate on the coasts of Japan and forage in the western Pacific. The number of nesting females was estimated to be 8,733 individuals and are overall increasing, but population trends are an estimate and can vary by location (NMFS and USFWS, 2020a). Loggerhead sea turtles are listed as endangered and have designated critical habitat that is located outside of the ATMP planning area along the southeastern coast of the United States.

Olive ridley sea turtles are one of the world's smallest sea turtles and are found worldwide, notably in Pacific subtropical waters from California to Peru, but do not nest in the United States. Population estimates of this species vary by nesting location but are believed to be declining overall (NMFS and USFWS, 2014). In the Pacific, large nesting populations are present in Mexico and Costa Rica. Olive ridley are listed as threatened under the ESA.

Birds

Forest Birds

The federally endangered kiwikiu, or Maui Parrotbill (*Pseudonestor xanthophrys*), is a stout yellow and olive-green honeycreeper with a large, hooked bill. Endemic to the Islands of Maui and Moloka'i, the species is currently only found on East Maui and is ranked as one of the most imperiled Hawaiian birds (Mounce et al. 2018; Warren et al., 2020; USFWS, 2019; Paxton et al. 2022). Kiwikiu typically breed between January and June and are primarily insectivorous, using their disproportionately large bill to probe and excavate woody plant material (and, to a lesser extent, fruits) to eat the larvae primarily of beetles (Coleoptera) and caterpillars (Lepidoptera) found on or within native plants and lichens (Mountainspring, 1987; Peck et al., 2015; Simons et al., 2020). Critical habitat (Figure 11) has been designated for kiwikiu (USFWS, 2016a), and its critical habitat lies partially within the ATMP planning area. Their habitat is characterized by wet-mesic and 'ōhi'a-dominated rainforest above 5,280 ft. (Judge et al., 2021).

The federally endangered Maui-endemic 'ākohekohe (*Palmeria dolei*) is a striking forest pollinator with a distinctive crest on the head. Critical habitat has been designated for 'ākohekohe (USFWS, 2016a); its critical habitat overlaps entirely with the critical habitat of the kiwikiu and also lies partially within the ATMP planning area (Figure 11). This Hawaiian honeycreeper persists on less than approximately 7,400 acres of native rainforest above 5,280 ft. (Judge et al., 2021), with breeding typically occurring between November and June in habitat above 5,620 ft. (Berlin and Vangelder, 2020; Wang et. al., 2020).

The 'i'iwi (*Drepanis coccinea*), federally listed as threatened, is a honeycreeper historically widespread and occurring at all elevations, but now persists only in the high-elevation forests primarily of Hawai'i, Maui, and Kaua'i (Scott et al., 1986; Fancy and Ralph, 2020; USFWS, 2016b). Breeding may occur all year, but the peak of breeding occurs from February through June (Fancy and Ralph, 2020). The 'i'iwi is a strong flier capable of high, long flights to locate nectar sources (Guillaumet et al., 2017; Fancy and Ralph, 2020). USFWS has proposed critical habitat for the species (USFWS 2022d), which includes portions of the ATMP planning area.

Avian malaria, a disease transmitted by invasive *Culex* mosquitoes, is driving the rapid decline of Hawaiian forest birds in the Park. Today, most Hawaiian forest birds persist only in high-elevation forests where the risk of malaria transmission is lower due in part to colder temperatures (van Riper et al., 1986; Scott et al., 1986; Atkinson and LaPointe, 2009b; Atkinson

et al., 2014). Even though much of the high elevation threatened and endangered bird habitat in the ATMP planning area is largely protected from feral ungulates and direct human-caused habitat loss, there is evidence of continuing range contraction and population declines, especially from lower-elevation portions of their ranges since 1980 (Baker and Baker, 2000; Camp et al., 2009; Vetter et al., 2012; Judge et al., 2021). Precipitous negative population trends have been observed for kiwīkiu and ‘ākohekohe across their small ranges (Judge et al., 2013, 2021). Under existing conditions, noise from ongoing air tours is present within the ATMP planning area. This noise affects biological resources in various ways, including bird species that occur throughout the ATMP planning area. Specifically, noise from aircraft has been demonstrated to influence bird vocalizations to overcome the masking effects from aircraft noise in areas where loud and frequent helicopter traffic occurs (Gallardo Cruz et al., 2021). As air tours are currently occurring within the ATMP planning area, these effects are ongoing and part of the affected environment for bird species that occur within the ATMP planning area.

Kiwīkiu and ‘ākohekohe population estimates from surveys in 2017 are 157 individuals (44–312 individuals [95 percent confidence interval]) and 1,768 individuals (1193–2411), respectively (Judge et al., 2021). Kiwīkiu and ‘ākohekohe abundance has declined by more than 70 percent since 2001 (Judge et al., 2021), and a predicted range loss of more than 90 percent may occur by the end of this century under moderate climate change scenarios (Fortini et al., 2015). ‘Īiwi have disappeared from most of its historic range (Atkinson et al., 1995; USFWS, 2016b, Table E-2). While most common above 5,000 ft., ‘Īiwi is regularly detected down to 2,700 ft. in the ATMP planning area (Judge et al., 2019). Recent surveys in 2017 resulted in a population estimate of 50,252 (43,908–57,146 individuals [95 percent confidence interval]) birds on East Maui (Judge et al., 2019), and a long-term trend analysis of the Park population shows population stability in portions of the Park but declines in other areas of the Park (Paxton, 2020). Surveys revealed an increasing trend of ‘Īiwi between 2011 and 2017 outside the Park (Judge et al., 2019).

Another endangered forest bird species, ‘ālalā or Hawaiian crow (*Corvus hawaiiensis*), was once common throughout their range on Hawai‘i Island but were not known to occur on the Island of Maui. However, subfossil remains found on Maui indicated existence of either a subspecies of ‘ālalā or related corvid (USFWS, 2009). The last ‘ālalā in its native habitat was thought to have been confined to higher elevations in South Kona. ‘Ālalā became extinct in their native habitat. The last observation of ‘ālalā in the wild was in 2002 (USFWS, 2009). A captive breeding population remains at Keauhou Bird Conservation Center where propagation efforts have been successful. Release of ‘ālalā is being considered for several areas across the State of Hawai‘i and may include areas within the ATMP planning area.

Seabirds

There are three listed seabirds confirmed or potentially breeding in the ATMP planning area. ‘Akē‘akē or Band-rumped Storm-Petrel (*Oceanodroma castro*), is a small black pelagic seabird that breeds on steep, remote cliffs and high-elevation volcanic terrain above 6,900 ft. (Slotterback, 2002; Antaky et al., 2019). The species was listed as endangered in 2016 after the first active nests were discovered in the Hawaiian Islands (USFWS, 2016). ‘Akē‘akē have been detected at multiple locations within the Park, including the Haleakalā Crater, Kīpahulu Valley, and on song meters in Nu‘u (Natividad Bailey, 2009; Haleakalā National Park, 2016; Krushelnycky et al., 2019). However, nest sites within the Park are currently unknown.

Once widespread in the main Hawaiian Islands, the ‘a‘o, or Newell’s Shearwater (*Puffinus newelli*), is federally listed as threatened. ‘A‘o breed on the ground in excavated burrows often surrounded with dense vegetation, including native ‘ōhi‘a (*Metrosideros polymorpha*) and uluhe ferns (*Dicranopteris linearis*), at elevations ranging from 500 to 4,000 ft. on steep slopes and near-vertical volcanic crater walls (Ainley et al., 2019). Evidence of breeding and transiting to nests in the ATMP planning area include radar studies; however, nest locations are not currently known (Krushelnycky et al., 2019). ‘A‘o audio detections are regularly reported by Park and state field teams from various locations within Kīpahulu Valley and along the northern slope of Haleakalā near Ko‘olau Gap, and Hanawī.

Haleakalā Crater currently supports the largest known breeding colony of ‘ua‘u, or Hawaiian Petrel (*Pterodroma sandwichensis*); the population has been monitored since the 1960s and mammalian predator populations have been managed/reduced since 1982 (Krushelnycky et al., 2019). The ‘ua‘u is federally listed as endangered. Nests are found throughout the Park with the highest concentration of known nest sites near the Haleakalā Summit, along the west and south rims of the Haleakalā Crater. Nests have also been located on state land adjacent to the Park.

The ‘ua‘u population in the Park is estimated to consist of 3,000–4,000 breeding pairs and a total of 8,000–9,000 individual birds. NPS biologists indicate that the most recent count of known burrows within the Park is 2,784. The ‘ua‘u population has grown since the 1980s with feral ungulate exclusion and invasive predator control in the Summit District. Current threats to seabirds include habitat loss, trampling of nests by feral ungulates, predation, groundings, and collision with vehicles and man-made objects/structures including potential aircraft strikes.

Climate change affects seabirds’ breeding success with increasing variability in the distribution and availability of at-sea prey, which is being affected by rising ocean temperatures; however, little is known about the potential effects of climate driven changes in the prey available for ‘akē‘akē, ‘a‘o, and ‘ua‘u. Expanding invasive species are also associated with climate change scenarios, which could potentially degrade the breeding habitat of the ‘akē‘akē, ‘a‘o, and ‘ua‘u.

(Ainley et al., 2019). Invasive Hymenoptera have caused seabird nest failures and burrow abandonment (Plentovich et al., 2008).

Hawaiian Goose

The nēnē, or Hawaiian Goose (*Branta sandvicensis*), was extirpated from all islands except Hawai'i by the early 1900s. Initial statewide recovery efforts focused on captive-breeding and release programs. In the early 1960s, the Park, in coordination with the State Division of Forestry and Wildlife, reestablished a population of nēnē on Maui. The subsequent Park population of nēnē provided for the establishment or augmentation of additional release sites on Kaua'i, Moloka'i, Hawai'i Island, as well as Maui until the captive breeding program ended in 2011 (Banko et al., 2020). The nēnē is currently listed as federally threatened but remains state listed as endangered. At the Park, nēnē typically nest between October and April. Nēnē use diverse habitats including sub-alpine grasslands, open native shrubland and grasslands as well as mid- and low-elevation pasture and managed grasslands, to forage on leaves of grass, berries, seeds, and flowers; some make elevational movements for breeding, foraging, and molting (USFWS, 2019; Banko et al., 2020; Leopold and Hess, 2014). On Maui, nēnē require intensive management to protect breeding (ground-nesting) birds from introduced predators, especially the mongoose (*Herpestes javanicus*) and are also susceptible to vehicle collisions, wind farm turbine collisions and human or vehicle-related injuries and trauma, toxoplasmosis (a pathogen carried by feral cats) and mosquito-borne avian pox virus (Work et al., 2015).

The Maui nēnē population is relatively small, fluctuating around approximately 250 breeding pairs (USFWS, 2019). Nēnē have benefitted from landscape level habitat management (ungulate fence/control, invasive plant control) within the Park. In 2020 and 2021, respectively, within Maui Island there were 223 and 164 nēnē outside the Park, and 254 and 190 in the Park. Breeding failures have been attributed to predators and suboptimal weather conditions during the nesting season (typically wet and cold, but also drought conditions) (Black et al., 1997). Increasing drought or other extremes in climate variability, expanding invasive species, and associated climate change scenarios are likely to negatively affect nēnē. Climate change may disrupt seasonal movements and some habitats used by nēnē for molt, breeding, and foraging.

Waterbirds

Two endangered waterbirds, ae'o, Hawaiian stilt, (*Himantopus mexicanus knudseni*) and the 'alae kea, Hawaiian coot, (*Fulica alai*) occur in the Nu'u Refuge, a nearshore wetland within the ½-mile boundary outside the Park in Nu'u.

Several studies have documented that noise from helicopters and fixed-wing aircraft can elicit behavioral responses including flushing and reduced foraging, to various waterbird species at close elevations (Ward et al., 1999; Komenda-Zehnder et al., 2003; Williams, 2007). Results of an experimental procedure for one species, the crested tern (*Sterna bergii*), indicate that the

maximum responses observed, preparing to fly or flying off, were restricted to exposures at sound levels greater than 85 dB(A) (Brown, 1997). This study also showed scanning behavior involving head-turning was the minimum response at lower noise levels, and this, or a more intense response, was observed in nearly all birds at all levels of exposure (Brown, 1997).

Other Protected Native Birds

Within the ATMP planning area, three Hawaiian honeycreeper species (in addition to the three federally protected species described above) are protected under the MBTA, ‘apapane (*Himatione sanguinea*), Hawai‘i ‘amakihi (*Chlorodrepanis virens wilsoni*), and Maui ‘alauahio (*Paroreomyza montana*). Although ‘apapane and Hawai‘i ‘amakihi are most common in native forests above 3,000 ft. in elevation, they will also venture to lower elevation forests. The Maui ‘alauahio occurs in native forest between 3,900 to 7,500 ft. (Baker & Baker, 2020; Judge et al., 2021). The Maui ‘alauahio is restricted to the Island of Maui. The response of ‘apapane vocalizations has been specifically studied in relation to helicopter noise on the Island of Hawai‘i, which actively changed the amount of time they vocalized in relation to loud and frequent helicopter noise, suggesting the presence of vocal plasticity in this species (Gallardo Cruz et al., 2021).

The Hawaiian Short-eared Owl or pueo (*Asio flammeus sandwichensis*) is listed as endangered by the State of Hawai‘i only on the Island of O‘ahu; it is not currently federally listed. The species is protected under the MBTA. Pueo are found on all the main Hawaiian Islands, at elevations ranging from sea level to 8,000 ft. Pueo occupy a variety of habitats, including agricultural lands, grasslands, wetlands, shrublands, and native forests. Ground nests are well concealed and lined with grasses and feather down (Price and Cotín, 2018). Threats to this species include loss and degradation of habitat, predation by invasive mammals, vehicle and wind turbine collisions, and other human interaction (Pueo Project, 2019). Pueo forage and potentially nest within the ATMP planning area, but their abundance and distribution has not been well studied on Maui.

Migrant or transiting birds that occur in the ATMP planning area include the kōlea or Pacific golden plover (*Pluvialis fulva*), an overwintering migrant shorebird which arrive in August and depart in April; the noio or Hawaiian Black Noddy (*Anous minutus melanogenys*) which nests on the coasts; ‘iwa or the Great Frigatebird (*Fregata minor palmerstoni*) which are seen flying over the coastal area of the Park; and koa‘e kea or White-tailed Tropicbirds (*Phaethon lepturus*), which are known to fly over the Park in the Haleakalā Crater, Kaupō Gap, and along the coast.

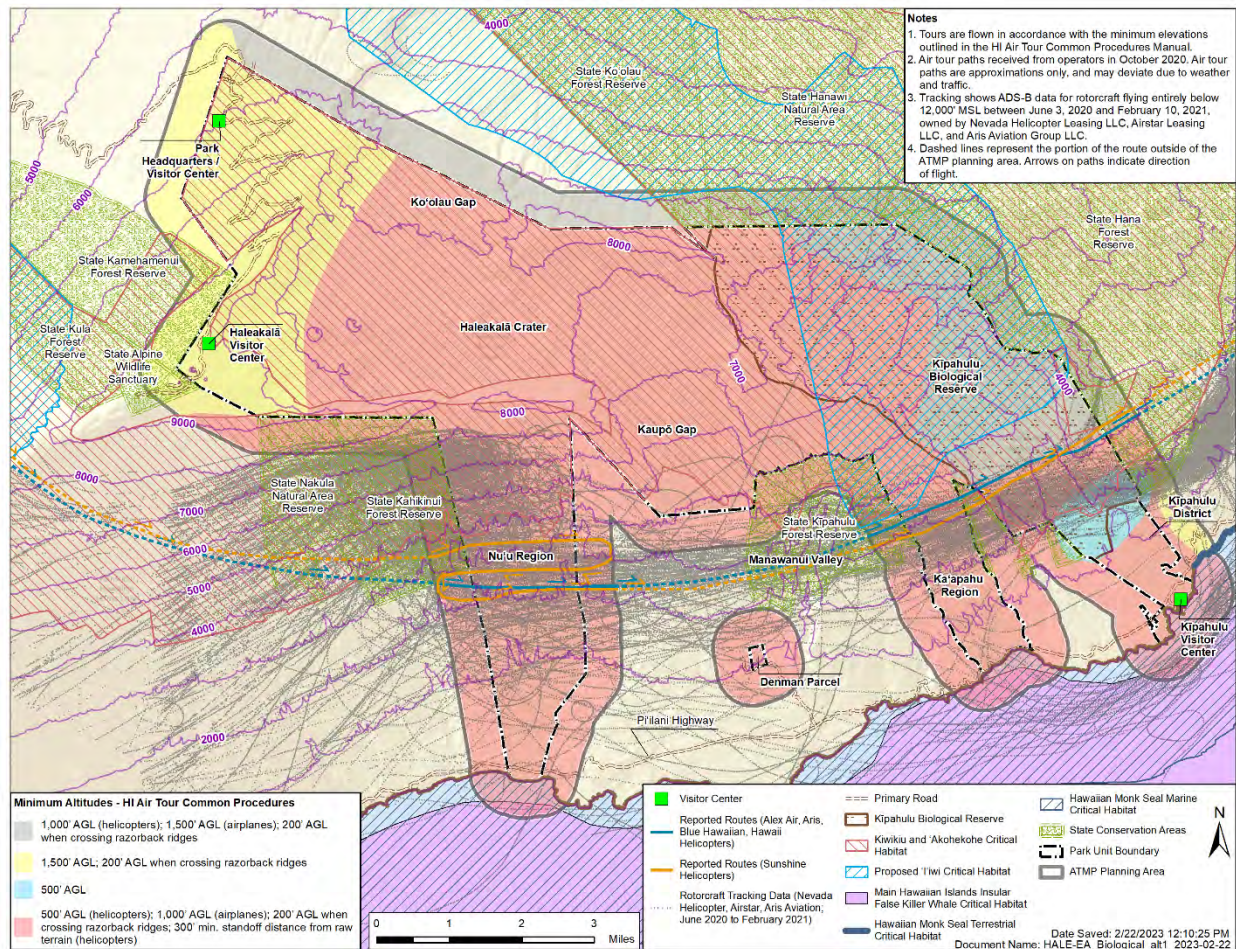


Figure 11. Affected Environment for Biological Resources

3.3.2 Environmental Consequences

Noise from commercial air tours may impact wildlife in a number of ways, including altered vocal behavior, breeding relocation, changes in vigilance and foraging behavior, and impacts on individual fitness and the structure of ecological communities to name a few (Shannon et al., 2016; Kunc et al., 2016; Kunc and Schmidt, 2019; Dolbeer et al., 2021). Understanding the relationships between noise attributes (e.g., timing, intensity, duration, and location) and ecosystem responses is essential for understanding impacts to these species and developing management actions to address them (Gutzwiller et al., 2017). To capture how noise may affect quieter natural sounds or communications, the resource impacts analysis below examines the time above 35 dBA (for quieter natural sounds and impacts to natural resources). Refer to the *Noise Technical Analysis* in Appendix F for more information.

Alternative 1: No Action

Under the No Action Alternative, noise from commercial air tours would continue to affect wildlife throughout the ATMP planning area. Ongoing noise from commercial air tours

currently disturbs the Park's wildlife and could result in changes in wildlife behavior, such as bird vocalizations, or other effects that cause wildlife to change their behavior or avoid an area, such as nest abandonment or flushing, and when flown at low altitudes, commercial air tours may result in direct strikes to airborne species. These effects would be expected to continue to occur under the No Action Alternative.

The Kīpahulu Biological Reserve supports many of the species described in Section 3.3.1, Affected Environment for Biological Resources, as well as provides opportunities for research and education on these species. Under existing conditions, the southern part of the Reserve near Kīpahulu is heavily overflowed by air tours, which introduces auditory disturbances for the species that utilize this area. Under the existing conditions, on days when air tours occur, noise above 35 dBA could occur up to 75 minutes in some areas of the Reserve. This noise may interfere with species behavior for any noise sensitive species that occur in this area and currently interferes with research and education activities such as listening to or recording bird vocalizations. This interference impedes the NPS's ability to fully meet the Park's purpose of preserving endemic Hawaiian ecosystems and would not support the perpetuation of biological diversity and ecological integrity which are fundamental resources and values of the Park since the Park cannot successfully monitor these species without the ability to listen and record bird vocalizations. Effects for specific categories of species are described below.

Mammals

Mammals within the ATMP planning area have a variety of sensitivities to noise from commercial air tours. For nocturnal species, such as the Hawaiian hoary bat, impacts associated with air tours would be less likely to occur, as commercial air tours do not fly at night. When noise from commercial air tours occurs over 'ōpe'ape'a habitat during sensitive breeding months (June-November), impacts could occur but are unlikely based on the analysis of the current noise levels. Based on reporting data from 2017-2019, air tours are flown over the Park during this timeframe, with the frequency of tours distributed approximately evenly throughout the year.

Marine mammals could also be disturbed by noise, including the Hawaiian monk seal and whale species. Helicopter surveys to inventory the status of Hawaiian monk seals by NMFS biologists, responsible for the recovery of this species, follow a guideline of 1,000 ft. AGL (Gilmartin, 2012) for their helicopter population surveys of Hawaiian monk seal. The Hawai'i Common Procedures Manual permits air tours to fly as low as 500 ft. AGL over waters which include Hawaiian monk seal habitat, which does not meet this guideline for protecting the species. Under the No Action Alternative, flights could continue to be flown as low as 500 ft. AGL which could cause Hawaiian monk seals to exhibit escape behavior impacting pupping and nursing (Richardson et al., 1995). Whale species have been found to exhibit behavior responses that

might constitute a disruption of their normal behavior patterns (Patenaude et al., 2002) for altitudes under the No Action Alternative.

Reptiles

Due to the poor sound transference from air to water, noise would be unlikely to illicit a response for individual turtles underwater. While sea turtles could be disturbed by noise, it would result in short-term behavioral reactions, such as swimming away from the aircraft, which is not expected to have fitness consequences (NMFS, 2022).

Birds

Forest Birds

Forest bird habitat within the ATMP planning area generally occurs at higher elevations. For the federally endangered kiwīkiu and ‘ākohekohe, habitat is generally found above 5,620 ft. elevation. Under existing conditions, air tours at higher elevations are concentrated in the Nu‘u area, including over portions of the State Kahikinui Forest Reserve which overlaps the ATMP planning area and Kaupō and Manawainui areas that are audible from high elevation kiwīkiu and ‘ākohekohe habitat. The noise from air tours that occur near forest bird habitat may disturb these species. Under the No Action Alternative, these impacts would continue to occur.

Seabirds

Seabird habitat throughout the ATMP planning area may also be affected by ongoing commercial air tours within the ATMP planning area. In particular for high elevation seabirds, direct strikes could occur if flights occurred near dusk and dawn. ‘Akē‘akē habitat in the Kīpahulu Valley and Nu‘u, and ‘a‘o habitat in Kīpahulu Valley and along the northern slope of Haleakalā near Ko‘olau Gap, and Hanawī are directly overflown by air tours under existing conditions which introduces noise in these areas that could result in behavioral disturbance to nesting and foraging for these species. These effects would continue under the No Action Alternative. The concentration of known nest sites occurs near the Haleakalā Summit, along the west and south rims of the Haleakalā Crater and extends to the upper Nu‘u area. Under existing conditions, the ATMP planning area along the south rim is overflown often by air tours. Noise from air tours in extends into ‘ua‘u habitat. Under the No Action Alternative, the noise from commercial air tours that affects these seabird species and their habitats under existing conditions would continue.

Hawaiian Goose

When air tour noise occurs over breeding or nesting habitat for nēnē, birds may flush from their nests, as NPS staff have observed this response occurring within the ATMP planning area. As nēnē habitat exists across the entire ATMP planning area, those effects may be widespread and would generally correspond with the areas experiencing the highest density of commercial air

tours (Kīpahulu District and Nu‘u Area near the Haleakalā Summit). Under the No Action Alternative, these effects would continue to occur.

Air tours flown at low altitudes (currently between 500-1,500 ft. AGL under existing conditions) that occur over habitat for bird species could result in direct strikes to those individuals. Under the No Action Alternative, air tours could continue to fly as low as 500 ft. AGL in accordance with the Hawai‘i Common Procedures Manual, and there would be no limits on the time of day that tours could be conducted, which may result in some tours being flown near dawn and dusk which increases the likelihood of a direct strike with species active during the time.

Waterbirds

Waterbird habitat in the Nu‘u Refuge for the ae‘o (Hawaiian Stilt) and ‘alae kea (Hawaiian Coot) is rarely overflown by air tours according to operator reporting and flight tracking data from 2017-2019. However, noise from commercial air tours in other parts of the ATMP planning area may still impede upon these areas and be experienced by these species. As described for other species, this would be likely to continue under the No Action Alternative.

Other Protected Native Birds

Other native birds that occur within the ATMP planning area including other native forest birds, Hawaiian Short-eared Owl, and migratory birds such as the kōlea, noio, ‘iwa, and koa‘e kea could be affected by air tour noise and direct strikes that occur from low-flying aircraft. Under the No Action Alternative, this would likely continue.

Alternative 2

Under Alternative 2, commercial air tour aircraft would not fly within the ATMP planning area which would eliminate this source of noise from the planning area. Therefore, there would be a direct beneficial effect on biological resources since the intensity and likely presence of noise from commercial air tours would be less than under the No Action Alternative. The impacts described above under the No Action Alternative would be less likely to occur as a result of air tours since they would no longer be flying within the ATMP planning area.

Alternative 3

As described in Section 2.6.2, Commercial Air Tour Routes and Altitudes, Alternative 3 would permit air tours to be conducted on a single flight path through the ATMP planning area, avoiding many habitat areas for sensitive species. The flight path stays below the 3,000 ft. elevational contour line as it crosses Nu‘u, which avoids habitat for high elevation forest birds and seabirds, as well as wetland habitats in the Nu‘u Refuge that support waterbirds. As it crosses above the Denman Parcel and through the Ka‘āpahu region, the flight path stays below the 2,000 ft. elevational contour line, avoiding high-elevation habitat for forest birds and seabirds as well as coastal areas that support marine mammals or shorebirds. As it crosses the

ATMP planning area near the Kīpahulu area, the flight path is directed offshore to avoid flying directly over the Kīpahulu Biological Reserve, which limits the intensity and duration of noise that could affect wildlife in this area.

Routing the flight path for Alternative 3 in a manner that avoids air tours flying directly over sensitive habitats for the Park's wildlife reduces the likelihood of impacts to those species including noise that could alter wildlife behavior (see Figure 12). The authorized altitudes under Alternative 3 (minimum 2,000 ft. AGL over land and 3,000 ft. AGL over the ocean) also limit the potential for impacts to wildlife within the ATMP planning area. This includes federal and state listed along with non-listed species within the ATMP planning area. This represents an increase of 500 – 2,500 ft. depending on location within the ATMP planning area as compared to existing conditions. To capture how noise may affect biological resources and quieter natural sounds, the resource impacts analysis examines the time above 35 dBA. Based on the *Noise Technical Analysis* (Appendix F, Figure 13), under Alternative 3, on days when air tours occur, noise above 35 dBA would occur for less than 15 minutes in most areas (58%) within the ATMP planning area, and would occur for less than 45 minutes in 3% of the ATMP planning area, mainly in the Kīpahulu District. The majority of the Haleakalā Crater would not experience noise above 35 dBA which would preserve intact wildlife habitat and ecological processes in these areas. The majority of the Biological Reserve would experience noise above 35 dBA for less than 15 minutes, with a few of the southern areas of the Reserve experiencing noise above 35 dBA for less than 30 minutes. This would protect research, education, and monitoring activities that occur in this area.

A portion of the flight path for Alternative 3 is located over Hawaiian monk seal habitat, including designated terrestrial and marine critical habitat. A specific regulation, issued pursuant to the MMPA and published at 50 CFR 224.103 (a), created a protective zone around humpback whales requiring vessels not to approach humpback whales, within 100 yards by vessel or 1,000 ft. by aircraft, when these whales are within 200 nautical miles of the Hawaiian Islands. In addition, when aircraft fly below certain altitudes (about 500 meters [1,640.4 ft.]), they have caused cetaceans to exhibit behavioral responses that might constitute a significant disruption of their normal behavioral patterns (Patenaude et al., 2002). Although effects vary between cetaceans and pinnipeds and no such standoff zone has been established for Hawaiian monk seals, the 3,000 ft. AGL altitude requirement in the ATMP exceeds altitudes that have been shown to cause effects to other marine mammals. Therefore, the agencies determined that the required altitude in this area (3,000 ft. AGL) is sufficiently protective of Hawaiian monk seal. In addition, this alternative would ensure noise levels are below 73 dBA, a threshold found to cause a behavioral response in Hawaiian monk seals when on land (Sills et al., 2020; Ruscher et al., 2021). Whale and turtle species could traverse near a portion of the flight path for Alternative 3. However, due to the poor sound transference from air to water, noise would

be unlikely to illicit a response for whale and turtle species at these altitudes. Therefore, no impacts to marine mammals or reptiles within the ATMP planning area are expected to occur.

As compared to existing conditions, Alternative 3 would result in fewer impacts to biological resources due to a reduction in the area of wildlife habitat that is overflowed by air tours by requiring them to be conducted on a single fixed route, by authorizing fewer tours on both an annual and daily basis, and requiring tours to fly at increased altitudes. This both reduces the frequency and duration of noise and the sound levels experienced by wildlife within the ATMP planning area, as well as reduces the likelihood of collisions with aircraft. Under current conditions, the entire ATMP planning area would experience noise above 35 dBA on days when air tours occurred, with some portions of the ATMP planning area experiencing noise above 35 dBA for up to 75 minutes a day. In contrast, under Alternative 3, 3% of the ATMP planning area would experience noise above 35 dBA for up to 45 minutes a day, with most areas at less than 15 minutes a day and many areas, including the Haleakalā Crater, not experiencing noise above 35 dBA at all. When compared to existing conditions, in which air tours could fly as low as 500 ft. AGL, Alternative 3 would increase the minimum altitudes for air tours within the ATMP planning area anywhere from 1,500 to 2,500 ft. AGL depending on location over the ATMP planning area (minimum altitudes under Alternative 3 are 2,000 ft. AGL over land and 3,000 ft. AGL over the ocean). Higher altitudes both reduce the likelihood of bird strikes and reduce maximum sound levels at sites directly below the flight path. It should be noted that when the altitude of an aircraft is increased, the total area exposed to the noise from that aircraft may also increase depending on the surrounding terrain. Although the area exposed to noise might increase, this would not meaningfully affect wildlife because of the attenuation of the noise from higher altitude and transient nature of the impacts.

The FAA and the NPS are currently conducting informal consultation with the USFWS and NMFS for those federally listed species and/or designated critical habitat described in Section 3.3.1, in accordance with 50 CFR § 402.02. At the time of this draft EA publication, the agencies do not believe the preferred alternative would jeopardize the continued existence of federally listed threatened or endangered species, nor would it result in the destruction or adverse modification of federally designated critical habitat. For additional information, see Appendix H, *Section 7 Consultation*.

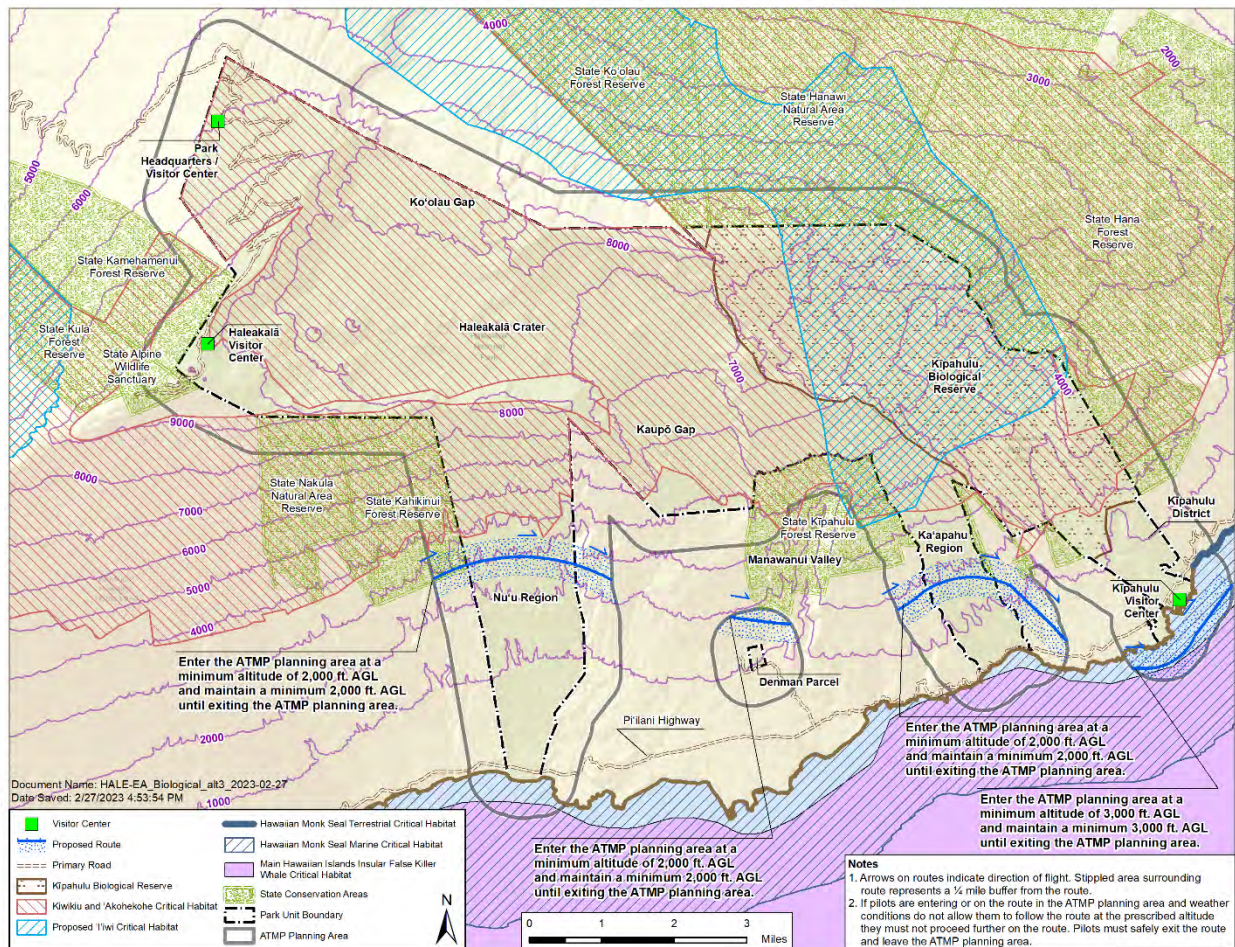


Figure 12. Biological Resources Environmental Consequences for Alternative 3

Indirect and Cumulative Effects

Indirect Effects: Indirect effects to biological resources could occur as a result of noise caused by air tours flying outside of the ATMP planning area. As noted in Section 3.1.2, Indirect and Cumulative Effects for Noise and Noise-Compatible Land Use, indirect noise impacts would have the potential to occur under Alternatives 2 and 3 as these alternatives could result in the displacement of air tours outside the ATMP planning area. Operators may choose to fly along existing flight paths but at or above 5,000 ft. AGL; however, the increase in altitude would likely decrease impacts on ground level resources as compared to current conditions. Flights close to the crater at or above 5,000 ft. AGL are unlikely due to the elevation and safety requirements for unpressurized aircraft. Supplemental oxygen use is required in unpressurized aircraft flying over 10,000 ft. MSL for more than 30 minutes (14 CFR § 135.89, § 135.157); therefore, it is unlikely air tours would fly higher for extended periods of time. Flights in this area and at other areas of lower elevation may continue along similar paths to existing conditions but at or above 5,000 ft. AGL. Operators could also choose to fly to points of interest on the island outside the

ATMP planning area where they already fly or fly routes just outside of the ATMP planning area similar to existing flight paths. Therefore, under Alternatives 2 and 3, some indirect impacts to biological resources could occur if flights were displaced to outside the ATMP planning area. This would likely affect high-elevation seabirds or forest birds that are found at higher elevations near the Haleakalā Crater for air tours conducted just outside the ATMP planning area, or species that have more widespread habitat, such as nēnē, for air tours conducted above the ATMP planning area. Air tours occurring outside the ATMP planning area could impact wetland birds in the Nu‘u lands owned by Hawai‘i Land Trust. Since Alternative 2 would displace more flights outside the ATMP planning area than Alternative 3, Alternative 2 could result in more indirect effects to biological resources than Alternative 3.

Indirect impacts could also occur to ‘ālalā if they are released within the ATMP planning area at some time in the future. Impacts to ‘ālalā are expected to be similar to other forest bird species. Under existing conditions, air tours at higher elevations are concentrated in the Nu‘u area, including over portions of the State Kahikinui Forest Reserve which overlap the ATMP planning area and Kaupō and Manawainui areas where air tours are audible from high elevation habitat that could be suitable to ‘ālalā resulting in noise impacts to these species under the No Action Alternative. Under Alternative 2, commercial air tour aircraft would not fly within the ATMP planning area which would eliminate potential impacts to ‘ālalā. Alternative 3 would permit air tours to be conducted on a single flight path through the ATMP planning area, avoiding many habitat areas for sensitive species. While it is not known where these species could be reintroduced or become established, the higher altitudes prescribed in Alternative 3, would limit the potential for noise impacts if ‘ālalā were to be reintroduced or recolonize after reintroduction elsewhere. Based on the analysis described in this draft EA and Appendix H, Alternative 3 *may affect, but not likely to adversely affect* ‘ālalā.

Cumulative Effects: The NPS would continue current management actions and respond to future needs and conditions for biological resources without major changes in the present course. The administrative flights and associated noise levels (see Section 3.1.1, Affected Environment for Noise and Noise-Compatible Land Use for more information) and wildlife disturbance risks within the ATMP planning area would likely continue at current levels, approximately 96 flights per year from 2017-2019. Mechanized equipment use and ground teams would generate noise during fencing activities and maintenance of trails. There are no anticipated changes to public access within the ATMP planning area, so ongoing impacts to wildlife from visitors would remain unchanged in the foreseeable future. Avian malaria continues to decimate populations of some endemic birds. The NPS is currently evaluating new technologies to combat avian malaria and slow the rate of decline of these species.

Changes in environmental conditions in the ATMP planning area that may ensue from global climate change include increasing temperatures, decreasing precipitation, increasing storm intensities, and increasing variability in weather patterns (Thomas et al., 2004; Frazier and

Giambelluca, 2017). Changes in microclimatic conditions in the habitats of endemic invertebrates and their host plants may lead to the loss of native species due to direct physiological stress, the loss or alteration of habitat, increasing distribution and abundance of invasive species, and changes in disturbance regimes (e.g., droughts, fire, storms, and hurricanes). Because the ecology and distribution of many invertebrates is little known, specific and cumulative effects of climate change on most species of concern are presently unknown. However, it is well documented that stress from different sources is cumulative having a combined effect on the health of wildlife (Tyack et al., 2022). Alternative 3 would result in less cumulative noise and wildlife disturbance in the ATMP planning area than the No Action Alternative, given the reduced number of flights, designated routes, and other ATMP parameters. However, it could allow for more cumulative noise and associated wildlife disturbance than Alternative 2, where flights would not be authorized in the ATMP planning area. Ongoing present and future park management actions by the NPS would continue to occur under any of the alternatives.

3.4 Cultural Resources

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

In addition to Section 106 of the NHPA, the NPS's Organic Act and Section 110 of the NHPA apply to and provide for the preservation of historic, ethnographic and cultural resources on parkland. NPS policies and directives that also apply to Park cultural and ethnographic resources and provide direction for their management include the 2006 NPS Management Policies, Chapter 5 and Director's Order 28: Cultural Resource Management. Executive Order (EO) 13007 provides direction regarding Indian Sacred Sites. NPS Management Policies (2006)

Section 5.3.1.7, Cultural Soundscape Management, also acknowledges that culturally appropriate sounds are important elements of the national park experience in many parks, and that the NPS will preserve soundscape resources and values of the parks to the greatest extent possible to protect opportunities for appropriate transmission of cultural and historic sounds that are fundamental components of the purposes and values for which the parks were established. NPS Management Policies identify and define five types of cultural resources for consideration in NEPA evaluation: Archeological Resources, Cultural Landscapes, Ethnographic Resources, Historic and Prehistoric Structures, and Museum Collections. These resource types correlate generally with the FAA categories as described further below. Museum Collections is dismissed from consideration due to the nature of the project.

Section 106 consultation with the Hawai'i State Historic Preservation Division (SHPD) was initiated via formal letter dated March 29, 2021. On April 28, May 4, and May 6, 2021, the agencies held initial Section 106 consultation webinars to provide basic background information on ATMPs and the ATMP development process. The agencies identified consulting parties that may have an interest in the undertaking and its effects on historic properties. They initiated consultation with consulting parties in three phases in order to include additional parties that were identified as the process moved forward (see Appendix G for correspondence and list of consulting parties). These letters were dated April 16, 2021; August 6, 2021; and October 1, 2021. The last letter included an invitation to the October 28, 2021, informational webinar held to provide background on the ATMP development process. An additional listening session was held December 9, 2021, with Kūpuna groups and other consulting parties and individuals.

The NEPA study area for cultural resources corresponds with the Area of Potential Effects (APE) identified as part of the Section 106 process and encompasses the potential effects of all alternatives under consideration. An APE as defined at 36 CFR 800.16(d) is the geographic area or areas within which the undertaking may directly or indirectly cause alterations in the character or use of any historic properties, if any such properties exist. The proposed undertaking does not require land acquisition, construction, or ground disturbance, and the agencies anticipate no physical effects to historic properties. The APE therefore includes areas where any historic property present could be affected by the potential introduction of visual or audible elements that could diminish the integrity of any identified significant historic properties. The APE has been defined to include the ATMP planning area as well as areas outside of the ATMP planning area between the Nu'u and Ka'āpahu areas of the Park, bounded to the south by the southern limits of the ½ mile buffer around the Kaupō Denman parcel, and the overland area between the Ka'āpahu and Kīpahulu areas of the Park. The APE extends vertically from ground level to encompass areas where cultural resources may be affected by operators flying above the ATMP planning area (i.e., more than 5,000 ft. AGL). As the ground level varies throughout the Park, the vertical limits extend to just above 5,000 ft. MSL at the

coastline to no more than 10,000 ft. MSL near the summit. Refer to Figure 13 for a depiction of the APE.

The agencies consulted with the Hawai'i SHPD, NHOs, Kūpuna, operators, and other consulting parties prior to finalizing the APE. The agencies held a Section 106 consultation meeting with all consulting parties on November 10, 2022, to inform them of the proposed APE and to seek comment on identification of historic properties within the APE and the justification of the boundaries of the APE. Consulting parties provided comments during the meeting as well as in emails and written letters following the meeting. The agencies took into consideration the input from the consulting parties and subsequently expanded the boundaries of the APE to incorporate comments received by the consulting parties regarding additional areas potentially affected by the undertaking. The FAA sent a letter dated December 23, 2022, to the SHPD requesting their input on the APE. SHPD responded with no objection in a letter dated January 26, 2023. The agencies shared the revised APE with the other consulting parties and requested input on any additional historic properties in a letter dated February 10, 2023.

3.4.1 Affected Environment

The affected environment includes prehistoric or historic districts, sites, buildings, structures, and/or objects, as well as TCPs (inclusive of ethnographic resources and sacred sites) and cultural landscapes that have been previously documented in the APE or identified through consultation. Under existing conditions, based on flight tracking data and reported routes, the heaviest concentrations of commercial air tours fly over the southern half of the Park, with many circling or focusing on views of the Haleakalā Summit and Crater area (see Figure 13). Throughout the Section 106 process, the agencies requested consulting party input to help identify historic properties within the APE. The agencies provided an initial historic property identification list to consulting parties in a March 2022 letter accompanying the public scoping newsletter and at the November 10, 2022, Section 106 consulting party meeting and requested further input on the identification of historic properties within the proposed APE. Consulting parties provided comments during the meeting as well as in emails and written letters following the meeting regarding the identification of historic properties, and the agencies took into consideration the input from the consulting parties in identifying additional historic properties. The agencies again requested input on historic property identification in the revised APE in the letter dated February 10, 2023. A final historic properties list was provided in the March 27, 2023 finding of effects letter.

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

Ethnographic resources are resources that are associated with the customs, habits, or behaviors of a cultural group, including those that possess religious and cultural significance. A sacred site, as defined in EO 13007, is any specific location that is identified to be an

appropriately authoritative representative of an indigenous religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an indigenous religion. A TCP is a property significant due to its association with past and continuous cultural practices or beliefs of a living community that are rooted in that community's history and are important in maintaining the continuing cultural identity of the community. TCPs possess traditional cultural significance derived from the role the property plays in a community's historically rooted beliefs, customs and practices (NPS, 1992). TCPs are treated as historic properties for the purpose of evaluating effects under Section 106 and NEPA (FAA, 2020).

Consultation with NHOs and kūpuna (elders) associated with the Park has been ongoing since 2004. The kūpuna have reiterated the cultural importance of the entire Park and stated that many sacred and cultural places cannot be disclosed. Based on consultation, as well as a 2008 Ethnographic Study of the Cultural Impacts of Commercial Air Tours over Haleakalā National Park conducted by Prasad and Tomonari-Tuggle (2008), Native Hawaiians view Haleakalā in its entirety as an important cultural place, a wahi pana or place of mo'olelo (stories), traditions, and legends. Based on oral and written traditions, as well as current cultural beliefs, Haleakalā is a sacred mountain. Native Hawaiians use Haleakalā for performance of ceremonies and other traditional practices including makahiki ceremonies and hula. Haleakalā is associated with birth and burial practices in the Native Hawaiian culture. Many traditional Hawaiian practices require that the sounds of nature may be heard and not interrupted by other human noises.

The Haleakalā Summit, including Kīpahulu Valley and Kaupō Gap, is eligible for the National Register as a TCP for its association with the cultural landscape of Maui and because it has known uses, oral history, mele (song), and legends, is a source for both traditional materials and sacred uses, and is considered a place exhibiting spiritual power.

The sacred essence of Haleakalā includes the sky above. Traditional cultural practices within the Haleakalā Summit TCP include ritual ceremonies, spiritual training, practices related to birth and burial, and farming using traditional practices (Prasad and Tomonari-Tuggle, 2008). The oral history, mele, and legends associated with the Haleakalā Summit present a cluster of stories suggesting the significance of Haleakalā as a TCP. Some believe that the Haleakalā Summit possesses therapeutic qualities. It is traditionally believed that gods dwelled at the Haleakalā Summit (CKM Cultural Resources, 2006). Craters, summits, and undisturbed forest areas are of importance to Native Hawaiian culture due to their association with Hawaiian deities and demi-gods including Maui, Pele, Kamohoali'i, Lilinoe, and Kāne/Kana (Prasad and Tomonari-Tuggle, 2008). Native Hawaiians still travel to the Haleakalā Summit to engage in cultural and religious practices. The Haleakalā Summit has also been a site for sourcing of traditional materials, including gathering of plants for medicinal, practical, and spiritual purposes; hunting birds for food and feathers; and basalt collection for the making of stone tools (Cultural Surveys Hawai'i, 2007; Prasad and Tomonari-Tuggle, 2008). The Haleakalā

Summit was also used traditionally for astronomical observations; travel (Haleakalā was traditionally utilized as a travel route through East Maui, particularly through the Kaupō and Koʻolau Gaps); and warfare (Prasad and Tomonari-Tuggle, 2008).

Kīpahulu is also a place rich in traditional Native Hawaiian moʻolelo (story). The goddess Kapo, the aliʻi (chief) Wahioloa, and famous battles are associated with Kīpahulu. Traditional practices in Kīpahulu include Native Hawaiian traditional farming, fishing, ceremony, and use of pre-Contact trails. The Kapahu Living Farm, a contributing feature of the Kīpahulu Historic District (see below) is an ancient loʻi (irrigated terrace complex) that is actively farmed in kalo (taro, *Colocasia esculenta*) and other Polynesian introduced crops, and used as an educational and cultural site by the East Maui community.

Consultation and the Ethnographic Study have also determined that the natural resources within the APE are also considered to be cultural resources by the Native Hawaiians, with particular emphasis on the Native Hawaiian birds within the APE (Prasad and Tomonari Tuggle, 2008). Many of these natural resources are contributing features to the cultural resources detailed throughout this section. A study completed by Maly & Maly (2004) states the following:

“We find in native traditions and beliefs, that Hawaiians shared spiritual and familial relationships with the natural resources around them. Each aspect of nature from the stars in the heavens, to the winds, clouds, rains, growth of the forests and life therein, and everything on the land and in the ocean, was believed to be alive. Indeed, every form of nature was a body-form of some god or lesser deity. In the Hawaiian mind, care for each aspect of nature, the kino lau (myriad body-forms) of the elder life forms, was a way of life. This concept is still expressed by Hawaiian kūpuna (elders) through the present day, and passed on in many native families. Also, in this cultural context, anything which damages the native nature of the land, forests, ocean, and kino lau therein, damages the integrity of the whole. Thus caring for, and protecting the land and ocean resources, is important. In the traditional context above referenced, we find that the land, the native plants and life-forms, and the intangible components therein, are a part of a sacred Hawaiian landscape. Thus, the landscape itself is a highly valued cultural property.”

Archeological Resources

Archeological resources are the physical evidence of past human activity, including evidence of the effects of that activity on the environment. Archeological features and sites within the APE include shrines, encampment remains, stone structures associated with travel, stone walls and enclosures, terraces associated with wet and dry agriculture, trails, burials, remains of lithic activity, ceremonial sites, coastal settlements, pictographs, and petroglyphs. These resources encompass a range of pre-Contact and post-Contact Native Hawaiian and Euro-American sites

(Tomonari-Tuggle and Tuggle, 2007). All of the National Register-eligible sites detailed below retain integrity of location, design, setting, materials workmanship, feeling, and association.

The National Register-listed Crater Historic District, which encompasses much of the northern part of the Park, consists of 56 pre-Contact archaeological sites, including temples and burials, and is significant for its potential to yield information important to the pre-Contact history of Hawai'i (nominated to the National Register in 1974). Rosendahl (1978), Glidden (1998) and Carson and Mintmier (2007) later completed more detailed inventories of sites within the Crater Historic District.

Archeological resources in the APE document the Native Hawaiian ka noho 'ana (way of life in traditional land divisions, or ahupua'a, extending from the uplands to the sea). The National Register-eligible Kīpahulu Historic District, for example, protects multiple intact ahupua'a and is significant for its association with Native Hawaiian culture, tradition, and settlement.

The entire Kīpahulu moku (district), which contains ahupua'a (smaller land divisions) within it, was settled sometime between the twelfth and fourteenth centuries C.E. and contains over 300 archeological features, including agricultural features, marine technology associated with fishing, and evidence of coastal villages including rock walls, pā hale (foundation of living quarters), ko'a (fishing shrines), and heiau (temples). Further inland, the Kīpahulu moku contains remains of lo'i kalo (irrigated taro terraces), animal enclosures, and house sites. The Kīpahulu Historic District was nominated for listing in the National Register in 1976. Since that time, individual sites within the district have been determined to be contributing to the historic district and individually eligible for listing in the National Register in 2002, 2008, 2013, and 2022 (Dye et al., 2002; Carson and Reeve, 2008; Tomonari-Tuggle, 2013; Hodara Nelson et al., 2022). The Kīpahulu Historic District includes the Kapahu Living Farm, a complex of both wetland and dryland terraces used for farming kalo (taro), and used as an educational and cultural site by the East Maui community. The Kapahu Farm is still actively farmed today by the Kīpahulu 'Ohana through a Cooperative Agreement with the NPS.

Like the Kīpahulu Historic District, the National Register-eligible Puhilele Archeological Sites are located near the ocean at the southern edge of the Park and consist of terraces, platforms, alignments, and mounds used for agricultural, residential, ceremonial as well as temporary shelter for fishing. The Puhilele Archeological Sites represent pre-Contact/early historical residential compounds and dryland agricultural complexes and are eligible for listing in the National Register for their potential to yield information regarding the island's prehistory. One site is eligible because it embodies the distinctive characteristics of a type, period, or method of construction (Carson and Reeve, 2008).

The Ka'āpahu Archeological Sites consist of archeological sites recorded within Kālepa, 'Alelele, Lelekēa, and Kukui'ula Valleys, including traditional Native Hawaiian dryland agriculture terraces and clearings, larger irrigated pondfield complexes for the production of kalo (taro),

and habitation and ceremonial sites. Nineteenth century enclosures representing mixed residences and agriculture, including animal husbandry, are also present. All of the sites are recommended as significant for their potential to yield information. The complex of 18 archeological sites at 1,000 ft. elevation in dryland Naholoku Ahupua'a dates as early as the fifteenth to seventeenth centuries and is significant for its potential to yield information regarding Hawaiian prehistory and history, with at least three sites eligible for their architecture/design. These latter sites represent structures that embody the characteristics of pre-Contact and late pre-Contact/early historical residential compounds and smaller agricultural heiau (Hodara Nelson and Steffen, In prep.).

Similarly, the Nu'u Archeological Sites are eligible for listing in the National Register for their potential to yield information, with 19 sites also eligible for their design. These latter sites represent structures that embody the characteristics of pre-Contact and late pre-Contact/early historical residential compounds, dryland agricultural complexes, smaller agricultural heiau, petroglyph styles, a lithic tool manufacturing locale, and the remains of a nineteenth-century church complex (Tomonari-Tuggle et al., 2015). The Nu'u sites consist of pocket terraces, terraces, enclosures, cleared areas, modified outcrops, and mounds that represent an extensive traditional dryland agricultural complex for primarily sweet potato production, temporary shelters associated with agricultural activity, multiple permanent residential complexes, most of which date to the nineteenth century, specialized features/use areas for ceremony and lithic production.

The following sites are located outside the Park boundary, but within the APE. The information was obtained from the Hawai'i SHPD.

The unevaluated Nu'u-Waiu Complex, located just east of the aforementioned Nu'u Archeological Sites, consists of several archaeological sites, including enclosures, terraces and platforms, pits, pavements, house lots, walls, ko'a, trails, cairn, petroglyphs, a fishpond, rockshelters, and graves.

The APE also contains the unevaluated Nu'u Petroglyph Complex and the Nu'u Pictograph Complex, which cover 117 meters and consist of 157 petroglyphs and 40 pictographs of human forms, animal forms, and other images. The unevaluated Pictograph and Rock Shelter site consists of a single human pictograph figure painted with alaea (Hawaiian red salt) on a boulder near a rock shelter (Hawai'i SHPD).

Additional individual archaeological sites in the APE include various individually eligible and potentially eligible prehistoric and historic structures, including several heiau: the Hāwelewele Complex (Kailiili Heiau), Keakalauae Heiau, Lonoaea Heiau, Lono'o'ai'a Heiau (Hale O Kane Heiau), Naku'ula Complex, and Pu'umaka'a Heiau. Individual sites also consist of various wall sites that served different purposes, such as a C-Shaped Wall (SHPD ID 50-50-16-03979) located east of Pāhihi Gulch; Wall (SHPD ID 50-50-16-08663), which was built along the side of a steep

stream channel; Wall (SHPD ID 50-50-16-08664), which may have been constructed for drainage during the historic period; Wall (SHPD ID 50-50-16-03978), which likely served as a windbreak for a structure located in its lee; Wall (SHPD ID 50-50-17-08883), which was likely constructed to mark the boundaries of a neighboring parcel; and Walls (SHPD ID 50-50-16-01132), which may be the remains of a house site. Other individual sites include the remains of large Enclosures (SHPD ID 50-50-16-03980); a Mound (SHPD ID 50-50-16-08665) constructed of stacked stones that may have served as a historic cattle ramp; and Terraces (SHPD ID 50-50-16-01133) on the west side of the Kalepa Stream, which consists of two rectangular enclosures (Hawai'i SHPD).

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

A cultural landscape is a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided. Cultural landscapes are geographic areas associated with specific cultures or historical events, and they help illustrate how humans have adapted to and altered their surroundings. The NPS recognizes four cultural landscape categories: historic designed landscapes, historic vernacular landscapes, historic sites, and ethnographic landscapes. The Park contains cultural landscapes that are significant for their association with early park master planning during the 1930s including the work of the Civilian Conservation Corps (CCC), World War II development in the Park, and the post-War Mission 66 era of NPS park planning. The five designated cultural landscapes of the Park are the CCC Haleakalā Crater Trails Historic District Cultural Landscape, the Haleakalā Headquarters Historic District Cultural Landscape, the Haleakalā Highway Historic District Cultural Landscape, the Hosmer Campground and Picnic Area Cultural Landscape, and the Pu'unianiau Historic Site Cultural Landscape. Four of the cultural landscapes are historic designed landscapes; the Pu'unianiau Cultural Landscape is a historic site. All five cultural landscapes retain integrity to convey their historical significance.

The CCC Haleakalā Crater Trails Historic District Cultural Landscape was designed by NPS landscape architects and constructed by CCC enrollees between 1930 and 1941. It is significant for its association with early Park planning and for its embodiment of NPS Rustic Style architecture. It is also a representation of development completed through the CCC program, which ran from 1933 to 1942 and provided jobs for young men after the Great Depression. Several historic buildings and structures within the Park are significant for their architectural design. Resources contributing to the CCC Haleakalā Crater Trails Historic District Cultural Landscape embody the distinctive characteristics of NPS Rustic Style architecture, which was a common style of architecture used by the NPS in the early- to mid-twentieth century. The Kaupō Gap Trail, which extends north-to-south in the Kaupō Gap, is a contributing feature of the CCC Haleakalā Crater Trails Historic District. The trail may also be significant for its

association with Native Hawaiian culture, traditions, and sacred uses, but this aspect of its significance has not yet been evaluated.

Similarly, the Haleakalā Headquarters Historic District Cultural Landscape and Haleakalā Highway Historic District Cultural Landscape are both significant for their association with early Park planning and as examples of Mission 66-era development. Several of the Park's historic structures are significant for their association with early Park planning and for their association with the CCC. The highway that runs through the Haleakalā Highway Historic District Cultural Landscape was designed by the Bureau of Public Roads with input from the Park and NPS landscape architects.

The Hosmer Campground and Picnic Area Cultural Landscape is located just below the 7,000 ft. elevation in the Haleakalā Summit area of the Park and is the only drive-in campground in the area. Like the Haleakalā Headquarters Historic District Cultural Landscape and Haleakalā Highway Historic District Cultural Landscape, it is significant as an example of a Mission 66-era development. It is also significant for its experimental forestry plot that was planted by Ralph S. Hosmer in the early-twentieth century. The Hosmer Campground and Picnic Area Cultural Landscape and Haleakalā Highway Historic District Cultural Landscape are both significant as examples of Mission 66 architecture in the Park. Mission 66 was an NPS program that was intended to expand visitor services and modernize Park facilities in response to growing tourism following the end of World War II.

Additionally, the Pu'unianiau Historic Site Cultural Landscape, located near the northwest corner of the Park, is significant as a base camp used by the U.S. Army for the administration of the Red Hill Aircraft Warning Service Station at the Haleakalā Summit between 1941 and 1946.

The Park retains several prehistoric and historic structures that are listed in, or eligible for listing in, the National Register, including pre-Contact Native Hawaiian temples and house sites, and historic trails, roads, bridges, campgrounds, and historic districts. Many of these historic structures are contributing features to the cultural landscapes and districts detailed in this section.

The Hāna Belt Road, which runs through the southern areas of the Park but is under the jurisdiction of the County of Maui, is associated with the early development of East Maui in the early- to mid-twentieth century. The Hāna Belt Road achieves state and local significance in the areas of engineering, transportation, commerce, and social history. The construction of bridges and a road to Hāna between 1900 and 1947 remain along the route as an example of bridge engineering and construction in Hawai'i during the early twentieth century. The completion of an automobile route to Hāna in 1926 ended the community's isolation from the rest of Maui. The road opened East Maui to settlement, agricultural enterprises and tourism. The Hāna Belt Road is the best remaining intact example of the old belt road system in Hawai'i.

Cultural Resources List

There are 32 identified cultural resources within the APE, listed in Table 8 and depicted in Figure 13. The locations of some archaeological sites are considered sensitive information and are therefore not included in Figure 13. Descriptions of each can be found in Appendix G, *Cultural Resources Consultation and Summary*.

Table 8. National Register Listed, Eligible, and Potentially Eligible Properties within the APE and Section 4(f) Resources.

Property Name	Property Type	Eligibility Status
Civilian Conservation Corps (CCC) Haleakalā Crater Trails Historic District Cultural Landscape	Cultural Landscape	Eligible
Crater Historic District	District	Listed
C-Shaped Wall (SHPD ID 50-50-16-03979)	Site, Structure	Eligible
Enclosures (SHPD ID 50-50-16-03980)	Site, Structure	Eligible
Haleakalā Headquarters Historic District Cultural Landscape	Cultural Landscape	Eligible
Haleakalā Highway Historic District Cultural Landscape	Cultural Landscape	Eligible
Haleakalā Summit Traditional Cultural Property	TCP	Eligible
Hāna Belt Road	District	Listed
Hāwelewele Complex (Kailili Heiau)	Site, Structure	Unevaluated ²¹
Hosmer Campground and Picnic Area Cultural Landscape	Cultural Landscape	Eligible
Ka'āpahu Archeological Sites	Sites	Eligible
Keakalauae Heiau	Site, Structure	Unevaluated
Kīpahulu Historic District	District	Eligible
Lonoaea Heiau	Site, Structure	Unevaluated
Lono'ō'ai'a Heiau (Hale O Kane Heiau)	Site, Structure	Unevaluated
Mound (SHPD ID 50-50-16-08665)	Site, Structure	Eligible
Naholoku Archeological Sites	Sites	Eligible
Naku'ula Complex	Site, Structure	Unevaluated
Nu'u Archeological Sites	Sites	Eligible
Nu'u Petroglyph Complex	Site	Unevaluated
Nu'u Pictograph Complex	Site	Unevaluated
Nu'u-Waiu Complex, Hana	Site, Structure	Unevaluated
Pictograph and Rock Shelter (Marciel's Pictograph)	Site, Structure	Unevaluated
Puhilele Archeological Sites	Sites	Eligible
Pu'umaka'a Heiau	Site, Structure	Unevaluated
Pu'unianiau Historic Site Cultural Landscape	Cultural Landscape	Eligible
Terraces (SHPD ID 50-50-16-01133)	Site, Structure	Unevaluated

²¹ The FAA is treating identified but unevaluated properties as eligible for the National Register.

Property Name	Property Type	Eligibility Status
Wall (SHPD ID 50-50-16-08663)	Site, Structure	Eligible
Wall (SHPD ID 50-50-16-08664)	Site, Structure	Eligible
Wall (SHPD ID 50-50-16-03978)	Site, Structure	Eligible
Wall (SHPD ID 50-50-17-08883)	Site, Structure	Unevaluated
Walls (SHPD ID 50-50-16-01132)	Site, Structure	Unevaluated

Sources: NPS Cultural Resource Managers and Hawai'i State Historic Preservation Division staff.

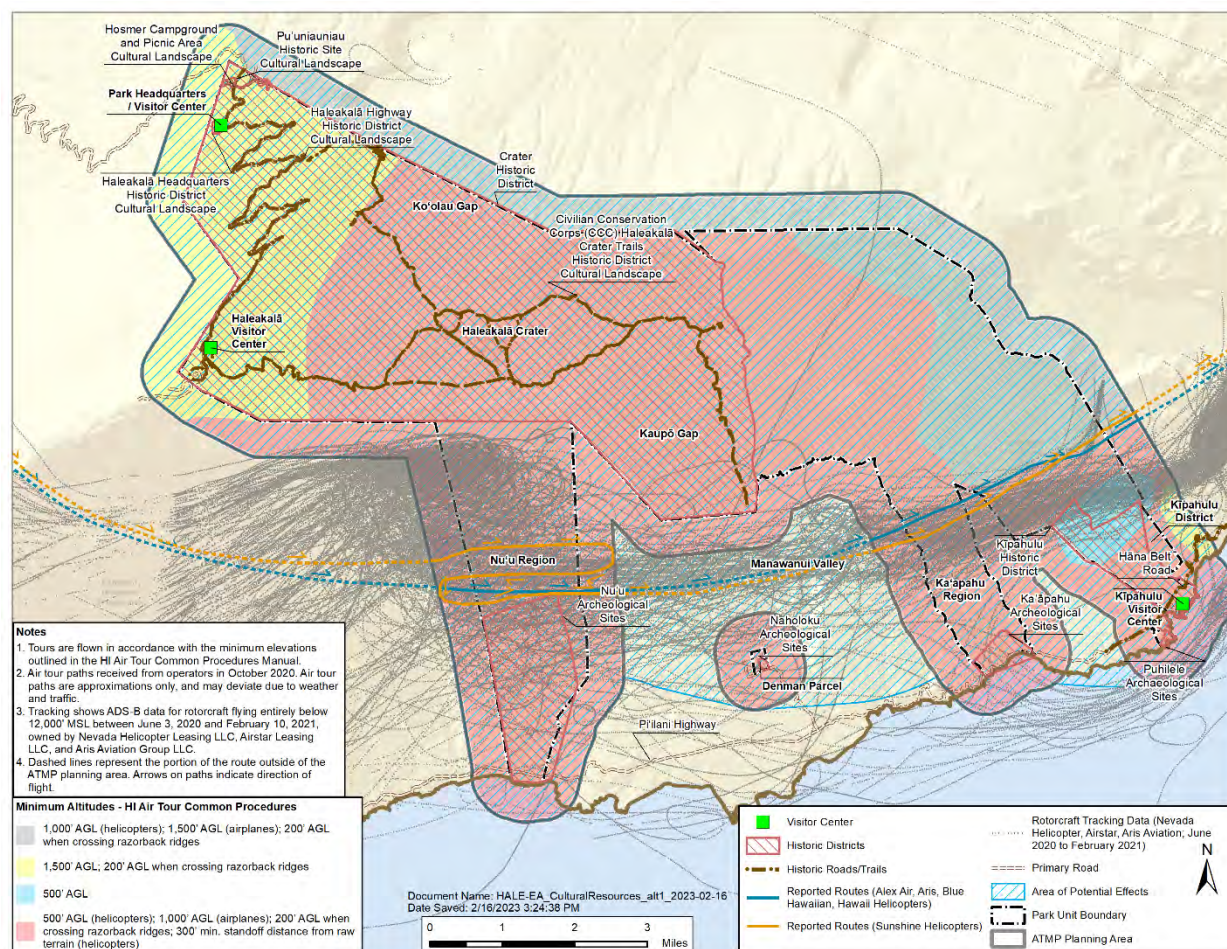


Figure 13. Affected Environment for Cultural Resources

3.4.2 Environmental Consequences

Cultural resources within the APE include historic, architectural, archeological and cultural resources, inclusive of ethnographic resources, TCPs, sacred sites, cultural landscapes, historic districts, and prehistoric and historic buildings and structures. Adverse impacts to these resources would occur if the alternative would alter the characteristics of a cultural resource that contribute to its significance in a manner that diminishes the integrity of the resource's

location, design, setting, materials, workmanship, feeling, or association. Commercial air tours, by their nature, have the potential to impact resources for which feeling and setting are contributing elements.

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

The agencies requested and received consulting party input on the potential effects of the alternatives on historic properties throughout the Section 106 process, including at the October 28, 2021, informational webinar, December 9, 2021, listening session, and the November 10, 2022, Section 106 Consulting Party meeting. Consulting parties provided comments during the meetings as well as in emails and written letters following the meetings, and the agencies took into consideration the input from the consulting parties in evaluating the effects of the preferred alternative on historic properties.

Alternative 1: No Action

Under the No Action Alternative, cultural resources within the APE would continue to be impacted by air tours, as noise and visual effects would impact the feeling and setting of those resources. As described in Section 2.2.1, Air Tours at or above Existing Levels, noise and visual impacts from existing air tours impact existing Native Hawaiian ethnographic resources, sacred sites and TCPs. Native Hawaiians have consistently noted that the persistent air tours over the Park unreasonably interfere with the silence needed to perform ceremonies conducted by Native Hawaiian practitioners at these sacred sites, some of which rely on hearing natural sounds. Under the No Action Alternative, these impacts to ethnographic resources would continue to occur. Reporting data from 2017-2019 indicates that on average, air tour aircraft fly over the APE approximately 14 times per day, and the maximum number of tours reported over the Park in one day during that period was 50 tours, creating the potential for multiple audible intrusions of Native Hawaiian ceremonial practices when the noise from those tours is audible. Based on the *Noise Technical Analysis* (see Appendix F, Figure 10), the entire Haleakalā Summit TCP may experience sound above 35 dBA, with the areas along the most heavily utilized flight paths (where the crater is visible) experiencing between 75 and 90 minutes above 35 dBA. The 12-hour equivalent sound level within the TCP would range from 9.5 dBA at Hosmer Point (modeled location point #1; the far northeast corner of the Park) to 45.6 dBA at approximately the 7,500 ft elevation of Nu'u (modeled location point #40).

Kūpuna, cultural practitioners, Native Hawaiians and kama'āina (the present residents in a place; a citizen; especially one of long standing) have repeatedly noted that overflights from

commercial air tours severely degrade the sacredness of Haleakalā and the sky above, detract from the sanctity of the mountain, and interrupt traditional practices, including fishing. Under the No Action Alternative, flights over significant features such as the Haleakalā Summit, including Kīpahulu Valley and Kaupō Gap, would continue to occur, resulting in visual and audible intrusions that detract from the sanctity of the Haleakalā Summit TCP.

Air tours within the APE may also impact the Park's historical, architectural, and archeological resources, including cultural landscapes, and prehistoric and historic structures when air tour noise and visual effects detract from the feeling and setting of those resources. As noted in Appendix G, *Cultural Resources Consultation and Summary*, the cultural resources that experience the most air tours flying directly over or near them under existing conditions are the Crater Historic District, Kīpahulu Historic District, Puhilele Archeological Sites, Hanā Belt Road, Nu'u Archeological Sites, Ka'āpahu Archeological Sites, Naholoku Archeological Sites, C-Shaped Wall (SHPD ID 50-50-16-03979), Enclosures (SHPD ID 50-50-16-03980), Hāwelewele Complex (Kailili Heiau), Keakalauae Heiau, Lonoaea Heiau, Lono'o'ai'a Heiau (Hale O Kane Heiau), Mound (SHPD ID 50-50-16-08665), Naku'ula Complex, Nu'u Petroglyph Complex, Nu'u Pictograph Complex, Nu'u-Waiu Complex, Hana, Pictograph and Rock Shelter (Marciel's Pictograph), Pu'umaka'a Heiau, Terraces (SHPD ID 50-50-16-01133), Wall (SHPD ID 50-50-16-08663), Wall (SHPD ID 50-50-16-08664), Wall (SHPD ID 50-50-16-03978), Wall (SHPD ID 50-50-17-08883), Walls (SHPD ID 50-50-16-01132), and the Haleakalā Summit TCP. Based on the significant characteristics that make them eligible for the National Register, all of these resources currently have their feeling or setting impacted by the noise and visual impacts of air tours. These effects would continue to occur under the No Action Alternative.

Alternative 2

Under Alternative 2, commercial air tour aircraft would not fly within the ATMP planning area. The elimination of commercial air tours from the ATMP planning area would reduce the noise and visual intrusions from impacting the feeling and setting of cultural resources within the APE and result in beneficial impacts, including ethnographic resources and sacred sites, TCPs, archeological resources, cultural landscapes, historic districts, and prehistoric and historic buildings and structures compared to current conditions.

Alternative 3

The authorized flight path under Alternative 3 would not fly directly over many of the Park's sacred sites and ethnographic resources, including many significant features of the Haleakalā Summit TCP, and the Park's National Register listed and eligible resources, including the Crater Historic District, Kīpahulu Historic District, Hanā Belt Road, Nu'u Archeological Sites, Ka'āpahu Archeological Sites, and Naholoku Archeological Sites (refer to Figure 14). Alternative 3 would overall reduce noise and visual impacts that could detract from the feeling and setting of these resources. Some points in the Kīpahulu Historic District, Puhilele Archeological Sites, and

Ka'āpahu Archeological Sites and near the Keakalauae Heiau, Lonoaea Heiau, Lono'o'ai'a Heiau (Hale O Kane Heiau), Mound (SHPD ID 50-50-16-08665), Pictograph and Rock Shelter (Marciel's Pictograph), Pu'umaka'a Heiau, Terraces (SHPD ID 50-50-16-01133), Wall (SHPD ID 50-50-16-08663), Wall (SHPD ID 50-50-16-08664), Wall (SHPD ID 50-50-17-08883), and Walls (SHPD ID 50-50-16-01132) may experience a slight increase in noise intensity from existing conditions as more flights may fly this path than currently fly over those areas. However, as further explained below, not all of these resources have settings where quiet or natural sounds are significant and the duration flights may be heard would be reduced due to the higher minimum altitudes and other restrictions under Alternative 3.

Under Alternative 3, the *Noise Technical Analysis* (Appendix F, Figure 13) indicates that on days when air tours occur, portions of the APE would experience noise above 35 dBA for up to 45 minutes a day, with most portions of the APE experiencing noise above 35 dBA for less than 15 minutes a day. Compared to the No Action Alternative, the time above 35 dBA under Alternative 3 would be reduced by up to 61 minutes (see modeled location point #40, Nu'u 7,500 ft. elevation). Only at one point, #24 (Waimoku Falls), would time above 35 dBA be greater under Alternative 3 (2 minutes). The noise footprint as measured in time above 35 dBA for Alternative 3 potentially affects 42% less of the Park.

The 12-hour equivalent sound level ($L_{Aeq, 12 \text{ hr}}$) would be between 35 and 40 dBA for portions of the APE along the proposed flight path of Alternative 3, with small areas increasing above 40 dBA but below 45 dBA (Appendix F, Figure 11). As a whole, the noise footprint for Alternative 3 as measured by $L_{Aeq, 12 \text{ hr}}$ would impact 16% less of the Park. Compared to the No Action Alternative, the average $L_{Aeq, 12 \text{ hr}}$ under Alternative 3 would be lower for the interior regions of the Park but may be higher in coastal regions. Noise at a point (#25) near Ka'āpahu Archeological Sites, Keakalauae Heiau, Mound (SHPD ID 50-50-16-08665), Terraces (SHPD ID 50-50-16-01133), Wall (SHPD ID 50-50-16-08663), Wall (SHPD ID 50-50-16-08664), and Walls (SHPD ID 50-50-16-01132) would increase 2.5 dBA in $L_{Aeq, 12 \text{ hr}}$, and a point (#26) near the Lonoaea Heiau, Lono'o'ai'a Heiau (Hale O Kane Heiau), Pictograph and Rock Shelter (Marciel's Pictograph), and Pu'umaka'a Heiau would slightly increase 0.2 dBA in $L_{Aeq, 12 \text{ hr}}$.

The 12-hour equivalent sound level ($L_{Aeq, 12 \text{ hr}}$) at a point (#22) near Puhilele Archaeological Sites and Wall (SHPD ID 50-50-17-08883) would increase 7.4 dBA, and points closest to the proposed flight path within the Kīpahulu Historic District would increase as much as 6.4 dBA (#37). This is an average across a 12-hour time period and is not necessarily indicative of noise levels at any specific point in time. Point #22 would experience a decrease in time above 35 dBA by 3.8 minutes (from 35.8 to 32 minutes) but would have 6.4 additional minutes of noise above 52 dBA (from 1.8 to 8.2 minutes). Point #37 would experience a decrease in time above 35 dBA by 4.9 minutes (from 35.8 to 39 minutes) but would have 7 additional minutes of noise above 52 dBA (from 2.2 to 9.3 minutes). The increases in minutes above 52 dBA would be minimal, and they would be spread across the operating hours depending on when the flights occur. The

maximum sound level at point #22 would increase by 6.3 dBA (from 57.3 dBA to 63.6 dBA L_{Amax}); the maximum sound level at point #37 would increase by 4.3 dBA (from 60.7 dBA to 65 dBA L_{Amax}). These levels are similar to the sound level of a large business office. Increases in noise of ± 5 dB would be obvious to an observer but are considered less than twice as loud as current conditions.

Of the historic properties in the vicinity of points #22 and #37, the Haleakalā TCP, Puhilele Archaeological Sites, and Kīpahulu Historic District have a quiet setting and/or natural sounds as significant characteristics. While these locations would experience an increase in noise intensity, they are near the coast where the median natural ambient sound level is between 45 and 50 dBA and the time the air tours are audible would decrease by over 100 minutes compared to current conditions (from 187.1 to 85.5 minutes at point #22 and 183.7 to 79.9 minutes at point #37). Therefore, overall impacts would be reduced in duration.

Because noise is modeled using conservative assumptions and implementing the ATMP under Alternative 3 would result in limiting the number of flights to half of the three-year average of flights flown from 2017-2019 using a single route and the same aircraft to fly at higher altitudes, noise impacts are expected to overall be reduced under Alternative 3. Alternative 3 would not introduce new audible elements into the APE because air tours are currently occurring in this area; the undertaking limits the number of annual (2,412) and daily (16) flights that could occur within the ATMP planning area, which would reduce the number of air tour operations within the ATMP planning area and corresponding noise effects to cultural resources within the APE. These annual and daily limits also reduce or maintain the likelihood that an air tour would interrupt Native Hawaiian traditional practices such as ceremonies, fishing, or farming, as well as the sanctity of the Haleakalā Crater as compared to existing conditions. Furthermore, Alternative 3 would impose time-of-day restrictions and would limit flights to certain days of the week. Because Alternative 3 would result in minimal changes to noise levels on historic properties compared to current conditions and would decrease the time that air tours are audible at historic properties in the APE, the undertaking would not diminish the integrity of any historic property's significant historic features.

Historic properties may also see an increase in flights in the coastal area due to the shifting of flights; however, overall flights will decrease, altitudes will increase, and visual impacts are anticipated to decrease. Noise and visual impacts of existing air tour operations are already present in the APE. Although the proposed flight path will shift the bulk of air tour operations to the south and will expose some historic properties to increased noise and visual impacts, any increases in noise and visual impacts will be limited due to the increased minimum altitudes and reduction in the overall number of air tours in the ATMP planning area. Furthermore, air tours are transitory in nature, and any noise and visual impacts to historic properties will be temporary. Therefore, Alternative 3 will not result in any adverse effects to historic properties in the APE.

The agencies continued consultation under Section 106 with an evaluation of the effects of Alternative 3, as the preferred alternative, on historic properties. A letter was sent on March 27, 2023, to the Hawai'i SHPD and all consulting parties outlining the Section 106 process, including a description of the undertaking, delineation and justification of the APE, identification of historic properties and an evaluation and proposed finding of effects. The FAA proposed a finding of no adverse effect to historic properties (36 CFR § 800.5(b)) for the ATMP undertaking. See Appendix G, *Cultural Resources Consultation and Summary*, for more information.

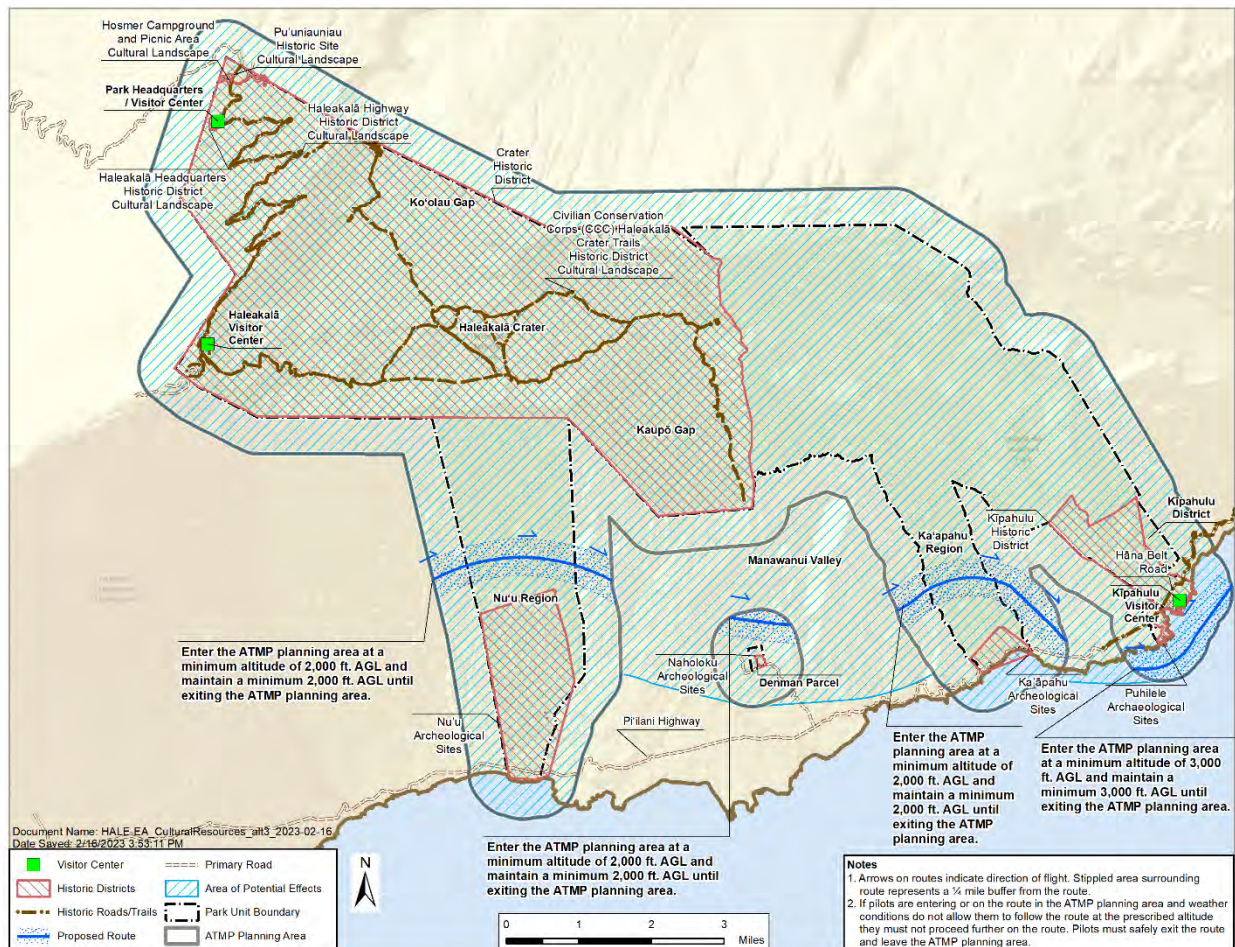


Figure 14. Cultural Resources Environmental Consequences for Alternative 3

Indirect and Cumulative Effects

Indirect Effects: Indirect effects to cultural resources could occur as a result of noise and visual effects caused by air tours flying outside of the ATMP planning area, including those over the ATMP planning area at or above 5,000 ft. AGL. As noted in Section 3.1.2, Indirect and Cumulative Effects for Noise and Noise-Compatible Land Use, indirect noise impacts would have the potential to occur under Alternatives 2 and 3 as these alternatives could result in the

displacement of air tours outside the ATMP planning area. The No Action Alternative is not expected to result in indirect effects to cultural resources within the APE. It is difficult to predict with specificity if, where, and to what extent any displaced air tours would result in impacts in different and/or new areas. The preciseness of routes and altitudes for air tours flown on displaced routes are generally subject to Visual Flight Rules and may vary greatly. Under Alternatives 2 and 3, it is reasonably foreseeable that operators would continue to fly to points of interest on the island outside of the ATMP planning area where they already fly or fly routes over or around the Park similar to existing flight paths but outside of the ATMP planning area, which are areas encompassed by the APE. Air tour operators are likely to continue to fly some air tours along the perimeter of the ATMP planning area since Haleakalā Crater and other Park features would be visible from some areas outside the ATMP planning area. Therefore, under Alternatives 2 and 3, some indirect impacts to cultural resources that are in the areas within and surrounding the Crater Historic District and Haleakalā Summit TCP could occur if flights were displaced to outside the APE. Under Alternative 3, it is also reasonably foreseeable that operators would fly a direct path between the route segments in the ATMP planning area authorized under Alternative 3.

If operators choose to fly above the ATMP planning area, they would likely keep to an altitude close to but just above 5,000 ft. AGL, as higher flights would provide limited value to a sightseeing operation. Flights close to the crater at or above 5,000 ft. AGL are unlikely due to the elevation and safety requirements for unpressurized aircraft. Supplemental oxygen use is required in unpressurized aircraft flying over 10,000 ft. MSL for more than 30 minutes (14 CFR § 135.89, § 135.157); therefore, it is unlikely air tours would fly higher for extended periods of time. Flights in this area and at other areas of lower elevation may continue along similar paths to existing conditions but at or above 5,000 ft. AGL. Therefore, Alternatives 2 and 3 could result in some noise and visual effects to cultural resources at the high elevation points of the Park to the north with views towards the ocean or in the southern areas of the APE where flights are more likely to occur as the elevations are lower. However, any flights above or along the perimeter of the ATMP planning area would likely be reduced from the existing number of flights due to the ATMP restrictions and would therefore result in a reduction of noise and visual impacts to the Crater Historic District and Haleakalā Summit TCP. For flights at or above 5,000 ft. AGL, the increase in altitude would also likely decrease impacts on ground level resources as compared to current conditions.

Since Alternative 2 prohibits flights within the APE (whereas Alternative 3 limits them to no more than 2,412 flights per year in addition to other operating parameters as specified in Section 2.6) Alternative 2 could result in more indirect impacts to cultural resources within the APE than Alternative 3.

Cumulative Effects: Other ongoing sources of noise within the APE include Park maintenance and management actions such as administrative flights or the use of mechanized equipment for

maintenance or fencing activities (see Section 3.1.1, Affected Environment for Noise and Noise-Compatible Land Use for more information on the existing ambient for current conditions).

Ongoing visual impacts within the APE include general aviation flights, overflights by commercial airlines, military flights, and approximately 96 administrative flights per year such as those used for maintenance or search and rescue efforts, which would likely continue in the same frequency and manner under any of the alternatives, as they occur independently of air tours.

Ongoing management actions, including wildlife predator control and management; forest bird monitoring and avian malaria monitoring; ground and aerial herbicide spray operations for invasive plant control; installation and replacement of fencing to exclude ungulates; manual removal of invasive plants, and native plant outplantings throughout the APE all have the potential to impact the Haleakalā Summit TCP and cultural resources within the APE through introduction of noise and visual impacts, which impact the feeling and setting of the Haleakalā Summit TCP and cultural resources. In some cases, these activities detract from the opportunity for traditional cultural practices because mechanized equipment is necessary for the activity. However, these activities enhance the cultural and natural resources of the Park by protecting and potentially restoring habitat for Native Hawaiian plants and animals, which are significant to the Native Hawaiian people and traditional cultural practices.

The potential for cumulative noise and visual effects of these actions along with those from commercial air tours would be the greatest under the No Action Alternative. The cumulative effects would be fewer for Alternative 3, which limits the number of air tours that would occur as compared to the No Action Alternative, and the fewest under Alternative 2 as there would be no tours permitted within the ATMP planning area. As mentioned, changes in environmental conditions in the APE that may ensue from global climate change include increasing temperatures, decreasing precipitation, increasing storm intensities, and increasing variability in weather patterns (Thomas et al., 2004; Frazier and Giambelluca, 2017). These changes have the potential to affect cultural resources such as the availability of freshwater, which is crucial for traditional Native Hawaiian farming practices. Changes from climate change also threaten to impact archeological site integrity through erosion and increased risk of catastrophic flooding. Other ongoing threats and impacts to cultural resources include visitors traveling off-trail, and overcrowding, especially during the sunset hours at the Park. Ongoing present and future Park management actions by the NPS would continue to occur under any of the alternatives.

3.5 Wilderness

While Wilderness is not an impact category the FAA traditionally examines, the NPS has agency-wide (see 2006 NPS Management Policies, Chapter 6, and Director's Order 41, 2013) and Park-specific guidelines for managing designated Wilderness areas within the national park system.

The Wilderness Act of 1964 is the primary federal legislation regulating the management of Wilderness areas. As a managing agency, the NPS is required to preserve Wilderness character. NPS Management Policies, Section 6.1 (2006) states,

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

NPS manages the Wilderness for the following qualities of Wilderness character:²²

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

Since commercial air tours do not land within the Park, the undeveloped quality of Wilderness is not discussed here. Additionally, the authorization of commercial air tours is not an intentional manipulation of the environment and therefore, the untrammeled quality of Wilderness is also not discussed here. Cultural and ethnographic resources within the Wilderness are discussed in Section 3.4, Cultural Resources; therefore, the other features of value have not been discussed in this section.

The study area for Wilderness is the Haleakalā Wilderness which is designated and defined within the Park boundary by federal statute.

3.5.1 Affected Environment

The Haleakalā Wilderness is described as “a place of extreme contrasts in terrain, ecology, climate, and scenery” shaped by volcanic, geologic, and erosional forces (NPS, 2015a). Approximately 24,719 acres, or 74 percent, of the Park is federally designated Wilderness. The Wilderness area includes the majority of the Haleakalā Crater, Manawainui, and the Kīpahulu

²² <https://www.nps.gov/subjects/wilderness/wilderness-character.htm>

Biological Reserve, which protects one of the most intact rainforest ecosystems in the Hawaiian Islands.

The Haleakalā Crater, unlike its name suggests, is a summit depression created by erosional forces during a long period of dormancy when streams in the Koʻolau and Kaupō valleys converged to create a large crater-like depression that was later partially filled by renewed volcanic activity. The Haleakala Crater drops to 3,000 ft. from an elevation 10,023 ft. above sea level at Puʻu ʻUlaʻula to the Haleakalā Crater floor. The floor of the Haleakalā Crater spans approximately 7.5 miles in length and 2.5 miles in width (NPS, 2015b). There are several opportunities for solitude and recreation in the Haleakalā Crater and the Haleakalā Summit.

The Park has a high level of biological diversity with natural processes continuing to take place, largely unaffected by humans. The Upper Kīpahulu Valley features a protected native Hawaiian intact rainforest, the Kīpahulu Biological Reserve, that is used for scientific study. Extensive management activities are focused on protection and management of these natural resources. This reserve is closed to the public to protect its biodiversity (NPS, 2015b).

The Park's Foundation Document states:

Natural sounds, panoramic views, and dark night skies greatly contribute to Haleakalā's unique sense of place. Ambient sound levels in the Haleakalā Crater are so low that they approach the threshold of human hearing, and the crater and summit offer world-renowned stargazing opportunities. Visitors flock to the summit to witness spectacular sunrises over the Park's natural landscape- this and other views in the Park are supported by its excellent air quality. In addition to being highly desired values for visitors, dark skies and natural soundscapes are vital components of a healthy, intact biological community. Each plays an important role in wildlife communication and behavior. The preservation of natural sounds, viewsheds, and dark night skies is also critical to effective Wilderness management. (NPS, 2015b)

Because natural sound is such an integral part of Wilderness character, any noise which is audible may detract from Wilderness character. Haleakalā Crater has one of the quietest (i.e., lowest decibels) natural ambient conditions (as low as 10 dBA (Wood, 2015)) of all national park system units (Lynch, 2012; Wood, 2015). Due to the extremely low ambient sound levels in the Haleakalā Crater, even relatively low-level noise can be heard at great distances. As shown in the *Noise Technical Analysis* (Appendix F, Figure 7 and Table 6), the natural ambient conditions in the majority of the Wilderness range from 20-25 decibels, with areas in the eastern portion of the Wilderness measuring at 30-35 decibels for natural ambient condition. As described in Section 3.1.1, Affected Environment for Noise and Noise-Compatible Land Use, human-generated noise sources within the study area include wheeled vehicles on roads, such as passenger vehicles and 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. There are no roads within Wilderness areas, so the noise from wheeled vehicles that extends into Wilderness areas is limited. In Wilderness areas, such as the Haleakalā Crater, low intensity noise, including noise below 35 decibels, detracts from Wilderness character. Refer to Figure 15 for a depiction of existing air tour conditions and the affected environment for Wilderness at the Park.

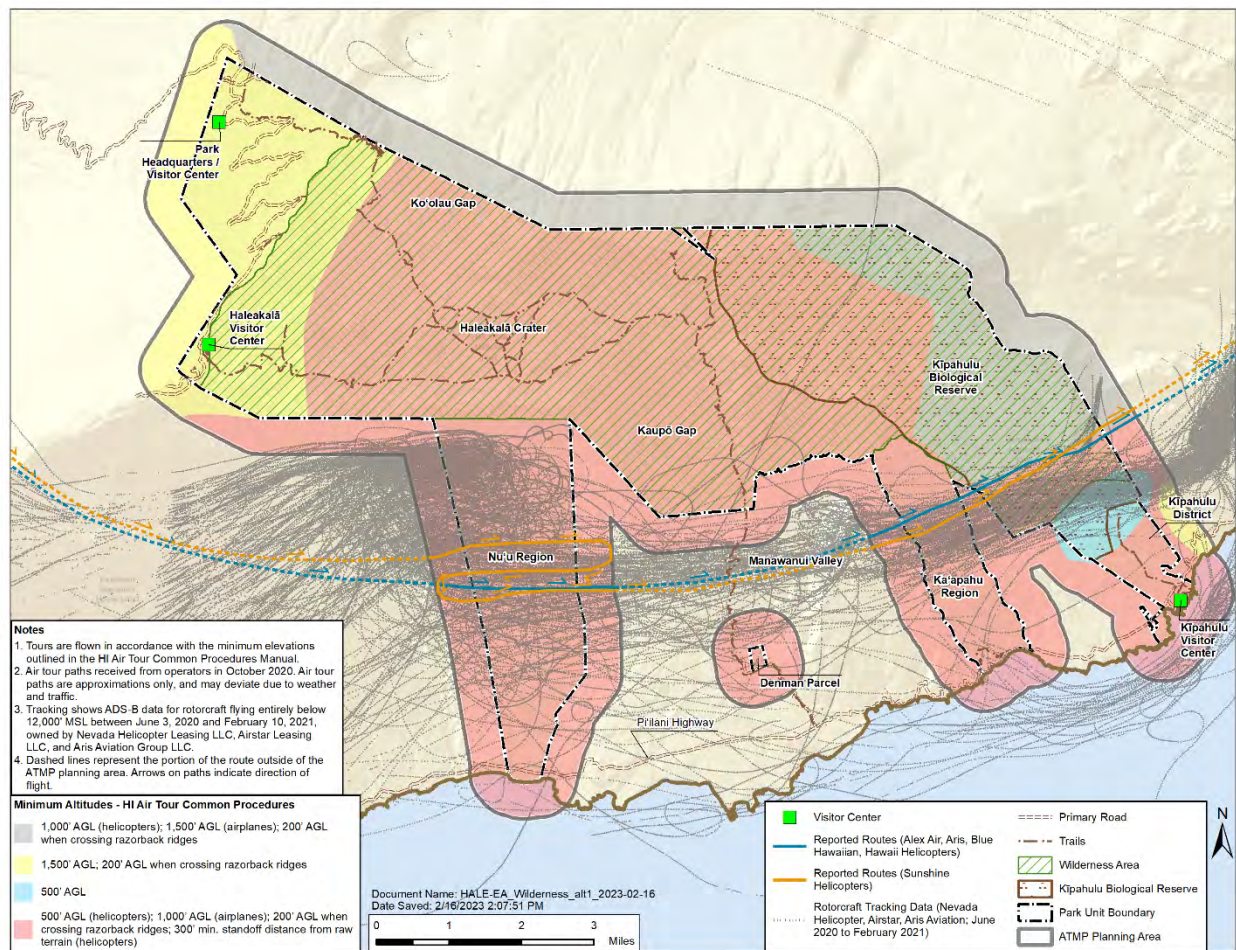


Figure 15. Affected Environment for Wilderness

Natural

A natural wilderness is one where ecological systems are substantially free from the effects of modern civilization. The natural quality is preserved when indigenous species and ecological processes are intact. When the effects of modern civilization impact wilderness, the natural quality is degraded. Haleakalā Wilderness has been severely affected by the introduction of non-native species, which have led to the extinction or severe outcompeting and decline of many native species.

The interwoven and diverse plant communities of the Haleakalā Wilderness support several native and endemic animal species, many of which are now threatened or endangered (NPS, 2015b). Native Hawaiian species have evolved to occupy a range of specialized niches without some of the defenses found in other parts of the world, making for a particular susceptibility to non-native introductions. Birds are the primary wildlife species within the Park and, like native plants at Haleakalā, native bird species have evolved to occupy a range of specialized niches. For threatened and endangered birds, such as the ‘ua‘u, nēnē, ‘ākohekohe and kiwīkiu (Maui Parrotbill), the Wilderness provides integral habitat and refuge from predators. Important pollinators, such as Hawaiian yellow-faced bees and nocturnal residents such as the ‘ōpe‘ape‘a (Hawaiian Hoary Bat), benefit from and contribute to this diversity as well (NPS, 2015a). The upper Kīpahulu Valley, which includes the Kīpahulu Biological Reserve, provides refuge for some of the most unique native plant communities in Hawai‘i and is closed to the public to protect its biodiversity (NPS, 2015b). Biological resources within these areas occur as described in Section 3.3.1, Affected Environment for Biological Resources.

Prior to rigorous management, feral ungulates overgrazed, trampled, and severely disturbed the Haleakalā Crater and wet forest landscapes, permanently altering vegetative communities and significantly impacting ground-nesting birds. Invasive mammalian predators negatively impact the natural quality of Wilderness, particularly populations of native bird species that have not evolved with this type of pressure. Avian diseases, such as avian malaria spread by introduced insects, have additionally taken a toll on native bird distribution and survival (NPS, 2015a), thus negatively impacting the natural character of Wilderness in the Park.

Solitude

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

Visitors access Wilderness through three primary trailheads, the Keonehe‘ehe‘e (Sliding Sands) Trail, Kaupō Trail, and the Halemau‘u Trail. The Haleakalā Crater includes enclaves with both visitor and management cabins, and horse pastures to support visitor activities. Trails and recreational infrastructure like cabins allow access to more remote areas of the Haleakalā Wilderness but are still visible to visitors and may degrade the solitude quality. Sights and sounds of other visitors, along with restrictions for off-trail travel and entry restrictions may impact solitude and opportunities for unconfined recreation when visiting Haleakalā Wilderness. The acoustic conditions at the trails are, as mentioned above, naturally very low which makes noise more noticeable. Presence of aircraft can also degrade the solitude quality when visible from Wilderness and obstructing a viewshed.

3.5.2 Environmental Consequences

Section 2(a) of the Wilderness Act states that Wilderness areas “shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as Wilderness, and so as to provide for the protection of these areas, the preservation of their Wilderness character.” The NPS manages Wilderness to enhance Wilderness character consistent with the Wilderness Act and NPS Management Policies and generally manages for the natural, untrammeled, undeveloped, solitude and unconfined recreation, and other features of value qualities of Wilderness character. Commercial air tours over the Park may impact the opportunity for solitude or the natural qualities of Wilderness character. Aircraft that land in Wilderness detract from the undeveloped quality of Wilderness. Because commercial air tours do not land in Wilderness or the Park, the undeveloped quality of Wilderness is not considered here.

Keeping it Wild 2, An Updated Interagency Strategy to Monitor Trends in Wilderness Character Across the National Wilderness Preservation System, 2015 (Landres et al., 2015) notes that wilderness has traditionally been associated with protecting ecological systems from human impacts (Sutter, 2004) (p.39). Therefore, “the natural quality is preserved when there are only indigenous species and natural ecological conditions and processes” taking place or by the restoration of those ecological conditions (p.11). “Natural quality is preserved when Wilderness ecological systems are substantially free from the effects of modern civilization” (p.34). The natural quality of Wilderness may be impacted by actions both outside and inside Wilderness (p.34). Effects on the natural quality are determined by determining the effects from human actions on ecological systems (p.34).

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

Alternative 1: No Action

While existing air tours currently avoid flying directly over most of the Haleakalā Wilderness, the noise and visibility from air tours over other portions of the ATMP planning area that are approximately ¼-mile from the Haleakalā Wilderness still affect the Wilderness and its Wilderness character, especially in the southern portion of the crater and in the areas of Manawainui and the Kīpahulu Biological Reserve. Under the No Action Alternative, the existing

flight routes, altitudes, number of tours per year, and other parameters described in Section 2.4, Alternative 1 (No Action Alternative) would likely continue to occur. The NPS has determined that persistent noise within Haleakalā Wilderness under the No Action Alternative would unreasonably interfere with the opportunity for solitude and would detract from the undeveloped and natural qualities of Wilderness. The No Action Alternative would continue to adversely impact Wilderness character, as air tour noise within and near Wilderness detracts from the opportunity for solitude, natural quality, and other features of value within the Haleakalā Wilderness as described below.

Natural Quality

Air tours at existing levels detracts from the natural quality of Wilderness character, which would continue under the No Action Alternative. Specifically, air tour noise currently affects natural resources that are present within the Haleakalā Wilderness, including native forest birds, many of which are threatened and endangered. Noise may affect these species by making it more difficult to forage, mate, or avoid predation, (refer to Section 3.3.2, Environmental Consequences for Biological Resources for more information on noise impacts). Ongoing air tour noise may result in temporal shifts in songbird vocalization (Gallardo Cruz et al., 2021). Air tour noise also interferes with the NPS's ability to conduct acoustical bird surveys, part of management actions to help detect and save forest birds from extinction. The *Noise Technical Analysis* (Appendix F, Figure 10) shows that on days when air tours occur, noise above 35 dBA would occur for less than 90 minutes a day in the Haleakalā Wilderness. Some portions of the Haleakalā Wilderness, namely the Kīpahulu Biological Reserve and adjacent lands, are the only habitat for remaining populations of some native forest bird species. In this area, noise above 35 dBA would occur for up to 75 minutes a day. The potential for impacts to native birds (including those facing extinction) that would continue to occur under the No Action Alternative would greatly detract from the natural quality of the Haleakalā Wilderness.

Opportunity for Solitude

The presence of noise and visual intrusion of commercial air tours is a human activity that detracts from the opportunity to experience solitude in Wilderness. Noise from commercial air tours disrupts Wilderness visitors seeking an opportunity for solitude within the Haleakalā Wilderness and would continue to occur under the No Action Alternative. The *Noise Technical Analysis* (Appendix F, Figure 9) provides context for the noise effects that would occur under the No Action Alternative and that would detract from the opportunity for solitude within the Haleakalā Wilderness. This analysis shows that on days when air tours occur (an average of 345 days a year based on air tour reports from 2017 – 2019), the maximum time that air tours could be audible within the Haleakalā Wilderness exceeds 225 minutes a day (non-contiguous), and 100% of the Wilderness would experience audible air tour noise. Current commercial air tours occur near the southern and eastern areas of Wilderness with noise above 35 dBA, as shown in

the *Noise Technical Analysis* (Appendix F, Figure 10), extending into the Keonehe'ehe'e (Sliding Sands) Trail, Kaupō Trail, and the Halemau'u Trail.

Alternative 2

Under Alternative 2, commercial air tour aircraft would not fly within the ATMP planning area, which would offer the greatest protection to Wilderness. Compared to current conditions, this would enhance Wilderness character by reducing the intensity of noise and number of noise events over Wilderness areas. There would be direct beneficial impacts to the natural quality of Wilderness and the opportunities for solitude under Alternative 2.

Alternative 3

Alternative 3 would not allow air tours to be conducted over the Haleakalā Wilderness (see Figure 16) and would authorize a route that is farther from Wilderness (approximately 1.5 miles) as compared to those flown under existing conditions. Compared to current conditions, this would enhance Wilderness character by reducing the intensity of noise, footprint of noise, and number of noise events over Wilderness areas. There would be direct beneficial impacts to the natural quality of Wilderness and opportunities for solitude under Alternative 3. However, noise from air tours over other portions of the ATMP planning area could still affect the Haleakalā Wilderness under this alternative, as described below.

Natural Quality

Impacts to the natural quality of Wilderness character would be less than the No Action Alternative because the intensity and duration of air tour noise would be less, which would likely result in fewer disturbances to forest birds. The *Noise Technical Analysis* (see Appendix F, Figure 13) shows that on days when air tours occur, noise above 35 dBA would occur for less than 30 minutes a day in the Haleakalā Wilderness, including in the Kīpahulu Biological Reserve. These impacts detract from the natural quality of Wilderness in some discrete locations where air tour noise would reach native forest bird habitat, although it would represent a reduction in impacts compared to current conditions.

Opportunity for Solitude

Impacts to opportunities for solitude would be less than the No Action Alternative because the intensity and duration of air tour noise and visibility would be less, which would result in less impact to this quality of Wilderness character. The *Noise Technical Analysis* (Appendix F, Figure 12) shows that on days when air tours occur, the maximum time that air tours could be audible within the Haleakalā Wilderness exceeds 105 minutes a day (non-contiguous), and 100% of the Wilderness would experience audible air tour noise. This noise detracts from the opportunity for solitude as it introduces sounds of human activity and therefore detracts from this quality of Wilderness character, although it would be less than current conditions.

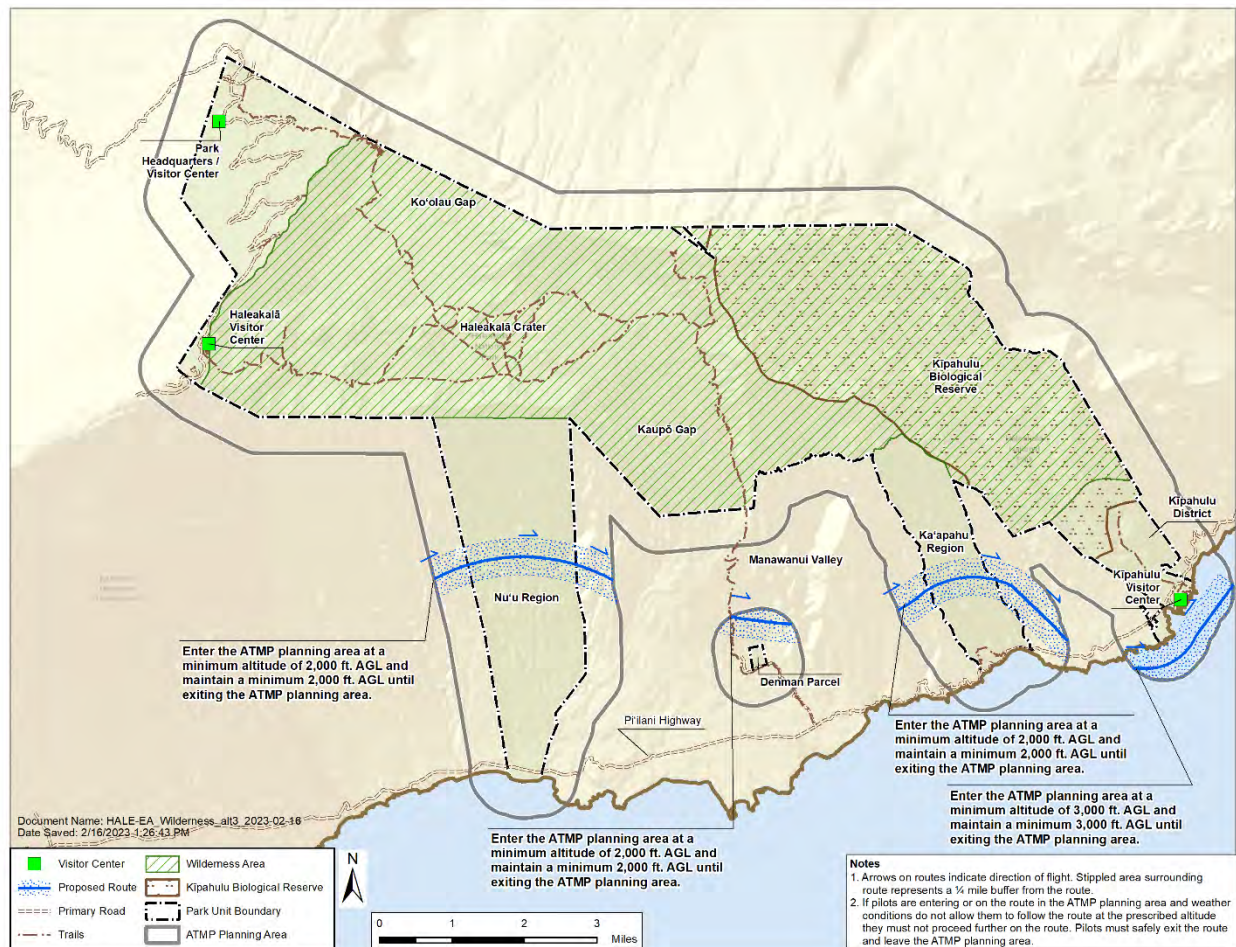


Figure 16. Wilderness Environmental Consequences for Alternative 3

Indirect and Cumulative Effects

Indirect Effects: Under the No Action Alternative, commercial air tour operations within the ATMP planning area would generally remain consistent with existing conditions, thus there are no indirect impacts that would be expected to occur under this alternative.

Alternatives 2 and 3 limit the number of flights per year as compared to existing conditions and would therefore have the potential to result in some displacement of air tours outside the ATMP planning area, including over the ATMP planning area at or above 5,000 ft. AGL. Air tours occurring outside the ATMP planning area, if any, may result in noise that could affect Wilderness character quality to the extent that Wilderness is present in areas near where those air tours would be occurring. Operators may choose to fly along existing flight paths but at or above 5,000 ft. AGL; however, the increase in altitude would likely decrease impacts on ground level resources as compared to current conditions. Flights close to the crater at or above 5,000 ft. AGL are unlikely due to the elevation and safety requirements for unpressurized aircraft. Supplemental oxygen use is required in unpressurized aircraft flying over 10,000 ft MSL for

more than 30 minutes (14 CFR § 135.89, § 135.157); therefore, it is unlikely air tours would fly higher for extended periods of time. Flights in this area and at other areas of lower elevation may continue along similar paths to existing conditions but at or above 5,000 ft. AGL. Air tour operators would also be likely to continue to fly some air tours along the perimeter of the ATMP planning area since Haleakalā Crater and other Park features would be visible from some areas outside the ATMP planning area. Therefore, under Alternatives 2 and 3, some indirect impacts to both the natural quality and opportunities for solitude could occur to the Haleakalā Wilderness if flights were displaced to outside the ATMP planning area, and the resultant noise was experienced in Wilderness areas. Since Alternative 2 prohibits flights within the ATMP planning area whereas Alternative 3 limits them to no more than 2,412 flights per year within the ATMP planning area in addition to other operating parameters as specified in Section 2.7, Summary Comparison of the ATMP Alternatives, Alternative 2 could result in more indirect impacts to Wilderness than Alternative 3 as some tours would still be permitted within the ATMP planning area under Alternative 3.

Cumulative Effects: Solitude in the Haleakalā Wilderness is impacted by approximately 96 administrative flights per year, commercial helicopter air tours, hikers, campers, and day-use visitors, and administrative use of motorized equipment which audibly and visibly affect the primitive Wilderness experience. Under the No Action Alternative these conditions would continue, resulting in limited opportunities to experience solitude in the Wilderness. Under Alternatives 2 and 3 all activities that currently impact solitude would continue, but impacts from commercial air tours would be less frequent since air tours would be prohibited from flying directly over Wilderness areas below 5,000 ft. AGL. Therefore, the No Action Alternative would result in no cumulative change in the opportunity to experience solitude, while Alternatives 2 and 3 would likely result in a net beneficial effect to the opportunity for solitude.

The Park is currently implementing wildlife predator and ungulate control, forest bird monitoring, and ground and aerial herbicide spray operations for invasive plant control in the Haleakalā Wilderness. Additional ongoing or planned activities include fencing to exclude ungulates, manual removal of invasive plants, and native plant outplantings. These activities detract in some cases from the opportunity for solitude but enhance the natural quality of Wilderness and are necessary for the restoration of native forest birds.²³ Mosquito surveys and monitoring of avian malaria prevalence have been conducted within the Park in the past and

²³ Haleakalā National Park uses mechanized equipment with quiet technology to manage federally threatened and endangered species in Wilderness in support of the purpose of the Park, the preservation of Wilderness character under the Wilderness Act, and to comply with the requirement to conserve threatened and endangered species under Section 7(a) of the ESA. The purpose of the Park is, “For the inspiration of current and future generations, Haleakalā National Park protects a wild volcanic landscape with a wide array of fragile and diverse native ecosystems, including plant and animal species found nowhere else on earth. Our stewardship perpetuates the unique and continuing connections between Hawaiian culture and this sacred and evolving land.” Foundation Document for Haleakalā National Park, 2015, page 5.

recently by the U.S. Geological Survey and the NPS. The NPS is currently evaluating a proposal to reduce the prevalence of avian malaria through the suppression of invasive mosquitoes using the incompatible insect technique which would improve the natural quality of Wilderness but potentially add additional noise in the upper Kīpahulu Valley. Under all alternatives, the NPS would continue current management actions and respond to future needs and conditions to improve the natural quality of the Wilderness, while minimizing adverse impacts on the opportunity for solitude. Under the No Action Alternative, noise from commercial air tours would continue to detract from the natural quality of Wilderness, but under Alternatives 2 and 3 the natural quality may experience some overall improvement since commercial air tours would be prohibited over the Haleakalā Wilderness. However, Alternative 3 would offer less overall net benefit to the natural quality than Alternative 2. Ongoing present and future Park management actions by the NPS would continue to occur under any of the alternatives.

3.6 Visitor Use and Experience and Other Recreational Opportunities

While visitor use and experience is not an impact category the FAA traditionally examines, NPS has agency wide (see 2006 NPS Management Policies, Section 8.2) and Park-specific guidelines (Haleakalā National Park Foundation Document) for managing visitors within the national park system. This section also examines impacts to air tour customers.

3.6.1 Affected Environment

Trends in Visitation and Visitor Demographics

Between 2017 and 2019, the Park averaged 1.05 million visitors annually. Most visitors enter the Park in vehicles or tour buses. The scenery, recreation and wildlife draw large numbers of visitors to the Park each year. Within the Park, the Summit District (which includes the lands west of the Kīpahulu Biological Reserve) sees approximately 3-4 times as much visitation as the Kīpahulu District. Visitors to the Summit District are primarily interested in experiencing the iconic sunrise or sunset over Haleakalā Crater, hiking and horse-riding, and camping or staying at historic cabins. Visitors use the Keonehe'ehe'e (Sliding Sands) Trail, which begins near the visitor's center parking lot, Haleman'u and Kaupo Trails, to traverse the Haleakalā Crater and view the pu'u (cinder cones) on the Haleakalā Crater floor.

The Kīpahulu District is located in a remote area of Maui and offers opportunities to learn about Native Hawaiian culture and experience the lush landscape of the wet forest community. Despite its isolated location, visitors to the Kīpahulu District are primarily drawn to attractions such as the pools at 'Ohe'o Gulch, the Pīpīwai Trail, views of waterfalls and the ocean, and Hawaiian cultural experiences. Main attractions for visitors in the Kīpahulu District include explorations of the pools of 'Ohe'o Gulch (85.1%), swimming in the pools (48.6%), and hiking to Waimoku Falls (44.4%) (Lawson et al., 2008). The Kīpahulu Biological Reserve is closed to entry for visitors, as it is an area used for research and protection of sensitive biological resources.

Figure 17 depicts key visitor facilities and points of interest within the ATMP planning area.

Visitor Experience

The character and quality of the visitor experience influences perception of natural areas, providing a unique encounter with a place that differentiates it from other areas. Public enjoyment of resources is a fundamental purpose of all national parks (NPS, 2006). Visitors come to the Park to participate in a range of recreational activities, including viewing sunrise and sunset, hiking, swimming, bicycling, horseback riding, attending ranger programs, scenic driving, stargazing and astronomy, birdwatching, and camping. The enabling legislation that created the Park—H.R. 9525, Public, No. 171, Chapter 264—states that, “...the tracts of land on the island of Hawaii and on the island of Maui...shall be perpetually dedicated and set apart as a public park or pleasure ground for the benefit and enjoyment of the people of the United States...” Within the Park, visitors may access overlooks and the Haleakalā Visitor Center via Crater Road (Haleakalā Highway). Driving and sightseeing along this heavily traveled road is the most common activity for visitors to the Summit District (NPS, 2015).

Key visitor facilities within the Park include the following:

- **Park Headquarters Visitor Center**, located just inside the northwestern Park entrance. The center has restrooms and a picnic area.
- **Haleakalā Visitor Center**, located near the summit of Haleakalā Crater. The center has restrooms and interpretive exhibits on the natural, geologic, and cultural heritage of Haleakalā.
- **The Kīpahulu Visitor Center**, located on the Kīpahulu coast near the pools of ‘Ohe‘o. The center has restrooms, picnic tables, and a Hawai‘i Pacific Parks Association sales area. The center offers interpretive exhibits on the cultural and natural heritage of the Kīpahulu area and cultural demonstrations.
- **Car Accessible Campgrounds** at Hosmer Grove (50-person capacity) and Kīpahulu (100-person capacity) (NPS, 2010b).
- **Wilderness Campgrounds** at Palikū and Hōlua, both 25-person capacity (NPS, 2010b).
- **Wilderness Cabins** (3) at Hōlua (minimum hike of 3.7 miles), Kapalaoa (5.5 miles) and Palikū (9.3 miles) (NPS, 2010b).

The Park is open daily year-round with varying daily and season hours. Generally, the Park Headquarters Visitor Center is open from 8:30 AM to 4:30 PM; the Haleakalā Visitor Center from 6:00 AM to 3:00 PM in the summer and from 6:30 AM to 4:00 PM in the winter; and the Kīpahulu Visitor Center from 9:00 AM to 5:00 PM.

Park lands are managed according to four management zones (NPS, 1995):

- **Natural Zone:** This zone encompasses nearly all of the lands within the Park, including the Upper Kīpahulu Valley, lower Kīpahulu Valley above the 800 ft. contour line, Haleakalā Crater, and West Crater Rim areas. This zone includes all designated Wilderness areas.
- **Research/Special Use Subzone:** The lands within the Kīpahulu Biological Reserve have been designated as a Special Use Subzone for research within the Natural Zone for their ecological significance. This area is closed to public entry due to its fragility.
- **Cultural Zone:** This zone encompasses the Kīpahulu coastal area up to the 800 ft. contour line.
- **Development Zone:** This zone includes developed areas of the Park, including visitor centers, roads, parking areas, overlooks, and maintenance facilities.

Park staff and volunteers provide a variety of in person interpretive and educational programs throughout the year including cultural demonstrations, informational talks, and guided walks. These programs may occur at various locations in the Park but are most frequently provided in the vicinity of visitor centers and along nearby Park trails. Interpretive and educational programs at Kīpahulu and Haleakalā Visitor Centers may be disrupted by noise occurring near these areas when noise results in speech interference or at lower levels when birdwatchers and guided groups are listening for bird song (refer to Table 3 in Section 3.1.2).

Similarly, visitors hiking, sightseeing and birdwatching likely experience noise occurring throughout the day. Noise is most disruptive in the Kīpahulu District at the Waimoku Falls and along southern areas of the Park.

Other Recreational Opportunities

This category applies to persons recreating within the ATMP planning area through the experience of air tours. An average of 24,120 air tour customers per year are currently able to experience the Park from another viewpoint.²⁴ Currently, flight routes for commercial air tours fly over the western portion of the Park near the Haleakalā Crater, then descend towards Kīpahulu and Waimoku Falls, crossing over the Park at various points near these areas. Commercial air tours operate at a minimum altitude of 1,000 ft. AGL, with the exception of flyovers of the Kīpahulu District, where a minimum altitude of 500 ft. AGL is maintained. The air tour experience often varies depending on weather conditions and the desires of the air tour client (i.e., length of flight, geographic features of special interest, etc.). Viewing Haleakalā

²⁴ The estimated 24,120 people who took commercial air tours of the Park is based on reported air tours from 2017-2019 (4,824), multiplied by an estimated 5 passenger seats per aircraft. The number of customers likely overestimates the actual number since it assumes every passenger seat is occupied.

is usually only a portion of the typical air tour around East Maui. Air tour visitation represents less than 2% of Park visitation from the same timeframe.

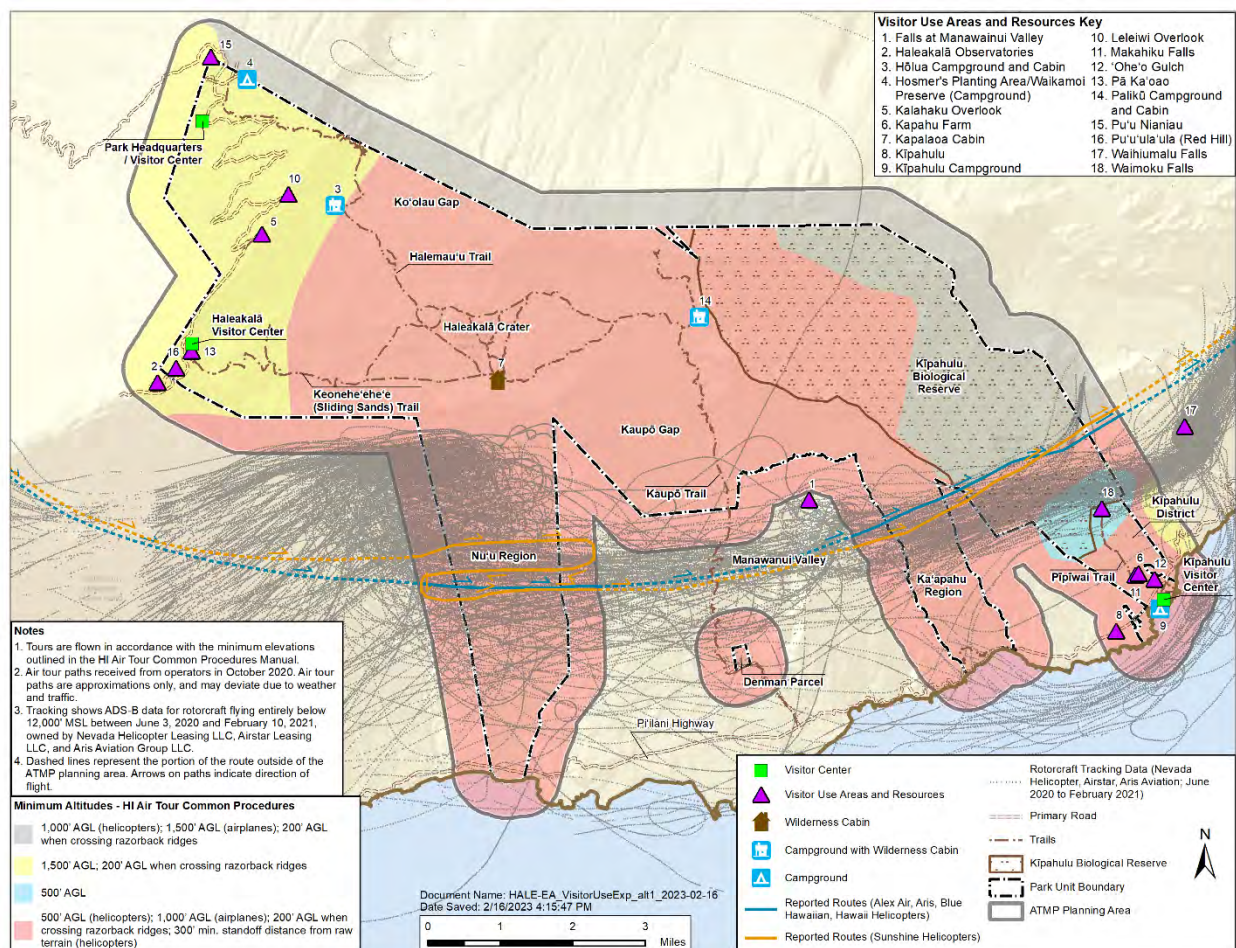


Figure 17. Affected Environment for Visitor Use and Experience

3.6.2 Environmental Consequences

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

Effects of commercial air tours on Park visitor experience have been well documented over many years, and one example is the *Report on the Effects of Aircraft Overflights on the National Park System* (Department of Interior/NPS, 1995). The primary effect of commercial air tours is the introduction of noise into the acoustic environment of the Park. Numerous studies have

identified the value and importance of soundscapes as one of the motivations for visiting parks (Haas and Wakefield, 1998; McDonald et al., 1995; Merchan et al., 2014; Miller et al., 2018), including in a cross-cultural context (Miller et al., 2018). Other studies have focused specifically on the effects of aircraft on the visitor experience both in parks and protected areas, and a laboratory setting, indicating that aircraft noise negatively impacts the visitor experience (Anderson et al., 2011; Ferguson, 2018; Mace et al., 2013; Rapoza et al., 2015).

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

The environmental consequences for non-air tour recreation opportunities is addressed in Section 3.10, Department of Transportation (DOT) Act Section 4(f) Resources.

Alternative 1: No Action

Under existing conditions, air tours are concentrated over the Park’s Kīpahulu District and near the Haleakalā Summit, which would likely continue under the No Action Alternative. As noted in Section 3.6.1, interpretive programs are offered at each of the Park’s visitor centers, which would be impacted by air tours under this alternative as the noise from air tours would result in speech interference. Based on the *Noise Technical Analysis* (Appendix F, Table 6), the nearest modeled location points to each visitor center and its corresponding output for the time above 52 dBA metric are provided in Table 9.

Table 9. Time Above 52 dBA for Park Visitor Centers and Corresponding Location Points Under the No Action Alternative.

Location	Nearest Modeled Location Point	Distance between Location Point and Visitor Center	Time above 52 dBA
Park Headquarters Visitor Center	#1: Hosmer Grove	4,350 ft.	0 minutes
Haleakalā Visitor Center	#4: Haleakalā Visitor Center	0 ft.	0 minutes
Kīpahulu Visitor Center	#37: Measurement Site ST10 (‘Ohe’o Coastal)	350 ft.	2.2 minutes

This table shows that under the No Action Alternative, while speech interference would not be anticipated to occur at the Park Headquarters or Haleakalā Visitor Centers, it would impact interpretive programs at the Kīpahulu Visitor Center for approximately two minutes a day, which may impede visitors from enjoying and learning about existing Park resources.

Natural quiet is a foundational resource for the Park and a primary reason for visitation, and air tours disrupt natural quiet throughout the Park which affects the visitor experience for activities such as hiking, bird watching, and the ability to hear natural sounds such as bird song which value natural quiet. This would continue to occur under the No Action Alternative. The time audible natural ambient metric provides context for the total time that aircraft noise levels would be audible to an attentive listener with normal hearing under natural ambient conditions. Based on the *Noise Technical Analysis* more than half (53%) of the ATMP planning area would experience audible air tour noise for more than 120 minutes a day (non-contiguous) under this alternative, and 100% of the ATMP planning area would experience audible air tour noise at some point during a day that commercial air tours occurred. Since the vast majority of the Park is designated as a Natural management zone (“Natural Zone”) (which includes all designated Wilderness areas) where visitors would generally expect to hear natural sounds prevail during their visit, noise from commercial air tours under this alternative would result in impacts to visitor experience. While time above 52 dBA at discrete locations is limited, the current level of air tours diminishes visitor opportunities to learn about and be inspired by Park resources and values and the NPS has determined that it unreasonably interferes with Park programs, activities, the atmosphere of peace and tranquility, and the natural soundscapes in Wilderness (see 2006 NPS Management Policies, Section 1.4.7.1). Audibility of natural sounds or natural quiet is important to visitor experience at the Park since natural quiet is a fundamental resource of the Park (NPS, 2015a). Because the natural ambient sound level of the Park is so low, the persistence of noise across the park under current conditions interferes with visitor’s ability to enjoy natural quiet almost daily (Rapoza et al., 2015). Most impacts to visitor experience under this alternative, which would occur Park-wide with the exception of the Park’s developed areas, are related to the intrusion of audible air tour noise where visitors would expect natural sounds to prevail during their visit to the Park. Some visitors noted during public scoping that the existing level of air tours could reasonably deter visitors who are seeking more quiet from visiting the Park, which would continue to occur under the No Action Alternative.

Commercial air tours offer a recreational experience for those who wish to view the Park from a different vantage point. Commercial air tour pilots may provide education to commercial air tour customers about the region, its history, and geology. Because the number of commercial air tours under the No Action Alternative would be consistent with the average number of flights from 2017-2019, there would be no or minimal changes anticipated to the availability of this recreational experience under this alternative.

Alternative 2

Under Alternative 2, commercial air tours would not fly within the ATMP planning area which would eliminate this source of noise from the ATMP planning area for up to 1.05 million Park visitors each year. Therefore, there would be a direct beneficial impact to Park visitor use and experience since the intensity and presence of noise from commercial air tours would be less than under the No Action Alternative. Alternative 2 offers the greatest protection of visitor use and experience.

However, Alternative 2 would not allow commercial air tours within the ATMP planning area, so air tour customers (up to an average of 24,120 passengers per year) who wished to would not be able to view the Park from an aerial vantage point that would be available from tours conducted within the ATMP planning area. This would be an adverse effect on those seeking that experience within the ATMP planning area.

Alternative 3

Alternative 3 would permit air tours to be conducted along a designated route and altitudes (see Figure 18). The authorized route avoids flying directly over or close to areas of primary importance for visitor use and experience, including the Haleakalā Crater and Summit District, Waimoku Falls, Kīpahulu District, and Kīpahulu Visitor Center, which would limit the noise effects of commercial air tours in these visitor use areas.

The results for the time above 52 dBA metric from the *Noise Technical Analysis* (Appendix F, Table 8) provide context for impacts to interpretive programs that would occur under Alternative 3. These results are summarized in Table 10.

Table 10. Time Above 52 dBA for Park Visitor Centers and Corresponding Location Points Under Alternative 3.

Location	Nearest Modeled Location Point	Distance between Location Point and Visitor Center	Time above 52 dBA
Park Headquarters Visitor Center	#1: Hosmer Grove	4,350 ft.	0 minutes
Haleakalā Visitor Center	#4: Haleakalā Visitor Center	0 ft.	0 minutes
Kīpahulu Visitor Center	#37: Measurement Site ST10 (‘Ohe‘o Coastal)	350 ft.	9.3 minutes

This analysis shows that under Alternative 3, while speech interference would not be anticipated to occur at the Park Headquarters or Haleakalā Visitor Centers, it could impact

interpretive programs at the Kīpahulu Visitor Center for up to 9.3 minutes a day, which may impede visitors from enjoying and learning about existing Park resources.

In areas of the Park managed as a Natural Zone, where visitors would expect to hear natural sounds, including the Haleakalā Crater or Special Use Subzones including the Kīpahulu Biological Reserve, the *Noise Technical Analysis* indicates that under Alternative 3, the maximum time that air tours could be audible by an attentive visitor would be less than 105 minutes a day in an area representing less than 1% of the ATMP planning area, and more than half (54%) of the ATMP planning area would experience audible air tour noise for at least 60 non-sequential minutes a day, including in the Haleakalā Crater. This noise may detract from the visitor experience, particularly in areas where visitors would expect to hear natural sounds. However, the majority of time during the day would be free of air tour noise so visitors would not hear them. In addition, Alternative 3 includes two days (Wednesday and Sunday) where air tours would not be permitted within the ATMP planning area, so these would provide an entire day where Park visitors would not experience noise from air tours in this area.

When compared to current conditions, Alternative 3 would result in fewer negative impacts to visitor experience in most areas of the Park. Specifically, under Alternative 3, approximately 60% of the ATMP planning area would experience a potential reduction in audibility of air tours between 37 and 194 minutes, which would improve the visitor experience in areas where visitors would be less likely to hear air tour noise during their visit, including areas managed as a Natural Zone (most areas of the Park). The largest reductions in time audible natural ambient (90-95%) would occur over current conditions at Kalahaku Overlook and Haleakalā Visitor Center, both within the Summit District. The smallest reductions over current conditions in time audible natural ambient (40-50%) would be at Waimoku Falls and Lelekea Stream Bridge. Compared to the No Action Alternative, the time above 52 dBA under Alternative 3 would be up to 24 minutes (100%) less, which corresponds with fewer potential instances of speech interference from air tour noise. However, Alternative 3 would result in more time above 52 dBA at the Kīpahulu Visitor Center than the No Action Alternative, which would correspond with more impacts to interpretive programs in this location.

Alternative 3 would limit the availability of air tours for those who wish to view the Park from an aerial vantage point to no more than 2,412 tours per year. This could mean that some people who wished to do so would not be able to take an air tour during their visit if operators had already reached their annual or daily allocations.

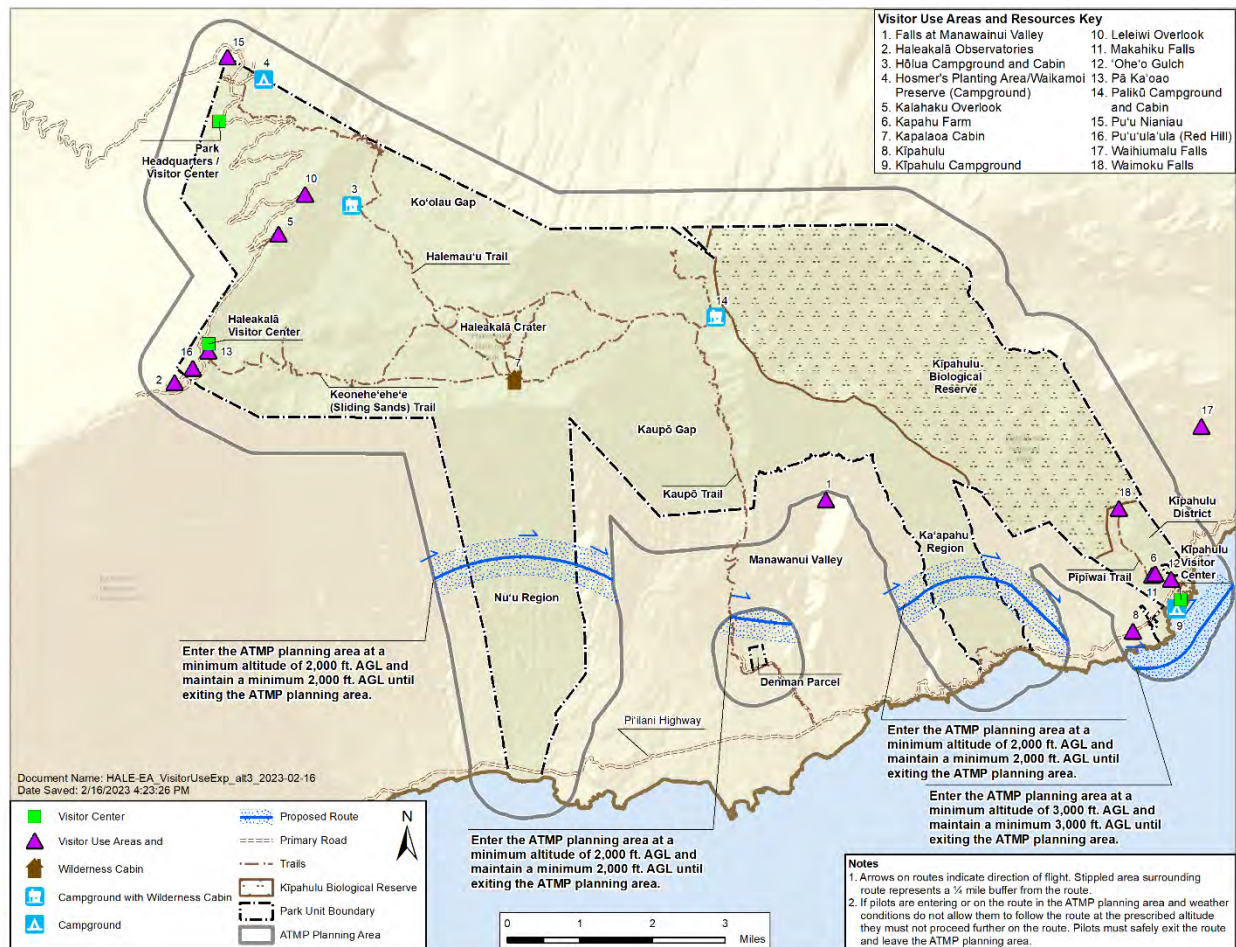


Figure 18. Visitor Use and Experience Environmental Consequences for Alternative 3

Indirect and Cumulative Effects

Indirect Effects: Under the No Action Alternative, commercial air tour operations within the ATMP planning area would generally remain consistent with existing conditions, thus there are no indirect impacts that would be expected to occur under this alternative.

Alternatives 2 and 3 would limit the number of flights per year as compared to existing conditions and would therefore have the potential to result in some displacement of air tours outside the ATMP planning area, including over the ATMP planning area at or above 5,000 ft. AGL. As described in Section 3.1.2, Indirect and Cumulative Environmental Consequences for Noise and Noise-Compatible Land Use, air tours occurring outside the ATMP planning area, if any, may result in noise in other areas near those flights, which could affect the visitor experience at sites to the extent that they are present near the location of those air tours. Operators may choose to fly along existing flight paths but at or above 5,000 ft. AGL; however, the increase in altitude would likely decrease impacts on ground level resources as compared to current conditions. Flights close to the crater at or above 5,000 ft. AGL are unlikely due to the

elevation and safety requirements for unpressurized aircraft. Supplemental oxygen use is required in unpressurized aircraft flying over 10,000 ft. MSL for more than 30 minutes (14 CFR § 135.89, § 135.157); therefore, it is unlikely air tours would fly higher for extended periods of time. Flights in this area and at other areas of lower elevation may continue along similar paths to existing conditions but at or above 5,000 ft. AGL. Air tour operators would also be likely to continue to fly some air tours along the perimeter of the ATMP planning area since Haleakalā Crater and other Park features would be visible from some areas outside the ATMP planning area. Therefore, under Alternative 2, some indirect impacts to visitor experience and points of interest within or near the Summit District could occur if flights were displaced to outside the ATMP planning area. Since Alternative 2 prohibits flights within the ATMP planning area whereas Alternative 3 limits them to no more than 2,412 flights per year in addition to other operating parameters as specified in Section 2.6, Alternative 2 could result in more indirect impacts to visitor experience than Alternative 3.

Cumulative Effects: Under existing conditions, approximately 96 helicopter flights per year are necessary to carry out Park management actions including maintenance, resource management, search and rescue and other operations. The noise from these administrative flights occasionally disrupts visitors. Because these flights generally occur throughout the Park, do not occur on all days of the year, and are not concentrated in any one area, they are not a source of consistent disruption on the visitor experience. These flights are anticipated to continue to facilitate resource stewardship projects and scientific research under any of the selected alternatives. Other noise from building maintenance and construction activities occasionally disrupts visitors, but these activities are temporary and short-term in nature. Alternative 3 would result in less cumulative noise that could affect the visitor experience in the ATMP planning area than the No Action Alternative, given the reduced number of flights, designated routes, and other ATMP parameters. However, it could allow for more cumulative noise impacting visitor use and experience than Alternative 2, where air tours would not be authorized in the ATMP planning area. Ongoing present and future Park management actions by the NPS would continue to occur under any of the alternatives.

3.7 Environmental Justice and Socioeconomics

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

minority and low-income populations, known as “EJ populations.” For the purposes of this EJ analysis, the FAA uses the minority and low-income definitions provided in DOT Order 5610.2c.

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

The combination of all the other relevant impact categories represent the potential EJ impact, 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 this draft EA for a description of the study area limits and Figure 19 for a depiction of the study area used for the EJ and socioeconomic analyses. The analysis incorporates data presented at the county level and from census block groups that are within and adjacent to the study area. Data from the block group level is compared to county level data to determine populations of EJ concern.

3.7.1 Affected Environment

Environmental Justice

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

For this analysis, a minority census block group of EJ concern is a census block group (unit of analysis) with a minority population percentage greater than the average minority population

percentage in the county (reference community). The average percentage of minority populations at the block group level residing within the study area is 66% (ACS, 2016-2020). Therefore, every census block group with a percentage of minority population greater than the average minority population of approximately 66% is designated a census block group of EJ concern. For this analysis, a low-income population census block group of EJ concern is a census block group with a greater percentage of low-income population than the average percentage of low-income population in the study area. The average percentage of low-income populations at the block group level residing in the study area was 9% (ACS, 2016-2020). Therefore, every census block group with a low-income population greater than 14% is designated a census block group of EJ concern.

Figure 19 (ACS, 2016-2020) depicts locations of EJ concern by block group within the study area. As depicted in Figure 19, most of the study area includes EJ populations. Table 11 (ACS, 2016-2020) shows the minority and low-income data for Maui County and block groups within the study area.

Table 11. Minority and Low-income Population Data within Maui County and the Study Area

Area	Population	Minority	Low-Income
Maui County	157,272	110,375	13,290
Block Groups within Study Area	7,596	4,131	767

Source: ACS, 2016-2020

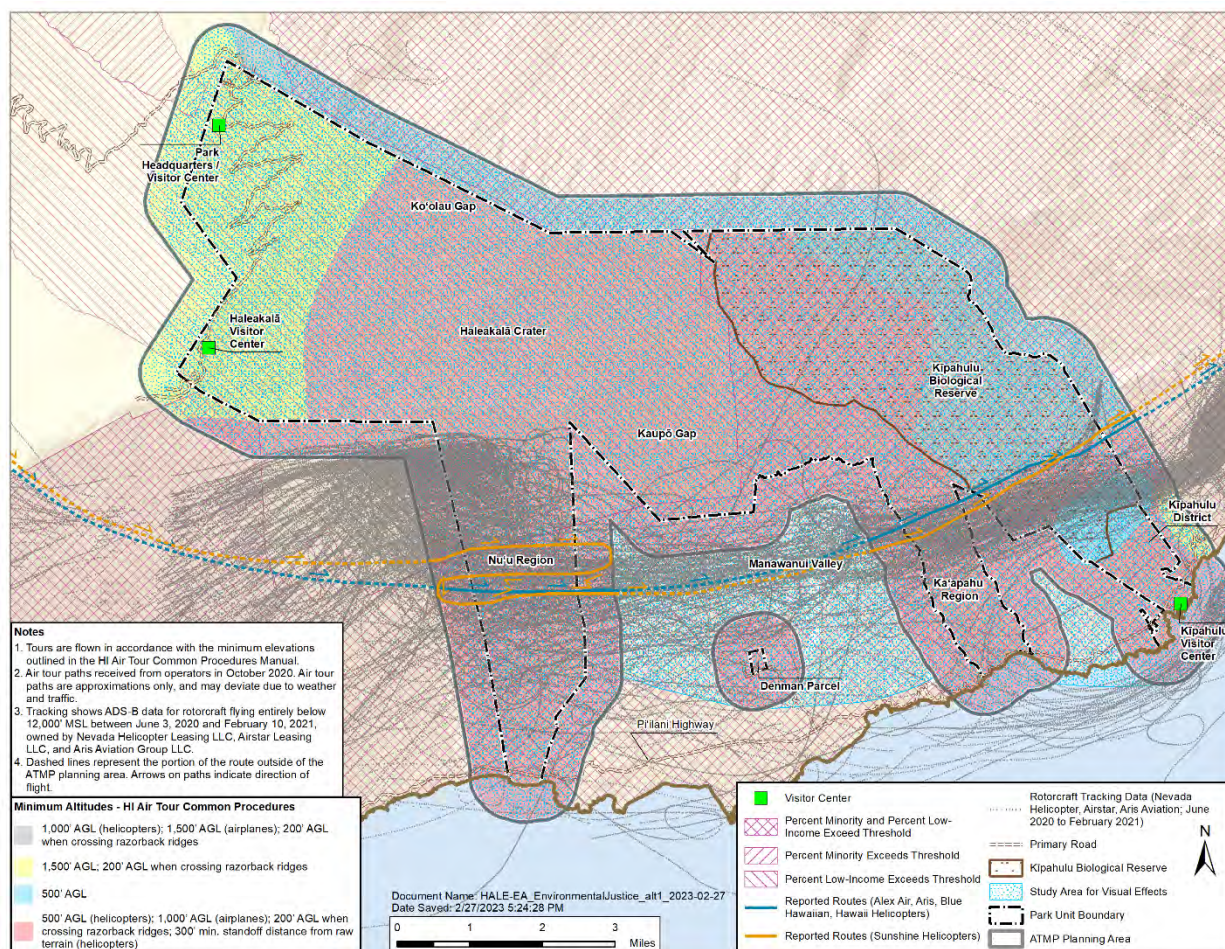


Figure 19. Affected Environment for Environmental Justice

Socioeconomics

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

Industry

Twenty-three percent (23%) of all Maui residents work in arts, entertainment, recreation, and accommodation and food services compared to 16% of all Hawai'i residents. Educational services, health care, and social services account for 17% of employment in Maui County but

accounts for 21% of employment in the State of Hawai'i. Approximately 11% of the Maui County workforce works in retail as does the state's workforce (US Census Bureau, 2021). The tourism industry is Maui County's leading sector. The Park plays a major role in the tourism industry of Maui County and Hawai'i. In 2021, visitors spent a total of approximately \$61 million at the Park and added a value of approximately \$50.3 million to the local economy. The total labor income generated by this spending equaled approximately \$27.3 million (NPS, 2022).

Other industry within the study area includes cattle ranches. In 2021, ranch farmworkers accounted for 80 jobs in the State of Hawai'i, representing approximately 1.5% of the state's employment (Bureau of Labor Statistics, 2021).

Commercial Air Tours

Commercial air tour operators currently fly an average of 4,824 air tours per year (based on 2017-2019 reporting) over the Park. There is a \$25 fee for commercial air tours entering Park airspace. In 2019, air tours that operated over the Park generated a revenue of \$112,225 for the NPS. Approximately 80% of the revenue generated from commercial air tours over the Park is used for projects at the Park. The remaining 20% is dispersed to other NPS sites that do not collect user fees.²⁵ As per the Federal Lands Recreation Enhancement Act,²⁶ a majority of the revenues are used for facility improvement and ecosystem enhancement projects within the Park.

The annual number of commercial air tours over the Park has been on a downward trend since 2000. In 2002, the number of air tours over the Park totaled 10,771. In 2019, that number dropped to 4,889 (Haleakalā National Park, 2020). The air tour industry employs pilots, mechanics, office administrators, and other types of jobs to conduct business. In 2021, 800 individuals worked in the air transportation industry in Maui County (which includes both the air tour industry plus commercial airlines and airport employees), representing approximately 1.2% of the county's total employment (Hawai'i Department of Business, Economic Development and Tourism, 2021). In addition to people directly employed by air tour operators, others are indirectly involved with the industry including hotels, tour booking agents, and advertising and marketing professionals. Employment supported by the air tour industry provides income to workers and indirectly provides revenue to local businesses as a result of employee and operator spending.

²⁵ <https://www.nps.gov/aboutus/fees-at-work.htm>

²⁶ The Omnibus Budget Reconciliation Act of 1993.

3.7.2 Environmental Consequences

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

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

This assessment is provided for each alternative below. As shown in Figure 19, minority and low-income populations of EJ concern are present throughout nearly the entire study area. Specific impacts associated with each alternative are discussed in more detail below.

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

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

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

Alternative 1: No Action

Under existing conditions, based on flight tracking data, the heaviest concentrations of commercial air tours fly over EJ communities. Reporting data from 2017-2019 indicates that residents in these areas have the potential, on average, for exposure to commercial air tour aircraft approximately 14 times per day, and the maximum number of air tours reported within the ATMP planning area during this time period was 50 tours in a single day. Based on reported

data, the existing air tours occur between 7 AM and 5 PM. The altitudes vary between 500 – 1,500 ft. AGL.

Air tours are concentrated within the Park’s Kīpahulu District and south of the Haleakalā Summit. Block groups within these areas are comprised of low income and minority populations of EJ concern, or “EJ populations.”²⁷ Therefore, EJ populations currently experience the noise, air quality, and visual effects associated with air tours under current conditions as described in more detail below.

The noise impacts of the No Action Alternative evaluated in Section 3.1, Noise and Noise-Compatible Land Use indicate that the No Action Alternative would not result in noise impacts that would exceed 65 dB DNL. The DNL is expected to be below 50 dB under the No Action Alternative.

For air quality impacts (see Section 3.2, Air Quality and Climate Change), the No Action Alternative would not cause pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations. The total amount of annual GHG emissions resulting from commercial air tours over the Park is 267 MT CO₂.

Under the No Action Alternative, impacts to viewsheds would primarily occur within the Kīpahulu District, including Waimoku Falls and coastal viewsheds. Impacts would continue to occur to visual resources under the No Action Alternative as air tours would affect the nature of the visual character of the area and would continue to contrast the scenic vistas and natural areas in the Park. The visual resources of the Park would still be viewable at times of the day when commercial air tours were not present within the study area (on average, air tours were conducted within the study area 14 times per day) (see Section 3.8, Visual Effects).

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

Under the No Action Alternative, the number of commercial air tours conducted by operators would vary from year to year, but would likely be consistent with the number of tours reported in the timeframe from 2017-2019. Therefore, the amount of income generated for air tour operators and other ancillary businesses as well as employment would likely be consistent with income generated during that timeframe. The No Action Alternative would not induce

²⁷ Note that while residential use of the Park is limited to that provided by NPS temporary housing, the block groups encompassing the Park also encompass areas outside of the Park. Because block groups are the smallest unit of analysis for which data is available to identify EJ populations, these geographic areas inside and outside the Park have been lumped together as containing EJ populations, but the Park does not contain residential settlements other than temporary NPS housing.

substantial economic growth, disrupt or divide physicality of community, cause extensive relocation, disrupt traffic patterns, or produce a substantial change in the community tax base.

Alternative 2

Under Alternative 2, commercial air tours would not fly within the ATMP planning area. Therefore, there would be direct beneficial impacts on noise, air quality, and viewsheds within the study area as a result of the elimination of commercial air tours in the ATMP planning area (see Sections 3.1, Noise and Noise-Compatible Land Use; 3.2, Air Quality and Climate Change; and 3.8, Visual Effects). Alternative 2 would result in a reduction in noise, air quality, and visual impacts compared to those currently occurring under existing conditions, therefore, this alternative may result in a benefit to EJ populations within the study area, and Alternative 2 would not result in disproportionately high and adverse noise, air quality, or visual impacts to EJ populations.

Because Alternative 2 would prohibit air tours from flying within the ATMP planning area, air tour operators and other ancillary businesses would not be able to generate income from conducting tours in this area. Additionally, the NPS would not collect a fee as no air tours would enter the Park's airspace. There could be some economic benefit under this alternative to businesses within the study area that benefit from quieter noise levels and/or the absence of human-caused sounds. This may include Park visitation, or it could include agricultural operations that occur in the study area that would experience less disturbance from human-caused sounds.

Alternative 2 would not induce substantial economic growth, disrupt or divide physicality of community, cause extensive relocation, or disrupt traffic patterns. Alternative 2 could result in some impacts to employment or the amount of income that air tour operators and other ancillary businesses could generate from conducting air tours within the ATMP planning area. However, the air transportation industry represents 1.4% of Maui County's total employment, and the limits on air tours within the ATMP planning area would not preclude operators from making up this revenue generation in other ways such as using their aircraft for other business ventures or conducting air tours elsewhere within the region (see below for a discussion of indirect socioeconomic effects). Therefore, it is unlikely that Alternative 2 would result in large socioeconomic impacts associated with changes to the community's tax base.

Alternative 3

Alternative 3 would permit air tours to be conducted along a designated route and altitudes (refer to Figure 20) within the ATMP planning area. The authorized route for this alternative crosses the Nu'u area downslope of the Haleakalā Crater, above the Denman Parcel and through the Ka'āpahu area south of the Kīpahulu Biological Reserve, and offshore from the Kīpahulu District. Compared to the No Action Alternative, Alternative 3 would result in fewer direct noise, air quality, and visual impacts as described for each impact category below.

In consideration of the noise impacts of Alternative 3, (Section 3.1, Noise and Noise-Compatible Land Use), the DNL analysis indicates that Alternative 3 would not result in noise in excess of 65 dB DNL. The resultant DNL for Alternative 3 is expected to be below 45 dB.

For air quality impacts (see Section 3.2, Air Quality and Climate Change), Alternative 3 would not cause pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations. The total change in annual GHG emissions for Alternative 3 as compared to the No Action Alternative is modeled to result in a reduction of 158 MT CO₂ within the ATMP planning area.

For visual impacts, Alternative 3 would provide protection to Park viewsheds, including those overlooking the Haleakalā Crater and within the Kīpahulu District (see Section 3.8, Visual Effects). The limited duration and reduced number of air tours that would occur under Alternative 3 as compared to the No Action Alternative would result in fewer impacts to viewsheds than those under existing conditions, including those viewsheds that may be used by EJ populations. Alternative 3 would protect the visual character of the Park and its viewsheds, including the importance, uniqueness, and aesthetic value of the affected visual resources. Other than times of day when commercial air tours were present within the ATMP planning area, this alternative would not contrast with the visual resources and/or visual character in the study area or obstruct views of the visual resources.

In summary, Alternative 3 would not result in disproportionately high and adverse noise, air quality, or visual impacts to EJ populations. The same socioeconomic effects stated under Alternative 2 would occur under Alternative 3, but those effects would be fewer (including the potential for impacts associated with changes to the community's tax base), as some air tours would still occur within the ATMP planning area. Alternative 3 would not induce substantial economic growth, disrupt or divide physicality of community, cause extensive relocation, or disrupt traffic patterns.

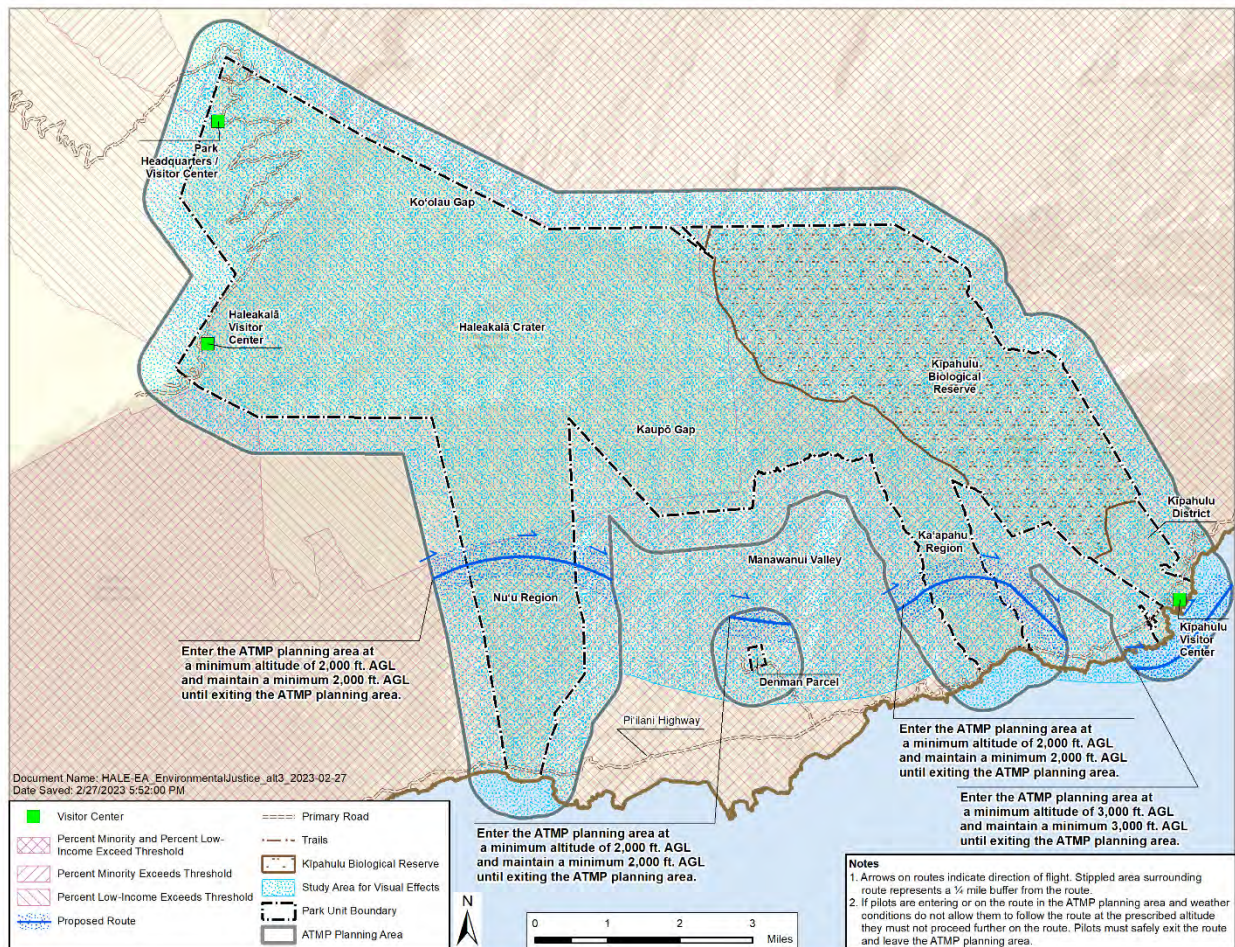


Figure 20. Environmental Justice Environmental Consequences for Alternative 3

Indirect and Cumulative Effects

Indirect Effects: Under the No Action Alternative, commercial air tour operations within the ATMP planning area would remain consistent with existing conditions, thus there are no indirect impacts that would be expected to occur under this alternative. There are no indirect impacts to EJ populations that would be expected to occur under this alternative, nor would this alternative be expected to result in indirect socioeconomic impacts as there would be no change to existing conditions.

The limited number of flights permitted by Alternatives 2 and 3 could limit the potential future economic growth for commercial air tour operators and other ancillary businesses. Because of the capital investment air tour operators have in aircraft, facilities, and equipment, operators could seek to make up lost revenue from air tours within the study area by conducting air tour operations outside of the ATMP planning area to the extent possible, including over the ATMP planning area at or above 5,000 ft. AGL. Operators may also choose to retire, surrender their operating certificates, or use their aircraft for other businesses or operations such as search and

rescue, fire protection, resource mapping and assessment, and flight for life operations. Therefore, although Alternatives 2 and 3 would limit the opportunities for air tour operators and ancillary businesses to generate revenue from tours conducted within the ATMP planning area, these alternatives would not preclude operators from making up this revenue generation in other ways such as using their aircraft for other business ventures or conducting air tours elsewhere within the region.

Under Alternatives 2 and 3, it is challenging to predict with specificity if, where, and to what extent any air tours that were displaced to outside the ATMP planning area would result in indirect noise, air quality, or visual impacts to EJ populations. Operations that may occur outside the ATMP planning area as a result of Alternative 2 and/or reduction in annual operations under Alternative 3, may shift where noise, air quality emissions, and visual effects occur, but the effects are not likely to change substantially as compared to current conditions. Therefore, adverse indirect impacts to EJ populations are not expected to occur. Therefore, disproportionately high or adverse indirect noise, air quality, or visual impacts to EJ populations are not expected to occur.

Cumulative Effects: The cumulative effects to EJ populations reflect those analyzed in other sections of this draft EA for noise, air quality, and visual effects. In summary, ongoing present and future Park management actions by the NPS within the ATMP planning area including approximately 96 administrative helicopter flights per year may contribute noise and air quality emissions that would continue to negatively affect the acoustic environment and air quality within the ATMP planning area. Those effects would be greatest under the No Action Alternative and fewest under Alternative 2 based on the number of flights authorized per year. Other sources of ongoing visual impacts that may affect EJ populations within the study area include general aviation flights, overflights by commercial airlines, military flights, and administrative flights such as those used for maintenance or search and rescue efforts, which would continue in the same frequency and manner under any of the alternatives, as they occur independently of air tours. The cumulative effects to viewsheds, including those experienced by EJ populations, would be greatest under the No Action Alternative and fewest under Alternative 2 based on the number of flights authorized per year. Ongoing present and future Park management actions by the NPS would continue to occur under any of the alternatives.

3.8 Visual Effects

Visual resources include buildings, sites, TCPs, and other natural or manmade landscape features that are visually important or have unique characteristics. In addition, visual resources can include the cohesive collection of various individual visual resources that can be viewed at once or in concert from the area surrounding the site of the alternatives. Visual character refers to the overall visual makeup of the existing environment where the alternatives would be located. For example, areas in close proximity to densely populated areas generally have a

visual character that could be defined as urban, whereas less developed areas could have a visual character defined by the surrounding landscape features, such as open grass fields, forests, mountains, or deserts, etc. Visual effects generally describe the extent to which the proposed action or alternatives would either produce light emissions that create annoyance or interfere with activities; or contrast with, or detract from, the visual resources and/or the visual character of the existing environment. Although there are no federal special purpose laws or requirements specific to light emissions and visual effects, there are special purpose laws and requirements that may be relevant, such as those relating to cultural resources or Section 4(f) resources. Additionally, NPS Management Policies (2006) Section 1.4.6 provides that scenic views and vistas are Park resources that are subject to protection under the NPS Organic Act.

The study area for visual effects includes the ATMP planning area as well as areas within the cultural resources APE that are outside of the ATMP planning area. Refer to Figure 21 for a depiction of the study area used for the visual effects analysis.

3.8.1 Affected Environment

The Park is characterized by its contrasting mountain, crater and coastal environments, offering visitors distinct experiences of the Park's visual resources. As discussed in Section 3.6, Visitor Use and Experience, a major attraction for visiting the Park is to experience the scenery and landscape of the Park. As 74% of the Park is Congressionally designated Wilderness, the natural areas and features provide an aesthetic and visual character unique to the Park. Viewsheds are a fundamental resource and value of the Park and panoramic views within the Park greatly contribute to the unique sense of place of Haleakalā (NPS, 2015a). Within the Park, visual resources include the Haleakalā Crater, Haleakalā Summit, sunrise and sunset vistas, waterfalls, forest canopy, the ocean, and the nighttime sky. These natural resources are also tied to visitor use and cultural resources. The Summit District, which includes the lands west of the Kīpahulu Biological Reserve, is a viewshed offering visitors views of the Haleakalā Crater, sunrises and sunsets over the Park's natural landscape, and stargazing opportunities. Several overlooks are available in the Summit District along Haleakalā Highway, including Kalahaku Overlook and Leleiwi Overlook. The Haleakalā Visitor Center can offer visitors views throughout the Haleakalā Crater and beyond to the neighboring Hawai'i Island, with views of eruption plumes or snow-capped mountains when conditions allow. The Kīpahulu District provides visitors with views of the Waimoku waterfalls, 'Ohe'o pools, the coastline, ocean and other attractions. These visual points of interest are depicted on Figure 21. Other structures and sites that are tied to cultural resources are often present within these viewsheds and are discussed in greater detail in Section 3.4, Cultural Resources.

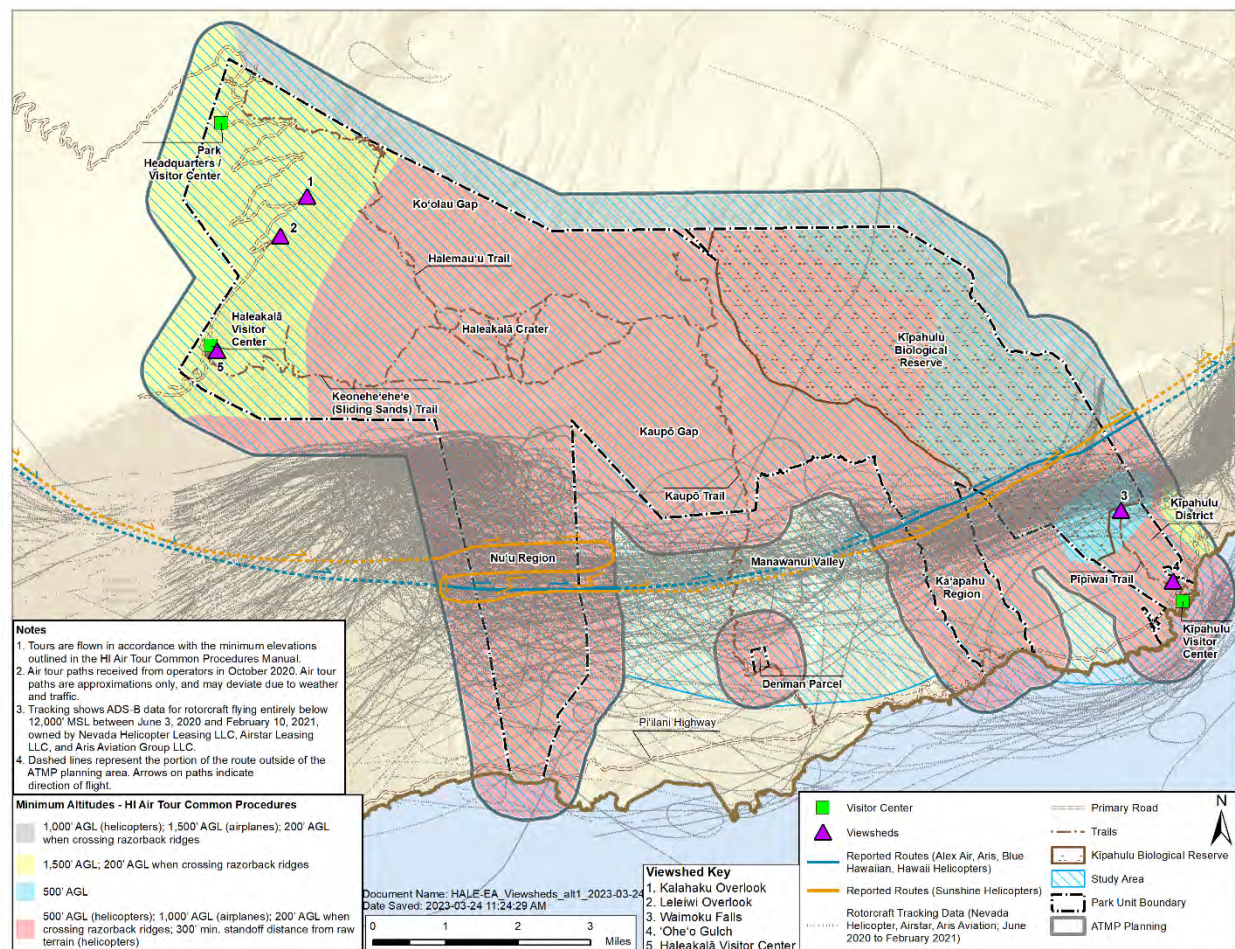


Figure 21. Affected Environment for Visual Effects

3.8.2 Environmental Consequences

Studies indicate that aircraft noise in national parks can impact human perceptions of aesthetic quality of viewsheds (Weinzimmer et al., 2014; Benfield et al., 2018). Visitors may notice aircraft overflights because of the accompanying noise. Aircraft are particularly noticeable in the natural, Wilderness character of the Haleakalā backcountry and from the high elevation crater overlooks.

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

- Affect the nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources;
- Contrast with the visual resources and/or visual character in the study area; and

- Block or obstruct the views of visual resources, including whether these resources would still be viewable from other locations.

Alternative 1: No Action

Reporting data from 2017-2019 indicates that visitors have the potential, on average, to see commercial air tour aircraft approximately 14 times per day, and the maximum number of tours reported over the Park during this time period was 50 tours. Based on reported data, the existing air tours occur between 7 AM and 5 PM. The altitudes reporting near Park viewsheds are 500 ft. AGL for helicopters and 1,000 ft. AGL for airplanes, so the aircraft are visible to visitors at the Park including those in the crater, at the Haleakalā Visitor Center, and at points of interest in the Kīpahulu District such as Waimoku Falls. Refer to Figure 21 for a depiction of existing air tour conditions in the context of visual points of interest and viewsheds within the study area.

Under existing conditions, based on flight tracking data, the heaviest concentrations of commercial air tours are flown over or near Park viewsheds all along the leeward shore of the Park, near the crater rim, and in the Kīpahulu District, including Waimoku Falls and coastal viewsheds. Under this alternative visitors in these areas would continue to experience visual impacts associated with commercial air tours. Commercial air tours may block visitors from seeing a viewshed or detract from natural or cultural scenery. Commercial air tours may be especially distracting when the visitor is at an overlook or other area where a specific visual experience is expected. Under the No Action Alternative, viewsheds within the study area could be impacted by commercial air tours for up to 50 times a day. Since the Park consists primarily of a natural landscape, the encroachment of commercial air tour aircraft on these viewsheds would continue to detract from the visitor's opportunity to observe these scenic natural resources and would block the view of unique visual resources within the Park of scenic vistas and natural areas contrast with commercial air tours when commercial air tours are present (on average approximately 14 times per day). However, greater Maui provides opportunities to view similar natural landscape features and viewsheds as those found within the study area, and the visual resources of the Park would still be viewable at times of the day when commercial air tours were not present within the ATMP planning area.

Alternative 2

Under Alternative 2, commercial air tour aircraft would not fly within the ATMP planning area. Therefore, commercial air tours within the ATMP planning area would no longer detract from visual resources within the study area. Visual resources would experience direct beneficial impacts throughout the Park under Alternative 2 and visual character would improve compared to current conditions. Alternative 2 would provide the greatest protection to Park viewsheds across the three alternatives.

Alternative 3

Under Alternative 3, some Park viewsheds could experience temporary impacts when commercial air tours are flying within the ATMP planning area, and those instances would be limited to viewsheds where aircraft could be seen along the designated route and altitudes (refer to Figure 22). Visitors would have the potential to see commercial air tour aircraft up to 16 times per day and no more than 2,412 times per year. Commercial air tours along the authorized route could be visible from the Park's coastal areas, but they would avoid most other scenic points of interest or overlooks within the study area, including Waimoku Falls and the Summit District. Impacts to Park viewsheds would be reduced as compared to current conditions because commercial air tour aircraft would be limited to offshore portions of the ATMP planning area near the Kīpahulu District where fewer Park viewsheds are located. Air tours within the ATMP planning area over the Summit District would not be permitted under 5,000 ft. AGL, so viewsheds in this area would not experience impacts from air tours within the ATMP planning area, including viewpoints along Haleakalā Highway overlooking the Haleakalā Crater.

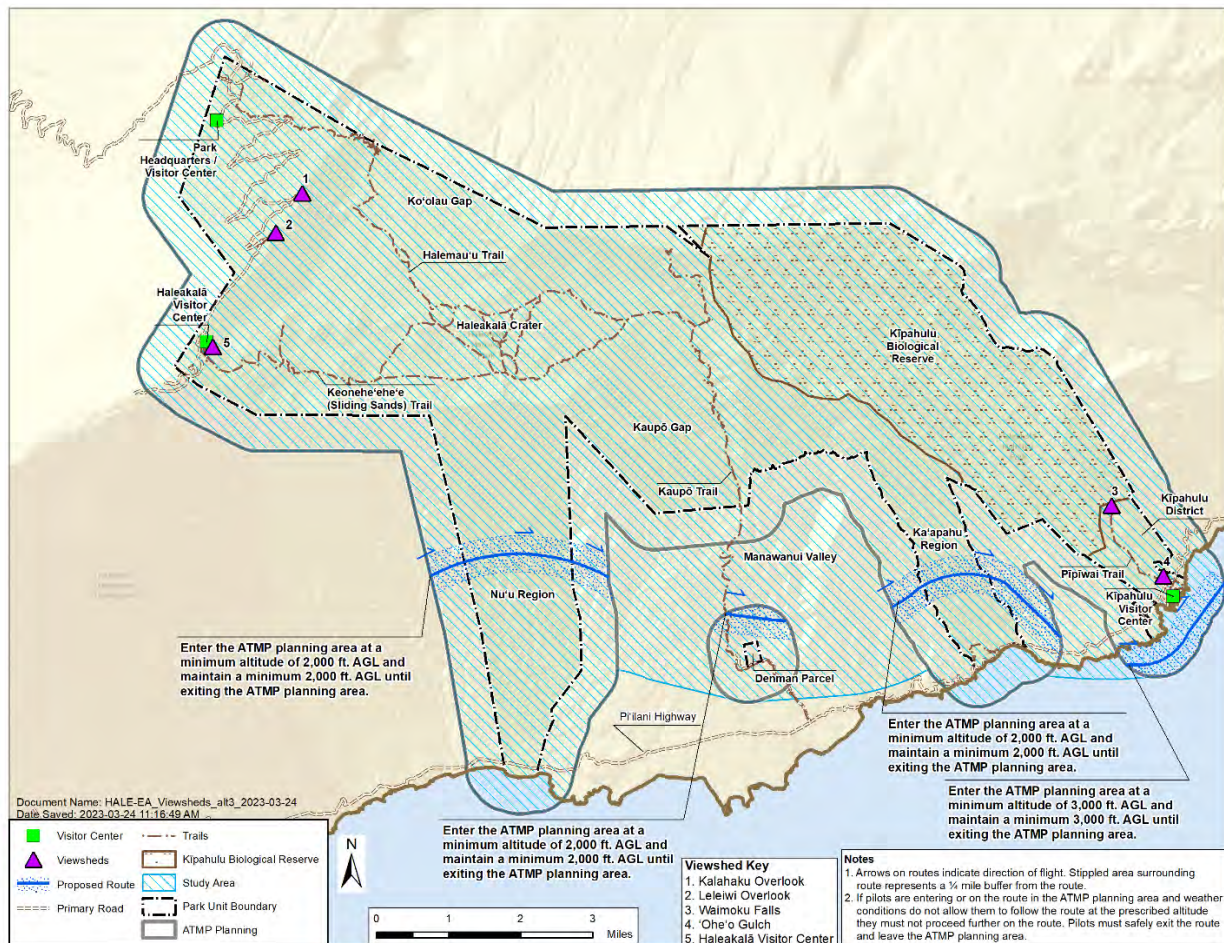


Figure 22. Visual Effects Environmental Consequences for Alternative 3

Indirect and Cumulative Effects

Indirect Effects: Under the No Action Alternative, commercial air tour operations within the ATMP planning area would likely remain consistent with existing conditions, thus there are no indirect impacts that would be expected to occur under this alternative.

Under Alternatives 2 and 3, since commercial air tour operations would be limited or prohibited within the ATMP planning area, it could result in the displacement of tours outside this area, including over the ATMP planning area at or above 5,000 ft. AGL. Operators may choose to fly along existing flight paths at or above 5,000 ft. AGL which could make them more visible to visitors at higher elevations than they currently are (for example visitors at 7,000 ft. elevation would be at the same eye level as an air tour flying 5,000 ft. AGL over an area at 2,000 ft. elevation); however, the increase in altitude could also decrease impacts on ground level resources as compared to current conditions. Flights close to the crater at or above 5,000 ft. AGL are unlikely due to the elevation and safety requirements for unpressurized aircraft. Supplemental oxygen use is required in unpressurized aircraft flying over 10,000 ft. MSL for

more than 30 minutes (14 CFR § 135.89, § 135.157); therefore, it is unlikely air tours would fly higher for extended periods of time. Flights in this area and at other areas of lower elevation may continue along similar paths to existing conditions but at or above 5,000 ft. AGL. Air tour operators are also likely to continue to fly some air tours along the perimeter of the ATMP planning area since Haleakalā Crater and other Park features would be visible from some areas outside the ATMP planning area. Therefore, under Alternative 2, some indirect impacts to viewsheds near the Summit District could occur to the extent that they are present if flights were displaced to outside the ATMP planning area. Since Alternative 2 prohibits flights within the ATMP planning area whereas Alternative 3 limits them to no more than 2,412 flights per year in addition to other operating parameters as specified in Section 2.6, Alternative 2 could result in more indirect impacts to viewsheds than Alternative 3.

Cumulative Effects: Other sources of ongoing visual impacts within the study area include general aviation flights, overflights by commercial airlines, military flights, and approximately 96 yearly administrative flights such as those used for resource protection or search and rescue efforts, which would likely continue in the same frequency and manner under any of the alternatives, as they occur independently of air tours.

The cumulative visual effects of these ongoing flights along with those from commercial air tours under the No Action Alternative would have the greatest potential for impacts within the study area. The cumulative effects would be fewer for Alternative 3 which limits the number of air tours that would occur as compared to the No Action Alternative, and the fewest under Alternative 2 as there would be no tours permitted within the ATMP planning area. Ongoing present and future Park management actions by the NPS would continue to occur under any of the alternatives.

3.9 Coastal Resources

The Coastal Zone Management Act (CZMA) (16 U.S.C. §§ 1451-1466) provides for management of U.S. coastal resources, including the Great Lakes, to help coastal states balance conservation and restoration of natural resources with community development to develop their economies and support ecosystems. The CZMA provides a framework, funding, and technical assistance to address coastal issues including wetland management, public access, coastal hazards, and water quality. The CZMA includes requirements for ensuring that activities conducted or authorized by federal agencies are consistent with approved state coastal zone management programs. These consistency requirements, as interpreted in NOAA's implementing regulations (15 CFR Part 930), apply to activities that would have reasonably foreseeable effects on land or water uses or natural resources in a coastal zone.

The State of Hawai'i administers a CZM program and has established objectives and their supporting policies (Hawai'i Revised Statutes § 205A-2) to help the Hawai'i CZM Program evaluate the consistency of proposed federal actions. As part of this evaluation, the agencies

have prepared documentation describing the preferred alternative's consistency with each objective and policy of the Hawai'i CZM program (see Appendix K, *CZMA Compliance*). The agencies have requested a federal consistency review by the Hawai'i CZM Program Office simultaneous with the release of this draft EA for public review and comment.

The entire State of Hawai'i is considered a coastal zone under the CZM program for the State of Hawai'i. Therefore, the study area for coastal resources is the ATMP planning area.

3.9.1 Affected Environment

Because the entire State of Hawai'i is considered a coastal zone, the affected environment includes the entire ATMP planning area as discussed above.

3.9.2 Environmental Consequences

Impacts to coastal resources may occur in the form of physical effects associated with land use (such as construction), changes in water quality from pollutants or runoff, or effects to biological resources that utilize coastal resources. FAA Order 1050.1F provides factors to consider in evaluating the severity of impacts, including the extent that the action would have the potential to:

- Be inconsistent with the relevant state coastal zone management plan(s);
- Impact a coastal barrier resources system unit (and the degree to which the resource would be impacted);
- Pose an impact to coral reef ecosystems (and the degree to which the ecosystem would be affected);
- Cause an unacceptable risk to human safety or property; or
- Cause adverse impacts to the coastal environment that cannot be satisfactorily mitigated.

The agencies analyzed the potential for direct, indirect, and cumulative impacts on coastal resources in the relevant environmental impact categories for all three alternatives in this draft EA. This analysis can be found in Noise and Noise Compatible Land Use (Section 3.1), Biological Resources (Section 3.3), Cultural Resources (Section 3.4), Visitor Use and Experience and Other Recreational Opportunities (Section 3.6), Environmental Justice and Socioeconomics (Section 3.7), Visual Effects (Section 3.8), and DOT Act Section 4(f) Resources (Section 3.10).

The agencies only prepared a consistency determination for the preferred alternative (Alternative 3), and have evaluated Alternative 3's consistency with the enforceable policies of the Hawai'i CZM Program, including their objectives and supporting policies (Hawai'i Revised

Statutes § 205A-2). The agencies' analysis is in Appendix K, *CZMA Compliance*, and the conclusions from that analysis are summarized below.

The agencies have evaluated Alternative 3 and have found that its implementation would not interfere with the Hawai'i CZM objective for:

- recreational resources, which is to provide coastal recreational opportunities accessible to the public;
- historic resources, which is to protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture;
- scenic and open space resources, which is to protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources;
- coastal ecosystems, which is to protect valuable coastal ecosystems, including reefs, beaches, and coastal dunes, from disruption and minimize adverse impacts on all coastal ecosystems;
- economic uses, which is to provide public or private facilities and improvements important to the State's economy in suitable locations;
- coastal hazards, which is to reduce hazard to life and property from coastal hazards;
- managing development, which is to improve the development review process, communication, and public participation in the management of coastal resources and hazards
- public participation, which is to stimulate public awareness, education, and participation in coastal management

Alternative 3 would be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the Hawai'i CZM Program with respect to recreational resources, historic resources, scenic and open space resources, coastal ecosystems, economic uses, coastal hazards, managing development, and public participation. The policies for beach and coastal dune protection and marine and coastal resources are not applicable to the proposed action and have therefore not been evaluated as part of this assessment. Refer to Appendix K, *CZMA Compliance* for the agencies' analysis.

The agencies have provided the consistency determination in Appendix K, *CZMA Compliance* as well as a copy of this draft EA to the Hawai'i CZM Program Office concurrent with the release of this draft EA for public review, and have requested their concurrence with this determination.

3.10 Department of Transportation (DOT) Act Section 4(f) Resources

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

Appendix B of FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* describes the FAA's procedures for complying with Section 4(f). Federal Highway Administration/Federal Railroad Administration/Federal Transit Administration regulations and policy are not binding on the FAA; however, the FAA may use them as guidance to the extent relevant to aviation projects.²⁸ According to FAA Order 1050.1F, significance of impacts is determined based on if the action involves more than a minimal physical use of a Section 4(f) resource or constitutes a "constructive use" based on an FAA determination that the aviation project would substantially impair the Section 4(f) resource.

The study area for considering Section 4(f) resources in this draft EA corresponds with the APE used for compliance with Section 106 of the NHPA. Refer to Figure 23 for a depiction of the Section 4(f) study area.

3.10.1 Affected Environment

Section 4(f) resources including parks, recreational areas, and wildlife and waterfowl refuges were identified using public datasets from federal, state, and local sources. Historic properties were identified as part of the Section 106 consultation process (see Section 3.4, Cultural Resources). Each resource that intersected the study area (i.e., some portion of the property fell within the study area) was included in the Section 4(f) analysis (see Appendix I).

Table 12 shows Section 4(f) parks, recreational areas, and wildlife and waterfowl refuges identified in the study area, and Section 3.4.1, Affected Environment for Cultural Resources and Appendix G lists historic resources that qualify under Section 4(f). Except in unusual circumstances, Section 4(f) protects only those historic sites that are listed in or eligible for

²⁸ See 1050.1F Desk Reference, Section 5-3.

listing in the National Register.²⁹ Figure 23 shows a map of the Section 4(f) resources analyzed in this chapter within the study area.

Table 12. Section 4(f) Resources.

Property Name	Property Type
Haleakalā National Park	National Park
Kīpahulu Point Park	County Park
Nakula Natural Area Reserve	State Reserve
Hāna Forest Reserve	State Forest Reserve
Kahikinui Forest Reserve	State Forest Reserve
Kīpahulu Forest Reserve	State Forest Reserve
Koʻolau Forest Reserve	State Forest Reserve
Kula Forest Reserve	State Forest Reserve
Hanawī Natural Area Reserve	State Forest Reserve
Alpine Wildlife Sanctuary	State Reserve
Kamehamehame Forest Reserve	State Forest Reserve
Kīpahulu Biological Reserve	National Reserve
State Resource Management Area (SRMA)	SRMA
Nuʻu Refuge	Nature Refuge

Sources: USGS Protected Areas Database of the United States, Hawaiʻi Division of State Parks, Hawaiʻi Department of Land and Natural Resources Office of Conservation and Coastal Lands, Hawaiʻi Division of Forestry and Wildlife.

²⁹ If a historic site is not National Register-listed or eligible, a state or local official may formally provide information to FAA to indicate that a historic site is locally significant. The responsible FAA official may then determine it is appropriate to apply Section 4(f). See FAA Order 1050.1F for further detail.

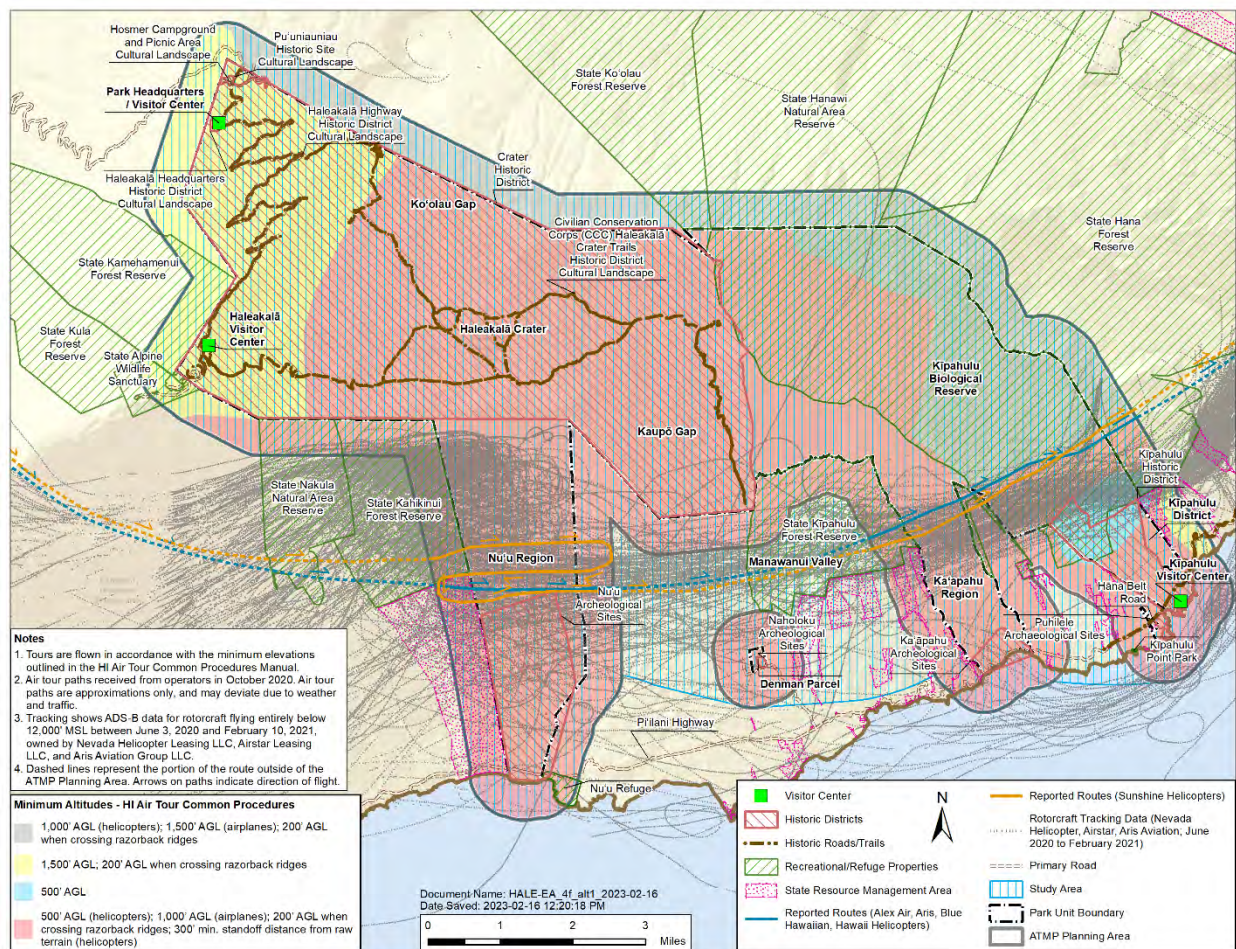


Figure 23. Affected Environment for Section 4(f) Properties

3.10.2 Environmental Consequences

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

The FAA considered the potential for constructive use of Section 4(f) resources under all alternatives but focused the Section 4(f) analysis on the preferred alternative (Alternative 3). In accordance with FAA Order 1050.1F, the FAA determined through an initial assessment if the

alternatives would result in use of any of the properties to which Section 4(f) applies. As noted in Section 2.4, Alternative 1 (No Action Alternative), the No Action Alternative provides a basis for comparison within this draft EA but is not a selectable alternative because it does not meet the purpose and need for the ATMP (refer to Section 1.4, Purpose and Need). Furthermore, the FAA consulted with the NPS on the potential for substantial impairment to Section 4(f) resources that would occur under the No Action Alternative, and the NPS determined that the No Action Alternative cannot be mitigated to avoid or prevent unacceptable impacts to Park resources including those that unreasonably interfere with ceremonies conducted by Native Hawaiian practitioners at cultural sites, Park programs, activities, the atmosphere of peace and tranquility, and the natural soundscapes in Park's Wilderness areas. The FAA did not advance the No Action Alternative for detailed Section 4(f) analysis as it is not considered a selectable alternative. Effects to Section 4(f) resources under Alternative 2 would be expected to be similar or less than those under Alternative 3 as there would be no air tours authorized in the ATMP planning area under this alternative. Therefore, the Section 4(f) analysis does not analyze the potential for constructive use of Section 4(f) resources in detail under Alternative 2. Detailed analysis of Section 4(f) resources is provided for Alternative 3 (preferred alternative).

In order to assess noise impacts to Section 4(f) resources, the land use compatibility guidelines in 14 CFR Part 150 assist with determining whether a proposed action would constructively use a Section 4(f) resource. These guidelines rely on the DNL, which is considered the best measure of impacts to the quality of the human environment from exposure to noise. The FAA acknowledges that the land use categories in 14 CFR Part 150 may not be sufficient to determine the noise compatibility of Section 4(f) properties (including, but not limited to, noise sensitive areas within national parks and wildlife refuges), where a quiet setting is a generally recognized purpose and attribute. The FAA has consulted with the NPS and included supplemental noise metrics in the Section 4(f) analysis for the alternatives (see Section 3.1.2, Environmental Consequences for Noise and Noise-Compatible Land Use). Visual impacts are assessed in accordance with the framework identified in Section 3.8, Visual Effects.

The FAA evaluated the preferred Alternative 3 for potential impacts to Section 4(f) resources. The noise analysis in Section 3.1.2, Environmental Consequences, indicates that the resultant DNL due to Alternative 3 is expected to be below DNL 45 dB and would not cause any reportable noise as there would be no expected increase or change in noise as a result of this alternative.

Under Alternative 3, there would be a reduction in the number of commercial air tours and routes as compared with existing conditions. Refer to Figure 24 for a depiction of air tour routes under Alternative 3 in the context of Section 4(f) properties. Because the number of authorized flights under Alternative 3 would be less than existing conditions, evaluation of NPS supplemental metrics show that impacts to Section 4(f) resources would be less than impacts currently occurring:

- On days when commercial air tours would occur, noise levels above 35 dBA (an indicator used by NPS to assess the potential for degradation of the natural sound environment) would occur for less than 15 minutes in 58% of the study area, less than 30 minutes in 25% of the study area, and less than 45 minutes in small portions (3%) in the southeast area of the study area (see Figure 13 in Appendix F, *Noise Technical Analysis*).
- On days when commercial air tours would occur, noise levels above 52 dBA (which is associated with speech interference) are not anticipated to exceed 10 minutes in the study area based on an analysis of location point data. Location points (provided by NPS) are specific points of interest geographically located across the entire Park where noise levels were evaluated (see Appendix I, *Section 4(f) Analysis* for a summary of the reported ranges of time above 52 dBA for location points within 1.5 miles of each Section 4(f) property).

In addition, Alternative 3 would limit the operation of commercial air tours to between 11 AM-2 PM any day of the week except Sunday and Wednesday, or other restricted periods, or would extend operations until 4 PM if authorized by the agencies for operators that have converted to quiet technology aircraft. These time restrictions provide times when visitors seeking solitude may experience the Section 4(f) resources without disruptions from commercial air tours. The altitudes required by Alternative 3, which would increase the minimum altitude by 500 – 2,500 ft. depending on location within the ATMP planning area as compared to existing conditions, would reduce the maximum noise levels at sites directly below the air tour routes.

As a result, FAA concludes there would be no substantial impairment³⁰ on Section 4(f) resources in the study area from noise-related effects under Alternative 3. This conclusion supports the FAA's determination that Alternative 3 would not constitute constructive use of Section 4(f) resources in the study area. This Section 4(f) determination for historic properties is based on 14 CFR Part 150 Appendix A and is also consistent with the Section 106 no adverse effect determination for Alternative 3 (see Section 3.4 Cultural Resources).

The FAA also considered the potential for vibrational impacts on Section 4(f) resources under Alternative 3. A review of the potential for vibrational impacts on sensitive structures such as geological resources, historic buildings, parklands, and forests suggests that the potential for damage resulting from helicopter overflights is minimal, as the fundamental blade passage frequency is well above the natural frequency of these structures. Additionally, the vibration amplitude of these overflights at the altitudes prescribed in Alternative 3 would be well below

³⁰ Substantial impairment would occur when impacts to section 4(f) lands are sufficiently serious that the value of the site in terms of its prior significance and enjoyment are substantially reduced or lost.

recommended limits.^{31, 32} Vibrational impacts are not anticipated to affect surrounding parkland and State Forest areas given that aircraft overflights do not contain vibrational energy at levels which would affect outdoor areas or natural features and there is no substantial change from existing conditions.

Recognizing that some types of Section 4(f) resources may be affected by visual effects of commercial air tours, the FAA and the NPS considered the potential for the introduction of visual elements that could substantially diminish the significance or enjoyment of Section 4(f) resources in the study area. Alternative 3 would limit the number of commercial air tours per year to 2,412 flights and would limit those routes to a single flight path over the Park, which would result in fewer air tours occurring in areas of the study area, and therefore, fewer Section 4(f) properties, from which a commercial air tour could be visible. Alternative 3 would not introduce visual elements or result in visual impacts that would substantially diminish the activities, features or attributes of a Section 4(f) resource. Therefore, there would be no constructive use from visual impacts of Section 4(f) resources.

³¹ Hanson, C.E., King, K.W., et al., "Aircraft Noise Effects on Cultural Resources: Review of Technical Literature," NPOA Report No. 91-3 (HMMH Report No.290940.04-1), September 1991.

³² Volpe National Transportation Systems Center, Department of Transportation, 2014. Literature Review: Vibration of Natural Structures and Ancient/Historical Dwellings, Internal Report for National Park Service, Natural Sounds and Night Skies Division, August 21, 2014.

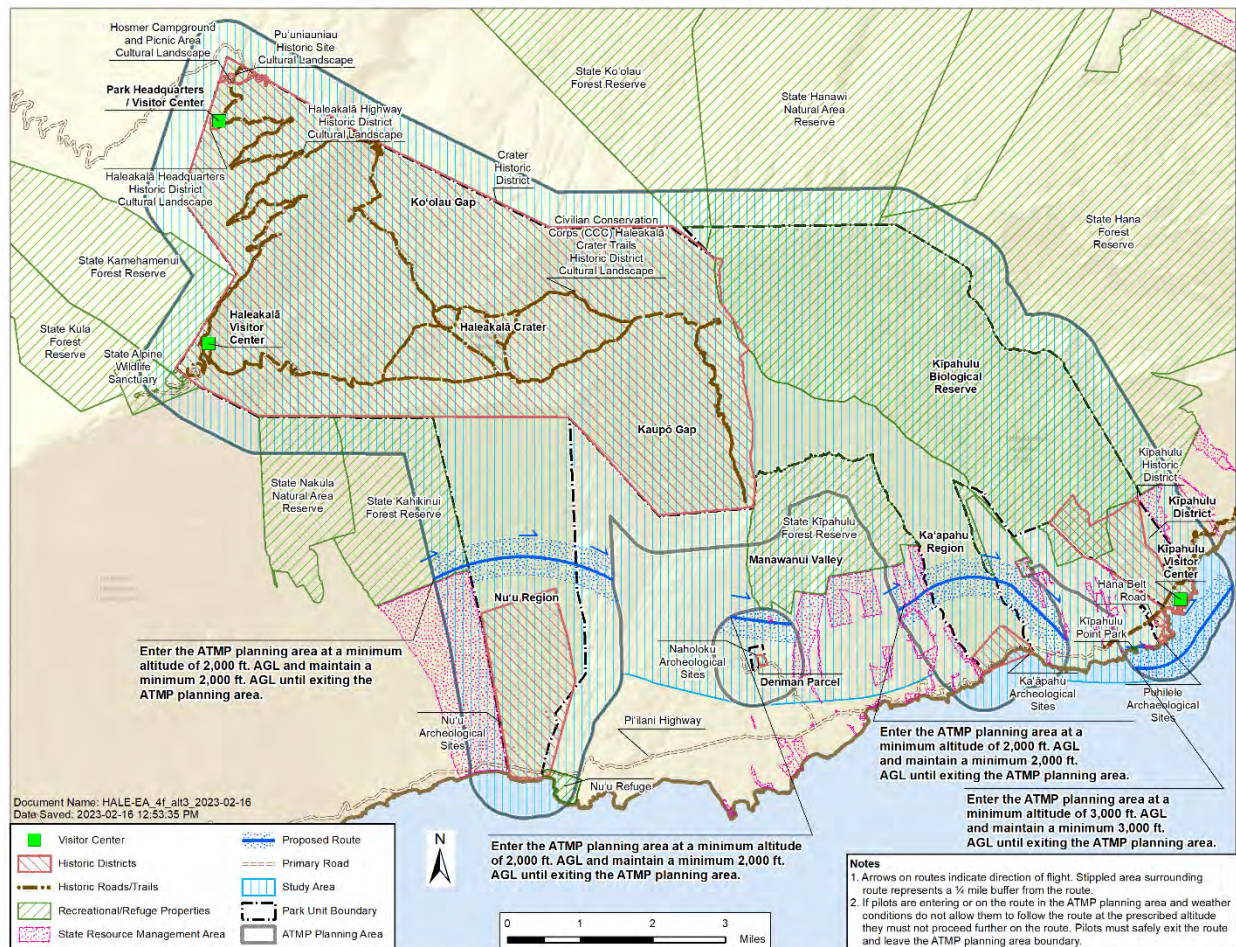


Figure 24. Section 4(f) Environmental Consequences for Alternative 3

Indirect and Cumulative Effects

Indirect Effects: The indirect effects of Alternative 3 on Section 4(f) properties reflect those analyzed in the sections for noise and visual effects. Alternative 3 would limit the number of flights per year as compared to existing conditions and would have the potential to result in some displacement of air tours outside the ATMP planning area. Air tours occurring outside the ATMP planning area or over the ATMP planning area at or above 5,000 ft. AGL, if any, may result in noise or visual effects to Section 4(f) resources to the extent that they are present near the areas that those flights would occur.

The indirect effects analysis conducted for Noise and Noise-Compatible Land Use indicates that it is highly unlikely that the air tours that are displaced to outside the ATMP planning area under Alternative 3 would generate a noise exposure level at or above DNL 65 dB in a single location in accordance with FAA Order 1050.1F, including those that overlap with Section 4(f) properties. The indirect effects analysis for Visual Effects identifies that some indirect visual impacts could occur if flights were displaced to outside the ATMP planning area and would

likely be experienced in the areas within or surrounding the Summit District since the Haleakalā Crater would still be visible from air tours conducted just outside the ATMP planning area in this location. Section 4(f) resources are present in these areas and could experience indirect visual effects if air tours were visible from those resources. However, the FAA and the NPS are unable to predict with specificity if, where, and to what extent any displaced air tours would result in visual impacts in different and/or new areas, including Section 4(f) resources.

Cumulative Effects: The cumulative effects to Section 4(f) properties reflect those analyzed in the sections for noise and visual effects. Ongoing present and future Park management actions by the NPS within the ATMP planning area including approximately 96 administrative helicopter flights per year may contribute noise that would continue to negatively affect the acoustic environment of Section 4(f) properties within the study area. Other sources of ongoing visual impacts that may affect Section 4(f) properties within the study area include general aviation flights, overflights by commercial airlines, military flights, and administrative flights such as those used for maintenance or search and rescue efforts, which would likely continue under Alternative 3, as they occur independently of air tours.

Section 4(f) Recommended Finding

In summary, the FAA has preliminarily determined that there would be no constructive use to Section 4(f) properties under Alternative 3 because noise and visual impacts from commercial air tours under this alternative would not constitute a substantial impairment of Section 4(f) resources in the study area. As part of the draft ATMP and draft EA development, the FAA consulted with the NPS and through the release of the draft ATMP and draft EA, consulted with the NPS and other officials with jurisdiction over Section 4(f) resources in the study area regarding FAA's preliminary finding of no substantial impairment, and hence, the FAA's proposed no constructive use determination. The FAA has sent letters to each Section 4(f) property's official with jurisdiction with this preliminary finding concurrent with the release of this draft EA for public review. Refer to Appendix I, *Section 4(f) Analysis*, for additional details on this coordination.

3.11 Summary of Environmental Consequences

Table 13 summarizes the environmental consequences described above for each of the alternatives considered across each environmental impact category.

Table 13. Summary of Environmental Consequences of the ATMP Alternatives.

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred)
Noise and Noise-Compatible Land Use	<ul style="list-style-type: none"> 12-hr equivalent sound level: maximum <50 dBA; <40 dBA in 20% of ATMP planning area. DNL: <50 dB 	<ul style="list-style-type: none"> 365 days per year without air tours within the ATMP planning area and would reduce noise in the most noise sensitive regions of the 	<ul style="list-style-type: none"> 12-hr equivalent sound level: maximum <45 dBA; 35 to <40 dBA in 6% of ATMP planning area.

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred)
	<ul style="list-style-type: none"> • Time audible natural ambient: maximum exceeds 225 minutes per day; >120 minutes per day in 53% of ATMP planning area; audible in 100% of ATMP planning area. • Time above 35 dBA: maximum 75-90 minutes per day in <1% of ATMP planning area; >30 minutes per day in 45% of ATMP planning area. • Maximum time above 52 dBA: 23.6 minutes across all locations; <1 minute at 61% of locations. • Maximum sound level in ATMP planning area: 68.7 dBA at location #40. • No indirect effects expected. 	<p>Park.</p> <ul style="list-style-type: none"> • Indirect noise impacts may occur due to air tours displaced to outside the ATMP planning area. 	<ul style="list-style-type: none"> • DNL: <45 dB • Time audible natural ambient: maximum <105 minutes per day in <1% of ATMP planning area; 60 minutes per day in 54% of ATMP planning area. • Time above 35 dBA: maximum 30-45 minutes per day in 3% of ATMP planning area; 0.1 minutes per day in 58% of ATMP planning area. • Maximum time above 52 dBA: 9.3 minutes across all locations; <1 minute at 73% of locations. • Maximum sound level in ATMP planning area: 65.0 dBA at location #37. • Indirect noise impacts may occur due to air tours being displaced to outside the ATMP planning area; would be fewer indirect impacts than Alternative 2.
Air Quality and Climate Change	<ul style="list-style-type: none"> • Criteria pollutants: 0.103 TPY • GHG emissions: 267 MT of CO₂ per year • Would not cause NAAQS exceedance or increase the frequency or severity of any existing violations. • No indirect effects expected. 	<ul style="list-style-type: none"> • Reduction in criteria pollutants: 0.103 TPY • Reduction in GHG emissions: 267 MT CO₂ • Would not cause NAAQS exceedance or increase the frequency or severity of any existing violations. • Indirect impacts may occur due to air tours outside the ATMP planning area if winds transport emissions to within the ATMP planning area, and some areas not currently exposed to emissions from air tours (outside the ATMP planning area) may be exposed to emissions. • Highly unlikely that air tours displaced to outside the ATMP planning area would result in air quality impacts or change the current attainment status of the Park. 	<ul style="list-style-type: none"> • Reduction in criteria pollutants: 0.064 TPY • Reduction in GHG emissions: 158 MT CO₂ • Would not cause NAAQS exceedance or increase the frequency or severity of any existing violations. • Indirect impacts may occur due to air tours outside the ATMP planning area if winds transport emissions to within the ATMP planning area, and some areas not currently exposed to emissions from air tours (outside the ATMP planning area) may be exposed to emissions. • Highly unlikely that air tours displaced to outside the ATMP planning area would result in air quality impacts or change the current attainment status of the Park.

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred)
Biological Resources	<ul style="list-style-type: none"> Commercial air tour noise would continue to affect wildlife within the ATMP planning area and interfere with wildlife research activities. Time above 35 dBA: 75 minutes in portions of ATMP planning area. Not expected to result in indirect effects to wildlife. 	<ul style="list-style-type: none"> Direct beneficial effects to biological resources are expected. No direct impacts to biological resources within the ATMP planning area, but could result in some indirect impacts due to air tour displacement outside the ATMP planning area. 	<ul style="list-style-type: none"> Annual (2,412) and daily (16) limits of air tour operations; a single flight route; and min. altitude of 2,000 ft. AGL over land and 3,000 ft. AGL over water to protect land and marine species and their habitats. Time above 35 dBA: <15 minutes in most areas within the ATMP planning area, <45 minutes in 3% of the ATMP planning area. Could result in indirect effects to wildlife due to air tour displacement outside the ATMP planning area.
Cultural Resources	<ul style="list-style-type: none"> Cultural resources would continue to be impacted by air tours, as noise and visual effects would impact the feeling and setting of cultural resources. Time above 35 dBA: 75-90 minutes per day in portions of ATMP planning area. Not expected to result in indirect effects to cultural resources within the APE. 	<ul style="list-style-type: none"> Would reduce the noise and remove visual intrusions from the setting of cultural resources within the APE. Could result in some indirect impacts to cultural resources within the APE, primarily in the lower portions of the Haleakalā Summit TCP, if flights were displaced to outside the APE. 	<ul style="list-style-type: none"> Would reduce noise and visual impacts that could detract from the feeling and setting of cultural resources within the APE. Annual (2,412) and daily (16) limits for air tour operations within the APE would reduce the likelihood that an air tour would interrupt Native Hawaiian traditional practices such as ceremonies and the sanctity of the Haleakalā Crater. Time above 35 dBA: 15-45 minutes per day in portions of ATMP planning area. Could result in air tour displacement outside the APE but would likely result in fewer indirect effects to cultural resources.
Wilderness	<ul style="list-style-type: none"> Air tour noise within and near the Wilderness detracts from the natural quality and opportunity for solitude. Time above 35 dBA: <90 minutes a day in the Haleakalā Wilderness; 75 minutes a day in portions of Haleakalā Wilderness including Kīpahulu 	<ul style="list-style-type: none"> Offers the greatest protection of Wilderness, since commercial air tours would not be able to fly over Wilderness. Could result in indirect impacts to Wilderness areas associated with the sights and sounds of air tours if tours were 	<ul style="list-style-type: none"> Protects Wilderness character due to the placement of routes further from Wilderness areas and increase in altitudes, but would diminish the natural quality of Wilderness in some discrete locations where air tour noise would reach native forest bird

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred)
	<p>Biological Reserve and adjacent lands.</p> <ul style="list-style-type: none"> No indirect effects expected. 	<p>displaced to outside the ATMP planning area.</p>	<p>habitat, and also would detract from opportunities for solitude where air tour noise would be audible to Wilderness visitors.</p> <ul style="list-style-type: none"> Time above 35 dBA: <30 minutes a day Haleakalā Wilderness Time audible in Wilderness >105 minutes a day in Wilderness. Could result in some indirect impacts to Wilderness areas if tours were displaced to outside the ATMP planning area and the sights and sounds of those tours affected Wilderness areas.
Visitor Use and Experience and Other Recreational Opportunities	<ul style="list-style-type: none"> Impacts to interpretive programs at the Kīpahulu Visitor Center due to sound levels from air tours resulting in speech interference and inability to hear natural sounds. Most impacts to visitor experience, which would occur Park-wide with the exception of the Park's developed areas, are related to the intrusion of audible air tour noise where visitors would expect natural sounds to prevail during their visit to the Park. Maintains the current availability of air tours for those that wanted to view the Park from an aerial vantage point. 53% of the ATMP planning area would experience audible air tour noise at some point in the day. Audible air tour noise >120 minutes a day. Time above 52 dBA: <2.5 minutes per day at the Kīpahulu Visitor Center. 	<ul style="list-style-type: none"> Offers the greatest protection of visitor use and experience and experience for the greatest number of visitors, but eliminates air tours within the ATMP planning area. Air tours occurring outside the ATMP planning area may result in noise in other areas near those flights which could affect the visitor experience. Indirect impacts to visitor experience and points of interest within or near the Summit District could occur if flights were displaced to outside the ATMP planning area. 	<ul style="list-style-type: none"> Indirect impacts to visitor experience and points of interest within or near the Summit District could occur if flights were displaced to outside the ATMP planning area. Annual (2,412) and daily (16) limits on air tour operations within the ATMP planning area; a single flight route; and min. altitude of 2,000 ft. AGL over land and 3,000 ft. AGL over water within ATMP planning area to protect to visitor use and experience. Reduction of audible air tour noise between 37-194 minutes in 60% of the ATMP planning. 54% of the ATMP planning area would experience audible air tour noise for at least 60 non-sequential minutes a day. Audible air tour noise <105 minutes a day <1% of the ATMP planning area. Time above 52 dBA: <9.5 minutes per day at the Kīpahulu Visitor Center.

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred)
	<ul style="list-style-type: none"> No indirect effects expected. 		
Environmental Justice and Socioeconomics	<ul style="list-style-type: none"> Would not result in disproportionately high and adverse impacts to EJ populations or impact those populations in ways that are unique to those EJ populations. DNL: <50 dB 267 MT CO₂ PMAD = 14 air tours 	<ul style="list-style-type: none"> Would not result in disproportionately high and adverse impacts to EJ populations or impact those populations in ways that are unique to those EJ populations. Could impact employment or the amount of income that air tour operators and other ancillary businesses generate from conducting air tours within the ATMP planning area. 	<ul style="list-style-type: none"> Annual (2,412) and daily (16) limits on air tours; a single flight route; and min. altitude of 2,000 ft. AGL over land and 3,000 ft. AGL over water within ATMP planning area would reduce impacts. Would not result in disproportionately high and adverse impacts to EJ populations or impact those populations in ways that are unique to those EJ populations. DNL: <45 dB 158 MT CO₂ Could impact employment or the amount of income that air tour operators and other ancillary businesses generate from conducting air tours within the ATMP planning area; impacts could be less than Alternative 2.
Visual Effects	<ul style="list-style-type: none"> Air tours would continue to impact viewsheds primarily within the Kīpahulu District, including Waimoku Falls and coastal viewsheds. No indirect effects expected. 	<ul style="list-style-type: none"> Would provide the greatest protection to Park viewsheds and would benefit visual resources and visual character within the Park. Indirect impacts to viewsheds could occur if flights were displaced to outside the ATMP planning area. 	<ul style="list-style-type: none"> Annual (2,412) and daily (16) limits on air tours; a single flight route; and min. altitude of 2,000 ft. AGL over land and 3,000 ft. AGL over water within ATMP planning area would reduce likelihood of visual impacts. Indirect impacts to viewsheds could occur if flights were displaced to outside the ATMP planning area.
Coastal Resources	<ul style="list-style-type: none"> Not a selectable alternative, and therefore would not be appropriate for the agencies to prepare a consistency determination. Impacts to coastal resources would reflect those analyzed in other sections of this draft EA for the No Action Alternative for Noise and Noise Compatible Land Use 	<ul style="list-style-type: none"> Impacts to coastal resources would reflect those analyzed in other sections of this draft EA for Alternative 2 for Noise and Noise Compatible Land Use (Section 3.1), Biological Resources (Section 3.3), Cultural Resources (Section 3.4), Visitor Use and Experience and Other Recreational Opportunities 	<ul style="list-style-type: none"> Would not result in impacts to coastal resources. Impacts to coastal resources would reflect those analyzed in other sections of this draft EA for Alternative 3 for Noise and Noise Compatible Land Use (Section 3.1), Biological Resources (Section 3.3), Cultural Resources (Section 3.4), Visitor Use and

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred)
	(Section 3.1), Biological Resources (Section 3.3), Cultural Resources (Section 3.4), Visitor Use and Experience and Other Recreational Opportunities (Section 3.6), Environmental Justice and Socioeconomics (Section 3.7), Visual Effects (Section 3.8), and DOT Act Section 4(f) Resources (Section 3.10).	(Section 3.6), Environmental Justice and Socioeconomics (Section 3.7), Visual Effects (Section 3.8), and DOT Act Section 4(f) Resources (Section 3.10).	Experience and Other Recreational Opportunities (Section 3.6), Environmental Justice and Socioeconomics (Section 3.7), Visual Effects (Section 3.8), and DOT Act Section 4(f) Resources (Section 3.10). <ul style="list-style-type: none"> • Would be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the Hawai'i CZM Program.
DOT Act Section 4(f) Resources	<ul style="list-style-type: none"> • FAA consulted with NPS, who determined that the No Action Alternative would result in substantial impairment to Section 4(f) resources. 	<ul style="list-style-type: none"> • No substantial impairment of Section 4(f) resources in the study area. • No "constructive use" to any Section 4(f) properties. 	<ul style="list-style-type: none"> • Annual (2,412) and daily (16) limits on air tours; a single flight route; and min. altitude of 2,000 ft. AGL over land and 3,000 ft. AGL over water within ATMP planning area would reduce likelihood of impacts. • No substantial impairment of Section 4(f) resources in the study area. • No "constructive use" to any Section 4(f) properties.

**Appendices for the Draft Environmental
Assessment for an Air Tour Management
Plan for
Haleakalā 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 Consultation

Appendix I: Section 4(f) Analysis

Appendix J: Public Scoping Newsletter and Comment Summary Report

Appendix K: CZMA Compliance

APPENDIX A

References

Ainley, D.G, Telfer, T.C., Reynolds, M.H., & Raine, A.F. (2019). *Newell's shearwater (Puffinus newelli)*. In *Birds of the World*. Cornell Lab of Ornithology, Ithaca, NY, USA.
<https://birdsoftheworld.org/bow/species/towshe2/cur/introduction>

American Community Survey (2016-2020). Explore census data. <https://data.census.gov/cedsci/>

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. *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

American National Standards Institute, Inc. (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, G., Rapoza, A., Fleming, G., & Miller, N. (2011). Aircraft noise dose-response relations for national parks. *Noise Control Engineering Journal*, 59, 519.
<https://doi.org/10.3397/1.3622636>

Antaky, C.C, Galase, N.K., & Price, M.R. (2019). Nesting ecology in the Hawaiian population of an endangered seabird, the band-rumped storm-petrel (*Oceanodroma castro*). *The Wilson Journal of Ornithology* 131(2), 402-406. <https://bioone.org/journals/the-wilson-journal-of-ornithology/volume-131/issue-2/18-123/Nesting-ecology-in-the-Hawaiian-population-of-an-endangered-seabird/10.1676/18-123.short>

Atkinson, C.T., & LaPointe, D.A. (2009). Introduced avian diseases, climate change, and the future of Hawaiian honeycreepers. *Journal of Avian Medicine* 23(1), 53-63.
<https://pubmed.ncbi.nlm.nih.gov/19530408/>

Atkinson, C.T., Utzurrum, R.B., LaPointe, D.A., Camp, R.J., Crampton, L.H., Foster, J.T., & Giambelluca, T.W. (2014). Changing climate and the altitudinal range of avian malaria in the Hawaiian Islands — an ongoing conservation crisis on the island of Kaua'i. *Global Change Biology* 20(8), 2426-2436, [10.1111/gcb.12535](https://doi.org/10.1111/gcb.12535)

Baker, J. & Johanos, T.C. (2004). Abundance of the Hawaiian monk seal in the main Hawaiian Islands. *Biological Conservation*, 116(1): 103-110. [https://doi.org/10.1016/S0006-3207\(03\)00181-2](https://doi.org/10.1016/S0006-3207(03)00181-2)

Baker, P.E. & Baker, H. (2020). Maui Alauahio (*Paroreomyza montana*), version 1.0. In *Birds of the World* (A. F. Poole and F. B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA.
<https://doi.org/10.2173/bow.mauala.01>.

- Banko, P.C., Peck, R.W., Cappadonna, J., Steele, C., Leonard, D.L., Mounce, H.L. Becker, D., & Swinnerton, K. (2015). *An assessment of arthropod prey resources at Nakula Natural Area Reserve, a potential site of reintroduction for Kiwikiu (Pseudonestor xanthophrys) and Maui 'Alaiahio (Parareomyza montana)*. Pacific Island Ecosystems Research Center.
<https://www.usgs.gov/publications/assessment-arthropod-prey-resources-nakula-natural-area-reserve-a-potential-site>
- Banko, P.C., Black, J.M., & Banko, W.E. (2020). *Hawaiian goose (Branta sandvicensis)*, version 1.0. In *Birds of the World* (A.F. Poole and F.B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. <https://birdsoftheworld.org/bow/species/hawgoo/cur/introduction>
- Beeco, J. A., Joyce, D., & Anderson, S. J. (2020). Evaluating the use of spatio-temporal aircraft data for air tour management planning and compliance. *Journal of Parks and Recreation Administration: Special Issue - Innovative Methodologies in Park and Recreation Management*, 39(1). <https://doi:10.18666/JPRA-2020-10341>
- 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>
- Berlin, K. E. & Vangelder, E.M. (2020). *Akohekohe (Palmeria dolei)*. version 1.0. In *Birds of the World* (A. F. Poole and F. B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. <https://doi.org/10.2173/bow.crehon.01>
- Black, J.M., Marshall, A.P., Gilburn, A., Santos, N., Hoshide, H., Medeiros, J., Mello, J., Natividad Hodges, C., & Katahira, L. Survival, movements, and breeding of released Hawaiian geese: An assessment of the reintroduction program. *The Journal of Wildlife Management*, 61(4): 1161-1173. <https://www.jstor.org/stable/3802114>
- Bonaccorso, F.J. (2010). 'Ōpe'ape'a: Solving the puzzles of Hawaii's only bat. *Bats* 28:10-12. <https://pubs.er.usgs.gov/publication/70041594>
- Bonaccorso, F.J., Todd, C.M., Miles, A.C., & Gorresen, P.M. (2015). Foraging range movements of the endangered Hawaiian hoary bat, *Lasiurus cinereus semotus* (Chiroptera: Vespertilionidae). *Journal of Mammalogy* 96(1), 64-71. <https://doi.org/10.1093/jmammal/gyu003>
- Borrie, W. T., & 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>
- Born, E.W., F.F. Riget, R. Dietz and D. Andriashek. 1999. Escape responses of hauled out ringed seals (*Phoca hispida*) to aircraft disturbance. *Polar Biol.* 21: 171-178.
- Brown, A. L. (1990). Measuring the effect of aircraft noise on sea birds. *Environment International* 16, 587-592. [https://doi.org/10.1016/0160-4120\(90\)90029-6](https://doi.org/10.1016/0160-4120(90)90029-6)

Bureau of Labor Statistics. (2021). May 2021 State Occupational Employment and Wage Estimates, Hawai'i. https://www.bls.gov/oes/current/oes_hi.htm.

Camp, R.J., Reynolds, M.H., Woodworth, B.L., Pratt, T.K., & Gorresen, P.M. (2009). Monitoring Hawaiian forest birds. Chapter 4 in T.K. Pratt, C.T. Atkinson, P. Banko, J. Jacobi, and B.L. Woodworth, eds. *Conservation Biology of Hawaiian Forest Birds: Implications for island avifauna*. Yale University Press, New York, U.S.A.

Carson, M. T., & Mintmier, M.A. (2007). Archeological Survey in Front Country Areas in the Summit District of Haleakalā National Park, Maui Island, Hawai'i. Prepared for National Park Service Pacific West Region, Pacific Islands Support Office. International Archaeological Research Institute, Inc., Honolulu.

Carson, M. T. & Rowland, R. (2008). Archeological Inventory Survey of Portions of the Kīpahulu Unit of Haleakalā National Park, Maui Island, State of Hawai'i Portions of Maui Tax Map Key 2-1-6- 03:007, -008, -010, -025, -029; 2-1- 6-05-024, -025,; 2-1- 6- 06-002, -003, -004, -006, -020. International Archaeological Research Institute, Inc., Prepared for National Park Service, Contract No. C8298030001. Report on file, Haleakalā National Park.

CKM Cultural Resources L.L.C. (2006). Cultural resource evaluation and traditional practices of the proposed Advanced Technology Solar Telescope (ATST) at Haleakalā high altitude observatories.

Cultural Surveys Hawai'i, Inc. (2007). Supplemental cultural impact assessment for the proposed Advanced Technology Solar Telescope (ATST) at Haleakalā high altitude observatories Papa'anui Ahupua'a, Makawao District, Island of Maui.

https://dkist.nso.edu/sites/atst.nso.edu/files/docs/36CFR800/CSH-SCIA-May%202007_Final%20Report.pdf

Delaney, D. K., Grubb, T. G., Beier, P., Pater, L. L., & Hildegard Reiser, M. (1999). Effects of helicopter noise on Mexican spotted owls. *Journal of Wildlife Management*, 63(1), 60-76. <https://doi.org/10.2307/3802487>

Department of Interior, 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>

Department of the Interior. (2014). Handbook on departmental review of Section 4(f) evaluations. Office of Environmental Policy and Compliance.

https://www.doi.gov/sites/doi.gov/files/uploads/4f_handbook.pdf

Dolbeer, R. A., Begier, M. J., Miller, P. R., Weller, J. R., & Anderson, A. L. (2021). Wildlife Strikes to Civil Aircraft in the United States 1990-2019. Department of Transportation, Federal Aviation Administration, National Wildlife Strike Database: Serial Report Number 26.

Dye, T. S., Carson, M.T., & Tomonari-Tuggle, M.J. (2002). Archeological Inventory Survey of Sixty Acres of the Kīpahulu Historic District within the Kīpahulu District of Haleakalā National Park, Maui. International Archaeological Research Institute, Inc., Prepared for National Park Service, Contract No. N62742-97-D-3511. Report on file, Haleakalā National Park.

Environmental Protection Agency. (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>

Fancy, S.G. & Ralph, C.J. (2020). Iiwi (*Drepanis coccinea*), version 1.0. In *Birds of the World* (A.F. Poole and F.B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA.
<https://doi.org/10.2173/bow.iiwi.01>

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

Federal Aviation Administration. (2020). 1050.1F Desk Reference.
https://www.faa.gov/sites/faa.gov/files/about/office_org/headquarters_offices/apl/desk-ref.pdf.

Federal Interagency Working Group on Environmental Justice. (2016). Promising Practices for EJ Methodologies in NEPA Reviews. https://www.epa.gov/sites/default/files/2016-08/documents/nepa_promising_practices_document_2016.pdf

Fortini, L.B., Vorsion, A.E., Amidon, F.A., Paxton, E.H., & Jacobi, J.D. (2015). Large-scale range collapse of Hawaiian forest birds under climate change and the need for 21st century conservation options. *PLoS ONE* 10(11). <https://doi.org/10.1371/journal.pone.0144311>

Francis, Clinton D., Kleist, Nathan J., Ortega, Catherine P., Cruz, Alexander. (2012). *Noise pollution alters ecological services: enhanced pollination and disrupted seed dispersal*. *Proc. R. Soc. B*. 2792727–2735. <http://doi.org/10.1098/rspb.2012.0230>.

Fraser, H., Parker-Geisman, V., & Parish IV, G. (2007). *Hawaiian hoary bat inventory in national parks on the islands of Hawai'i, Maui and Moloka'i*. Pacific Cooperative Studies Unit, University of Hawai'i at Mānoa, Honolulu, Hawai'i. Hawaiian hoary bat inventory in national parks on the islands of Hawai'i, Maui and Moloka'i.
<https://scholarspace.manoa.hawaii.edu/items/6156eee4-a112-4765-b80d-8b3bae46fc20>

Frazier, A.B., & Giambelluca, T.W. (2017). Spatial trend analysis of Hawaiian rainfall from 1920 to 2012. *International Journal of Climatology*, 37(5), 2522-2531.
<https://doi.org/10.1002/joc.4862>

Fung Associates, Incorporated, and SWCA Environmental Consultants. (2019). Natural resource condition assessment: Hawai'i Volcanoes National Park. Natural Resource Report NPS/HAVO/NRR—2019/1967. National Park Service, Fort Collins, Colorado.

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

Gilmartin, B. (2012, March 13). Chief, Protected Species Investigations, National Marine Fisheries Service, Hawai'i (retired). Personal Communication with NPS.

Glidden, C. (1998). Archeological Survey of the Crater Historic District: Haleakalā National Park, Phase III. National Park Service, Hawai'i Volcanoes National Park.

Gonzalez, Patrick. (2014). Climate Change Trends and Vulnerabilities, Haleakalā National Park, Hawai'i. U.S. National Park Service. <https://irma.nps.gov/DataStore/DownloadFile/512681>

Guillaumet, A., Kuntz, W., Samuel, M., & Paxton, E. (2017). Altitudinal migration and the future of an iconic Hawaiian honeycreeper in response to climate change and management. *Ecological Monographs* 87(3), 410-428. <https://www.istor.org/stable/26358514>

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. & Timothy J. W. (1998). National parks and the American public: a national public opinion survey on the National Park System: A summary report. The Association, 1-32.

Habib, L., Bayne, E. M., Boutin, S. (2007). *Chronic industrial noise affects pairing success and age structure of ovenbirds *Seiurus aurocapilla**. *Journal of Applied Ecology* Volume 44, Issue 1, 176-184. <https://doi.org/10.1111/j.1365-2664.2006.01234.x>.

Haleakalā National Park. (2014). Hawaiian Petrel Activity Information. Unpublished Data.

Haleakalā National Park. (2016). Environmental Assessment: Management and removal of feral animals in upper elevations of Nu'u, Maui. <https://parkplanning.nps.gov/document.cfm?parkID=306&documentID=73368>

Haleakalā National Park Endangered Wildlife Management. (2018). *'Ua'u, the Hawaiian Petrel*. National Park Service. <https://www.nps.gov/hale/learn/nature/uau-the-hawaiian-petrel.htm>

Halfwerk, W., Holleman, L. J. M., Lessells, C. M., Slabbekoorn, H. *Negative impact of traffic noise on avian reproductive success*. *Journal of Applied Ecology*, Volume 48, Issue 1, 210-219. <https://doi.org/10.1111/j.1365-2664.2010.01914.x>.

Hawai'i Department of Land and Natural Resources. (2005). Hawai'i's Comprehensive Wildlife Conservation Strategy. <https://dlnr.hawaii.gov/wildlife/files/2013/09/CWCS-Full-Documents-2005Oct01.pdf>

Hawai'i Department of Business, Economic Development, and Tourism. (2006). Hawai'i Ocean Resources Management Plan. https://files.hawaii.gov/dbedt/op/czm/ormp/reports/2006_ocean_resources_management_plan.pdf

Hawai'i Department of Business, Economic Development and Tourism. (2021). *Job Count by Industry*. <https://dbedt.hawaii.gov/economic/job-count-by-industry/>

H. T. Harvey & Associates (2020). Hawaiian Hoary Bat Research, Maui. Final Report 2019. Project #3978-01. Prepared for Terraform Power. <https://dlnr.hawaii.gov/wildlife/files/2021/01/MauiBatsHTHFebruary2020.pdf>

Hodara Nelson, R. E., Matthew, K. E., & Gehrman, S.M. (2022) Archeological Inventory Survey of Portions of the Kīpahulu District of Haleakalā National Park, Ahupua'a of 'Alae Nui, Moku of Kīpahulu, Maui Island, State of Hawai'i Portions of Maui Tax Map Key (2) 1-6-003: 001(por.) and (2) 1-6-004: 002(por.). Prepared by NPS. Report on file, Haleakalā National Park.

Hodara Nelson, R. & Steffen, R. A. in prep. Archeological Inventory Survey of A Portion of the Former Ala Akua Ranch in Haleakalā National Park, Ahupua'a of Naholoku, 'Okana of Ma'ua, Moku of Kaupō, Maui Island, State of Hawai'i Maui Tax Map Key (2) 1-7-002: 77 (Por.). Prepared by NPS. Report on file, Haleakalā National Park.

Hodges, Cathleen. (1992). Band-rumped storm-petrel observations in Haleakalā National Park. Unpublished report prepared by Haleakalā National Park for the U. S. Fish and Wildlife Service.

Job, J. R., A. R. Pipkin, & J. A. Beeco. (2018). *Haleakalā National Park: Acoustic monitoring report*. National Park Service, Fort Collins, Colorado. <https://irma.nps.gov/DataStore/DownloadFile/602845>

Judge, S.W., Camp, R.J., & Hart, P.J. (2013). Pacific Island landbird monitoring annual report, Haleakalā National Park, 2012. Natural Resource Technical Report NPS/PACN/NRTR—2013/740. National Park Service. <https://pubs.er.usgs.gov/publication/70048595>

Judge, S.W., Camp, R.J., Warren, C.C., Berthold, L.K., Mounce, H.L., Hart, P.J., & Monello, R.J. (2019). Pacific island landbird monitoring annual report, Haleakalā National Park and East Maui Island, 2017. Natural Resource Report NPS/PACN/NRR-2019/1949. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2264948>

Judge, S.W., Camp, R.J., Warren, C.C., Berthold, L.K., Mounce, H.L., Hart, P.J., & Monello, R.J. (2021). Population estimates and trends of three Maui Island-endemic Hawaiian honeycreepers. *Journal of Field Ornithology* 92(2), 115-126.

<https://www.usgs.gov/publications/population-estimates-and-trends-three-maui-island-endemic-hawaiian-honeycreepers>.

Kleist, N. J., Guralnick, R. P., Cruz, A., Francis, C. D. (2018). *Chronic anthropogenic noise disrupts glucocorticoid signaling and has multiple effects on fitness in an avian community*. *Proceedings of the National Academy of Sciences of the United States of America*. 115 (4) E648-E657.

<https://doi.org/10.1073/pnas.1709200115>.

Komenda-Zehnder, S., M. Cevallos, & B. Bruderer. (2003). Effects of disturbance by aircraft overflight on waterbirds – an experimental approach. *International Bird Strike Committee* IBSC26/WP-LE2, 157-168. <https://nmsfarallones.blob.core.windows.net/farallones-prod/media/archive/eco/seabird/pdf/articles/disturbcon/komendazehnderetal2003.pdf>

Krushelnycky, P.D., Chimera, C.G., & VanderWerf, E.A. (2019). Natural resource condition assessment: Haleakalā National Park. Natural Resource Report NPS/HALE/NRR—2019/1977. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2265714>

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), 20160839. <https://pubmed.ncbi.nlm.nih.gov/27534952/>

Kunc, H. P., & 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., ... & 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>

LaPointe, D., Atkinson, C. T., Jarvi, S. I. (2009). *Chapter 17, Managing Disease*. Applying research to Management.

LaPointe, D. A., Goff, L., Atkinson, C. T. (2010). *Thermal Constraints to the Sporogonic Development and Altitudinal Distribution of Avian Malaria Plasmodium relictum in Hawai'i*. *J Parasitol* 96 (2): 318–324. <https://doi.org/10.1645/GE-2290.1>. <https://irma.nps.gov/DataStore/DownloadFile/620854>

Lawson S. R., Hockett K., Kiser B. C., Reigner N. R., Ingram A., Barnes C., Dymond S.F. (2008). *Research to support visitor use management and resource protection at the 'Ohe'o Pools in Haleakalā National Park: Final report*. Virginia Polytechnic Institute and State University, Department of Forestry.

Le, L. & M. Strawn. (2016). *Haleakalā National Park visitor study summer 2015*.

<https://irma.nps.gov/DataStore/DownloadFile/620854>

Lee, C.S.Y., Fleming, G.G., Roof, C.J., MacDonald, J.M., Scarpone, C.J., Malwitz, A.R., & Baker, G. (2016). Haleakalā National Park: Baseline Ambient Sound Levels 2003.

<https://irma.nps.gov/DataStore/Reference/Profile/2233849>

Leopold, C.R., & Hess, S.C. (2014). Corridor- and stopover-use of the Hawaiian goose (*Branta sandvicensis*), an intratropical altitudinal migrant. *Journal of Tropical Ecology*, 30(1), 67-78.

<http://www.jstor.org/stable/43831696>

Lynch, E. (2012). *Haleakalā National Park: Acoustical monitoring report*. Natural Resource Technical Report NPS/NRSS/NRTR—2012/549. National Park

Service. <https://irma.nps.gov/DataStore/DownloadFile/446569>

Magnacca, K., and D. Foote. 2006. Appendix E: Invertebrate Faunareport. *In*: HaySmith, L., F. L. Klasner, S. H. Stephens, and G. H. Dicus. Pacific Island Network vital signs monitoring plan. Natural Resource Report NPS/PACN/NRR—2006/003 National Park Service, Fort Collins, Colorado.

Maly, K. & Maly, O. (2004) He Mo'olelo 'Āina: A Cultural Study of the Manukā NAR.

https://www.kumupono.com/wp-content/uploads/2021/12/2004_07_20_Manuka-Kau-Kaulanamauna-Kona-Hawaii-PDF.pdf

Maui County. (2005). §205A-22 *Definitions*.

http://www.capitol.hawaii.gov/hrscurrent/Vol04_Ch0201-0257/HRS0205A/HRS_0205A-0022.htm.

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>

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, 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/>

Montoya-Aiona, K.M. (2020). *Roosting ecology and behavior of the solitary and foliage-roosting Hawaiian hoary bat (*Lasiurus cinereus semotus*)*. [Unpublished master's thesis] University of Hawai'i, Hilo.

<https://irma.nps.gov/DataStore/DownloadFile/620854>

Mounce HL, Warren CC, McGowan CP, Paxton EH, Groombridge JJ. (2018). Extinction risk and conservation options for Maui Parrotbill, an endangered Hawaiian honeycreeper. *Journal of Fish and Wildlife Management* 9(2):367–382; e1944-687X. doi:10.3996/072017-JFWM-059.

Mountainspring, S. (1987). Ecology, behavior, and conservation of the Maui parrotbill. *Condor* 89(1), 24-39. <https://www.jstor.org/stable/1368757>

National Marine Fisheries Service. (2015). Endangered Species Act Section 7 biological opinion: issuance of incidental harassment authorization under section 101(a)(5)(a) of the Marine Mammal Protection Act to Shell Gulf of Mexico and Shell Offshore Inc. (Shell) for aviation operations associated with ice condition monitoring over the Beaufort and Chukchi Seas from May 2015 through April 2016. National Marine Fisheries Service, Alaska Region. 25 p. <https://repository.library.noaa.gov/view/noaa/17157>

NMFS. (2017). Biological opinion on the issuance of Permit No. 20311 to the National Marine Fisheries Service, Pacific Islands Fisheries Science Center for research on cetaceans. <https://repository.library.noaa.gov/view/noaa/14991>

National Marine Fisheries Service & the National Oceanic and Atmospheric Administration (NMFS and NOAA). (2007). Recovery plan for the Hawaiian Monk Seal (*Monachus schauinslandi*). <https://www.fisheries.noaa.gov/action/hawaiian-monk-seal-recovery-plan>

National Marine Fisheries Service and U.S. Fish and Wildlife Service (NMFS and USFWS). (2014). Olive ridley sea turtle (*Lepidochelys Olivacea*) 5-year review: summary and evaluation. <https://repository.library.noaa.gov/view/noaa/17036>

National Oceanic and Atmospheric Administration (2013). Hawksbill Sea Turtle (*Eretmochelys Imbricata*) 5-Year Review: Summary and Evaluation. <https://repository.library.noaa.gov/view/noaa/17041>

National Register of Historic Places. (1974). Crater Historic District, Haleakala National Park. National Register of Historic Places nomination form. Prepared by Kipahulu District Manager (T. Vaughn) and Pacific Historian (R.A. Apple), revised by Pacific Archeologist (E.J. Ladd). State Director's Office, National Park Service, Honolulu. In Haleakalā National Park Archives.

National Register of Historic Places. (1975). Kipahulu Historic District. National Register of Historic Places nomination form. Prepared by Pacific Historian (R.A. Apple) and Pacific Archeologist (E.J. Ladd). State Director's Office, National Park Service, Honolulu. In Haleakalā National Park Archives.

NMFS and USFWS. (2020). Endangered Species Act status review of the leatherback turtle (*Dermochelys coriacea*). Report to the National Marine Fisheries Service Office of Protected Resources and U.S. Fish and Wildlife Service. <https://repository.library.noaa.gov/view/noaa/25629>

NMFS and USFWS. (2020a). Loggerhead sea turtle (*Caretta caretta*) North Pacific Ocean DPS 5-year review: summary and evaluation. https://media.fisheries.noaa.gov/dam-migration/np_loggerhead_5yr_review_final.pdf

National Marine Fisheries Service (NMFS). (2022). Endangered Species Act Section 7 biological opinion on the Bureau of Ocean Energy Management's proposal to fund a study on the behavioral and spatial ecology of the threatened giant manta ray (*Mobula birostris*, formerly *Manta birostris*). <https://repository.library.noaa.gov/view/noaa/37559>

National Oceanic and Atmospheric Administration (NOAA) Fisheries. (2021). Marine life viewing guidelines: guidelines & distances. <https://www.fisheries.noaa.gov/topic/marine-life-viewing-guidelines/guidelines-&-distances>

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

NPS (1995). General Management Plan and Environmental Impact Statement for Haleakalā National Park.

NPS. (2003). Long-Range Interpretive Plan.

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

NPS. (2008). Haleakalā National Park Action Plan. https://www.nps.gov/subjects/climatechange/upload/HALE_CFP_Action_Plan_508Compliant.pdf

NPS. (2010). Haleakalā National Park – Plan Your Visit. National Park Service. <https://www.nps.gov/hale/planyourvisit/index.htm>

NPS. (2012). Information for Programmatic Section 7 Consultation, Haleakalā National Park, Maui.

NPS. (2015a). Foundation Document - Haleakalā National Park. <https://irma.nps.gov/DataStore/DownloadFile/619346>

NPS. (2015b). Wilderness Building Blocks 1 & 2: Wilderness Basics & Wilderness Character Assessment- Haleakalā Wilderness. <https://irma.nps.gov/DataStore/DownloadFile/619346>

NPS (2015c). *Climate Friendly Parks Program*. National Park Service. <https://www.nps.gov/articles/cfp.htm>

NPS (2015d). Haleakalā National Park Visitor Study. <https://s3.wp.wsu.edu/uploads/sites/3019/docs/HALE15-sum.pdf>

NPS. (2017). *Natural Sounds- Soundscape Management Policy 4.9*.

https://www.nps.gov/subjects/sound/soundscape-management-policy_4-9.htm

NPS. (2019). *Park air profiles – Haleakalā National Park*. National Park Service.

<https://www.nps.gov/articles/airprofiles-hale.htm>

NPS. (2021) 2021 National Park Visitor Spending Effects.

https://www.nps.gov/nature/customcf/NPS_Data_Visualization/docs/NPS_2021_Visitor_Spending_Effects.pdf

NPS (2021b) National Park Service Visitor Use Statistics.

<https://irma.nps.gov/STATS/Reports/Park/HALE>

Natividad Bailey, C. S. (2009). Seabird inventory at Haleakalā National Park, Maui, Hawai'i.

University of Hawai'i at Mānoa, Department of Botany, Honolulu, HI.

<https://scholarspace.manoa.hawaii.edu/server/api/core/bitstreams/9bf18a0d-9b1e-4122-8f90-b02aee978f33/content>

Natural Resources Conservation Service. (2022). *Soil Data Access (SDA) Prime and other*

Important Farmlands. U.S. Department of Agriculture. <https://sdmdataaccess.nrcs.usda.gov/>

NatureServe Explorer. (2022). *Pterodroma sandwichensis*.

<http://explorer.natureserve.org/servlet/NatureServe?searchName=Pterodroma+phaeopygia+sandwichensis>

NatureServe Explorer. (2022). *Lasiurus cinereus semotus*.

https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.102007/Lasiurus_cinereus_semotus

Nemeth, E., Brumm, H. (2010). *Birds and Anthropogenic Noise: Are Urban Songs Adaptive?* The American Naturalist, Volume 176, Number 4. <https://doi.org/10.1086/656275>.

Pacific Rim Conservation. (2013). *Hawaiian Hoary Bat*.

<http://www.pacificrimconservation.org/wp-content/uploads/2013/10/Hawaiian%20Hoary%20Bat.pdf>.

Patenaude, N. J., Richardson, W. J., Smultea, M. A., Koski, W. R., Miller, G. W., Würsig, B., & Greene Jr, C. R. (2002). Aircraft sound and disturbance to bowhead and beluga whales during spring migration in the Alaskan Beaufort Sea. *Marine Mammal Science*, 18(2): 309-335.

Paxton, E.H., Brinck, K.W., Crampton, L.H., Hite, J., & Costantini, M. (2020). 2018 Kaua'i forest bird population estimates and trends. HCSU Technical Report Series 98.

<http://128.171.57.11/handle/10790/5507>

Paxton, E. H., M. Laut, S. Enomoto, and M. Bogardus. (2022). Hawaiian forest bird conservation strategies for minimizing the risk of extinction: Biological and biocultural considerations.

Hawai'i Cooperative Studies Unit Technical Report HCSU-103. University of Hawai'i at Hilo, Hawaii, USA. 125 pages. <http://hdl.handle.net/10790/5386>

Pinzari, C.A., Peck, R.W., Zinn, T., Gross, D., Montoya-Aiona, K., Brinck, K.W., Gorresen, P.M., & Bonaccorso, F.J. (2019b). Hawaiian hoary bat (*Lasiurus cinereus semotus*) activity, diet and prey availability at the Waihou Mitigation Area, Maui. Pacific Island Ecosystems Research Center. <https://www.usgs.gov/publications/hawaiian-hoary-bat-lasiurus-cinereus-semotus-activity-diet-and-prey-availability>

Plentovich, S., Hebshi, A., & Conant, S. (2008). Detrimental effects of two widespread invasive ant species on weight and survival of colonial nesting seabirds in the Hawaiian Islands. *Biological Invasions* 11, 289–298. <https://link.springer.com/article/10.1007/s10530-008-9233-2>

Prasad, U.K. & Tomonari-Tuggle, M.J. (2008). An ethnographic study of the cultural impacts of commercial air tours over Haleakalā National Park, Island of Maui. Prepared for National Park Service-Pacific Islands Support Office. Prepared by International Archaeological Research Institute, Inc.: Honolulu.

Pratt, T. K., Atkinson, C. T. (2009). *Conservation Biology of Hawaiian Forest Birds: Implications for Island Avifauna*.

Price, M., & Cotín, J. (2018). The Pueo Project, Final Report April 2017-March 2018: Population size, distribution, and habitat use of the Hawaiian short-eared owl (*Asio flammeus sandwichensis*) on O'ahu. https://www.pueoproject.com/files/ugd/35ff1d_01233935a6884a7d8738d9146223053a.pdf

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>

Rosendahl, Margaret L.K. (1978). Preliminary Overview of Archaeological Resources at Haleakala National Park, Island of Maui. Prepared for the National Park Service. Department of Anthropology, B.P. Bishop Museum, Honolulu.

Scott, J.M., Mountainspring, S., Ramsey, F.L., & Kepler, C.B. (1986). Forest bird communities of the Hawaiian Islands: their dynamics, ecology, and conservation. *Studies in Avian Biology* 9:1-431. <https://pubs.er.usgs.gov/publication/5200067>

Seminoff, J.A., C.D. Allen, C.D., Balazs, G.H., Dutton, P.H., Eguchi, T., Haas, H.L., Hargrove, S.A., Jensen, M.P., Klemm, D.L., Lauritsen, A.M., MacPherson, S.L., Opay, P., Possardt, E.E., Pultz, S.L., Seney, E.E., Van Houtan, K.S., & Waples, R.S. (2015). Status review of the green turtle (*Chelonia mydas*) under the U.S. Endangered Species Act. NOAA Technical Memorandum, NOAA NMFS-SWFSC-539. 571pp. <https://repository.library.noaa.gov/view/noaa/4922>

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>

Sills, J. M., Parnell, K., Ruscher, B., Lew, C., Kendall, T. L., & Reichmuth, C. (2021). Underwater hearing and communication in the endangered Hawaiian monk seal *Neomonachus schauinslandi*. *Endangered Species Research*, 44: 61-78.

Simon, J. C., P. E. Baker, & H. Baker (2020). Maui Parrotbill (*Pseudonestor xanthophrys*), version 1.0. In *Birds of the World* (A. F. Poole and F. B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. <https://doi.org/10.2173/bow.maupar.01>

Simons, T.R. & Bailey, C.N. (2020). *Hawaiian Petrel (Pterodroma sandwichensis)*, version 1.0. In *Birds of the World* (A.F. Poole and F.B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. <https://doi.org/10.2173/bow.hawpet1.01> Last updated 1998.

Slotterback, J.W. (2021). Band-rumped storm-petrel (*Hydrobates castro*), version 1.1. In *Birds of the World* (A.F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. <https://doi.org/10.2173/bow.barpet.01.1>

Starr, F., and Starr, K. (2017). Investigator's Annual Report. Unpublished report prepared for Haleakalā National Park.

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

The California Department of Transportation. (2016). *Technical guidance for the assessment and mitigation of the effects of traffic noise and road construction noise on bats*. <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/noise-effects-on-bats-jul2016-a11y.pdf>

The Pueo Project. (2019). *Pueo Distribution and Sightings Map*. <https://www.pueoproject.com/distribution-map>.

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>

Tomonari-Tuggle, M. J. (2013) Archeological Inventory Survey of the Area Below Kapahu Living Farm in the Kīpahulu District of Haleakalā National Park, Maui Island, Hawai'i TMK (2) 1-6-03:2, 8, 9, 22, 23, 25, 29; (2) 1-6-04:1. International Archaeological Research Institute, Inc., Submitted to National Park Service, Contract No. C8298100007. Report on file, Haleakalā National Park.

Tomonari-Tuggle, M. J. & Rieth, T.M. (2015). An Archeological Inventory Survey of Five Stream Areas, Ka'āpahu, Haleakalā National Park, Ka'āpahu Ahupua'a, Kīpahulu District, Maui, TMK: (2) 1-6-010:001, 006-008 (Portions, All). International Archaeological Research Institute, Inc., Submitted to National Park Service, Contract No. P10PC60964. Report on file, Haleakalā National Park.

Tomonari-Tuggle, M.J, Rieth, T.M, Bell, M., Filimoehala, D., and Cochrane, E.E. (2015). Archeological Inventory and Reconnaissance Surveys of Nu'u, Haleakalā National Park, Maui Island, Hawai'i (TMK (2) 1-8-001:002). International Archaeological Research Institute, Inc., Submitted to National Park Service, Contract No. C8298100007 & P10PC60964. Report on file, Haleakalā National Park.

Tomonari-Tuggle, M. J., & Tuggle H. D. (2007). Archeological Overview and Assessment for Haleakalā National Park, Island of Maui. International Archaeological Research Institute, Inc., Submitted to National Park Service, Contract No. C8298030001. Report on file, Haleakalā National Park.

Tyack, Len Thomas, Daniel P. Costa, Ailsa J. Hall, Catriona M. Harris, John Harwood, Scott D. Kraus, Patrick J. O. Miller, Michael Moore, Theoni Photopoulou, Enrico Pirota, Rosalind M. Rolland, Lori H. Schwacke, Samantha E. Simmons and Brandon L. Southall. (2022). Managing the effects of multiple stressors on wildlife populations in their ecosystems: developing a cumulative risk approach. *Proc. R. Soc. B*. 2892022205820222058
<http://doi.org/10.1098/rspb.2022.2058>

UC Davis (2022). *Interagency Monitoring of Protected Visual Environments*. Air Quality Research Center. <https://airquality.ucdavis.edu/improve>

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

U.S. Census Bureau. (2021). *Quicks Facts- Maui County, Hawai'i*.
<https://www.census.gov/quickfacts/mauicountyhawaiihttps://ecos.fws.gov/ecp/report/species-listings-by-state-totals?statusCategory=Listed>

USFWS. (2009). Endangered and Threatened Wildlife and Plants; Revised Recovery Plan for the 'Alala (*Corvus hawaiiensis*). FWS–R1–ES–2008–N0208; 10120–1113–0000–C2.

USFWS. (2016a). Endangered Status for 49 Species from the Hawaiian Islands: Final Rule. FR 81(190) 67786-67860.

USFWS. (2016b). Iiwi (*Drepanis coccinea*) species status report. Pacific Islands Fish and Wildlife Office, Region 1. <https://ecos.fws.gov/ServCat/DownloadFile/166536>

USFWS. (2017). Threatened Species Status for the 'I'iwi (*Drepanis coccinea*). FR 82(181) 43873-43885.

USFWS. (2019). Recovery Outline for the Islands of Maui, Moloka'i, Kaho'olawe, and Lana'i (Maui Nui). Pacific Islands Fish and Wildlife Office, Honolulu, HI.
https://ecos.fws.gov/docs/recovery_plan/Maui_Nui_Recovery_Outline_20191031.pdf.
Accessed October 2022.

USFWS. (2021). Hawaiian Hoary Bat 5-year review 2021. <https://www.fws.gov/node/66067>

USFWS. (2022a). *Environmental Conservation Online System- Species Reports*.
<https://ecos.fws.gov/ecp/report/species-listings-by-state-totals?statusCategory=Listed>

USFWS. (2022b). *Environmental Conservation Online System- Hawaiian goose*.
<https://ecos.fws.gov/ecp/species/B00C>

USFWS. (2022c). *Environmental Conservation Online System- Hawaiian Hoary Bat*.
<https://ecos.fws.gov/ecp/species/770>

USFWS. (2022d). Federal Register. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for 'I'iwi. <https://www.federalregister.gov/documents/2022/12/28/2022-27544/endangered-and-threatened-wildlife-and-plants-designation-of-critical-habitat-for-iwi>

van Riper, C., van Riper, S.G., Goff, M.L., & Laird, M. (1986). The epizootiology and ecological significance of malaria in Hawaiian land birds. *Ecological Monographs* 56, 327-344.
<https://www.semanticscholar.org/paper/THE-EPIZOOTIOLOGY-AND-ECOLOGICAL-SIGNIFICANCE-OF-IN-Riper-Riper/250d8dbba2d5823fa38affad8c1ccf5c796cd0ed>

Vetter, J.P., Swinnerton, K.J., VanderWerf, E.A., Garvin, J.C., Mounce, H.L., Breniser, H.E., Leonard, D.L., & Fretz, J.S. (2012). Survival estimates for two Hawaiian honeycreepers. *Pacific Science* 66(3), 299-309.

Wang, A.X., Paxton, E.H., Mounce, H.L., & Hart, P.J. (2020). Divergent movement patterns of adult and juvenile 'Akohekohe, an endangered Hawaiian Honeycreeper. *Journal of Field Ornithology* 91(4): 346-353. <https://doi.org/10.1111/jfo.12348>

Ward, D. H., R. A. Stehn, W. P. Erickson, & D. V. Derksen. (1999). Response of fall-staging Brant and Canada Geese to aircraft Overflights in Southwestern Alaska. *The Journal of Wildlife Management* 63:1, pp. 373-381. <https://www.usgs.gov/publications/response-fall-staging-brant-and-canada-geese-aircraft-overflights-southwestern-alaska>

Warren, C. C., Berthold, L. K., Mounce, H. L., Luscomb, P., Masuda, B., & Berry, L. (2020). Kiwikiu Translocation Report 2019. Pacific Cooperative Studies Unit Technical Report #203. University of Hawai'i at Mānoa. Honolulu, HI. 103 pp.

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>

Whitaker, J.O. & Tomich, P.Q. (1983). Food habits of the hoary bat, *Lasiurus cinereus*, from Hawai'i. *Journal of Mammalogy* 64(1), 151-152. <https://doi.org/10.2307/1380766>

Williams, T. J. (2007). Responses of waterbirds to helicopter disturbance and fish poisoning by Rotenone at Paardevlei, South Africa. *Waterbirds: The International Journal of Waterbird Biology*, 30(3):429-432. <https://www.jstor.org/stable/4501849>

Wood, L. 2015. Acoustic Environment and Soundscape Resource Summary, Haleakala National Park. Natural Sounds & Night Skies Division.
<https://irma.nps.gov/DataStore/DownloadFile/534087>

Work, T., Dagenais, J., Rameyer, R., & Breeden, R. (2015). Mortality patterns in endangered Hawaiian geese (Nene; *branta sandvicensis*). *Journal of Wildlife Diseases*, 51(3), 688-695.
<https://pubmed.ncbi.nlm.nih.gov/26161721/>

APPENDIX B

List of Acronyms, Abbreviations, and Glossary

Appendix B: List of Acronyms, Abbreviations, and Glossary

Acronyms and Abbreviations

The Act	National Parks Air Tour Management Act of 2000
ACS	American Community Survey
ADS-B	Automatic Dependent Surveillance-Broadcast
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.
CCC	Civilian Conservation Corps
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH ₄	Methane
CMZA	Coastal Zone Management Act
CO ₂	Carbon Dioxide
dB	Decibels
dBA	Decibels (A-weighted scale)
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
FSDO	Flight Standards District Office
GHG	Greenhouse Gas
H ₂ O	Water Vapor
Hawai'i Common Procedures Manual	2008 FAA Hawai'i Air Tour Common Procedures Manual
IMPROVE	Interagency Monitoring of Protected Visual Environments
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
L _{nat}	Natural ambient L ₅₀ as described in Lynch (2012) and Job (2018)
MBTA	Migratory Bird Treaty Act
MMPA	Marine Mammal Protection Act
MSL	Mean Sea Level
MT	Metric Tons
N ₂ O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHO	Native Hawaiian Organizations
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
O ₃	Ozone
The Park	Haleakalā National Park
PM	Particulate Matter
PMAD	Peak Month Average Day
SHPD	State Historic Preservation Division
SO ₂	Sulfur Dioxide
TCP	Traditional Cultural Properties
TPY	Tons per Year
U.S.C.	United States Code
USFWS	United States Fish and Wildlife Service

APPENDIX C

List of Preparers

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
- Patricia Deem
- Sandra Fox
- Eric Elmore
- Sheri Lares
- Keith Lusk
- Judith Walker

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

- Michelle Carter
- Kawailehua Domingo
- Bernadette Duman
- Natalie Gates
- Lindsay Gillham
- Jindtana Prugsawan Harlow
- Rachel Hodara Nelson
- Paul Hosten
- Lindsay Moore
- Sara Porsia
- Catherine Sullivan
- Joy Tamayose
- Karen Trevino
- Vicki Ward
- Chris Warren
- Ari Wong

U.S. DOT Volpe National Transportation Systems Center

- Rebecca Blatnica
- Leah Epstein
- Shauna Haas
- Shelby Hanchera
- Amy Hootman
- Brent Lignell
- Travis Mast

- Anjuliee Mittelman
- Jennifer Papazian
- Amanda Rapoza
- Kaitlyn Rimol
- Matthew Simon

APPENDIX D

Distribution List

Appendix D: Distribution List

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

Federal Agencies

- Maui Space Surveillance System Complex (U.S. Space Force)
- U.S. Department of Agricultural - Rural Development
- U.S. Environmental Protection Agency - Region 9, Pacific Islands Contact Office
- U.S. Fish and Wildlife Service
- U.S. Fish and Wildlife Service - Pacific Islands Fish and Wildlife Office
- U.S. Geological Survey
- U.S. Geological Survey - Pacific Islands Ecosystems Research Center
- U.S. Congress – Sen. Mazie Hirono
- U.S. Congress – Sen. Brian Schatz
- U.S. House of Representatives – Rep. Jill Tokuda
- U.S. Fish and Wildlife Service Pacific Islands Office - Endangered Species Biologist, Maui Nui and Hawai'i Island Team

Hawai'i State Agencies

- Department of Hawaiian Homelands
- Department of Hawaiian Homelands - Maui District Office
- Department of Land and Natural Resources, Division of Forestry and Wildlife
- Hawai'i State Capitol
- Hawai'i State Historic Preservation Division
- Hawai'i State Historic Preservation Division, Maui Office
- Hawai'i State House of Representatives
- Hawai'i State Senate
- Land Division
- Land Division- Maui District Office, DLNR
- State of Hawai'i Department of Business, Economic Development & Tourism
- State of Hawai'i Department of Health - Maui District Health Office
- State of Hawai'i Department of Transportation
- State of Hawai'i Department of Transportation - Highways Division
- State of Hawai'i DLNR
- State of Hawai'i DLNR - Division of Forestry and Wildlife
- State of Hawai'i DLNR - Nā Ala Hele
- State of Hawai'i DLNR - State Historic Preservation Division
- The Chamber of Commerce of Hawai'i

Hawai'i County and Local Agencies

- County of Maui Mayor's Office
- Maui County Cooperative Extension
- Maui County Council
- Maui County Cultural Resources Commission
- Maui County Environmental Program
- Maui Police Department
- Office of Hawaiian Affairs
- Office of Hawaiian Affairs, Maui Community Resource Center

Community Organizations, Associations, Businesses, and Interest Groups

- A Broad Adventure
- 'Aha Moku o Kahikinui
- 'Aha Moku o Kaupō
- 'Aha Moku o Maui Inc.
- Akina Aloha Tours
- AlexAir, Inc. (Maverick Helicopters) [Alika Aviation, Inc. (Alexair) in FR]
- Ali'i 'Ai Moku O Kahekili Royal Order of Kamehameha I
- Aloha Maui Limousine
- Aris, Inc. (Air Maui Helicopter Tours)
- Bike It Maui No Ka Oi
- Broder's Skunkware
- Central Maui Hawaiian Civic Club
- Charley's Trail Rides
- College of Tropical Agriculture and Human Resources - University of Hawai'i at Mānoa
- Cruiser Phil's Volcano Riders
- Dept. of Natural Resource and Environmental Management - University of Hawai'i at Mānoa
- Diamond B Ranch
- East Maui Irrigation
- East Maui Watershed Partnership
- Ekahi Tours
- Friends of Haleakala National Park
- Friends of Moku'ula, Inc.
- Ha'iku Community Association
- Hale Hulu Mamo
- Haleakalā Conservancy
- Haleakala Downhill

- Haleakala On Horseback
- Haleakala Ranch
- Hāna Community Association
- Hāna Cultural Center
- Hana Ranch
- Hapapa Farm
- Hasegawa General Store
- Hawai'i Conservation Alliance & Foundation
- Hawai'i Farmer Union United
- Hawai'i Island Coalition Malama Pono
- Hawai'i Pacific Parks Association
- Hawai'i Visitors & Convention Bureau
- Hawaiian Islands Land Trust
- Hawai'i Tourism Authority
- Helicopter Consultants of Maui, LLC (Blue Hawaiian Helicopters)
- Helicopter Consultants of Maui, LLC (Hawai'i Helicopters)
- Hike Maui
- Historic Hawai'i Foundation
- Island Exclusive
- Kamehameha Schools Maui
- Ka'ono'ulu Ranch
- Kaupō Community Association
- Kaupō Ranch
- Kaze Enterprises
- Kilakila o Haleakalā
- Kimura International
- King Kekaulike High School
- Kīpahulu Community Association
- Kīpahulu 'Ohana
- Kula Community Association
- Kula Lodge and Restaurant
- Kula Market Place
- Kula Sandalwoods
- Kuloloi'a Lineage - I ke Kai 'o Kuloloi'a
- Kumu A'o
- Kupuna Group – Kipa
- Leeward Haleakalā Watershed Restoration Partnership
- Magic Maui
- Mahi Pono LLC
- Maui Cattle Company
- Maui Chamber of Commerce

- Maui Coastal Land Trust
- Maui Downhill
- Maui Eco-Adventures
- Maui Horseback Tours
- Maui Invasive Species Committee
- Maui Land & Pineapple Company
- Maui Mountain Cruisers
- Maui Nui
- Maui Outdoor Circle
- Maui Sunriders Bike Company
- Maui Tomorrow Foundation
- Maui Visitors Bureau
- MCT Inc./Best Holiday
- Mountain Riders
- Myna Tours Inc.
- Na Aikane o Maui
- Na Koa Ikaika Ka Lāhui Hawai'i
- National Parks Conservation Association
- National Parks Conservation Association - Pacific Regional Office
- National Trust for Historic Preservation
- Nekaifes 'Ohana
- Nu'u Mauka Ranch
- ONO Organic Farms
- Pacific Islands Climate Change Cooperative
- Paukūkalo Hawaiian Homes Community Center
- Polynesian Adventure Tours Inc.
- Pony Express
- Pualani Adventures
- Public Employees For Environmental Responsibility
- Pukalani Community Association
- Robert's Hawai'i
- Royal Order of Kamehameha I, Heiau O Kahekili IV
- Schuman Aviation Company, Ltd. (Makani Kai Helicopters, Magnum Helicopters)
- Sierra Club - Maui Group
- Star Gazers Maui
- Sunrise Country Market
- Sunshine Helicopters, Inc.
- Sustainable Science Management - University of Hawai'i Maui College
- Temptation Tours
- The Nature Conservancy
- The World Outdoors

- Thompson Ranch
- Travel Plaza Transportation, LLC - JTB Overseas Development Corporation
- Tri-Isle Resource Conservation & Development Council
- Tropical Plant and Soil Science - University of Hawai'i at Mānoa
- 'Ulupalakua Ranch
- University of Hawai'i - Institute for Astronomy Haleakala
- University of Hawai'i Maui College
- Valley Isle Excursions
- Waiehu Kou Phase 3 Assoc.
- Waiohuli Hawaiian Homesteaders Association
- Wananalua Congregational Church
- West Maui Mountains Watershed Partnership

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/HaleakalaATMP>

APPENDIX E

Environmental Impact Analysis Methods

Environmental Assessment for an Air Tour Management Plan for Haleakalā 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 Haleakalā National Park (park). In compliance with the National Environmental Policy Act (NEPA), the agencies prepared an 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 EA. This technical appendix describes the methodologies used for evaluating the potential for environmental impacts to occur from the alternatives considered in the EA.

The agencies have identified environmental impact categories that require detailed analysis in this EA due to the potential environmental impacts resulting from implementing the alternatives (refer to Section 1.5 of the 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 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 (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 is 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 and flight tracking data is used to define the routes for this alternative. There are no altitude restrictions under the No Action Alternative beyond the FAA general restrictions/allowances and the guidelines in the 2008 FAA Hawai'i Air Tour Common Procedures Manual (HI Common Procedures Manual).³

3.0 Impacts Considered

The analysis considers direct, indirect, and cumulative effects of each alternative described in Chapter 2 of the 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 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

¹ 49 U.S.C. § 40128(c)(2)(A)(i-ii)

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

³ FAA DOCUMENT NUMBER: AWP13-136A

category. The indirect effects analyses consider 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, 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).⁴ 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 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 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 EA presents this analysis in a comparative manner across all alternatives

⁴ <https://www.faa.gov/files/gslac/courses/content/25/185/vfr%20weather%20minimums.pdf>

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 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 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); blood pressure increases in sleeping humans (Haralabidis et al., 2008); maximum background noise level inside classrooms (ANSI/Acoustical Society of America S12.60/Part 1-2010).</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>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). 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>

4.1.2. 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 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 (PMAD), 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 including minimum altitudes proscribed in the HI Common Procedures Manual.

The results of this analysis are described in the indirect effects analysis in the environmental consequences discussion of the 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 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.⁵ 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)

⁵ NAAQS Table: <https://www.epa.gov/criteria-air-pollutants/naaqs-table>

- Nitrogen dioxide (NO₂)
- Ozone (O₃)⁶
- Particulate matter: aerodynamic diameter ≤ 2.5 µm (PM_{2.5})⁷ and aerodynamic diameter ≤ 10 µm (PM₁₀)
- Sulfur dioxide (SO₂)

The EPA designates geographic areas⁸ 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 national ambient air quality standards.
- 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.⁹

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 Book¹⁰ 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.

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

⁶ 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.

⁷ Sulfur dioxide (SO₂), NOX, VOC, and ammonia are considered precursors to PM_{2.5}.

⁸ Current Nonattainment Counties for All Criteria Pollutants:

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

⁹ General Conformity: <https://www.epa.gov/general-conformity>

¹⁰ Nonattainment Areas for Criteria Pollutants (Green Book): <https://www.epa.gov/green-book>

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 stringent¹¹ 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 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 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

¹¹ 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).

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 CO₂.¹²

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

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.

¹² FAA 1050.1F Desk Reference. February 2020. Section 3.3 Environmental Consequences – Climate.

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 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 EA.

The 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 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 and National Marine Fisheries 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 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 Hawaiians, as identified by Kūpuna groups and other consulting parties with relevant expertise. This analysis in the 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 have identified TCPs and sacred sites within the APE. Additional records have been gathered from the Hawai'i Cultural Resource Information System (HICRIS) and through a records request of the Hawai'i State Historic Preservation Division (SHPD) 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 and 12-hour equivalent sound level metric from the *Noise Technical Analysis* to quantitatively assess potential noise impacts to cultural resources from Alternative 3 as compared to the No Action Alternative. Noise data is used to identify where audible impacts may increase, decrease, or be introduced. Time above 52 was used where noise increases are identified and modeled noise points can be associated with cultural resources. Point data does not include areas outside of the ATMP planning area that may be within the APE. As appropriate, maximum sound level and time audible metrics are also utilized for additional context on increases in noise intensity and/or duration and evaluation of whether impacts are adverse or beneficial to cultural resources where a quiet or natural setting contributes to the significance. 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 is 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 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 this 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 EA analyzes how commercial air tour operators may support economic development by generating income for other ancillary tourism industry businesses. The 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 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 EA focuses on visual effects on visual resources and character and not light emissions. Visual effects on resources discussed in other sections of the 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. Coastal Resources

The Coastal Zone Management Act (CZMA) (16 U.S.C. §§ 1451-1466) provides for management of US coastal resources, including the Great Lakes, to help coastal states balance conservation and restoration of natural resources with community development to develop their economies and support ecosystems. The state of HI administers a CZM program and has established objectives and their supporting policies (HI Revised Statutes § 205A-2) to help the HI CZM Program evaluate the consistency of proposed federal actions. The entire state of HI is considered a coastal zone under the HI CZM program. Therefore, the study area for coastal resources reflects the ATMP planning area.

The affected environment for this environmental impact category identifies resources within the study area that are relevant to the evaluation of the proposed action's consistency with the enforceable policies of the HI CZM program.

According to FAA's 1050.1F Desk Reference, the significance of impacts considers the degree to which the action would be inconsistent with the relevant state coastal zone management plan(s); impact a coastal barrier resources system unit (and the degree to which the resource would be impacted); pose an impact to coral reef ecosystems (and the degree to which the ecosystem would be affected); cause an unacceptable risk to human safety or property; or cause adverse impacts to the coastal environment that cannot be satisfactorily mitigated. As land acquisition, construction, or other ground disturbing activities would not occur because of the proposed action, the effects analysis for coastal resources focuses on an evaluation of the preferred alternative's consistency with the enforceable policies of the HI CZM Program, including their objectives and supporting policies (Hawai'i Revised Statutes § 205A-2). This analysis is provided in Appendix K, *CZMA Compliance*, and the conclusions summarized in the Environmental Consequences section of the EA. The agencies will provide the consistency determination as well as a copy of the EA to the HI CZM Program Office concurrent with the release of the EA for public review and request their concurrence with the agencies' determination.

4.10. 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 this 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 dB is reported for each Section 4(f) resource.

APPENDIX F

Noise Technical Analysis

Noise Technical Analysis: Haleakalā National Park

Contents

List of Figures	3
List of Tables	4
1. Introduction	5
2. Modeled Noise Metrics.....	6
3. Affected Environment.....	8
Ambient Map Data.....	10
4. Noise Model Method	13
Aircraft Data.....	14
5. Model Output.....	16
6. Noise Model Results / Environmental Consequences	19
Alternative 1 (No Action Alternative)	19
Alternative 3	24
7. Comparison of Alternatives by Metric.....	29
8. Indirect Effects of Potential Displacement of Air Tours Outside of the ATMP Planning Area	36
9. Literature Cited	38

List of Figures

Figure 1. Comparative Sound Levels.....	6
Figure 2. Ambient map – Natural Ambient L_{50}	11
Figure 3. Ambient map – Existing Ambient without Air Tours L_{50}	12
Figure 4. Cumulative Existing Ambient for Existing Conditions	13
Figure 5. Air Tour Routes for modeling the No Action Alternative.....	14
Figure 6. Air Tour Routes for Alternative 3	15
Figure 7. Location Points modeled for Haleakalā National Park	17
Figure 8. 12-hour equivalent sound level ($L_{Aeq,12h}$) map for the No Action Alternative	19
Figure 9. Time audible (for natural ambient) map for the No Action Alternative.....	20
Figure 10. Time Above 35 dBA map for the No Action Alternative	21
Figure 11. 12-hour equivalent sound level ($L_{Aeq,12h}$) map for Alternative 3	24
Figure 12. Time Audible (for natural ambient) map for Alternative 3.....	25
Figure 13. Time Above 35 dBA map for Alternative 3	26

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.....	10
Table 4. Aircraft and Number of Operations Modeled for the No Action Alternative (2017-2019 PMAD)16	
Table 5. Aircraft and Number of Operations Modeled for Alternative 3	16
Table 6. Location Points Modeled for Haleakalā National Park	18
Table 7. Location point results - No Action Alternative.....	22
Table 8. Location point results for Alternative 3	27
Table 9. Comparison of contour results for 12-hour Equivalent Sound Level.....	29
Table 10. Comparison of contour results for Time Audible for Natural Ambient	30
Table 11. Comparison of contour results for Time Above 35 dBA	30
Table 12. Comparison of location point results for 12-hour Equivalent Sound Level	31
Table 13. Comparison of location point results for Time Audible for Natural Ambient.....	32
Table 14. Comparison of location point results for Time Above 35 dBA.....	33
Table 15. Comparison of location point results for Time Above 52 dBA.....	34
Table 16. Comparison of location point results for Maximum Sound Level.....	35
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	37
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	37

1. Introduction

The purpose of this report is to present the noise results used in the alternatives impact analysis discussed in the Haleakalā 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; including indirect 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 sound levels in protected natural

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.

areas, such as the Park, are often lower than those of the ‘common’ outdoor areas shown, in the range of 20-30 dBA.

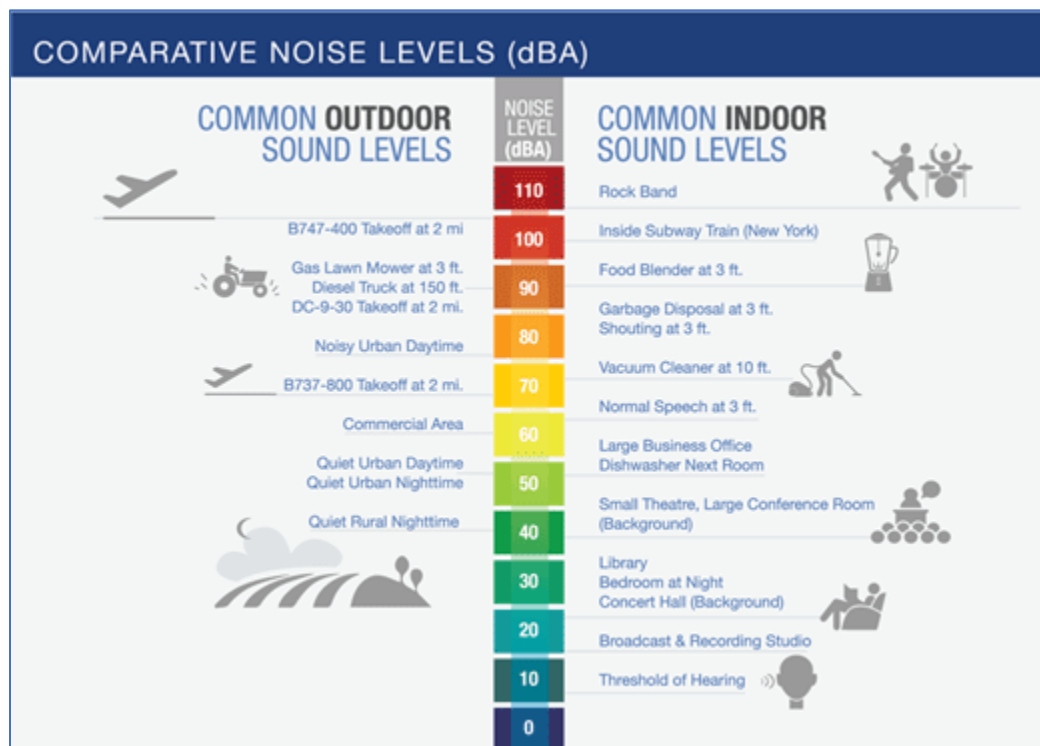


Figure 1. Comparative Sound Levels²

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 discloses 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 from a commercial air tour operation would be above specific sound levels that relate to functional

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

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, $L_{Aeq, 12\text{ hr}}$	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 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>
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). 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>

Metric	Relevance and citation
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, 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}	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.

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, such as the nēnē (Hawaiian goose), to define territories or aid in attracting mates
- Sounds produced by bats to locate prey or navigate
- Sounds received by mice to detect and avoid predators or other danger
- Sounds produced by physical processes, such as wind in the trees, wind in the bamboo forest, 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 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. Human-generated noise within the Park is typically concentrated in areas of high visitor use such as at overlook areas along the road to the summit and Waimoku Falls in the Kīpahulu area.

To characterize the natural and existing ambient, detailed sound level measurements were conducted at 10 locations across the Park in 2003, resulting in the identification of five acoustic zones representing regions with similar acoustic conditions (Table 3) (Lee et al., 2016). These acoustic sampling locations were chosen to be representative of the natural ecological zones or broad ecosystems of the Park and ATMP planning area. Median daytime natural ambient sound levels (L_{50}) ranged from 21 dBA in backcountry areas to 45 dBA along the shoreline; median daytime existing ambient sound levels for these areas exhibits similar variability, ranging from 23 dBA in the backcountry to 46 dBA in the front country where visitors are more prevalent. The median or L_{50} sound level (in decibels) is the sound level exceeded 50 percent of the day.

Additional sound level measurements were conducted in 2008 and 2013, providing further information and characterization of the natural and existing ambient conditions. In 2008, data were collected at three locations (Lynch, 2012) to understand the level of air tour operations at the time and to provide a snapshot of the acoustical conditions at the Park. The sites were located in the same general area as a selection of sites from the 2003 study to allow for potential comparisons. Similar trends were observed, where Haleakalā Crater sites were quieter during the day than Kīpahulu sites. Overall, the median natural and existing ambient levels measured at crater sites in 2003 were slightly higher (3 dBA) than the 2008 study, likely due to differences in vegetation types at these locations as well as proximity to sound sources, variation in weather conditions (particularly wind patterns), and differences in methods used to compute natural ambient. Authors of the 2008 study state that these two studies present a likely range of ambient levels for the sampling areas in the Park.

The 2013 measurements (Job, 2018) were performed to establish a baseline inventory of the newly-acquired Nu‘u unit. Results indicated that the natural ambient sound levels (L_{nat})³ during the monitoring period were 21.1 dBA during the daytime. Existing ambient sound levels (L_{50}) were slightly higher, 23.5 dBA. Compared to ten other sites in the Park, it is the fourth quietest. These results were used to assign ambient data for computer modeling to this area.

³ It should be noted that different techniques have been used to calculate natural ambient, resulting in two different descriptor notations. Natural ambient L_{50} refers to the natural ambient computation process described in Lee 2016, while L_{nat} refers to the natural ambient process described in Lynch 2012 and Job 2018. Although different, the processes are highly correlated and yield similar results; differences are generally less than 1 dB (Rapoza, 2008).

Table 3. Acoustic Conditions

Acoustic Sampling Area	Daytime Natural Ambient, L₅₀ (dBA)	Daytime Existing Ambient, L₅₀ (dBA)	Description
Zone 1 (West Rim Crater)	24-28	27-28	Natural sounds in this zone include wind through the low brush and birds. Human sounds include occasional hikers and vehicles as well as air tour aircraft.
Zone 2 (Haleakalā Crater)	21-23	24-25	Sounds in this zone include strong winds, hikers, and bird vocalizations. Air tour aircraft can be heard within this zone.
Zone 3 (Kaupo Gap)	23	23	The dominant sounds are strong winds with occasional hikers, as well as distant aircraft.
Zone 4 (Kīpahulu Coastal)	45	44-46	Natural sounds in this zone include bamboo, birds, insects, and waterfalls. Human caused sounds include hikers and air tour helicopters.
Zone 5 (Upper Kīpahulu Valley)	31	35	Natural sounds in this zone include wind and rain on the tree fern canopy and insects, with localized occurrences of bird vocalizations. Ground based visitors are not allowed in this area. Sounds from distant aircraft are audible.
Zone 6 (Nu‘u Coastal)			Audible sound sources at this site include wind, birds, and helicopters. This zone was not a part of the Park when the 2003 study was being conducted, so data from other zones (Zone 4) was applied to this zone for AEDT modeling based on NPS guidance.

Ambient Map Data

From the detailed data collected in 2003, an ambient “map” of the natural soundscape⁴ 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 used in the computer modeling.

⁴ 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.

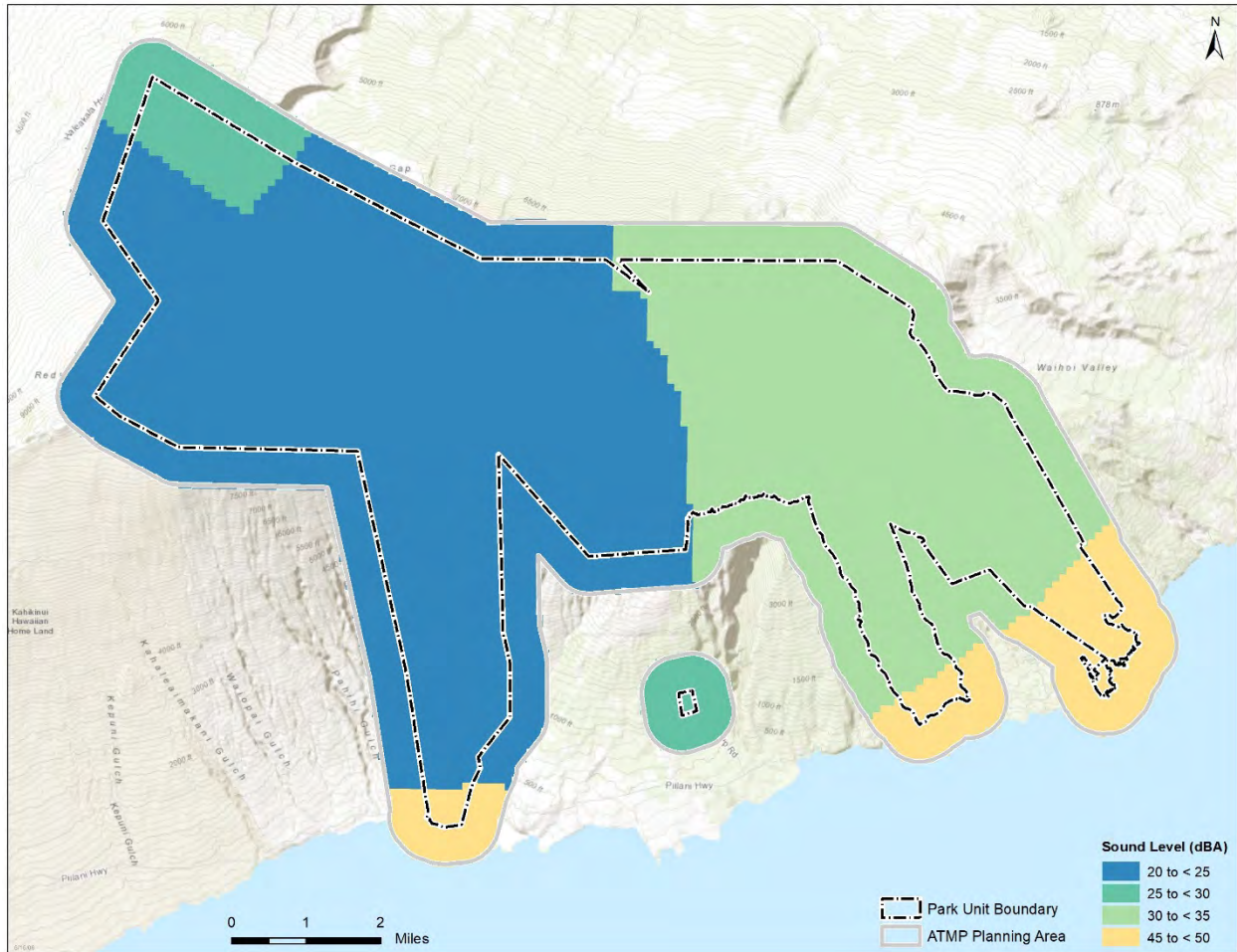
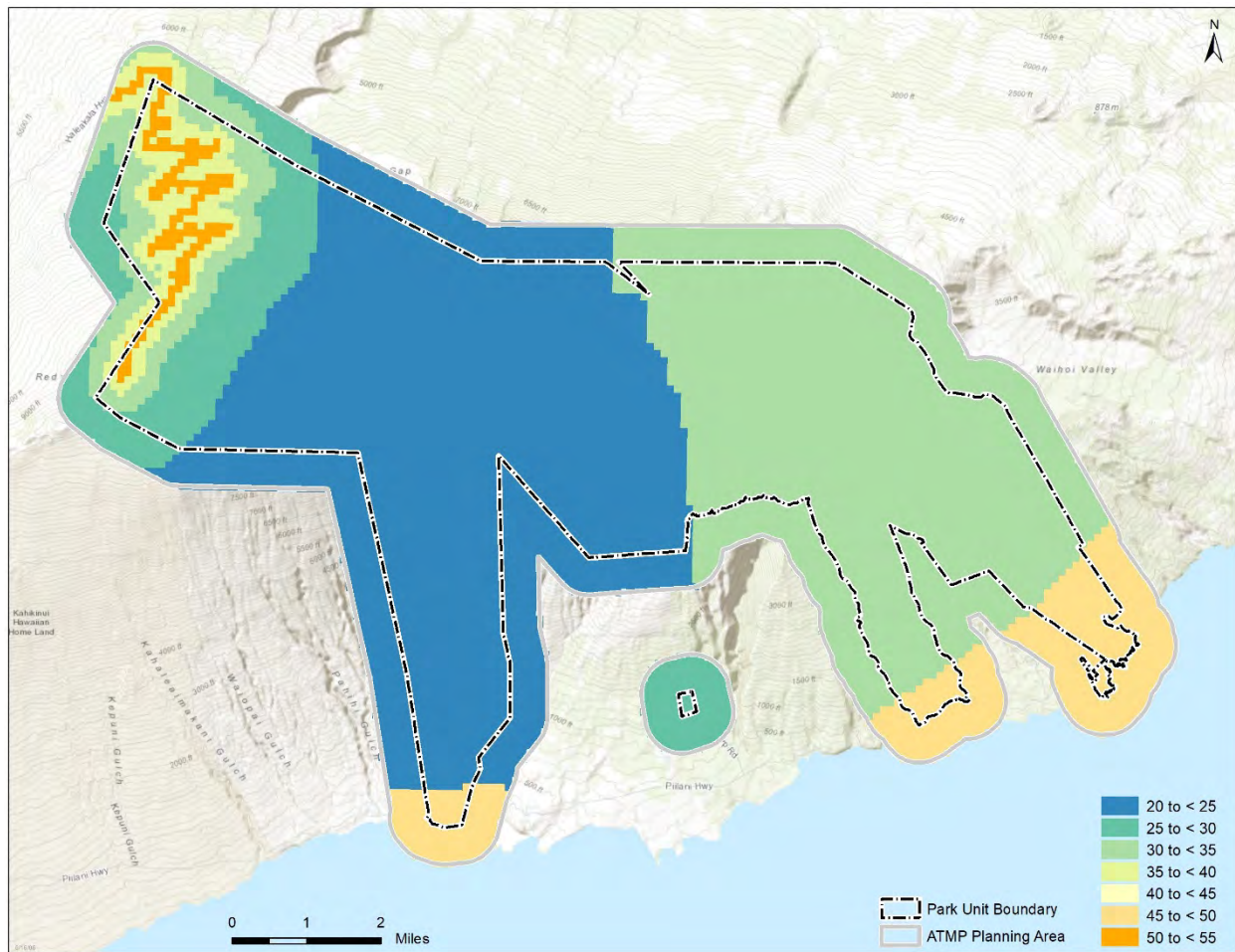


Figure 2. Ambient map – Natural Ambient L₅₀

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 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; hikers, visitor centers, commercial jets, general aviation aircraft, military aircraft, and administrative aircraft operations. The result of this process is the Cumulative Existing Ambient (Figure 4).



⁵ 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.

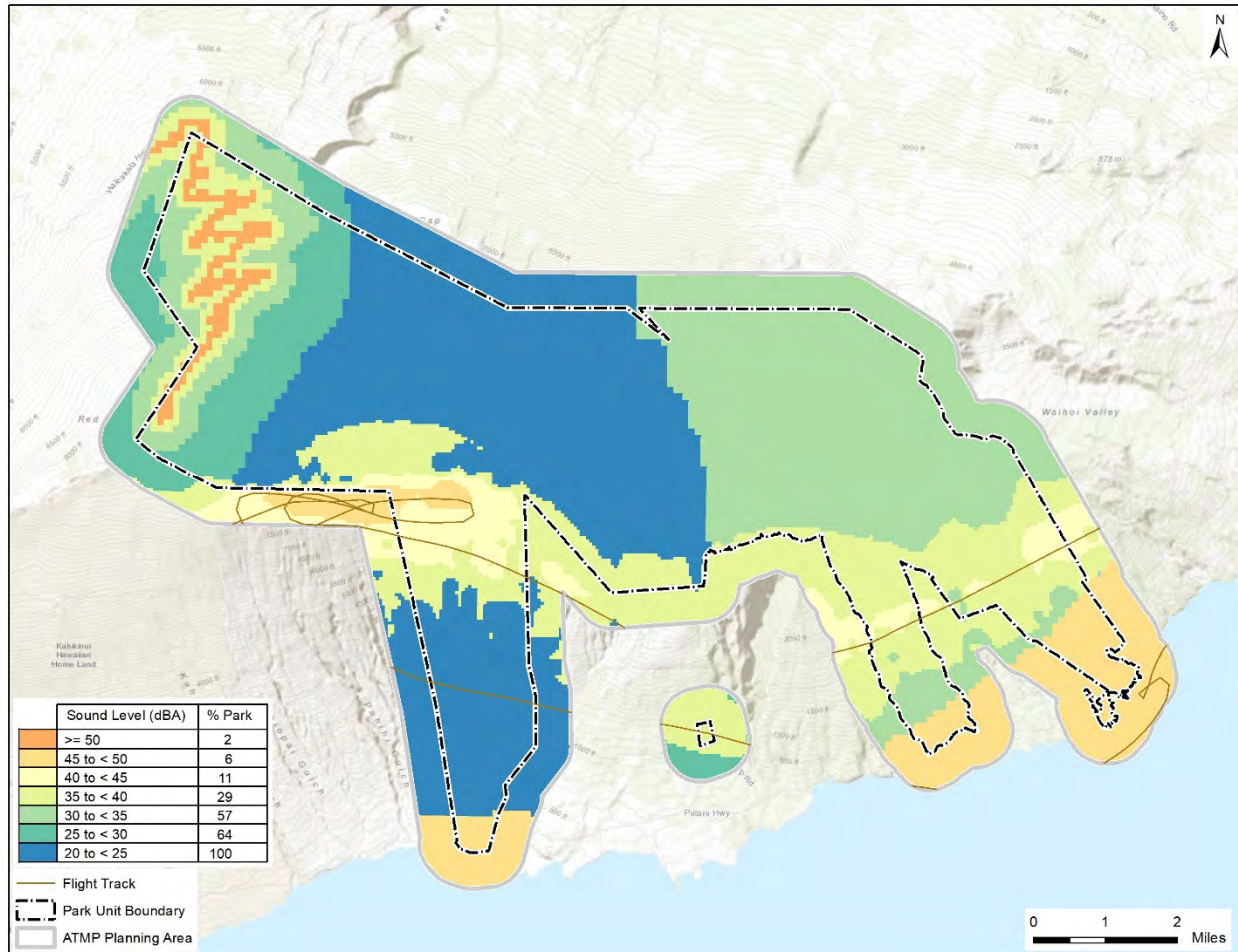


Figure 4. Cumulative Existing Ambient for Existing Conditions

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 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, as well as other information⁶ to compute various noise metrics that can be used to assess the potential impacts of noise from commercial air tours on the acoustic environment of a park.

Aircraft Data

The tour aircraft types identified for modeling the alternatives are the Aerospatiale SA-350D and Eurocopter EC-130 aircraft. The flight routes used for modeling the No Action Alternative are shown in Figure 5; the flight routes used for Alternative 3 are shown in Figure 6.

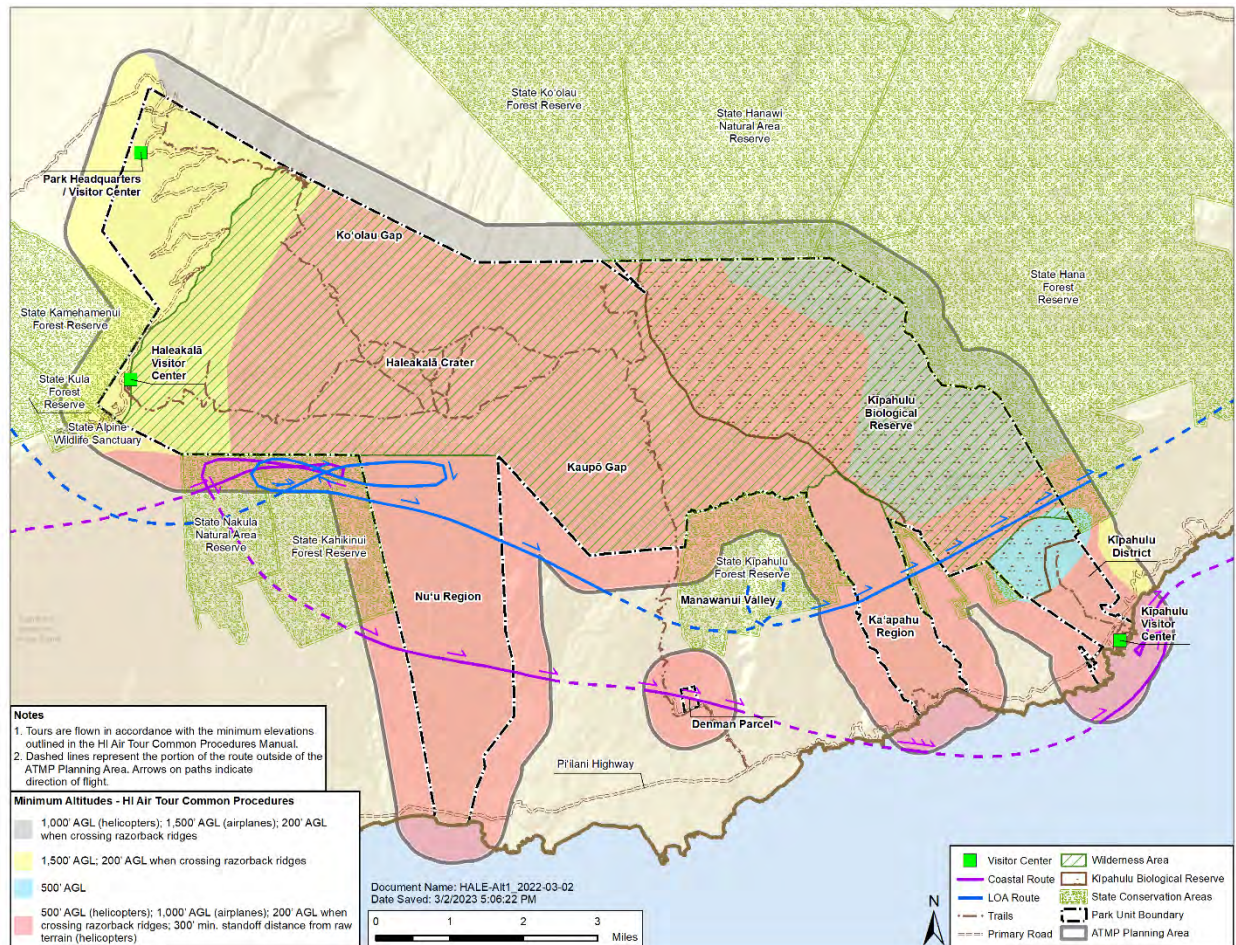
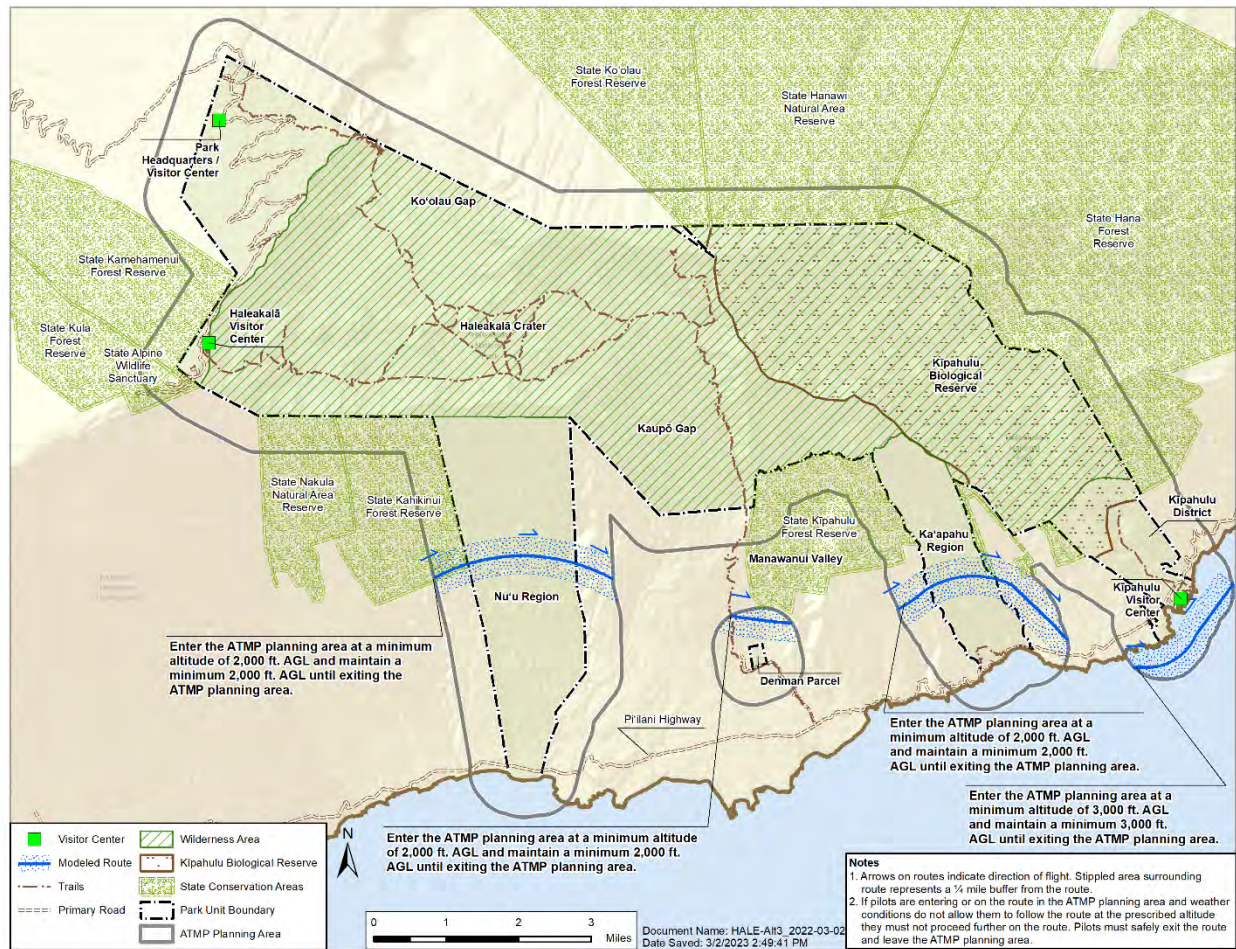


Figure 5. Air Tour Routes for modeling the No Action Alternative

⁶ 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 (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.



A unique noise modeling profile was developed for each 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 day⁷ (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 determine if it is a reasonable representation of the commercial air tour activity over the ATMP planning area. For the ATMP planning area, the PMAD was identified as summarized in Table 4. The process of averaging and apportioning a peak month of flights to daily

⁷As required by FAA policy, the FAA typically represents yearly conditions as the Average Annual Day (AAD). However, it was determined that a 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.

flights can result in a fractional number. Altitudes were modeled according to the minimum altitudes identified in the 2008 FAA Hawai'i Air Tour Common Procedures Manual.⁸

The analysis for Alternative 3 is based on the number of aircraft operations for each aircraft and route combination identified under this alternative and is summarized in Table 5.

Table 4. Aircraft and Number of Operations Modeled for the No Action Alternative (2017-2019 PMAD)

Aircraft	Route	Number of Flights
Aerospatiale SA-350D	LOA	4.5
Eurocopter EC-130	LOA	9
Aerospatiale SA-350D	Coastal	1.5
Eurocopter EC-130	Coastal	3
Total		18

Table 5. Aircraft and Number of Operations Modeled for Alternative 3

Aircraft	Route	Number of Flights
Aerospatiale SA-350D	Proposed Route	3
Eurocopter EC-130	Proposed Route	6
Total		9

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 44 location points, geographically located across the entire Park, where noise levels were to be evaluated. These locations are listed in Table 6 and indicated as blue dots in Figure 7.

⁸ FAA DOCUMENT NUMBER: AWP13-136A

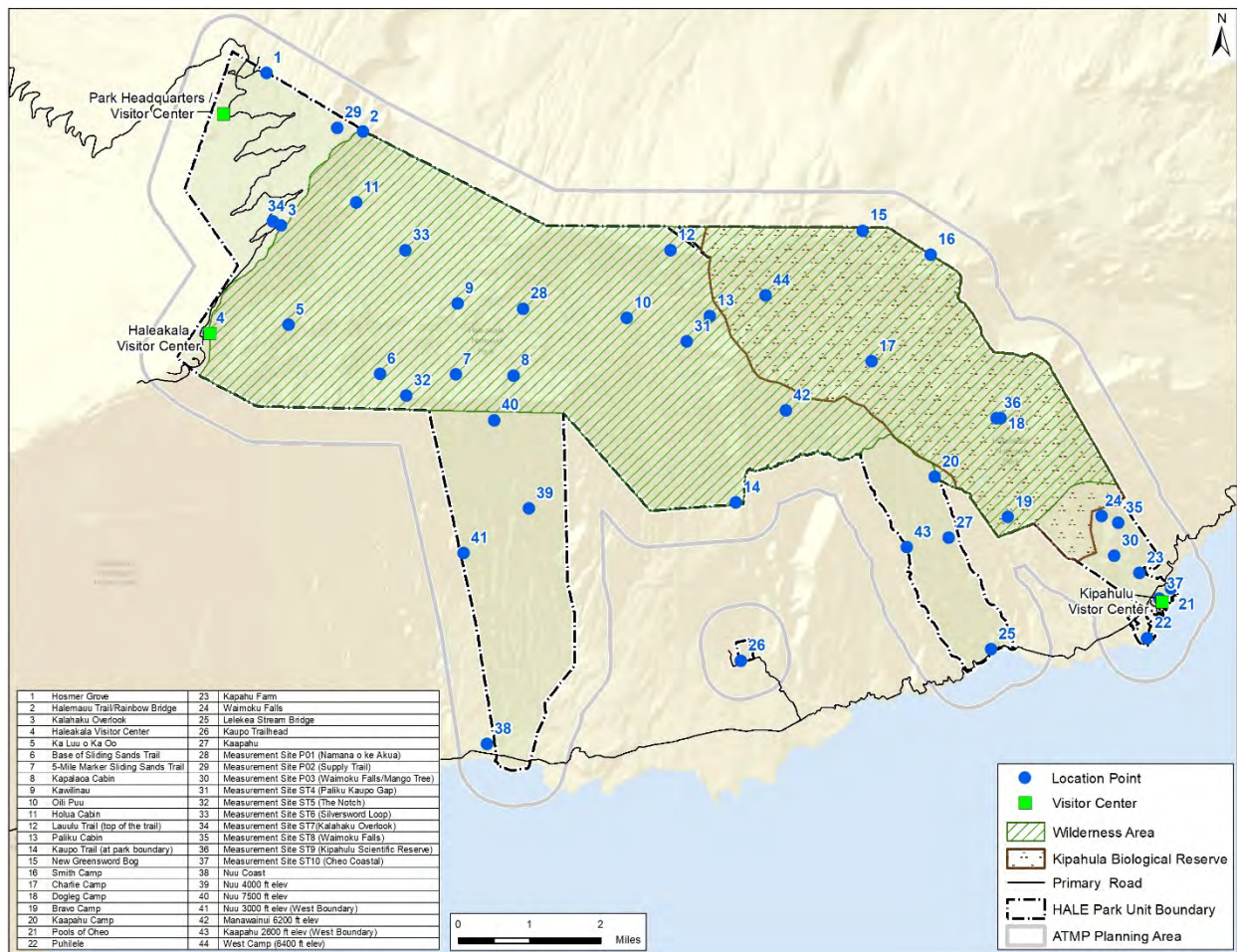


Figure 7. Location Points modeled for Haleakalā National Park

Table 6. Location Points Modeled for Haleakalā National Park

Location	Longitude (decimal degrees)	Latitude (decimal degrees)	Natural Ambient L ₅₀ (dBA)
1. Hosmer Grove	20.768	-156.238	25-30
2. Halemau'u Trail/Rainbow Bridge	20.756	-156.217	20-25
3. Kalahaku Overlook	20.737	-156.234	20-25
4. Haleakalā Visitor Center	20.715	-156.250	20-25
5. Ka Lu'u o ka 'O'o	20.717	-156.233	20-25
6. Base of Sliding Sands Trail	20.707	-156.213	20-25
7. 5-Mile Marker Sliding Sands Trail	20.707	-156.197	20-25
8. Kapalaoa Cabin	20.706	-156.184	20-25
9. Kawilinau	20.721	-156.196	20-25
10. Oili Pu'u	20.718	-156.160	20-25
11. Holua Cabin	20.742	-156.218	20-25
12. Lau'ulu Trail (top of the trail)	20.732	-156.150	30-35
13. Paliku Cabin	20.757	-156.223	20-25
14. Kaupō Trail (at Park boundary)	20.681	-156.136	20-25
15. New Greensword Bog	20.736	-156.109	30-35
16. Smith Camp	20.731	-156.094	30-35
17. Charlie Camp	20.709	-156.107	30-35
18. Dogleg Camp	20.698	-156.079	30-35
19. Bravo Camp	20.678	-156.077	30-35
20. Ka'apahu Camp	20.686	-156.093	30-35
21. Pools of 'Ohe'o	20.663	-156.042	45-50
22. Puhilele	20.653	-156.047	45-50
23. Kapahu Farm	20.666	-156.049	45-50
24. Waimoku Falls	20.678	-156.057	30-35
25. Lelekea Stream Bridge	20.651	-156.081	45-50
26. Kaupo Trailhead	20.649	-156.135	25-30
27. Ka'apahu	20.673	-156.090	30-35
28. Measurement Site P01 (Namana o ke Akua)	20.719	-156.181	20-25
29. Measurement Site P02 (Supply Trail)	20.757	-156.223	25-30
30. Measurement Site P03 (Waimoku Falls/Mango Tree)	20.662	-156.060	45-50
31. Measurement Site ST4 (Palikū Kaupō Gap)	20.713	-156.147	20-25
32. Measurement Site ST5 (The Notch)	20.702	-156.207	20-25
33. Measurement Site ST6 (SILVERSWORD LOOP)	20.734	-156.218	20-25
34. Measurement Site ST7(Kalahaku Overlook)	20.738	-156.236	20-25
35. Measurement Site ST8 (Waimoku Falls)	20.677	-156.054	45-50
36. Measurement Site ST9 (Kīpahulu Scientific Reserve)	20.698	-156.080	30-35
37. Measurement Site ST10 ('Ohe'o Coastal)	20.660	-156.040	45-50
38. Nu'u Coast	20.632	-156.190	45-50
39. Nu'u 4000 ft elev	20.679	-156.181	20-25
40. Nu'u 7500 ft elev	20.697	-156.188	20-25
41. Nu'u 3000 ft elev (West Boundary)	20.670	-156.195	20-25
42. Manawainui 6200 ft elev	20.699	-156.125	45-50
43. Ka'apahu 2600 ft elev (West Boundary)	20.672	-156.099	20-25
44. West Camp (6400 ft elev)	20.723	-156.130	20-25

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 and Figure 11), time audible natural ambient (Figure 9 and Figure 12) and time above 35 dBA (Figure 10 and Figure 13), followed by tabular results (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)

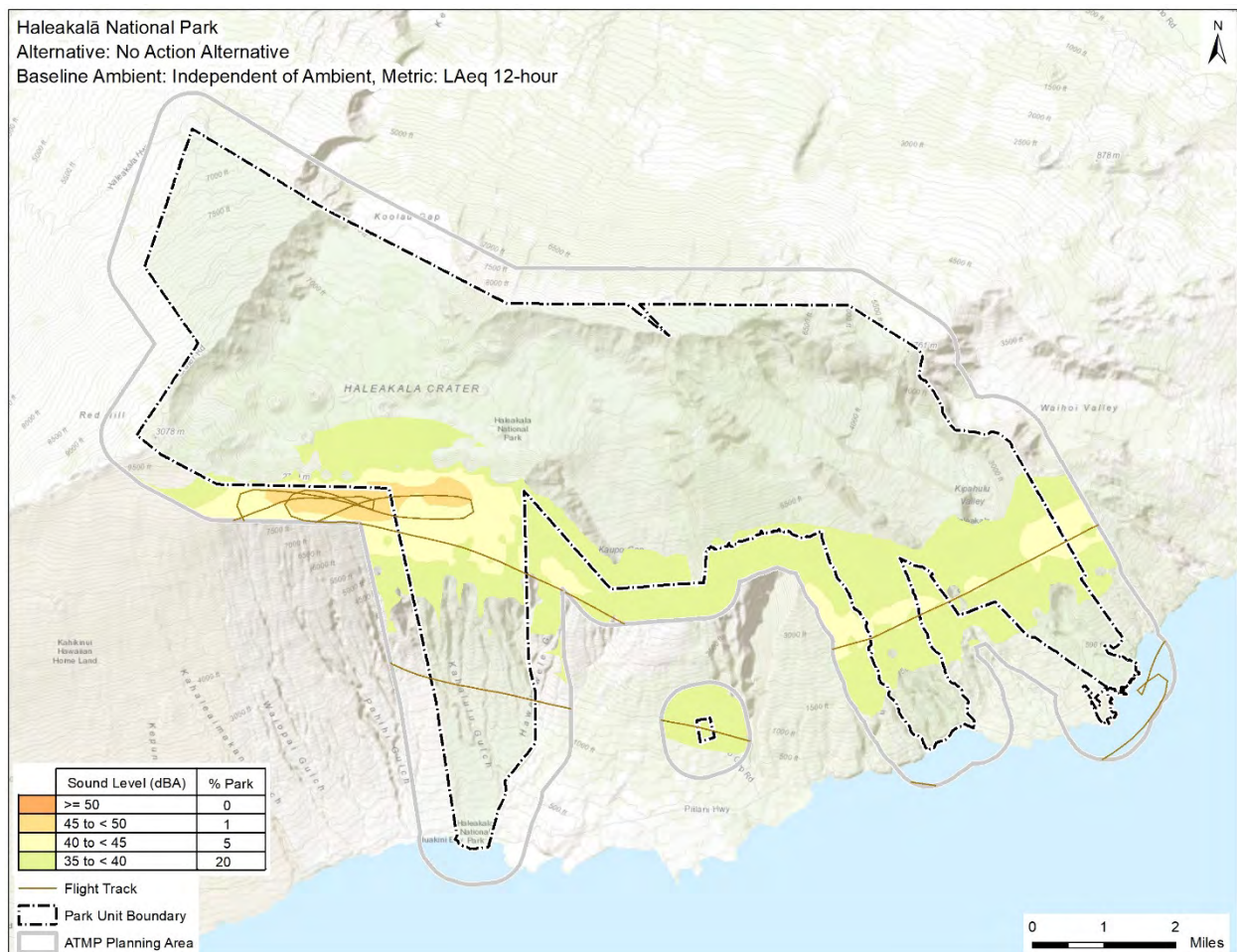


Figure 8. 12-hour equivalent sound level (LAeq,12h) map for the No Action Alternative

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

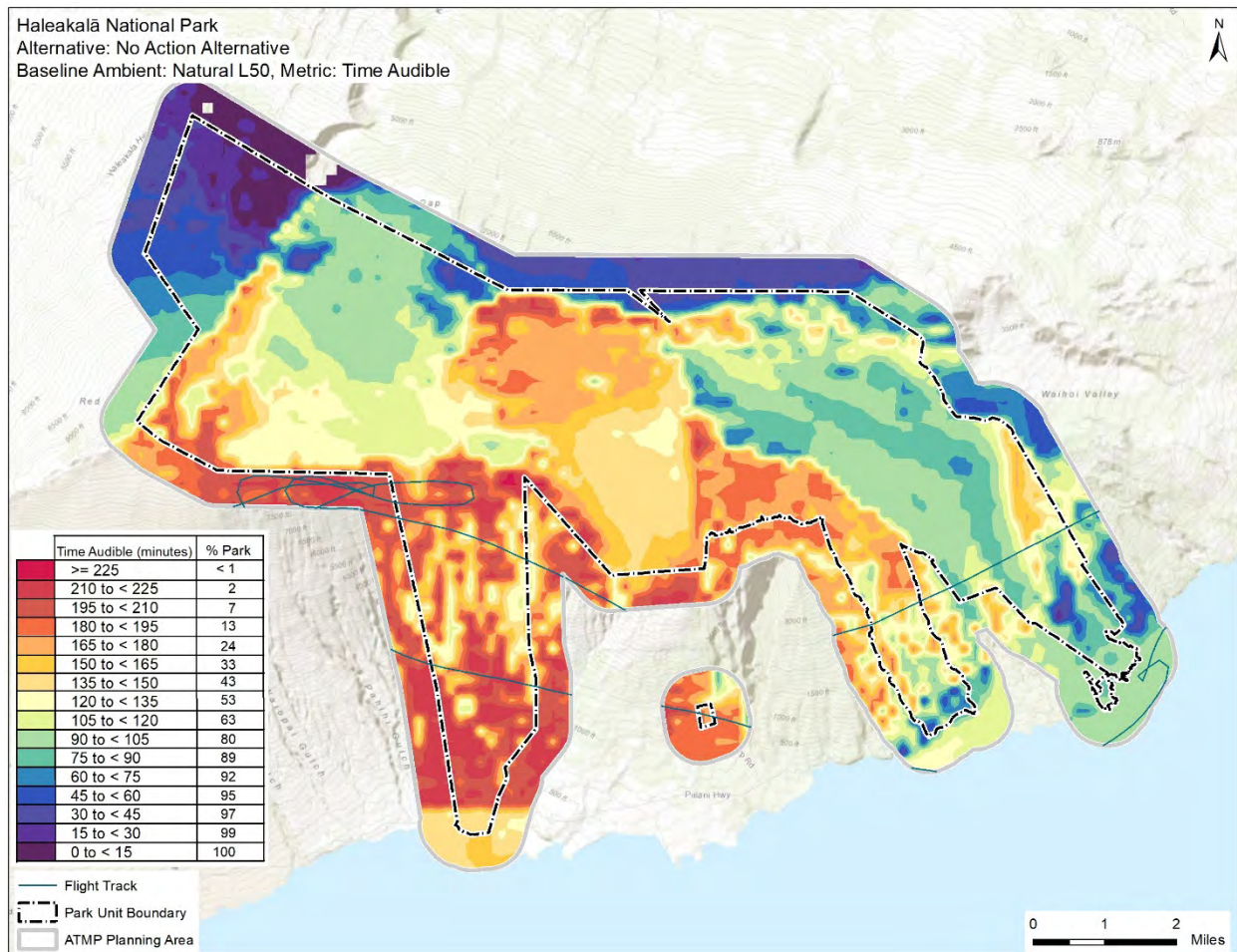


Figure 9. Time audible (for natural ambient) map for the No Action Alternative

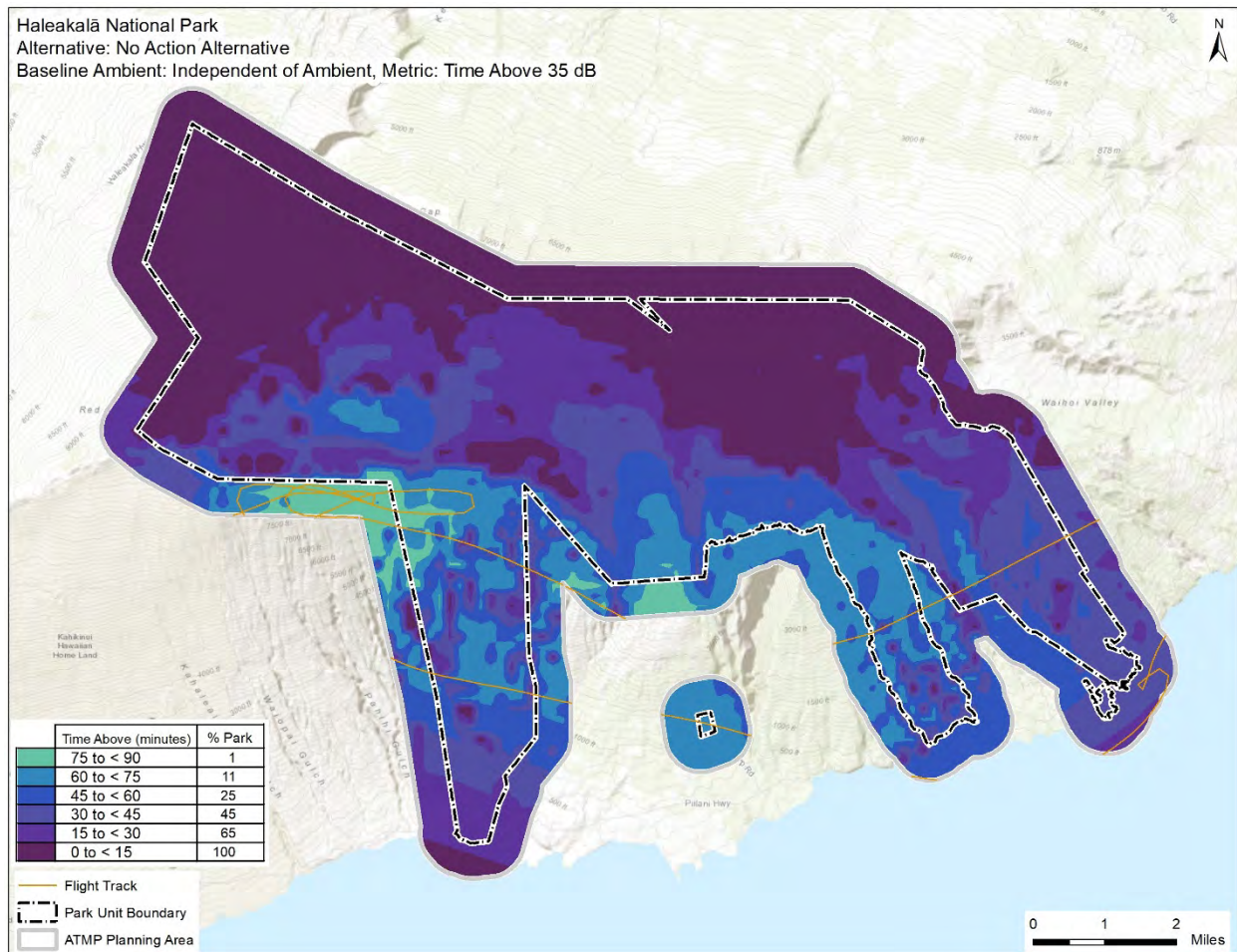


Figure 10. Time Above 35 dBA map for the No Action Alternative

Table 7. 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. Hosmer Grove	9.5	81.6	0.0	0.0	29.3
2. Halemau'u Trail/Rainbow Bridge	20.1	146.1	3.7	0.0	38.2
3. Kalahaku Overlook	16.3	173.9	1.1	0.0	36.7
4. Haleakalā Visitor Center	21.1	219.0	2.8	0.0	42.9
5. Ka Lu'u o ka 'O'o	12.6	148.4	0.0	0.0	33.2
6. Base of Sliding Sands Trail	37.0	155.0	30.4	4.7	59.3
7. 5-Mile Marker Sliding Sands Trail	39.2	151.5	50.1	10.5	60.5
8. Kapalaoa Cabin	30.9	156.4	6.6	1.7	60.4
9. Kawilinau	28.6	145.3	22.5	0.0	49.9
10. Oili Pu'u	26.1	157.9	17.5	0.0	46.2
11. Holua Cabin	22.6	126.6	9.0	0.0	41.6
12. Lau'ulu Trail (top of the trail)	16.5	168.9	0.2	0.0	35.7
13. Paliku Cabin	9.7	106.2	0.0	0.0	30.5
14. Kaupō Trail (at Park boundary)	34.6	212.1	51.9	1.5	54.1
15. New Greensword Bog	14.2	99.0	0.0	0.0	32.0
16. Smith Camp	13.1	97.4	0.0	0.0	35.0
17. Charlie Camp	24.6	120.5	12.9	0.0	43.9
18. Dogleg Camp	33.1	117.3	35.5	0.9	53.1
19. Bravo Camp	39.9	125.4	61.4	8.0	63.1
20. Ka'apahu Camp	36.9	188.1	66.7	2.9	57.0
21. Pools of 'Ohe'o	33.6	173.7	39.2	2.0	59.8
22. Puhilele	32.3	187.1	35.8	1.8	57.3
23. Kapahu Farm	32.7	155.7	44.1	1.0	55.9
24. Waimoku Falls	26.5	92.6	7.4	0.2	53.9
25. Lelekea Stream Bridge	31.4	108.8	44.4	0.3	53.2
26. Kaupo Trailhead	35.4	210.6	68.5	1.3	57.2
27. Ka'apahu	40.3	175.8	70.5	8.2	64.0
28. Measurement Site P01 (Namana o ke Akua)	28.5	182.9	18.7	0.0	50.5
29. Measurement Site P02 (Supply Trail)	9.7	106.2	0.0	0.0	30.5
30. Measurement Site P03 (Waimoku Falls/Mango Tree)	32.2	180.7	50.6	0.0	51.4
31. Measurement Site ST4 (Palikū Kaupō Gap)	27.8	168.4	31.0	0.0	43.9
32. Measurement Site ST5 (The Notch)	37.9	155.9	35.2	4.9	64.6
33. Measurement Site ST6 (Silersword Loop)	25.1	131.5	16.3	0.0	44.0
34. Measurement Site ST7(Kalahaku Overlook)	16.2	125.6	1.3	0.0	36.9
35. Measurement Site ST8 (Waimoku Falls)	35.2	171.4	46.1	1.1	53.6

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)
36. Measurement Site ST9 (Kīpahulu Scientific Reserve)	31.6	110.9	24.7	0.5	52.7
37. Measurement Site ST10 (‘Ohe‘o Coastal)	34.0	183.7	35.8	2.2	60.7
38. Nu‘u Coast	26.7	225.3	20.0	0.0	44.2
39. Nu‘u 4000 ft elev	38.6	229.8	73.9	6.1	58.3
40. Nu‘u 7500 ft elev	45.6	225.8	71.8	23.6	68.7
41. Nu‘u 3000 ft elev (West Boundary)	34.2	185.9	59.9	0.9	55.9
42. Manawainui 6200 ft elev	31.9	219.3	50.1	0.0	49.5
43. Ka‘apahu 2600 ft elev (West Boundary)	40.3	191.3	59.1	8.9	62.8
44. West Camp (6400 ft elev)	22.6	142.3	8.3	0.0	40.4

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

Alternative 3

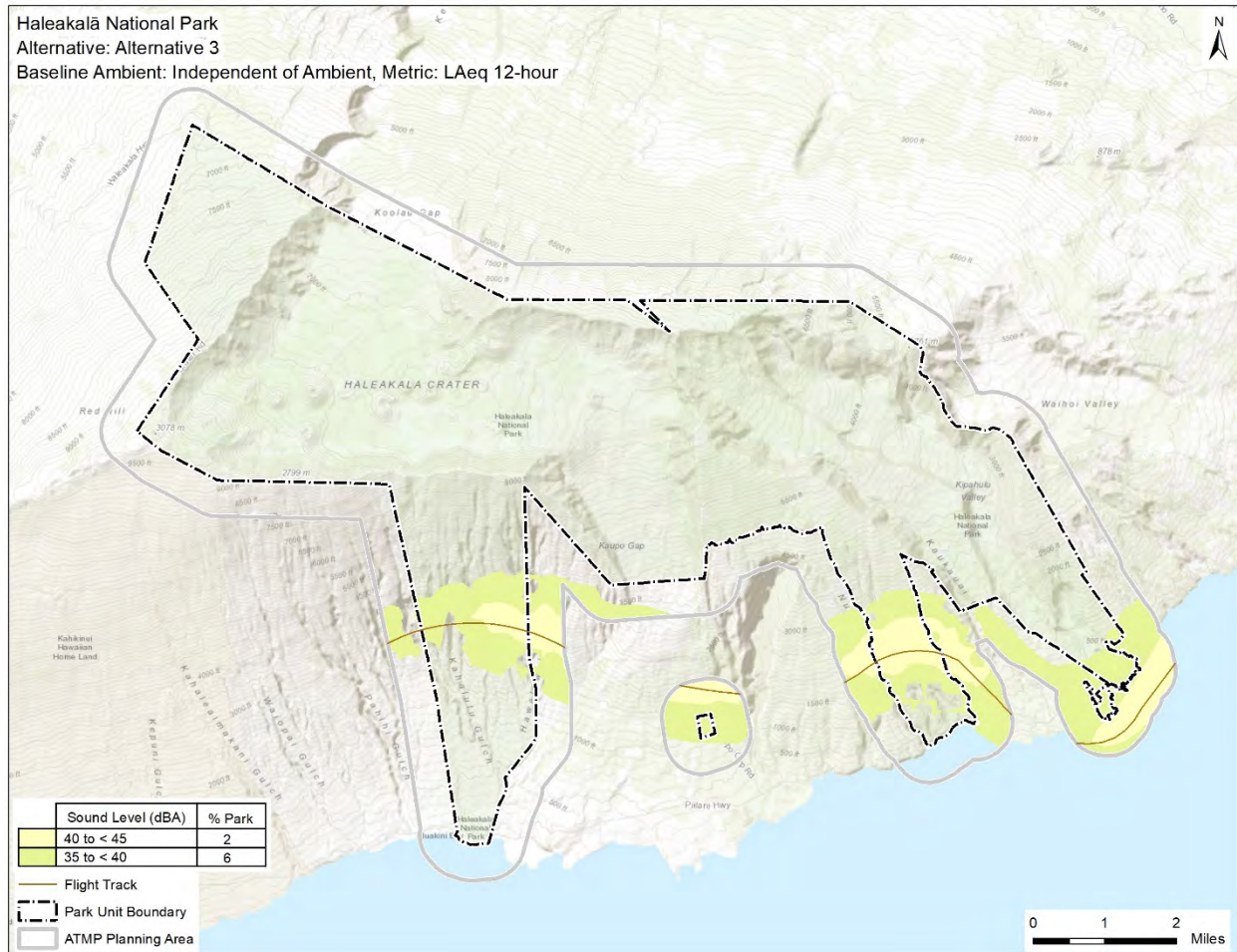


Figure 11. 12-hour equivalent sound level ($L_{Aeq,12h}$) map for Alternative 3

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 between 10 AM and 3 PM (i.e., 5 hours), then the 5-hour equivalent sound level would be 3.8 dBA greater than the 12-hour equivalent sound level.

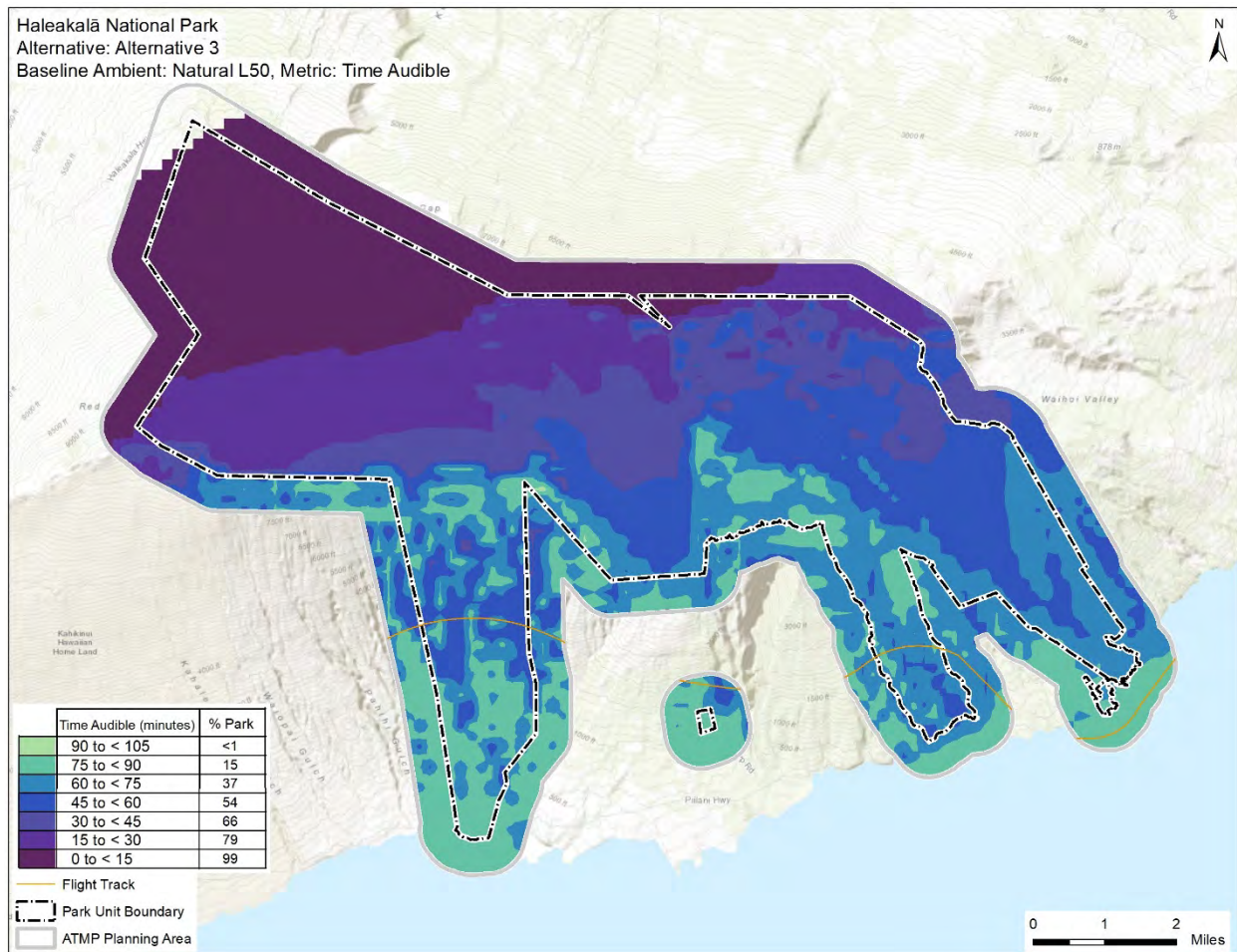


Figure 12. Time Audible (for natural ambient) map for Alternative 3

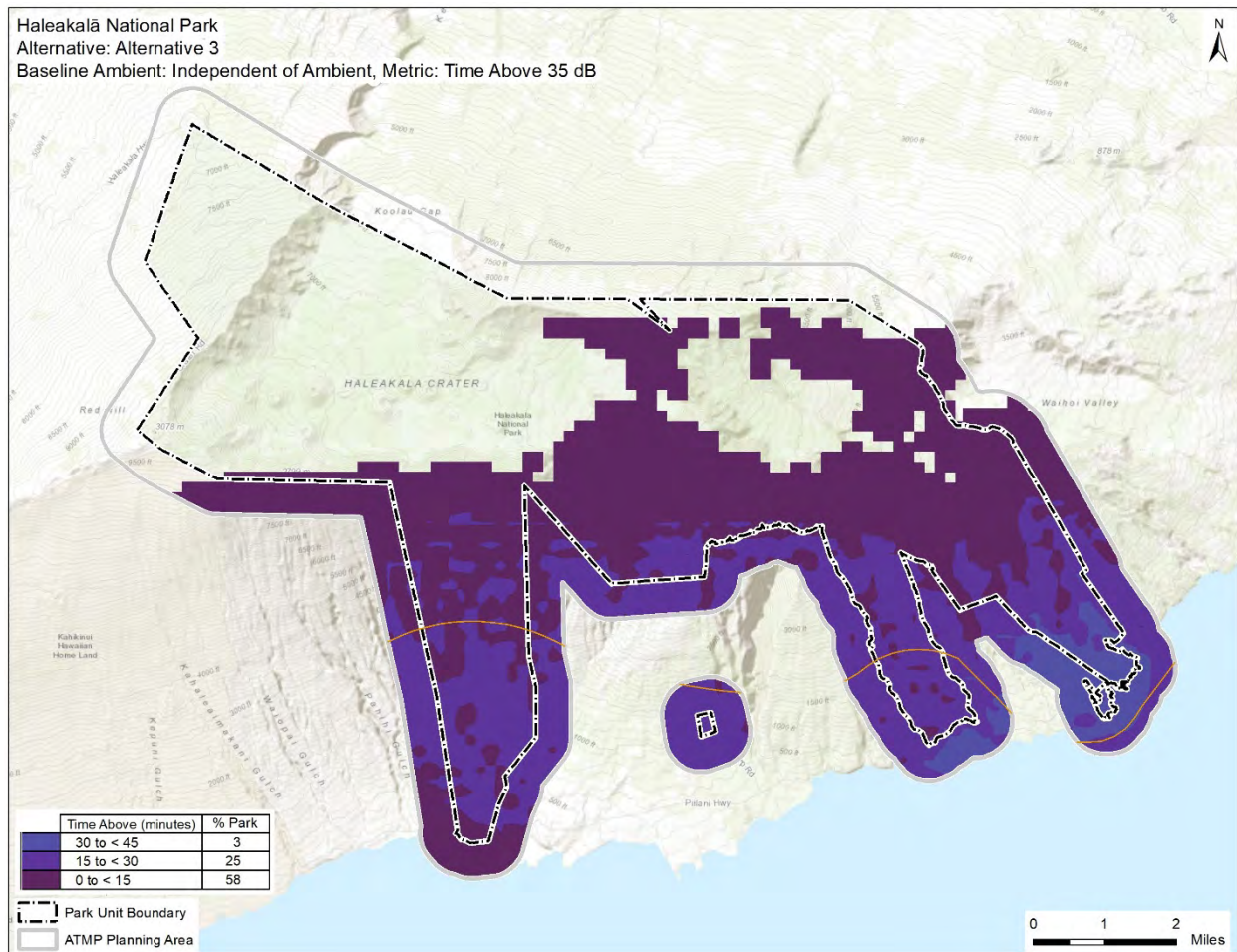


Figure 13. Time Above 35 dBA map for Alternative 3

Table 8. 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. Hosmer Grove	0	0.3	0.0	0.0	12.3
2. Halemau'u Trail/Rainbow Bridge	0	3.2	0.0	0.0	14.6
3. Kalahaku Overlook	0	7.6	0.0	0.0	15.5
4. Haleakalā Visitor Center	0	24.8	0.0	0.0	19.1
5. Ka Lu'u o ka 'O'o	0	16.1	0.0	0.0	18.5
6. Base of Sliding Sands Trail	1.0	29.7	0.0	0.0	23.2
7. 5-Mile Marker Sliding Sands Trail	2.5	31.5	0.0	0.0	25.7
8. Kapalaoa Cabin	3.4	31.6	0.0	0.0	26.8
9. Kawilinau	0	18.5	0.0	0.0	22.0
10. Oili Pu'u	1.2	25.1	0.0	0.0	22.7
11. Holua Cabin	0	9.6	0.0	0.0	16.7
12. Lau'ulu Trail (top of the trail)	0	15.7	0.0	0.0	23.1
13. Paliku Cabin	0	2.6	0.0	0.0	14.1
14. Kaupō Trail (at Park boundary)	28.9	74.9	16.8	0.0	51.5
15. New Greensword Bog	0	18.9	0.0	0.0	19.5
16. Smith Camp	0	26.5	0.0	0.0	19.4
17. Charlie Camp	14.1	57.7	0.0	0.0	34.8
18. Dogleg Camp	13.6	56.2	0.7	0.0	37.9
19. Bravo Camp	34.0	63.2	21.5	2.4	57.8
20. Ka'apahu Camp	29.7	76.1	19.4	0.3	52.7
21. Pools of 'Ohe'o	38.6	68.7	31.9	7.9	62.2
22. Puhilele	39.7	85.5	32.0	8.2	63.6
23. Kapahu Farm	35.2	65.5	33.8	2.8	56.6
24. Waimoku Falls	24.0	56.2	9.4	0.0	48.2
25. Lelekea Stream Bridge	33.9	56.9	22.9	2.7	56.7
26. Kaupo Trailhead	35.6	81.4	22.5	4.1	57.5
27. Ka'apahu	38.9	73.0	19.8	6.6	63.9
28. Measurement Site P01 (Namana o ke Akua)	2.0	30.4	0.0	0.0	23.3
29. Measurement Site P02 (Supply Trail)	0	2.6	0.0	0.0	14.1
30. Measurement Site P03 (Waimoku Falls/Mango Tree)	35.2	80.3	31.8	2.7	56.7
31. Measurement Site ST4 (Palikū Kaupō Gap)	12.8	32.0	0.5	0.0	37.2
32. Measurement Site ST5 (The Notch)	2.5	32.4	0.0	0.0	25.0
33. Measurement Site ST6 (Sword Loop)	0	12.4	0.0	0.0	17.9
34. Measurement Site ST7(Kalahaku Overlook)	0	6.5	0.0	0.0	15.3
35. Measurement Site ST8 (Waimoku Falls)	30.7	67.8	29.5	0.0	50.8

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
36. Measurement Site ST9 (Kīpahulu Scientific Reserve)	7.9	55.5	0.0	0.0	31.2
37. Measurement Site ST10 (‘Ohe‘o Coastal)	40.4	79.6	30.9	9.3	65.0
38. Nu‘u Coast	23.3	79.0	13.2	0.0	42.3
39. Nu‘u 4000 ft elev	37.1	85.1	18.2	4.9	63.7
40. Nu‘u 7500 ft elev	24.2	76.5	11.0	0.0	47.8
41. Nu‘u 3000 ft elev (West Boundary)	36.6	54.2	11.9	4.1	65.0
42. Manawainui 6200 ft elev	21.0	83.6	5.7	0.0	42.9
43. Ka‘apahu 2600 ft elev (West Boundary)	37.3	69.9	19.5	3.9	63.7
44. West Camp (6400 ft elev)	9.6	41.9	0.0	0.0	31.2

* 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 between 10 AM and 3 PM (i.e., 5 hours), then the 5-hour equivalent sound level would be 3.8 dBA greater than the 12-hour equivalent sound level.

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 No Action Alternative, the average sound levels under Alternative 3 would be lower for the interior regions of the Park, but may be higher in coastal regions. The noise footprint for Alternative 3 potentially affects 16% less of the ATMP planning area. See also results for points 21, 22, 23, 25, 30, 37, and 38.
- Time Audible Natural Ambient (Table 10 and Table 13): Compared to the No Action Alternative, the overall time audible noise footprint for Alternative 3 potentially would be only 1% smaller than the No Action Alternative; however, approximately 60% of the ATMP planning area would see a potential reduction in audibility between 37 and 194 minutes. The largest reductions would be at point 3 (Kalahaku Overlook) and point 4 (Haleakalā Visitor Center). The smallest reductions would be at point 24 (Waimoku Falls) and point 25 (Lelekea Stream Bridge).
- Time Above 35 (Table 11 and Table 14): Compared to the No Action Alternative, the time above 35 dBA under Alternative 3 would be up to 61 minutes less (see point 40, Nu'u 7500 ft elevation). Only at one point, 24 (Waimoku Falls), would time above 35 dBA be greater under Alternative 3 (2 minutes). The noise footprint for Alternative 3 would potentially affect 42% less of the ATMP planning area.
- Time Above 52 (Table 15): Compared to the No Action Alternative, the time above 52 dBA under Alternative 3 would be up to 24 minutes less (see point 40, Nu'u 7500 ft elevation). However, time above 52 dBA would be greater under Alternative 3 at 8 locations in the coastal regions (points, 21, 22, 23, 25, 26, 30, 37, and 41).
- Maximum Sound Level (Table 16): Compared to the No Action Alternative, the maximum sound levels under Alternative 3 would be lower for the interior regions of the Park, but may be higher in coastal regions. See results for points 21, 22, 23, 25, 30, 37, and 38.

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

12-hour Equivalent Sound Level Contour Results		% Park for No Action	% Park for Alternative 3
>- 50		0	0
45 to < 50		1	0
40 to < 45		5	2
35 to < 40		20	6

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

Time Audible for Natural Ambient Contour Results		% Park for No Action	% Park for Alternative 3
>- 225		< 1	0
210 to < 225		2	0
195 to < 210		7	0
180 to < 195		13	0
165 to < 180		24	0
150 to < 165		33	0
135 to < 150		43	0
120 to < 135		53	0
105 to < 120		63	0
90 to < 105		80	<1
75 to < 90		89	15
60 to < 75		92	37
45 to < 60		95	54
30 to < 45		97	66
15 to < 30		99	79
0 to < 15		100	99

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

Time Above 35 dBA Contour Results		% Park for No Action	% Park for Alternative 3
75 < 90		1	0
60 to < 75		11	0
45 to < 60		25	0
30 to < 45		45	3
15 to < 30		65	25
0 to < 15		100	58

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

Location	No Action, 12-hour Equivalent Sound Level (dBA)	Alternative 3, 12- hour Equivalent Sound Level (dBA)
1. Hosmer Grove	9.5	0
2. Halemau'u Trail/Rainbow Bridge	20.1	0
3. Kalahaku Overlook	16.3	0
4. Haleakalā Visitor Center	21.1	0
5. Ka Lu'u o ka 'O'o	12.6	0
6. Base of Sliding Sands Trail	37.0	1.0
7. 5-Mile Marker Sliding Sands Trail	39.2	2.5
8. Kapalaoa Cabin	30.9	3.4
9. Kawilinau	28.6	0
10. Oili Pu'u	26.1	1.2
11. Holua Cabin	22.6	0
12. Lau'ulu Trail (top of the trail)	16.5	0
13. Paliku Cabin	9.7	0
14. Kaupō Trail (at Park boundary)	34.6	28.9
15. New Greensword Bog	14.2	0
16. Smith Camp	13.1	0
17. Charlie Camp	24.6	14.1
18. Dogleg Camp	33.1	13.6
19. Bravo Camp	39.9	34.0
20. Ka'apahu Camp	36.9	29.7
21. Pools of 'Ohe'o	33.6	38.6
22. Puhilele	32.3	39.7
23. Kapahu Farm	32.7	35.2
24. Waimoku Falls	26.5	24.0
25. Lelekea Stream Bridge	31.4	33.9
26. Kaupo Trailhead	35.4	35.6
27. Ka'apahu	40.3	38.9
28. Measurement Site P01 (Namana o ke Akua)	28.5	2.0
29. Measurement Site P02 (Supply Trail)	9.7	0
30. Measurement Site P03 (Waimoku Falls/Mango Tree)	32.2	35.2
31. Measurement Site ST4 (Palikū Kaupō Gap)	27.8	12.8
32. Measurement Site ST5 (The Notch)	37.9	2.5
33. Measurement Site ST6 (Silersword Loop)	25.1	0
34. Measurement Site ST7(Kalahaku Overlook)	16.2	0
35. Measurement Site ST8 (Waimoku Falls)	35.2	30.7
36. Measurement Site ST9 (Kīpahulu Scientific Reserve)	31.6	7.9
37. Measurement Site ST10 ('Ohe'o Coastal)	34.0	40.4
38. Nu'u Coast	26.7	23.3
39. Nu'u 4000 ft elev	38.6	37.1
40. Nu'u 7500 ft elev	45.6	24.2
41. Nu'u 3000 ft elev (West Boundary)	34.2	36.6
42. Manawainui 6200 ft elev	31.9	21.0
43. Ka'apahu 2600 ft elev (West Boundary)	40.3	37.3
44. West Camp (6400 ft elev)	22.6	9.6

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

Location	No Action, Time Audible for Natural Ambient (minutes)	Alternative 3, Time Audible for Natural Ambient (minutes)
1. Hosmer Grove	81.6	0.3
2. Halemau'u Trail/Rainbow Bridge	146.1	3.2
3. Kalahaku Overlook	173.9	7.6
4. Haleakalā Visitor Center	219.0	24.8
5. Ka Lu'u o ka 'O'o	148.4	16.1
6. Base of Sliding Sands Trail	155.0	29.7
7. 5-Mile Marker Sliding Sands Trail	151.5	31.5
8. Kapalaoa Cabin	156.4	31.6
9. Kawilinau	145.3	18.5
10. Oili Pu'u	157.9	25.1
11. Holua Cabin	126.6	9.6
12. Lau'ulu Trail (top of the trail)	168.9	15.7
13. Paliku Cabin	106.2	2.6
14. Kaupō Trail (at Park boundary)	212.1	74.9
15. New Greensword Bog	99.0	18.9
16. Smith Camp	97.4	26.5
17. Charlie Camp	120.5	57.7
18. Dogleg Camp	117.3	56.2
19. Bravo Camp	125.4	63.2
20. Ka'apahu Camp	188.1	76.1
21. Pools of 'Ohe'o	173.7	68.7
22. Puhilele	187.1	85.5
23. Kapahu Farm	155.7	65.5
24. Waimoku Falls	92.6	56.2
25. Lelekea Stream Bridge	108.8	56.9
26. Kaupo Trailhead	210.6	81.4
27. Ka'apahu	175.8	73.0
28. Measurement Site P01 (Namana o ke Akua)	182.9	30.4
29. Measurement Site P02 (Supply Trail)	106.2	2.6
30. Measurement Site P03 (Waimoku Falls/Mango Tree)	180.7	80.3
31. Measurement Site ST4 (Palikū Kaupō Gap)	168.4	32.0
32. Measurement Site ST5 (The Notch)	155.9	32.4
33. Measurement Site ST6 (Silersword Loop)	131.5	12.4
34. Measurement Site ST7(Kalahaku Overlook)	125.6	6.5
35. Measurement Site ST8 (Waimoku Falls)	171.4	67.8
36. Measurement Site ST9 (Kīpahulu Scientific Reserve)	110.9	55.5
37. Measurement Site ST10 ('Ohe'o Coastal)	183.7	79.6
38. Nu'u Coast	225.3	79.0
39. Nu'u 4000 ft elev	229.8	85.1
40. Nu'u 7500 ft elev	225.8	76.5
41. Nu'u 3000 ft elev (West Boundary)	185.9	54.2
42. Manawainui 6200 ft elev	219.3	83.6
43. Ka'apahu 2600 ft elev (West Boundary)	191.3	69.9
44. West Camp (6400 ft elev)	142.3	41.9

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

Location	No Action, Time Above 35 dBA (minutes)	Alternative 3, Time Above 35 dBA (minutes)
1. Hosmer Grove	0.0	0.0
2. Halemau'u Trail/Rainbow Bridge	3.7	0.0
3. Kalahaku Overlook	1.1	0.0
4. Haleakalā Visitor Center	2.8	0.0
5. Ka Lu'u o ka 'O'o	0.0	0.0
6. Base of Sliding Sands Trail	30.4	0.0
7. 5-Mile Marker Sliding Sands Trail	50.1	0.0
8. Kapalaoa Cabin	6.6	0.0
9. Kawilinau	22.5	0.0
10. Oili Pu'u	17.5	0.0
11. Holua Cabin	9.0	0.0
12. Lau'ulu Trail (top of the trail)	0.2	0.0
13. Paliku Cabin	0.0	0.0
14. Kaupō Trail (at Park boundary)	51.9	16.8
15. New Greensword Bog	0.0	0.0
16. Smith Camp	0.0	0.0
17. Charlie Camp	12.9	0.0
18. Dogleg Camp	35.5	0.7
19. Bravo Camp	61.4	21.5
20. Ka'apahu Camp	66.7	19.4
21. Pools of 'Ohe'o	39.2	31.9
22. Puhilele	35.8	32.0
23. Kapahu Farm	44.1	33.8
24. Waimoku Falls	7.4	9.4
25. Lelekea Stream Bridge	44.4	22.9
26. Kaupo Trailhead	68.5	22.5
27. Ka'apahu	70.5	19.8
28. Measurement Site P01 (Namana o ke Akua)	18.7	0.0
29. Measurement Site P02 (Supply Trail)	0.0	0.0
30. Measurement Site P03 (Waimoku Falls/Mango Tree)	50.6	31.8
31. Measurement Site ST4 (Palikū Kaupō Gap)	31.0	0.5
32. Measurement Site ST5 (The Notch)	35.2	0.0
33. Measurement Site ST6 (Silersword Loop)	16.3	0.0
34. Measurement Site ST7(Kalahaku Overlook)	1.3	0.0
35. Measurement Site ST8 (Waimoku Falls)	46.1	29.5
36. Measurement Site ST9 (Kīpahulu Scientific Reserve)	24.7	0.0
37. Measurement Site ST10 ('Ohe'o Coastal)	35.8	30.9
38. Nu'u Coast	20.0	13.2
39. Nu'u 4000 ft elev	73.9	18.2
40. Nu'u 7500 ft elev	71.8	11.0
41. Nu'u 3000 ft elev (West Boundary)	59.9	11.9
42. Manawainui 6200 ft elev	50.1	5.7
43. Ka'apahu 2600 ft elev (West Boundary)	59.1	19.5
44. West Camp (6400 ft elev)	8.3	0.0

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

Location	No Action, Time Above 52 dBA (minutes)	Alternative 3, Time Above 52 dBA (minutes)
1. Hosmer Grove	0.0	0.0
2. Halemau'u Trail/Rainbow Bridge	0.0	0.0
3. Kalahaku Overlook	0.0	0.0
4. Haleakalā Visitor Center	0.0	0.0
5. Ka Lu'u o ka 'O'o	0.0	0.0
6. Base of Sliding Sands Trail	4.7	0.0
7. 5-Mile Marker Sliding Sands Trail	10.5	0.0
8. Kapalaoa Cabin	1.7	0.0
9. Kawilinau	0.0	0.0
10. Oili Pu'u	0.0	0.0
11. Holua Cabin	0.0	0.0
12. Lau'ulu Trail (top of the trail)	0.0	0.0
13. Paliku Cabin	0.0	0.0
14. Kaupō Trail (at Park boundary)	1.5	0.0
15. New Greensword Bog	0.0	0.0
16. Smith Camp	0.0	0.0
17. Charlie Camp	0.0	0.0
18. Dogleg Camp	0.9	0.0
19. Bravo Camp	8.0	2.4
20. Ka'apahu Camp	2.9	0.3
21. Pools of 'Ohe'o	2.0	7.9
22. Puhilele	1.8	8.2
23. Kapahu Farm	1.0	2.8
24. Waimoku Falls	0.2	0.0
25. Lelekea Stream Bridge	0.3	2.7
26. Kaupo Trailhead	1.3	4.1
27. Ka'apahu	8.2	6.6
28. Measurement Site P01 (Namana o ke Akua)	0.0	0.0
29. Measurement Site P02 (Supply Trail)	0.0	0.0
30. Measurement Site P03 (Waimoku Falls/Mango Tree)	0.0	2.7
31. Measurement Site ST4 (Palikū Kaupō Gap)	0.0	0.0
32. Measurement Site ST5 (The Notch)	4.9	0.0
33. Measurement Site ST6 (Silersword Loop)	0.0	0.0
34. Measurement Site ST7(Kalahaku Overlook)	0.0	0.0
35. Measurement Site ST8 (Waimoku Falls)	1.1	0.0
36. Measurement Site ST9 (Kīpahulu Scientific Reserve)	0.5	0.0
37. Measurement Site ST10 ('Ohe'o Coastal)	2.2	9.3
38. Nu'u Coast	0.0	0.0
39. Nu'u 4000 ft elev	6.1	4.9
40. Nu'u 7500 ft elev	23.6	0.0
41. Nu'u 3000 ft elev (West Boundary)	0.9	4.1
42. Manawainui 6200 ft elev	0.0	0.0
43. Ka'apahu 2600 ft elev (West Boundary)	8.9	3.9
44. West Camp (6400 ft elev)	0.0	0.0

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

Location	No Action, Maximum Sound Level (dBA)	Alternative 3, Maximum Sound Level (dBA)
1. Hosmer Grove	29.3	12.3
2. Halemau'u Trail/Rainbow Bridge	38.2	14.6
3. Kalahaku Overlook	36.7	15.5
4. Haleakalā Visitor Center	42.9	19.1
5. Ka Lu'u o ka 'O'o	33.2	18.5
6. Base of Sliding Sands Trail	59.3	23.2
7. 5-Mile Marker Sliding Sands Trail	60.5	25.7
8. Kapalaoa Cabin	60.4	26.8
9. Kawilinau	49.9	22.0
10. Oili Pu'u	46.2	22.7
11. Holua Cabin	41.6	16.7
12. Lau'ulu Trail (top of the trail)	35.7	23.1
13. Paliku Cabin	30.5	14.1
14. Kaupō Trail (at Park boundary)	54.1	51.5
15. New Greensword Bog	32.0	19.5
16. Smith Camp	35.0	19.4
17. Charlie Camp	43.9	34.8
18. Dogleg Camp	53.1	37.9
19. Bravo Camp	63.1	57.8
20. Ka'apahu Camp	57.0	52.7
21. Pools of 'Ohe'o	59.8	62.2
22. Puhilele	57.3	63.6
23. Kapahu Farm	55.9	56.6
24. Waimoku Falls	53.9	48.2
25. Lelekea Stream Bridge	53.2	56.7
26. Kaupo Trailhead	57.2	57.5
27. Ka'apahu	64.0	63.9
28. Measurement Site P01 (Namana o ke Akua)	50.5	23.3
29. Measurement Site P02 (Supply Trail)	30.5	14.1
30. Measurement Site P03 (Waimoku Falls/Mango Tree)	51.4	56.7
31. Measurement Site ST4 (Palikū Kaupō Gap)	43.9	37.2
32. Measurement Site ST5 (The Notch)	64.6	25.0
33. Measurement Site ST6 (Silersword Loop)	44.0	17.9
34. Measurement Site ST7(Kalahaku Overlook)	36.9	15.3
35. Measurement Site ST8 (Waimoku Falls)	53.6	50.8
36. Measurement Site ST9 (Kīpahulu Scientific Reserve)	52.7	31.2
37. Measurement Site ST10 ('Ohe'o Coastal)	60.7	65.0
38. Nu'u Coast	44.2	42.3
39. Nu'u 4000 ft elev	58.3	63.7
40. Nu'u 7500 ft elev	68.7	47.8
41. Nu'u 3000 ft elev (West Boundary)	55.9	65.0
42. Manawainui 6200 ft elev	49.5	42.9
43. Ka'apahu 2600 ft elev (West Boundary)	62.8	63.7
44. West Camp (6400 ft elev)	40.4	31.2

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 (4,824 flights per year), 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. 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 above the ATMP planning area (above 5,000 feet (ft.) above ground level (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 and 3, some locations within the ATMP planning area may experience less intense noise but for a longer period when compared to current conditions. Additionally, other locations within the ATMP planning area not currently experiencing air tour noise may experience some noise under these alternatives when compared to current conditions. However, in both cases, the intensity of noise would likely be low given the aircraft altitude; any noise that might result could also be more easily masked by opportunistic sounds such as wind and various anthropogenic noise sources. In summary, while the area of noise could be greater under these alternatives, the intensity of noise, especially when compared to current conditions at locations near or directly below existing air tour routes, would be less.

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 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 (500 ft.) altitude 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 peak-month average day 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 level⁹ currently operating at the Park is the Aerospatiale SA350D. For overflight operations at 500 ft. AGL, the number of operations over a 12-hour period to exceed a DNL 65 dB level is 1,654 (see Table 17). Other aircraft operating at the Park are the Eurocopter EC-130. The number of operations over a 12-hour period to exceed a DNL 65 dB level for this aircraft is 11,534.

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
SA350D	500	82.2	1,654
EC130	500	73.7	11,534

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 and 3, 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 3,861 operations at 500 ft. AGL over a 12-hour period to exceed a DNL 65 dB level (see Table 18). This activity level represents an increase in daily operations of 3,843 compared to the PMAD (18 operations) and an increase of 3,811 compared to the peak day (50 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
SA350D	500	82.2	6	33.3%	1,287
EC130	500	73.7	12	66.6%	2,574
Total			18	100%	3,861

⁹ The determination of loudest is based on the aircraft with the highest overflight sound exposure level at 500 ft. 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.

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>

Job, J. R., A. R. Pipkin, & J. A. Beeco. (2018). *Haleakalā National Park: Acoustic monitoring report*. National Park Service, Fort Collins, Colorado.
<https://irma.nps.gov/DataStore/DownloadFile/602845>

Lee Cynthia S.Y., Fleming, Gregg G., Roof, Christopher J., MacDonald John M., Scarpone Christopher J., Malwitz, Andrew R., and Baker, Gary, 2016, Haleakala National Park: Baseline Ambient Sound Levels 2003, DOT-VNTSC-FAA-06-09, DOT/FAA/AEE/2016-06.
<https://irma.nps.gov/DataStore/DownloadFile/601942>

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

Lynch, E. (2012). Haleakalā National Park: Acoustical monitoring report. Natural Resource Technical Report NPS/NRSS/NRTR—2012/549. National Park Service., Fort Collins, Colorado.
<https://irma.nps.gov/DataStore/DownloadFile/446569>

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

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

Property Name	Property Type	Eligibility Status	Significant Characteristics
Civilian Conservation Corps (CCC) Haleakalā Crater Trails Historic District Cultural Landscape	Cultural Landscape	Eligible	The Civilian Conservation Corps (CCC) Haleakalā Crater Trails Historic District Cultural Landscape was designed by NPS landscape architects and constructed by CCC enrollees between 1930 and 1941. It is significant for its association with early park planning and the CCC and for its embodiment of NPS Rustic Style architecture. Significant characteristics of the district include its rustic design, historic trail system, the human manipulated topography to accommodate the trails, the viewshed from the trails of the crater and the ocean, and its continued use as a tourist circulation system.
Crater Historic District	District	Listed	Crater Historic District consists of 56 pre-contact archeological sites, including temples and burials. It is accessed for traditional uses by Native Hawaiians. Extant prehistoric stone structures, remains of workshop sites, other archeological remains, quiet setting and/or natural sounds, and the surrounding landscape are all significant characteristics of the district.
C-Shaped Wall (SHPD ID 50-50-16-03979)	Site, Structure	Eligible	This site is located east of Pāhihi Gulch and consists of a C-shape wall that is two inches in diameter. Significant characteristics of the site include the wall's C-shaped design and stone materials.
Enclosures (SHPD ID 50-50-16-03980)	Site, Structure	Eligible	This site consists of the remains of a large enclosing wall and an attached rectangular enclosure. Significant characteristics of the site include its configuration and stone materials.
Haleakalā Headquarters Historic District Cultural Landscape	Cultural Landscape	Eligible	The Haleakalā Headquarters Historic District Cultural Landscape is significant for its association with early park planning and as an example of Mission 66-era development. It is also significant for its NPS Rustic Style design. The rustic design, building configuration, and surrounding landscape are all significant characteristics of the district.
Haleakalā Highway Historic District Cultural Landscape	Cultural Landscape	Eligible	The Haleakalā Highway Historic District Cultural Landscape includes a portion of the highway within the Park, which was designed by the Bureau of Public Roads (BPR) with input from the Park and NPS landscape architects, as well as several developments along the route. It is significant for its association with NPS master planning from the 1930s and Mission 66 eras and for its minimally intrusive design. In order to be minimally intrusive, the district's road, buildings, and structures were designed to

			decrease the visual and physical impact on the landscape; this design and the surrounding landscape are significant characteristics of the district.
Haleakalā Summit Traditional Cultural Property	TCP	Eligible	The Summit of Haleakalā, including Kaupō Gap and Kīpahulu Valley, is significant as a Traditional Cultural Property (TCP) for its association with native Hawaiian culture, traditions, and sacred uses. The exceptional stillness and serenity of the Summit of Haleakalā are significant characteristics of the TCP that allow Native Hawaiians to continue conducting traditional ceremonies, which require a quiet setting.
Hāna Belt Road	District	Listed	Hāna Belt Road includes a road and bridges to Hāna that were built between 1900 and 1947. It is significant as an engineering achievement and for its association with the development of the area that opened East Maui to further settlement, agricultural enterprises, and tourism. The road's winding and narrow alignment; surrounding scenery and viewshed featuring waterfalls, small villages, valleys, and sea cliffs; and stylistically consistent, one-lane bridges with sharp approaches are all significant characteristics of the district.
Hāwelewele Complex (Kailiili Heiau)	Site, Structure	Unevaluated ¹	The Hāwelewele Complex, also called the Kailiili Heiau, is located a quarter of a mile from the shore on top of a small hill in the center of a valley. The large heiau measures approximately 50 by 124 feet with walls that are 6 feet thick and around 4-5 feet high. Potential significant characteristics of the site include its materials and configuration.
Hosmer Campground and Picnic Area Cultural Landscape	Cultural Landscape	Eligible	The Hosmer Campground and Picnic Area Cultural Landscape is located just below the 7,000-foot elevation in the summit area of the Park and is the only drive-in campground in the area. It is significant as an example of a Mission 66-era development and for its experimental forestry plots that were planted by Ralph S. Hosmer in the early-twentieth century. Significant characteristics of the cultural landscape include the campground layout and design and surrounding landscape.
Ka'āpahu Archeological Sites	Sites	Eligible	Ka'āpahu Archeological Sites consist of archeological sites recorded within Kālepa, 'Alelele, Lelekēa, and Kukui'ula Valleys, including traditional Native Hawaiian dryland agriculture terraces and clearings, larger irrigated pondfield complexes for the production of kalo (taro, <i>Colocasia esculenta</i>), and habitation and ceremonial sites. 19 th century enclosures representing mixed residences and agriculture (including animal husbandry) are also present. Significant characteristics of the sites include the

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

			extant remains of structures and complexes, their materials and configurations, extant material culture remains, the surrounding landscape, and a quiet setting and/or natural sounds.
Keakalauae Heiau	Site, Structure	Unevaluated	The Keakalauae Heiau is one of the largest of the Kaupō heiaus and is credited to Kekaulike from c.1730. Its greatest dimensions are approximately 168 by 330 feet. The interior of the platform has been utilized for a pig pen with walls built around it. Potential significant characteristics of the site include the heiau's configuration, materials, and natural sounds.
Kīpahulu Historic District	District	Eligible	The Kīpahulu Historic District is comprised of fragmentary structural remains of Hawaiian use of the Kīpahulu land in the pre-contact period through 1900 that indicate a substantial resident population engaged in horticulture and fishing in an isolated wet-valley Polynesian community. The archeological study of the remains may reveal the vicinity may have played a significant role in the colonization of the Hawaiian Islands by early Polynesian voyagers and settlers. The few Hawaiian families who continued to live along 'Ohe'o Gulch and stream after 1900 perpetuated traditional irrigated and dry-land horticulture and fishing activities. The people of Kīpahulu perhaps experienced a minor lifestyle change when organized Christianity invaded east Maui ca. 1850, and certainly did so after 1900 when Kīpahulu plantation imported laborers from overseas and began to clear and plow the steeply sloping lower flanks of Haleakala volcano on both sides of 'Ohe'o Gulch to grow sugar cane. The historical themes of Hawaiian land use, Hawaiian placenames, engineering for sugar cultivation on marginal lands, and overland transportation are represented by structures or their remnants. Significant characteristics of the district include extant material culture and structural remains, physical evidence of historic and prehistoric land use, association with the ocean, a quiet setting and/or natural sounds, and the landscape.
Lonoaea Heiau	Site, Structure	Unevaluated	The Lonoaea Heiau is a walled heiau located on top of a hill overlooking Waiuha to the west. Potential significant characteristics include the heiau's materials, viewshed, and natural sounds.
Lono'o'ai'a Heiau (Hale O Kane Heiau)	Site, Structure	Unevaluated	The Lono'o'ai'a Heiau, also called the Hale O Kane Heiau, is an open platform that is 10 to 12 feet above the ground. Potential significant characteristics include the heiau's materials and natural sounds.

Mound (SHPD ID 50-50-16-08665)	Site, Structure	Eligible	This site consists of a partially-faced mound that was constructed of stacked stones and may have served as a historic cattle ramp. Significant characteristics of the site include its stacked configuration and stone materials.
Naholoku Archeological Sites	Sites	Eligible	The complex of 18 archeological sites at 1,000 ft elevation in dryland Naholoku Ahupua'a dates as early as the 15 th to 17 th centuries and is significant for its potential to yield information, with at least three sites eligible for architecture/design. These latter sites represent structures that embody the characteristics of pre-Contact and late pre-Contact/early historical residential compounds and smaller agricultural heiau. Significant characteristics include the extant remains of buildings and structures; their materials, configurations, and design; extant material culture remains; physical evidence of historic and prehistoric land use, a quiet setting and/or natural sounds, and the landscape.
Naku'ula Complex	Site, Structure	Unevaluated	The Naku'ula Complex consists of three rectangular terraced platforms that may be heiau sites. Potential significant characteristics include the site's physical materials and a quiet setting and/or natural sounds.
Nu'u Archeological Sites	Sites	Eligible	Nu'u Archeological Sites consist of archeological sites, composed of pocket terraces, terraces, enclosures, cleared areas, modified outcrops, and mounds that represent an extensive traditional dryland agricultural complex for primarily sweet potato production, temporary shelters associated with agricultural activity, multiple permanent residential complexes, most of which date to the 19 th century, specialized features/use areas for ceremony and lithic production. Significant characteristics of the sites include the extant remains of structures and residential complexes, their materials and configurations, mounds, extant material culture remains including evidence of ceremony and lithic production, physical evidence of historic and prehistoric land use, a quiet setting and/or natural sounds, and the landscape.
Nu'u Petroglyph Complex	Site	Unevaluated	The Nu'u Petroglyph Complex is a site covering 117 meters that is located on the beach at Nu'u Bay. It consists of 157 petroglyphs: 92 human forms, 3 animal forms, 3 names, and 59 undetermined images. Potential significant characteristics of the site include the petroglyph designs and configurations.
Nu'u Pictograph Complex	Site	Unevaluated	The Nu'u Petroglyph and Pictograph Complex is a site covering 117 meters that is located on the beach at Nu'u Bay. It consists of 40 pictographs: 16 human forms, 3

			animal forms, and 21 undetermined images. Potential significant characteristics of the site include the pictograph designs and the materials used to create them.
Nu'u-Waiu Complex, Hana	Site, Structure	Unevaluated	The Nu'u-Waiu Complex consists of several archeological sites composed of enclosures, partial enclosures, terraces and platforms, pits, pavements, house lots, walls, ko`a, trails, cairn, petroglyphs, a fishpond, rockshelters, and graves. Potential significant characteristics of the complex includes the extant remains of structures, their materials and configurations, other extant material culture remains, prehistoric and historic trail alignments, and physical evidence of prehistoric and historic land use.
Pictograph and Rock Shelter (Marciel's Pictograph)	Site, Structure	Unevaluated	This site consists of a human figure painted with alaea (red salt) on a boulder that is located next to a rock shelter that once contained a burial. Potential significant characteristics of the site include the pictograph form and design, the use of alaea to create it, the rock shelter's materials, natural sounds, and any other extant cultural remains.
Puhilele Archaeological Sites	Sites	Eligible	Puhilele Archaeological Sites consist of archeological sites, composed of terraces, platforms, alignments, and mounds used for agricultural, residential, ceremonial as well as temporary shelter for fishing. Significant characteristics of the site includes the extant remains of structures, their materials and configurations, other extant material culture remains, association with the ocean, a quiet setting and/or natural sounds, and physical evidence of prehistoric and historic land use.
Pu'umaka'a Heiau	Site, Structure	Unevaluated	The Pu'umaka'a Heiau is an open platform type of heiau that consists of a series of rough terraced pavements. Potential significant characteristics include the heiau's materials and natural sounds.
Pu'unianiau Historic Site Cultural Landscape	Cultural Landscape	Eligible	The Pu'unianiau Historic Site Cultural Landscape is significant as a base camp used by the U.S. Army for the administration of the Red Hill Aircraft Warning Service Station at the summit of Haleakalā between 1941 and 1946. It consists of five historic buildings and structures and a south access road. The spatial organization of the site, which reflects the traditional conventions for military cantonments, and the 1940s military one-story buildings and structures are significant characteristics of the cultural landscape.
Terraces (SHPD ID 50-50-16-01133)	Site, Structure	Unevaluated	These terraces are located on the west side of the Kalepa Stream. They consist of the remains of two rectangular enclosures, each with two end walls and one connecting

			wall about 50 feet in length. Potential significant characteristics of the site include its configuration and materials.
Wall (SHPD ID 50-50-16-08663)	Site, Structure	Eligible	This site consists of a low wall near Kukui'ula Gulch that was built along the side of a steep stream channel. The wall is constructed of stacked and piled stones that terminates in an "L" on its inland end. Significant characteristics of the site include its configuration, stone materials, and location next to the stream.
Wall (SHPD ID 50-50-16-08664)	Site, Structure	Eligible	This site consists of a bi-facial wall near Kukui'ula Gulch that was likely constructed for drainage during the historic period. Significant characteristics of the site include its configuration and materials.
Wall (SHPD ID 50-50-16-03978)	Site, Structure	Eligible	This site consists of a single stacked boulder wall approximately 5.5 meters in length and 60 centimeters high. It is oriented north-to-south and likely served as a windbreak for a structure located in its lee. Significant characteristics of the site include its configuration, stone materials, and north-to-south orientation.
Wall (SHPD ID 50-50-17-08883)	Site, Structure	Unevaluated	This site consists of a dry-stacked, core-filled rock wall that was likely constructed to mark the boundaries of a neighboring grant parcel to the west sometime after the sale of the parcel in 1854. Potential significant characteristics of the site include its configuration, stone materials, and location.
Walls (SHPD ID 50-50-16-01132)	Site, Structure	Unevaluated	This site consists of the remains of walls, one parallel to the shore and another parallel to the Kalepa Stream, which may be the remains of a house site. Potential significant characteristics of the site include its configuration, stone materials, and location next to the stream.



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



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 29, 2021

Re: Initiation of consultation under Section 106 of the National Historic Preservation Act for the development of Air Tour Management Plans at Hawai'i Volcanoes and Haleakalā National Parks

Suzanne Case
Chairperson and State Historic Preservation Officer
State Historic Preservation Division
1151 Punchbowl Street, Suite 555
Honolulu, HI 96813

Dear Ms. Case:

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 Hawai'i Volcanoes and Haleakalā National Parks. 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 assessed individually under Section 106 and NEPA. We look forward to meaningful consultation on the air tours and their overall effect on historic properties.

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/

There will be no ground disturbance, construction or demolition associated with this undertaking. Air tours have been operating in Hawai'i Volcanoes and Haleakalā National Parks 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.

In accordance with 36 CFR 800.3 and NPATMA, the agencies have identified and initiated consultation with Native Hawaiian organizations, individuals, and other consulting parties 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.

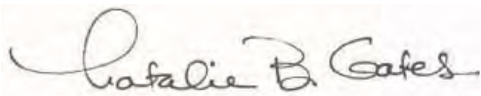
Sincerely,



Raquel Girvin
Regional Administrator
Western-Pacific Region
Federal Aviation Administration



Rhonda K. Loh
Park Superintendent
Hawai'i Volcanoes National Park
National Park Service



Natalie B. Gates
Park Superintendent
Haleakalā National Park
National Park Service

cc: Dr. Alan S. Downer via HICRIS

Attachment A: List of Consulting Parties

ATTACHMENT A
CONSULTING PARTIES LIST

Organizations
Office of Hawaiian Affairs
O Ka'u Kakou
Department of Land and Natural Resources
Office of Native Hawaiian Relations, US Department of Interior
Historic Hawai'i Foundation
Na Kupuna Moku O Keawe
The Nature Conservancy of Hawai'i
Kalapana Fishing Council
Kalauonaone O Puna Association
Edith Kanaka'ole Foundation
Kamehameha Schools
Kalapana 'Ohana Association
Maku'u Farmers Association
Kona Hawaiian Civic Club
National Trust for Historic Preservation
Naki'i Ke Aho
Na Ohana O Kalapana
Royal Hawaiian Academy of Traditional Arts
The Mary Kawena Pūku'i Cultural Preservation Society
Advisory Council on Historic Preservation
The Nature Conservancy
Department of Hawaiian Home Lands
County of Hawaii
Kalapana Community Organization
Aha Moku o Kahikinui
Aha Moku o Kaupo
Aha Moku o Maui Inc.
Ali'i 'Ai Moku O Kahekili
Royal Order of Kamehameha I
Brian Kaniela Nae'ole Na'auao
George K. Cypher 'Ohana
Na Koa Ikaika Ka Lahui Hawai'i
Nekaifes 'Ohana
Waiehu Kou Phase 3 Assoc.
Kaupo Community Association
Kipahulu 'Ohana

Kumu A`o
Wananalua Congregational Church
Friends of Haleakalā National Park
Leeward Haleakalā Watershed Restoration Partnership

Individuals
Kauilani Almeida
Gladys Brigham
Bobby Camara
Greg Herbst
Leialoha Ilae-Kaleimamahu
Piilani Kaawaloa
Mr. Sam Kahookaulana
Mr. Brian Kaniela Nae'ole Naauao
Kekuhi Keliikanakaole
Gladys Konanui
Larry Kuamo'o
Julie Leialoha
Earl Louis
Violet Makuakane
JoniMae Makuakane-Jarrell
Demetrius Olivera
John Replogle
Mabel Wilson
Nona and Herb Wilson
Paulette K. Ke
Jessie Ke
Clifford Hashimoto
Daisy Lind
Tweetie Lind
Kahu Dane Maxwell
Kahu Lyons Naone
Terry Poaipuni
Angela Tavares
Ma'ano Smith
Dana Hall
Ki'ope Raymond
Jade Alohalani Smith
Donna Sterling



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

February 10, 2023

Re: Response to Comments and Request for Assistance on the Identification of Cultural Resources within the Revised Area of Potential Effects on the Development of an Air Tour Management Plan for Haleakalā National Park Pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations at 36 CFR Part 800 (HICRIS Project 2022PR00396)

Kiersten Faulkner
Executive Director
Historic Hawai'i Foundation
The Dole Cannery
680 Iwilei Rd., Dole Office Bldg. Tower, Suite 690
Honolulu, HI 96817

Dear Kiersten Faulkner:

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) regarding the development of an Air Tour Management Plan (ATMP) for Haleakalā National Park (the Park). The FAA hosted a consulting party meeting on November 10, 2022, for the development of an ATMP for the Park, pursuant to Section 106 of the NHPA and its implementing regulations at 36 CFR Part 800. The purposes of the meeting were to discuss the identification of historic properties that may be affected by the implementation of the ATMP, identify the area of potential effects (APE), and explain how the agency would assess effects on historic properties within the proposed APE (**Attachment 1**). At the meeting, and via email on November 14, 2022, the FAA requested consulting parties provide written comments for the agency's consideration regarding the APE, the identification of cultural resources, and the potential effects of the undertaking on cultural resources. This letter serves as the FAA's response to comments it received from consulting parties and provides recent revisions to the APE and requests assistance identifying cultural resources within the revised APE.

The FAA received and reviewed comments from four consulting parties, including the State of Hawai'i's Office of Hawaiian Affairs, the Historic Hawai'i Foundation, the Friends of Haleakalā National Park, and the Kīpahulu Kupuna Council. The FAA considered the comments from the consulting parties in revising the APE and also sought input from the Hawai'i State Historic Preservation Division (SHPD). On January 26, 2023 the SHPD offered no objections to the revised APE, but noted that their office looked forward to receiving and reviewing the agencies' responses to the consulting parties' comments. **Attachment 2** summarizes consulting parties' comments and provides FAA's responses to those comments.

Description of the Undertaking

Consistent with the National Parks Air Tour Management Act of 2000 (Act), the proposed ATMP for the Park would regulate commercial air tours over the Park up to 5,000 ft. above ground level (AGL) or within ½ mile outside the boundary of the Park, referred to as the ATMP planning area. 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 February 2022 Scoping Newsletter, prepared by the FAA and the NPS (together, the agencies) is available at the following link:

- Haleakalā National Park: <https://parkplanning.nps.gov/HaleakalaATMP>

The proposed ATMP would authorize or prohibit commercial air tour operations over the Park in accordance with the conditions included in the preferred alternative. The agencies are working to select the preferred alternative for the ATMP. The preferred alternative selected will be the undertaking for the Park. The current draft action alternatives are shown in the table below, and a summary of the elements in each alternative being considered can be found in **Attachment 3**. Maps of the alternatives under consideration were previously provided in the invitations to the November 10, 2022, consulting party meeting.

Potential Undertakings for Haleakalā National Park

Alternative 2 – No Air Tours in the Planning Area
Alternative 3 – Reduction of Air Tours

Revised 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 establishment 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 resulting from the undertaking that could diminish the integrity of any identified historic properties.

In establishing the APE, the FAA sought to include areas where any historic property present could be affected by introduction of noise from or sight of commercial air tours as a result of the implementation of the ATMP. 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 listing in the National Register of Historic Places (NRHP).

Under the no air tour alternative (Alternative 2) it is reasonably foreseeable that operators would continue to fly to points of interest on the island outside of the ATMP planning area where they already fly and fly routes over or around the Park similar to existing flight paths but outside of the ATMP planning area. Under Alternative 3 (reduced air tours), it is reasonably foreseeable that operators would fly the proposed flight path at a minimum of 2,000 feet (ft.) AGL or fly close to their existing flight paths

above 5,000 ft. AGL or outside the ATMP planning area. Alternative 3 proposes a flight path through the Park that varies from currently reported routes. The proposed flight path connects to existing flight paths at the easternmost and westernmost bounds of the ATMP planning area (based on automatic dependent surveillance-broadcast (ADS-B) systems¹ data of flight paths) but shifts to the south at the Kaupō Denman parcel as well as the Kīpahulu and Kaʻāpahu areas. While the flights may not follow a straight line connecting the route outside the ATMP planning area, it is reasonably foreseeable that some flights would follow the entire Alternative 3 proposed flight path and maintain a direct connection to the path outside of the ATMP planning area some of the time.

Therefore, the APE includes the Park and areas outside the Park but within ½ mile of its boundary. The APE also includes areas outside of the ATMP planning area between the Nuʻu and Kaʻāpahu regions of the Park, bounded to the south by the southern limits of the ½ mile buffer around the Kaupō Denman parcel, and the overland area between the Kaʻāpahu and Kīpahulu regions of the park. The inclusion of areas outside the ATMP planning area addresses the most direct path operators may fly to connect to the proposed flight path, allowing for deviation in the route and new visual and audible impacts that may result from such deviations. The APE extends vertically from ground level to encompass areas where the operators may fly above the ATMP planning area (i.e., more than 5,000 ft. AGL). In the event that operators choose to fly above the ATMP planning area, they would likely keep to an altitude close to but just above 5,000 ft. AGL, as higher flights would provide limited value to a sightseeing operation. As the ground level varies throughout the park, the vertical limits extend to just above 5,000 ft. mean sea level (MSL) at the coastline to no more than 10,000 ft. MSL near the summit.² It is unlikely that air tours would fly higher than 5,000 ft. AGL over the higher elevation areas of the park as supplemental oxygen use is required in unpressurized aircraft flying over 10,000 ft. MSL (14 CFR § 135.89, § 135.157).

This APE encompasses the reasonably foreseeable areas where operators may fly given the implementation of the ATMP and therefore the areas within which the undertaking may directly or indirectly cause alterations in the character or use of historical properties within the APE if any such properties exist. The revised APE is depicted in the map included in **Attachment 4**. A revised list of historic properties, including properties in the expanded APE areas, is included in **Attachment 5**.

Review Request

The FAA requests assistance in identifying cultural resources within the revised APE by February 28, 2023. Specifically, please provide any additional information you may have on historic properties that may exist within the revised APE that have not yet been identified for which setting or feeling are significant characteristics. Please send information responsive to this request to Judith.Walker@faa.gov, copying the ATMP team at ATMPTeam@dot.gov.

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

Sincerely,

¹ ADS-B systems periodically transmits aircraft location data in real-time.



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

CC: Dr. Alan Downer, Deputy State Historic Preservation Officer, Hawai'i SHPD
Stephanie Hacker, Archaeologist, Hawai'i SHPD

Enclosures:

Attachment 1 – November 10, 2022, Section 106 Consulting Party Meeting Presentation
Regarding the Development of an ATMP for Haleakalā National Park

Attachment 2 – Response to Comments on the Development of an ATMP for Haleakalā National
Park

Attachment 3 – Summary of Alternatives for an ATMP for Haleakalā National Park

Attachment 4 – Revised APE Map for an ATMP for Haleakalā National Park

Attachment 5 – Revised Historic Property Identification List for Haleakalā National Park

ATTACHMENT 1

**NOVEMBER 10, 2022, SECTION 106 CONSULTING PARTY MEETING PRESENTATION REGARDING THE
DEVELOPMENT OF AN ATMP AT HALEAKALĀ NATIONAL PARK**

A photograph of a volcanic landscape. A winding dirt path leads up a hillside covered in reddish-brown volcanic soil and sparse vegetation. In the distance, a person stands on the path, providing a sense of scale. The sky is overcast with grey clouds.

Section 106 Consulting Party Meeting for Haleakalā National Park Air Tour Management Plan

November 10, 2022

Agenda

- Introductions
- Oli/‘ōlelo no‘eau
- Provide Project Overview
- Development of Area of Potential Effects
- Identification of Historic Properties
- Review Proposed Alternatives
- Discuss Agencies’ Assessment of Effects
- Next Steps
- Request Input from Consulting Parties



Introductions – Federal Agencies

Federal Aviation Administration

- Judith Walker – Federal Preservation Officer
- Eric Elmore – FAA Senior Policy Advisor

National Park Service, Haleakalā National Park

- Natalie Gates - Superintendent
- Lindsay Moore - Environmental Protection Specialist
- Rachel Hodara Nelson - Archeologist & Cultural Resources Program Manager
- Honeygirl Duman – Education Specialist & Hawaiian Community Liaison



Introductions – Consulting Parties

- Native Hawaiian Organizations
- Kūpuna
- Hawai'i State Historic Preservation Division (SHPD)
- Property Owners
- Operators



Oli and 'ōlelo no'eau



NPATMA Overview

- Enacted April 5, 2000
- Requires an ATMP or Voluntary Agreement
- The agencies have chosen to develop an ATMP for this park
- Required FAA to grant Interim Operating Authority (IOA) for existing commercial air tour operations
 - Based on the number of flights conducted in the 12-month period prior to enactment of NPATMA (or average of three prior years)
 - Granted 25,827 IOA to 6 operators for Haleakalā
 - IOA was published in the Federal Register in 2005
- Established the National Parks Overflights Advisory Group (NPOAG) to provide advice and guidance to the agencies from personnel with aviation, environmental, and tribal interests.



Project Overview

- Purpose of the Project – to comply with National Parks Air Tour Management Act (NPATMA) and other applicable laws, consistent with the Plan and Schedule for Completion of Air Tour Management Plans (ATMPs) at 23 Parks under Court Order
- Need for the Project – NPATMA requires the FAA, in cooperation with the NPS, to develop an ATMP for Parks with applications to conduct commercial air tours.
- Objective of the ATMP, under NPATMA, is to develop acceptable and effective measures to mitigate or prevent the significant adverse impacts, if any, of commercial air tour operations on the natural and cultural resources, traditional cultural properties (TCPs), sacred sites and ceremonial areas, wilderness character, and visitor experiences



Project Overview

- Undertaking is the development of an ATMP for the Park
- ATMP would regulate commercial air tours over the Park or within a half-mile buffer during which the aircraft flies below 5,000 ft. AGL
- Three alternatives are being considered for the ATMP at the Park
- Consultation under Section 106 was initiated in Spring of 2021 and is ongoing
- Both the FAA and NPS must prepare National Environmental Policy Act (NEPA) documentation and sign the decision document for the ATMP
 - The FAA is acting as the lead agency overseeing compliance with NEPA and Section 106 consultation under the National Historic Preservation Act (NHPA), with the NPS serving as a cooperating agency
 - An Environmental Assessment (EA) will be prepared for the Park

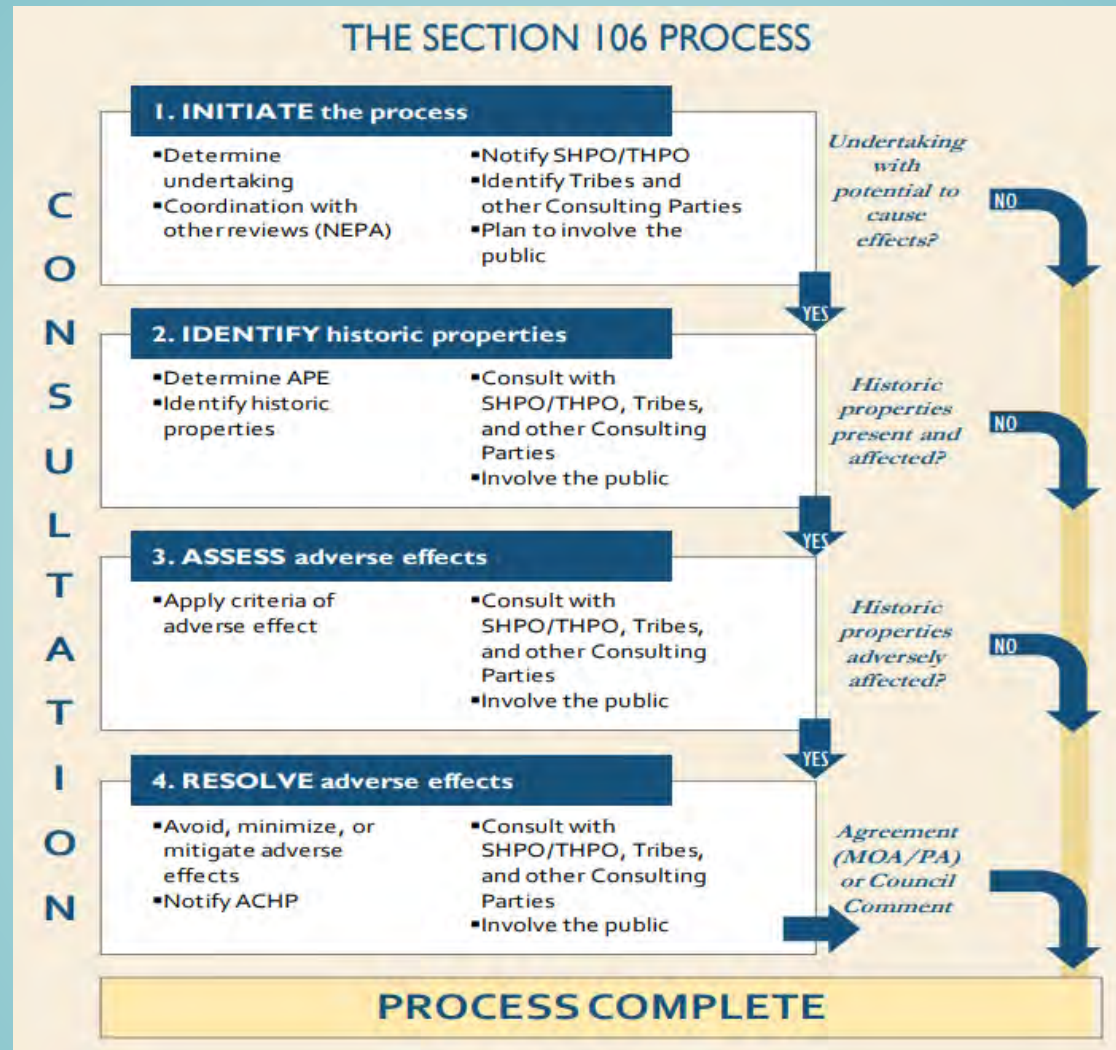


Consulting Party Roles under Section 106

- By-right consulting parties include the applicants, State Historic Preservation Offices (SHPOs)/Tribal Historic Preservation Offices (THPOs), NHOs, and local governments
- Invited consulting parties include others with a demonstrated interest, such as the operators
- Consulting parties are entitled to share their views, receive and review pertinent information, offer ideas, and consider possible solutions
- Views of the public are also important and considered in the Section 106 process and NEPA



Steps of the Section 106 Process



Graphic from *NEPA and NHPA: A Handbook for Integrating NEPA and Section 106*

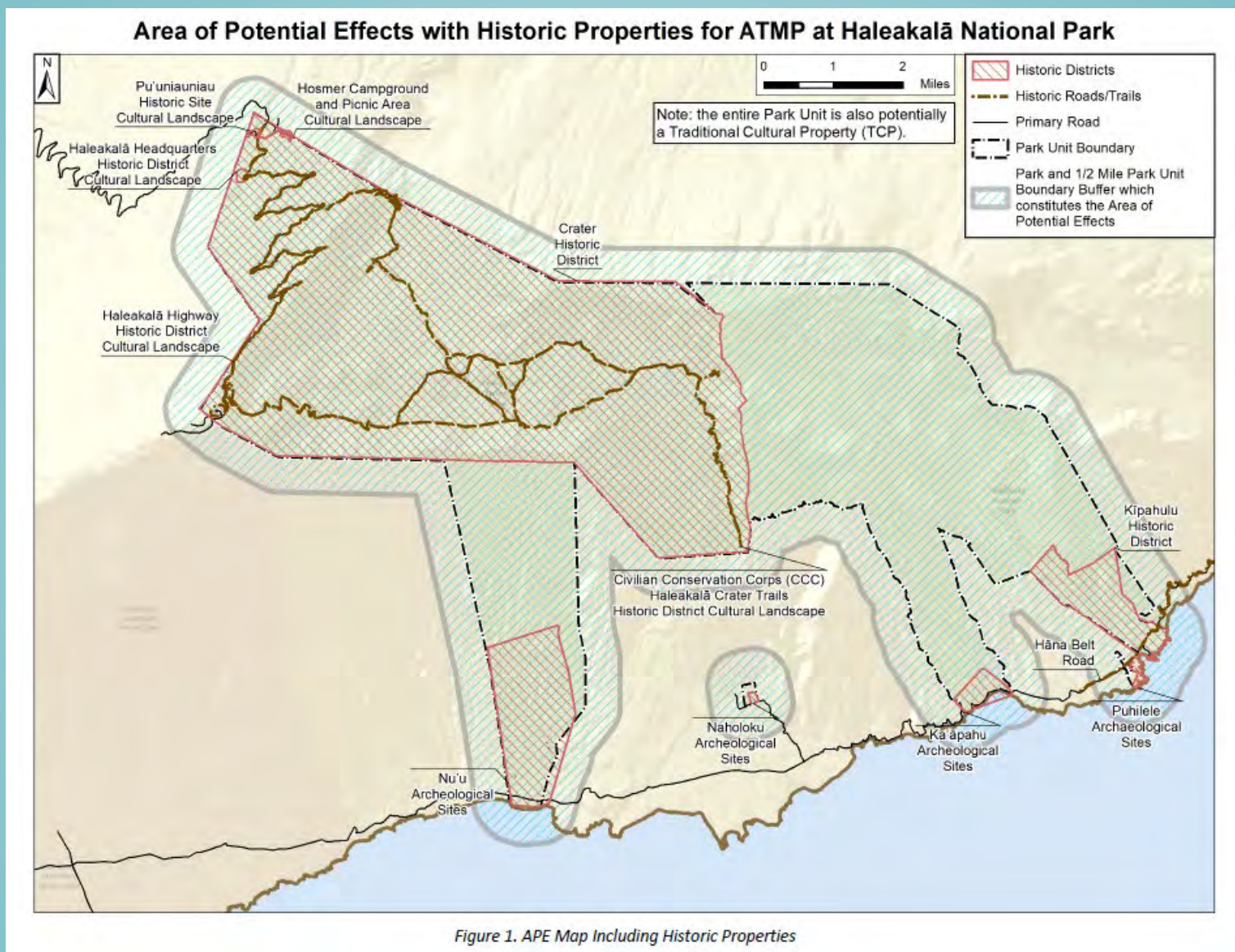
Development of Area of Potential Effects

Area of Potential Effects (APE) is defined as *“the geographic area or areas within which an undertaking may directly or indirectly cause alteration in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.”*
36 CFR 800.16(d)

- The APE is based on the undertaking and its potential impacts to cultural resources in accordance with 36 CFR 800.
- Potential impacts include the introduction of audible or visual elements



Haleakalā National Park Proposed APE – Park plus ½ mile outside the Park boundary



Preliminary Identification of Historic Properties

For identifying historic properties within the APE, the FAA and NPS consider the:

- views of consulting parties, planning, research, and studies
- the magnitude and nature of the undertaking
- the nature and extent of potential effects on historic properties, and the use of traditional cultural properties associated with cultural practices, customs or beliefs that continue to be practiced today

Current Identification Efforts include:

- data pulled from NPS and the Hawai'i State Historic Preservation Division's (SHPD) Hawai'i Cultural Resource Information System identified 13 above-ground historic properties within the APE, which includes a TCP, the Summit of Haleakalā, and several cultural landscapes

Preliminary Identification of Historic Properties

- Traditional Cultural Property (TCP) defined as Summit of Haleakalā including Kīpahulu Valley and Kaupō Gap
- Civilian Conservation Corps Haleakalā Crater Trails Historic District Cultural Landscape
- Crater Historic District
- Haleakalā Headquarters Historic District Cultural Landscape
- Haleakalā Highway Historic District Cultural Landscape
- Hāna Belt Road
- Hosmer Campground and Picnic Area Cultural Landscape
- Ka‘āpahu Archeological Sites
- Kīpahulu Historic District
- Naholoku Archeological Sites
- Nu‘u Archeological Sites
- Puhilele Archaeological Sites
- Pu‘uniauniau Historic Site Cultural Landscape



Questions or Comments?



Existing Air Tour Operations – Haleakalā National Park

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)
Aris, Inc. (Air Maui Helicopter Tours)	AS350BA	905	863	735	834	3,996
Hawai'i Helicopters, Inc.	AS350B2	516	328	283	376	5,682
Helicopter Consultants of Maui, Inc. (Blue Hawaiian Helicopters)	AS350B2, EC130 T2, EC130 B4	2,100	2,503	2,740	2,448	8,348
Schuman / Makani Kai	No Data	0	0	0	0	25
Sunshine Helicopters, Inc.	AS350BA	881	703	775	786	4,853
Alika Aviation, Inc. (Alexair, Maverick)	EC130B4	437	360	342	380	2,923
		4,839	4,757	4,875	4,824	25,827

Existing Air Tour Operations – Haleakalā National Park

- 6 helicopter operators
- 4,824 flights per year on average.
- Interim operating authority (IOA) for up to 25,827 flights, all helicopter operations
- No time-of-day restrictions
- No provisions for NPS to establish temporary no-fly periods.
- Tours occur year-round on most days of the year.
- January or July is the peak operation month with a 3-year average of 551 flights or about 18 flights per day during the peak month.

Project Alternatives for Haleakalā National Park

- ~~Alternative 1~~

- No Action – Continuation of current conditions up to IOA limits
- Not selectable as NPATMA requires implementation of ATMP or Voluntary Agreement

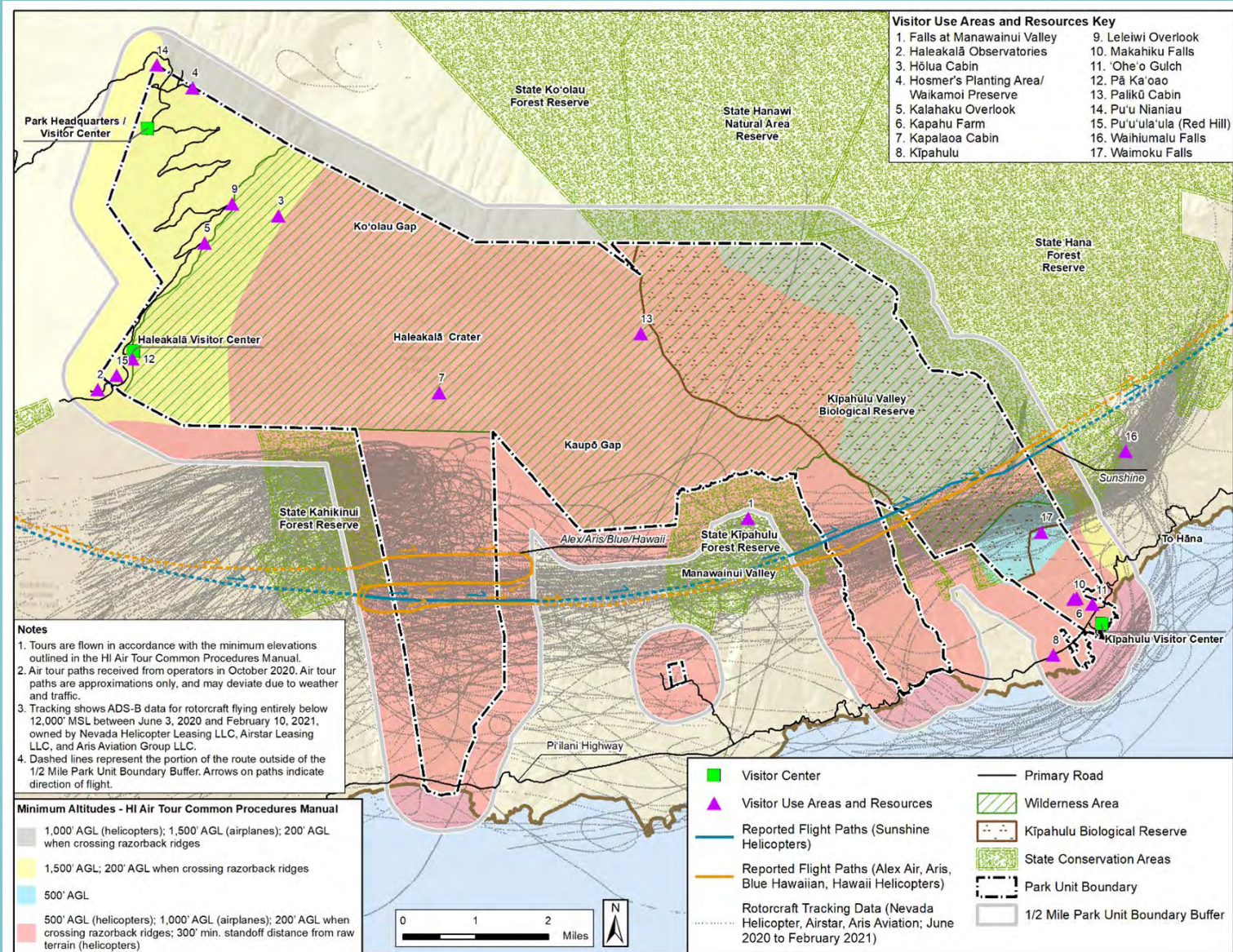
- **Alternative 2**

- No air tours within 5,000ft AGL over or within ½ mile of the Park
- Air tours could still occur outside of this area and around the Park

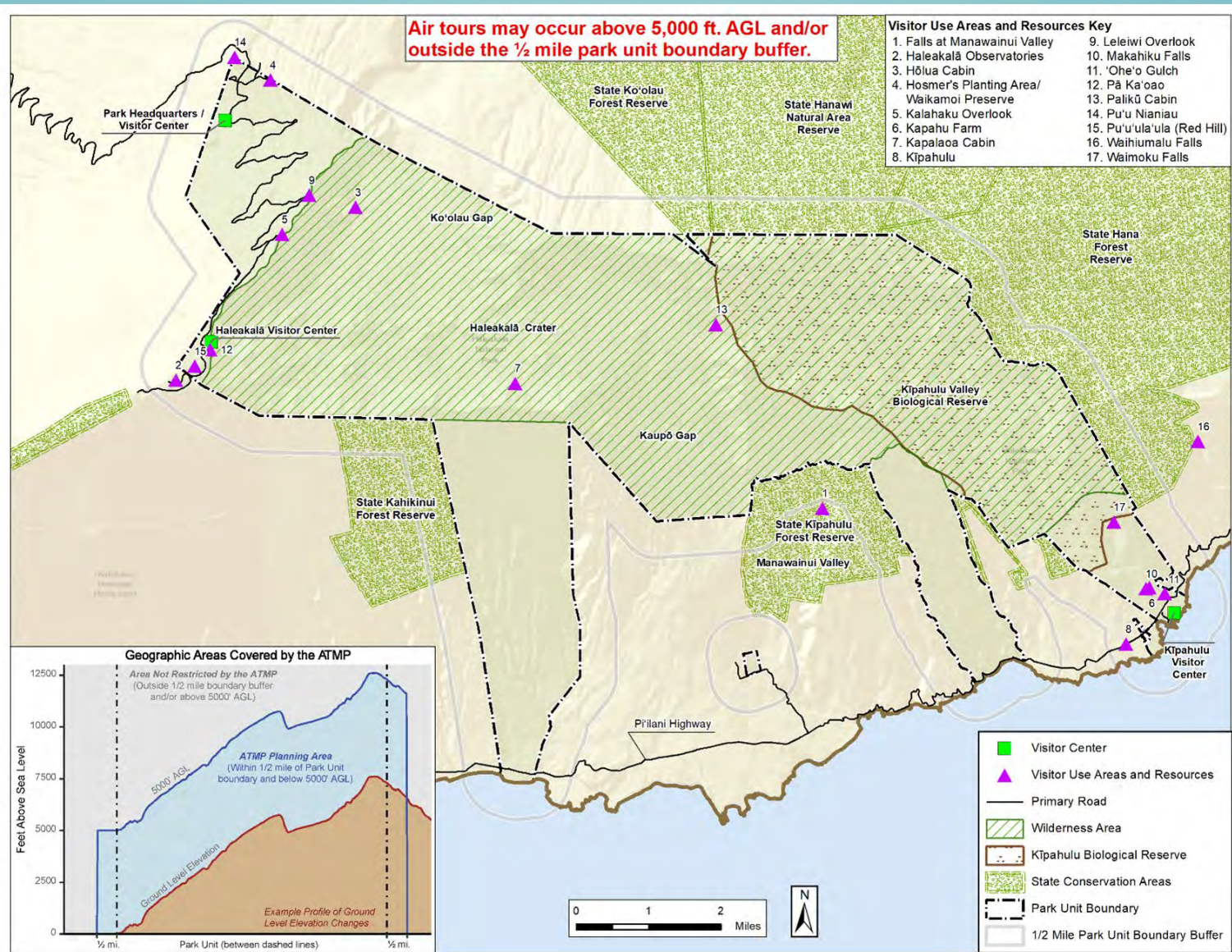
- **Alternative 3**

- Reduction in annual number of commercial air tours over the Park
- A singular flight path with altitudes ranging from 1,500 – 2,000ft AGL
- Flights permitted between 11AM-2PM (with Quiet Technology allowed from 11AM-4PM), except for Wednesday and Sunday
- Hovering/circling prohibited

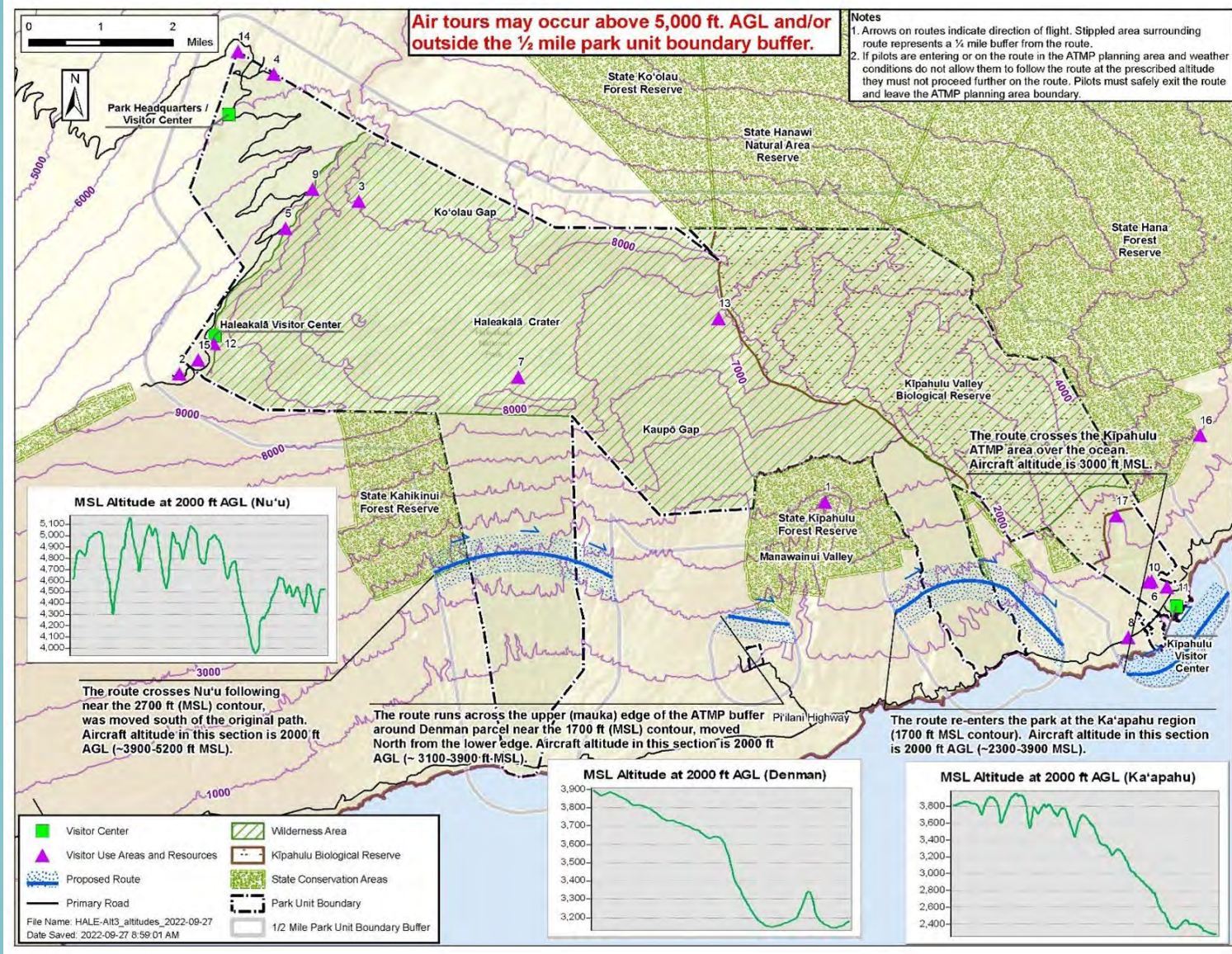
Alternative 1



Alternative 2



Alternative 3



Assessment of Effects

- **The proposed ATMP draft alternatives would not require land acquisition, construction, or ground disturbance**
 - No physical effects to historic properties anticipated
- **Focus of the assessment – new introduction of visual or audible elements beyond current effects that could diminish the integrity of any identified significant historic property**
 - The FAA and NPS will consider consulting parties' input on potential adverse effects
 - Analyze visual and audible elements of air tours



Questions or Comments?



Next Steps – Section 106 Consultations

The FAA and the NPS will:

- Revise alternatives as needed based on the comments received during consultation
- Continue to consult on the APE and identification of historic properties (including TCPs or sacred sites) within the APE
- Complete impact modeling and analysis
- Complete and distribute EA and Draft ATMP for comment
- Be open to holding additional consultation meetings to discuss development of an ATMP and ways to avoid or minimize any adverse effects that could result from air tours in the APE
- Send a consolidated consultation letter summarizing the FAA's steps in the Section 106 process and the effects to historic properties for consulting party input this winter
- Complete and distribute EA and Draft ATMP for comment and hold a public meeting

The findings reached during the Section 106 consultation process will inform decision on the final ATMP.

THANK YOU

- **Should you wish to provide further input on cultural property identification and/or the area of potential effects, please contact:**
 - Judith Walker at (202) 267–4185 or at judith.walker@faa.gov, copying ATMPTeam@dot.gov



ATTACHMENT 2

RESPONSE TO COMMENTS ON THE DEVELOPMENT OF AN ATMP FOR HALEAKALĀ NATIONAL PARK

The following table provides an overview of consulting parties' comments on the development of an Air Tour Management Plan (ATMP) for Haleakalā National Park (the Park) and the Federal Aviation Administration's (FAA) responses to those comments.

Commenter	Correspondence	Summary of Comments	Response
Sylvia M. Hussey, Office of Hawaiian Affairs	11/28/22 Letter	<p>Requests consideration of the Park as a whole as a Traditional Cultural Property (TCP) and to require a TCP study as part of the Section 106 process and acknowledgement of natural resources as cultural resources.</p> <p>Shares concerns about vertical buffers for historic properties, recommends buffer of 9,000 feet above ground (though ATMP has only jurisdiction up to 5,000 feet), and believes a TCP study will better inform vertical buffers for historic properties.</p>	<p>For the purposes of the Section 106 assessment, the entire Park is being considered a TCP. However, due to the time needed to conduct a TCP study and the agencies' December 31, 2023 deadline to complete an ATMP or voluntary agreement for the Park, a TCP study will not be accomplished.</p> <p>The revised APE extends vertically from the ground level to encompass areas where operators may fly above the ATMP planning area (i.e., higher than 5,000 ft. AGL).</p>
Sylvia M. Hussey, Office of Hawaiian Affairs	11/28/22 Letter	<p>Shares safety concerns, particularly on crashes and the effects of flights on historic properties. Recommends that records verifying air tour pilots cue-based training specific to Maui island and up-to-date annual safety trainings be made available to National Park Service (NPS) staff, the Kīpahulu/Lind 'Ohana, and/or the Kīpahulu Kūpuna Council upon request as part of the ATMP.</p>	<p>This comment is beyond the scope of the Section 106 assessment. However, this comment has been provided to agency personnel for consideration</p>

Commenter	Correspondence	Summary of Comments	Response
Sylvia M. Hussey, Office of Hawaiian Affairs	11/28/22 Letter	Shares safety concerns, particularly on crashes and the effects of flights on historic properties. Recommends a "sterile cockpit rule" (in which the pilot cannot act as a tour guide).	This comment is beyond the scope of the Section 106 assessment. However, this comment has been provided to agency personnel for consideration
Sylvia M. Hussey, Office of Hawaiian Affairs	11/28/22 Letter	Shares safety concerns, particularly on crashes and the effects of flights on historic properties. Recommends any air tour operators flying over the Park be required to perform daily desalination rinses and post flight checks related to upkeep from volcanic ash exposure and records of these maintenance actions be made accessible to NPS staff, the Kīpahulu/Lind 'Ōhana, and/or the Kīpahulu Kūpuna Advisory Council upon request as part of the ATMP.	This comment is beyond the scope of the Section 106 assessment. However, this comment has been provided to agency personnel for consideration.
Sylvia M. Hussey, Office of Hawaiian Affairs	11/28/22 Letter	Shares concerns about the limited monitoring of air tours. Recommends the ATMP requires flight tracking data for enforcement of flight routes and altitudes and includes protocols for concerned individuals to report possible flight violations and clear follow up actions for the FAA regarding data gathering and enforcement.	This comment is beyond the scope of the Section 106 process. However, as stated in the Park's February 2022 Newsletter, aircraft monitoring and enforcement will occur under the ATMP and NPS will continue to maintain its ADS-B flight tracking system to monitor commercial air tour activity within the National Parks Air Tour Management Act of 2000's (Act) jurisdictional boundaries.

Commenter	Correspondence	Summary of Comments	Response
Sylvia M. Hussey, Office of Hawaiian Affairs	11/28/22 Letter	Shares concerns about the fee system. Proper flight tracking will enable proper accounting and for fees imposed to benefit the Park.	This comment is beyond the scope of the Section 106 process.
Matt Wordeman, Friends of Haleakala National Park	11/10/22 Email	Requests consideration of Kaupo Gap trail as a historic property, since Alternative 3 crosses over the trail. Recommends the route goes south of the Denman property instead.	The Kaupo Gap trail is a contributing resource to the Civilian Conservation Corps Haleakalā Crater Trails Historic District Cultural Landscape and as such is being considered and included in the revised area of potential effects (APE). No changes to the proposed route were made.
Kiersten Faulkner, Historic Hawai'i Foundation	11/18/22 Letter	Disagrees with the proposed APE. Recommends including the southern (makai) parcels from Kalepa Point to Pua'alu'u Gulch (including the non-federal lands) from the current planning area boundary down to the shoreline. On the north (inland), the Ko'olau Gap and Halemau'u Trail area should be included.	These parcels are included in the revised APE.
Kiersten Faulkner, Historic Hawai'i Foundation	11/18/22 Letter	Recommends the summary table of historic properties include a summary of the properties' character-defining features, with attention to those that may be affected by the air tours through visual, audible, or atmospheric elements.	The agencies include a summary of character defining features for the list of historic properties identified within the APE.

Commenter	Correspondence	Summary of Comments	Response
Kiersten Faulkner, Historic Hawai'i Foundation	11/18/22 Letter	Requests information on the pros and cons of an ATMP versus a Voluntary Agreement (such as replacement of the current Letter of Agreement NPS has with Maui Air Tour Operators) and possible use of a Voluntary Agreement for properties outside of the ATMP boundary.	This request is outside the scope of the Section 106 assessment.
Kiersten Faulkner, Historic Hawai'i Foundation	11/18/22 Letter	Requests a fourth Alternative similar to the Letter of Agreement. Shares concerns that areas currently prohibited by the Letter of Agreement (such as Notch and Ko'olau Gap) would be opened to flights since they are not located within the ATMP area.	This request is outside the scope of the Section 106 assessment. However, this comment has been referred to the agencies' National Environmental Policy Act (NEPA) team to review and address as appropriate.

Commenter	Correspondence	Summary of Comments	Response
Kiersten Faulkner, Historic Hawai'i Foundation	11/18/22 Letter	Shares concerns that Alternatives would allow for flights over the Crater higher than 5,000 feet above ground.	The ATMP for this park is being implemented pursuant to the Act and its implementing regulations. The regulations define a commercial air tour as: "[A]ny flight, conducted for compensation or hire in a powered aircraft where a purpose of the flight is sightseeing over a national park, within ½ mile outside the boundary of any national park, or over tribal lands during which the aircraft flies: (i) Below 5,000 feet above ground level [AGL] (except for the purpose of takeoff or landing, or as necessary for the 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] (ii) Less than 1 mile laterally from any geographic feature within the park (unless more than ½ mile outside the boundary)." Therefore, the agencies do not have authority to regulate air tours above 5000 ft AGL.
Kiersten Faulkner, Historic Hawai'i Foundation	11/18/22 Letter	Requests information on how the ATMP would be affected if the Park's boundaries change.	The ATMPs may be amended or modified through adaptive management to address boundary changes.
Kiersten Faulkner, Historic Hawai'i Foundation	11/18/22 Letter	Requests information on Alternative 3 regarding managed air tours' specific routes and altitudes and rationale for the proposed altitudes at different locations.	The description and rationale for Alternative 3 is found in the February 2022 Scoping Newsletter available at this link https://parkplanning.nps.gov/HaleakalaATMP and in Attachment 1.

Commenter	Correspondence	Summary of Comments	Response
Kiersten Faulkner, Historic Hawai'i Foundation	11/18/22 Letter	Supports working meetings with consulting parties (including air tour operators) about historic properties to craft another alternative.	This request is outside the scope of the Section 106 process. The agencies have considered input from the public and stakeholders including the consulting parties in the development of the alternatives included in the draft Environmental Assessment and the alternatives presented at the Nov. 10, 2022 consulting party meeting.
Tweetie Lind, Kīpahulu, Kūpuna Council	11/22/22 Letter	States that Kūpuna Council worked with NPS staff on alternatives that allow no helicopter tours within two miles or so away from the Crater.	Comment noted.
Tweetie Lind, Kīpahulu, Kūpuna Council	11/22/22 Letter	States that helicopter tours should be cut down due to: noise pollution, air pollution, crossing over sacred sites, flights going over private residences, shoreline limit coming near residences (especially in Kīpahulu), and going over the NPS (Lelekea-Kalepa-Kaapahu) loosen rocks on whole mountain.	Comment noted.

ATTACHMENT 3

SUMMARY OF PROJECT ALTERNATIVES FOR AN ATMP FOR HALEAKALĀ NATIONAL PARK

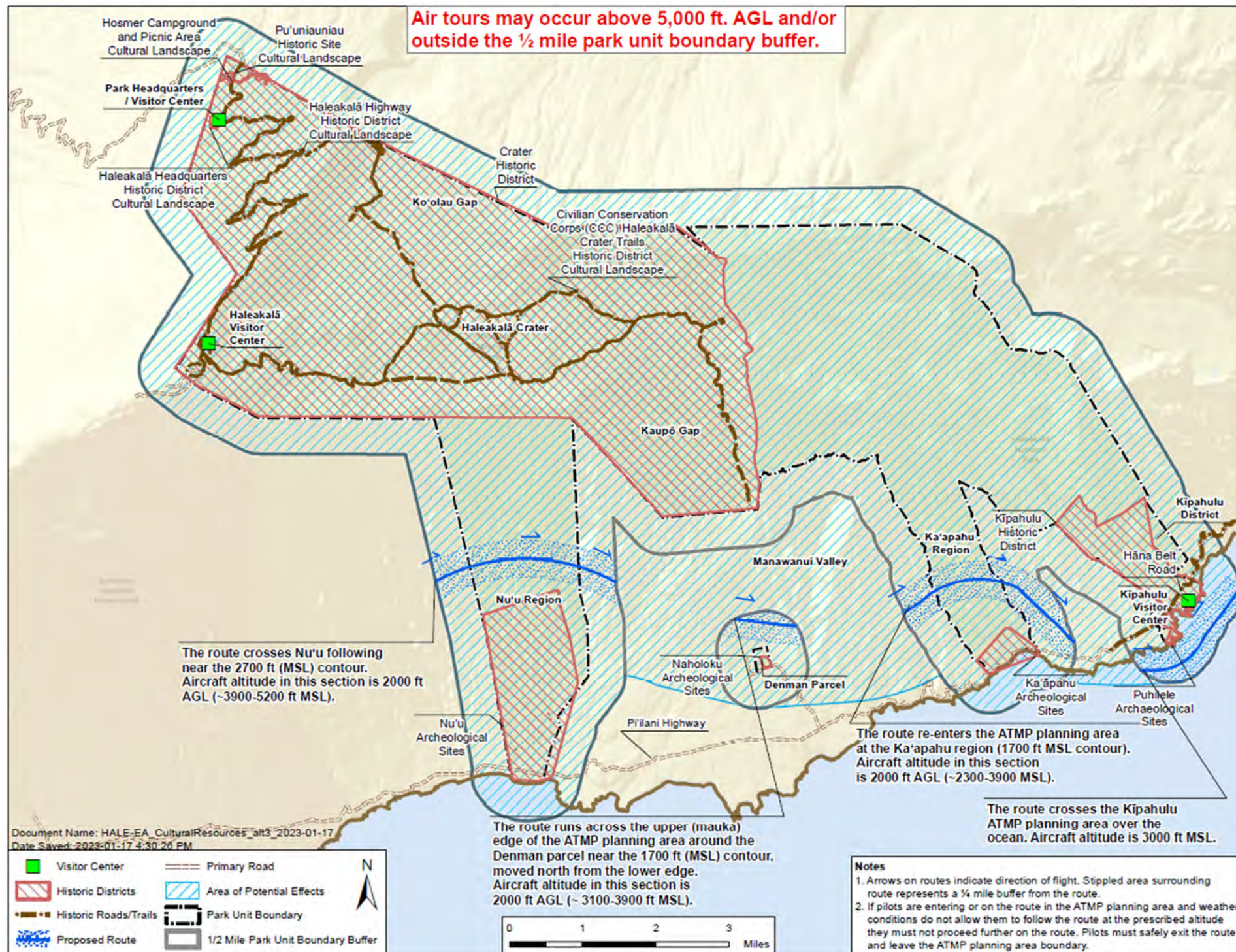
Table 1. Summary Comparison of the ATMP Action Alternatives for Haleakalā National Park

Alternative Attributes	Alternative 2 (No Air Tours)	Alternative 3 (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).	Provides a singular flight path within the ATMP planning area and a reduction in the annual number of commercial air tours over the Park. 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).
Routes	None in ATMP planning area.	One air tour route, entering the Park from the west, south of the State Kahikinui Forest Reserve and exiting the ATMP planning area approximately 1.25km from the Kīpahulu area and Visitor Center. This route allows operators to fly in one direction.
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. The minimum altitude for air tour operations conducted more than ½ mile outside the Park boundary would be 1,500 ft. AGL unless the operator has OpSpecs B048 (air tour operations below 1,500 ft. AGL in the State of Hawaii), in which case the operator must comply with the requirements and procedures of the Hawaii Air Tour Common Procedures Manual (HI Manual) for conducting commercial air tour operations below 1,500 ft. AGL.	Minimum 2,000 ft. AGL over land; minimum 3,000 ft. MSL over the ocean. Flights more than ½-mile outside the Park boundary are similarly outside the ATMP planning area and are subject to the altitude requirements and procedures of the HI Manual.
Time of Day	N/A	On days where air tours are permitted: 11 AM – 2 PM for non-quiet technology flights. 11 AM – 4 PM for quiet technology flights.
Day of Week	N/A	No-fly days on Sunday and Wednesday.
Hovering/ Circling	N/A	Not permitted.
Quiet Technology (quiet technology) Incentives	N/A	Quiet technology flights may fly 11AM – 4PM. All commercial air tours within the ATMP planning area must utilize quiet technology aircraft by 2033.
Interpretative Training and Education	N/A	Mandatory.

Alternative Attributes	Alternative 2 (No Air Tours)	Alternative 3 (Reduction of Air Tours)
Annual Meeting	N/A	Mandatory.
Restrictions for Particular Events	N/A	Six no-fly days generated by following the Hawaiian Moon Calendar and Makahiki Season; two no-fly days on Hawaiian State holidays of historical importance with one year notice provided to operators.
Adaptive Management	N/A	To be considered/analyzed.
Operators, Initial Allocation of Air Tours, and Aircraft Types	N/A	The initial allocation would reflect the proportional number of air tours reported over the Park and the existing aircraft types of each of the five operators that have reported operating in the period from 2017-2019. Then it would move to competitive bidding. Any new or replacement aircraft must not exceed the noise level produced by the aircraft being replaced.

ATTACHMENT 4

REVISED APE MAP FOR AN ATMP FOR HALEAKALĀ NATIONAL PARK



ATTACHMENT 5

REVISED HISTORIC PROPERTY IDENTIFICATION LIST FOR HALEAKALĀ NATIONAL PARK

Property Name	Property Type	Eligibility Status	Significant Characteristics
Civilian Conservation Corps (CCC) Haleakalā Crater Trails Historic District Cultural Landscape	Cultural Landscape	Eligible	The Civilian Conservation Corps (CCC) Haleakalā Crater Trails Historic District Cultural Landscape was designed by NPS landscape architects and constructed by CCC enrollees between 1930 and 1941. It is significant for its association with early park planning and the CCC and for its embodiment of NPS Rustic Style architecture. The Kaupō Gap Trail is a contributing resource to the district. Significant characteristics of the district include its rustic design, historic trail system, the human manipulated topography to accommodate the trails, the viewshed from the trails of the crater and the ocean, and its continued use as a tourist circulation system.
Crater Historic District	District	Listed	Crater Historic District consists of 56 pre-contact archeological sites, including temples and burials. It is accessed for traditional uses by Native Hawaiians. Extant prehistoric stone structures, remains of workshop sites, other archeological remains, and the surrounding landscape are all significant characteristics of the district.
C-Shaped Wall (SHPD ID 50-50-16-03979)	Site, Structure	Eligible	This site is located east of Pāhihi Gulch and consists of a C-shape wall that is two inches in diameter. Significant characteristics of the site include the wall's C-shaped design and stone materials.
Enclosures (SHPD ID 50-50-16-03980)	Site, Structure	Eligible	This site consists of the remains of a large enclosing wall and an attached rectangular enclosure. Significant characteristics of the site include its configuration and stone materials.
Haleakalā Headquarters Historic District Cultural Landscape	Cultural Landscape	Eligible	The Haleakalā Headquarters Historic District Cultural Landscape is significant for its association with early park planning and as an example of Mission 66-era development. It is also significant for its NPS Rustic Style design. The rustic design, building configuration, and surrounding landscape are all significant characteristics of the district.
Haleakalā Highway Historic District Cultural Landscape	Cultural Landscape	Eligible	The Haleakalā Highway Historic District Cultural Landscape includes a portion of the highway within the Park, which was designed by the Bureau of Public Roads (BPR) with input from the Park and NPS landscape architects, as well as several developments along the route. It is significant for its association with NPS master planning from the 1930s and Mission 66 eras and for its minimally intrusive design. In order to be

Property Name	Property Type	Eligibility Status	Significant Characteristics
			minimally intrusive, the district's road, buildings, and structures were designed to decrease the visual and physical impact on the landscape; this design and the surrounding landscape are significant characteristics of the district.
Traditional Cultural Property	TCP	Eligible	The Summit of Haleakalā, including Kaupō Gap and Kīpahulu Valley, is significant as a Traditional Cultural Property (TCP) for its association with native Hawaiian culture, traditions, and sacred uses. The exceptional stillness and serenity of the Summit of Haleakalā are significant characteristics of the TCP that allow Native Hawaiians to continue conducting traditional ceremonies, which require a quiet setting.
Hāna Belt Road	District	Listed	Hāna Belt Road includes a road and bridges to Hāna that were built between 1900 and 1947. It is significant as an engineering achievement and for its association with the development of the area that opened East Maui to further settlement, agricultural enterprises, and tourism. The road's winding and narrow alignment; surrounding scenery featuring waterfalls, small villages, valleys, and sea cliffs; and stylistically consistent, one-lane bridges with sharp approaches are all significant characteristics of the district.
Hāwelewele Complex (Kailiili Heiau)	Site, Structure	Unevaluated	The Hāwelewele Complex, also called the Kailiili Heiau, is located a quarter of a mile from the shore on top of a small hill in the center of a valley. The large heiau measures approximately 50 by 124 feet with walls that are 6 feet thick and around 4-5 feet high. Potential significant characteristics of the site include its materials and configuration.
Hosmer Campground and Picnic Area Cultural Landscape	Cultural Landscape	Eligible	The Hosmer Campground and Picnic Area Cultural Landscape is located just below the 7,000-foot elevation in the summit area of the Park and is the only drive-in campground in the area. It is significant as an example of a Mission 66-era development and for its experimental forestry plots that were planted by Ralph S. Hosmer in the early-twentieth century. Significant characteristics of the cultural landscape include the campground layout and design and surrounding landscape.
Ka'āpahu Archeological Sites	Site	Eligible	Ka'āpahu Archeological Sites consist of archeological sites recorded within Kālepa, 'Alelele, Lelekēa, and Kukui'ula Valleys, including traditional Native Hawaiian dryland agriculture terraces and clearings, larger irrigated pondfield complexes for the production of kalo (taro, <i>Colocasia esculenta</i>), and habitation and ceremonial sites. 19 th century enclosures representing mixed residences and agriculture (including animal husbandry) are also present. Significant characteristics of the sites include the

Property Name	Property Type	Eligibility Status	Significant Characteristics
			extant remains of structures and complexes, their materials and configurations, extant material culture remains, the surrounding landscape, and quiet setting.
Keakalauae Heiau	Site, Structure	Unevaluated	The Keakalauae Heiau is one of the largest of the Kaupō heiaus and is credited to Kekaulike from c.1730. Its greatest dimensions are approximately 168 by 330 feet. The interior of the platform has been utilized for a pig pen with walls built around it. Potential significant characteristics of the site include the heiau's configuration, materials, and quiet setting.
Kīpahulu Historic District	District	Eligible	The Kīpahulu Historic District is comprised of fragmentary structural remains of Hawaiian use of the Kīpahulu land in the pre-contact period through 1900 that indicate a substantial resident population engaged in horticulture and fishing in an isolated wet-valley Polynesian community. The archeological study of the remains may reveal the vicinity may have played a significant role in the colonization of the Hawaiian Islands by early Polynesian voyagers and settlers. The few Hawaiian families who continued to live along 'Ohe'o Gulch and stream after 1900 perpetuated traditional irrigated and dry-land horticulture and fishing activities. The people of Kīpahulu perhaps experienced a minor lifestyle change when organized Christianity invaded east Maui ca. 1850, and certainly did so after 1900 when Kīpahulu plantation imported laborers from overseas and began to clear and plow the steeply sloping lower flanks of Haleakala volcano on both sides of 'Ohe'o Gulch to grow sugar cane. The historical themes of Hawaiian land use, Hawaiian placenames, engineering for sugar cultivation on marginal lands, and overland transportation are represented by structures or their remnants. Significant characteristics of the district include extant material culture and structural remains, physical evidence of historic and prehistoric land use, association with the ocean, and the landscape.
Lonoaea Heiau	Site, Structure	Unevaluated	The Lonoaea Heiau is a walled heiau located on top of a hill overlooking Waiuha to the west. Potential significant characteristics include the heiau's materials, viewshed, and quiet setting.
Lono'o'ai'a Heiau (Hale O Kane Heiau)	Site, Structure	Unevaluated	The Lono'o'ai'a Heiau, also called the Hale O Kane Heiau, is an open platform that is 10 to 12 feet above the ground. Potential significant characteristics include the heiau's materials and quiet setting.

Property Name	Property Type	Eligibility Status	Significant Characteristics
Mound (SHPD ID 50-50-16-08665)	Site, Structure	Eligible	This site consists of a partially-faced mound that was constructed of stacked stones and may have served as a historic cattle ramp. Significant characteristics of the site include its stacked configuration and stone materials.
Naholoku Archeological Sites	Site	Eligible	The complex of 18 archeological sites at 1,000 ft elevation in dryland Naholoku Ahupua'a dates as early as the 15th to 17th centuries and is significant for its potential to yield information, with at least three sites eligible for architecture/design. These latter sites represent structures that embody the characteristics of pre-Contact and late pre-Contact/early historical residential compounds and smaller agricultural heiau. Significant characteristics include the extant remains of buildings and structures; their materials, configurations, and design; extant material culture remains; physical evidence of historic and prehistoric land use, quiet setting, and the landscape.
Naku'ula Complex	Site, Structure	Unevaluated	The Naku'ula Complex consists of three rectangular terraced platforms that may be heiau sites. Potential significant characteristics include the site's physical materials and quiet setting.
Nu'u Archeological Sites	Site	Eligible	Nu'u Archeological Sites consist of archeological sites, composed of pocket terraces, terraces, enclosures, cleared areas, modified outcrops, and mounds that represent an extensive traditional dryland agricultural complex for primarily sweet potato production, temporary shelters associated with agricultural activity, multiple permanent residential complexes, most of which date to the 19 th century, specialized features/use areas for ceremony and lithic production. Significant characteristics of the sites include the extant remains of structures and residential complexes, their materials and configurations, mounds, extant material culture remains including evidence of ceremony and lithic production, physical evidence of historic and prehistoric land use, and the landscape.
Nu'u Petroglyph Complex	Site	Unevaluated	The Nu'u Petroglyph Complex is a site covering 117 meters that is located on the beach at Nu'u Bay. It consists of 157 petroglyphs: 92 human forms, 3 animal forms, 3 names, and 59 undetermined images. Potential significant characteristics of the site include the petroglyph designs and configurations.
Nu'u Pictograph Complex	Site	Unevaluated	The Nu'u Petroglyph and Pictograph Complex is a site covering 117 meters that is located on the beach at Nu'u Bay. It consists of 40 pictographs: 16 human forms, 3

Property Name	Property Type	Eligibility Status	Significant Characteristics
			animal forms, and 21 undetermined images. Potential significant characteristics of the site include the pictograph designs and the materials used to create them.
Nu'u-Waiu Complex, Hana	Site, Structure	Unevaluated	The Nu'u-Waiu Complex consists of several archeological sites composed of enclosures, partial enclosures, terraces and platforms, pits, pavements, house lots, walls, ko'a, trails, cairn, petroglyphs, a fishpond, rockshelters, and graves. Potential significant characteristics of the complex includes the extant remains of structures, their materials and configurations, other extant material culture remains, prehistoric and historic trail alignments, and physical evidence of prehistoric and historic land use.
Pictograph and Rock Shelter (Marciel's Pictograph)	Site, Structure	Unevaluated	This site consists of a human figure painted with alaea (red salt) on a boulder that is located next to a rock shelter that once contained a burial. Potential significant characteristics of the site include the pictograph form and design, the use of alaea to create it, the rock shelter's materials, and any other extant cultural remains.
Puhilele Archaeological Sites	Site	Eligible	Puhilele Archaeological Sites consist of archeological sites, composed of terraces, platforms, alignments, and mounds used for agricultural, residential, ceremonial as well as temporary shelter for fishing. Significant characteristics of the site includes the extant remains of structures, their materials and configurations, other extant material culture remains, association with the ocean, and physical evidence of prehistoric and historic land use.
Pu'umaka'a Heiau	Site, Structure	Unevaluated	The Pu'umaka'a Heiau is an open platform type of heiau that consists of a series of rough terraced pavements. Potential significant characteristics include the heiau's materials and quiet setting.
Pu'unianiau Historic Site Cultural Landscape	Cultural Landscape	Eligible	The Pu'unianiau Historic Site Cultural Landscape is significant as a base camp used by the U.S. Army for the administration of the Red Hill Aircraft Warning Service Station at the summit of Haleakalā between 1941 and 1946. It consists of five historic buildings and structures and a south access road. The spatial organization of the site, which reflects the traditional conventions for military cantonments, and the 1940s military one-story buildings and structures are significant characteristics of the cultural landscape.
Terraces (SHPD ID 50-50-16-01133)	Site, Structure	Unevaluated	These terraces are located on the west side of the Kalepa Stream. They consist of the remains of two rectangular enclosures, each with two end walls and one connecting

Property Name	Property Type	Eligibility Status	Significant Characteristics
			wall about 50 feet in length. Potential significant characteristics of the site include its configuration and materials.
Wall (SHPD ID 50-50-16-08663)	Site, Structure	Eligible	This site consists of a low wall near Kukui'ula Gulch that was built along the side of a steep stream channel. The wall is constructed of stacked and piled stones that terminates in an "L" on its inland end. Significant characteristics of the site include its configuration, stone materials, and location next to the stream.
Wall (SHPD ID 50-50-16-08664)	Site, Structure	Eligible	This site consists of a bi-facial wall near Kukui'ula Gulch that was likely constructed for drainage during the historic period. Significant characteristics of the site include its configuration and materials.
Wall (SHPD ID 50-50-16-03978)	Site, Structure	Eligible	This site consists of a single stacked boulder wall approximately 5.5 meters in length and 60 centimeters high. It is oriented north-to-south and likely served as a windbreak for a structure located in its lee. Significant characteristics of the site include its configuration, stone materials, and north-to-south orientation.
Wall (SHPD ID 50-50-17-08883)	Site, Structure	Unevaluated	This site consists of a dry-stacked, core-filled rock wall that was likely constructed to mark the boundaries of a neighboring grant parcel to the west sometime after the sale of the parcel in 1854. Potential significant characteristics of the site include its configuration, stone materials, and location.
Walls (SHPD ID 50-50-16-01132)	Site, Structure	Unevaluated	This site consists of the remains of walls, one parallel to the shore and another parallel to the Kalepa Stream, which may be the remains of a house site. Potential significant characteristics of the site include its configuration, stone materials, and location next to the stream.



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 27, 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 Haleakalā National Park (HICRIS Project 2022PR00396)

Dr. Alan Downer
Deputy State Historic Preservation Officer
Hawai'i State Historic Preservation Division
Hawai'i Department of Land and Natural Resources
Kakuhihewa Building, Room 555
601 Kamokila Boulevard
Kapolei, HI 96707

Dear Dr. Alan Downer:

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 Haleakalā National Park (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 – reduction of air tours (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 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 Hawai'i State Historic Preservation Division (SHPD) by letter dated March 29, 2021. Similar consultation initiation letters were sent to consulting parties in early 2021. In a follow-up letter dated October 1, 2021, we invited all consulting parties (listed in

Attachment A) to an October 28, 2021, informational webinar to provide background on the ATMP development process at the Park. The agencies have held meetings with Native Hawaiian Organizations (NHOs) and members of the Park's Kūpuna (grandparents, ancestors; starting points, sources) consultation group, which consists of elders and individuals with in-depth knowledge of the Park, to discuss the ATMP planning process, the range of alternatives, and Section 106 consultation. Section 106 consultation with the consulting parties including NHOs and the Kūpuna consultation group is further described below in the Summary of Section 106 Consultation with Consulting Parties.

Public involvement for this undertaking was integrated with the NEPA process. The agencies published an ATMP Public Scoping Potential Alternatives Newsletter on February 28, 2022. The Public Scoping comment period spanned from February 28, 2022, to April 1, 2022. The agencies received 4,347 discrete comments, 257 of which were regarding impacts to cultural resources. The agencies received comments about the importance of the Park to Native Hawaiians and that the Park contains culturally significant resources, sites, temples, and burial grounds. Commenters expressed opposition to air tours and noted that the sight and sounds of air tours disrupt cultural sites and traditional practices and infringe on the religious freedoms of those who visit certain areas for pule (prayer) interaction, religious ceremonies, solitude, relaxation, contemplation, silence, and meditation. Commenters also noted the destruction air tours cause to the Hawaiian communities by taking away the connection and ability to speak with the Kūpuna and interfering with Native Hawaiian traditional cultural practices.

Commenters noted that the Park is a traditional cultural property (TCP) that should be treated with respect, and it is the dwelling place of nā akua (the gods), where kahuna (priests) conduct ceremonies. Commenters also noted that Native Hawaiians and the Kūpuna believe the Crater and Pele are sacred, serene, peaceful spaces of cultural and spiritual significance that should not be interrupted or disturbed.

Commenters stated that air tours over sacred land and indigenous communities is exploitative and linked it to the illegal overthrow of the Hawaiian kingdom and erasure of Hawaiian culture and language. Commenters noted that air tour demand would decrease if more people were aware of the overthrow and its impacts. Commenters also stated that tourism, marketing Hawai'i as an exotic tourist destination, and the commodification and overexposure of Hawaiian culture has created cultural distortions leading to degradation of Hawaiian culture that makes it more difficult for Hawaiian activism and sovereignty to gain traction and poses a serious threat to the sovereignty of ancestral domain over the land by its indigenous caretakers. Commenters stated that air tours affect the pristine, sanctuary environment of the Hawaiian Islands Sovereign Lands and noted that Native Hawaiians are constantly being pressured by tourism.

Commenters emphasized the importance of keeping the considerations of the local population, especially the indigenous Hawaiian population, as a top priority in the planning of the ATMP. Commenters questioned if the kahuna and "tribal peoples" were asked their thoughts on the ATMP and requested the agencies work closely with the Native Hawaiian communities and put their concerns above all else, especially with issues that will affect future generations.

Commenters stated that the Haleakalā National Park Foundation Document (updated September 2015) lists nine fundamental resources and values (FRVs) "essential to achieving the purpose of the park," which include natural sounds, viewsheds and dark night skies; wilderness; ongoing connections to living Hawaiian culture; native Hawaiian biological diversity; and kuleana (the responsibility to present and future generations for stewardship and the respect for all things spiritual and physical). Commenters noted that any number of commercial air tours fundamentally impedes or damages each of these FRVs,

including intrusion on Native Hawaiian cultural ceremonies and practices, interference of acoustic-based bird surveys, and unreasonable impacts on interpretive programs and visitor activities throughout the Park, and that any flights anywhere close to the boundary of Haleakalā Crater, in either height or distance, have an amplifying destructive effect on the peace, quiet and serenity of the Crater.

Commenters expressed opposition to maintaining air tours at current levels as it would continue to cause impacts to cultural resources and ceremonial use. Commenters expressed support for reducing or eliminating air tours to provide greater protection from noise impacts to cultural resources, cultural practices, ceremonial sites, and TCPs. Commenters noted that it was important to protect indigenous land, especially since the area within the ATMP holds culturally significant areas that are considered sacred and/or used for cultural practices with reference to: Hall, Lisa Kahaleole, “‘Hawaiian at Heart’ and other Fictions”; *The Contemporary Pacific* (2005): 404-413.

Description of the Undertaking

Consistent with the National Park Air Tours Management Act (NPATMA), the proposed ATMP would regulate commercial air tours within the ATMP planning area. 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 February 2022 Scoping Newsletter, prepared by the agencies, that was previously provided to you and is available at the following link:

<https://parkplanning.nps.gov/document.cfm?parkID=306&projectID=103365&documentID=118738>

The undertaking for purposes of Section 106 is developing and implementing an ATMP that applies to all commercial air tours over the Park and within ½ mile outside the boundary of the Park. 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 (ft.) above ground level (AGL) (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).

The area regulated by the ATMP 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.

Commercial air tours have been operating over the Park for over 20 years. Prior to NPATMA, the FAA did not regulate air tours over national parks and the NPS did not have authority to regulate commercial air tours. Since 2005, these air tours have been conducted pursuant to interim operating authority (IOA) that the FAA was required to grant under NPATMA. As a non-discretionary act, the granting of IOA did not constitute an undertaking under Section 106 regulations. IOA does not provide any operating conditions (e.g., routes, altitudes, time of day, etc.) for air tours other than an annual limit on the number of air tours per year. Six commercial air tour operators – Aris, Inc. (Air Maui Helicopter Tours); Hawai'i Helicopters, Inc.; Helicopter Consultants of Maui, Inc. (Blue Hawaiian Helicopters); Schuman /

Makani Kai; Sunshine Helicopters, Inc.; and Alike Aviation, Inc. (Alexair, Maverick) – hold IOA to conduct a combined total of 25,827 commercial air tours over the Park each year. The ATMP will replace IOA.

The agencies have documented the existing conditions for commercial air tour operations over the Park. The agencies consider the existing operations for commercial air tours to be an average of 2017-2019 annual air tours flown, which is 4,824 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.

Commercial air tours currently are provided by five different operators¹ and are conducted using AS350BA, AS350B2, EC130 T2, and EC130 B4 helicopters. Under existing conditions, there are no designated flight routes or no-fly zones that operators must adhere to; however, commercial air tours are generally concentrated south of the Haleakalā Crater and along the southern portions of the Park according to automatic dependent surveillance-broadcast (ADS-B) systems² data of flight paths. Minimum altitudes for commercial air tours within the ATMP planning area are flown in accordance with the Hawai'i Air Tour Common Procedures Manual, from 500 to 1,500 ft. AGL, weather dependent and contingent on location over the island. In most locations over the Park, the Hawai'i Air Tour Common Procedures Manual requires helicopters to fly at a minimum of 500 ft. AGL.

The proposed undertaking, which was referred to in prior consultation and the February 2022 Scoping Newsletter as Alternative 3 – Reduction of Air Tours, would require operators to fly on a single designated route within the ATMP planning area in accordance with the conditions included in the ATMP. The ATMP will require operators to fly the designated route depicted in **Attachment B**.

A summary of the undertaking is shown in the table below:

SUMMARY OF ATMP ELEMENTS

General Description and Objectives	Designates a single flight path within the ATMP planning area and a reduction in the annual number of commercial air tours over the Park. 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).
Annual/Daily Number of Flights	Authorizes 2,412 flights per year. Daily limit of 16 flights per day across all operators on those days where flights are allowed.
Routes	One air tour route with four segments. The first segment of the route enters the ATMP planning area from the west, south of the State Kahikinui Forest Reserve and extends west-to-east above the Nu'u Area before ending at the edge of the ATMP planning area. The second segment enters the ATMP planning area within a ½ mile of the Denman Parcel and ends south of the Kīpahulu Forest Reserve. The third segment enters near the Ka'apahu Area and ends approximately 0.75 miles from the Kīpahulu Area and Visitor Center. The fourth segment enters the ATMP planning area over the ocean south of

¹ Six operators hold IOA, but one operator (Schuman/Makani Kai) has not reported any air tours since 2013.

² ADS-B systems periodically transmits aircraft location data in real-time.

	Puhilele Point and ends over the ocean south of Pepeiaolepo Bay. This route allows operators to fly in one direction—west to east.
Minimum Altitudes	Minimum 2,000 ft. AGL over land; minimum 3,000 ft. AGL over the ocean. Operators may continue to fly to points of interest on the island outside of the ATMP planning area where they already fly or fly routes over or around the ATMP planning area similar to existing flights paths but outside of the ATMP planning area. Flights more than ½-mile outside the Park boundary could continue to occur and are also outside the ATMP planning area and are subject to the altitude requirements and procedures of the Hawai'i Air Tour Common Procedures Manual. Some air tour operators may choose to fly air tours above the ATMP planning area, but this would be impractical in some locations, such as over the crater, due to safety requirements for unpressurized aircraft.
Time of Day	On days where air tours are permitted: 11 AM – 2 PM for non-quiet technology flights. 11 AM – 4 PM for quiet technology flights.
Day of Week	No-fly days on Sunday and Wednesday.
Hovering and/or Circling	Not permitted.
Quiet Technology Incentives	Quiet technology flights may fly 11 AM – 4 PM except on no-fly days. All commercial air tours within the ATMP planning area must exclusively utilize quiet technology aircraft by 2033.
Interpretative Training and Education	Mandatory, when made available by Park staff. Helicopter operators would also be required to complete the FAA Introduction to Fly Neighborly training.
Annual Meeting	Mandatory, when requested by the agencies.
Restrictions for Particular Events	Six no-fly days generated by following the Hawaiian Moon Calendar and Makahiki Season; two no-fly days on Hawai'i State holidays of historical importance with prior notice provided to operators. NPS could establish restrictions for particular events with two months' notice provided to operators.
Monitoring and Enforcement	Operators would provide semi-annual reports, including the flight monitoring data, which is specified in detail in the ATMP Section 4.1. The NPS would conduct ADS-B aircraft monitoring and work with the FAA to respond to instances of non-compliance. The FAA FSDO would investigate all reports of noncompliance. Investigative determination of non-compliance may result in legal enforcement actions.
Adaptive Management	Adaptive management of the route, frequency, and timing would be considered/analyzed. NPS would conduct periodic acoustic monitoring.
Operators, Initial Allocation of Air Tours, and Aircraft Types	The initial allocation of commercial air tours for each operator would reflect the proportion of the annual air tours flown on average by each of the six air tour companies from 2017-2019 and would restrict companies to the same aircraft type flown during that time. After the

	initial allocation, competitive bidding would occur. Any new or replacement aircraft must not exceed the noise level produced by the aircraft being replaced.
--	---

Area of Potential Effects

The agencies initially delineated the APE to include the Park and a ½-mile buffer around the Park. The agencies held a Section 106 consultation meeting with all consulting parties on November 10, 2022, to inform them of the proposed APE and to seek comments. The agencies took into consideration the input from the consulting parties and subsequently expanded the boundaries of the APE to incorporate comments received by the consulting parties regarding additional areas potentially affected by the undertaking.

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 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 noise levels that may result in alteration of the characteristics of historic properties qualifying them as eligible for listing in the National Register.

It is reasonably foreseeable that operators would fly the proposed flight path at a minimum of 2,000 ft. AGL or fly close to their existing flight paths above 5,000 ft. AGL or outside the ATMP planning area. The undertaking proposes a flight path through the Park that varies from currently reported routes. The proposed flight path connects to existing flight paths at the easternmost and westernmost bounds of the ATMP planning area (based on ADS-B systems data of flight paths) but shifts to the south at the Kaupō Denman parcel as well as the Kīpahulu and Kaʻāpahu areas. While the flights may not follow a straight line connecting the route outside the ATMP planning area, it is reasonably foreseeable that some flights would follow the proposed flight path and maintain a direct connection to the path outside of the ATMP planning area some of the time.

Therefore, the APE includes the Park and areas outside the Park but within ½ mile of its boundary. The APE also includes areas outside of the ATMP planning area between the Nuʻu and Kaʻāpahu areas of the park, bounded to the south by the southern limits of the ½ mile buffer around the Kaupō Denman parcel, and the overland area between the Kaʻāpahu and Kīpahulu areas of the park. The inclusion of areas outside the ATMP planning area addresses the most direct path operators may fly to connect to the proposed flight path, allowing for deviation in the route and the extent of new visual and audible impacts that may result. The APE extends vertically from ground level to encompass areas where the operators may fly above the ATMP planning area (i.e., more than 5,000 ft. AGL). If operators choose to fly above the ATMP planning area, they would likely keep to an altitude close to but just above 5,000 ft. AGL, as higher flight altitudes would provide limited value to a sightseeing operation. As the ground level varies throughout the park, the vertical limits extend to just above 5,000 ft. mean sea level (MSL) at the coastline to no more than 10,000 ft. MSL near the summit.³

³ Supplemental oxygen use is required in unpressurized aircraft flying over 10,000 ft MSL for more than 30 minutes (14 CFR § 135.89, § 135.157); therefore, it is unlikely air tours would fly higher for extended periods of time.

This APE encompasses the reasonably foreseeable areas where operators may fly given the implementation of the ATMP and therefore the areas within which the undertaking may directly or indirectly cause alterations in the character or use of historical properties within the APE if any such properties exist. The proposed APE is depicted in the map included in **Attachment B** below.

The FAA sent a letter dated December 23, 2022, to the SHPD requesting their input on the revised APE. On January 26, 2023, the SHPD offered no objections to the APE, but noted that the State Historic Preservation Officer looked forward to receiving and reviewing the agencies' responses to the consulting parties' comments. The FAA sent a follow-up letter dated February 10, 2023, to all consulting parties that included the revised APE. The FAA requested comments from all consulting parties including NHOs. We received no comments from consulting parties regarding the revised APE.

Summary of Section 106 Consultation with Consulting Parties

In addition to the SHPD, the agencies invited various consulting parties, including NHOs, members of the Park's Kūpuna consultation group, and operators, to participate in the consultation process for the undertaking. The agencies recognize that Native Hawaiians 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 FAA contacted Native Hawaiians, including NHOs and members of the Park's Kūpuna consultation group, via letter on April 9, 2021, inviting them to participate in Section 106 consultation and requesting their expertise regarding historic properties, including TCPs that may be located within the APE. The agencies sent consultation invitations to operators on August 6, 2021. Additional consulting parties were invited on October 1, 2021. A complete list of all consulting parties contacted is enclosed in **Attachment A**. The agencies held a listening session for the Park's Kūpuna consultation group on December 9, 2021, and a consulting party meeting with all consulting parties on November 10, 2022. A preliminary APE, historic property identification list, and maps of the proposed alternatives were included in the invitations and meeting materials for the November 2022 consulting party meeting.

During the listening sessions and consultation meetings, the agencies heard from participating Kūpuna that they oppose air tours in the ATMP planning area. The Park's Kūpuna consultation group expressed concerns regarding the impacts of air tours on the sacredness and spirituality of the entire Park and the impacts of noise pollution on traditional practices and on endangered wildlife. Furthermore, the NHOs and Kūpuna noted that the entire Park is part of a continuous landscape that is sacred. The landscape is considered a TCP, which includes natural resources that are also considered to be cultural resources by Native Hawaiians. The participating NHOs and Kūpuna emphasized that plants, animals, the sky, the ocean, and other natural resources are contributing features to cultural resources throughout the APE.

Friends of Haleakalā National Park noted that the Kaupō Gap Trail should be included in the historic property list and requested that the route be located south of the Denman parcel. The Historic Hawai'i Foundation provided comments on the initial APE and historic property list and expressed concerns regarding flights over the Haleakalā Crater higher than 5,000 ft. AGL and in areas where they do not currently fly. The National Trust for Historic Preservation endorsed the comments submitted by the Historic Hawai'i Foundation. Tweetie Lind, a representative from the Lind 'Ohana (family) and the Kūpuna Council, expressed opposition to air tours within two miles of Haleakalā Crater and noted that air tours should be reduced due to noise pollution, air pollution, crossing over sacred sites and private residences, and because crossing over the Park (Lelekea-Kalepa-Kaapahu) loosens rocks on the whole

mountain. The Office of Hawaiian Affairs (OHA) requested a TCP study for the Park and noted that the entire Park contains endangered species, cultural resources, and cultural functions that should all be considered. The OHA also requested that the FAA consider vertical boundaries or buffers for identified historic properties, noted flight safety related concerns, requested flight altitude monitoring, and expressed opposition to air tours in the ATMP planning area.

On February 10, 2023, the FAA sent a Section 106 consultation letter to all consulting parties that provided responses to comments received during and following the November 2022 consulting party meeting, a revised APE map, and a revised historic properties list.

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, outdoor spaces designed for meditation or contemplation, and certain TCPs. 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 retrieved from the Hawai'i Cultural Resource Information System (HICRIS). Section 106 consultation efforts to identify historic properties within the APE also involved outreach to NHOs and the Park's Kūpuna consultation group, the SHPD, operators, and other consulting parties including local governments. Public comments submitted as part of the Public Scoping process also informed identification efforts.

The FAA provided a preliminary list of historic properties in the Park to the SHPD for their review and comment in the scoping cover letter dated March 7, 2022. A preliminary list of historic properties in the entire initial APE was provided to all consulting parties in the meeting materials for the November 10, 2022, consulting party meeting. The agencies expanded the boundaries of the APE to incorporate additional areas potentially affected by the undertaking, and an updated historic properties list was provided in the response to consulting party comments in a letter dated February 10, 2023. The FAA received no comments from consulting parties in response to the February 10, 2023, letter.

These efforts resulted in identification of 32 historic properties within the APE. All historic properties identified within the APE are listed in **Attachment C** and those with available non-restricted location data are shown in the APE map provided in **Attachment B**.

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. Commercial air tours, by their nature, have the potential to impact resources for which feeling and setting are contributing elements. Based on the standard imposed in the regulations implementing Section 106, the agencies 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. See 36 CFR §800.5(a)(2)(v). Air tours have been conducted over the Park for well over 20 years and are currently conducted under the IOA that the FAA was required to grant operators by NPATMA. Thus, the undertaking—implementing the ATMP—would not introduce visual or auditory elements from air tours as aircraft already operate in the area. The undertaking does not include land acquisition, construction, or ground disturbance and will not result in physical effects to historic properties. The undertaking would not limit access to or change ceremonial use of Native Hawaiian sacred sites, ethnographic resources, or TCPs.

Assessment of Noise Effects

To assess the potential for the introduction of audible elements, as well as changes in the duration and intensity of aircraft noise, the FAA and NPS 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 authorizes half the annual flights as the average number of flights from 2017-2019 with a daily limit on flights across all operators on those days where flights are allowed. The ATMP designates a single one-way route from west to east over four segments in the southern area of the ATMP planning area. The ATMP authorizes the use of the AS350BA, AS350B2, EC130 T2, and EC130 B4 helicopters. Any new or replacement aircraft must not exceed the noise level produced by the aircraft being replaced. The ATMP requires the operators to fly on a single route at increased altitudes than are flown under existing conditions (minimum 2,000 – 3,000 ft. AGL, depending on location over the Park and ATMP boundary). Increases in minimum altitudes, where they occur, would reduce maximum noise levels at sites directly below the commercial air tour routes. It should be noted that when the altitude of an aircraft is increased, the total area exposed to the noise from that aircraft may also increase depending on the surrounding terrain. Although the area exposed to noise might increase, this would not meaningfully affect the acoustic environment because attenuation of noise from the higher altitude would most likely reduce noise levels depending on terrain and the transient nature of the impacts. Overall, noise levels associated with commercial air tours over the Park would be reduced in both duration and decibel level across most of the APE as a result of the undertaking.

Noise Metrics

To account for the differences in duration and loudness of sounds, different metrics are used. These metrics are used to compare individual noise events as well as many events that take place over an extended period of time. Equivalent sound level (L_{eq}) is being used to account for the cumulative effect of multiple air tour overflights throughout the day; it accounts for increases in both the loudness and duration of noise events. L_{eq} is defined as the level of continuous sound over a given time period that would deliver the same amount of energy as the actual, varying sound exposure. For air tours, it is computed over a 12-hour daytime period ($L_{Aeq, 12\text{ hr}}$) to represent a typical operational day and to provide a common time basis for comparison between alternatives.

Closely related, the day-night average sound level (DNL) noise metric is used to reflect a person's cumulative exposure to sound over a 24-hour period. By definition, DNL is arithmetically 3 dBA⁴ lower than the $L_{Aeq, 12\text{ hr}}$, as the averaging time period is twice as long and there are no nighttime air tour operations authorized by the ATMP. For purposes of assessing noise impacts from commercial air tours on the acoustic environment of the Park under NEPA, the FAA noise evaluation is based on Yearly⁵ Day Night Average Sound Level (L_{dn} or DNL). The DNL analysis indicates that the undertaking would not result in any noise impacts that would be “significant” or “reportable” under FAA’s policy for NEPA.⁶

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. The time above 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) per day. In quiet settings, outdoor sound levels exceeding 35 dBA 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 (Table 1) and presents the noise contours (i.e., graphical illustration depicting noise exposure) and point data from the modeling.

Time audible and maximum sound level (L_{Amax}) are also used to gather more data on the duration and intensity of noise. Time audible notes the total time that aircraft noise levels are audible to an attentive listener with normal hearing under natural ambient conditions. Time audible does not indicate how loud the event is, only if it can be heard. Time audible may be more indicative of when quiet is disrupted than the time above metrics and takes into consideration the natural ambient conditions that may mask or make human-sourced sounds more noticeable. L_{Amax} provides the loudest sound level generated by the loudest event, and does not provide any context of frequency, duration, or timing of exposure.

Overview of Noise Effects Throughout ATMP Planning Area

Attachment D presents noise contour data for the $L_{Aeq, 12\text{ hr}}$ (Figure 11) and time above 35 dBA (Figure 13) and point data for time above 52 dBA (Figure 7 and Table 7). Generally, the undertaking would result in a decrease of noise levels for the interior (northern) regions of the Park but may result in an increase in noise levels in coastal regions near the proposed flight path. Many historic properties are clustered in the northern region of the Park where noise would not exceed 35 dBA on days when commercial air tours would occur under the ATMP. Furthermore, the proposed flight path does not fly directly over many of the historic properties in the APE, including the Crater Historic District, Kīpahulu Historic District, Hanā Belt Road, Nu‘u Archeological Sites, Ka‘āpahu Archeological Sites, Naholoku

⁴ 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. See attached noise report, page 5 for further discussion.

⁵ Yearly conditions are represented as the Average Annual Day (AAD)

⁶ 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.

Archeological Sites, and many significant features of the Haleakalā Summit TCP. The undertaking would reduce noise impacts that could detract from the feeling and setting of these resources as compared to existing conditions.

Portions of the APE along the proposed flight path would experience $L_{Aeq, 12 \text{ hr}}$ between 35 dBA and 40 dBA, with small areas rising above 40 dBA but below 45 dBA. Compared to existing conditions, the average $L_{Aeq, 12 \text{ hr}}$ would be lower for the interior regions of the park but may be higher in coastal regions as more flights may fly the proposed flight path than currently fly over these areas. No areas in the ATMP planning area would experience DNL greater than 40 dB.

As a whole, the noise footprint for the ATMP, as measured by areas where the $L_{Aeq, 12 \text{ hr}}$ exceeds 35 dBA, would impact 6% of the park (see Table 8 in **Attachment D**). Noise related to commercial air tours would be greater than 35 dBA for less than 45 minutes a day within the APE (with most portions of the APE experiencing noise above 35 dBA for less than 15 minutes a day) and greater than 52 dBA for less than 15 minutes a day within the APE.⁷ Time above 35 dBA across the entire Park decreases by up to 61 minutes (see point 40, Nu'u 7,500 ft. elevation) compared to existing conditions; only point 24 (Waimoku Falls) would experience a slight increase in time above 35 dBA (by 2 minutes), likely due to the increased flight altitude and surrounding topography. Compared to existing conditions, the noise footprint for the ATMP as measured by time above 35 dBA potentially affects 42% less of the Park.

More flights may occur on the proposed route under the ATMP than existing flights along the coast (modeled at 9 flights per day versus the existing average of 4.5). The ATMP will also require 2,000 ft. AGL as a minimum altitude on the proposed flight path, compared to the existing minimum altitudes of 500 ft. to 1,500 ft. AGL. The net result of creating a single designated route and the increase in minimum altitude due to the undertaking is an increase in noise at coastal locations. Note however, that coastal areas have a natural ambient level higher than the interior portions of the Park; noise from air tours may not be as intrusive compared to naturally quieter locations. Median levels of natural sounds at the coast are between 45 and 50 dBA, 10-20 dB higher than in many interior areas (see Figure 2 in **Attachment D**); the ambient conditions along the coast remain in the 45-50 dB range (i.e., do not increase) when existing air tours are included in the Cumulative Existing Ambient for Existing Conditions (see Figure 4 in **Attachment D**). High natural ambient conditions may mask human-sourced sounds, while sound intrusions may be more noticeable in the areas of the park with low natural ambient conditions.

Points with Increased Noise

Eight noise points (21, 22, 23, 25, 26, 30, 37, and 41) would experience increases in more than one of the FAA and NPS metrics. As noted above, only point 24 (Waimoku Falls) will see an increase in one metric (time above 35 dBA); however, the increase of 2 minutes is minor, and all other metrics decrease at this point. The agencies determined whether these eight points were near any historic properties that have a quiet setting or natural sounds and setting as a significant characteristic. The agencies then analyzed additional noise metrics to determine changes in noise duration and intensity that would be experienced at those properties under the ATMP compared to existing conditions. Table 11 in **Attachment D** shows the difference between the existing $L_{Aeq, 12 \text{ hr}}$ compared to the modeled $L_{Aeq, 12 \text{ hr}}$ under the ATMP, Table 12 shows the difference in the time audible for natural ambient, Table 13 shows the difference in time above 35 dBA, Table 14 shows the difference in time above 52 dBA, and Table 15

⁷ See note preceding Figure 1 in the Noise Technical Analysis (Attachment D) regarding minor altitude adjustments not reflected in the noise modeling.

shows the difference in the L_{Amax} . The below analysis interprets the modeled noise metrics in these tables and discusses if any changes in noise have the potential to cause adverse effects to historic properties in the APE.

Noise point 26 in the Denman Parcel, which is within the Haleakalā Summit TCP and near the Naholoku Archaeological Sites, Lonoaea Heiau, Lono'o'ai'a Heiau (Hale O Kane Heiau), and Pictograph and Rock Shelter (Marciel's Pictograph), would experience increases in sound level as measured by $L_{Aeq, 12\text{ hr}}$ and L_{Amax} ; the increase of 0.3 dBA in L_{Amax} (from 57.2 to 57.5 dBA L_{Amax}) would be imperceptible to a human observer. However, all of these historic properties have a use where quiet setting and/or natural sounds is important. Noise near these sites would decrease in time above 35 dBA by 46 minutes (from 68.5 to 22.5 minutes) compared to existing conditions but would increase in time above 52 dBA by 2.8 minutes compared to existing conditions (from 1.3 to 4.1 minutes). While time above 52 is an indication of when speech could be disrupted, time audible may be more indicative of when quiet is disrupted and takes into consideration the natural ambient conditions that may mask or make human-sourced sounds more noticeable. Despite the slight sound level intensity increases cited above, the time the air tours may be audible would decrease by approximately 129 minutes compared to existing conditions (from 210.6 to 81.4 minutes).⁸ Therefore, while noise intensity would slightly increase at this point compared to existing conditions (resulting in a longer time above 52 dBA and higher L_{Amax}), the overall amount of time that noise caused by air tours is audible would decrease (resulting in a shorter time above 32 dBA and a shorter time audible). Similar slight increases in intensity and decreases in duration are modeled at the points discussed below.

Noise at point 25, which is a coastal location within the Haleakalā TCP and Ka'āpahu Archeological Sites, near Mound (SHPD ID 50-50-16-08665), Terraces (SHPD ID 50-50-16-01133), Wall (SHPD ID 50-50-16-08663), Wall (SHPD ID 50-50-16-08664), and Walls (SHPD ID 50-50-16-01132), would experience increases in sound level as measured by $L_{Aeq, 12\text{ hr}}$ and L_{Amax} ; the increase of 3.5 dBA in L_{Amax} (from 53.2 to 56.7 dBA L_{Amax}) would be imperceptible to a human observer. Of these historic properties, the Haleakalā Summit TCP and Ka'āpahu Archeological Sites have a ceremonial use where the quiet setting and/or natural sounds is important. Noise at this point would experience a decrease in time above 35 dBA by 21.5 minutes (from 44.4 to 22.9 minutes) compared to existing conditions but would experience an increase in time above 52 dBA by 2.4 minutes compared to existing conditions (from 0.3 to 2.7 minutes) due to the minor increase in sound intensity. Noise point 25 is near the coast where the median natural ambient sound level is between 45 and 50 dBA. The time audible metric considers both the natural ambient sounds as well as the noise generated by the air tours. Despite the slight sound level intensity increases cited above, the overall time air tours may be audible would decrease by approximately 52 minutes compared to existing conditions (from 108.8 to 56.9 minutes).

Noise point 22, which is a coastal location within the Haleakalā Summit TCP and Puhilele Archaeological Sites and near Wall (SHPD ID 50-50-17-08883), would experience an increase in the $L_{Aeq, 12\text{ hr}}$ of 7.4 dBA (from 32.3 to 39.7 dBA). As this is an average across a 12-hour time period and is not necessarily indicative of noise levels at any specific point in time, additional metrics are also considered to determine the effects of the undertaking on historic properties. Of the historic properties near or encompassing Noise point 22, the Haleakalā Summit TCP and Puhilele Archaeological Sites have a ceremonial use where the quiet setting and/or natural sounds is important. Noise at this point would experience a decrease in time above 35 dBA of 3.8 minutes (from 35.8 to 32 minutes) compared to

⁸ Time Audible accounts for the total time in minutes that aircraft noise levels are audible to an attentive listener with normal hearing under natural ambient conditions (see Noise Technical Report in **Attachment D**).

existing conditions but would experience an increase in time above 52 dBA by approximately 6 minutes compared to existing conditions (from 1.8 to 8.2 minutes). This point would experience an increase in the L_{Amax} of 6.3 dBA (from 57.3 dBA to 63.6 dBA L_{Amax}), which would be obvious to an observer; these sound levels are similar to the sound level of a dishwasher in an adjacent room. Noise point 22 is near the coast where the median natural ambient sound level is between 45 and 50 dBA. The time audible considers the natural ambient sounds as well as the noise generated by the air tours. Despite the slight sound level intensity increases cited above, the time the air tours may be audible would decrease by 102 minutes compared to existing conditions (from 187.1 to 85.5 minutes).

While several points within the Kīpahulu Historic District show increases in noise, Noise point 37 is the closest to the proposed flight path and also represents a coastal location in the Haleakalā Summit TCP and is near the Hanā Belt Road. The $L_{Aeq, 12\text{ hr}}$ at Noise point 37 would increase 6.4 dBA (from 34 to 40.4 dBA). Of these historic properties, the Haleakalā Summit TCP and Kīpahulu Historic District have a quiet setting and/or natural sounds as a significant characteristic. This location would experience a decrease in time above 35 dBA by 4.9 minutes (from 35.8 to 30.9 minutes) compared to existing conditions but would experience an increase in time above 52 dBA by 7 minutes (from 2.2 to 9.3 minutes) compared to existing conditions. The L_{Amax} at this point would rise by 4.3 dBA (from 60.7 dBA to 65 dBA L_{Amax}); these sound levels are similar to the sound level of a large business office, and the increase would be discernable by an observer. Noise point 37 is near the coast where the median natural ambient sound level is between 45 and 50 dBA. The time audible considers the natural ambient sounds as well as the noise generated by the air tours. Despite the slight sound level intensity increases cited above, the time the air tours may be audible would decrease by around 104 minutes compared to existing conditions (from 183.7 to 79.6 minutes).

Noise Effects Summary

The increases in noise intensity at the points noted above are due to a greater number of air tours anticipated on the proposed route than currently fly over these areas under existing conditions; however, the annual and daily limits, time-of-day restrictions, quiet technology incentives, and no-fly days would minimize the overall effects experienced at historic properties in the APE. While there may be increases in $L_{Aeq, 12\text{ hr}}$ at these points, this metric is an average across a 12-hour time period and is not necessarily indicative of noise levels at any specific point in time. Additionally, time above 35 dBA is decreasing at all but one noise point, and any increases in time above 52 dBA are minimal and would be spread across operating hours. Although the L_{Amax} would increase at some points, the increases are minor, and the levels at these points are already perceptible against the natural ambient sounds under existing conditions. Furthermore, the time that air tours are audible at all of these historic properties decreases as a result of the ATMP, indicating that while the noise may at times be louder in these areas, the air tours would be audible for a shorter duration than existing conditions. Therefore, the undertaking would not diminish the integrity of setting and feeling of these properties as related to sound, nor would it substantially hinder or prevent one from experiencing the property within its historic context compared to existing conditions. All other historic properties within the APE that are not noted above would experience either similar noise levels or a decrease in noise levels from existing conditions in all modeled metrics as a result of the undertaking.

Because noise is modeled using conservative assumptions (see **Attachment D**) and implementing the ATMP would result in limiting the number of flights to half of the three-year average of flights flown from 2017-2019 using a single route and the same aircraft to fly at higher altitudes, noise impacts are expected to overall be reduced under the ATMP. The ATMP would not introduce new audible elements

into the APE because air tours are currently occurring in this area; the undertaking limits the number of annual (2,412) and daily (16) flights that could occur within the ATMP planning area, which would reduce the number and frequency of air tour operations within the ATMP planning area and corresponding noise effects to cultural resources within the APE. These annual limits, daily limits, time-of-day restrictions, and no-fly days also reduce the likelihood that an air tour would interrupt Native Hawaiian traditional practices such as ceremonies, fishing, or farming, as well as the sanctity of the Haleakalā Crater as compared to existing conditions. Because the ATMP would result in minimal changes to noise levels on historic properties compared to existing conditions and would decrease the time that air tours are audible at historic properties in the APE, the undertaking would not diminish the integrity of any historic property's significant historic features.

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 short duration and low number of flights make it unlikely a historic property would experience a visual effect from the undertaking.

The ATMP would not introduce new aircraft into the viewshed within the APE, and the level of commercial air tour activity under the ATMP is expected to be reduced. The undertaking would not alter the characteristics of historic properties within the APE because there would be no significant increase in visual effects from existing conditions. The ATMP reduces the number of commercial air tours within the ATMP planning area compared to the three-year average from 2017-2019 and implements limits on the number of flights, times of day, and days of the week and year during which commercial air tours are able to operate. These limits do not currently exist.

The FAA and NPS also considered the experience of Native Hawaiians who may be conducting ceremonies or practices that could involve looking toward the sky. The ATMP includes a provision for the NPS to establish temporary no-fly periods for special events, such as Native Hawaiian ceremonies or other similar events, with a minimum of two months' notice to the operators. This represents an improvement over existing conditions where no such provision exists.

The ATMP limits the annual number of commercial air tours to 2,412 tours on a single one-way route and imposes a daily limit of 16 flights. The average annual number of air tours from 2017-2019 is 4,824 flights; on days with peak air tour activity (defined as a 90th percentile day), as many as 50 commercial air tours occurred. Therefore, visual intrusions to historic properties are expected to decrease compared to flights currently occurring because the number of authorized flights under the ATMP will be less than the average number of flights from 2017-2019.

The ATMP would remove flights in the northern part of the ATMP planning area near the Haleakalā Crater. The areas in the vicinity of the proposed flight path already experience visual intrusions by air tours under existing conditions. Although more flights may occur over the southeastern portion of the APE compared to existing conditions, the ATMP would reduce the overall number of air tours in the planning area, cap daily flights, and establish a proposed flight path that does not cross directly over any historic properties except for the Haleakalā Summit TCP, which encompasses the entire Park.

Furthermore, the increased altitude would minimize visual intrusions to historic properties near the proposed flight path.

Properties in the APE that have viewshed as a significant characteristic include the Haleakalā Summit TCP, Civilian Conservation Corps Haleakalā Crater Trails Historic District Cultural Landscape, Hanā Belt Road, and Lonoaea Heiau. The transitory nature and short duration of aircraft as well as the restrictions under the ATMP – including the designated route, limits to annual and daily flights numbers, time-of-day limits, no-fly days, and increase in minimum altitude – would limit the overall visual effects of air tours on these historic properties. As a result of these provisions in the ATMP, the undertaking would not introduce visual elements that would alter the characteristics of any historic property that qualifies it for inclusion in the National Register.

Assessment of Indirect Effects

As the ATMP would limit the number of flights per year to a level below existing conditions, 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.” It is difficult to predict with specificity if, where, and to what extent any air tours would be displaced to areas outside the ATMP planning area, including areas above 5,000 ft. AGL. The preciseness of routes and altitudes for air tours flown on displaced routes are generally subject to the Hawai‘i Air Tour Common Procedures Manual and may vary greatly. It is reasonably foreseeable that operators would continue to fly to points of interest on the island outside of the ATMP planning area where they already fly or fly routes over or around the park similar to existing flight paths but outside of the ATMP planning area. Air tour operators are likely to continue to fly some air tours along the perimeter of the ATMP planning area where Haleakalā Crater and other park features may be visible. If operators choose to fly above the vertical limit of the ATMP boundary, they would likely keep to an altitude close to, but just above 5,000 ft. AGL, as higher flights would provide limited value to a sightseeing operation. Flights close to the crater above 5,000 ft. AGL are unlikely due to the ground elevation in that area and safety requirements for unpressurized aircraft flying over 10,000 ft. MSL for more than 30 minutes.³ For flights above 5,000 ft. AGL, the increase in altitude would likely decrease impacts on ground level resources as compared to existing conditions. The undertaking could result in some noise and visual effects to cultural resources at higher elevation areas of the Park to the north with views towards the ocean or in the southern areas of the APE where flights are more likely to occur as the elevations are lower. The increase in altitude would likely decrease impacts on ground level resources as compared to existing conditions. Any flights above or along the perimeter of the ATMP planning area would likely be reduced from the existing number of flights due to the ATMP restrictions and would therefore result in a reduction of noise and visual effects to the Crater Historic District and Haleakalā Summit TCP.

Finding of No Adverse Effect Criteria

As noted above, air tours over the Park are part of the existing condition, and the required analysis under Section 106 is of the undertaking—the implementation of an ATMP. 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). The above analysis of impact demonstrates the undertaking does not meet those criteria. The undertaking would not have any physical impact on any property or result in any alteration or physical modifications to these resources. 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 new 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.

Noise and visual effects of existing air tour operations are already present in the APE. Although the proposed flight path would shift the bulk of air tour operations to the south and may expose some historic properties to increased noise and visual effects, any increases in noise and visual effects would be limited due to the increased minimum altitude and reduction in the overall number of air tours in the ATMP planning area. Furthermore, air tours are transitory in nature, and any noise and visual impacts to historic properties would be temporary. While some historic properties may experience an increase in noise intensity, the duration of the noise would decrease in all cases. Therefore, the undertaking will not result in any adverse effects to historic properties in the APE.

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 in a manner that would diminish its integrity as there would be an overall reduction in audible or visual effects from existing conditions and no introduction of effects. 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 thirty days of receiving this letter.

The agencies are holding a consulting party meeting on April 20, 2023, at 9:30 a.m. to 11:00 a.m. HST over Zoom, to explain how the FAA arrived at the proposed finding of no adverse effect on historic properties. Information on how to access the meeting is included in **Attachment E**.

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,



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

cc: Stephanie Hacker, Archaeologist

Attachments

- A. List of Consulting Parties
- B. APE Map including Proposed Commercial Air Tour Route
- C. List of Historic Properties in the APE and Description of Historic Characteristics

- D. Noise Technical Analysis: Haleakalā National Park
- E. Connection Information for April 20, 2023, Consulting Party Meeting for Haleakalā National Park

ATTACHMENT A

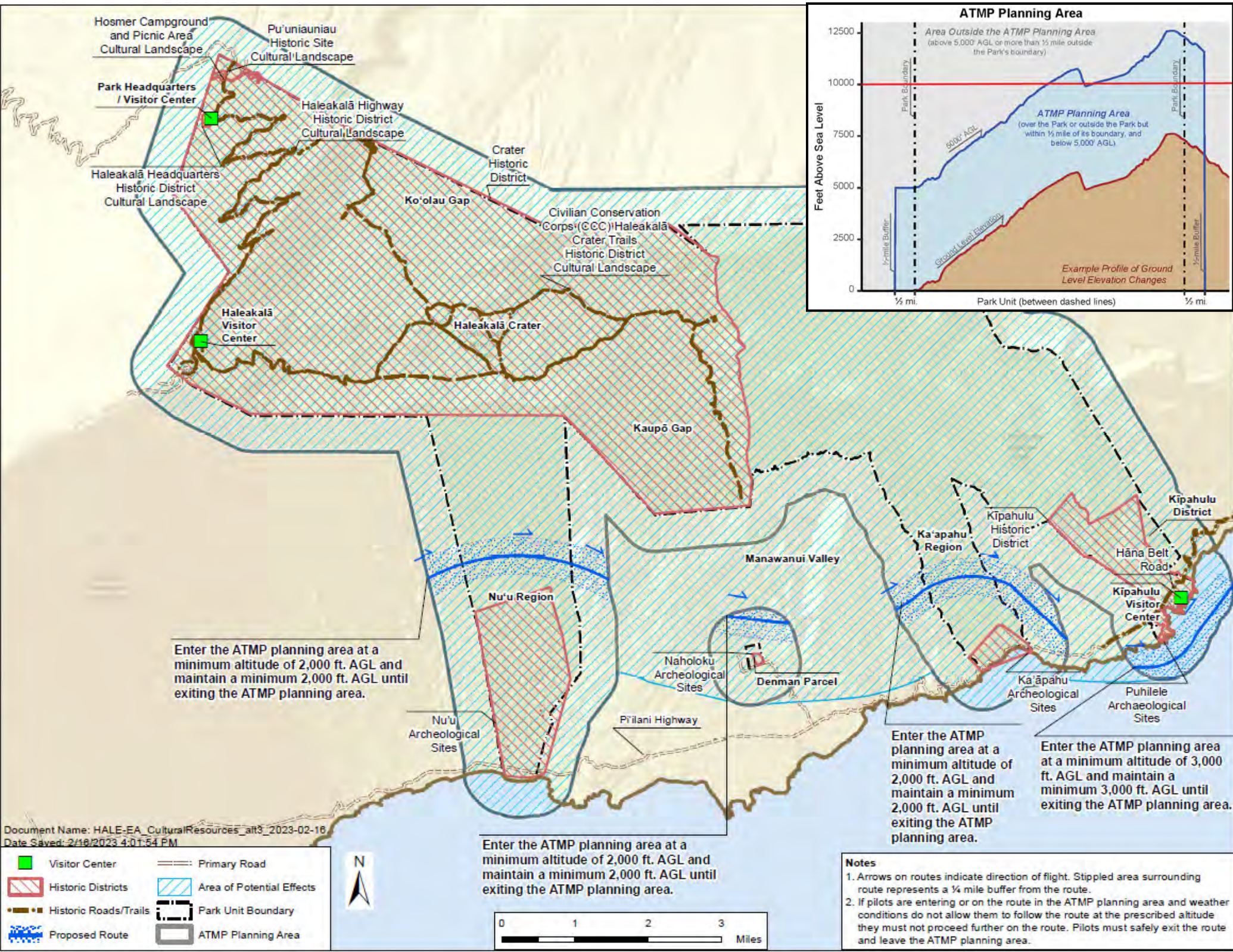
List of Consulting Parties

'Aha Moku o Kahikinui
'Aha Moku o Kaupō
'Aha Moku o Maui Inc.
AlexAir, Inc. (Maverick Helicopters) [Alia Aviation, Inc. (Alexair) in FR]
Angela Tavares (Individual)
Aris, Inc. (Air Maui Helicopter Tours)
Brian Kaniela Nae'ole Na'auao
Clifford Hashimoto (Individual)
County of Maui Mayor's Office
Daisy Lind (Individual)
Dana Hall (Individual)
Daniel K. Inouye Solar Telescope (DKIST)
Department of Hawaiian Homelands
Department of Land and Natural Resources, Division of Forestry and Wildlife
Department of Land and Natural Resources, Division of Forestry and Wildlife, Maui Branch
Donna Sterling (Individual)
East Maui Irrigation
East Maui Watershed Partnership
Friends of Haleakala National Park
George K. Cypher 'Ohana
Haleakalā Conservancy
Haleakalā Ranch
Hawaiian Islands Land Trust
Hawai'i Island Coalition Malama Pono
Historic Hawai'i Foundation
Helicopter Consultants of Maui, LLC (Blue Hawaiian Helicopters)
Helicopter Consultants of Maui, LLC (Hawaii Helicopters)
Hōkūlani Holt (Individual)
Kahu Dane Maxwell (Individual)
Kahu Lyons Naone (Individual)
Ka'ono'ulu Ranch

Kaupō Community Association
Kaupō Ranch
Kī'ope Raymond (Individual)
Kīpahulu 'Ōhana
Kumu A'o
Leeward Haleakalā Watershed Restoration Partnership
Ma'ano Smith (Individual)
Mahi Pono LLC
Maui County Parks Department
Na Koa Ikaika Ka Lāhui Hawai'i
National Trust for Historic Preservation
The Nature Conservancy
Nekaifes 'Ōhana
Nu'u Mauka Ranch
Office of Hawaiian Affairs
Public Employees for Environmental Responsibility
The Royal Order of Kamehameha I - Moku O Kahekili - Helu Eha
Schuman Aviation Company, Ltd. (Makani Kai Helicopters, Magnum Helicopters)
Sunshine Helicopters, Inc.
Terry Poaipuni (Individual)
Thompson Ranch
Tweetie Lind (Individual)
'Ulupalakua Ranch
U.S. Fish and Wildlife Service
Waiehu Kou Phase 3 Association
Wananalua Congregational Church

ATTACHMENT B

**Area of Potential Effects Map
Including
Proposed Commercial Air Tour Route**



ATTACHMENT C

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

Property Name	Property Type	Eligibility Status	Significant Characteristics
Civilian Conservation Corps (CCC) Haleakalā Crater Trails Historic District Cultural Landscape	Cultural Landscape	Eligible	The Civilian Conservation Corps (CCC) Haleakalā Crater Trails Historic District Cultural Landscape was designed by NPS landscape architects and constructed by CCC enrollees between 1930 and 1941. It is significant for its association with early park planning and the CCC and for its embodiment of NPS Rustic Style architecture. Significant characteristics of the district include its rustic design, historic trail system, the human manipulated topography to accommodate the trails, the viewshed from the trails of the crater and the ocean, and its continued use as a tourist circulation system.
Crater Historic District	District	Listed	Crater Historic District consists of 56 pre-contact archeological sites, including temples and burials. It is accessed for traditional uses by Native Hawaiians. Extant prehistoric stone structures, remains of workshop sites, other archeological remains, quiet setting and/or natural sounds, and the surrounding landscape are all significant characteristics of the district.
C-Shaped Wall (SHPD ID 50-50-16-03979)	Site, Structure	Eligible	This site is located east of Pāhihi Gulch and consists of a C-shape wall that is two inches in diameter. Significant characteristics of the site include the wall's C-shaped design and stone materials.
Enclosures (SHPD ID 50-50-16-03980)	Site, Structure	Eligible	This site consists of the remains of a large enclosing wall and an attached rectangular enclosure. Significant characteristics of the site include its configuration and stone materials.
Haleakalā Headquarters Historic District Cultural Landscape	Cultural Landscape	Eligible	The Haleakalā Headquarters Historic District Cultural Landscape is significant for its association with early park planning and as an example of Mission 66-era development. It is also significant for its NPS Rustic Style design. The rustic design, building configuration, and surrounding landscape are all significant characteristics of the district.
Haleakalā Highway Historic District Cultural Landscape	Cultural Landscape	Eligible	The Haleakalā Highway Historic District Cultural Landscape includes a portion of the highway within the Park, which was designed by the Bureau of Public Roads (BPR) with input from the Park and NPS landscape architects, as well as several developments along the route. It is significant for its association with NPS master planning from the 1930s and Mission 66 eras and for its minimally intrusive design. In order to be minimally intrusive, the district's road, buildings, and structures were designed to

Property Name	Property Type	Eligibility Status	Significant Characteristics
			decrease the visual and physical impact on the landscape; this design and the surrounding landscape are significant characteristics of the district.
Haleakalā Summit Traditional Cultural Property	TCP	Eligible	The Summit of Haleakalā, including Kaupō Gap and Kīpahulu Valley, is significant as a Traditional Cultural Property (TCP) for its association with native Hawaiian culture, traditions, and sacred uses. The exceptional stillness and serenity of the Summit of Haleakalā are significant characteristics of the TCP that allow Native Hawaiians to continue conducting traditional ceremonies, which require a quiet setting.
Hāna Belt Road	District	Listed	Hāna Belt Road includes a road and bridges to Hāna that were built between 1900 and 1947. It is significant as an engineering achievement and for its association with the development of the area that opened East Maui to further settlement, agricultural enterprises, and tourism. The road's winding and narrow alignment; surrounding scenery and viewshed featuring waterfalls, small villages, valleys, and sea cliffs; and stylistically consistent, one-lane bridges with sharp approaches are all significant characteristics of the district.
Hāwelewele Complex (Kailiili Heiau)	Site, Structure	Unevaluated ⁹	The Hāwelewele Complex, also called the Kailiili Heiau, is located a quarter of a mile from the shore on top of a small hill in the center of a valley. The large heiau measures approximately 50 by 124 ft. with walls that are 6 ft. thick and around 4-5 ft. high. Potential significant characteristics of the site include its materials and configuration.
Hosmer Campground and Picnic Area Cultural Landscape	Cultural Landscape	Eligible	The Hosmer Campground and Picnic Area Cultural Landscape is located just below the 7,000-foot elevation in the summit area of the Park and is the only drive-in campground in the area. It is significant as an example of a Mission 66-era development and for its experimental forestry plots that were planted by Ralph S. Hosmer in the early-twentieth century. Significant characteristics of the cultural landscape include the campground layout and design and surrounding landscape.
Ka'āpahu Archeological Sites	Sites	Eligible	Ka'āpahu Archeological Sites consist of archeological sites recorded within Kālepa, 'Alelele, Lelekēa, and Kukui'ula Valleys, including traditional Native Hawaiian dryland agriculture terraces and clearings, larger irrigated pondfield complexes for the production of kalo (taro, <i>Colocasia esculenta</i>), and habitation and ceremonial sites. 19 th century enclosures representing mixed residences and agriculture (including animal husbandry) are also present. Significant characteristics of the sites include the extant remains of structures and complexes, their materials and configurations, extant

⁹ 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	Significant Characteristics
			material culture remains, the surrounding landscape, and a quiet setting and/or natural sounds.
Keakalauae Heiau	Site, Structure	Unevaluated	The Keakalauae Heiau is one of the largest of the Kaupō heiaus and is credited to Kekaulike from c.1730. Its greatest dimensions are approximately 168 by 330 ft. The interior of the platform has been utilized for a pig pen with walls built around it. Potential significant characteristics of the site include the heiau's configuration, materials, and natural sounds.
Kīpahulu Historic District	District	Eligible	The Kīpahulu Historic District is comprised of fragmentary structural remains of Hawaiian use of the Kīpahulu land in the pre-contact period through 1900 that indicate a substantial resident population engaged in horticulture and fishing in an isolated wet-valley Polynesian community. The archeological study of the remains may reveal the vicinity may have played a significant role in the colonization of the Hawaiian Islands by early Polynesian voyagers and settlers. The few Hawaiian families who continued to live along 'Ohe'o Gulch and stream after 1900 perpetuated traditional irrigated and dry-land horticulture and fishing activities. The people of Kīpahulu perhaps experienced a minor lifestyle change when organized Christianity invaded east Maui ca. 1850, and certainly did so after 1900 when Kīpahulu plantation imported laborers from overseas and began to clear and plow the steeply sloping lower flanks of Haleakala volcano on both sides of 'Ohe'o Gulch to grow sugar cane. The historical themes of Hawaiian land use, Hawaiian placenames, engineering for sugar cultivation on marginal lands, and overland transportation are represented by structures or their remnants. Significant characteristics of the district include extant material culture and structural remains, physical evidence of historic and prehistoric land use, association with the ocean, a quiet setting and/or natural sounds, and the landscape.
Lonoaea Heiau	Site, Structure	Unevaluated	The Lonoaea Heiau is a walled heiau located on top of a hill overlooking Waiuha to the west. Potential significant characteristics include the heiau's materials, viewshed, and natural sounds.
Lono'o'ai'a Heiau (Hale O Kane Heiau)	Site, Structure	Unevaluated	The Lono'o'ai'a Heiau, also called the Hale O Kane Heiau, is an open platform that is 10 to 12 ft. above the ground. Potential significant characteristics include the heiau's materials and natural sounds.
Mound (SHPD ID 50-50-16-08665)	Site, Structure	Eligible	This site consists of a partially-faced mound that was constructed of stacked stones and may have served as a historic cattle ramp. Significant characteristics of the site include its stacked configuration and stone materials.

Property Name	Property Type	Eligibility Status	Significant Characteristics
Naholoku Archeological Sites	Sites	Eligible	The complex of 18 archeological sites at 1,000 ft elevation in dryland Naholoku Ahupua'a dates as early as the 15 th to 17 th centuries and is significant for its potential to yield information, with at least three sites eligible for architecture/design. These latter sites represent structures that embody the characteristics of pre-Contact and late pre-Contact/early historical residential compounds and smaller agricultural heiau. Significant characteristics include the extant remains of buildings and structures; their materials, configurations, and design; extant material culture remains; physical evidence of historic and prehistoric land use, a quiet setting and/or natural sounds, and the landscape.
Naku'ula Complex	Site, Structure	Unevaluated	The Naku'ula Complex consists of three rectangular terraced platforms that may be heiau sites. Potential significant characteristics include the site's physical materials and a quiet setting and/or natural sounds.
Nu'u Archeological Sites	Sites	Eligible	Nu'u Archeological Sites consist of archeological sites, composed of pocket terraces, terraces, enclosures, cleared areas, modified outcrops, and mounds that represent an extensive traditional dryland agricultural complex for primarily sweet potato production, temporary shelters associated with agricultural activity, multiple permanent residential complexes, most of which date to the 19 th century, specialized features/use areas for ceremony and lithic production. Significant characteristics of the sites include the extant remains of structures and residential complexes, their materials and configurations, mounds, extant material culture remains including evidence of ceremony and lithic production, physical evidence of historic and prehistoric land use, a quiet setting and/or natural sounds, and the landscape.
Nu'u Petroglyph Complex	Site	Unevaluated	The Nu'u Petroglyph Complex is a site covering 117 meters that is located on the beach at Nu'u Bay. It consists of 157 petroglyphs: 92 human forms, 3 animal forms, 3 names, and 59 undetermined images. Potential significant characteristics of the site include the petroglyph designs and configurations.
Nu'u Pictograph Complex	Site	Unevaluated	The Nu'u Petroglyph and Pictograph Complex is a site covering 117 meters that is located on the beach at Nu'u Bay. It consists of 40 pictographs: 16 human forms, 3 animal forms, and 21 undetermined images. Potential significant characteristics of the site include the pictograph designs and the materials used to create them.
Nu'u-Waiu Complex, Hana	Site, Structure	Unevaluated	The Nu'u-Waiu Complex consists of several archeological sites composed of enclosures, partial enclosures, terraces and platforms, pits, pavements, house lots, walls, ko'a, trails, cairn, petroglyphs, a fishpond, rockshelters, and graves. Potential

Property Name	Property Type	Eligibility Status	Significant Characteristics
			significant characteristics of the complex includes the extant remains of structures, their materials and configurations, other extant material culture remains, prehistoric and historic trail alignments, and physical evidence of prehistoric and historic land use.
Pictograph and Rock Shelter (Marciel's Pictograph)	Site, Structure	Unevaluated	This site consists of a human figure painted with alaea (red salt) on a boulder that is located next to a rock shelter that once contained a burial. Potential significant characteristics of the site include the pictograph form and design, the use of alaea to create it, the rock shelter's materials, natural sounds, and any other extant cultural remains.
Puhilele Archaeological Sites	Sites	Eligible	Puhilele Archaeological Sites consist of archeological sites, composed of terraces, platforms, alignments, and mounds used for agricultural, residential, ceremonial as well as temporary shelter for fishing. Significant characteristics of the site includes the extant remains of structures, their materials and configurations, other extant material culture remains, association with the ocean, a quiet setting and/or natural sounds, and physical evidence of prehistoric and historic land use.
Pu'umaka'a Heiau	Site, Structure	Unevaluated	The Pu'umaka'a Heiau is an open platform type of heiau that consists of a series of rough terraced pavements. Potential significant characteristics include the heiau's materials and natural sounds.
Pu'unianiau Historic Site Cultural Landscape	Cultural Landscape	Eligible	The Pu'unianiau Historic Site Cultural Landscape is significant as a base camp used by the U.S. Army for the administration of the Red Hill Aircraft Warning Service Station at the summit of Haleakalā between 1941 and 1946. It consists of five historic buildings and structures and a south access road. The spatial organization of the site, which reflects the traditional conventions for military cantonments, and the 1940s military one-story buildings and structures are significant characteristics of the cultural landscape.
Terraces (SHPD ID 50-50-16-01133)	Site, Structure	Unevaluated	These terraces are located on the west side of the Kalepa Stream. They consist of the remains of two rectangular enclosures, each with two end walls and one connecting wall about 50 ft. in length. Potential significant characteristics of the site include its configuration and materials.
Wall (SHPD ID 50-50-16-08663)	Site, Structure	Eligible	This site consists of a low wall near Kukui'ula Gulch that was built along the side of a steep stream channel. The wall is constructed of stacked and piled stones that terminates in an "L" on its inland end. Significant characteristics of the site include its configuration, stone materials, and location next to the stream.

Property Name	Property Type	Eligibility Status	Significant Characteristics
Wall (SHPD ID 50-50-16-08664)	Site, Structure	Eligible	This site consists of a bi-facial wall near Kukui'ula Gulch that was likely constructed for drainage during the historic period. Significant characteristics of the site include its configuration and materials.
Wall (SHPD ID 50-50-16-03978)	Site, Structure	Eligible	This site consists of a single stacked boulder wall approximately 5.5 meters in length and 60 centimeters high. It is oriented north-to-south and likely served as a windbreak for a structure located in its lee. Significant characteristics of the site include its configuration, stone materials, and north-to-south orientation.
Wall (SHPD ID 50-50-17-08883)	Site, Structure	Unevaluated	This site consists of a dry-stacked, core-filled rock wall that was likely constructed to mark the boundaries of a neighboring grant parcel to the west sometime after the sale of the parcel in 1854. Potential significant characteristics of the site include its configuration, stone materials, and location.
Walls (SHPD ID 50-50-16-01132)	Site, Structure	Unevaluated	This site consists of the remains of walls, one parallel to the shore and another parallel to the Kalepa Stream, which may be the remains of a house site. Potential significant characteristics of the site include its configuration, stone materials, and location next to the stream.

ATTACHMENT D

Noise Technical Analysis: Haleakalā National Park

ATTACHMENT E

Connection Information for April 20, 2023, Consulting Party Meeting for Haleakalā National Park

The consulting party meeting will be held on Thursday, April 20th, 2023, at 9:30 a.m. to 11:00 a.m. HST over Zoom.

Web link:

<https://usdot.zoomgov.com/j/1607918709?pwd=RFQvcVR1SzRDR01tTURCdVJDZWlQZz09>

Meeting ID: 160 791 8709

Passcode: 602195

Call-in:

Dial by your location

+1 669 254 5252 US (San Jose)

+1 646 964 1167 US (US Spanish Line)

+1 646 828 7666 US (New York)

+1 415 449 4000 US (US Spanish Line)

+1 551 285 1373 US

+1 669 216 1590 US (San Jose)

Meeting ID: 160 791 8709

Passcode: 602195

APPENDIX H

Section 7 Consultation



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish And Wildlife Office
300 Ala Moana Boulevard, Box 50088
Honolulu, HI 96850-5000
Phone: (808) 792-9400 Fax: (808) 792-9580



In Reply Refer To:

March 22, 2023

Project Code: 2023-0058768

Project Name: Haleakalā Naitonal 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 and endangered species, as well as designated critical habitat that may occur within the boundary of your proposed project and that may be affected by project related actions. 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.*). Please contact the Service's Pacific Islands Fish and Wildlife Office (PIFWO) at 808-792-9400 if you have any questions regarding your IPaC species 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 adversely affect threatened and endangered species and/or designated 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. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the 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 IPaC system by completing the same process used to receive the enclosed list.

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 or Biological Evaluation are described at 50 CFR 402.12.

Due to the significant number of listed species found on each island within PIFWO's regulatory jurisdiction, and the difficulty in accurately mapping ranges for species that we have limited information about, your species list may include more species than if you obtained the list directly from a Service biologist. We recommend you use the species links in IPaC to view the life history, habitat descriptions, and recommended avoidance and minimization measures to assist with your initial determination of whether the species or its habitat may occur within your project area. If appropriate habitat is present for a listed species, we recommend surveys be conducted to determine whether the species is also present. If no surveys are conducted, we err on the side of the species, by regulation, and assume the habitat is occupied. Updated avoidance and minimization measures for plants and animals, best management practices for work in or near aquatic environments, and invasive species biosecurity protocols can be found on the PIFWO website at: <https://www.fws.gov/office/pacific-islands-fish-and-wildlife/library>.

If a Federal agency determines, based on the Biological Assessment or Biological Evaluation, that a 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. 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: <http://www.fws.gov/endangered/esa-library/index>.

Non-federal entities can also use the IPaC generated species list to develop Habitat Conservation Plans (HCP) in accordance with section 10(a)(1)(B) of the Act. We recommend HCP applicants coordinate with the Service early during the HCP development process. For additional information on HCPs, the Habitat Conservation Planning handbook can be found at <https://www.fws.gov/sites/default/files/documents/habitat-conservation-planning-handbook-entire.pdf>.

Please be aware that wind energy projects should follow the Service's wind energy guidelines (<http://www.fws.gov/windenergy>) for minimizing impacts to migratory birds. Listed birds and the Hawaiian hoary bat may also be affected by wind energy development and we recommend development of a Habitat Conservation Plan for those species, as described above. Guidance for minimizing impacts to migratory birds for projects including communications towers can be found at:

- <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers>
- <http://www.towerkill.com>
- <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow>

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation actions that benefit threatened and endangered species into their project planning to further the purposes of the Act in accordance with section 7(a)(1). Please include the Consultation Tracking Number associated with your IPaC species list in any

request for consultation or correspondence about your project that you submit to our office. Please feel free to contact us at PIFWO_admin@fws.gov or 808-792-9400 if you need more current information or assistance regarding the potential impacts to federally listed species and federally designated critical habitat.

Attachment(s):

- Official Species List

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:

Pacific Islands Fish And Wildlife Office

300 Ala Moana Boulevard, Box 50088

Honolulu, HI 96850-5000

(808) 792-9400

PROJECT SUMMARY

Project Code: 2023-0058768
Project Name: Haleakalā 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/@20.699321349999998,-156.15382323806202,14z>



Counties: Maui County, Hawaii

ENDANGERED SPECIES ACT SPECIES

There is a total of 109 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
Hawaiian Hoary Bat <i>Lasiurus cinereus semotus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/770 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/6477.pdf	Endangered

BIRDS

NAME	STATUS
Band-rumped Storm-petrel <i>Oceanodroma castro</i> Population: USA (HI) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1226 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/6939.pdf	Endangered
Crested Honeycreeper (akohekohe) <i>Palmeria dolei</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3089 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/6938.pdf	Endangered
Hawaii Akepa <i>Loxops coccineus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5714 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/6938.pdf	Endangered
Hawaiian (=koloa) Duck <i>Anas wyvilliana</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7712 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/6934.pdf	Endangered
Hawaiian Coot <i>Fulica americana alai</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7233 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/6934.pdf	Endangered
Hawaiian Goose <i>Branta (=Nesochen) sandvicensis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1627 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/6925.pdf	Threatened
Hawaiian Petrel <i>Pterodroma sandwichensis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6746 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/6939.pdf	Endangered

NAME	STATUS
Hawaiian Stilt <i>Himantopus mexicanus knudseni</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2082 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/6934.pdf	Endangered
Maui Parrotbill (kiwikiu) <i>Pseudonestor xanthophrys</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7952 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/6938.pdf	Endangered
Newell's Townsend's Shearwater <i>Puffinus auricularis newelli</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2048 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/6939.pdf	Threatened
Short-tailed Albatross <i>Phoebastria (=Diomedea) albatrus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/433	Endangered

REPTILES

NAME	STATUS
Green Sea Turtle <i>Chelonia mydas</i> Population: Central North Pacific DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6199 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/6929.pdf	Threatened

INSECTS

NAME	STATUS
Blackburn's Sphinx Moth <i>Manduca blackburni</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4528 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/6926.pdf	Endangered

FLOWERING PLANTS

NAME	STATUS
(=native Yellow Hibiscus) Ma`o Hau Hele <i>Hibiscus brackenridgei</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4075 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf	Endangered
`ahinahina <i>Argyroxiphium sandwicense</i> ssp. <i>macrocephalum</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/387 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf	Threatened
`aiea <i>Nothocestrum latifolium</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1061 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf	Endangered
`ala `ala Wai Nui <i>Peperomia subpetiolata</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7437 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf	Endangered
`awikiwiki <i>Canavalia pubescens</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7908 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf	Endangered
`ena`ena <i>Pseudognaphalium sandwicense</i> var. <i>molokaiense</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5993 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf	Endangered
`oha Wai <i>Clermontia lindseyana</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5493 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf	Endangered
`oha Wai <i>Clermontia oblongifolia</i> ssp. <i>mauiensis</i>	Endangered

NAME	STATUS
<p>There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7350 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	
<p><i>`oha Wai Clermontia peleana</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/849 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p><i>`oha Wai Clermontia samuelii</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/729 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p><i>`ohe Joinvillea ascendens ascendens</i></p> <p>No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2412 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p><i>A`e Zanthoxylum hawaiiense</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4645 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p><i>Alani Melicope adscendens</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4028 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p><i>Alani Melicope balloui</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7786 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p><i>Alani Melicope knudsenii</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4668 General project design guidelines:</p>	Endangered

NAME	STATUS
https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf <i>Alani Melicope mucronulata</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/706 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf	Endangered
<i>Alani Melicope ovalis</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6401 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf	Endangered
<i>Awiwi Schenkia sebaeoides</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7103 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf	Endangered
<i>Bonamia menziesii</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2503 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf	Endangered
<i>Carter's Panicgrass Panicum fauriei var. carteri</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5578 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf	Endangered
<i>Cyperus pennatifolius</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6868 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051,7060.pdf	Endangered
<i>Dwarf Naupaka Scaevola coriacea</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4669 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf	Endangered

NAME	STATUS
<p>Gouania hillebrandii</p> <p>There is final critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/3464</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p>Haha Nui <i>Cyanea horrida</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/9238</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p>Haha <i>Cyanea asplenifolia</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/7940</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p>Haha <i>Cyanea copelandii</i> ssp. <i>haleakalaensis</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/4574</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p>Haha <i>Cyanea duvalliorum</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/9237</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p>Haha <i>Cyanea glabra</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/7981</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p>Haha <i>Cyanea hamatiflora</i> ssp. <i>hamatiflora</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/7380</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p>Haha <i>Cyanea kunthiana</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/5320</p>	Endangered

NAME	STATUS
General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf	
Haha <i>Cyanea maritae</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9240 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf	Endangered
Haha <i>Cyanea mauensis</i> There is final critical habitat for this species. However, no <i>actual</i> acres or miles were designated due to exemptions or exclusions. See Federal Register publication for details. Species profile: https://ecos.fws.gov/ecp/species/9241 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf	Endangered
Haha <i>Cyanea mceldowneyi</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/984 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf	Endangered
Haha <i>Cyanea obtusa</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2907 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf	Endangered
Haiwale <i>Cyrtandra ferripilosa</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9243 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf	Endangered
Hilo <i>Ischaemum Ischaemum byrone</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3903 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf	Endangered
Holei <i>Ochrosia haleakalae</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/884 General project design guidelines:	Endangered

NAME	STATUS
https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf	
<p>Honohono <i>Haplostachys haplostachya</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/5815</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p>Ihi <i>Portulaca villosa</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/4886</p>	Endangered
<p>Kamanomano <i>Cenchrus agrimonioides</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/2928</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p>Kauila <i>Colubrina oppositifolia</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/850</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p>Ko`oko`olau <i>Bidens campylothea ssp. pentamera</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/1897</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p>Ko`oko`olau <i>Bidens campylothea ssp. waihoiensis</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/6450</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p>Ko`oko`olau <i>Bidens micrantha ssp. kalealaha</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/7697</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p>Ko`oloa`ula <i>Abutilon menziesii</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/3268</p>	Endangered

NAME	STATUS
<p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	
<p>Kuahiwi Laukahi <i>Plantago princeps</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4926 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p>Kulu'i <i>Nototrichium humile</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1001 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p>Lanai Sandalwood (=`ilihi) <i>Santalum haleakalae</i> var. <i>lanaiense</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3282 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p>Ma`oli`oli <i>Schiedea pubescens</i></p> <p>No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4030 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p>Mahoe <i>Alectryon macrococcus</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2446 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p>Makou <i>Peucedanum sandwicense</i></p> <p>There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5579 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Threatened
<p>Makou <i>Ranunculus hawaiiensis</i></p> <p>No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4033 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered

NAME	STATUS
<p>Makou <i>Ranunculus mauiensis</i></p> <p>No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3594 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p>Maui Reedgrass <i>Calamagrostis expansa</i></p> <p>No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1742 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p>Mehamehame <i>Flueggea neowawraea</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/109 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p>Na`ena`e <i>Dubautia plantaginea ssp. humilis</i></p> <p>There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5833 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p>Nanu <i>Gardenia remyi</i></p> <p>No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5835 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p>Nehe <i>Melanthera kamolensis</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3476 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p>Neraudia <i>sericea</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2237 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p>Nohoanu <i>Geranium arboreum</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6346</p>	Endangered

NAME	STATUS
<p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	
<p>Nohoanu <i>Geranium hanaense</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8032 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p>Nohoanu <i>Geranium multiflorum</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3848 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p>Ohai <i>Sesbania tomentosa</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8453 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p>Phyllostegia bracteata</p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3212 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p>Phyllostegia brevidens</p> <p>No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3184</p>	Endangered
<p>Phyllostegia haliakalae</p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9245 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p>Phyllostegia mannii</p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7511 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p>Phyllostegia pilosa</p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p>	Endangered

NAME	STATUS
<p>Species profile: https://ecos.fws.gov/ecp/species/9246</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	
<p>Platanthera holochila</p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/6864</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p>Popolo Ku Mai <i>Solanum incompletum</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/3199</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p>Popolo <i>Solanum nelsonii</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/2281</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p>Round-leaved Chaff-flower <i>Achyranthes splendens</i> var. <i>rotundata</i></p> <p>There is final critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/4709</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p>Sanicula sandwicensis</p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/5580</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p>Schiedea diffusa subsp. <i>diffusa</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/9616</p>	Endangered
<p>Schiedea haleakalensis</p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/2764</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p>Schiedea hookeri</p>	Endangered

NAME	STATUS
<p>There is final critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/1705</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	
<p><i>Schiedea jacobii</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/9247</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p><i>Sea Bean Mucuna sloanei</i> var. <i>persericea</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/9244</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p><i>Spermolepis hawaiiensis</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/1670</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p><i>Stenogyne angustifolia</i> var. <i>angustifolia</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/1591</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p><i>Tetramolopium arenarium</i></p> <p>There is proposed critical habitat for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/1655</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p><i>Uhi Uhi Mezoneuron kavaense</i></p> <p>There is final critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/7129</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p><i>Vigna o-wahuensis</i></p> <p>There is final critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/8445</p> <p>General project design guidelines:</p>	Endangered

NAME	STATUS
https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf	
Wikstroemia villosa	Endangered
There is final critical habitat for this species. Your location overlaps the critical habitat.	
Species profile: https://ecos.fws.gov/ecp/species/854	
General project design guidelines:	
https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf	

FERNS AND ALLIES

NAME	STATUS
<p><i>Asplenium peruvianum</i> var. <i>insulare</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/4357</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p><i>Asplenium</i>-leaved <i>Diellia Asplenium dielirectum</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/7361</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p><i>Deparia kaalaana</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/9612</p>	Endangered
<p><i>Diplazium molokaiense</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/2168</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p><i>Hohiu Dryopteris glabra</i> var. <i>pusilla</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/8583</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p><i>Huperzia stemmermanniae</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/6289</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf</p>	Endangered
<p><i>Kupukupu Makalii Cyclosorus boydiae</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/4692</p>	Endangered
<p><i>Microlepidia strigosa</i> var. <i>mauiensis</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/4737</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf</p>	Endangered
<p><i>Olua Hypolepis hawaiiensis</i> var. <i>mauiensis</i></p>	Endangered

NAME	STATUS
No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9619	
Pendant Kihī Fern <i>Adenophorus periens</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1916 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7051.pdf	Endangered
Wawae`iole <i>Huperzia mannii</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1215 General project design guidelines: https://ipac.ecosphere.fws.gov/project/35CB225Y3JAYHH5KSZFLGRWAFE/documents/generated/7060.pdf	Endangered

CRITICAL HABITATS

There are 63 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
(=native Yellow Hibiscus) Ma`o Hau Hele <i>Hibiscus brackenridgei</i> https://ecos.fws.gov/ecp/species/4075#crithab	Final
`ahinahina <i>Argyroxiphium sandwicense ssp. macrocephalum</i> https://ecos.fws.gov/ecp/species/387#crithab	Final
`ala `ala Wai Nui <i>Peperomia subpetiolata</i> https://ecos.fws.gov/ecp/species/7437#crithab	Final
`awikiwiki <i>Canavalia pubescens</i> https://ecos.fws.gov/ecp/species/7908#crithab	Final
`i`iwi <i>Drepanis coccinea</i> For information on why this critical habitat appears for your project, even though `i`iwi is not on the list of potentially affected species at this location, contact the local field office. https://ecos.fws.gov/ecp/species/9076#crithab	Proposed
`oha Wai <i>Clermontia lindseyana</i> https://ecos.fws.gov/ecp/species/5493#crithab	Final
`oha Wai <i>Clermontia oblongifolia ssp. mauiensis</i> https://ecos.fws.gov/ecp/species/7350#crithab	Final
`oha Wai <i>Clermontia peleana</i> https://ecos.fws.gov/ecp/species/849#crithab	Final
`oha Wai <i>Clermontia samuelii</i> https://ecos.fws.gov/ecp/species/729#crithab	Final

NAME	STATUS
A`e <i>Zanthoxylum hawaiiense</i> https://ecos.fws.gov/ecp/species/4645#crithab	Final
Alani <i>Melicope adscendens</i> https://ecos.fws.gov/ecp/species/4028#crithab	Final
Alani <i>Melicope balloui</i> https://ecos.fws.gov/ecp/species/7786#crithab	Final
Alani <i>Melicope knudsenii</i> https://ecos.fws.gov/ecp/species/4668#crithab	Final
Alani <i>Melicope mucronulata</i> https://ecos.fws.gov/ecp/species/706#crithab	Final
Alani <i>Melicope ovalis</i> https://ecos.fws.gov/ecp/species/6401#crithab	Final
Asplenium peruvianum var. insulare https://ecos.fws.gov/ecp/species/4357#crithab	Final
Asplenium-leaved Diellia <i>Asplenium dielirectum</i> https://ecos.fws.gov/ecp/species/7361#crithab	Final
Bonamia menziesii https://ecos.fws.gov/ecp/species/2503#crithab	Final
Crested Honeycreeper (akohekohe) <i>Palmeria dolei</i> https://ecos.fws.gov/ecp/species/3089#crithab	Final
Diplazium molokaiense https://ecos.fws.gov/ecp/species/2168#crithab	Final
Ha`iwale <i>Cyrtandra oxybapha</i> For information on why this critical habitat appears for your project, even though Ha`iwale is not on the list of potentially affected species at this location, contact the local field office. https://ecos.fws.gov/ecp/species/4937#crithab	Final
Haha <i>Cyanea asplenifolia</i> https://ecos.fws.gov/ecp/species/7940#crithab	Final
Haha <i>Cyanea copelandii</i> ssp. <i>haleakalaensis</i> https://ecos.fws.gov/ecp/species/4574#crithab	Final
Haha <i>Cyanea duvalliorum</i> https://ecos.fws.gov/ecp/species/9237#crithab	Final
Haha <i>Cyanea glabra</i> https://ecos.fws.gov/ecp/species/7981#crithab	Final
Haha <i>Cyanea hamatiflora</i> ssp. <i>hamatiflora</i> https://ecos.fws.gov/ecp/species/7380#crithab	Final
Haha <i>Cyanea kunthiana</i>	Final

NAME	STATUS
https://ecos.fws.gov/ecp/species/5320#crithab	
Haha <i>Cyanea maritae</i> https://ecos.fws.gov/ecp/species/9240#crithab	Final
Haha <i>Cyanea mceldowneyi</i> https://ecos.fws.gov/ecp/species/984#crithab	Final
Haha <i>Cyanea obtusa</i> https://ecos.fws.gov/ecp/species/2907#crithab	Final
Haha Nui <i>Cyanea horrida</i> https://ecos.fws.gov/ecp/species/9238#crithab	Final
Haiwale <i>Cyrtandra ferripilosa</i> https://ecos.fws.gov/ecp/species/9243#crithab	Final
Kamanomano <i>Cenchrus agrimonioides</i> https://ecos.fws.gov/ecp/species/2928#crithab	Final
Kauila <i>Colubrina oppositifolia</i> https://ecos.fws.gov/ecp/species/850#crithab	Final
Ko`oko`olau <i>Bidens campylotheca</i> ssp. <i>pentamera</i> https://ecos.fws.gov/ecp/species/1897#crithab	Final
Ko`oko`olau <i>Bidens campylotheca</i> ssp. <i>waihoiensis</i> https://ecos.fws.gov/ecp/species/6450#crithab	Final
Ko`oko`olau <i>Bidens micrantha</i> ssp. <i>kalealaha</i> https://ecos.fws.gov/ecp/species/7697#crithab	Final
Kuahiwi Laukahi <i>Plantago princeps</i> https://ecos.fws.gov/ecp/species/4926#crithab	Final
Kulu`i <i>Nototrichium humile</i> https://ecos.fws.gov/ecp/species/1001#crithab	Final
Lanai Sandalwood (=`iliahi) <i>Santalum haleakalae</i> var. <i>lanaiense</i> https://ecos.fws.gov/ecp/species/3282#crithab	Final
Mahoe <i>Alectryon macrococcus</i> https://ecos.fws.gov/ecp/species/2446#crithab	Final
Maui Parrotbill (kiwikiu) <i>Pseudonestor xanthophrys</i> https://ecos.fws.gov/ecp/species/7952#crithab	Final
Mehamehame <i>Flueggea neowawraea</i> https://ecos.fws.gov/ecp/species/109#crithab	Final
Nehe <i>Melanthera kamolensis</i> https://ecos.fws.gov/ecp/species/3476#crithab	Final
Neraudia sericea	Final

NAME	STATUS
https://ecos.fws.gov/ecp/species/2237#crithab	
Nohoanu <i>Geranium arboreum</i> https://ecos.fws.gov/ecp/species/6346#crithab	Final
Nohoanu <i>Geranium hanaense</i> https://ecos.fws.gov/ecp/species/8032#crithab	Final
Nohoanu <i>Geranium multiflorum</i> https://ecos.fws.gov/ecp/species/3848#crithab	Final
Ohai <i>Sesbania tomentosa</i> https://ecos.fws.gov/ecp/species/8453#crithab	Final
Pauoa <i>Ctenitis squamigera</i> For information on why this critical habitat appears for your project, even though Pauoa is not on the list of potentially affected species at this location, contact the local field office. https://ecos.fws.gov/ecp/species/289#crithab	Final
Pendant Kihī Fern <i>Adenophorus periens</i> https://ecos.fws.gov/ecp/species/1916#crithab	Final
Phyllostegia bracteata https://ecos.fws.gov/ecp/species/3212#crithab	Final
Phyllostegia haliakalae https://ecos.fws.gov/ecp/species/9245#crithab	Final
Phyllostegia mannii https://ecos.fws.gov/ecp/species/7511#crithab	Final
Phyllostegia pilosa https://ecos.fws.gov/ecp/species/9246#crithab	Final
Platanthera holochila https://ecos.fws.gov/ecp/species/6864#crithab	Final
Popolo Ku Mai <i>Solanum incompletum</i> https://ecos.fws.gov/ecp/species/3199#crithab	Final
Schiedea haleakalensis https://ecos.fws.gov/ecp/species/2764#crithab	Final
Schiedea jacobii https://ecos.fws.gov/ecp/species/9247#crithab	Final
Sea Bean <i>Mucuna sloanei</i> var. <i>persericea</i> https://ecos.fws.gov/ecp/species/9244#crithab	Final
Spermolepis hawaiiensis https://ecos.fws.gov/ecp/species/1670#crithab	Final
Wawae`iōle <i>Huperzia mannii</i> https://ecos.fws.gov/ecp/species/1215#crithab	Final

NAME	STATUS
Wikstroemia villosa https://ecos.fws.gov/ecp/species/854#crithab	Final

IPAC USER CONTACT INFORMATION

Agency: Department of Transportation
Name: Briana Litchholt
Address: 55 Broadway
City: Cambridge
State: MA
Zip: 02142
Email: brilitchholt@gmail.com
Phone: 8579983936

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Aviation Administration
Name: Shawna Barry
Email: shawna.m.barry@faa.gov
Phone: 2022671844



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



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 2, 2023

Mr. Earl Campbell
U.S. Fish and Wildlife Service, Pacific Islands Ecoregion
300 Ala Moana Blvd, Rm 3-122, PO Box 50088
Honolulu, HI 96850

Re: Informal Section 7 Consultation for Haleakalā National Park Air Tour Management Plan

Dear Mr. Campbell,

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 Haleakalā National Park (the Park). The agencies are preparing documentation for the draft ATMP in accordance with the National Parks Air Tour Management Act of 2000 (NPATMA) and other applicable laws. This letter is a request for informal consultation with your office by the agencies pursuant to Section 7 of the Endangered Species Act (the ESA). We are seeking your concurrence that the proposed action in the draft ATMP will not adversely affect threatened and endangered species occurring within the study area.

Project Background and Purpose of the Action

NPATMA directs the agencies to develop ATMPs or voluntary agreements for National Park System units over which more than 50 commercial air tours occur annually, 49 U.S.C. § 40128. A commercial air tour operation is defined as “a flight conducted for compensation or hire in a powered aircraft where the purpose of the flight is sightseeing over a national park, within ½ mile outside the boundary of a national park... during which the aircraft flies below an altitude of 5,000 feet (ft.) above ground level (AGL) or less than 1 mile laterally from any geographic feature within the Park (unless more than ½ mile outside the boundary).” When NPATMA was passed in 2000 it required the FAA to grant Interim Operating Authority (IOA) to existing air tour operators who were permitted to continue air tour operations over parks until an ATMP was completed. 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, or altitude(s) of such tours. In 2012, NPATMA was amended to require operators to report the number of commercial air tours conducted each year.

On February 14, 2019, Public Employees for Environmental Responsibility and the Hawai’i Coalition Malama Pono filed a petition for writ of mandamus seeking to have the agencies complete air tour management plans or voluntary agreements at seven specified parks, *In re Public Employees for Environmental Responsibility, et al.*, Case No. 19-1044 (D.C. Cir.). On May 1, 2020, the United States

Court of Appeals for the District of Columbia Circuit granted the petition and ordered the agencies to file a proposed schedule for bringing twenty-three eligible parks, including Haleakalā National Park, into compliance with NPATMA within two years. The D.C. Circuit subsequently entered an order requiring the agencies to propose firm completion dates to bring all parks into compliance with NPATMA. The completion date set for the Park is December 31, 2023.

Past and Current Commercial Air Tour Activity

Table 1 describes the current commercial air tour activity over the Park along with the average number of flights typically flown over the Park, based on data reported to the NPS and FAA. Based on reported data from 2017-2019, the average annual number of commercial air tours over the Park is 4,824. The flights currently conducted over the Park are flown at altitudes ranging from 500 ft. to 1,500 ft. AGL depending on location over the Park. Details regarding the proposed action, which is implementation of an ATMP for the Park, are described in the following sections.

Table 1. Current Commercial Air Tour Activity

Park Unit	IOA	Current AGL	Average Total Annual Flights (2017-2019)
Haleakalā National Park	25,827	500 ft. – 1,500 ft.	4,824

Action Area

The action area is the area that includes all direct and indirect effects. The action area includes the Park and the land within a ½-mile boundary from the Park depicted in Figure 1. The ATMP applies to all commercial air tours within the action area. 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 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.

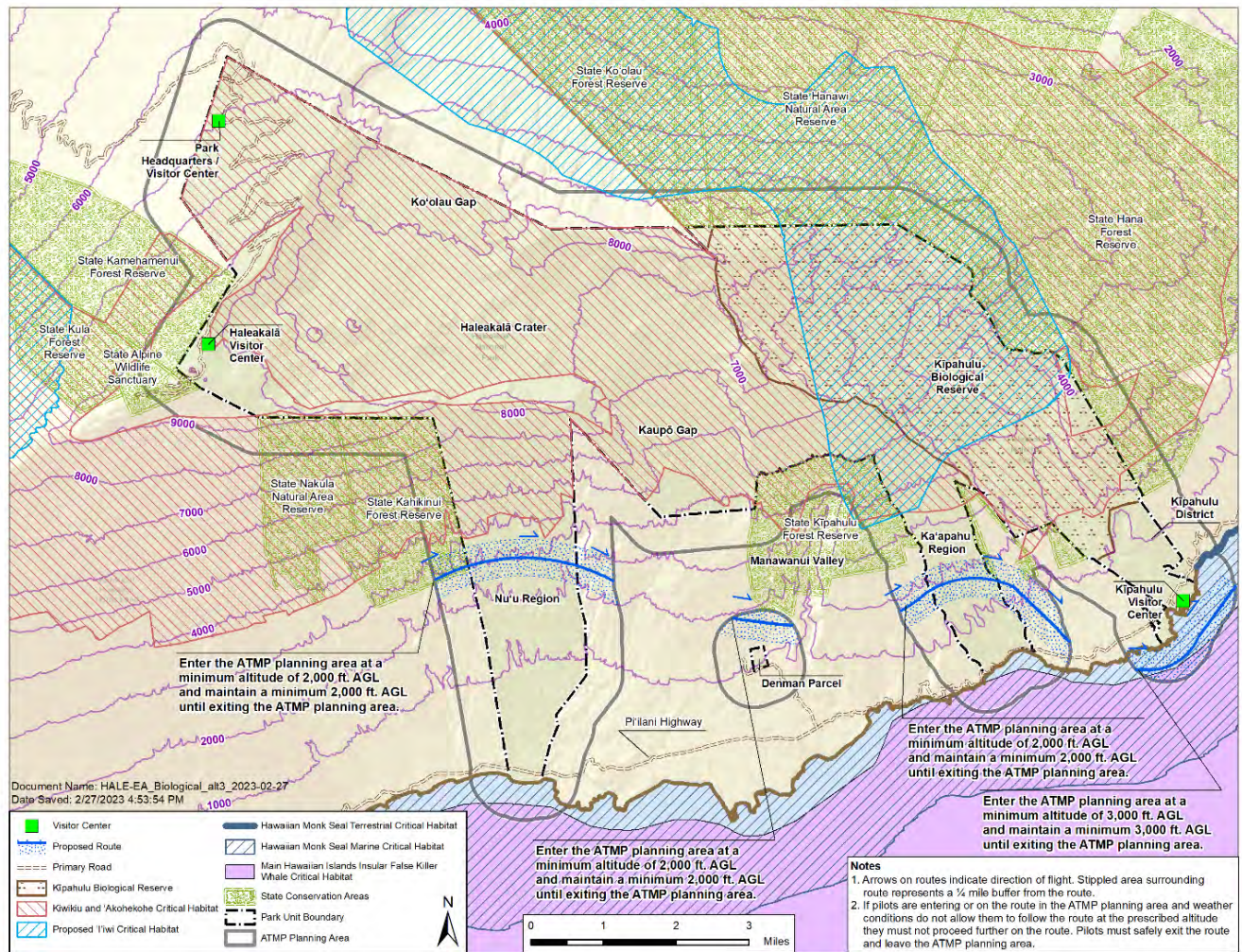


Figure 1. Commercial Air Tour Route at Haleakalā National Park Under the Proposed Action¹

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 draft ATMP will remain in effect until amended, at which time the agencies would reinstate consultation pursuant to 50 CFR 402.16. A summary of the operating parameters of the draft ATMP are discussed in detail below. See Attachment 1 for the draft ATMP.

Commercial Air Tours Per Year

¹ Figure 1 includes designated and proposed critical habitat under the jurisdiction of both the National Marine Fisheries Service and USFWS.

The draft ATMP authorizes 2,412 commercial air tours over the Park each year— a 50% reduction compared with the existing number of flights.

Commercial Air Tour Routes and Altitudes

The draft ATMP requires aircraft operators to follow a single flight path with a minimum altitude of 2,000 ft. AGL over land and 3,000 ft. AGL over the ocean. Flights more than ½-mile outside the Park boundary are outside of the action area and are subject to the altitude restrictions of the 2008 FAA Hawai'i Air Tour Common Procedures Manual (HI Common Procedures Manual).

Commercial Air Tour Day/Time

Flights would be permitted between the hours of 11:00 AM and 2:00 PM, unless using a quiet technology aircraft. Flights would be permitted on all days of the week except Wednesday and Sunday, in addition to several no-fly days throughout the year as described in the draft ATMP.

Additional Requirements

Daily Caps: The draft ATMP limits the number of commercial air tours within the action area to no more than 16 tours per day across all operators.

Hovering/Circling: Hovering and circling are prohibited.

Adaptive Management: Adaptive management is a systematic approach for improving resource management and ensuring the continued effectiveness of the ATMP over time through the monitoring of Park conditions and by learning from management actions or choices. Adaptive management is also used to address changed conditions such as if the breeding habitat of a sensitive species moves to a new area. Resource condition monitoring and adaptive management of the draft ATMP would occur under this alternative to ensure that the terms and conditions of the ATMP would continue to address park management objectives. The NPS would conduct periodic acoustic monitoring to ensure that the terms and conditions of the ATMP remain consistent with park management objectives. The FAA and the NPS will provide additional information for interested parties about the notice and process for adaptive management changes.

Interpretive Training and Education: When made available by Park staff, operators/pilots would take at least one training course per year conducted by the NPS. The training would include Park information that operators could use to further their own understanding of Park priorities and management objectives, as well as enhance the interpretive narrative for air tour clients and increase understanding of the Park by air tour clients. Helicopter pilots would also be required to complete the FAA introduction to Fly Neighborly training.² The Fly Neighborly Noise Abatement Training program, created by the FAA and endorsed by Helicopter Association International, teaches pilots and operators noise abatement procedures and situational awareness tools that can be used to minimize the effects of helicopter noise emissions.

Reporting, Monitoring, and Enforcement: Operators would be required to equip all aircraft used for air tours with flight monitoring technology, to use flight monitoring technology during all air tours under the draft ATMP, and to report flight monitoring data as an attachment to the operator's semi-annual reports. Investigative determination of non-compliance may result in partial or total loss of authorization to conduct commercial air tours authorized by the ATMP. Any violation of Operations

² https://www.faa.gov/gslac/ALC/course_content.aspx?pf=1&preview=true&clD=500

Specifications shall be treated in accordance with FAA Order 2150.3, *FAA Compliance and Enforcement Program*.³

Quiet Technology Incentives

The draft ATMP incentivizes the adoption of quiet technology by commercial air tour operators. Operators that have converted to quiet technology aircraft would be allowed to conduct commercial air tours from 11:00 AM to 4:00 PM (two hours longer than non-quiet technology aircraft) on all days that air tours are authorized. The draft ATMP would require that, by 2033, all operators exclusively use quiet technology aircraft to conduct commercial air tours within the action area.

Summary of Conservation Measures

The proposed action includes the following measures protective of species:

- Reduces the number of air tours over the Park from 4,824 (three-year average) to 2,412—a 50% reduction.
- Designates a single flight path that avoids Kīpahulu Biological Reserve and reduces impacts to forest birds, nēnē, and ‘ua‘u by maintaining mid-slope elevations (i.e., staying below 4,000 ft. contour line elevations). Thus, the designated route would shift air tours away from key avian habitat. The flight path also allows lower altitude flights through a specific location over the Park away from cliff-nesting seabirds and forest birds of the Manawainui plateau.
- Flights would be permitted between only the hours of 11:00 AM and 2:00 PM, unless using a quiet technology aircraft. This proposed window of operation would provide additional protection to wildlife during critical dusk/dawn periods that are prime times of day for foraging, mating, and communication.
- Aircraft will not hover or circle while conducting air tours within the action area. This measure would minimize the time individual animals would be exposed to noise from aircraft.
- Sets minimum altitudes of 2,000 ft. AGL over land and 3,000 ft. AGL over the ocean, which is an increase of 500 to 2,500 ft. compared to existing operations. This increase in altitude would reduce noise intensity at ground level. When the altitude of an aircraft is increased, the total area of noise exposure from the aircraft may also increase depending on the surrounding terrain. However, because increases in altitude also result in a reduction in maximum sound level of the aircraft in areas nearby the flight track, the beneficial effects of increasing the altitude of commercial air tours are anticipated to outweigh the *de minimis* impacts from any increase in the area exposed to the noise.
- Adaptive management of the route, frequency, and timing will be considered, analyzed, and included in the draft ATMP for the protection of bird movement patterns and climate change-induced range shifts and biological reserves, impacted by air tours.

3

https://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.information/documentID/1034329

Listed Species and Critical Habitat Potentially Occurring within the Action Area

The U.S. Fish and Wildlife Service's (USFWS) Information Planning and Consultation (IPaC) tool and the NPS species list was used to assess the potential for any federally listed species or designated critical habitat that may occur within the action area. Species listed in Table 2 are those that are known to occur within the Park or could occur at some point in the future. All listed species including those that do not occur within the Park, but were identified via IPaC, can be found in the IPaC Official Species List (Attachment 3).

Table 2. Listed Species and Critical Habitat Potentially Occurring in the Action Area

Birds - Scientific Name	Birds - Common Name	Birds - Status (Federal)	Birds - Critical Habitat in the Action Area (Y/N)	Birds - Proposed Finding
<i>Branta (=Nesochen) sandvicensis</i>	Hawaiian Goose (=Nēnē)	Threatened	N	NLAA
<i>Corvus hawaiiensis</i>	Hawaiian Crow (=‘Alalā)	Endangered	N	NLAA
<i>Drepanis coccinea</i>	‘I‘iwi	Threatened	Proposed	NLAA
<i>Fulica alai</i>	Hawaiian Coot (=‘Alae kea)	Endangered	N	NLAA
<i>Himantopus mexicanus knudseni</i>	Hawaiian Stilt (=Ae‘o)	Threatened	N	NLAA
<i>Oceanodroma castro</i>	Band-rumped Storm-Petrel (=‘Akē‘akē)	Endangered	N	NLAA
<i>Palmeria dolei</i>	‘Ākohekohe	Endangered	Y	NLAA
<i>Pseudonestor xanthophrys</i>	Maui Parrotbill (=Kiwikiu)	Endangered	Y	NLAA
<i>Pterodroma sandwichensis</i>	Hawaiian Petrel (=‘Ua‘u)	Endangered	N	NLAA
<i>Puffinus newelli</i>	Newell's Shearwater (=‘A‘o)	Threatened	N	NLAA
Reptiles - Scientific Name	Reptiles - Common Name	Reptiles - Status (Federal)	Reptiles - Critical Habitat in the Action Area (Y/N)	Reptiles - Proposed Finding
<i>Caretta caretta</i>	Loggerhead Sea Turtle	Endangered	N	NLAA
<i>Chelonia mydas</i>	Green Sea Turtle (=Honu)	Threatened	N	NLAA
<i>Dermochelys coriacea</i>	Leatherback Sea Turtle	Endangered	N	NLAA
<i>Eretmochelys imbricata</i>	Hawksbill Sea Turtle (=Honu ‘ea)	Endangered	N	NLAA
<i>Lepidochelys olivacea</i>	Olive Ridley Sea Turtle	Threatened	N	NLAA
Mammals - Scientific Name	Mammals - Common Name	Mammals - Status (Federal)	Mammals - Critical Habitat in the Action Area (Y/N)	Mammals - Proposed Finding
<i>Lasiurus semotus</i>	Hawaiian Hoary Bat (=‘Ōpe‘ape‘a)	Endangered	N	NLAA

Insects - Scientific Name	Insects - Common Name	Insects - Status (Federal)	Insects - Critical Habitat in the Action Area (Y/N)	Insects - Proposed Finding
<i>Manduca blackburni</i>	Blackburn's Sphinx Moth	Endangered	Y	No Effect
<i>Megalagrion nesiotes</i>	flying earwig Hawaiian damselfly	Endangered	N	No Effect
<i>Megalagrion pacificum</i>	Pacific Hawaiian damselfly	Endangered	N	No Effect
Flowering Plants - Scientific Name	Flowering Plants - Common Name	Flowering Plants - Status (Federal)	Flowering Plants - Critical Habitat in the Action Area (Y/N)	Flowering Plants - Proposed Finding
<i>Argyroxiphium sandwicense</i> ssp. <i>macrocephalum</i>	ʻĀhinahina	Threatened	Y	No Effect
<i>Bidens campylotheca</i> ssp. <i>pentamera</i>	Koʻokoʻolau	Endangered	Y	No Effect
<i>Bidens campylotheca</i> ssp. <i>waihoiensis</i>	Koʻokoʻolau	Endangered	Y	No Effect
<i>Bidens micrantha</i> ssp. <i>kalealaha</i>	Koʻokoʻolau	Endangered	Y	No Effect
<i>Calamagrostis expansa</i>	Maui Reedgrass	Endangered	N	No Effect
<i>Clermontia samuelii</i> ssp. <i>samuelii</i>	ʻŌhā wai	Endangered	Y	No Effect
<i>Cyanea asplenifolia</i>	Hāhā	Endangered	Y	No Effect
<i>Cyanea copelandii</i> ssp. <i>haleakalaensis</i>	Hāhā	Endangered	Y	No Effect
<i>Cyanea glabra</i>	Hāhā	Endangered	Y	No Effect
<i>Cyanea hamatiflora</i> ssp. <i>hamatiflora</i>	Hāhā	Endangered	Y	No Effect
<i>Cyanea horrida</i>	Hāhā nui	Endangered	Y	No Effect
<i>Cyanea kunthiana</i>	Hāhā	Endangered	Y	No Effect
<i>Cyanea maritae</i>	Hāhā	Endangered	Y	No Effect
<i>Cyrtandra ferripilosa</i>	Haiwale	Endangered	Y	No Effect
<i>Gardenia remyi</i>	Nanu	Endangered	N	No Effect
<i>Geranium arboreum</i>	Nohoanu	Endangered	Y	No Effect
<i>Geranium hanaense</i>	Nohoanu	Endangered	Y	No Effect
<i>Geranium multiflorum</i>	Nohoanu	Endangered	Y	No Effect

<i>Gouania hillebrandii</i>	No Common Name	Endangered	Y	No Effect
<i>Hibiscus brackenridgei</i>	Ma'o hau hele	Endangered	Y	No Effect
<i>Ischaemum byrone</i>	Hilo Ischaemum	Endangered	Y	No Effect
<i>Joinvillea ascendens</i> ssp. <i>ascendens</i>	'Ohe	Endangered	N	No Effect
<i>Melicope ovalis</i>	Alani	Endangered	Y	No Effect
<i>Nothoestrum latifolium</i>	'Aiea	Endangered	N	No Effect
<i>Phyllostegia bracteata</i>	No Common Name	Endangered	Y	No Effect
<i>Phyllostegia brevidens</i>	No Common Name	Endangered	N	No Effect
<i>Phyllostegia haliakalae</i>	No Common Name	Endangered	Y	No Effect
<i>Plantago princeps</i> var. <i>laxiflora</i>	Kuahwi lauahi	Endangered	Y	No Effect
<i>Sanicula sandwicensis</i>	No Common Name	Endangered	N	No Effect
<i>Schiedea diffusa</i> ssp. <i>diffusa</i>	No Common Name	Endangered	N	No Effect
<i>Schiedea haleakalensis</i>	No Common Name	Endangered	Y	No Effect
<i>Wikstroemia villosa</i>	'Ākia	Endangered	Y	No Effect
Ferns and Allies - Scientific Name	Ferns and Allies - Common Name	Ferns and Allies - Status (Federal)	Ferns and Allies - Critical Habitat in the Action Area (Y/N)	Ferns and Allies - Proposed Finding
<i>Asplenium peruvianum</i> var. <i>insulare</i>	No Common Name	Endangered	Y	No Effect
<i>Cyclosorus boydiae</i>	Kupukupu makali'i	Endangered	N	No Effect
<i>Huperzia stemmermanniae</i>	No Common Name	Endangered	N	No Effect
<i>Microlepia strigosa</i> ssp. <i>mauiensis</i>	No Common Name	Endangered	N	No Effect
<i>Phlegmariurus mannii</i>	Wawae'iole	Endangered	Y	No Effect

Other Protected Native Birds

Within the action area, there are three Hawaiian honeycreeper species that are not listed under the ESA, but are protected under the Migratory Bird Treaty Act (MBTA): ‘apapane (*Himatione sanguinea*), Hawai‘i ‘amakihi (*Chlorodrepanis virens wilsoni*), and Maui ‘alauahio (*Paroreomyza montana*). Although ‘apapane and Hawai‘i ‘amakihi are most common in native forests above 3,000 ft. in elevation, they will also venture to lower elevation forests. The Maui ‘alauahio occurs in native forest between 3,900 to 7,500 ft. (Baker and Baker, 2020; Judge et al., 2021). The Maui ‘alauahio is restricted to the Island of Maui. The response of ‘apapane vocalizations has been specifically studied in relation to helicopter noise on the Island of Hawai‘i, which actively changed the amount of time they vocalized in relation to loud and frequent helicopter noise, suggesting the presence of vocal plasticity in this species (Gallardo Cruz et al., 2021).

The Hawaiian Short-eared owl or pueo (*Asio flammeus sandwichensis*) is listed as endangered by the State of Hawai‘i only on the Island of O‘ahu; it is not currently federally listed. The species is protected under the MBTA. Pueo are found on all the main Hawaiian Islands, at elevations ranging from sea level to 8,000 ft. Pueo occupy a variety of habitats, including agricultural lands, grasslands, wetlands, shrublands, and native forests. Ground nests are well concealed and lined with grasses and feather down (Price and Cotín, 2018). Threats to this species include loss and degradation of habitat, predation by invasive mammals, vehicle and wind turbine collisions, and other human interaction (Price and Cotín, 2018). Pueo forage and potentially nest within the action area, but their abundance and distribution has not been well studied on Maui.

Migrant or transiting birds that occur in the action area include the kōlea or Pacific golden-plover (*Pluvialis fulva*), an overwintering migrant shorebird which arrives in August and departs in April; the noio or Hawaiian black noddy (*Anous minutus melanogenys*) which nests on the coasts; ‘iwa or the great frigatebird (*Fregata minor palmerstoni*) which are seen flying over the coastal area of the Park; and koa‘e kea or white-tailed tropicbird (*Phaethon lepturus*), which are known to fly over the Park in the Haleakalā Crater, Kaupō Gap, and along the coast.

Other native birds protected under the MBTA that may occur within the action area are listed in Table 3, and could be affected by air tour noise or direct strikes. The single flight path allowed under the proposed action prevents air tours flying directly over sensitive habitats for the Park’s wildlife which reduces the likelihood of impacts to those species including noise that could alter wildlife behavior. The authorized altitudes under the proposed action (minimum 2,000 ft. AGL over land and 3,000 ft. AGL over the ocean) also limit the potential for direct strikes to wildlife within the action area.

Table 3. Other Protected Species Potentially Occurring in the Action Area

Scientific Name	Common Name
<i>Alauda arvensis</i>	Eurasian Skylark
<i>Anas acuta</i>	Northern Pintail
<i>Anas crecca</i>	Green-winged Teal
<i>Anas platyrhynchos</i>	Mallard
<i>Anas wyvilliana</i>	Hawaiian Duck, Koloa
<i>Anous minutus melanogenys</i>	Black Noddy, Noio

Scientific Name	Common Name
<i>Arenaria interpres</i>	Ruddy Turnstone, 'Akekeke
<i>Asio flammeus sandwichensis</i>	Hawaiian Short-eared Owl, Pueo
<i>Branta canadensis</i>	Canada Goose
<i>Bubulcus ibis</i>	Cattle Egret
<i>Cardinalis cardinalis</i>	Northern Cardinal
<i>Chlorodrepanis virens wilsoni</i>	Hawaii 'Amakihi
<i>Fregata minor palmerstoni</i>	Great Frigatebird, 'Iwa
<i>Haemorhous mexicanus</i>	House Finch
<i>Hemignathus affinis</i>	Maui Nukupu'u
<i>Himatione sanguinea</i>	'Apapane
<i>Loxops ochraceus</i>	Maui 'Ākepa
<i>Mareca americana</i>	American Wigeon
<i>Mareca penelope</i>	Eurasian Wigeon
<i>Melamprosops phaeosoma</i>	Po'ouli
<i>Mimus polyglottos</i>	Northern Mockingbird
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron, 'Auku'u
<i>Paroreomyza montana</i>	Maui 'Alauahio
<i>Phaethon lepturus</i>	White-tailed Tropicbird, Koa'e kea
<i>Plegadis chihi</i>	White-faced Ibis
<i>Pluvialis fulva</i>	Pacific Golden-Plover, Kōlea
<i>Spatula discors</i>	Blue-winged Teal
<i>Spatula clypeata</i>	Northern Shoveler
<i>Tringa incana</i>	Wandering Tattler, 'Ūlili
<i>Tyto alba</i>	Barn Owl

Environmental Baseline

The environmental baseline for this consultation includes the three year average of the air tours currently flown under existing law including applicable regulations that govern aviation safety (14 CFR Part 136, Appendix A, Special Operating Rules for Air Tour Operators in the State of Hawai'i (formerly Special Federal Aviation Regulation 71)) and any FAA exceptions issued to individual operators as outlined by the HI Common Procedures Manual.

The NPS and partner organizations conduct aviation over the Park for administrative and research purposes. The NPS and its partners' aircraft activity has been evaluated and impacts addressed through the Park's Biological Opinion and Section 7 consultations on Park operations and programs such as monitoring activities, the Park's fire management plan, as well as research permits issued to individual researchers.

Potential Stressors Associated with the Proposed Action

The agencies evaluated the proposed action to identify potential stressors that may affect listed species or critical habitat, if exposed. The proposed action does not include ground-based activities. Therefore, potential stressors would be limited to noise and direct strikes. Potential effects of low-level flights including commercial air tours on biological resources is largely inferential, as literature specific to these types of effects on individual species is generally unavailable. Discussion of potential effects is based on related species and similar actions.

Overview of Noise Associated with the Proposed Action

The draft ATMP includes several provisions to minimize potential noise impacts, as outlined above in the *Description of Proposed Action* section. As a result, the intensity of potential noise exposures would be limited under the proposed action. The draft ATMP would ensure that noise would not be constant and that there would be substantial time intervals between noise events from air tours by limiting the number of flights each day. The draft ATMP also ensures that large segments of the Park would not be exposed to air tour noise by establishing a designated air tour route.

The agencies conducted noise modeling to estimate noise produced by commercial air tours under the proposed action (Attachment 2, *Noise Technical Analysis*). In summary, the noise modeling predicts that the maximum sound pressure level (L_{max}) generated by commercial air tours in the Park would be 65 dBA, and would occur at the 'Ohe'o Coastal site. The L_{max} noise metric is event based and does not provide any context of frequency, duration, or timing of exposure. The time above (TA) noise metric specifies the amount of time (in minutes) aircraft sound levels would be above a given noise level during a 24-hour period. TA_{35dBA} and TA_{52dBA} were modeled for the proposed action. Based on the modeling, aircraft noise levels above 35 dBA (TA_{35dBA}) are predicted to occur for 30 to 45 minutes a day in 3% of the action area, and 58% of the action area would experience noise above 35 dBA for at least 0.1 minutes a day. Aircraft noise levels above 52 dBA (TA_{52dBA}) are predicted to occur for 9.3 minutes across all points modeled, while 73% of points modeled would experience TA_{52dBA} for less than 1 minute.

The FAA has established a significance threshold for noise that uses the day-night average sound level (DNL) metric (see FAA Order 1050.1F, Exhibit 4-1). The resultant DNL due to the ATMP is well below the FAA's threshold within the action area. As described in the *Noise Technical Analysis* (Attachment 2), contours for equivalent continuous sound level (L_{Aeq}) show that the maximum value was less than 45 dBA, and affected portions of the action area would generally be 35 to <40 dBA, representing 6% of the total area. DNL will be arithmetically three dB lower than the 12-hour equivalent sound level, and therefore less than 45 dB, as there are no nighttime events at the Park. Figure 2 compares common outdoor and indoor sound levels for context.



Figure 2. Comparative Noise Levels (Source: FAA 2020)

Listed Species Evaluated for Effects

The effects of the action include the direct and indirect effects of the air tours that will now occur under NPATMA authorization, including the conservation measures identified. All other aspects of the environmental baseline are expected to continue at approximately the same levels.

Table 2 includes the Section 7 determination for each listed species and associated critical habitat. The proposed action does not involve ground-disturbing activities or other activities with the potential to modify aquatic or terrestrial habitat. In addition, while the proposed action overlaps critical habitat for plant and insect species listed in Table 2, no impacts to the physical or biological features that are essential to the conservation of these species would occur. Therefore, the agencies determined the proposed action will have no effect on insects, plants, and ferns and allies and critical habitats.

Hawaiian Hoary Bat or 'Ōpe'ape'a

The Hawaiian hoary bat (*Lasiurus semotus*), or 'Ōpe'ape'a, is the only fully terrestrial native mammal in the Hawaiian Islands and is federally listed as endangered. 'Ōpe'ape'a are found from sea level to 11,800 ft. (Bonaccorso et al., 2015), with the highest activity on Maui generally occurring in gulch, low density development, and grassland habitats (H.T. Harvey and Associates, 2020). Data indicate that 'Ōpe'ape'a commonly traverse and forage in large parts of the action area and are likely to be roosting within this area. Detections were reported from within the Park up to the summit or the vicinity of the action area (Fraser et al., 2007; Krushelnicky et al., 2019; H.T. Harvey and Associates, 2020). Females typically give birth to twin pups from June to August which then leave the maternal roost by November.

'Ōpe'ape'a are known to roost solitarily in tree foliage in a variety of tree species and in an assortment of habitats and elevations (native and non-native habitats). Roost trees are usually larger than randomly selected trees (Montoya-Aiona, 2020). 'Ōpe'ape'a is vulnerable to roost disturbance during pupping and pup care (June through November). Noise exposure to bat species during daytime roosting and while rearing young can lead to abandonment of their roosts and young (California Department of Transportation, 2016). Noise from a variety of sources occurs within the Park, including from commercial air tours, over 'Ōpe'ape'a habitat during these sensitive months.

'Ōpe'ape'a is an insectivore, and prey items include a variety of night-flying insects, primarily moths and beetles (Whitaker and Tomich, 1983; Pinzari et al., 2019; H. T. Harvey & Associates, 2020). Acoustic detection studies show seasonal patterns of habitat occupancy with increased activity in the higher elevations (higher than 3,300 ft.) during the non-breeding season (November to April), and increased activity in the low elevations during the breeding season (Bonaccorso et al., 2015).

Due to its solitary and cryptic roosting behavior (Bonaccorso et al., 2015), robust estimates of the population size and trends of the 'Ōpe'ape'a are currently unavailable. 'Ōpe'ape'a can be injured and killed from collisions with man-made structures including barbed wire fences, wind turbines, and communication towers; however, limiting factors are poorly understood. Threats to this species include the elimination of roosting sites, habitat destruction, pesticides, and introduced species such as nonnative insects or disease.

Effect Determination

Direct strikes and noise impacts are potential impacts to the 'Ōpe'ape'a. The possibility of direct strikes is considered discountable because 'Ōpe'ape'a are nocturnal and commercial air tours will occur during daylight hours only (between 11:00 AM to 2:00 PM or from 11:00 AM to 4:00 PM if using quiet technology aircraft), so 'Ōpe'ape'a would be roosting in trees during the time of day at which air tours occur, and therefore the risk of an aircraft striking a bat would be unlikely to occur. The risk of direct strikes around dusk when this species forages could increase for operators that use quiet technology aircrafts, as flights can be conducted later in the day. However, the risk of a helicopter strike would remain extremely low if operators convert to quiet technology aircraft because the minimum flight altitude would be 2,000 ft. AGL over land and most bat flights would occur near or below the tree canopy height. Additionally, there are no references of 'Ōpe'ape'a strikes on the Island of Maui in the FAA Wildlife Strike Database (FAA, 2022). Therefore, the likelihood of an aircraft striking a bat is extremely low and the effects are considered discountable.

Bats could be intermittently exposed to commercial air tour noise while roosting in trees during the daytime and during the pupping season. Air tours would be limited during the hours of 11:00 AM to

2:00 PM unless the operators have converted to a quiet technology aircraft, which would allow for air tours to occur from 11:00 AM to 4:00 PM.

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). Based on noise modeling, the value for L_{max} generated by commercial air tours in the Park would be 65 dBA and would occur at the 'Ohe'o Coastal site, while a majority of the Park would experience noise above 52 dBA for less than one minute a day (see Attachment 2, *Noise Technical Analysis*, for additional information). Based on the values for noise used in Bunkley and Barber (2015) and Schaub et al. (2008), conditions for commercial air tours under the proposed action are unlikely to inhibit foraging success in bats. Additionally, restrictions on flight altitudes would prevent flights from occurring below 2,000 ft. AGL within the action area, which is greater than the 10 – 15 meters (33 – 49 ft.) that elicited a negative foraging response in bats as described in Bunkley and Barber (2015). Noise associated with commercial air tours would be short in duration and could cause bats within the action area to shift their foraging areas to less noisy areas.

The minimum flight altitude would be 2,000 ft. AGL over land under the proposed action, which would limit the intensity of noise exposure. Given the relatively low magnitude and slow onset rate of the air tour helicopter noise, it appears unlikely that 'ōpe'ape'a would abandon a roost site unless the noise were accompanied by visual or tactical cues that may cause a bat to perceive the noise as a threat. Based on the minimum flight altitude of 2,000 ft. AGL over land and the prohibition of hovering and circling, helicopter downwash, air deflected downwards by an aircraft rotor blade in motion, is not expected to be an issue.

Based on implementation of the measures described above, any potential impact resulting from direct strikes would be discountable⁴ and impacts from noise would be insignificant.⁵ Therefore, the agencies have determined the proposed action **may affect, not likely to adversely affect** 'ōpe'ape'a. There is no critical habitat designated for this species.

Forest Birds

The federally endangered kiwikiu, or Maui Parrotbill (*Pseudonestor xanthophrys*), is a stout yellow and olive-green honeycreeper with a large, hooked bill. Endemic to the Islands of Maui and Moloka'i, this species is currently only found on East Maui and is ranked as one of the most imperiled Hawaiian birds (Mounce et al. 2018; Warren et al., 2020; USFWS, 2019; Paxton et al. 2022). Kiwikiu typically breed between January and June and are primarily insectivorous, using their disproportionately large bill to probe and excavate woody plant material (and, to a lesser extent, fruits) to eat the larvae primarily of beetles (Coleoptera) and caterpillars (Lepidoptera) found on or within native plants and lichens (Mountainspring, 1987; Simons et al., 2020). Their habitat is characterized by wet-mesic and 'ōhi'a-

⁴ Discountable effects are those extremely unlikely to occur.

⁵ Insignificant effects relate to the size of the impact and include those effects that are undetectable, not measurable, or cannot be evaluated.

dominated rainforest above 5,280 ft. (Judge et al., 2021). Critical habitat (as shown in Figure 1) has been designated for kiwikiu (USFWS, 2016a), which lay partially within the action area.

The federally endangered Maui-endemic ‘ākohekohe (*Palmeria dolei*) is a striking forest pollinator with a distinctive crest on the head. Critical habitat has been designated for ‘ākohekohe (USFWS, 2016b), and overlaps entirely with critical habitat of the kiwikiu. This Hawaiian honeycreeper persists on less than approximately 7,400 acres of native rainforest above 5,280 ft. (Judge et al., 2021), with breeding typically occurring between November and June in habitat above 5,620 ft. (Berlin and Vangelder, 2020; Wang et. al., 2020).

The ‘i‘iwi (*Drepanis coccinea*), federally listed as threatened, is a honeycreeper historically widespread and occurring at all elevations, but now persists only in the high-elevation forests primarily on the Islands of Hawai‘i, Maui, and Kaua‘i (Scott et al., 1986; Fancy and Ralph, 2020; USFWS, 2016c). Breeding may occur all year, but the peak of breeding occurs from February through June (Fancy and Ralph, 2020). The ‘i‘iwi is a strong flier capable of high, long flights to locate nectar sources (Guillaumet et al., 2017; Fancy and Ralph, 2020). USFWS has proposed critical habitat for the species (USFWS, 2022), which includes portions of the action area.

Another endangered forest bird species, ‘alalā or Hawaiian crow (*Corvus hawaiiensis*), was once common throughout their range on the Island of Hawai‘i but were not known to occur on the Island of Maui. However, subfossil remains found on Maui indicated existence of either a subspecies of ‘alalā or related corvid (USFWS, 2009). The last ‘alalā in its native habitat was thought to have been confined to higher elevations in South Kona. The last observation of ‘alalā in the wild was in 2002 (USFWS, 2009). There remains a captive breeding population at Keauhou Bird Conservation Center where propagation efforts have been successful. Release of ‘alalā is being considered for several areas across the State of Hawai‘i and may include areas within the action area.

Today, most Hawaiian forest birds persist only in high-elevation forests where the risk of malaria transmission is lower due in part to cooler temperatures (van Riper et al., 1986; Scott et al., 1986; Atkinson and LaPointe, 2009; Atkinson et al., 2014). Even though much of the high elevation threatened and endangered bird habitat in the action area is largely protected from feral ungulates and direct human-caused habitat loss, there is evidence of continuing range contraction and population declines among forest birds, especially from the lower-elevation portions of their ranges since 1980 (Baker and Baker, 2000; Camp et al., 2009; Vetter et al., 2012; Judge et al., 2021).

Precipitous negative population trends have been observed for kiwikiu and ‘ākohekohe across their small ranges (Judge et al., 2013; Judge et al., 2021). Kiwikiu and ‘ākohekohe population estimates from surveys in 2017 are 157 individuals (44 – 312 individuals [95 percent confidence interval]) and 1,768 individuals (1193 – 2411), respectively (Judge et al., 2021). Kiwikiu and ‘ākohekohe abundance has declined by more than 70% since 2001 (Judge et al., 2021), and a predicted range loss of more than 90% may occur by the end of this century under moderate climate change scenarios (Fortini et al., 2015). ‘i‘iwi have disappeared from most of its historic range (USFWS, 2016c). While most common above 5,000 ft., ‘i‘iwi is regularly detected down to 2,700 ft. in the action area (Judge et al., 2019). Recent surveys in 2017 resulted in a population estimate of 50,252 (43,908 – 57,146 individuals [95 percent confidence interval]) birds on East Maui (Judge et al., 2019), and a long-term trend analysis of the Park population shows population stability in portions of the Park but declines in other areas of the Park (Paxton, 2020). Surveys revealed an increasing trend of ‘i‘iwi between 2011 and 2017 outside the Park (Judge et al., 2019).

Effect Determination

Forest birds could be impacted by direct strikes and noise from air tours. Habitat generally occurs at high elevations. For the federally endangered kiwīkiu and ‘ākohekohe, habitat is generally found above 5,620 ft. elevation. Although forest birds fly at altitudes high enough where they could interact with aircraft, this event is unlikely, as forest birds are relatively small (ranging from 4 - 8 inches in size). Kiwīkiu, ‘ākohekohe, and ‘i‘iwi are not listed in the FAA Wildlife Strike Database, so it can be inferred that there are no reported strikes of these species on the Island of Maui.

Anthropogenic noise has the potential to affect woodland structure through seed removal, seed predation, and seedling recruitment (Francis et al., 2012), and areas closer to anthropogenic noise have lower bird species richness than areas further away from noise, but nesting success has the potential to be higher in noisier areas due to noise intolerance of predatory birds (Francis et al., 2009). The costs of chronic noise exposure include impacts to reproduction and habitat selection. Communication networks allow birds to simultaneously assess potential mates and rivals. Acoustic masking, the process by which the threshold of detection for a sound is increased by other sounds, reduces the number of individuals that participate in these communication networks and can impact reproductive processes (Barber et al., 2010). Moreover, nocturnally migrating songbirds have been observed to listen across species’ boundaries for other vocalizations to assess habitat, and reduced listening area hindered by anthropogenic sound can affect this acoustical eavesdropping (Barber et al., 2010). Noise from commercial air tours would not be chronic due to restrictions on the number of flights per day and the requirement of a designated route.

Gallardo Cruz et al. (2021) assessed the impacts of helicopter noise from air tours on forest bird species in Hawai‘i Volcanoes National Park. They found that helicopter noise affects the vocalizing behavior of birds but does not always significantly impact the total vocalization time before, during, or after helicopter noise, and that exposure to high amplitude helicopter noise was not severe enough to mask bird song in some locations (Gallardo Cruz et al., 2021). Bird response to helicopter noise was the strongest in areas with very loud and frequent helicopter traffic, which would be mitigated under the proposed action by daily caps on the number of flights and the designated flight route that requires operators to fly in specific locations within the action area. The effect of helicopter noise on the vocalizing behavior of birds decreases when helicopters fly at high altitudes with low frequency (Gallardo Cruz et al., 2021). While altering vocalizations may not result in death of impacted birds, this change in behavior is likely to be indicative of other effects (e.g., stress response) seen in numerous bird species in response to noise disturbance (Francis et al., 2009; Barber et al., 2010; Shannon et al., 2016). Stress is well known to reduce survival and reproductive success in birds (Delaney et al., 1999; Kleist et al., 2018).

In order to reduce impacts to these species the agencies selected a flight path that largely avoids many habitat areas staying below the 3,000 ft. elevational contour line as it crosses Nu‘u; below the 2,000 ft. elevational contour line at the Denman Parcel and through the Ka‘apahu region; and as the route crosses the Kīpahulu District, the flight path is directed offshore to avoid flying directly over the Kīpahulu Biological Reserve, which limits the intensity and duration of noise that could affect wildlife in this area. This route would result in 3% of the action area experiencing noise above 35 dBA for up to 45 minutes a day, with most areas of the action area at less than 15 minutes a day and many areas, including the Haleakalā Crater, not experiencing noise above 35 dBA. It should be noted that when the altitude of an aircraft is increased, the total area exposed to the noise from that aircraft may also increase depending on the surrounding terrain. Although the area exposed to noise might increase, this would not

meaningfully affect wildlife because of the attenuation of the noise from higher altitude and transient nature of the impacts.

Critical habitat for kiwīkiu and ‘ākohekohe is located on the east and west regions of the Island of Maui. Primary constituent elements of critical habitat cover a range of elevations and physical habitat conditions such as annual rainfall and substrate type. While the proposed route partially crosses over critical habitat for the ‘ākohekohe and kiwīkiu in the southern region of the action area, it is unlikely that the proposed action will adversely impact critical habitat and its primary constituent elements because these elements cover a wide range of habitats and ecosystems. Proposed critical habitat for ‘i‘iwi is located within the action area but would not be impacted and is outside of the proposed route.

The proposed release site for ‘alalā is the State’s Kīpahulu Forest Reserve, which is adjacent to the Park boundary and next to the Park’s Manawainui rainforest. Higher altitudes prescribed in the proposed action, in addition to the proposed flight path that avoids forested areas, would limit the potential for noise impacts if ‘alalā were to be reintroduced or recolonize after reintroduction elsewhere.

The designated air tour route, caps on the number of daily flights, and time of day restrictions would limit the amount of habitat that is flown over and minimize noise impacts to these species. Based on implementation of these measures, any potential impact resulting from direct strikes would be discountable and impacts from noise would be insignificant. Therefore, the agencies have determined the proposed action **may affect, not likely to adversely affect** forest birds including the kiwīkiu, ‘ākohekohe, ‘i‘iwi, or ‘alalā; kiwīkiu and ‘ākohekohe critical habitat; and proposed critical habitat for ‘i‘iwi.

Seabirds

There are three listed seabirds confirmed or potentially breeding in the action area. ‘Akē‘akē, or Band-rumped Storm-Petrel (*Oceanodroma castro*), is a small black pelagic seabird that breeds on steep, remote cliffs and high-elevation volcanic terrain above 6,900 ft. (Slotter-back, 2002; Antaky et al., 2019). This species was listed as endangered in 2016 after the first active nests were discovered in the Hawaiian Islands (USFWS, 2016d). ‘Akē‘akē have been detected at multiple locations within the Park, including the Haleakalā Crater, Kīpahulu Valley, and on song meters in Nu‘u (Natividad Bailey, 2009; Haleakalā National Park, 2016; Krushelnycky et al., 2019). However, nest sites within the Park are currently unknown.

Once widespread in the main Hawaiian Islands, the ‘a‘o, or Newell’s Shearwater (*Puffinus newelli*), is federally listed as threatened. ‘A‘o breed on the ground in excavated burrows often surrounded with dense vegetation, including native ‘ōhi‘a (*Metrosideros polymorpha*) and uluhe ferns (*Dicranopteris linearis*), at elevations ranging from 500 to 4,000 ft. on steep slopes and near-vertical volcanic crater walls (Ainley et al., 2019). Evidence of breeding and transiting to nests in the action area include radar studies; however, nest locations are not currently known (Krushelnycky et al., 2019). ‘A‘o audio detections are regularly reported by NPS and state field teams from various locations within Kīpahulu Valley and along the northern slope of Haleakalā near Ko‘olau Gap, and Hanawī.

Haleakalā Crater currently supports the largest known breeding colony of ‘ua‘u, or Hawaiian Petrel (*Pterodroma sandwichensis*); the population has been monitored since the 1960s and mammalian predator populations have been managed since 1982 (Krushelnycky et al., 2019). The ‘ua‘u is federally listed as endangered. Nests are found throughout the Park with the highest concentration of known nest sites near the Haleakalā Summit and along the west and south rims of the Haleakalā Crater. Nests

have also been located on state land adjacent to the Park. The ‘ua‘u population in the Park is estimated to consist of 3,000 – 4,000 breeding pairs and a total of 8,000 – 9,000 individual birds. NPS biologists indicate that the most recent count of known burrows within the Park is 2,784. The ‘ua‘u population has grown since the 1980s with feral ungulate exclusion and invasive predator control in the Summit District. Current threats to seabirds include habitat loss, trampling of nests by feral ungulates, predation, groundings, and collision with vehicles and man-made objects/structures including potential aircraft strikes.

Climate change affects seabirds’ breeding success with increasing variability in the distribution and availability of at-sea prey, which is being affected by rising ocean temperatures; however, little is known about the potential effects of climate driven changes in the prey available for ‘akē‘akē, ‘a‘o, and ‘ua‘u. Expanding invasive species are also associated with climate change scenarios, which could potentially degrade the breeding habitat of the ‘akē‘akē, ‘a‘o, and ‘ua‘u. (Ainley et al., 2019). Invasive Hymenoptera have caused seabird nest failures and burrow abandonment (Plentovich et al., 2008).

Effect Determination

Direct strikes and noise are potential impacts to seabirds. There are no recorded strikes of the ‘akē‘akē, ‘a‘o, or ‘ua‘u on the Island of Maui per the FAA Wildlife Strike Database (FAA, 2022). Many seabirds are nocturnal, underground burrow nesters that travel to and from nest sites during the night. Direct strikes could occur if flights are conducted near dusk or dawn. However, under the proposed action, flights are restricted to only occur from 11:00 AM – 2:00 PM, or 11:00 AM – 4:00 PM if using quiet technology aircraft, so the likelihood of an aircraft striking a seabird is extremely low and the effects are considered discountable. Noise from air tours could impact seabirds during their nesting season. However, designated air tour routes, caps on the number of daily flights, and time of day restrictions would limit the amount of nesting habitat that is flown over and minimize impacts to seabirds during the nesting season. The flight path also allows lower altitude flight through a specific location over the Park away from cliff-nesting seabirds of the Manawainui plateau, therefore the agencies determined noise impacts would be insignificant.

Based on implementation of these measures, any potential impact resulting from direct strikes would be discountable and impacts from noise would be insignificant. Therefore, the agencies have determined the proposed action **may affect, not likely to adversely affect** seabirds including ‘akē‘akē, ‘a‘o, and ‘ua‘u.

Nēnē or Hawaiian Goose

The threatened nēnē, or Hawaiian goose (*Branta sandvicensis*), was extirpated from all islands except the Island of Hawai‘i by the early 1900s. Initial statewide recovery efforts focused on captive-breeding and release programs. In the early 1960s, the NPS, in coordination with the State Division of Forestry and Wildlife, reestablished a population of nēnē on the Island of Maui. The subsequent Park population allowed nēnē to establish or augment additional release sites on Kaua‘i, Moloka‘i, Hawai‘i Island, as well as Maui until the captive breeding program ended in 2011 (Banko et al., 2020). At the Park, nēnē typically nest between October and April. Nēnē use diverse habitats including sub-alpine grasslands, open native shrubland, and grasslands as well as mid- and low-elevation pasture and managed grasslands, to forage on leaves of grass, berries, seeds, and flowers; some make elevational movements for breeding, foraging, and molting (USFWS, 2019; Banko et al., 2020; Leopold and Hess, 2014). On Maui, nēnē require intensive management to protect breeding (ground-nesting) birds from introduced

predators, especially the mongoose (*Herpestes javanicus*) and are also susceptible to vehicle collisions, wind farm turbine collisions and human or vehicle-related injuries and trauma, toxoplasmosis (a pathogen carried by feral cats) and mosquito-borne avian pox virus (Work et al., 2015).

The Maui nēnē population is relatively small, fluctuating around approximately 250 breeding pairs (USFWS, 2019). Nēnē have benefitted from landscape level habitat management (ungulate fences/control and invasive plant control,) within the Park. In 2020 and 2021, respectively, there were 223 and 164 nēnē outside the Park, and 254 and 190 individuals within the Park. Breeding failures have been attributed to predators and suboptimal weather conditions during the nesting season (Black et al., 1997). Increasing drought or other extremes in climate variability, expanding invasives species, and associated climate change scenarios are likely to negatively affect nēnē. Climate change may disrupt seasonal movements and some habitats used by nēnē for molting, breeding, and foraging.

NPS staff have observed air tours at existing altitudes cause nēnē to flush from nests. As nēnē habitat exists across the entire action area, those effects may be widespread and would generally correspond with the areas experiencing the highest density of commercial air tours (Kīpahulu District and Nu‘u Area near the Haleakalā Summit).

Effect Determination

Direct strikes and noise impacts are potential stressors to nēnē, as this species may occur throughout the Park. According to observations from Park and maintenance staff, low level flight impacts from administrative flights included birds flushing and agitation of birds at nests. Although direct collisions with aircrafts are possible, the probability is low based on the minimum altitudes in the proposed action. In addition, bird strikes most often occur during the approach and landing of airplanes (International Civil Aviation Organization, 2020). No take off or landings will occur within the action area. According to the FAA Wildlife Strike Database, there have been six reported nēnē strikes at airports across the Hawaiian Islands since 2014, two of which occurred on the Island of Maui (FAA, 2022). However, there are no documented direct strikes of nēnē within the Park. Temporary disturbance has been observed by Park staff when air tours at current altitudes approach or fly low near areas where nēnē occur, causing nēnē to fly away. Noise can also impact nēnē during molting, flocking periods, and during their nesting season from October to April.

Several studies have documented that noise from helicopters and fixed-wing aircraft can elicit behavioral responses including flushing and reduced foraging to various waterbird species at close elevations (Ward et al., 1999; Komenda-Zehnder et al., 2003; Williams, 2007). Results of an experimental procedure for one species, the crested tern (*Sterna bergii*), indicate that the maximum responses observed, preparing to fly or flying off, were restricted to exposures at sound levels greater than 85 dBA (Brown, 1990). This study also showed scanning behavior involving head-turning was the minimum response at lower noise levels, and this, or a more intense response, was observed in nearly all birds at all levels of exposure (Brown, 1990).

Under the proposed action, nēnē would be exposed intermittently to audible air tour noise. As discussed above, the minimum flight altitude of 2,000 ft. AGL and other provisions of the draft ATMP would limit exposure to air tour noise. Based on the relatively low magnitude and frequency of exposure, noise is not expected to affect the fitness of individual birds and any effects would be limited. The amount of habitat that is flown over by commercial air tours is limited by the designated route, and the minimum altitudes and daily caps on the number of air tours would limit noise impacts. Therefore, any potential impact resulting from direct strikes would be discountable and impacts from noise would be insignificant. Therefore, the agencies have determined the proposed action **may affect, not likely to adversely affect** nēnē.

Waterbirds

Two endangered waterbirds, ae'o, or Hawaiian stilt (*Himantopus mexicanus knudseni*) and the 'ālae kea, or Hawaiian coot (*Fulica alai*) occur in the Nu'u Refuge, a nearshore wetland within the ½ mile boundary outside of the Park in Nu'u. This species was first listed as endangered under the ESA in 1970 but were downlisted to threatened in 2021 as their populations recovered due to wetland habitat restoration and predator control actions. The Hawaiian stilt is a wading bird with distinctive pink legs. This species is currently found on all of the major Hawaiian Islands except the Island of Kaho'olawe, and two of Maui's coastal wetlands support the largest populations of Hawaiian stilts and their nesting habitat (USFWS, 2011). Hawaiian stilts nest on freshly exposed mudflats with interspersed vegetation, and their breeding season occurs mid-February through August.

The Hawaiian coot is a duck-like bird that was historically considered a subspecies of the American coot (*Fulica americana*) and was originally listed under the ESA as such but is now regarded as a distinct species and is listed as endangered (American Ornithologists' Union, 1993). Hawaiian coots currently inhabit all of the main Hawaiian Islands except Kaho'olawe, with the largest populations of Hawaiian coots occurring on the Island of Maui. This species nests on open bodies of water like brackish ponds, shallow reserves, and irrigation ditches, and use utilize a wide variety of vegetation to construct their floating nests (Udvardy, 1960; Shallenberger, 1977). Their preferred habitat is lowland wetlands and coastal plains with emergent plant growth (Brisbin et al., 2002).

Effect Determination

There are no recorded strikes of Hawaiian stilts or Hawaiian coots on the Island of Maui per the FAA Wildlife Strike Database (FAA, 2022). These species do not fly at altitudes high enough that they would be exposed to a risk of coming into contact with an aircraft used for commercial air tours, which must fly at a minimum of 2,000 ft. AGL over land under the proposed action. Therefore, the probability of direct strikes with aircrafts are low.

Several studies have documented that noise from helicopters and fixed-wing aircraft can elicit behavioral responses including flushing and reduced foraging to various waterbird species at close elevations (Ward et al., 1999; Komenda-Zehnder et al., 2003; Williams, 2007). Results of an experimental procedure for one species, the crested tern (*Sterna bergii*), indicate that the maximum responses observed, preparing to fly or flying off, were restricted to exposures at sound levels greater than 85 dBA (Brown, 1990). This study also showed scanning behavior involving head-turning was the minimum response at lower noise levels, and this, or a more intense response, was observed in nearly all birds at all levels of exposure (Brown, 1990).

As discussed above, the minimum flight altitude of 2,000 ft. AGL over land and other provisions of the draft ATMP would limit exposure to air tour noise. Based on the relatively low magnitude and frequency of exposure, individual birds exposed to air tour noise would be expected to return to homeostasis and normal behavior shortly after exposure. Noise from commercial air tours is not expected to affect the fitness of individual birds of conservation concern and any effects would be insignificant. The amount of habitat that is flown over by commercial air tours is limited by the designated route, minimum altitudes, and daily caps on the number of air tours. Any potential impact resulting from direct strikes would be discountable and impacts from noise would be insignificant. Therefore, the agencies have determined the proposed action **may affect, not likely to adversely affect** waterbirds including the Hawaiian stilt and the Hawaiian coot.

Reptiles

Several species of listed sea turtles occur within the action area including green sea turtle (*Chelonia mydas*) or honu, hawksbill sea turtle (*Eretmochelys imbricata*) or honu 'ea, leatherback sea turtle (*Dermochelys coriacea*), loggerhead sea turtle (*Caretta caretta*), and olive ridley sea turtle (*Lepidochelys olivacea*). Threats to sea turtles include interactions with fisheries, poaching, and nesting habitat degradation due to coastal development.

Honu forage nearshore in the Kīpahulu District and are listed as threatened under the ESA. The Central North Pacific population, which includes the State of Hawai'i, has approximately 3,710 breeding females (Seminhoff et al., 2015). More than 96% of nesting occurs at one site in the Northwestern Hawaiian Islands; the highly concentrated nesting population makes honu vulnerable to stochastic events and threats from climate change that impact their low-level nesting habitat (Seminhoff et al., 2015). However, monitoring over the past 40 years has indicated that overall nesting is increasing in the State of Hawai'i. Critical habitat for this species is designated outside of the action area.

In addition to honu, the endangered honu 'ea regularly nests in the Hawaiian Islands, including on the Island of Maui, although there are no known nest sites in the action area. Although a large proportion of the known nesting sites in the Pacific are found across the State of Hawai'i, abundance for the species is quite low (NOAA, 2013). These turtles feed in similar habitat to that of the more abundant honu. Honu 'ea forage nearshore in the Kīpahulu District. Honu 'ea have critical habitat that is designated outside of the action area.

Leatherback sea turtles are the largest turtle in the world and are highly migratory. They are listed as endangered under the ESA. In the Pacific Ocean, nesting is common in Mexico, Nicaragua, and Indonesia, but rare across the State of Hawai'i. Abundance estimates for leatherback sea turtles are less than 1,000 nesting females for the East Pacific population, and have been declining (NMFS and USFWS, 2020). Critical habitat for leatherback sea turtles is designated outside of the action area.

The loggerhead sea turtle is the most abundant sea turtle that nests in the United States and has nine distinct populations. The action area is included under the North Pacific population; turtles mate on the coasts of Japan and forage in the western Pacific. The number of nesting females was estimated to be 8,733 individuals and are overall increasing, but population trends are an estimate and can vary by location (NMFS and USFWS, 2020a). Critical habitat for this species is designated outside of the action area.

Olive ridley sea turtles are one of the world's smallest sea turtles and are listed as threatened under the ESA. They are found worldwide, notably in Pacific subtropical waters from California to Peru, but do not

nest in the United States. Population estimates of this species vary by nesting location but are believed to be declining overall (NMFS and USFWS, 2014). In the Pacific, large nesting populations are present in Mexico and Costa Rica.

Effect Determination

Underwater noise thresholds in the loggerhead sea turtle were measured by Martin et al. (2012) that indicated potential behavioral thresholds observed at about 100 dB at 100 hertz, much higher than the maximum sound levels of 65 dB associated with the proposed action. Sea turtle ears are adapted to hearing underwater, and they are more sensitive to underwater sounds than sounds above water.⁶ Therefore, while sea turtles hauled out on shore could be exposed to noise, it is unlikely this would elicit a response for individual turtles.

Adverse effects have been noted as occurring to sea turtles when flight altitudes are 600 ft. or lower, and flight altitudes up to 2,000 ft. AGL have been determined to not likely to adversely affect sea turtle species (NMFS, 2022). Due to the poor sound transference from air to water, noise would be unlikely to elicit a response for individual sea turtles underwater.

The minimum altitude of 2,000 ft. AGL over land and 3,000 ft. AGL over the ocean under the proposed action is above the threshold of adverse effects found in prior Section 7 consultations. In addition, the noise levels of the proposed action are well below those found to show a behavioral response. Therefore, the agencies determined any noise impacts would be discountable resulting in ***may affect, not likely to adversely affect*** reptiles including green sea turtle, hawksbill sea turtle, leatherback sea turtle, loggerhead sea turtle, and olive ridley sea turtle.

Cumulative Effects of the Action

Cumulative effects of the action include the effects of future State, local, or private actions that are reasonably certain to occur in the action area. Currently there are no known planned Federal actions that would affect the species described above. Similarly, the agencies are not aware of any proposed non-Federal action that may affect species or critical habitats considered in this consultation. The impacts of ongoing Federal actions unrelated to the proposed action are considered part of the baseline condition since they are covered under separate consultation pursuant to Section 7 of the ESA. Therefore, there are no cumulative effects associated with the proposed action.

Conclusion

As indicated above, the proposed action implements a designated route, required minimum altitudes, establishes time of day restrictions, and limit the number of air tours that may be conducted daily and annually. The measures incorporated into the draft ATMP will serve to avoid and minimize possible effects to listed species and their critical habitat.

Therefore, based on the analysis that all effects of the proposed action will be insignificant or discountable, the agencies have determined that the proposed project ***may affect, not likely to adversely affect*** 'ōpe'ape'a; forest birds including 'ākohekohe, kiwikiu, 'i'iwi, 'ālalā; critical habitat of 'ākohekohe and kiwikiu, and proposed critical habitat for 'i'iwi; seabirds including 'akē'akē, 'a'o, and

⁶ <https://www.fisheries.noaa.gov/feature-story/sea-turtles-sea-sound#:~:text=Sea%20turtle%20ears%20are%20adapted,than%20sounds%20above%20water%20sounds.>

‘ua‘u; nēnē; waterbirds including Hawaiian stilt and Hawaiian coot; and reptiles including green sea turtle, hawksbill sea turtle, leatherback sea turtle, loggerhead sea turtle, and olive ridley sea turtles. The agencies have also determined that the proposed project will have **no effect** on insects, flowering plants, and ferns and allies within the action area.

Thank you very much for your help and support. If you have questions or need more information, please contact Michelle Carter, Michelle_Carter@nps.gov at NPS who is helping coordinate overall Section 7 consultations for ATMPs on behalf of the agencies.

Sincerely,

NATALIE
GATES

Digitally signed by
NATALIE GATES
Date: 2023.04.04 11:13:53
-10'00'

Natalie Gates, Superintendent for Haleakalā National Park

KEVIN W.
WELSH

Digitally signed by KEVIN
W. WELSH
Date: 2023.04.06 07:31:36
-04'00'

Kevin Welsh, Executive Director, Office of Environment and Energy, Federal Aviation Administration

Attachments

- Attachment 1 Draft Air Tour Management Plan
- Attachment 2 Noise Technical Analysis
- Attachment 3 U.S. Fish and Wildlife Service's Information Planning and Consultation tool Official Species List

List of Acronyms and Abbreviations

The agencies	National Park Service and Federal Aviation Administration
ATMP	Air Tour Management Plan
Action 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.
AGL	Above ground level
dB	Decibels
dBA	Decibels (A-weighted scale)
DNL	Day-night Average Sound Level (denoted by the symbol L_{dn})
ESA	Endangered Species Act
FAA	Federal Aviation Administration
ft.	Feet
IPaC	Information Planning and Consultation
HI Common Procedures Manual	2008 FAA Hawai'i Air Tour Common Procedures Manual
IOA	Interim Operating Authority
L_{Aeq}	Equivalent Continuous Sound Level
L_{max}	Maximum sound pressure level
MBTA	Migratory Birds Treaty Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic Atmospheric Administration
NPS	National Park Service
NPATMA	National Parks Air Tour Management Act of 2000
The Park	Haleakalā National Park
TA_{35dBA} and TA_{52dBA}	The amount of time (in minutes) aircraft sound levels would be above a given noise level during a 24-hour period (35 minutes and 52 minutes)
USFWS	United States Fish and Wildlife Service

Literature Cited

- 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. ANSI/ASA S12.9-2007/PART 5 (R2020), 1-20.
<https://webstore.ansi.org/Standards/ASA/ANSIASAS122007PartR2020>
- Ainley, D.G, Telfer, T.C., Reynolds, M.H., & Raine, A.F. (2019). Newell's shearwater (*Puffinus newelli*). In *Birds of the World*. Cornell Lab of Ornithology, Ithaca, NY, USA.
<https://birdsoftheworld.org/bow/species/towshe2/cur/introduction>
- American Ornithologists' Union. (1993). Thirty-ninth supplement of the American Ornithologists' Union Checklist of North American Birds. Auk 110:675-682.
- Antaky, C.C, Galase, N.K., & Price, M.R. (2019). Nesting ecology in the Hawaiian population of an endangered seabird, the band-rumped storm-petrel (*Oceanodroma castro*). *The Wilson Journal of Ornithology* 131(2), 402-406. <https://bioone.org/journals/the-wilson-journal-of-ornithology/volume-131/issue-2/18-123/Nesting-ecology-in-the-Hawaiian-population-of-an-endangered-seabird/10.1676/18-123.short>
- Atkinson, C.T., and LaPointe, D.A. (2009). Introduced avian diseases, climate change, and the future of Hawaiian honeycreepers. *Journal of Avian Medicine* 23(1), 53-63.
<https://pubmed.ncbi.nlm.nih.gov/19530408/>
- Atkinson, C.T., Utzurrum, R.B., LaPointe, D.A., Camp, R.J., Crampton, L.H., Foster, J.T., & Giambelluca, T.W. (2014). Changing climate and the altitudinal range of avian malaria in the Hawaiian Islands – an ongoing conservation crisis on the island of Kaua'i. *Global Change Biology*, 20(8), 2426-2436,
[10.1111/gcb.12535](https://doi.org/10.1111/gcb.12535)
- Baker, P.E. and Baker, H. (2020). Maui Alauahio (*Paroreomyza montana*), version 1.0. In *Birds of the World* (A. F. Poole and F. B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA.
<https://doi.org/10.2173/bow.mauala.01>.
- Banko, P.C., Black, J.M., & Banko, W.E. (2020). Hawaiian goose (*Branta sandvicensis*), version 1.0. In *Birds of the World* (A.F. Poole and F.B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA.
<https://birdsoftheworld.org/bow/species/hawgoo/cur/introduction>
- Barber, J.R., Crooks, K.R., & Fristrup, K.M. (2010). The costs of chronic noise exposure for terrestrial organisms. *Trends in ecology & evolution*, 25(3), 180-189.
- Berlin, K. E. and Vangelder, E.M. (2020). Akohekohe (*Palmeria dolei*). version 1.0. In *Birds of the World* (A. F. Poole and F. B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. <https://doi.org/10.2173/bow.crehon.01>

Black, J.M., Marshall, A.P., Gilburn, A., Santos, N., Hoshide, H., Medeiros, J., Mello, J., Natividad Hodges, C., & Katahira, L. (1997). Survival, movements, and breeding of released Hawaiian geese: an assessment of the reintroduction program. *The Journal of Wildlife Management*, 61(4): 1161-1173.

<https://www.jstor.org/stable/3802114>

Brisbin, I.L. Jr., Pratt, H.D., & Mowbray, T.B. (2002). American Coot (*Fulica americana*) and Hawaiian Coot (*Fulica alai*). No. 697 in the Birds of North America (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.

Bonaccorso, F.J., Todd, C.M., Miles, A.C., & Gorresen, P.M. (2015). Foraging range movements of the endangered Hawaiian hoary bat, *Lasiurus cinereus semotus* (Chiroptera: Vespertilionidae). *Journal of Mammalogy*, 96(1), 64-71. <https://doi.org/10.1093/jmammal/gyu003>

Brown, A. L. (1990). Measuring the effect of aircraft noise on sea birds. *Environment international*, 16(4-6), 587-592.

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

California Department of Transportation. (2016). Technical guidance for the assessment and mitigation of the effects of traffic noise and road construction noise on bats. <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/noise-effects-on-bats-jul2016-a11y.pdf>

Camp, R.J., Reynolds, M.H., Woodworth, B.L., Pratt, T.K., & Gorresen, P.M. (2009). Monitoring Hawaiian forest birds. Conservation Biology of Hawaiian Forest Birds: Implications for island avifauna. Yale University Press, New York, U.S.A.

Delaney, D. K., Grubb, T. G., Beier, P., Pater, L. L., & Hildegard Reiser, M. (1999). Effects of helicopter noise on Mexican spotted owls. *Journal of Wildlife Management*, 63(1), 60-76. <https://doi.org/10.2307/3802487>

Fancy, S.G. and Ralph, C.J. (2020). ‘I‘iwi (*Drepanis coccinea*), version 1.0. In *Birds of the World* (A.F. Poole and F.B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. <https://doi.org/10.2173/bow.iiwi.01>

Federal Aviation Administration (FAA). (2022). Wildlife strike database. <https://wildlife.faa.gov/search>

Federal Aviation Administration. (2020). 1050.1F Desk Reference. https://www.faa.gov/sites/faa.gov/files/about/office_org/headquarters_offices/apl/desk-ref.pdf.

Fortini, L.B., Vorsion, A.E., Amidon, F.A., Paxton, E.H., & Jacobi, J.D. (2015). Large-scale range collapse of Hawaiian forest birds under climate change and the need for 21st century conservation options. *PLoS ONE*, 10(11). <https://doi.org/10.1371/journal.pone.0144311>

Francis, C. D., Ortega, C. P., & Cruz, A. (2009). Noise pollution changes avian communities and species interactions. *Current biology*, 19(16), 1415-1419.

Francis, C. D., Kleist, 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: Biological Sciences*, 279(1739), 2727-2735.

Fraser, H., Parker-Geisman, V., & Parish IV, G. (2007). Hawaiian hoary bat inventory in national parks on the Islands of Hawai'i, Maui and Moloka'i. Pacific Cooperative Studies Unit, University of Hawai'i at Mānoa, Honolulu, Hawai'i. <https://scholarspace.manoa.hawaii.edu/items/6156eee4-a112-4765-b80d-8b3bae46fc20>

Gallardo Cruz, K. V., Paxton, K. L., & Hart, P. J. (2021). Temporal changes in songbird vocalizations associated with helicopter noise in Hawai'i's protected natural areas. *Landscape Ecology*, 36(3), 829-843.

Guillaumet, A., Kuntz, W., Samuel, M., & Paxton, E. (2017). Altitudinal migration and the future of an iconic Hawaiian honeycreeper in response to climate change and management. *Ecological Monographs* 87(3), 410-428. <https://www.jstor.org/stable/26358514>

H. T. Harvey and Associates (2020). Hawaiian Hoary Bat Research, Maui. Final Report 2019. Project #3978-01. Prepared for Terraform Power. <https://dlnr.hawaii.gov/wildlife/files/2021/01/MauiBatsHTHFebruary2020.pdf>

Haleakalā National Park. (2016). Environmental Assessment: Management and removal of feral animals in upper elevations of Nu'u, Maui. <https://parkplanning.nps.gov/document.cfm?parkID=306&documentID=73368>

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>

International Civil Aviation Organization (2020). Fact sheet – the Federal Aviation Administration's (FAA) wildlife hazard mitigation program. <https://bit.ly/3MCq40Z>

Judge, S.W., Camp, R.J., & Hart, P.J. (2013). Pacific Island landbird monitoring annual report, Haleakalā National Park, 2012. Natural Resource Technical Report NPS/PACN/NRTR—2013/740. National Park Service. <https://pubs.er.usgs.gov/publication/70048595>

Judge, S.W., Camp, R.J., Warren, C.C., Berthold, L.K., Mounce, H.L., Hart, P.J., & Monello, R.J. (2019). Pacific island landbird monitoring annual report, Haleakalā National Park and East Maui Island, 2017. Natural Resource Report NPS/PACN/NRR-2019/1949. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2264948>

Judge, S.W., Camp, R.J., Warren, C.C., Berthold, L.K., Mounce, H.L., Hart, P.J., & Monello, R.J. (2021). Population estimates and trends of three Maui Island-endemic Hawaiian honeycreepers. *Journal of Field Ornithology*, 92(2), 115-126. <https://www.usgs.gov/publications/population-estimates-and-trends-three-maui-island-endemic-hawaiian-honeycreepers>

- Kleist, N. J., Guralnick, R. P., Cruz, A., Francis, C. D. (2018). Chronic anthropogenic noise disrupts glucocorticoid signaling and has multiple effects on fitness in an avian community. *Proceedings of the National Academy of Sciences of the United States of America*, 115(4). <https://doi.org/10.1073/pnas.1709200115>.
- Komenda-Zehnder, S., Cevallos, M., & Bruderer, B. (2003). Effects of disturbance by aircraft overflight on waterbirds – an experimental approach. *International Bird Strike Committee IBSC26/WP-LE2*, 157-168. <https://nmsfarallones.blob.core.windows.net/farallones-prod/media/archive/eco/seabird/pdf/articles/disturbcon/komendazehnderetal2003.pdf>
- Krushelnysky, P.D., Chimera, C.G., & VanderWerf, E.A. (2019). Natural resource condition assessment: Haleakalā National Park. Natural Resource Report NPS/HALE/NRR—2019/1977. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2265714>
- Kunc, P. H., McLaughlin, K. H., & Schmidt, R. (2016). Aquatic noise pollution: implications for individuals, populations, and ecosystems. *Proceedings of the Royal Society B: Biological Sciences*, 283(1836), <http://doi.org/10.1098/rspb.2016.0839>
- Kunc H.P., and Schmidt, R. (2019). The effects of anthropogenic noise on animals: a meta-analysis. *Biology Letters*, 15(11). <http://dx.doi.org/10.1098/rsbl.2019.0649>
- Leopold, C.R., and Hess, S.C. (2014). Corridor and stopover-use of the Hawaiian goose (*Branta sandvicensis*), an intratropical altitudinal migrant. *Journal of Tropical Ecology*, 30(1), 67-78. <http://www.jstor.org/stable/43831696>
- Luo J., Siemers, B.M., & Koselj, K. (2015). How anthropogenic noise affects foraging. *Global Change Biology*, 21, 3278–3289.
- Martin, K.J., Alessi, S.C., Gaspard, J.C., et al. (2012) Underwater hearing in the loggerhead turtle (*Caretta caretta*): a comparison of behavioral and auditory evoked potential audiograms. *Journal of Experimental Biology*, 215:3001–3005.
- Montoya-Aiona, K.M. (2020). *Roosting ecology and behavior of the solitary and foliage-roosting Hawaiian hoary bat (Lasiurus cinereus semotus)*. [Unpublished master's thesis] University of Hawai'i, Hilo. <https://irma.nps.gov/DataStore/DownloadFile/620854>
- Mounce, H.L., Warren, C.C., McGowan, C.P., Paxton, E.H., & Groombridge, J.J. (2018). Extinction risk and conservation options for Maui Parrotbill, an endangered Hawaiian honeycreeper. *Journal of Fish and Wildlife Management*, 9(2):367–382; e1944-687X. doi:10.3996/072017-JFWM-059
- Mountainspring, S. (1987). Ecology, behavior, and conservation of the Maui parrotbill. *Condor*, 89(1), 24-39. <https://www.jstor.org/stable/1368757>
- National Marine Fisheries Service (NMFS). (2022). Endangered Species Act Section 7 biological opinion on the Bureau of Ocean Energy Management's proposal to fund a study on the behavioral and spatial

ecology of the threatened giant manta ray (*Mobula birostris*, formerly *Manta birostris*).
<https://repository.library.noaa.gov/view/noaa/37559>

National Marine Fisheries Service and U.S. Fish and Wildlife Service (NMFS and USFWS). (2014). Olive ridley sea turtle (*Lepidochelys Olivacea*) 5-year review: summary and evaluation.
<https://repository.library.noaa.gov/view/noaa/17036>

NMFS and USFWS. (2020). Endangered Species Act status review of the leatherback turtle (*Dermochelys coriacea*). Report to the National Marine Fisheries Service Office of Protected Resources and U.S. Fish and Wildlife Service. <https://repository.library.noaa.gov/view/noaa/25629>

NMFS and USFWS. (2020a). Loggerhead sea turtle (*Caretta caretta*) North Pacific Ocean DPS 5-year review: summary and evaluation. https://media.fisheries.noaa.gov/dam-migration/np_loggerhead_5yr_review_final.pdf

National Oceanic and Atmospheric Administration (2013). Hawksbill Sea Turtle (*Eretmochelys Imbricata*) 5-Year Review : Summary and Evaluation. <https://repository.library.noaa.gov/view/noaa/17041>

National Park Service. (2022). Haleakala National Park species list.
<https://irma.nps.gov/NPSpecies/Search/SpeciesList/HALE>

Natividad Bailey, C. S. (2009). Seabird inventory at Haleakalā National Park, Maui, Hawai'i. University of Hawai'i at Mānoa, Department of Botany, Honolulu, HI.
<https://scholarspace.manoa.hawaii.edu/server/api/core/bitstreams/9bf18a0d-9b1e-4122-8f90-b02aee978f33/content>

Paxton, E.H., Brinck, K.W., Crampton, L.H., Hite, J., & Costantini, M. (2020). 2018 Kaua'i forest bird population estimates and trends. HCSU Technical Report Series 98.
<http://128.171.57.11/handle/10790/5507>

Paxton, E. H., Laut, M., Enomoto, S., and Bogardus, M. (2022). Hawaiian forest bird conservation strategies for minimizing the risk of extinction: Biological and biocultural considerations. Hawai'i Cooperative Studies Unit Technical Report HCSU-103. University of Hawai'i at Hilo, Hawaii, USA. 125 pages. <http://hdl.handle.net/10790/5386>

Pinzari, C.A., Peck, R.W., Zinn, T., Gross, D., Montoya-Aiona, K., Brinck, K.W., Gorresen, P.M., & Bonaccorso, F.J. (2019). Hawaiian hoary bat (*Lasiurus cinereus semotus*) activity, diet and prey availability at the Waihou Mitigation Area, Maui. Pacific Island Ecosystems Research Center.
<https://www.usgs.gov/publications/hawaiian-hoary-bat-lasiurus-cinereus-semotus-activity-diet-and-prey-availability>

Plentovich, S., Hebshi, A., & Conant, S. (2008). Detrimental effects of two widespread invasive ant species on weight and survival of colonial nesting seabirds in the Hawaiian Islands. *Biological Invasions*, 11, 289–298. <https://link.springer.com/article/10.1007/s10530-008-9233-2>

Price, M., and Cotín, J. (2018). The Pueo Project, Final Report April 2017-March 2018: Population size, distribution, and habitat use of the Hawaiian short-eared owl (*Asio flammeus sandwichensis*) on O‘ahu. https://www.pueoproject.com/files/ugd/35ff1d_01233935a6884a7d8738d9146223053a.pdf

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

Scott, J.M., Mountainspring, S., Ramsey, F.L., & Kepler, C.B. (1986). Forest bird communities of the Hawaiian Islands: their dynamics, ecology, and conservation. *Studies in Avian Biology* 9, 1-431. <https://pubs.er.usgs.gov/publication/5200067>

Seminoff, J.A., C.D. Allen, C.D., Balazs, G.H., Dutton, P.H., Eguchi, T., Haas, H.L., Hargrove, S.A., Jensen, M.P., Klemm, D.L., Lauritsen, A.M., MacPherson, S.L., Opay, P., Possardt, E.E., Pultz, S.L., Seney, E.E., Van Houtan, K.S., & Waples, R.S. (2015). Status review of the green turtle (*Chelonia mydas*) under the U.S. Endangered Species Act. NOAA Technical Memorandum, NOAA NMFS-SWFSC-539. 571pp. <https://repository.library.noaa.gov/view/noaa/4922>

Shallenberger, R.J. (1977). An ornithological survey of Hawaiian wetlands. U.S. Army Corps of Engineers Contract DACW 84-77-C-0036, Honolulu, HI. 406 pp.

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.

Simons, T.R. & Bailey, C.N. (2020). *Hawaiian Petrel (Pterodroma sandwichensis)*, version 1.0. In *Birds of the World* (A.F. Poole and F.B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. <https://doi.org/10.2173/bow.hawpet1.01> Last updated 1998.

Slotter-back, J.W. (2021). Band-rumped storm-petrel (*Hydrobates castro*), version 1.1. In *Birds of the World* (A.F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. <https://doi.org/10.2173/bow.barpet.01.1>

U. S. 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>

U.S. Fish and Wildlife Service (USFWS). (2009). Endangered and Threatened Wildlife and Plants; Revised Recovery Plan for the ‘Alala (*Corvus hawaiiensis*). FWS–R1–ES–2008–N0208; 10120–1113–0000–C2.

USFWS. (2011). Recovery plan for Hawaiian waterbirds, second revision. U.S. Fish and Wildlife Service, Portland, Oregon. https://ecos.fws.gov/docs/recovery_plan/Hawaiian%20Waterbirds%20RP%202nd%20Revision.pdf

USFWS. (2016a). Endangered and threatened wildlife and plants; designation and nondesignation of critical habitat on Molokai, Lanai, Maui, and Kahoolawe for 135 species.

<https://www.federalregister.gov/documents/2016/03/30/2016-06069/endangered-and-threatened-wildlife-and-plants-designation-and-nondesignation-of-critical-habitat-on>

USFWS. (2016b). Endangered Status for 49 species from the Hawaiian Islands: final rule. FR 81(190) 67786-67860.

USFWS. (2016c). 'I'iwi (*Drepanis coccinea*) species status report. Pacific Islands Fish and Wildlife Office, Region 1. <https://ecos.fws.gov/ServCat/DownloadFile/166536>

USFWS. (2016d). Endangered and threatened wildlife and plants; endangered status for 49 species from the Hawaiian Islands. 81 FR 67786. <https://www.federalregister.gov/documents/2016/09/30/2016-23112/endangered-and-threatened-wildlife-and-plants-endangered-status-for-49-species-from-the-hawaiian>

USFWS. (2019). Recovery outline for the Islands of Maui, Moloka'i, Kaho'olawe, and Lana'i (Maui Nui). Pacific Islands Fish and Wildlife Office, Honolulu, HI.

https://ecos.fws.gov/docs/recovery_plan/Maui_Nui_Recovery_Outline_20191031.pdf. Accessed October 2022

USFWS. (2022). Federal Register. Endangered and threatened wildlife and plants; designation of critical habitat for 'i'iwi. <https://www.federalregister.gov/documents/2022/12/28/2022-27544/endangered-and-threatened-wildlife-and-plants-designation-of-critical-habitat-for-iwi>

Udvardy, M.D.F. (1960). Movements and concentrations of the Hawaiian coot on the Island of O'ahu. `Elepaio 21:20-22.

van Riper, C., van Riper, S.G., Goff, M.L., & Laird, M. (1986). The epizootiology and ecological significance of malaria in Hawaiian land birds. *Ecological Monographs*, 56, 327-344.

<https://www.semanticscholar.org/paper/THE-EPIZOOTIOLOGY-AND-ECOLOGICAL-SIGNIFICANCE-OF-IN-Riper-Riper/250d8dbba2d5823fa38affad8c1ccf5c796cd0ed>

Vetter, J.P., Swinnerton, K.J., VanderWerf, E.A., Garvin, J.C., Mounce, H.L., Breniser, H.E., Leonard, D.L., & Fretz, J.S. (2012). Survival estimates for two Hawaiian honeycreepers. *Pacific Science*, 66(3), 299-309.

Wang, A.X., Paxton, E.H., Mounce, H.L., & Hart, P.J. (2020). Divergent movement patterns of adult and juvenile 'Akohekohe, an endangered Hawaiian Honeycreeper. *Journal of Field Ornithology*, 91(4): 346-353. <https://doi.org/10.1111/jfo.12348>

Ward, D. H., Stehn, R.A., Erickson, W.P., & Derksen, D.V. (1999). Response of fall-staging Brant and Canada Geese to aircraft overflights in Southwestern Alaska. *The Journal of Wildlife Management*, 63(1), pp. 373-381. <https://www.usgs.gov/publications/response-fall-staging-brant-and-canada-geese-aircraft-overflights-southwestern-alaska>

Warren, C.C., Berthold, L.K., Mounce, H.L., Luscomb, P., Masuda, B. & Berry, L. (2020). Kiwikiu. Translocation Report 2019. Pacific Cooperative Studies Unit Technical Report #203. University of Hawai'i at Mānoa. Honolulu, HI. 103 pages.

Whitaker, J.O. and Tomich, P.Q. (1983). Food habits of the hoary bat, *Lasiurus cinereus*, from Hawai'i. *Journal of Mammalogy*, 64(1), 151-152, <https://doi.org/10.2307/1380766>

Williams, T. J. (2007). Responses of waterbirds to helicopter disturbance and fish poisoning by Rotenone at Paardevlei, South Africa. *Waterbirds: The International Journal of Waterbird Biology*, 30(3), 429-432. <https://www.jstor.org/stable/4501849>

Work, T., Dagenais, J., Rameyer, R., & Breeden, R. (2015). Mortality patterns in endangered Hawaiian geese (nēnē; *branta sandvicensis*). *Journal of Wildlife Diseases*, 51(3), 688-695. <https://pubmed.ncbi.nlm.nih.gov/26161721/>



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



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 2, 2023

Ann Garrett, Assistant Regional Administrator
NOAA/IRC/NMFS/PIRO
Protected Resources Division
1845 Wasp Blvd, Blad 176
Honolulu, HI 96818

Re: Informal Section 7 Consultation for Haleakalā National Park Air Tour Management Plan

Dear Ms. Garrett,

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 Haleakalā National Park (the Park). The agencies are preparing documentation for the draft ATMP in accordance with the National Parks Air Tour Management Act of 2000 (NPATMA) and other applicable laws. This letter is a request for informal consultation with your office by the agencies pursuant to Section 7 of the Endangered Species Act (the ESA). We are seeking your concurrence that the proposed actions in the draft ATMP will not adversely affect threatened and endangered species occurring within the study area.

Project Background and Purpose of the Action

NPATMA directs the agencies to develop ATMPs or voluntary agreements for National Park System units over which more than 50 commercial air tours occur annually, 49 U.S.C. § 40128. A commercial air tour operation is defined as “a flight conducted for compensation or hire in a powered aircraft where the purpose of the flight is sightseeing over a national park, within ½ mile outside the boundary of a national park... during which the aircraft flies below an altitude of 5,000 feet (ft.) above ground level (AGL) or less than 1 mile laterally from any geographic feature within the Park (unless more than ½ mile outside the boundary).” When NPATMA was passed in 2000 it required the FAA to grant Interim Operating Authority (IOA) to existing air tour operators who were permitted to continue air tour operations over parks until an ATMP was completed. 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, or altitude(s) of such tours. In 2012, NPATMA was amended to require operators to report the number of commercial air tours conducted each year.

On February 14, 2019, Public Employees for Environmental Responsibility and the Hawai'i Coalition Malama Pono filed a petition for writ of mandamus seeking to have the agencies complete air tour management plans or voluntary agreements at seven specified parks, *In re Public Employees for*

Environmental Responsibility, et al., Case No. 19-1044 (D.C. Cir.). On May 1, 2020, the United States Court of Appeals for the District of Columbia Circuit granted the petition and ordered the agencies to file a proposed schedule for bringing twenty-three eligible parks, including Haleakalā National Park, into compliance with NPATMA within two years. The D.C. Circuit subsequently entered an order requiring the agencies to propose firm completion dates to bring all parks into compliance with NPATMA. The completion date set for the Park is December 31, 2023.

Past and Current Commercial Air Tour Activity

Table 1 describes the current commercial air tour activity over the Park along with the average number of flights typically flown over the Park, based on data reported to the NPS and FAA. Based on reported data from 2017-2019, the average annual number of commercial air tours over the Park is 4,824. The flights currently conducted over the Park are flown at altitudes ranging from 500 ft. to 1,500 ft. AGL depending on location over the Park. Details regarding the proposed action, which is implementation of an ATMP for the Park, are described in the following sections.

Table 1. Current Commercial Air Tour Activity

Park Unit	IOA	Current AGL	Average Total Annual Flights (2017-2019)
Haleakalā National Park	25,827	500 ft. – 1,500 ft.	4,824

Action Area

The action area is the area that includes all direct and indirect effects. The action area includes the Park and the land within a ½-mile boundary from the Park depicted in Figure 1. The ATMP applies to all commercial air tours within the action area. 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 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.

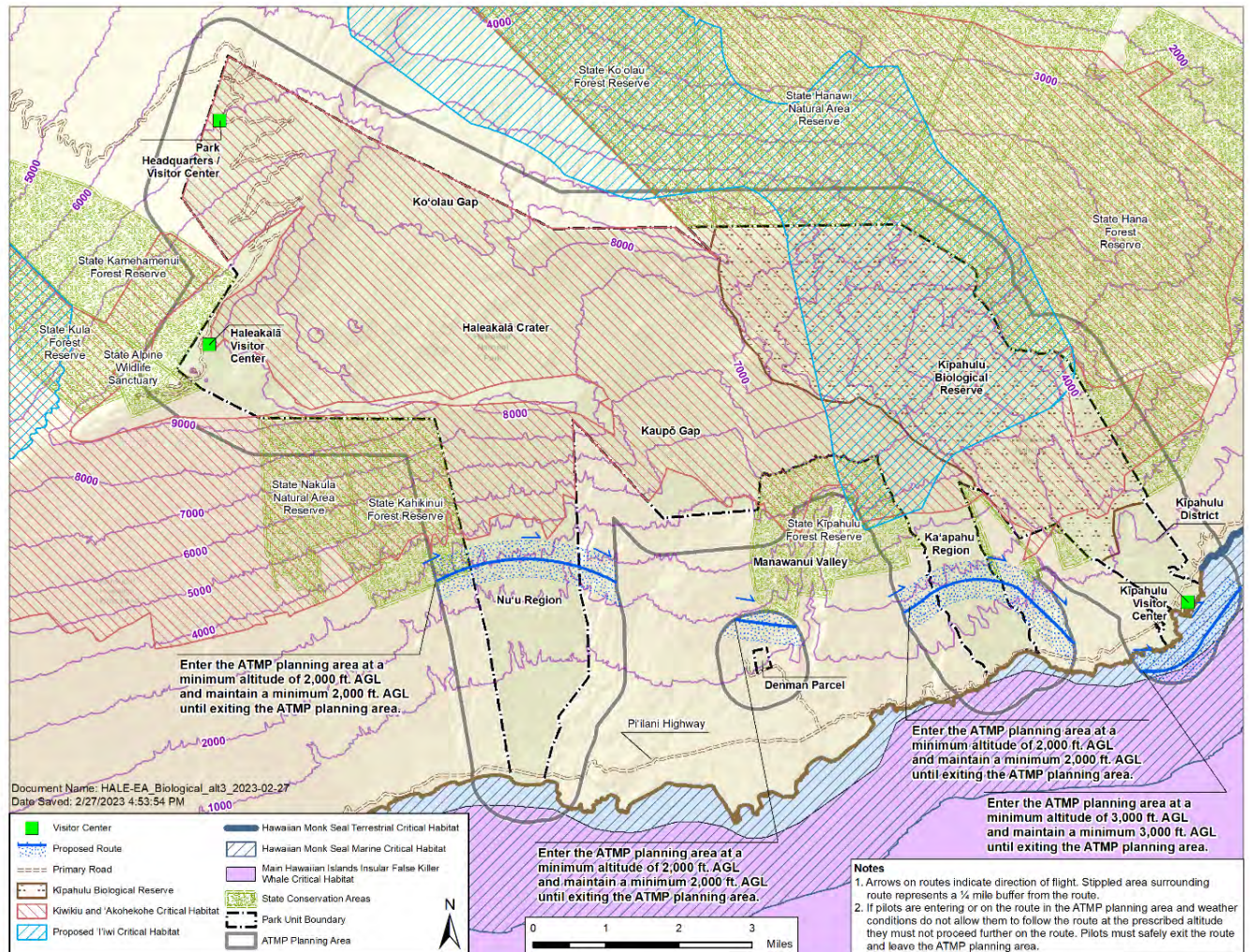


Figure 1. Commercial Air Tour Route at Haleakalā National Park Under the Proposed Action¹

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 draft ATMP will remain in effect until amended, at which time the agencies would reinstate consultation pursuant to 50 CFR 402.16. A summary of the operating parameters of the draft ATMP are discussed in detail below. See Attachment 1 for the draft ATMP.

Commercial Air Tours Per Year

The draft ATMP authorizes 2,412 commercial air tours over the Park each year – a 50% reduction compared with the existing number of flights.

¹ Figure 1 includes designated and proposed critical habitat under the jurisdiction of both NMFS and the U.S. Fish and Wildlife Service.

Commercial Air Tour Routes and Altitudes

The draft ATMP requires aircraft operators to follow a single flight path with a minimum altitude of 2,000 ft. AGL over land and 3,000 ft. AGL over the ocean. Flights more than ½-mile outside the Park boundary are outside of the action area and are subject to the altitude restrictions of the 2008 Hawai'i Air Tour Common Procedures Manual (HI Common Procedures Manual).

Commercial Air Tour Day/Time

Flights would be permitted between the hours of 11:00 AM and 2:00 PM, unless using a quiet technology aircraft. Flights would be permitted on all days of the week except Wednesday and Sunday, in addition to several no-fly days throughout the year as described in the draft ATMP.

Additional Requirements

Daily Caps: The draft ATMP limits the number of commercial air tours within the action area to no more than 16 tours per day across all operators.

Hovering/Circling: Hovering and circling are prohibited.

Adaptive Management: Adaptive management is a systematic approach for improving resource management and ensuring the continued effectiveness of the ATMP over time through the monitoring of park conditions and by learning from management actions or choices. Adaptive management is also used to address changed conditions such as if the breeding habitat of a sensitive species moves to a new area. Resource condition monitoring and adaptive management of the ATMP would occur under this alternative to ensure that the terms and conditions of the ATMP would continue to address park management objectives. The NPS would conduct periodic acoustic monitoring to ensure that the terms and conditions of the ATMP remain consistent with park management objectives. The FAA and the NPS will provide additional information for interested parties about the notice and process for adaptive management changes.

Interpretive Training and Education: When made available by Park staff, operators/pilots would take at least one training course per year conducted by the NPS. The training would include Park-specific information that operators could use to further their own understanding of Park priorities and management objectives, as well as enhance the interpretive narrative for air tour clients and increase understanding of the Park by air tour clients. Helicopter pilots would also be required to complete the FAA introduction to Fly Neighborly training.² The Fly Neighborly Noise Abatement Training program, created by the FAA and endorsed by Helicopter Association International, teaches pilots and operators noise abatement procedures and situational awareness tools that can be used to minimize the effects of helicopter noise emissions.

Reporting, Monitoring, and Enforcement: Operators would be required to equip all aircraft used for air tours with flight monitoring technology, to use flight monitoring technology during all air tours under the draft ATMP, and to report flight monitoring data as an attachment to the operator's semi-annual reports. Investigative determination of non-compliance may result in partial or total loss of authorization to conduct commercial air tours authorized by the ATMP. Any violation of Operations Specifications shall be treated in accordance with FAA Order 2150.3, *FAA Compliance and Enforcement Program*.³

² https://www.faasafety.gov/gslac/ALC/course_content.aspx?pf=1&preview=true&CID=500

³

https://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.information/documentID/1034329

Quiet Technology Incentives

The draft ATMP incentivizes the adoption of quiet technology aircraft by commercial air tour operators conducting commercial air tours over the Park. Operators that have converted to quiet technology aircraft would be allowed to conduct commercial air tours from 11:00 AM – 4:00 PM on all days on which flights are allowed. The draft ATMP would require that, by 2033, all operators exclusively use quiet technology aircraft to conduct commercial air tours within the action area.

Summary of Conservation Measures

The proposed action includes the following measures protective of species:

- Reduces the number of air tours over the Park from 4,824 (three-year average) to 2,412—a 50% reduction.
- Designates a single flight path, the majority of which avoids coastal habitat and ensures a minimum altitude of 3,000 ft. AGL over the ocean.
- Flights would be permitted only between the hours of 11:00 AM and 2:00 PM, unless using a quiet technology aircraft. This proposed window of operation would provide additional protection to wildlife during critical dusk/dawn periods that are prime times of day for foraging, mating, and communication.
- Aircraft will not hover or circle while conducting air tours within the action area. This measure would minimize the time individual animals would be exposed to noise from aircraft.
- Sets minimum altitudes of 2,000 ft. AGL over land and 3,000 ft. AGL over the ocean, which is an increase of 500 to 2,500 ft. compared to existing operations. This increase in altitude would reduce noise intensity at ground level. When the altitude of an aircraft is increased, the total area of noise exposure from the aircraft may also increase depending on the surrounding terrain. However, because increases in altitude also result in a reduction in maximum sound level of the aircraft in areas nearby the flight track, the beneficial effects of increasing the altitude of commercial air tours are anticipated to outweigh the *de minimis* impacts from any increase in the area exposed to the noise.

Listed Species and Critical Habitat Potentially Occurring within the Action Area

The National Marine Fisheries Service’s (NMFS) online Species Directory was used to assess the potential for any federally listed species or designated critical habitat that may occur within the action area. Additional federally listed species addressed during informal consultation with NMFS were also included. Based on this review of species protected under the ESA, the agencies identified the following species and/or critical habitat that may occur in the action area (see Table 2).

Table 2. Listed Species and Critical Habitat Potentially Occurring in the Action Area

Mammal - Scientific Name	Mammal - Common Name	Mammals - Status (Federal)	Mammals - Critical Habitat in the Action Area (Y/N)	Mammals - Proposed Finding
<i>Balaenoptera borealis</i>	Sei Whale	Endangered	N	No Effect
<i>Balaenoptera musculus</i>	Blue Whale	Endangered	N	No Effect
<i>Balaenoptera physalus</i>	Fin Whale	Endangered	N	No Effect

Mammal - Scientific Name	Mammal - Common Name	Mammals - Status (Federal)	Mammals - Critical Habitat in the Action Area (Y/N)	Mammals - Proposed Finding
<i>Eubalaena japonica</i>	North Pacific Right Whale	Endangered	N	No Effect
<i>Neomonachus schauinslandi</i>	Hawaiian Monk Seal	Endangered	Y	NLAA
<i>Physeter macrocephalus</i>	Sperm Whale	Endangered	N	No Effect
<i>Pseudorca crassidens</i>	Main Hawaiian Islands Insular False Killer Whale	Endangered	Y	No Effect
Reptiles - Scientific Name	Reptiles - Common Name	Reptiles - Status (Federal)	Reptiles - Critical Habitat in the Action Area (Y/N)	Reptiles - Proposed Finding
<i>Caretta caretta</i>	Loggerhead Sea Turtle	Endangered	N	No Effect
<i>Chelonia mydas</i>	Green Sea Turtle	Threatened	N	No Effect
<i>Dermochelys coriacea</i>	Leatherback Sea Turtle	Endangered	N	No Effect
<i>Eretmochelys imbricata</i>	Hawksbill Sea Turtle	Endangered	N	No Effect
<i>Lepidochelys olivacea</i>	Olive Ridley Sea Turtle	Threatened	N	No Effect

Environmental Baseline

The environmental baseline for this consultation includes the three year average of the air tours currently flown under existing law including applicable regulations that govern aviation safety (14 CFR Part 136, Appendix A, Special Operating Rules for Air Tour Operators in the State of Hawai'i (formerly Special Federal Aviation Regulation 71)) and any FAA exceptions issued to individual operators as outlined by the HI Common Procedures Manual.

The NPS and partner organizations conduct aviation over the Park for administrative and research purposes. The NPS and its partners' aircraft activity has been evaluated and impacts addressed through the Park's Biological Opinion and Section 7 consultations on Park operations and programs such as monitoring activities, the Park's fire management plan, as well as research permits issued to individual researchers.

Potential Stressors Associated with the Proposed Action

The agencies evaluated the proposed action to identify potential stressors that may affect listed species or critical habitat, if exposed. The proposed action does not include in-water activities. Therefore, potential stressors would be associated with overflights, limited to noise and visual disturbance. An increase in altitude to 3,000 ft. AGL over the ocean would limit visual disturbance and reduce noise intensity. Potential effects of low-level flights including commercial air tours on biological resources is largely inferential, as literature specific to these types of effects on individual species is generally unavailable. Discussion of potential effects is based on related species and similar actions.

Overview of Noise Associated with the Proposed Action

The draft ATMP includes several provisions to minimize potential noise impacts, as outlined above in the *Description of Proposed Action* section. As a result, the intensity of potential noise exposures would be

limited under the proposed action. The draft ATMP would ensure that noise would not be constant and that there would be substantial time intervals between noise events from air tours by limiting the number of flights each day. The draft ATMP also ensures that large segments of the Park and areas directly offshore would not be exposed to air tour noise by establishing a designated air tour route.

The agencies conducted noise modeling to estimate noise produced by commercial air tours under the proposed action (Attachment 2, *Noise Technical Analysis*). In summary, the noise modeling predicts that the maximum sound pressure level (L_{max}) generated by commercial air tours in the Park would be 65 dBA, and would occur at the 'Ohe'o Coastal site. The L_{max} noise metric is event based and does not provide any context of frequency, duration, or timing of exposure. The time above (TA) noise metric specifies the amount of time (in minutes) aircraft sound levels would be above a given noise level during a 24-hour period. TA_{35dBA} and TA_{52dBA} were modeled for the proposed action. Based on the modeling, aircraft noise levels above 35 dBA (TA_{35dBA}) are predicted to occur for 30 to 45 minutes a day in 3% of the action area, and 58% of the action area would experience noise above 35 dBA for at least 0.1 minutes a day. Aircraft noise levels above 52 dBA (TA_{52dBA}) are predicted to occur for 9.3 minutes across all points modeled, while 73% of points modeled would experience TA_{52dBA} for less than 1 minute.

The FAA has established a significance threshold for noise that uses the day-night average sound level (DNL) metric (see FAA Order 1050.1F, Exhibit 4-1). The resultant DNL due to the ATMP is well below the FAA's threshold within the action area. As described in the *Noise Technical Analysis* (Attachment 2), contours for equivalent continuous sound level (L_{Aeq}) show that the maximum value was less than 45 dBA, and affected portions of the action area would generally be 35 to <40 dBA, representing 6% of the total area. DNL will be arithmetically three dB lower than the 12-hour equivalent sound level, and therefore less than 45 dB, as there are no nighttime events at the Park. Figure 2 compares common outdoor and indoor sound levels for context.



Figure 2. Comparative Noise Levels (Source: FAA 2020)

Listed Species Evaluated for Effects

The effects of the action include the direct and indirect effects of the air tours that will now occur under NPATMA authorization, including the conservation measures identified. All other aspects of the environmental baseline are expected to continue at approximately the same levels. Table 2 includes the Section 7 determination for each listed species and associated critical habitat.

Reptiles

Several species of listed sea turtles occur within the action area including green sea turtle (*Chelonia mydas*) or honu, the hawksbill sea turtle (*Eretmochelys imbricata*) or honu'ea, the leatherback sea turtle (*Dermochelys coriacea*), loggerhead sea turtle (*Caretta caretta*), and olive ridley sea turtle (*Lepidochelys olivacea*). Threats to sea turtles include interactions with fisheries, poaching, and nesting habitat degradation due to coastal development.

Due to the poor sound transference from air to water, noise would be unlikely to elicit a response for individual turtles underwater. Adverse effects have been noted as occurring to sea turtles when flight altitudes are 600 ft. AGL or lower, and flight altitudes up to 2,000 ft. AGL have been determined to not likely adversely affect sea turtle species (NMFS, 2022).

Conservation measures included in the proposed action, notably the altitude requirement of 3,000 ft. AGL over the ocean and a designated air tour route, along with prohibition of hovering and circling, ensure that the intensity of the noise associated with commercial air tours is limited. Therefore, the

agencies have determined the proposed action would have **no effect** on green sea turtle, hawksbill sea turtle, leatherback sea turtle, loggerhead sea turtle, and olive ridley sea turtle.

Mammals

Several cetaceans occur within the action area including the blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*), Main Hawaiian Islands Insular false killer whale (*Pseudorca crassidens*), North Pacific right whale (*Eubalaena japonica*), sei whale (*Balaenoptera borealis*), and sperm whale (*Physeter macrocephalus*).

Richter et al. (2006) evaluated aircraft effects on blow duration, vocalization patterns, and surface time for sperm whales and found that there was little change in blow duration when exposed to aircraft used for aerial whale watching. When aircraft were flown at 150 meters (492 ft.), surface time differed between resident and transient whale populations, where resident whales had a slightly longer surface duration when exposed to aircraft, while transient whales had a shorter surface duration when exposed to aircraft (Richter et al., 2006). Sperm whales did not alter the frequency of their vocalization patterns, but did take longer to make their first click sound after a tail fluke-up dive when aircraft were present.

Noise from air tours may impact marine species in a number of ways: altered vocal behavior, changes in behavior such as retreating underwater and surface times, and pod formation, among others (Kunc et al., 2016; Kunc and Schmidt, 2019; Gomez et al., 2016; Richardson et al., 1995). Visually, aircraft can be difficult for cetaceans to locate since they are not in the water and move rapidly (Richter et al., 2006). Aircraft that fly below 500 meters (about 1,640 ft.) have caused cetaceans to exhibit behavioral responses that might constitute a significant disruption of their normal behavioral patterns (Patenaude et al., 2002).

Commercial air tours have the potential to generate noise that could be audible to whales. However, these noise events are not expected to be stressors on these species as they are infrequent and of short duration (likely limited to no more than a few minutes of exposure). Noise underwater is the loudest when aircraft are directly overhead, and generally decrease as altitude increases. The altitudes under the proposed action would be consistent with marine mammal viewing guidelines. A specific regulation, issued pursuant to the ESA and published at 50 CFR 224.103 (a), created a protective zone around humpback whales requiring vessels not to approach humpback whales, within 100 yards by vessel or 1,000 ft. by aircraft, when these whales are within 200 nautical miles of the Hawaiian Islands. No such stand off zone has been established for other whale species within the action area. However, the agencies believe the 3,000 ft. AGL minimum flight altitude is protective of whale species.

Conservation measures included in the proposed action, notably the altitude requirement of 3,000 ft. AGL over the ocean and a designated air tour route, along with prohibition of hovering and circling, ensure that the intensity of the noise associated with commercial air tours is limited. Therefore, the agencies have determined the proposed action would have **no effect** on blue whale, fin whale, Main Hawaiian Islands Insular false killer whale, North Pacific right whale, sei whale, and sperm whale; and would have **no effect** on the critical habitat of Main Hawaiian Islands Insular false killer whale including the essential element of its critical habitat and the four features associated with it.

Hawaiian Monk Seal

The endangered Hawaiian monk seal (*Neomonachus schauinslandi*), or 'ilio holo i ka uaua, is silvery gray to brownish in color with yellowish-brown ventral pelage, reaching an average length of approximately seven ft. by adulthood (NMFS and NOAA, 2007). Hawaiian monk seal have been known to haul out and bask along the shoreline within the Park (Baker and Johanos, 2004). The beach areas used by seals for

hauling out, pupping, and nursing are critical to the well-being of the species. Federally designated critical habitat for the Hawaiian monk seal, both terrestrial and marine, is located within the action area along the southern coast of the Island of Maui (see Figure 1). Critical habitat for this species has three essential features: 1) Terrestrial areas and adjacent shallow, sheltered aquatic areas with characteristics preferred by monk seals for pupping and nursing; 2) Marine areas from 0 to 200 meters in depth that support adequate prey quality and quantity for juvenile and adult monk seal foraging; and 3) Significant areas used by monk seals for hauling out, resting, or molting.

Compared to related species, Hawaiian monk seals have reduced sensitivity to airborne sounds and a reduction in terrestrial hearing ability (Ruscher et al., 2021). Although this species has a broad range of hearing while in water, they are not sensitive to noise that is less than 73 dB while in water (Sills et al., 2021). Under the proposed action, the value for L_{max} over critical habitat and beach areas used by Hawaiian monk seals for hauling out or pupping is not expected to exceed 75 dBA, and values for TA_{52dBA} are predicted to occur for 9.3 minutes across all points modeled, while 73% of points modeled would experience TA_{52dBA} for less than 1 minute (see Attachment 2, *Noise Technical Analysis*).

A study of ringed seal responses to fixed-wing airplanes and helicopters in Greenland found that 6% of the seals showed escape behavior in response to low altitude fixed-wing aircraft overflights at 500 ft. and responded at an average distance of 1,214 ft. in front of the aircraft (Born et al., 1999). Maximum escape response was 1,970 ft. In contrast, 50% of seals showed escape behavior in response to helicopters flying at this same altitude at 1,640 ft. in front of the helicopter and showed a maximum escape distance of 4,760 ft. (Born et al., 1999). Although the aircraft and helicopter surveys were conducted at different locations, the magnitude of these differences indicates that seals show a heightened response to helicopters versus fixed-wing aircraft (NMFS, 2015). Pinnipeds pupping or molting on land were the most responsive to aircraft noise and responded by retreating to the water (Richardson et al., 1995).

Effect Determination

A specific regulation, issued pursuant to the ESA and published at 50 CFR § 224.103 (a), created a protective zone around humpback whales requiring vessels not to approach humpback whales, within 100 yards by vessel or 1,000 ft. by aircraft, when these whales are within 200 nautical miles of the Hawaiian Islands. In addition, when aircraft fly below certain altitudes (about 500 meters [1,640.4 ft.]), they have caused cetaceans to exhibit behavioral responses that might constitute a significant disruption of their normal behavioral patterns (Patenaude et al., 2002). Although effects vary between cetaceans and pinnipeds and no such standoff zone has been established for Hawaiian monk seals, the 3,000 ft. AGL altitude requirement in the ATMP exceeds altitudes that have been shown to cause effects.

While Hawaiian monk seals will be exposed to noise, these noise events are not expected to be stressors on these species. Commercial air tours will not inhibit foraging, feeding, breeding or nesting of these species because they are infrequent and of short duration (likely limited to no more than a few minutes of exposure). In addition, conservation measures included in the proposed action such as the requirement to fly on a designated route and the establishment of required minimum altitudes reduce noise impacts, which will ensure that the intensity of the noise associated with commercial air tours is limited. Therefore, any potential impact resulting from noise would be insignificant⁴ due to the daily caps on flights and minimum altitude of 3,000 ft. AGL over the ocean which exceeds the altitudes that have been shown to cause adverse impacts to pinnipeds. Based on the analysis presented above, the

⁴ Insignificant effects relate to the size of the impact and include those effects that are undetectable, not measurable, or cannot be evaluated.

agencies have determined that the proposed action ***may affect, not likely to adversely affect*** Hawaiian monk seal and its critical habitat.

Cumulative Effects of the Action

Cumulative effects of the action include the effects of future State, local, or private actions that are reasonably certain to occur in the action area. Currently there are no known planned Federal actions that would affect the species described above. Similarly, the agencies are not aware of any proposed non-Federal action that may affect species or critical habitats considered in this consultation. The impacts of ongoing Federal actions unrelated to the proposed action are considered part of the baseline condition since they are covered under separate consultation pursuant to Section 7 of the ESA. Therefore, there are no cumulative effects associated with the proposed action.

Conclusion

As indicated above, the proposed action implements a designated route, requires minimum altitudes, establishes time of day restrictions, and limits the number of air tours that may be conducted daily and annually. The measures incorporated into the draft ATMP will serve to avoid and minimize possible effects to listed species and their critical habitat. Therefore, based on the analysis that all effects of the proposed action will be insignificant and/or discountable, the agencies have determined that the proposed action ***may affect, not likely to adversely affect*** Hawaiian monk seal and its critical habitat.

Thank you very much for your help and support. If you have questions or need more information, please contact Michelle Carter, Michelle.Carter@nps.gov at NPS who is helping coordinate overall Section 7 consultations for ATMPs on behalf of the agencies.

Sincerely,

NATALIE
GATES

Digitally signed by
NATALIE GATES
Date: 2023.04.04
14:29:35 -10'00'

Natalie Gates, Superintendent for Haleakalā National Park

KEVIN W.
WELSH

Digitally signed by
KEVIN W. WELSH
Date: 2023.04.06
07:34:08 -04'00'

Kevin Welsh, Executive Director, Office of Environment and Energy, Federal Aviation Administration

Attachments

- Attachment 1 Draft Air Tour Management Plan
- Attachment 2 Noise Technical Analysis

List of Acronyms and Abbreviations

The agencies	National Park Service and Federal Aviation Administration
ATMP	Air Tour Management Plan
Action 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.
AGL	Above ground level
dB	Decibels
dBA	Decibels (A-weighted scale)
DNL	Day-night Average Sound Level (denoted by the symbol L_{dn})
ESA	The Endangered Species Act
FAA	Federal Aviation Administration
ft.	Feet
HI Common Procedures Manual	2008 FAA Hawai'i Air Tour Common Procedures Manual
IOA	Interim Operating Authority
L_{Aeq}	Equivalent Continuous Sound Level
L_{max}	Maximum sound pressure level
NMFS	National Marine Fisheries Service
NOAA	National Oceanic Atmospheric Administration
NPS	National Park Service
NPATMA	National Parks Air Tour Management Act of 2000
The Park	Haleakalā National Park
TA_{35dBA} and TA_{52dBA}	The amount of time (in minutes) aircraft sound levels would be above a given noise level during a 24-hour period (35 minutes and 52 minutes)
USFWS	U.S. Fish and Wildlife Service

Literature Cited

- 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. ANSI/ASA S12.9-2007/PART 5 (R2020), 1-20.
<https://webstore.ansi.org/Standards/ASA/ANSIASAS122007PartR2020>
- Baker, J. and Johanos, T.C. (2004). Abundance of the Hawaiian monk seal in the main Hawaiian Islands. *Biological Conservation*, 103-110. [https://doi.org/10.1016/S0006-3207\(03\)00181-2](https://doi.org/10.1016/S0006-3207(03)00181-2)
- Born, E.W., Riget, F.F., Dietz, R., & Andriashek, D. (1999). Escape responses of hauled out ringed seals (*Phoca hispida*) to aircraft disturbance. *Polar Biology*, 21:171-178.
- Federal Aviation Administration. (2020). 1050.1F Desk reference.
https://www.faa.gov/sites/faa.gov/files/about/office_org/headquarters_offices/apl/desk-ref.pdf.
- Gomez, C., Lawson, J. W., Wright, A. J., Buren, A. D., Tollit, D., & Lesage, V. (2016). A systematic review on the behavioural responses of wild marine mammals to noise: the disparity between science and policy. *Canadian Journal of Zoology*, 94(12):801-819.
- 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>
- Kunc, P. H., McLaughlin, K. H., & Schmidt, R. (2016). Aquatic noise pollution: implications for individuals, populations, and ecosystems. *Proceedings of the Royal Society B: Biological Sciences*, 283(1836).
<http://doi.org/10.1098/rspb.2016.0839>
- Kunc, P. H., and Schmidt, R. (2019). The effects of anthropogenic noise on animals: a meta-analysis. *Biology Letters*, 15(11). <http://dx.doi.org/10.1098/rsbl.2019.0649>
- National Marine Fisheries Service (NMFS). (2022). Endangered Species Act Section 7 biological opinion on the Bureau of Ocean Energy Management's proposal to fund a study on the behavioral and spatial ecology of the threatened giant manta ray (*Mobula birostris*, formerly *Manta birostris*).
<https://repository.library.noaa.gov/view/noaa/37559>
- NMFS. (2015). Endangered Species Act Section 7 biological opinion: issuance of incidental harassment authorization under section 101(a)(5)(a) of the Marine Mammal Protection Act to Shell Gulf of Mexico and Shell Offshore Inc. (Shell) for aviation operations associated with ice condition monitoring over the Beaufort and Chukchi Seas From May 2015 through April 2016. National Marine Fisheries Service, Alaska Region. <https://repository.library.noaa.gov/view/noaa/17157>
- National Marine Fisheries Service & the National Oceanic and Atmospheric Administration (NMFS and NOAA). (2007). Recovery plan for the Hawaiian Monk Seal (*Monachus schauinslandi*).
<https://www.fisheries.noaa.gov/action/hawaiian-monk-seal-recovery-plan>

Patenaude, N. J., Richardson, W. J., Smultea, M. A., Koski, W. R., Miller, G. W., Würsig, B., & Greene Jr, C. R. (2002). Aircraft sound and disturbance to bowhead and beluga whales during spring migration in the Alaskan Beaufort Sea. *Marine Mammal Science*, 18(2):309-335.

Richardson, J.W., Greene, C.R., Malme, C.I., and Thomson, D.H. (1995). *Marine mammals and noise*. Academic Press, Inc. San Diego, CA. 576pp

Richter, C., Dawson, S., and Slooten, E. (2006). Impacts of commercial whale watching on male sperm whales at Kaikoura, New Zealand. *Marine Mammal Science*, 22(1):46-63.

Ruscher, B., Sills, J.M., Richter, B.P., et al. (2021). In-air hearing in Hawaiian monk seals: implications for understanding the auditory biology of Monachinae seals. *J Comp Physiol A*, 207, 561–573.
<https://doi.org/10.1007/s00359-021-01498-y>.

Sills, J. M., Parnell, K., Ruscher, B., Lew, C., Kendall, T. L., & Reichmuth, C. (2021). Underwater hearing and communication in the endangered Hawaiian monk seal (*Neomonachus schauinslandi*). *Endangered Species Research*, 44:61-78.

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 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 study area. All data sources were accessed the week of March 21, 2022. Information on coordination with Officials with Jurisdiction is located in Table 4.

Table 1. Section 4(f) parks, recreational resources, and wildlife/waterfowl refuges in the study area

Property Name	Official(s) with Jurisdiction	Property Type	Description	Approximate Size (acres)
Haleakalā National Park	National Park Service (NPS)	National Park	Haleakalā National Park is located in southeast Maui and known for its native ecosystems in a volcanic landscape.	33,578 ac (entirely within study area)
Kīpahulu Point Park	NPS	County Park	Small outlook park near the Kīpahulu Visitor Center with coastal views.	0.74 ac (entirely within study area)
Nu‘u Refuge	Hawai‘i Land Trust	Nature Refuge	82 acres on Maui’s rugged and remote southeast coast at Nu‘u which include coastal wetlands, seabird habitat, and archaeological sites.	82 ac (74 ac in study area)
Nakula Natural Area Reserve	State DLNR (Department of Land and Natural Resources)	State Reserve	State Reserve dedicated to reviving the leeward forest of Haleakalā, including the koa tree, the largest endemic Hawaiian tree.	1,517 ac (350 ac within study area)
Hāna Forest Reserve	State DLNR	State Forest Reserve	Reserve containing a variety of tree and bird species.	13,124 ac (1,748 ac within study area)
Kahikinui Forest Reserve	State DLNR	State Forest Reserve	Reserve on the southern slopes of Haleakalā, established in 1928 to restore the native forest.	2,203 ac (976 ac within study area)
Kīpahulu Forest Reserve	State DLNR	State Forest Reserve	State Forest Reserve contains wet rainforests and bogs and are a refuge for native Hawaiian plants and animals.	2,390 ac (entirely within study area)

Property Name	Official(s) with Jurisdiction	Property Type	Description	Approximate Size (acres)
Ko'olau Forest Reserve	State DLNR	State Forest Reserve	Established to protect native Hawaiian trees and animal species.	31,058 ac (292 ac within study area)
Kula Forest Reserve	State DLNR	State Forest Reserve	This reserve was established to reforest area that was previously converted to pasture.	1,498 ac (2.5 ac within study area)
Hanawī Natural Area Reserve	State DLNR	State Forest Reserve	This reserve is located on the north slopes of Haleakalā, containing rare subalpine grassland, shrublands and montane wet forests. Provides essential habitat for endangered Hawaiian birds.	7,724 ac (779 ac within study area)
Alpine Wildlife Sanctuary	State DLNR	State Reserve	Wildlife sanctuary with nature trails and home to colorful native forest birds.	300 ac (155 ac within study area)
Kamehamehū Forest Reserve	State DLNR	State Forest Reserve	This reserve is located on the northwestern slopes of Haleakalā. Includes native shrubland ecosystems and provides nesting habitat.	3,422 ac (580 ac within study area)
Kīpahulu Biological Reserve	NPS	National Reserve	Plant sanctuary in Kīpahulu Valley home to rainforests, bogs, and many species of native Hawaiian plants and animals.	8,299 ac (entirely within study area)
State Resource Management Area (SRMA)	State DLNR	SRMA	SRMA on the island of Maui.	2,045 ac within 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 dBA. Location point results present the metric results at specific points of interest. The 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.

To assess time above 52 dBA at Section 4(f) resources under the preferred alternative, 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.

Section 4(f) Study Area and Properties for ATMP at Haleakalā National Park

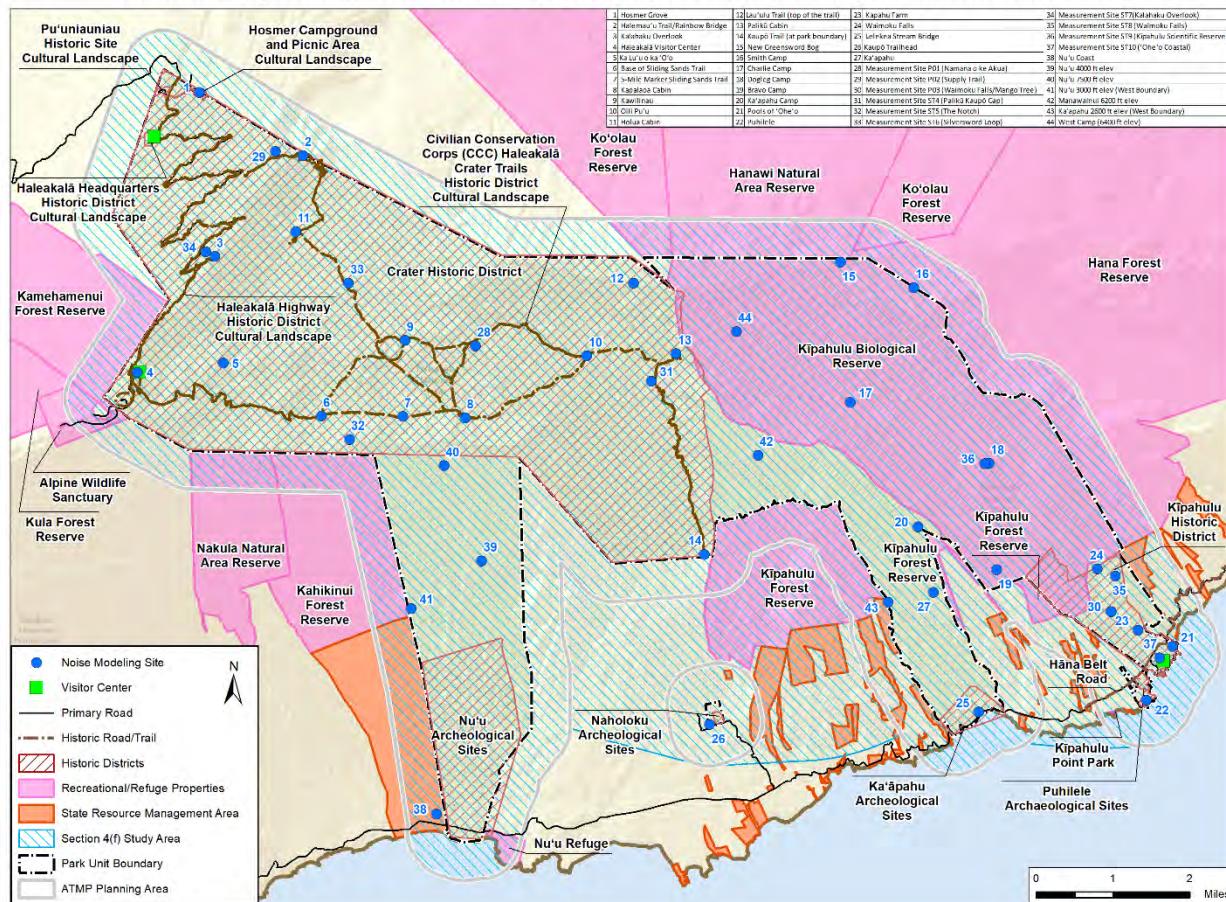


Figure 1. Section 4(f) resources and location points in the study area.

Table 2 shows the low and high modelled time above 52 dBA values under the preferred alternative at each Section 4(f) resource. Table 3 shows 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 study area is 9.30 minutes.

Table 2. Low and high modelled values for Time Above 52 dB under the preferred alternative for Section 4(f) resources

Section 4(f) Resource	Time Above 52 dBA – Low (minutes)	Time Above 52 dBA – High (minutes)
Alpine Wildlife Sanctuary	0.00	0.00
Civilian Conservation Corps (CCC) Haleakalā Crater Trails Historic District Cultural Landscape	0.00	0.00
Crater Historic District	0.00	4.90
Haleakalā Headquarters Historic District Cultural Landscape	0.00	0.00
Haleakalā Highway Historic District Cultural Landscape	0.00	0.00
Hāna Belt Road	0.00	9.30
Hana Forest Reserve	0.00	9.30
Hanawī Natural Area Reserve	0.00	0.00
Hosmer Campground and Picnic Area Cultural Landscape	0.00	0.00
Kaʻāpahu Archeological Sites	2.70	6.60
Kahikinui Forest Reserve	0.00	4.90
Kamehamenui Forest Reserve	0.00	0.00
Kīpahulu Forest Reserve	0.00	9.30
Kīpahulu Historic District	0.00	9.30
Kīpahulu Point Park	2.70	9.30
Kīpahulu Biological Reserve	0.00	9.30
Koolau Forest Reserve	0.00	0.00
Kula Forest Reserve	0.00	0.00
Naholoku Archeological Sites	4.10	4.10
Nakula Natural Area Reserve	0.00	0.00
Nuʻu Archeological Sites	0.00	4.90
Nuʻu Refuge	0.00	0.00
Puʻuniauniau Historic Site Cultural Landscape	0.00	0.00
Puhilele Archaeological Sites	0.00	9.30
State Department of Land State Resource Management Area	0.00	9.30

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

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA under Preferred Alternative (Minutes)
Alpine Wildlife Sanctuary	4	Haleakalā Visitor Center	0.53	0.00
Alpine Wildlife Sanctuary	5	Ka Lu'u o ka 'O'o	1.42	0.00
CCC Haleakalā Crater Trails Historic District Cultural Landscape	1	Hosmer Grove	1.22	0.00
CCC Haleakalā Crater Trails Historic District Cultural Landscape	2	Halemau'u Trail/Rainbow Bridge	0.01	0.00
CCC Haleakalā Crater Trails Historic District Cultural Landscape	3	Kalahaku Overlook	0.98	0.00
CCC Haleakalā Crater Trails Historic District Cultural Landscape	4	Haleakalā Visitor Center	0.03	0.00
CCC Haleakalā Crater Trails Historic District Cultural Landscape	5	Ka Lu'u o ka 'O'o	0.39	0.00
CCC Haleakalā Crater Trails Historic District Cultural Landscape	6	Base of Sliding Sands Trail	0.02	0.00
CCC Haleakalā Crater Trails Historic District Cultural Landscape	7	5-Mile Marker Sliding Sands Trail	0.00	0.00
CCC Haleakalā Crater Trails Historic District Cultural Landscape	8	Kapalaoa Cabin	0.00	0.00
CCC Haleakalā Crater Trails Historic District Cultural Landscape	9	Kawilinau	0.00	0.00
CCC Haleakalā Crater Trails Historic District Cultural Landscape	10	Oili Pu'u	0.01	0.00
CCC Haleakalā Crater Trails Historic District Cultural Landscape	11	Holua Cabin	0.00	0.00
CCC Haleakalā Crater Trails Historic District Cultural Landscape	12	Lau'ulu Trail (top of the trail)	0.86	0.00

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA under Preferred Alternative (Minutes)
CCC Haleakalā Crater Trails Historic District Cultural Landscape	13	Palikū Cabin	0.03	0.00
CCC Haleakalā Crater Trails Historic District Cultural Landscape	14	Kaupō Trail (at park boundary)	0.06	0.00
CCC Haleakalā Crater Trails Historic District Cultural Landscape	28	Measurement Site P01 (Namana o ke Akua)	0.06	0.00
CCC Haleakalā Crater Trails Historic District Cultural Landscape	29	Measurement Site P02 (Supply Trail)	0.07	0.00
CCC Haleakalā Crater Trails Historic District Cultural Landscape	31	Measurement Site ST4 (Palikū Kaupō Gap)	0.03	0.00
CCC Haleakalā Crater Trails Historic District Cultural Landscape	32	Measurement Site ST5 (The Notch)	0.35	0.00
CCC Haleakalā Crater Trails Historic District Cultural Landscape	33	Measurement Site ST6 (Sword Loop)	0.04	0.00
CCC Haleakalā Crater Trails Historic District Cultural Landscape	34	Measurement Site ST7(Kalahaku Overlook)	1.09	0.00
CCC Haleakalā Crater Trails Historic District Cultural Landscape	40	Nu'u 7500 ft elev	0.68	0.00
CCC Haleakalā Crater Trails Historic District Cultural Landscape	42	Manawainui 6200 ft elev	0.93	0.00
CCC Haleakalā Crater Trails Historic District Cultural Landscape	44	West Camp (6400 ft elev)	0.80	0.00
Crater Historic District	1	Hosmer Grove	0.00	0.00
Crater Historic District	2	Halemau'u Trail/Rainbow Bridge	0.00	0.00
Crater Historic District	3	Kalahaku Overlook	0.00	0.00
Crater Historic District	4	Haleakalā Visitor Center	0.00	0.00
Crater Historic District	5	Ka Lu'u o ka 'O'o	0.00	0.00
Crater Historic District	6	Base of Sliding Sands Trail	0.00	0.00

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA under Preferred Alternative (Minutes)
Crater Historic District	7	5-Mile Marker Sliding Sands Trail	0.00	0.00
Crater Historic District	8	Kapalaoa Cabin	0.00	0.00
Crater Historic District	9	Kawilinau	0.00	0.00
Crater Historic District	10	Oili Pu'u	0.00	0.00
Crater Historic District	11	Holua Cabin	0.00	0.00
Crater Historic District	12	Lau'ulu Trail (top of the trail)	0.00	0.00
Crater Historic District	13	Palikū Cabin	0.00	0.00
Crater Historic District	14	Kaupō Trail (at park boundary)	0.00	0.00
Crater Historic District	28	Measurement Site P01 (Namana o ke Akua)	0.00	0.00
Crater Historic District	29	Measurement Site P02 (Supply Trail)	0.00	0.00
Crater Historic District	31	Measurement Site ST4 (Palikū Kaupō Gap)	0.00	0.00
Crater Historic District	32	Measurement Site ST5 (The Notch)	0.00	0.00
Crater Historic District	33	Measurement Site ST6 (Silversword Loop)	0.00	0.00
Crater Historic District	34	Measurement Site ST7(Kalahaku Overlook)	0.00	0.00
Crater Historic District	39	Nu'u 4000 ft elev	1.26	4.90
Crater Historic District	40	Nu'u 7500 ft elev	0.14	0.00
Crater Historic District	42	Manawainui 6200 ft elev	0.59	0.00
Crater Historic District	44	West Camp (6400 ft elev)	0.63	0.00
Haleakalā Headquarters Historic District Cultural Landscape	1	Hosmer Grove	0.78	0.00
Haleakalā Highway Historic District Cultural Landscape	1	Hosmer Grove	0.32	0.00
Haleakalā Highway Historic District Cultural Landscape	2	Halemau'u Trail/Rainbow Bridge	0.82	0.00

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA under Preferred Alternative (Minutes)
Haleakalā Highway Historic District Cultural Landscape	3	Kalahaku Overlook	0.00	0.00
Haleakalā Highway Historic District Cultural Landscape	4	Haleakalā Visitor Center	0.00	0.00
Haleakalā Highway Historic District Cultural Landscape	5	Ka Lu'u o ka 'O'o	0.97	0.00
Haleakalā Highway Historic District Cultural Landscape	11	Holua Cabin	0.69	0.00
Haleakalā Highway Historic District Cultural Landscape	29	Measurement Site P02 (Supply Trail)	0.50	0.00
Haleakalā Highway Historic District Cultural Landscape	34	Measurement Site ST7(Kalahaku Overlook)	0.07	0.00
Hāna Belt Road	21	Pools of Oheo	0.09	7.90
Hāna Belt Road	22	Puhilele	0.32	8.20
Hāna Belt Road	23	Kapahu Farm	0.33	2.80
Hāna Belt Road	24	Waimoku Falls	1.09	0.00
Hāna Belt Road	25	Lelekea Stream Bridge	1.33	2.70
Hāna Belt Road	30	Measurement Site P03 (Waimoku Falls/Mango Tree)	0.75	2.70
Hāna Belt Road	35	Measurement Site ST8 (Waimoku Falls)	0.84	0.00
Hāna Belt Road	37	Measurement Site ST10 (Oheo Coastal)	0.10	9.30
Hāna Forest Reserve	15	New Greensword Bog	0.12	0.00
Hāna Forest Reserve	16	Smith Camp	0.01	0.00
Hāna Forest Reserve	18	Dogleg Camp	0.91	0.00
Hāna Forest Reserve	21	Pools of Oheo	1.43	7.90
Hāna Forest Reserve	23	Kapahu Farm	1.08	2.80
Hāna Forest Reserve	24	Waimoku Falls	0.43	0.00
Hāna Forest Reserve	30	Measurement Site P03 (Waimoku Falls/Mango Tree)	0.83	2.70
Hāna Forest Reserve	35	Measurement Site ST8 (Waimoku Falls)	0.37	0.00

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA under Preferred Alternative (Minutes)
Hāna Forest Reserve	36	Measurement Site ST9 (Kīpahulu Scientific Reserve)	0.92	0.00
Hāna Forest Reserve	37	Measurement Site ST10 (Oheo Coastal)	1.50	9.30
Hanawī Natural Area Reserve	12	Lau‘ulu Trail (top of the trail)	0.61	0.00
Hanawī Natural Area Reserve	13	Palikū Cabin	1.25	0.00
Hanawī Natural Area Reserve	15	New Greensword Bog	0.05	0.00
Hanawī Natural Area Reserve	16	Smith Camp	0.92	0.00
Hanawī Natural Area Reserve	44	West Camp (6400 ft elev)	0.96	0.00
Hosmer Campground and Picnic Area Cultural Landscape	1	Hosmer Grove	0.00	0.00
Hosmer Campground and Picnic Area Cultural Landscape	2	Halemau‘u Trail/Rainbow Bridge	1.46	0.00
Hosmer Campground and Picnic Area Cultural Landscape	29	Measurement Site P02 (Supply Trail)	1.14	0.00
Ka‘āpahu Archeological Sites	25	Lelekea Stream Bridge	0.00	2.70
Ka‘āpahu Archeological Sites	27	Ka‘apahu	1.32	6.60
Kahikinui Forest Reserve	5	Ka Lu‘u o ka ‘O‘o	1.31	0.00
Kahikinui Forest Reserve	6	Base of Sliding Sands Trail	0.48	0.00
Kahikinui Forest Reserve	7	5-Mile Marker Sliding Sands Trail	0.62	0.00
Kahikinui Forest Reserve	8	Kapalaoa Cabin	1.28	0.00
Kahikinui Forest Reserve	32	Measurement Site ST5 (The Notch)	0.19	0.00
Kahikinui Forest Reserve	39	Nu‘u 4000 ft elev	1.07	4.90
Kahikinui Forest Reserve	40	Nu‘u 7500 ft elev	0.86	0.00
Kahikinui Forest Reserve	41	Nu‘u 3000 ft elev (West Boundary)	0.04	4.10
Kamehamenui Forest Reserve	3	Kalahaku Overlook	0.85	0.00
Kamehamenui Forest Reserve	4	Haleakalā Visitor Center	0.18	0.00

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA under Preferred Alternative (Minutes)
Kamehamehenui Forest Reserve	5	Ka Lu'u o ka 'O'o	1.04	0.00
Kamehamehenui Forest Reserve	34	Measurement Site ST7(Kalahaku Overlook)	0.82	0.00
Kīpahulu Forest Reserve	14	Kaupō Trail (at park boundary)	0.11	0.00
Kīpahulu Forest Reserve	17	Charlie Camp	1.30	0.00
Kīpahulu Forest Reserve	18	Dogleg Camp	1.16	0.00
Kīpahulu Forest Reserve	19	Bravo Camp	0.26	2.40
Kīpahulu Forest Reserve	20	Ka'apahu Camp	0.08	0.30
Kīpahulu Forest Reserve	23	Kapahu Farm	1.03	2.80
Kīpahulu Forest Reserve	24	Waimoku Falls	0.74	0.00
Kīpahulu Forest Reserve	25	Lelekea Stream Bridge	1.03	2.70
Kīpahulu Forest Reserve	26	Kaupō Trailhead	0.80	4.10
Kīpahulu Forest Reserve	27	Ka'apahu	0.15	6.60
Kīpahulu Forest Reserve	30	Measurement Site P03 (Waimoku Falls/Mango Tree)	0.65	2.70
Kīpahulu Forest Reserve	35	Measurement Site ST8 (Waimoku Falls)	0.86	0.00
Kīpahulu Forest Reserve	36	Measurement Site ST9 (Kīpahulu Scientific Reserve)	1.13	0.00
Kīpahulu Forest Reserve	37	Measurement Site ST10 (Oheo Coastal)	1.41	9.30
Kīpahulu Forest Reserve	42	Manawainui 6200 ft elev	0.63	0.00
Kīpahulu Forest Reserve	43	Ka'apahu 2600 ft elev (West Boundary)	0.05	3.90
Kīpahulu Historic District	18	Dogleg Camp	1.37	0.00
Kīpahulu Historic District	19	Bravo Camp	0.39	2.40
Kīpahulu Historic District	21	Pools of Oheo	0.00	7.90
Kīpahulu Historic District	22	Puhilele	0.35	8.20
Kīpahulu Historic District	23	Kapahu Farm	0.00	2.80
Kīpahulu Historic District	24	Waimoku Falls	0.00	0.00
Kīpahulu Historic District	27	Ka'apahu	1.22	6.60

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA under Preferred Alternative (Minutes)
Kīpahulu Historic District	30	Measurement Site P03 (Waimoku Falls/Mango Tree)	0.00	2.70
Kīpahulu Historic District	35	Measurement Site ST8 (Waimoku Falls)	0.00	0.00
Kīpahulu Historic District	36	Measurement Site ST9 (Kīpahulu Scientific Reserve)	1.40	0.00
Kīpahulu Historic District	37	Measurement Site ST10 (Oheo Coastal)	0.00	9.30
Kīpahulu Point Park	21	Pools of Oheo	1.12	7.90
Kīpahulu Point Park	22	Puhilele	0.43	8.20
Kīpahulu Point Park	23	Kapahu Farm	1.10	2.80
Kīpahulu Point Park	30	Measurement Site P03 (Waimoku Falls/Mango Tree)	1.29	2.70
Kīpahulu Point Park	37	Measurement Site ST10 (Oheo Coastal)	0.91	9.30
Kīpahulu Biological Reserve	10	Oili Pu'u	1.24	0.00
Kīpahulu Biological Reserve	12	Lau'ulu Trail (top of the trail)	0.44	0.00
Kīpahulu Biological Reserve	13	Palikū Cabin	0.17	0.00
Kīpahulu Biological Reserve	15	New Greensword Bog	0.00	0.00
Kīpahulu Biological Reserve	16	Smith Camp	0.00	0.00
Kīpahulu Biological Reserve	17	Charlie Camp	0.00	0.00
Kīpahulu Biological Reserve	18	Dogleg Camp	0.00	0.00
Kīpahulu Biological Reserve	19	Bravo Camp	0.00	2.40
Kīpahulu Biological Reserve	20	Ka'apahu Camp	0.16	0.30
Kīpahulu Biological Reserve	21	Pools of Oheo	1.16	7.90
Kīpahulu Biological Reserve	22	Puhilele	1.39	8.20
Kīpahulu Biological Reserve	23	Kapahu Farm	0.67	2.80
Kīpahulu Biological Reserve	24	Waimoku Falls	0.10	0.00
Kīpahulu Biological Reserve	27	Ka'apahu	0.58	6.60
Kīpahulu Biological Reserve	30	Measurement Site P03 (Waimoku Falls/Mango Tree)	0.25	2.70

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA under Preferred Alternative (Minutes)
Kīpahulu Biological Reserve	31	Measurement Site ST4 (Palikū Kaupō Gap)	0.62	0.00
Kīpahulu Biological Reserve	35	Measurement Site ST8 (Waimoku Falls)	0.25	0.00
Kīpahulu Biological Reserve	36	Measurement Site ST9 (Kīpahulu Scientific Reserve)	0.00	0.00
Kīpahulu Biological Reserve	37	Measurement Site ST10 (Oheo Coastal)	1.09	9.30
Kīpahulu Biological Reserve	42	Manawainui 6200 ft elev	0.31	0.00
Kīpahulu Biological Reserve	43	Ka'apahu 2600 ft elev (West Boundary)	1.08	3.90
Kīpahulu Biological Reserve	44	West Camp (6400 ft elev)	0.00	0.00
Koolau Forest Reserve	10	Oili Pu'u	1.48	0.00
Koolau Forest Reserve	12	Lau'ulu Trail (top of the trail)	0.36	0.00
Koolau Forest Reserve	13	Palikū Cabin	1.25	0.00
Koolau Forest Reserve	15	New Greensword Bog	0.22	0.00
Koolau Forest Reserve	16	Smith Camp	0.61	0.00
Koolau Forest Reserve	44	West Camp (6400 ft elev)	1.27	0.00
Kula Forest Reserve	4	Haleakalā Visitor Center	0.83	0.00
Naholoku Archeological Sites	26	Kaupō Trailhead	0.08	4.10
Nakula Natural Area Reserve	4	Haleakalā Visitor Center	1.23	0.00
Nakula Natural Area Reserve	5	Ka Lu'u o ka 'O'o	1.15	0.00
Nakula Natural Area Reserve	6	Base of Sliding Sands Trail	0.82	0.00
Nakula Natural Area Reserve	32	Measurement Site ST5 (The Notch)	1.04	0.00
Nu'u Archeological Sites	38	Nu'u Coast	0.13	0.00
Nu'u Archeological Sites	39	Nu'u 4000 ft elev	1.03	4.90
Nu'u Archeological Sites	41	Nu'u 3000 ft elev (West Boundary)	0.71	4.10

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA under Preferred Alternative (Minutes)
Nu'u Refuge	38	Nu'u Coast	0.67	0.00
Pu'uniauniau Historic Site Cultural Landscape	1	Hosmer Grove	0.37	0.00
Puhilele Archaeological Sites	21	Pools of Oheo	0.52	7.90
Puhilele Archaeological Sites	22	Puhilele	0.00	8.20
Puhilele Archaeological Sites	23	Kapahu Farm	0.55	2.80
Puhilele Archaeological Sites	24	Waimoku Falls	1.46	0.00
Puhilele Archaeological Sites	30	Measurement Site P03 (Waimoku Falls/Mango Tree)	0.88	2.70
Puhilele Archaeological Sites	35	Measurement Site ST8 (Waimoku Falls)	1.29	0.00
Puhilele Archaeological Sites	37	Measurement Site ST10 (Oheo Coastal)	0.30	9.30
State Department of Land SRMA	14	Kaupō Trail (at park boundary)	1.41	0.00
State Department of Land SRMA	19	Bravo Camp	0.56	2.40
State Department of Land SRMA	20	Ka'apahu Camp	1.02	0.30
State Department of Land SRMA	21	Pools of Oheo	0.13	7.90
State Department of Land SRMA	22	Puhilele	0.19	8.20
State Department of Land SRMA	23	Kapahu Farm	0.37	2.80
State Department of Land SRMA	24	Waimoku Falls	0.34	0.00
State Department of Land SRMA	25	Lelekea Stream Bridge	0.44	2.70
State Department of Land SRMA	26	Kaupō Trailhead	0.53	4.10
State Department of Land SRMA	27	Ka'apahu	0.60	6.60
State Department of Land SRMA	30	Measurement Site P03 (Waimoku Falls/Mango Tree)	0.36	2.70
State Department of Land SRMA	35	Measurement Site ST8 (Waimoku Falls)	0.21	0.00

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA under Preferred Alternative (Minutes)
State Department of Land SRMA	37	Measurement Site ST10 (Oheo Coastal)	0.34	9.30
State Department of Land SRMA	38	Nu'u Coast	0.00	0.00
State Department of Land SRMA	39	Nu'u 4000 ft elev	1.18	4.90
State Department of Land SRMA	41	Nu'u 3000 ft elev (West Boundary)	0.10	4.10
State Department of Land SRMA	43	Ka'apahu 2600 ft elev (West Boundary)	0.01	3.90

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

Entity Name	Address
NPS	P.O. Box 369 Makawao, HI 96768
Department of Land and Natural Resources	1151 Punchbowl St. Honolulu, HI 96813

APPENDIX J

Public Scoping Newsletter and Comment Summary Report



Haleakalā National Park

FEB 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 Haleakalā National Park. Public and stakeholder feedback during this phase is critical. This document will explain:

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

Project Introduction

This document presents potential alternatives for the Haleakalā National Park Air Tour Management Plan (ATMP) Environmental Assessment (EA) for public and stakeholder input. As applied to Haleakalā National Park (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 within ½-mile outside the Park's boundary during which the aircraft flies below 5,000 feet above ground level.

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 this 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 landscapes and resources, areas of historic and spiritual significance to Native Hawaiians, 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. Many of you have commented on the FAA and the NPS's past efforts to complete an ATMP for Haleakalā National Park which have been considered in the development of these 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 later this year.



View of Kukui Bay, Kīpahulu District

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 landscapes and resources, Wilderness character, visitor experience, and Native Hawaiian Traditional Cultural Properties including Native Hawaiian sacred landscapes, sites, and ceremonial areas. In order to address potential 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:

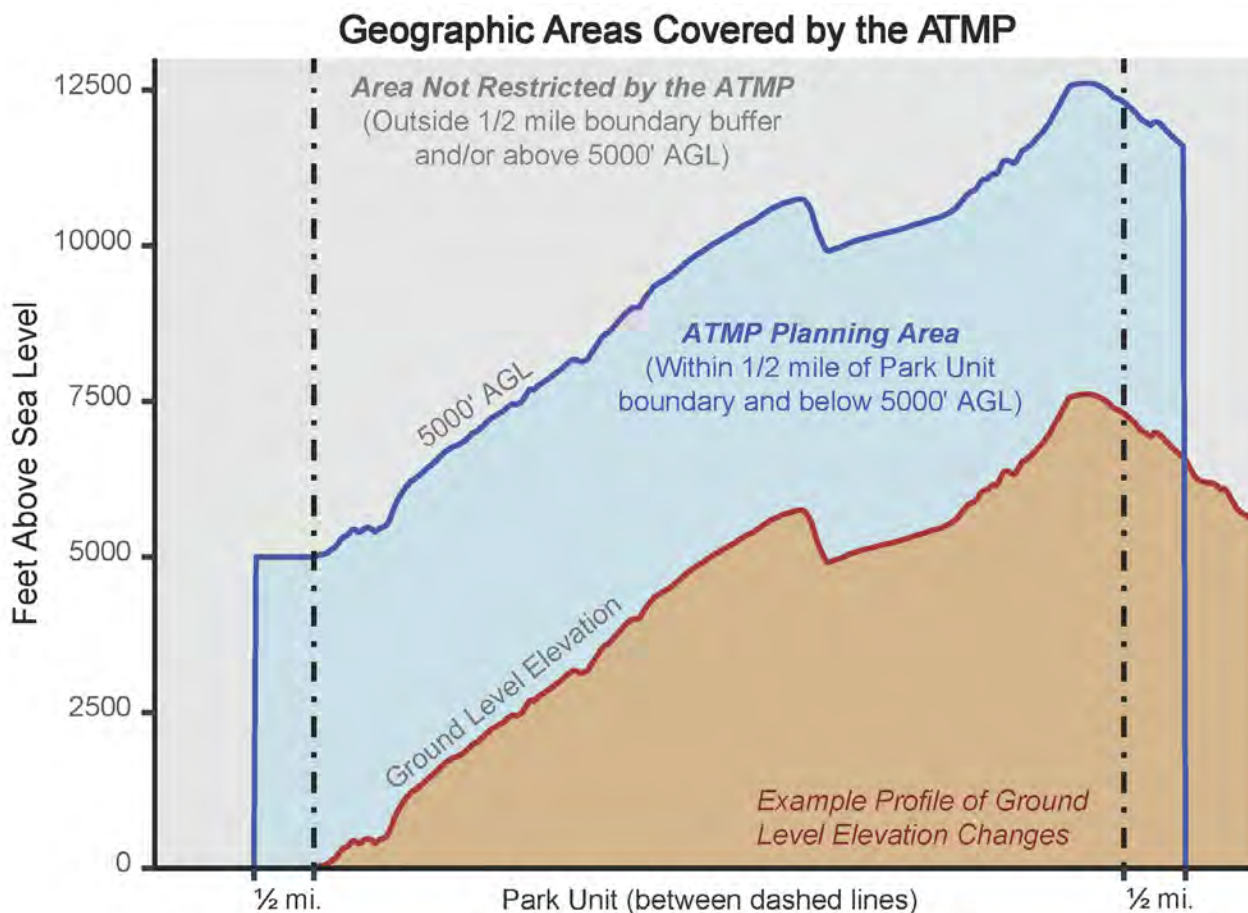
- Air quality
- Biological resources (e.g., fish, plants, and wildlife including mammals, avian species, and special status species)
- Climate (climate change and greenhouse gas emissions)
- Coastal resources
- Cultural resources (historic buildings, historic districts, archeological resources, sacred sites, Traditional Cultural Properties, cultural landscapes, ethnographic resources)
- Department of Transportation Act, Section 4(f)
- Farmlands (e.g., Kapahu Living Farm)
- Noise and compatible land use (acoustic environment and Park soundscape)
- Park visitors and visitor uses
- Socioeconomics, Children's Environmental Health and Safety Risk, and Environmental Justice
- Visual effects (light emissions, visual resources, visual character)
- Water resources
- Wilderness

Elements Common to All Alternatives for the Haleakalā National Park ATMP

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

ATMP Planning Area

According to the Act, an ATMP may regulate 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 Above Ground Level (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. As air tours outside the boundaries of the ATMP planning area are outside the jurisdiction of the ATMP, 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. Although they may occur within the ATMP planning area, general aviation flights, overflights by commercial airline and military flights would not be regulated by the ATMP because they are not commercial air tours subject to regulation under the Act.



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. 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.



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 Honolulu 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.

The NPS will continue to maintain its Automatic Dependent Surveillance-Broadcast (ADS-B) flight tracking system to monitor commercial air tour activity within the ATMP planning area. The ADS-B data documenting unauthorized commercial air tours and any additional visual observations will be submitted to the FAA through the Honolulu FSDO for FAA enforcement and/or disciplinary actions. The NPS will use all available flight tracking data to monitor air tour activity.

Flight Route and In-flight Deviations

The map included in the potential alternative show a flight route where air tours could occur within the ATMP planning area. The flight route within the ATMP planning area is represented by a line with a buffer on either side of the route that indicates the acceptable range of deviation that would not trigger enforcement action. The flight line will be used for noise modeling purposes in the impact analysis. If pilots are entering or on the route in the ATMP planning area and weather conditions do not allow them to follow the route at the prescribed altitude they must not proceed further on the route. Pilots must safely exit the route and leave the ATMP planning area boundary. Weather deviations to the flight route would be reported to the Park, the FAA, and the NPS as part of bi-annual reporting requirements.



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.



Minimum Altitudes

The range of altitudes examined in the alternatives will be from 1,500 to 5,000 feet AGL. None of the alternatives would supersede laws protecting humpback whales and monk seals under the Endangered Species Act, the Marine Mammal Protection Act, and State of Hawai‘i law, including 50 CFR Part 216 which states that it is unlawful to operate any aircraft within 1,000 feet AGL of any humpback whale or monk seal in the vicinity of the Hawaiian Islands.



Fee Collection

Under the Omnibus Budget Reconciliation Act of 1993 (54 U.S.C. § 100904), commercial air tour operators currently conducting air tours over the Park are required to pay a fee (currently \$25 for each aircraft with 25 passengers or less) for each air tour conducted. This requirement will remain in force when this ATMP becomes effective.

Fee collection will not be considered in the decision-making process for analyzing and selecting a potential alternative. The decisions will be based solely on the environmental impact analysis and public input.



Initial Allocation and Competitive Bidding

The Act states whenever an ATMP limits the number of commercial air tour operations during a specified time frame, a competitive bidding process must occur pursuant to the criteria set forth in 49 U.S.C. § 40128(a)(2)(B) and other criteria developed by the agencies. Since the number of flights would be limited for Alternative 3, competitive bidding would be required. In the time period between the finalization of an ATMP and the completion of the 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.

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.

Alternatives Considered and Dismissed

The agencies considered but dismissed alternatives that would allow air tour operations at or above existing numbers. These alternatives were dismissed from further consideration because the NPS determined they would result in unacceptable impacts to Park natural and cultural resources and visitor enjoyment as defined in NPS Management Policies 2006 1.4.7.1. and do not meet the purpose and need for the plan.

The NPS determined the current level of air tours is inconsistent with the Park's purpose and values. Existing air tour operations result in frequent and loud noise disruptions in many areas of the Park. Noise from air tours adversely impacts existing Native Hawaiian sacred sites and landscapes. The NPS is required to avoid adverse impacts to sacred sites to the extent possible (NPS Management Policy 5.3.5.3.2). Native Hawaiians have consistently noted the persistent air tours over the Park unreasonably interfere with ceremonies conducted by Native Hawaiian practitioners at these sacred sites.

Current air tours over the Park also directly interfere with resource management activities (such as the execution of acoustic based bird surveys) which impedes the NPS's ability to fully meet the Park's purpose of perpetuating endemic Hawaiian ecosystems and does not support the perpetuation of biological diversity and ecological integrity which are fundamental resources and values of the Park (see Foundation Document). A recent study in Hawai'i documents that loud, frequent helicopter noise results in changes in avian vocalization (Gallardo Cruz et al 2021). Helicopter noise could detrimentally affect physiology, pairing and breeding success, and territory size of birds by limiting communication between individuals (Habib et al. 2007; Nemeth and Brumm 2010; Halfwerk et al. 2011; Kleist et al. 2018). These effects could have a greater impact on Hawaiian endemics, which already face a number of stressors (Atkinson and Lapointe 2009; Pratt et al. 2009; LaPointe et al. 2010), than on introduced species. The current level of air tours also diminishes visitor opportunities to learn about and be inspired by Park resources and values and unreasonably interferes with Park programs, activities, the atmosphere of peace and tranquility and the natural soundscapes in Wilderness (see NPS Management Policies 1.4.7.1). Existing air tours repeatedly interrupt and unreasonably

interfere with interpretive programs and visitor activities at the Summit, in Kīpahulu and in the Haleakalā Crater, which may significantly impede visitors from enjoying and learning about existing Park resources. Natural quiet is a foundational resource for the Park and a primary reason for visitation. Air tours currently disrupt natural quiet throughout the Park. Additionally, existing air tour operations unreasonably interfere with the natural soundscape maintained within the Haleakalā Wilderness.

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



Alternative 1 (No Action)

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 interim operating authority (IOA) without implementation of an ATMP or voluntary agreement. Under the no action alternative, air tours 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 below. Under the no action alternative operators could fly up to IOA, 25,827 air tours per year. Air tour operators may fly where they choose. Currently, altitudes are flown in accordance with the Hawai'i Air Tour Common Procedures Manual (HI Manual). Minimum altitudes range from 500-1,500 ft. AGL, weather dependent, depending on location on the island.

Number of Flights Each Year

Alternative 1 represents a continuation of what currently exists and is allowed under existing law including each company's IOA as granted by the FAA (70 Federal Register 36456 (June 23, 2005)), applicable regulations that govern aviation safety (Title 14 Code of Federal Regulations Part 136, Appendix A (formerly Special Federal Aviation Regulation 71)), and any FAA exceptions issued to individual operators as outlined by the HI Manual. Six commercial air tour operators currently hold IOA to fly up to a combined total of 25,827 annual flights at the Park authorized under IOA (see table on page 11).

Under the no action alternative, operators could fly up to IOA. The operators may not exceed their respective IOA limitation in any given year. Under the no action alternative, air tours numbers would be expected to vary from year to year, likely consistent with reported numbers over the past three to five years. The average annual number of commercial air tours conducted over the Park from 2017-2019 for all operators is 4,824. The agencies consider the 2017-2019, three-year average, to be the existing baseline for the purposes of understanding the existing number of commercial air tour flights over the Park.

Alternative 1 (No Action)

The requirement for commercial air tour operators to report actual commercial air tours to the FAA and the NPS was implemented in 2013. Reporting data from 2013 and 2014 are considered incomplete as reporting protocols were not fully in place at that time and likely do not reflect actual flights. Flight numbers from a single year were not chosen as the existing baseline because the three-year average accounts for both variation across years and takes into account the most recent, pre-pandemic years. Reporting data from 2020 was not used because the 2020 COVID-19 pandemic resulted in lower than normal commercial air tour operations due to travel restrictions and closures in the State of Hawai‘i and does not represent the conditions in a typical year.

Routes and Altitudes

There are no designated flight routes or no-fly zones under the no action alternative. The figure for this alternative depicts both general route information provided by current commercial air tour operators and Automatic Dependent Surveillance – Broadcast (ADS-B) flight tracking data of actual commercial air tour operations over and adjacent to the Park. Actual commercial air tour operations are dispersed around the generalized routes provided by operators depicted on the figure. The ADS-B tracking data is more reflective of existing operations for various reasons including deviations that occur due to weather.

Minimum altitudes for commercial air tours within the ATMP planning area are flown in accordance with the HI Manual, from 500-1,500 ft. AGL, weather dependent and contingent on location on the island. In most locations within the Park, the HI Manual requires helicopters to fly at a minimum 500 ft. AGL. See the figure for this alternative for details. Operators have been granted exemptions to fly below 1,500 feet AGL over Haleakalā National Park and within a ½-mile buffer provided they meet certain requirements and limitations set forth by the FAA in the HI Manual.

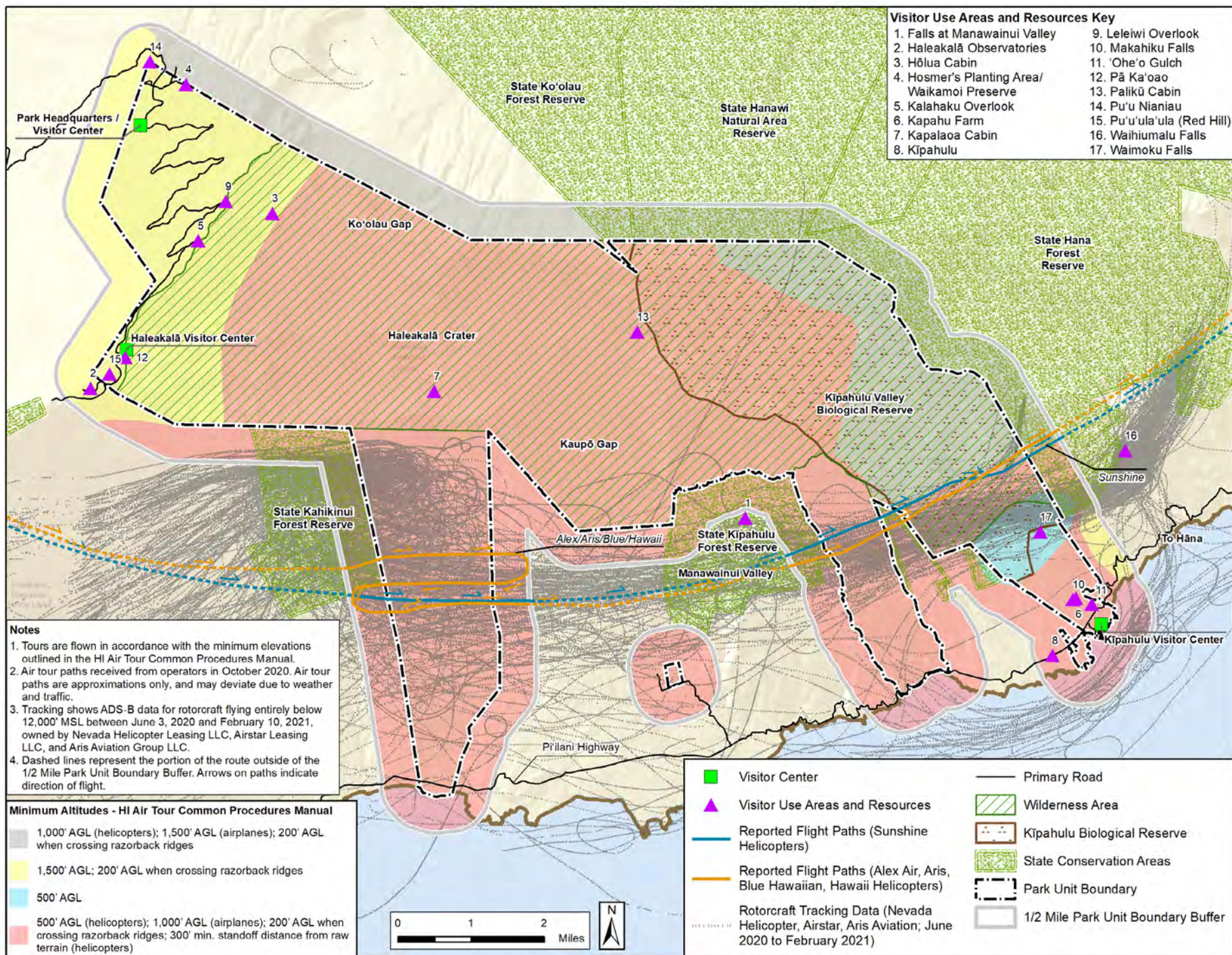
Operators, Aircraft Types, Interim Operating Authority

Five of the six operators that hold IOA for the Park reported flying commercial air tours over the Park between 2013 and 2019. All five operators that have reported flying over the Park during this period fly helicopters (not fixed wing aircraft). The following table summarizes each operator’s aircraft type, IOA for the Park, and average number of reported air tours over the Park from 2017-2019:

Alternative 1 (No Action)

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)
Aris, Inc. (Air Maui Helicopter Tours)	AS350BA	905	863	735	834	3,996
Hawai'i Helicopters, Inc.	AS350B2	516	328	283	376	5,682
Helicopter Consultants of Maui, Inc. (Blue Hawaiian Helicopters)	AS350B2, EC130 T2, EC130 B4	2,100	2,503	2,740	2,448	8,348
Schuman / Makani Kai	No Data	0	0	0	0	25
Sunshine Helicopters, Inc.	AS350BA	881	703	775	786	4,853
Alika Aviation, Inc. (Alexair, Maverick)	EC130B4	437	360	342	380	2,923
		4,839	4,757	4,875	4,824	25,827





Alternative 2

Objective

Alternative 2 seeks the greatest protection for the purposes, resources, and values of the Park. This includes: the summit of Haleakalā (meaning rim and crater), a Traditional Cultural Property which holds spiritual and cultural significance to Native Hawaiians; threatened and endangered species and other wildlife sensitive to noise; Congressionally designated Wilderness and visitor opportunities for solitude; ground-based visitor experience; Native Hawaiian traditional cultural practices; scenic qualities, and natural sounds.

Description

Alternative 2 would prohibit air tours within the ATMP planning area. The ATMP planning area includes areas below 5,000 feet AGL and within 1/2-mile of the Park boundary. The Park itself would be designated as an area to remain free of commercial air tours under 5,000 feet AGL. Air tours outside of the ATMP planning area (i.e., above 5,000 feet

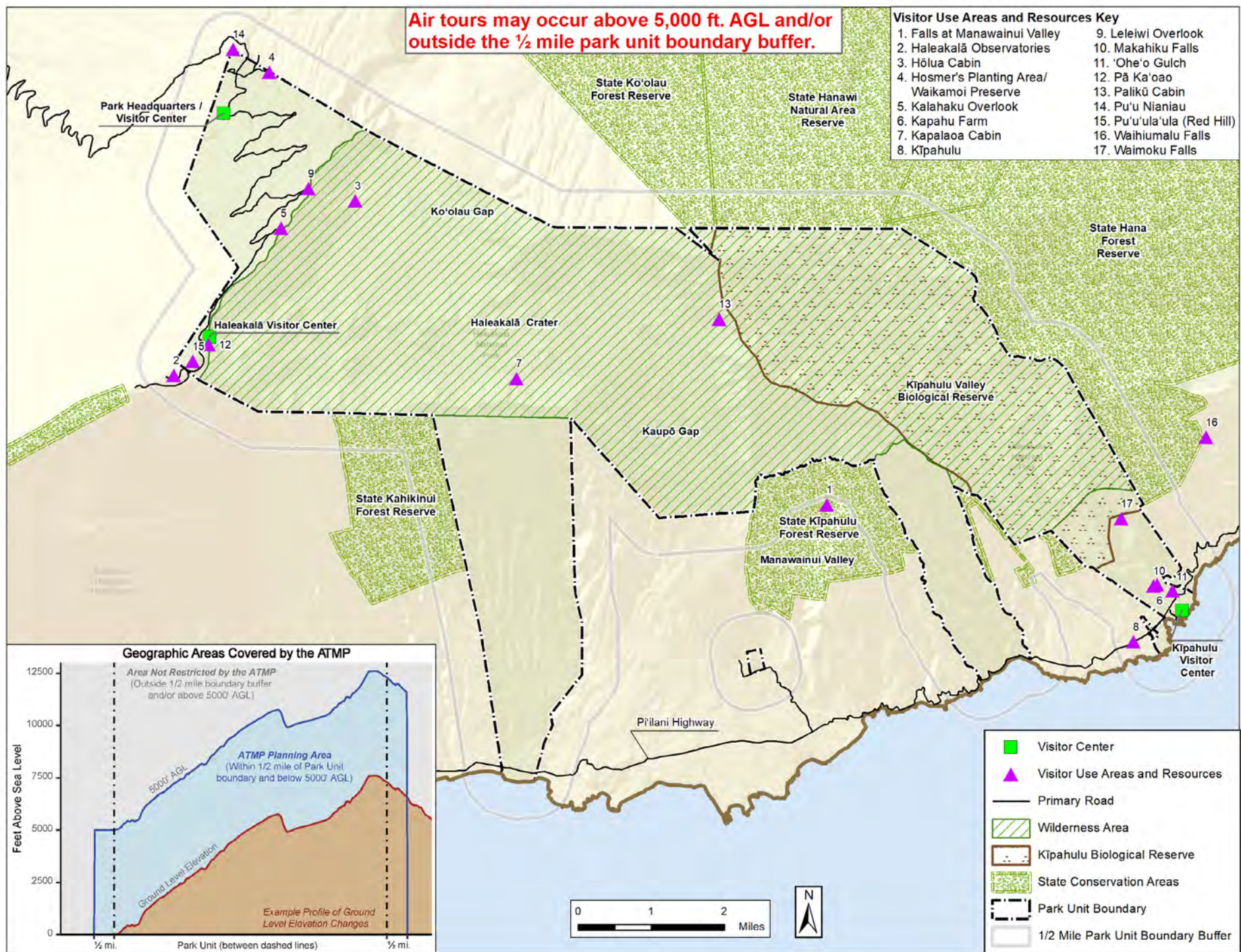
AGL or more than 1/2-mile outside of the Park's boundary) are not subject to the Act and are therefore not regulated under the ATMP. Thus, there would be no limitations on the annual number of air tours that could occur outside the ATMP planning area.

Routes and Altitudes

Air tours could be conducted only outside the ATMP planning area. Based on current air tour activity, routes outside of the ATMP planning area would be expected to be similar to existing routes. An unknown number of air tours originating on Maui Island would still continue to fly more than 1/2-mile outside of the Park's boundary at minimum altitudes ranging from 500 to 1,500 ft. AGL, depending on location on the island, in accordance with the HI Manual. The actual flight path of air tours outside the ATMP planning area would vary due to operator preference and weather conditions at the time of the air tour.



'Iwi in māmane



Alternative 3

Objective

Alternative 3 is intended to improve and protect Wilderness values, cultural resources, natural soundscapes, wildlife, and to provide enjoyment of the Park (visitor use). The following objectives were considered by the NPS in the development of this alternative.

- Protect sensitive cultural properties. The flight path avoids culturally significant areas, including those used by cultural practitioners, the Kīpahulu Historic District, Crater Historic District, the Kapahu Living Farm, and coastal areas for cultural fishing access and use (Prasad, U.K. and Tomonari-Tuggle, M.J. 2008).
- Protect biological resources. The flight path avoids bioreserves and protects forest birds, nēnē and ‘ua‘u by maintaining mid-slope (i.e., staying below 4,000 ft contour line elevations). The flight path also protects cliff-nesting seabirds and forest birds of the Manawainui plateau by avoiding flights in the deep valley/bowl area immediately west of Kaupō.
- Protect visitor experience and Wilderness values. The singular flight path avoids the Keonehe‘ehe‘e (Sliding Sands) Trailhead at the visitor center parking lot, Waimoku Falls and Kīpahulu area including the Visitor Center, and the Halemau‘u Trail switchback areas for improved Wilderness and visitor use and experience conditions and protection.
- Avoid or minimize unacceptable impacts to Wilderness values, cultural resources, natural soundscapes, wildlife, and visitor use by reducing the annual number of commercial air tours over the Park as compared to existing conditions.

The FAA reviewed the alternative to ensure it meets safety parameters.

Description

Alternative 3 provides a singular flight path within the ATMP planning area and a reduction in the number of commercial air tours authorized to fly over the Park in order to protect Park resources, values, and visitor experience.

Alternative 3

Caps on Numbers of Flights Allowed Annually and Daily

Noise modeling will be used to consider and evaluate various numbers of annual commercial air tours over the Park, ranging between 1 flight per year to below current condition (the average number of commercial air tours conducted over the Park each year from 2017-2019, in this case 4,824). The number of flights allowed over the Park on an annual basis will be selected to avoid or minimize unacceptable impacts to Wilderness values, cultural resources, natural soundscapes, wildlife, and visitor experience.

Daily caps will be determined by noise modeling in order to protect biological resources, sensitive cultural areas, and visitor use and experience.

Annual and daily caps on the numbers of flights allowed will be outlined in the EA and draft ATMP for public review.

Route and Altitudes

Alternative 3 includes a singular flight path with altitudes ranging from 1,500 – 2,000 ft. AGL, depending on location over the Park. This route has one ingress point into the ATMP planning area, entering from the west over the State Kahikinui Forest Reserve at a minimum altitude of 2,000 ft AGL. The flight crosses the Park's Nu'u Parcel at 2,000 ft. AGL, then descends to the edge of the ATMP planning area near the Park's Denman Parcel. The route continues in an easterly direction over a coastal portion of the ATMP planning area at a minimum of 1,000 ft. mean sea level (MSL). The altitude restrictions protect

marine threatened and endangered species by maintaining at least 1,000 feet above MSL over the ocean. Vertical separation of aircraft along the route would be prohibited.

Other than the route described above, under Alternative 3, no air tours could occur below 5,000 feet AGL within the rest of the ATMP planning area. Refer to the map for this alternative for a depiction of the flight corridor and altitudes.

Hovering/Circling

This alternative would prohibit hovering or circling because it could negatively impact visitors, cultural, and natural resources, including sensitive sites.

Time of Day/Day of Week

Flights would be permitted between the hours of 11:00 a.m. and 2:00 p.m. Exceptions to this parameter for Quiet Technology (QT) aircraft are noted below, which allow QT aircraft to fly at the Park from 11:00 a.m. until 4:00 p.m.

Flights would be permitted on all days of the week except Wednesday and Sunday. Selecting non-consecutive days comprising one weekend day and one weekday may offer access to the renowned quiet of the Haleakalā Crater to a broad range of visitors. Air tour operators will also be required to observe the Park's six existing commercial free days as no-fly days (see section on restrictions for special events).

Alternative 3

Quiet Technology (QT) Incentives

The Act requires that the ATMP include incentives for the adoption of QT by commercial air tour operators. Alternative 3 incentivizes the use of QT aircraft by relaxing time-of-day restrictions to allow QT aircraft to fly from 11:00 a.m. - 4:00 p.m.

In order to qualify for QT incentives, operators will be required to follow a process to be defined by the agencies outside of the planning process for the Haleakalā National Park ATMP.

Restrictions for Special Events

This alternative would include a mandatory 5-mile lateral standoff for special events that could be affected by commercial air tours, limited to the day of the event. Special events could include Native Hawaiian events or other natural and cultural resource programs. Two months' notice would be provided by the Park to commercial air tour operators prior to the event. The standoff would not extend outside of the ATMP planning area.

In addition to the weekly no fly days of Wednesday and Sunday, the Park has set aside six no-fly days for commercial tours over the Park. These dates are generated by following the Hawaiian Moon Calendar and Makahiki Season and currently are:

1. January 6 - end of Makahiki
2. May 26 - Zenith Noon
3. June 20 - Summer Solstice
4. July 15 - Zenith Noon
5. October 7 - start of Makahiki
6. December 21 - Winter Solstice

One year notice of the six no-fly dates will be provided to air tour operators by the Park.

Adaptive Management

Adaptive management is a systematic approach for improving resource management and ensuring that the continued effectiveness of the ATMP over time through the monitoring of park conditions and by learning from management actions or choices. Adaptive management is also used to address changed conditions such as if the breeding habitat of a sensitive species moves to a new area. Adaptive management of the route, frequency, and timing will be considered, analyzed, and included in this alternative for the protection of the biological reserves, forest and ground bird migratory patterns and habitat shifts over time due to climate change, Wilderness, and cultural resource quality and visitor experience impacted by air tours.

Interpretive Training and Education

The NPS would provide mandatory training for air tour pilots regarding Park resources. The training would include the Park information that operators could use to further their own understanding of Park priorities, cultural and natural resource protection and management objectives as well as enhance the interpretive narrative for air tour clients and increase understanding of the Park by air tour clients.

Operators would also be required to complete the FAA Fly Neighborly training for their aircraft type. Fly Neighborly is a noise reduction program that seeks to create better relationships between communities and helicopter operators by establishing noise mitigation techniques and increasing effective communication.

Alternative 3

Annual Meeting

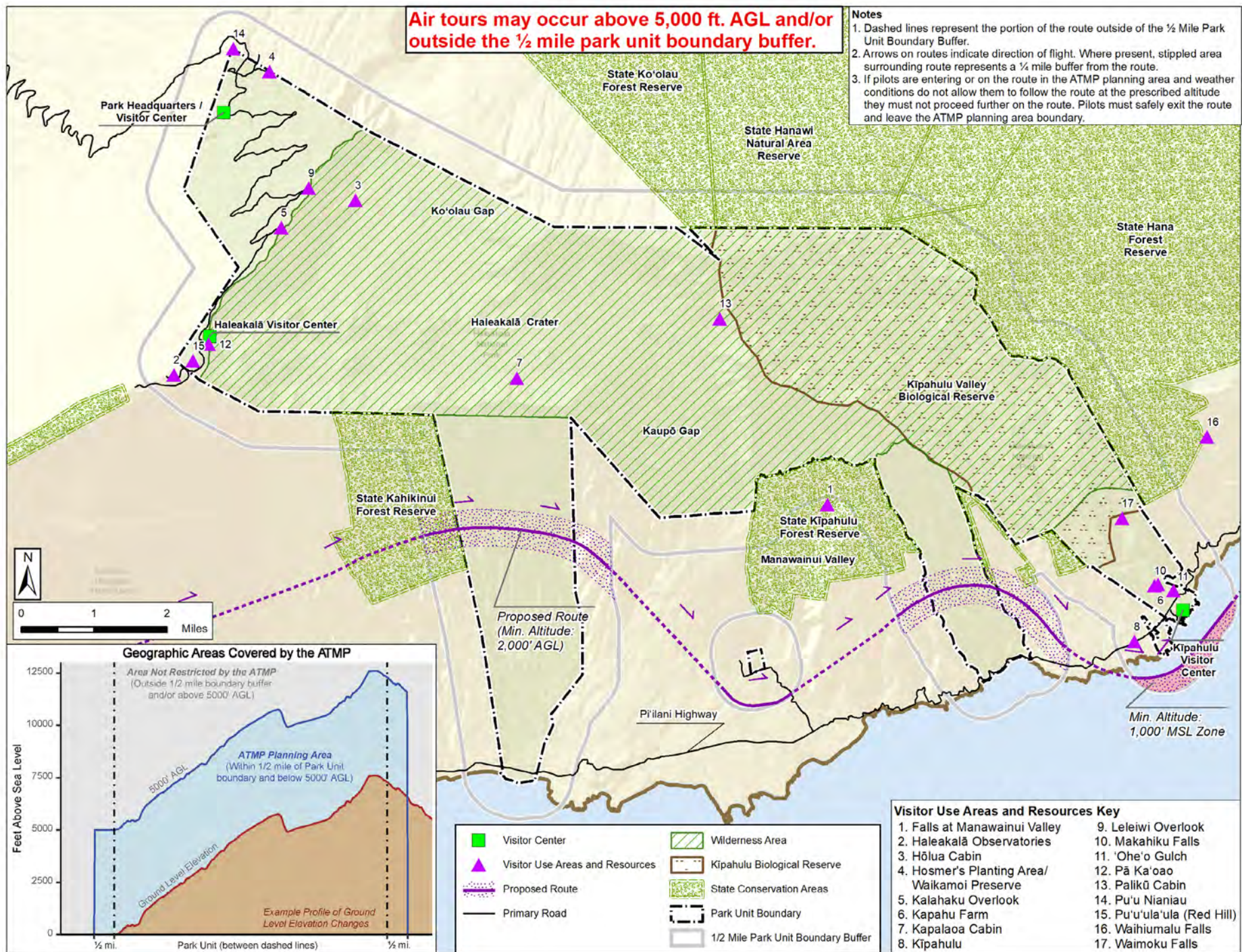
An annual meeting between the agencies and air tour operators would occur under this alternative. The ATMP will describe the details of the annual meeting.

Operators, Initial Allocation of Air Tours, and Aircraft Types

The ATMP will identify a maximum total number of air tour flights authorized to occur each year. Upon finalization of the ATMP, the number of flights authorized to occur each year would be proportionally allocated to each of the six operators that have reported operations over the Park in the period from 2017-2019. Each operator's initial allocation will reflect the proportion of its average number of reported flights from 2017-2019 as compared to all operators that have reported flying over the Park during this period. 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. Under the Act, IOA terminates 180 days after the date of establishment of the ATMP. However, if the FAA updates an operator's Operations Specifications before that time, IOA will be terminated when the Operations Specifications are updated.

Monitoring and Enforcement

Operators would be required to equip all aircraft used for air tours with flight monitoring technology, use flight monitoring technology during all air tours under the ATMP, and to report flight monitoring data as an attachment to the operator's semi-annual reports. Soundscape monitoring by the NPS would also occur to ensure that the terms and conditions of the ATMP are consistent with Park management objectives.



Summary of Alternative Elements

Alternative Attributes	Alternative 1 (No Action)	Alternative 2	Alternative 3
General Description and Objectives	What happens if the agencies do not adopt an ATMP. 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 feet AGL or more than ½-mile outside of the Park's boundary).	Provides a singular flight path within the ATMP planning area and a reduction in the annual number of commercial air tours over the Park.
Annual/Daily Number of Flights	Leaves IOA in place allowing the potential to fly up to 25,827 commercial air tours each year. Actual number of tours has historically ranged from 4,839 (in 2017) to 4,757 (in 2018) flights per year, or an average of 4,824 flights (based on 2017-2019 reporting).	None in ATMP planning area.	Between 1 and below the current condition (4,824) flights per year, dependent on modeling. Will consider the use of daily caps by operator.
Routes	No mandatory routes or no-fly zones. See map for depiction of reported routes and actual operations.	None in ATMP planning area.	One air tour route, entering the Park on the west near the State Kahikinui Forest Reserve and exiting the Park near the Kīpahulu area and Visitor Center. This route allows operators to fly in one direction.
Minimum Altitudes	Flown in accordance with the HI Manual, generally between 500-1,500 ft. AGL.	No minimum altitude would be set. However, flights over the Park that are above 5,000 feet 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 are subject to the altitude restrictions of the HI Manual.	Minimum 1,500 – 2,000 ft. AGL. Flights more than ½-mile outside the Park boundary are similarly outside the ATMP planning area and are subject to the altitude restrictions of the HI Manual.
Time of Day	No restrictions.	N/A	11 AM – 2 PM for non-QT flights. 11 AM – 4 PM for QT flights.

Continuation of Alternative Attributes	Alternative 1 (No Action)	Alternative 2	Alternative 3
Day of Week	No restrictions.	N/A	No-fly day on Wednesday and Sunday.
Hovering/ Circling	No restrictions.	N/A	Not permitted.
Quiet Technology (QT) Incentives	None.	N/A	QT flights may fly 11AM - 4PM.
Interpretative Training and Education	None.	N/A	Mandatory.
Annual Meeting	None.	N/A	Included.
Restrictions for Particular Events	None.	N/A	Six no-fly days generated by following the Hawaiian Moon Calendar and Makahiki Season with one year notice provided to operators. Mandatory 5-mile standoff distance for other special events, with two months' notice provided to operators.
Adaptive Management	None.	N/A	To be considered/analyzed.
Operators, Initial Allocation of Air Tours, and Aircraft Types	Reflects IOA (25,827 IOA issued to six operators).	N/A	The initial allocation would reflect the proportional number of air tours reported over the Park and the existing aircraft types of each of the five operators that have reported operating in the period from 2017-2019. Then it would move to competitive bidding.

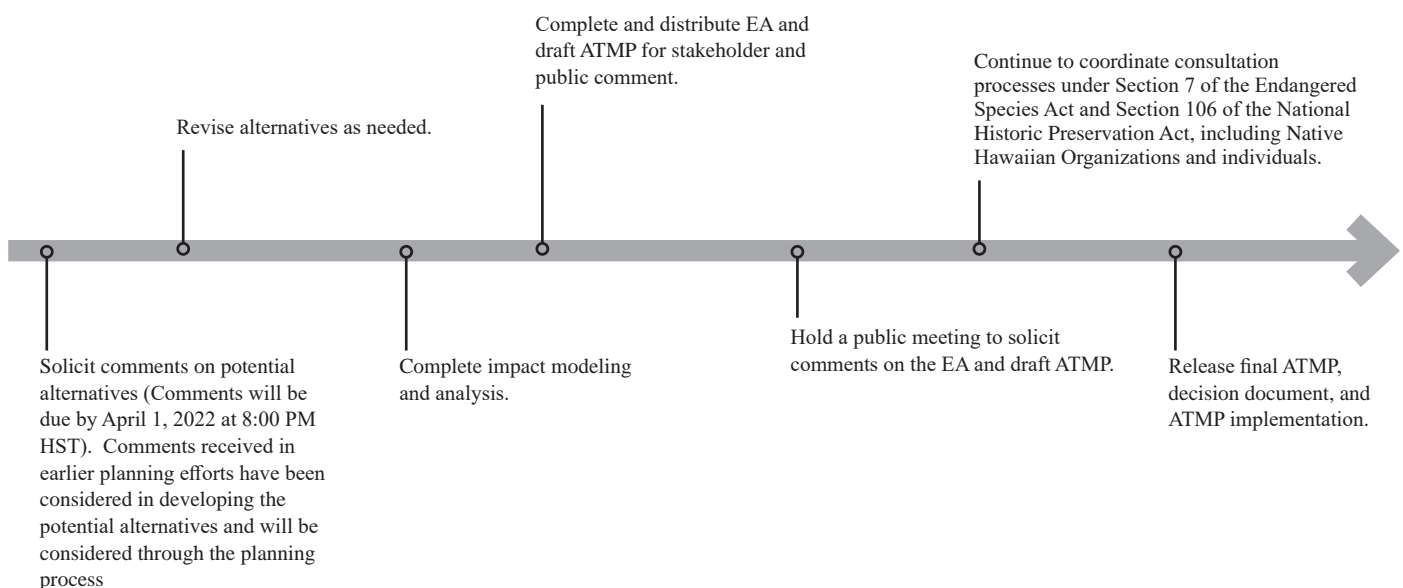
Next Steps

This public scoping period represents the first opportunity to be involved in the current planning process. Comments received in earlier planning efforts have been considered in developing the potential alternatives and will be considered through the 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 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 NPS are also seeking to identify additional individuals or organizations that may be interested in participating in Section 106 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 Cathy Nadals at 240-446-5086 or Catherine.L.Nadals@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.



Glossary

The Act	National Parks Air Tour Management Act of 2000
ADS-B	Automatic Dependent Surveillance-Broadcast
AGL	Above Ground Level
ATMP	Air Tour Management Plan
EA	Environmental Assessment
FAA	Federal Aviation Administration
FSDO	Flight Standards District Office
HI Manual	Hawai‘i Air Tour Common Procedures Manual
IOA	Interim Operating Authority
MSL	Mean Sea Level
NEPA	National Environmental Policy Act
NPS	National Park Service
Park	Haleakalā National Park
PEPC	Planning, Environment & Public Comment System
QT	Quiet Technology



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. Please send comments by **April 1, 2022 at 8:00 PM HST**.

Comments may be submitted using the PEPC system at:

<https://parkplanning.nps.gov/HaleakalaATMP>

Written comments may be sent via postal mail to the following address:

Volpe National Transportation Systems Center
Kaitlyn Rimol, V-326
Attn: Haleakalā National Park ATMP
55 Broadway
Cambridge, MA 02142

Send Us Your Comments!

PLEASE SUBMIT YOUR COMMENTS BY APRIL 1, 2022 AT 8:00 PM HST.

Please submit comments electronically by visiting:

<https://parkplanning.nps.gov/HaleakalaATMP>

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.

Please print your name and address in the space provided.

Name: _____

Organization, if any: _____

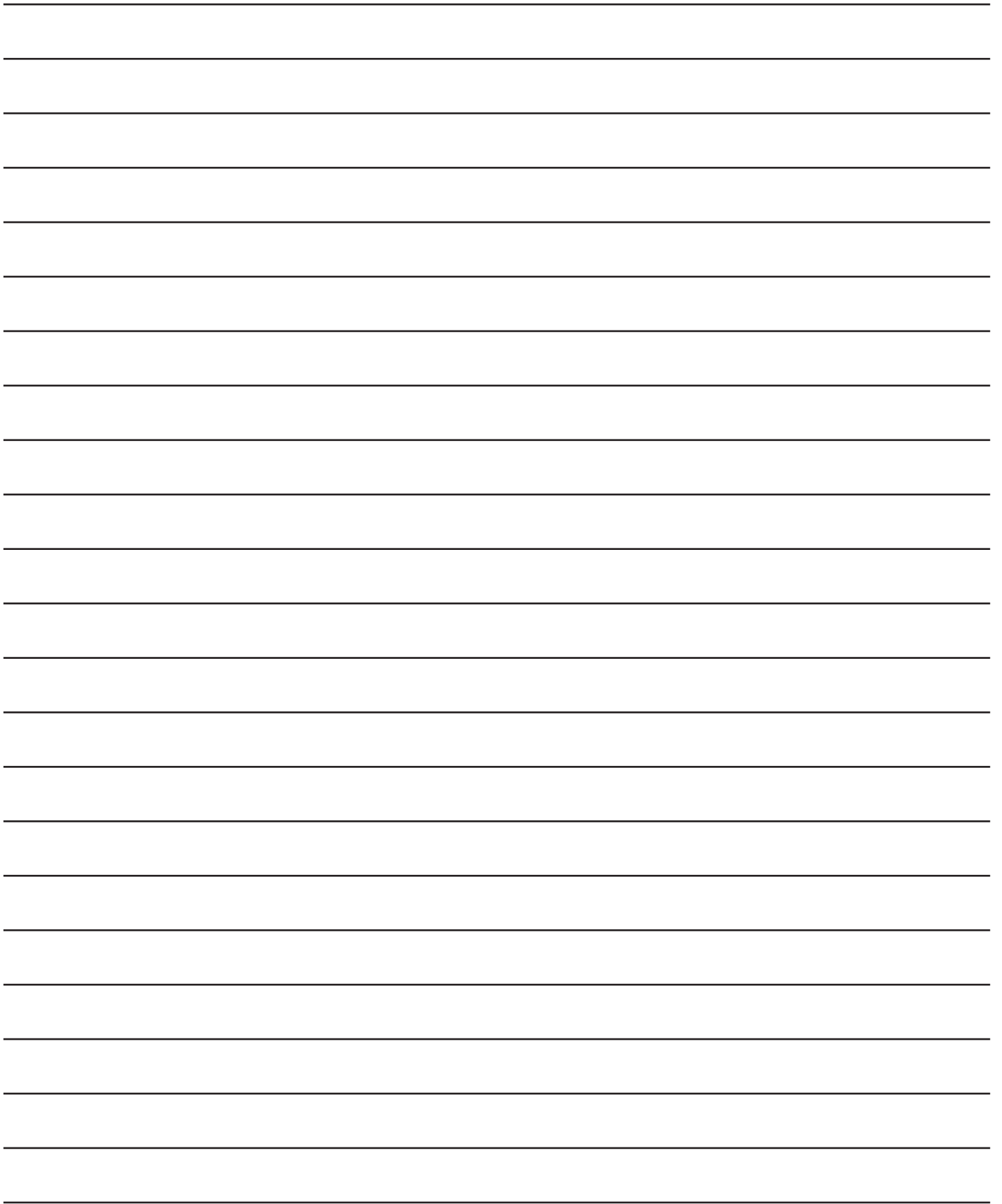
Mailing Address: _____

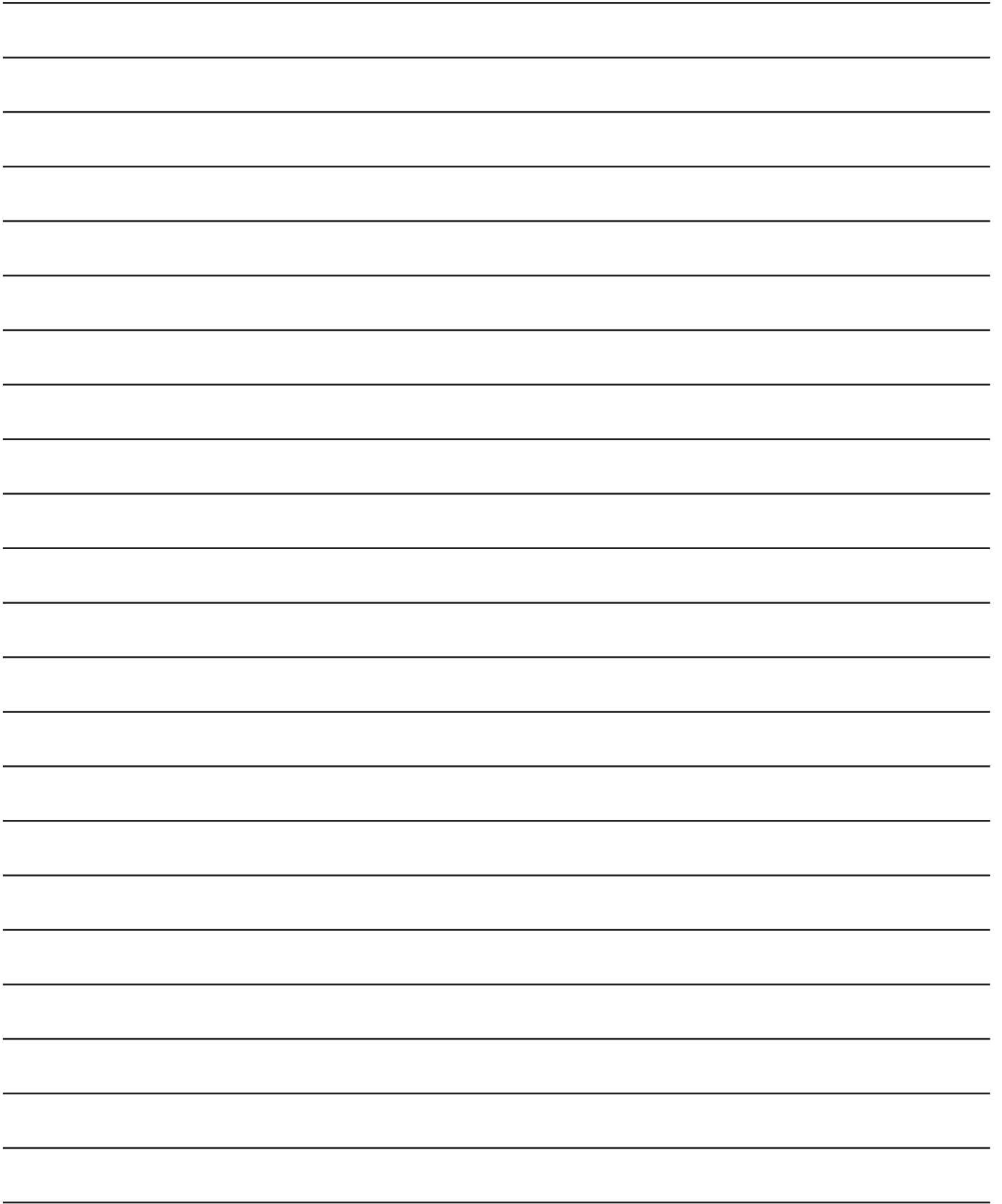
City/State/Zip: _____

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: Haleakalā National Park ATMP
55 Broadway
Cambridge, MA 02142

**US Department of Transportation
Federal Aviation Administration**



**US Department of the Interior
National Park Service**



Haleakalā National Park

Air Tour Management Plan

Summary of Comments Received During Scoping for the Environmental Assessment

November 2022

CONTENTS

INTRODUCTION	1
COMMENT ANALYSIS METHODOLOGY	1
CONTENT ANALYSIS TABLES	2
SUMMARY OF COMMENTS	3
ADV100 Adverse Impacts: Soundscape Impacts	3
ADV200 Adverse Impacts: Wildlife/Biological Impacts	4
ADV300 Adverse Impacts: Endangered Species Impacts	4
ADV400 Adverse Impacts: Wilderness Character Impacts	4
ADV500 Adverse Impacts: Cultural Resource Impacts	5
ADV600 Adverse Impacts: Visual Impacts	5
ADV700 Adverse Impacts: Equity	6
ADV800 Adverse Impacts: Climate Change, Greenhouse Gases, and Air Quality	6
ADV900 Adverse Impacts: Other	6
ALT100 Alternatives: Substantive Support for Alternative 1 – No Action	7
ALT150 Alternatives: Substantive Opposition for Alternative 1 – No Action	7
ALT200 Alternatives: Substantive Support for Alternative 2 – No Air Tours in Planning Area	7
ALT250 Alternatives: Substantive Opposition for Alternative 2 – No Air Tours in Planning Area	7
ALT300 Alternatives: Substantive Support for Alternative 3 – Mitigation Measures	7
ALT350 Alternatives: Substantive Opposition for Alternative 3 – Mitigation Measures	8
CUL100: NHO/Kūpuna Concerns	8
ELE100 ATMP Elements: Annual Number of Air Tours	8
ELE200 ATMP Elements: Routes and Altitudes	9
ELE300 ATMP Elements: Aircraft Type	10
ELE400 ATMP Elements: Day/Time	10
ELE500 ATMP Elements: Other	10
FAV100 Benefits of Air Tours	11
PRO100 Process Comments: Impact Analysis	12
PRO200 Process Comments: Public Review	13
PRO300 Process Comments: Alternatives Considered	13
PRO400 Process Comments: Other	14
PRO500 Process Comments: NEPA	14

INTRODUCTION

The draft Air Tour Management Plan (ATMP) would provide the terms and conditions for commercial air tours conducted over Haleakalā National Park (Park) pursuant to the National Parks Air Tour Management Act (Act) of 2000. The Act requires that the Federal Aviation Administration (FAA) in cooperation with the National Park Service (NPS) (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 U.S.C. § 40128(a)(5).

The objective of establishing an ATMP for the Park 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, visitor experiences and areas of historic and spiritual significance to Native Hawaiians, Wilderness character, and visitor experience within the jurisdictional boundaries of the Act.

Comments were accepted as part of a National Environmental Policy Act (NEPA) public scoping process, and notification of the public scoping period occurred through a news release by the Park, posted notice on the Park’s website and social media, and sending emails and hard copy mailings to the Park’s civic engagement stakeholder list and congressional officials. In addition, Park staff responded to media inquiries and requests for interviews. The agencies accepted comments from February 28 through April 1, 2022. The NPS published a newsletter describing the potential alternatives on the NPS Planning, Environment, and Public Comment (PEPC) website at the start of the scoping period and included the newsletter in the Park’s emails and hard copy mailing notifications. The newsletter on potential alternatives provided a project introduction, the purpose and need for the project, resources for consideration in the Environmental Assessment (EA), elements common to all the alternatives, and an overview of three potential alternatives, including routes, altitudes, time-of-day restrictions, restrictions for particular events, maximum numbers of flights, and other provisions. The potential draft alternatives also include a justification for the provisions and conditions designed to protect Park resources and visitor experience.

Any comments entered into PEPC by members of the general public, as well as any written comments mailed or emailed to the NPS, were considered and included in the project file. The agencies will use public and stakeholder input to further refine or dismiss alternatives and potentially to consider new alternatives. The agencies will also use public input to inform the environmental analysis. Alternatives that are carried forward and analyzed in the EA will be available for public review and comment as part of the public comment period on the EA. This *Public Comment Summary Report* provides a summary of the substantive comments submitted during the public scoping period.

COMMENT ANALYSIS METHODOLOGY

Comment analysis is a process used to compile and correlate similar comments into a usable format for the agencies’ decision-makers and the program team. Comment analysis assists the agencies in organizing, clarifying, and addressing information and aids in identifying the topics and issues to be evaluated and considered throughout the ATMP planning process.

The process includes five main components:

- developing a coding structure;
- employing a comment database for comment management;

- reviewing and coding of comments;
- interpreting and analyzing the comments to identify issues and themes; and
- preparing a comment summary.

A coding structure was developed to help sort comments into logical groups by topic and issue. The coding structure was designed to capture the content of the comments rather than to restrict or exclude any ideas.

The NPS PEPC database was used to manage the public comments received. The database stores the full text of all correspondence and allows each comment to be coded by topic and category. The agencies read and analyzed all comments. Under each code, all comments were grouped by similar themes, and those groups were summarized with concern statements which are reflected in the report below.

CONTENT ANALYSIS TABLES

In total, 2,685 correspondences were received, of which 139 were duplicates. Therefore, the agencies received a total of 2,546 correspondences, which included 4,347 discrete comments. The term “correspondence,” as used in this report, refers to each submission offered by a commenter. The term “comment,” as used in this report, refers to an individual issue or concern raised by a commenter that was coded by topic and category. A single commenter may have raised multiple comments within a correspondence. Similarly, multiple commenters raised many of the same comments. Of the correspondences received, six were identified as form letters. These form letters captured varying expression towards the ATMP, all captured in the comment summaries below. The six form letters were signed by a combined total of 426 signatories. There were other correspondences that were revised versions of the six form letters, but the comment management software did not capture them as form letters.

The following table was produced by the NPS PEPC database and provides information about the numbers and types of comments received, organized by code, including form letters.

Code	Description	Comments	Percentage
ADV100	Adverse Impacts: Soundscape impacts	916	21%
ADV200	Adverse Impacts: Wildlife/biological impacts	164	3.7%
ADV300	Adverse Impacts: Endangered species impacts	34	0.8%
ADV400	Adverse Impacts: Wilderness character impacts	53	1.2%
ADV500	Adverse Impacts: Cultural resource impacts	257	6%
ADV600	Adverse impacts: Visual impacts	31	0.7%
ADV700	Adverse Impacts: Equity	116	2.7%
ADV800	Adverse Impacts: Climate change / greenhouse gases / air quality	55	1.2%
ADV900	Adverse Impacts: Other	308	7%
ALT100	Alternatives: Support Alternative 1 - No Action	2	0.05%
ALT150	Alternatives: Oppose Alternative 1 – No Action	7	0.2%
ALT200	Alternatives: Support Alternative 2 - No Air Tours in Planning Area	123	2.8%
ALT250	Alternatives: Oppose Alternative 2 – No Air Tours in Planning Area	3	0.07%
ALT300	Alternatives: Support Alternative 3 - Mitigation Measures	28	0.6%
ALT350	Alternatives: Oppose Alternative 3 – Mitigation Measures	8	0.2%
CUL100	NHO/Kūpuna Concerns	26	0.6%
DUP100	Duplicate Correspondence	139	3.2%
ELE100	ATMP Elements: Annual number of air tours	41	0.9%
ELE200	ATMP Elements: Routes and altitudes	69	1.6%

Code	Description	Comments	Percentage
ELE300	ATMP Elements: Aircraft type	3	0.07%
ELE400	ATMP Elements: Day/time	26	0.6%
ELE500	ATMP Elements: Other	29	0.7%
FAV100	Benefits of air tours	123	2.8%
NS100	Non-substantive comment: Support air tours	394	9%
NS150	Non-substantive comment: Other	378	8.7%
NS200	Non-substantive comment: Oppose air tours continuing	137	3%
NS300	Non-substantive comment: Oppose air tours introduction	759	17.5%
PRO100	Process Comments: Impact analysis	24	0.6%
PRO200	Process Comments: Public review	9	0.2%
PRO300	Process Comments: Alternatives considered	17	0.4%
PRO400	Process Comments: Other	6	0.1%
PRO500	Process Comments: NEPA	11	0.3%
WP100	Wrong Park: Substantive Comment	0	0%
WP200	Wrong Park: Non-Substantive Comment	51	1.2%

SUMMARY OF COMMENTS

The following text summarizes the comments received during the scoping period and is organized by code. The summarized text is formatted into concern statements to identify the thematic issues or concerns represented by comments within the code. The agencies only coded comments with substantive content. Substantive comments raise, debate, or question a point of fact, or elements of the potential alternatives. Comments that merely support or oppose the potential alternatives are not considered substantive. After review and consideration of the public scoping comments, the input was used to further refine and/or dismiss alternatives for analysis within the Environmental Assessment (EA). There were 1,719 non-substantive comments received during the scoping period.

ADV100 Adverse Impacts: Soundscape Impacts

1. Many commenters expressed opposition to air tours, citing air tour noise adversely affects opportunities to experience solitude, and natural sounds, specifically in the Wilderness areas; adversely affects endangered species, wildlife, plants, and ecosystems; adversely affects visitors that come to the Park to experience natural soundscapes, camping, hiking, or to visit the backcountry and Crater; impacts Park visitors and local pets; triggers erosions from the vibrations; adds pollutants; and adversely affects residents' health and triggers post-traumatic stress disorder (PTSD). Commenters pointed out that the Park has been designated as one of the quietest places on Earth and highlighted that helicopter noise is more persistent than fixed wing aircraft. For these reasons, commenters requested that air tours be prohibited over the Park. Some commenters stated that all three alternatives allow air tours over the Crater, resulting in frequent noise impacts, while others expressed preference for Alternative 2, noting that it provides the greatest protection from noise.
2. Some commenters noted air tours disrupt the silence near the Crater rim at the Kapalaoa Cabin and near the Crater rim at the Palikū Cabin, noting that the Park is highly susceptible to noise pollution due to its topography and that scientists can measure negative sound decibels, meaning below the human hearing spectrum, within the Crater. Some commenters mentioned that air tours interfere with acoustic-based bird surveys, and interpretive visitor programs. Some commenters noted that FAA altered flight patterns from offshore to onshore have an increase in sound as

pilots downshift, and some mentioned that previously established restrictions to ban flights over the Crater have reduced noise.

3. Commenters stated that air tours negatively impact abutting communities, personal lives and health, cultural and spiritual practices, business, and properties. Commenters stated that small number of tourists utilizing air tours is less than the majority of visitors on the ground who would be affected by air tour noise and that natural sounds should not be disturbed by a minority group of air tourists, while some suggested that noise from all vehicles be removed from the Park. Commentors also noted that air tours are not affordable for the average household in Hawai‘i.

ADV200 Adverse Impacts: Wildlife/Biological Impacts

1. Many commenters expressed concern about the negative impacts on wildlife and plants, noting that air tours affect behavior, habitat, feeding, nesting, resting, and these effects can lead to higher mortality rates or abandonment of habitat and young; and that noise from air tours would adversely affect insects, marine wildlife, birds, deer, horses, and native species such as nēnē, ‘ōpe‘ape‘a, ‘ua‘u (Hawaiian Petrel), honeycreepers, ‘i‘iwi, ‘apapane, ‘amakihi, happy face spider, pueo, and kiwīkiu. Some commenters stated that damage to wildlife from sound disturbances is not fully understood and cannot be measured through an Environmental Impact Statement while others mentioned adaptive ability of wildlife exposed to noise impacts based on studies near the National Aeronautics and Space Administration’s (NASA’s) Pad 39 launch site. Commenters noted the noise from air tours drowns out bird songs and that air tours would disrupt bird watching, impact bird monitoring efforts, and interfere with acoustic-based bird surveys and Native Hawaiian biological diversity. One commenter noted air tours impact animals on local ranches and the deer population, which may destroy ranch fences when startled by air tours. Commenters noted air tours may affect livestock and pets and disrupt game animals in Polipoli Spring State Recreation Area near the Park. One commenter referenced the Aircraft Noise Study in Haleakala National Park (Perez, A. and Quinn, M., 1985) and noted that 85% of flights made through the Wilderness area were made by tour helicopters, at altitudes ranging from 80 feet to 3,000 feet above ground level (AGL), and peak sound levels generated ranged from 30 to 80 dBA and averaged 60 dBA. The study found that helicopter noise disturbed nēnē (Hawaiian Goose), taking several minutes to calm back down, which is an unnecessary expenditure of energy and reduced the nēnē’s chance for survival and reproduction.

ADV300 Adverse Impacts: Endangered Species Impacts

1. Commenters noted effects from air tourism such as higher risk to endangered species and their critical habitat caused by noise, wind turbulence, pollution, bird fatalities, changes to behavior, reduced survival, and reduced likelihood of Park visitors observing species.
2. Commenters raised concerns about the impact air tours and related noise can have on endangered birds, noting that Hawai‘i hosts the greatest concentration of endangered birds in the world and that the National Park Service endangered birds monitoring with use of acoustic devices could be interrupted by air tours.
3. Commenters noted the Park is protected by FAA/FAR regulations prohibiting overflights over the “Caldera” and portions of Park for endangered and endemic animals, flora, and fauna.

ADV400 Adverse Impacts: Wilderness Character Impacts

1. Commenters opposed flights over Wilderness, backcountry, and surrounding areas, such as the Kahikinui Forest Reserve, noting that air tours are incompatible with Wilderness characteristics and values. Commenters noted any sound that reaches the interior of the Crater reverberates off

the walls and reaches within the designated Wilderness area and in order to maintain Wilderness character, commenters requested no aircraft noise should be permitted within audible range of the Wilderness area, while others suggested restricted routes to minimize the visual and audible impacts in Wilderness areas of the Park and noted the Wilderness area must be protected from commercialization as it is sacred to Native Hawaiians.

ADV500 Adverse Impacts: Cultural Resource Impacts

1. Commenters objected to air tours because of the disruption and intrusion to sacred land, stating that the Park is an important cultural site and Traditional Cultural Property that should be treated with respect; there would be more disruption to cultural sites by not restricting and observing the flight routes; and that the sight and sounds of aircraft are disturbing to native cultural practitioners and infringe on the religious freedoms of those who visit certain areas for pule (prayer) interaction, religious ceremonies, solitude, relaxation, contemplation, silence, and meditation, citing nps.gov which states that Haleakalā is a sacred place that has been used since ancient times, and that it is the dwelling place of nā akua (the gods), where kahuna (priests) conduct ceremonies. Commenters stated that air tours over sacred land and indigenous communities is exploitative linking it to the illegal overthrow of the Hawaiian kingdom and erasure of Hawaiian culture and language; and noted that air tour demand would decrease if more people were aware of the overthrow and its impacts. Commenters stated that tourism, marketing Hawai'i as an exotic tourist destination, and the commodification and overexposure of Hawaiian culture has created cultural distortions leading to degradation of Hawaiian culture that makes it more difficult for Hawaiian activism and sovereignty to gain traction and poses a serious threat to the sovereignty of ancestral domain over the land by its indigenous caretakers. Commenters emphasized the importance of keeping the considerations of the local population, especially the indigenous Hawaiian population, as a top priority in the planning of the ATMP. Some commenters stated that Alternative 2 provides adequate protections for indigenous land, especially since the area within the ATMP holds culturally significant areas that are considered sacred and/or used for cultural practices with reference to: Hall, Lisa Kahaleole, 'Hawaiian at Heart' and other Fictions"; The Contemporary Pacific (2005): 404-413.
2. Commenters stated that the Haleakalā National Park Foundation Document (updated September 2015) lists nine fundamental resources and values (FRVs) "essential to achieving the purpose of the park," which include natural sounds, viewsheds and dark night skies; Wilderness; ongoing connections to living Hawaiian culture; native Hawaiian biological diversity; and kuleana (the responsibility to present and future generations for stewardship and the respect for all things spiritual and physical), and noted that any number of commercial air tours fundamentally impede or damage each of these FRVs, including intrusion on Native Hawaiian cultural ceremonies and practices, interference of acoustic-based bird surveys and unreasonable impacts on interpretive programs and visitor activities throughout the Park, and that any flights anywhere close to the boundary of Haleakalā Crater, in either height or distance, have an amplifying destructive effect on the peace, quiet and serenity of the Crater.

ADV600 Adverse Impacts: Visual Impacts

1. Commenters were concerned about the visual impacts of air tours, noting that they are a source of visual pollution and intrusion that would impede enjoyment of scenic qualities, peace, and serenity. Commenters stated that air tours fundamentally impede or damage the FRVs listed in the Haleakalā National Park Foundation Document, specifically interfering with night sky and scenic vistas; and flights interfere with photography.

ADV700 Adverse Impacts: Equity

1. Many commenters stated that a disproportionately small number of people who can afford or can physically fit on the aircraft benefit from air tours that cause adverse impacts for most visitors who exert effort to view the Park from the ground, noting that the Park is accessible by other means than air tours. Commenters described air tours as inequitable and an environmental justice issue that signal income disparities in the use of public lands as Park visitors with lower incomes are less like to utilize air tours due to their cost and are more likely to be impacted by them, while wealthy tourists utilize air tours and operators benefit from them. Commenters mentioned that Hawai'i has one of the highest costs of living and air tours do not benefit the locals who endure that high cost of living, pointing out that air tour companies do not hire locals, but rather trained professionals that have been transplanted to Hawai'i and restrictions to the annual number of air tours and times of day will reduce the air tour operation and generate a large profit for a few employees that spend earnings at larger retail corporations rather than local shops, ultimately impacting the local economy.
2. Other commenters stated not providing air tours limits the physically disabled and elderly from viewing the Park, while others questioned why air tour companies are allowed to make money at the expense of all other Park visitors; stated that it is good public policy to limit the privatization of public spaces for private profit; mentioned Park managers' personal dislike of air tours and preference for complete removal of air tours as they would reduce overall tourism and detract from the interest in the Park overall; and suggested that air tours go on a lottery system with affordable flight fares to eliminate inequity in air tourism.

ADV800 Adverse Impacts: Climate Change, Greenhouse Gases, and Air Quality

1. Commenters stated that air tours contribute to air pollution, increased use in limited fossil fuels, increased carbon footprint, and greenhouse gas emissions which contribute to the climate crises, smog, hazardous health conditions, and harmful effects on the ecosystem. Commenters stated U.S. Government and the NPS should not be encouraging fossil-fuel intensive recreation that is in direct conflict with the values of the park system to preserve the natural ecosystems. Commenters noted that the fuel consumption and emissions go against Hawaii's energy goals and compound the climate crisis, while others suggested the use of aircraft equipment that would help to reduce their carbon footprint and requested the NPS fully explore these options before reducing the number of allowable tours.

ADV900 Adverse Impacts: Other

1. Commenters mentioned general health and safety concerns related to air tours, including potential property damage from potential crashes, increased stress, and disrupted sleep patterns. Commenters stated that limiting flights over the Park may result in an increase in commercial air tour traffic and impacts to state lands, noting that the Board of Land and Natural Resources raised these concerns with the FAA in a letter dated May 28, 2021, and also noted air tours would impact not only state-owned lands but public land trust areas. Other commenters noted that banning air tours would cause economic impacts to the local economy and tourism industry and result in a loss of revenue for the Park and tax revenue for state and local governments, citing Matsuoka, Jon, and Terry Kelly. "The environmental, economic, and social impacts of resort development and tourism on native Hawaiians." J. Soc. & Soc. Welfare 15 (1988): 29.

ALT100 Alternatives: Substantive Support for Alternative 1 – No Action

1. Few commenters expressed preference or support for Alternative 1, but some stated confusion on how it continues to follow the voluntary agreement to not fly directly over the Crater while others state that flights are not currently flying directly over the Crater as there are no designated flight routes or no fly zones under Alternative 1.

ALT150 Alternatives: Substantive Opposition for Alternative 1 – No Action

1. Many commenters opposed Alternative 1, commenting that Alternative 1 is unacceptable as it continues to cause impacts to noise, natural and cultural resources, and ground-based use experience; does not meet the purpose and need for the ATMP and is not in compliance with the Act; and that it is a basis for comparison but is not a selectable alternative as it does not meet the purpose and need for the ATMP and is not in compliance with the Act. Other commenters noted that one cannot assume the current Interim Operating Authority (IOA) will remain indefinitely, and if Alternative 1 is adopted, and the IOA is amended, the number of helicopter tours could increase significantly.

ALT200 Alternatives: Substantive Support for Alternative 2 – No Air Tours in Planning Area

1. Commenters expressed general preference for Alternative 2 as it provides the greatest protection from pollution and noise impacts to natural and cultural resources, cultural practices, ceremonial sites, Traditional Cultural Properties, ecological systems, endangered species, Wilderness character and backcountry visitors, and ground-based visitor experience. Commenters noted that Alternative 2 was the strictest, yet easily enforceable, Alternative that protects from overtourism, noting that there was an overdependence on tourism during the COVID pandemic. Some commenters deemed air tours unnecessary, while others noted that under Alternative 2, the Park would be designated as an area to remain free of commercial air tours under 5,000 feet AGL and tours could still fly over the Park above 5,000 ft AGL, but that those flights still have visual and noise impacts and there are no mitigating circumstances that will allow helicopters to operate in the area without destroying the spirit of this Park. Other commenters expressed preference for Alternative 2, suggesting that a buffer be established so helicopters cannot be heard if they are near the ATMP area, and that Alternative 2 be combined with Alternative 3.
2. Commenters expressed preference for Alternative 2 as it preserves the Park's purpose, supports the requests of Senator Akaka and Representative Case's preference; follows the ATMP legislation from 2000; and meets the purpose of the Act, the Park's legislative mandate, and the Park's fundamental resources and values.

ALT250 Alternatives: Substantive Opposition for Alternative 2 – No Air Tours in Planning Area

1. Few commenters expressed opposition to Alternative 2. Some described that it is too restrictive and unrealistic while others stated that Alternative 2 would only be acceptable if flights occurred on limited days. Some commenters expressed concern if Alternative 2 were selected stating operators may start flying over 5,000 AGL across the entire Park; operators may increase the number and timing of flights on more sensitive parts of the island; and some operators may end up going out of business and lay off personnel.

ALT300 Alternatives: Substantive Support for Alternative 3 – Mitigation Measures

1. Commenters expressed general preference for Alternative 3 as it provides restrictive rules, mitigates noise, protects wildlife, biodiversity, visitor experience, cultural sites, the tourism

industry, reduces carbon emissions, and provides education for tour operators. Commenters expressed their agreement with annual meetings to discuss flight routes and overall reservation of the land, minimum elevations, and 6 no-fly days for planned cultural events, while some requested increasing the number of no-fly days to include Federal holidays.

2. Commenters expressed preference for Alternative 3 as an acceptable compromise between unlimited tours and no tours at all, noting that it is the best way to meet the interests of all stakeholders, the use of Quiet Technology (QT) no tail rotor aircraft, and QT incentives. Other commenters expressed preference for Alternative 3 only if it will not impact the residents along the route, there are larger incentives for QT, and flights during 11 AM – 2 PM are limited to no more than 2 per hour.

ALT350 Alternatives: Substantive Opposition for Alternative 3 – Mitigation Measures

1. Commenters expressed opposition to Alternative 3 noting that it still produces aircraft noise and visual disturbances, impacts to the ecosystem, wildlife, biodiversity, visitor experience, and Native Hawaiian communities and residents; concentrates helicopter tours over areas such as the Department of Hawaiian Homelands at Kahikinui, the Hawai‘i Land Trust Nu‘u Refuge, Kīpahulu, Kaupō, Wailua Valley, Koali, Mu‘olea, Waiho‘i, Pu‘uiki and Maka‘ala; will not provide adequate safe options for navigation while another commenter noted when exiting the ATMP area the tours would disturb residents on the Hāna coast; does not meet the Park’s foundational goals and legislative mandates, allows tours that would fly at low altitudes, increasing the possibility of a crash causing environmental damage and endangered species fatalities; compresses tours into 11 AM – 2 PM window, increasing noise and causing damage to natural resources; and would require an allocation of Park resources to oversee compliance, such as QT, instead of focusing on preservation of Park resources.

CUL100: NHO/Kūpuna Concerns

1. Commenters expressed opposition to air tours stating Native Hawaiians and Kūpuna believe the Crater and Pele are sacred, serene, peaceful spaces of cultural and spiritual significance that should not be interrupted or disturbed. Commenters also noted the destruction air tours cause to the Hawaiian communities by taking away the connection and ability to speak with Kūpuna and interfering with Native Hawaiian traditional cultural practices.
2. Commenters questioned if the kāhuna and “tribal peoples” were asked their thoughts on the ATMP and requested the agencies work closely with the Native Hawaiian communities and put their concerns above all else, especially with issues that will affect future generations. Commenters stated that air tours affect the pristine, sanctuary environment of the Hawaiian Islands Sovereign Lands and noted that Native Hawaiians are constantly being pressured by tourism and this proposal is offensive to Hawaiian culture.

ELE100 ATMP Elements: Annual Number of Air Tours

1. Commenters expressed general concern for the 25,000 plus annual number of flights, noting that more than 25,000 flights are allowed per year, averaging 68-70 flights a day or 5 to 6 flights per hour, and that the number of flights could increase to 25,000 to 50,000. Commenters noted that the 3-year average of 4,824 flights averages 13 flights daily, or one per hour. Commenters suggested limiting the number of flights rather than complete restriction, suggesting that reducing that number and operators could compensate by using larger aircrafts and scheduling full tours. Some commenters requested air tours remain at current levels to avoid creating a bidding war for tour. lots and accessibility issues while some suggested annual flights be limited to no more than

4,824, 3 flights per day, or equal to or less than half of current tour operations, noting that a reduction in the IOA is important and overdue.

2. Commenters requested NPS describe in the EA its modeling criteria, desired future conditions, monitoring plan, or other information and procedures that will be factored into the modeling process to determine an appropriate number of flights and noted limitations based on soundscape modeling could mitigate impacts to cultural practices, ecological integrity, and visitor use.

ELE200 ATMP Elements: Routes and Altitudes

1. Commenters noted current altitude restrictions and suggested various altitude restrictions. Commenters noted aircraft are prohibited from flying under 9,500 ft. in certain areas of the Park. Commenters suggested air tours be restricted from flying lower than 1,500 ft., 2,000 ft., and 5,000 ft. to reduce visual and noise impacts; while others suggested operators choose the height [altitude] restrictions or that the current restrictions and routes remain in place. Some questioned whether current proposed altitudes for Alternative 3 (2,000 ft. AGL) or the jurisdictional boundary of the ATMP (5,000 ft.) were sufficient to reduce noise impacts; others mentioned that 5,000 ft. is not feasible during much of the day due to cloud cover and noted the quietest and safest routes are at not higher altitudes, but rather at lower altitudes (above the minimum safe altitude above 600 feet over terrain) at greater than 60 knots airspeed. Commenters expressed concern that operators do not adhere to current restrictions and would not do so in the future. Multiple commenters expressed that air tours should not go over residential areas and that doing so should be a criminal offense, and some suggested singular routes, including a coastal route, to reduce visual and noise impacts to Wilderness areas. Commenters stated that if tours are restricted to one route, operators should be able to exit the route in poor weather conditions without reprisal. Commenters also suggested no air tours within two miles of the island and only allowing circumnavigating of the perimeter from exterior.
2. Commenters expressed their thoughts and concerns on the Alternatives. Commenters stated that reconfigured routes are an improvement compared to routes in the original 2004 scoping document in reducing noise. Some commenters expressed concern that if Alternative 2 were selected, operators might then take to flying over 5,000 ft. AGL across the entire Park or fly more frequently and lower over areas, like Polipoli Spring State Recreation Area. Commenters suggested setting multiple ingress points for Alternative 3 rather than just 2000 ft. AGL over Kahikinui Forest Preserve, while other commenters suggested there be one air tour route as specified in Alternative 3 that keeps tours away from populated areas with a minimum altitude of 2,000 ft. AGL. Commenters requested the NPS explain the basis for allowing air tours to fly at only 1,500 - 2,000 ft. AGL in Alternative 3 and questioned whether these altitudes are sufficient to minimize noise impacts over a national park and Wilderness. Some requested the incorporation of FAA Advisory Circular AC No: 91-36D, which recommends that pilots operating noise producing aircraft over noise sensitive areas fly not less than 2,000 ft. AGL, weather permitting, citing https://rgl.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/list/AC%2091-36D/ and <https://www.nps.gov/articles/mitigating-the-impacts-of-aviation.htm>; while others noted the 2,000 ft. AGL requirement in other Parks based on FAA Advisory Circular AC91-36, would not work at this Park due to the elevation of the hiking trails and oxygen would be required on board the flights at these altitudes. Commenters noted that the route in Alternative 3, with time limitations, would cause portions of the Park to be concentrated with noise, and requested the NPS provide written description and rationale in the EA on the following questions and concerns:

- a. In the lower center of the map that contains the text block “Proposed Route (Min. Altitude 2,000 AGL)” the route crosses Park land. What is the sightseeing purpose of this portion of the flight? Are there hiking trails or other backcountry uses or sensitive wildlife habitat in this portion of the Park that will be adversely impacted by the concentrated daily dose of air tour noise? If there is no compelling sightseeing value of this portion of the route, then is its purpose simply to allow air tours to take a more direct route to reach the Kīpahulu section of the Park? If this portion of the route is simply a short-cut for the benefit of helicopter tour operators, how can NPS justify allowing it?
 - b. In the Kīpahulu portion of the map, it appears that the route goes offshore before it reaches the Park boundary near the Kīpahulu Visitor Center; then remains at least ½ mile offshore and outside the Park boundary. Is that correct? If “yes” that portion of the proposed route seems appropriate to us. However, the route's distance from the Park boundary is difficult to determine from the map.
3. Commenters suggested tour operators reach the altitude required to reach the summit within a short distance of liftoff from the heliport and maintain this elevation on their approach to reduce noise impacts and view the Crater from the rim on the southern flank between 08:00 and 16:00 hours at prescribed altitudes. Others suggested tours not be allowed in the Crater but kept to the edge or beyond 5,000 ft. from the 10,000 ft. peak.

ELE300 ATMP Elements: Aircraft Type

1. Commenters had various suggestions about aircraft type, such as utilizing helicopters that require less fuel and larger helicopters that seat more passengers and utilizing blimps as they are quieter and can carry more passengers.

ELE400 ATMP Elements: Day/Time

1. Commenters had several suggestions regarding the days and times of air tours. Some commenters suggested that flights be restricted to certain days, such as only weekdays, a combination of a number of weekdays and one weekend day, every other day, every other week or only one day. Some commenters suggested no-fly days on Wednesday, weekends, holidays, and days of cultural significance in accordance with the Hawaiian Moon Calendar and Makahiki Season.
2. Commenters suggested that flights only occur during certain hours, such as 10 AM to 3 PM, 11 AM to 2 PM, or 1 PM to 3 PM. Commenters expressed that no flights should be allowed over the Park at certain times, suggesting 2 days per week before 9:00 AM and after 5:00 PM and quiet hours. Other commenters requested that a time schedule for separation of flights be created, and penalties be issued for non-compliance.

ELE500 ATMP Elements: Other

1. Commenters referenced air tours and safety, noting that restriction on hovering decreases safety and the ability to view “volcanoes” in unoccupied areas, and suggesting air tours for rescue, fire, and perimeter maintenance only be allowed with the approval of the Park Superintendent and that no flights occur over the Park unless a permit from a notable source, such as the Smithsonian or National Geographic, has been acquired to state the flight is for scientific research and an insurance policy must be obtained to cover costs associated with a crash.
2. Some commenters made suggestions about QT incentives, while others expressed opposition. Commenters suggested additional QT incentives such as a day of the week for QT aircraft only, a route deviation for QT aircraft, and QT as a requirement for flights to hover. Commenters

expressed preference for Alternative 3 based on the QT incentives but stated the additional 2-hours of flight is not enough of an incentive. Others noted QT does not exist in which destructive impacts are fully mitigated, so QT cannot be tolerated as justification for continued destructive operations.

3. Commenters referenced the establishment of buffers, suggesting a 1-mile buffer from current access points and noted the 1/2-mile distance is not enough to reduce helicopter noise. Commenters noted the most important elements of an ATMP are those that limit the visual and audible disturbance caused by air tours, especially on biologically sensitive and high use areas.
4. Commenters stated flight monitoring data attached to semiannual reports is not sufficient due to the lag time between violations and consequences and suggested requiring transponders aboard all tour aircraft to identify aircraft numbers, altitude, geographic coordinates, and direction to be broadcasted and captured by an automated monitoring network so violators will be immediately identified and issued violation notices. Commenters also suggested tours have dedicated pilots and guides. Commenters noted the need for transparency between operators and the public, requesting operators should not block out position and identification ADS-B data, effective methods for the public to register complaints, and community members attend the annual meeting.
5. Commenters stated that the \$25 fee paid by visitors accessing the Park on the ground are subsidizing air tours and suggested a per passenger tax so the local community can benefit from the privatization of public space and so community can share in the profits gained by air tour companies. Commenters noted the operators are not accurately reporting flights to reduce fees and suggested the ATMP require aircraft be equipped with satellite tracking coupled with an NPS base to automatically charge and bill the overflight fees to each company and also record any infraction of the ATMP airspace restrictions.
6. Commenters suggested various limits and caps including an annual cap on air tours where each company is capped at a number equally divisible by the annual number of air tours and companies can trade unused or unplanned allocated air tours with other companies, limiting air tours to people with certified medical inability to visit the Park by foot, and limits on the number of active air tour companies and the number of days they can fly within the Park. Some commenters concurred with the competitive bidding process.
7. Commenters noted air tours should not be a matter of accommodating competing uses but of severely limiting and mitigating one use which is inherently contradictory to and destructive of another and suggested a noise abatement program to ensure all flora and fauna can survive air tour impacts, noting that operators have already proven that alternatives are feasible because they reroute due to weather.
8. Commenters requested consultation regarding applicability with the federal Coastal Zone Management Act (CZMA), and suggested the draft EA include the project's consistency with HRS 205A-4 of Hawai'i's CZM Program, noting inclusion of Hawai'i's CZM Program serves as the foundation of the enforceable policies of the State of Hawai'i, as listed in HRS 205A-2, and disclosure of impacts on CZM objectives and supporting policies, as it relates to HRS Chapter 343 requirements, will aid the State in determining impacts to the resources of the coastal zone, and mitigation measures on the subject lands involved for this proposed action.

FAV100 Benefits of Air Tours

1. Commenters expressed support of air tours as they provide benefits such as reduced impacts to the Park landscape; ability to view locations within the Park otherwise unreachable by foot; reduced interference with "active lava"; fewer impacts to plants, wildlife, geology, and ecology;

reduced need for Park Ranger response due to medical issues or lost tourists; provides education opportunities; additional revenue to the Hawaiian Islands and promotes employment; reduced car traffic and accidents; reduced Park infrastructure and overcrowding; increased interest in National Park stewardship and resource management; the ability to “monitor lava”; and reduced impacts as compared to on-the-ground visitors.

2. Commenters expressed that air tours provide an unparalleled visitor experience and the ability to view the Park quickly and efficiently, noting that air tours provide an experience, otherwise not available, for the physically disabled, young children, and elderly, and that the removal of air tours would deny persons with disabilities access to a public space. Commenters discussed benefits of air tours outside of tourism, including providing safe vantage points for professional photography and use of air tours to locate and rescue injured or lost hikers on the ground, and the use of air tour fees to support public services provided by the Park.

PRO100 Process Comments: Impact Analysis

1. Commenters requested disclosure of the impacts of air tourism on the economy, greenhouse gas emissions, noise pollution, cultural resources including traditional cultural properties, natural resources, Wilderness, visitor use experience, wildlife, and endangered species; the impact analysis of each topic include available data such as ambient sound surveys and a review of relevant scientific literature related to the impacts of aircraft noise on specific resources; economic analysis of QT incentive to determine if they are realistic and meaningful; economic analysis of the monitoring and enforcement requirements of Alternative 3; assessment of leakage of air tour noise beyond the Crater ridge and into the Crater should be assessed and comparison against noise assessment results from the Y2004 Scoping Document and within the Haleakalā Noise Studies archived on the NPS PEPC site for Haleakalā; the NPS use 4,824, the three year average of flights, as a baseline for analysis of impacts in Alternative 1 and include data documenting the impacts of 4,824 for comparison in Alternatives 2 and 3; location point noise analyses with supplemental noise metrics for peak hour and peak day be included in the EA, such as the metrics applied at Zion National Park Soundscape Management Plan, the Cal Black Memorial Airport (UT) case, Mesquite NV Replacement Airport and in the Part 150 Study for the Jackson Hole Airport, and suggested various metrics, including: Lmax for individual aircraft types and location points, percent Time Audible, Noise-Free Interval, (NFI), Leq values, and Number of Events Above natural ambient (or, above, say 20 dBA) by hour of day; and the EA discuss the importance of protecting the exceptional quality of the natural soundscape at the Park from commercial air tour noise as described in the [2015 Foundation Document](#).
2. Commenters emphasized that impact thresholds at which impairments occur are not apparent and the NPS must apply a standard that offers greater assurance that impairment will not occur by avoiding impacts that it determines to be unacceptable and noted that Haleakalā has an extensive amount of acoustical monitoring data which should be included in the development of the ATMP to evaluate the impairment of natural sounds in Wilderness from air tours. Commenters questioned if data has been collected on the impacts to nesting seabirds in Alternatives and how the NPS determined the current level of air tours is inconsistent with the Park’s purpose and values before analyzing the impacts through an EA.
3. Commenters referenced NPS Management Policies Section 1.4.7 for NPS’s requirement to consider impacts of the proposed action and stated the need for an appropriate use analysis of the proposed action consistent with NPS Management Policies Section 1.5, and referenced the following materials for impact analyses:

- a. Effects of Aircraft Overflights on the National Park System. Report to Congress 1995:
<https://www.nonoise.org/library/npreport/intro.htm>
- b. An assessment of noise audibility and sound levels in U.S. National Parks:
<https://sites.warnercnr.colostate.edu/soundandlightecologyteam/wp-content/uploads/sites/146/2020/11/landscapeecology2011b.pdf>
- c. Protecting National Park Soundscapes: National Academy of Engineering 2013:
<https://www.nap.edu/catalog/18336/protecting-national-park-soundscapes>
- d. Effects of Noise on Wildlife: https://www.nps.gov/subjects/sound/effects_wildlife.htm
- e. A Synthesis of Two Decades of Research on the Effects of Noise on Wildlife:
<https://sites.warnercnr.colostate.edu/soundandlightecologyteam/wp-content/uploads/sites/146/2020/11/biologicalreviews2015.pdf>
- f. Conserving the wild life there in - protecting park fauna from anthropogenic noise:
<https://sites.warnercnr.colostate.edu/soundandlightecologyteam/wp-content/uploads/sites/146/2020/11/parkscience2009.pdf>
- g. A review of the effects of aircraft noise on wildlife and humans 2003:
https://www.researchgate.net/publication/8683287_A_Review_of_the_Effects_of_Aircraft_Noise_on_Wildlife_and_Humans_Current_Control_Mechanisms_and_the_Need_for_Further_Study
- h. Effects of Noise on Wilderness:
https://www.nps.gov/subjects/sound/effects_wilderness.htm
- i. Noise pollution is pervasive in U.S. protected areas:
<https://www.science.org/doi/10.1126/science.aah4783>
- j. Effects of Noise on Visitors: https://www.nps.gov/subjects/sound/effects_visitors.htm
- k. Effects of Noise on Cultural-Historic Resources:
https://www.nps.gov/subjects/sound/effects_cultural.htm
- l. HALE Baseline Ambient Sound Levels 2003:
<https://irma.nps.gov/DataStore/DownloadFile/601942>
- m. HALE Acoustical Monitoring Report 2008:
<https://irma.nps.gov/DataStore/DownloadFile/446569>
- n. HALE Acoustical Monitoring Report 2018:
<https://sites.warnercnr.colostate.edu/soundandlightecologyteam/wp-content/uploads/sites/146/2020/11/haleakala.pdf>
- o. NPS Natural Sounds Program website at: <https://www.nps.gov/subjects/sound/index.htm>

PRO200 Process Comments: Public Review

1. Commenters expressed concern that the agencies have not coordinated or requested input from Native Hawaiian communities, stakeholders, residents, or air tour operators, noting that lack of stakeholder involvement contradicts FAA Order No. 1110.138A and concern about the request for substantive comments rather than voting on a preferred alternative. Commenters suggested the agencies develop an outreach plan that is more inclusive and notify the Hawaiian communities of the public comment period as some of their sacred land is protected by the NPS and should be honored.

PRO300 Process Comments: Alternatives Considered

1. Commenters referenced NPS Management Policies 2006 1.4.7 and stated the dismissal of alternatives is premature and inappropriate. They also referenced NPS Management Policies 5.3.5.3.2 and recommended a no air tours in and or around the Park alternative, as the NPS has

the authority and duty under NPATMA to decide when air tours adversely impact natural and cultural resources, visitor experience, and “tribal lands”.

2. Commenters referenced the Newsletter, noting it does not describe why current air tour routes in Alternative 1 are in the south part of the Park and questioned if it was due to procedures in the HI Manual. Commenters noted the Newsletter does not indicate if there would be provisions to prevent non-commercial air traffic, such as general and military aviation, from flying wherever they want within the ATMP area or on air tour routes without being required to communicate with one another and requested the ATMP alternatives specify protections to ensure safety for public consideration. Commenters also questioned why the only reasonable route is Alternative 3 and why there aren’t additional alternatives or variations to Alternative 3 that can be considered.
3. Commenters requested the NPS fully describe in the EA its modeling criteria, desired future conditions, monitoring plan, and other information or considerations that will be factored into the modeling process used to determine an appropriate number of flights, and suggested the inclusion of Alternative 4 that would phase down and phase out air tours over the Park within a 5-year period where the annual cap on the number of flights could be decreased by 965 flights per year for 5 years, resulting in the elimination of air tours after 5 years, allowing air tour operators the opportunity to adjust their operations to the eventual requirement that all air tours occurred outside of the planning area.
4. Some commenters suggested combining Alternative 2 and Alternative 3 as a compromise with the air tour companies and the community, and reduce air traffic congestion, while others requested modifying Alternative 3 or creating an Alternative 4 that would always require use of QT for operations covered by the proposed ATMP and noted that in setting QT as a requirement, additional analysis of economic impact for air tour operators utilizing mixed fleet or have not yet made the transition would be needed. Some commenters expressed difficulty in understanding the proposed Alternatives and requested clarification if the no action Alternative would be acceptable in the future Environmental Assessment (EA) or Environmental Impact Statement (EIS) process, while some referenced the 2015 NPS NEPA Handbook (https://www.nps.gov/subjects/nepa/upload/NPS_NEPAHandbook_Final_508.pdf) and stated the EA should identify the NPS’s preferred alternative and the environmentally preferred alternative.

PRO400 Process Comments: Other

1. Commenters noted the current process does not adequately consider the contents, goals and objectives of the Hawai’i State Constitution, The County of Maui 2030 General Plan Countywide Policy Plan (Ordinance No. 3732 (2010)), The Maui Island Plan General Plan 2030 (Ordinance No. 4004 (2012) or the 1994 Hana Community Plan with the suggestion that the contents be fully analyzed in the future EA or EIS. Commenters stated that NPS and FAA ignored NPOAG, a rulemaking committee put in place by Congress to provide advice, information, and recommendations to the agencies in the implementation of the National Parks Air Tour Management Act of 2000 and excluding the NPOAG from providing input on the ATMP process is a direct contradiction of FAA Order No. 1110.138A, while others stated that NPS does not have the necessary expertise to fundamentally redesign the airspace over these parks.

PRO500 Process Comments: NEPA

1. Some commenters noted that the Park conducted a proper planning process in accordance with Council of Environmental Quality NEPA implementing regulations at 40 CFR Parts 1500 - 1508 and the NPS NEPA Handbook 2015 and expressed approval of the FAA and NPS approach to the ATMP process since public scoping with potential alternatives was conducted before proceeding

with NEPA and National Historic Preservation Act (NHPA), while other commenters questioned if an EIS has been conducted and suggested an EIS be conducted for all three Alternatives. Some commenters expressed approval of the purpose and need statement, while others requested levels of significance be established and explained in the proposed EA to establish compliance and suggested the purpose and need statement reference the NPS Organic Act, the objectives and directives from the Park Foundation document, General Management Plan, and other Park decision documents. Commenters noted the newsletter does not refer to the 1916 Organic Act and offers no explanation of the Act's relevance to the proposed action, and requested the EA include reference to the NPS Organic Act of 1916 and the NPS General Authorities Act of 1970, preferably in the first chapter, to serve as basis for the agencies to evaluate impacts to Park resources and values to determine an appropriate level of air tours, if any. Commenters suggested the NEPA analysis include an appropriate use analysis, impairment determination, and identification of a preferred alternative and environmentally preferable alternative, consistent with NPS Management Policies and the expertise of the NPS Natural Sounds Program.

2. Commenters questioned why the NPS is not conducting a range of alternatives in an EA for all Parks in the Act court order and questioned the rationale for complying with NEPA on only a few Parks, noting the Parks with ATMPs failed to consider a range of alternatives, including a reduced level of air tours, ultimately only considering a no action alternative. Additionally, previously issued proposed ATMPs failed to disclose or evaluate potential environmental impacts of the respective proposed actions.
3. Commenters requested the EA identify its preparers as well as the respective roles of the NPS and the FAA in the NEPA process as it is confusing which agency is coordinating preparation of the EA and serves as the lead agency as described in 40 CFR §1501.7 and which agency serves as the cooperating agency as described in 40 CFR §1501.8.

APPENDIX K

CZMA Compliance



www.hawaii.gov/dbedt/czm

APPLICATION FOR CZM FEDERAL CONSISTENCY REVIEW

Project/Activity Title or Description: _____

Location: _____

Island: _____ **Tax Map Key:** _____

Applicant or Agency

Name of Applicant or Agency

Mailing Address

City / State / Zip Code

Phone

E-mail Address

Agent or Representative for Applicant

Agent or Representative for Applicant

Mailing Address

City / State / Zip Code

Phone

E-mail Address

CZM Consistency Determination or Certification

✓ Check the applicable type of federal action below and sign.

☒ Federal Agency Activity

CZM Consistency Determination: "The proposed activity will be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the Hawaii Coastal Zone Management Program."

ERIC M ELMORE Digitally signed by ERIC M ELMORE
Date: 2023.04.24 15:02:11 -04'00'

Signature _____ Date _____

☐ Federal Permit or License

CZM Consistency Certification: "The proposed activity complies with the enforceable policies of Hawaii's approved management program and will be conducted in a manner consistent with such program."

Signature _____ Date _____

☐ Federal Grants and Assistance

CZM Consistency Certification: "The proposed activity complies with the enforceable policies of Hawaii's approved management program and will be conducted in a manner consistent with such program."

Signature _____ Date _____

Submit Application By: Email - Debra.L.Mendes@hawaii.gov

USPS Mail - Office of Planning & Sustainable Development, P.O. Box 2359, Honolulu, Hawaii 96804

For Questions or Help Contact: Debra Mendes | Email: Debra.L.Mendes@hawaii.gov | Phone: (808) 587-2840



HAWAII CZM PROGRAM FEDERAL CONSISTENCY ASSESSMENT FORM

Federal regulations (15 CFR Part 930) require that an evaluation of consistency with the relevant enforceable policies of the Hawaii CZM Program be provided. This assessment form is organized according to the Hawaii CZM objectives and their supporting policies (Hawaii Revised Statutes § 205A-2) to help the Hawaii CZM Program evaluate the consistency of the proposed action. An independent evaluation would need to be submitted in lieu of using this form for a consistency review.

For Help Contact: Debra Mendes | Email: Debra.L.Mendes@hawaii.gov | Phone: (808) 587-2840

RECREATIONAL RESOURCES

Objective: Provide coastal recreational opportunities accessible to the public. Policies:

- 1) Improve coordination and funding of coastal recreational planning and management.
- 2) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:
 - a) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas.
 - b) Requiring restoration of coastal resources that have significant recreational and ecosystem value, including but not limited to coral reefs, surfing sites, fishponds, sand beaches, and coastal dunes, when these resources will be unavoidably damaged by development; or requiring monetary compensation to the State for recreation when restoration is not feasible or desirable.
 - c) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value.
 - d) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation.
 - e) Ensuring public recreational uses of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources.
 - f) Adopting water quality standards and regulating point and non-point sources of pollution to protect, and where feasible, restore the recreational value of coastal waters.
 - g) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing.
 - h) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, and county authorities; and crediting that dedication against the requirements of Hawaii Revised Statutes, section 46-6.

RECREATIONAL RESOURCES (continued)

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section that follows:

- | | <u>Yes</u> | <u>No</u> |
|--|-------------------------------------|-------------------------------------|
| 1. Will the proposed action occur in or adjacent to a dedicated public right-of-way?
E.g., public beach access, inland or coastal hiking trail, shared-use path | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Will the proposed action affect public access to or along the shoreline? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Is the project parcel adjacent to the shoreline? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. Is the project site on or adjacent to a sandy beach? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5. Is the project site in or adjacent to a state or county park? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 6. Is the project site in or adjacent to a water body such as a stream, river, pond, lake, or ocean? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 7. Will the proposed action occur in or affect an ocean or coastal recreation area, swimming area, surf site, fishing or gathering area, or boating area? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Discussion: Explain “Yes” responses to the questions above. If more space is needed, attach a separate sheet, or append additional information.

HISTORIC RESOURCES

Objective: Protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Policies:

- 1) Identify and analyze significant archaeological resources.
- 2) Maximize information retention through preservation of remains and artifacts or salvage operations.
- 3) Support state goals for protection, restoration, interpretation, and display of historic resources.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section that follows:

	<u>Yes</u>	<u>No</u>
1. Is the project site within a designated historic or cultural district?	<input checked="" type="checkbox"/>	
2. Is the project site listed on or nominated to the Hawaii or National Register of Historic Places?	<input checked="" type="checkbox"/>	
3. Has the project site been surveyed for historic or archaeological resources?		<input checked="" type="checkbox"/>
4. Has the State Historic Preservation Division been consulted?	<input checked="" type="checkbox"/>	
5. Does the project parcel include undeveloped land which has not been surveyed by an archaeologist?	<input checked="" type="checkbox"/>	
6. Is the project site within or adjacent to a Hawaiian fishpond or historic settlement area?		<input checked="" type="checkbox"/>



HISTORIC RESOURCES (continued)

Discussion: Explain “Yes” responses to the questions above. If more space is needed, attach a separate sheet, or append additional information.

SCENIC AND OPEN SPACE RESOURCES

Objective: Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies:

- 1) Identify valued scenic resources in the coastal zone management area.
- 2) Ensure that new developments are compatible with their visual environment by designing and locating those developments to minimize the alteration of natural landforms and existing public views to and along the shoreline.
- 3) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources.
- 4) Encourage those developments that are not coastal dependent to locate in inland areas.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section that follows:

	<u>Yes</u>	<u>No</u>
1. Will the proposed action alter any natural landforms or existing public views to and along the shoreline?		<input checked="" type="checkbox"/>
2. Does the proposed action involve the construction of a multi-story structure?		<input checked="" type="checkbox"/>
3. Is the project site located on or adjacent to an undeveloped parcel, including a beach or oceanfront land?	<input checked="" type="checkbox"/>	
4. Does the proposed action involve the construction of a structure visible between the nearest coastal roadway and the shoreline?		<input checked="" type="checkbox"/>
5. Will the proposed action involve constructing or placing a structure in waters seaward of the shoreline?		<input checked="" type="checkbox"/>



SCENIC AND OPEN SPACE RESOURCES (continued)

Discussion: Explain “Yes” responses to the questions above. If more space is needed, attach a separate sheet, or append additional information.

COASTAL ECOSYSTEMS

Objective: Protect valuable coastal ecosystems, including reefs, beaches, and coastal dunes, from disruption and minimize adverse impacts on all coastal ecosystems.

Policies:

- 1) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources.
- 2) Improve the technical basis for natural resource management.
- 3) Preserve valuable coastal ecosystems of significant biological or economic importance, including reefs, beaches, and dunes.
- 4) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land water uses, recognizing competing water needs.
- 5) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section that follows:

	<u>Yes</u>	<u>No</u>
1. Does the proposed action involve dredge or fill activities?		<input checked="" type="checkbox"/>
2. Is the project site within the Special Management Area (SMA) or the Shoreline Setback Area?	<input checked="" type="checkbox"/>	
3. Is the project site within the State Conservation District?	<input checked="" type="checkbox"/>	
4. Will the proposed action involve some form of discharge or placement of material into a body of water or wetland?		<input checked="" type="checkbox"/>
5. Will the proposed action require earthwork, grading, clearing, grubbing, or stockpiling?		<input checked="" type="checkbox"/>
6. Will the proposed action include the construction of waste treatment facilities, such as injection wells, discharge pipes, or septic systems?		<input checked="" type="checkbox"/>
7. Will the proposed action involve the construction or installation of a stormwater discharge or conveyance system?		<input checked="" type="checkbox"/>
8. Is an intermittent or perennial stream located on or adjacent to the project parcel?		<input checked="" type="checkbox"/>

COASTAL ECOSYSTEMS (continued)

- | | <u>Yes</u> | <u>No</u> |
|---|-------------------------------------|-------------------------------------|
| 9. Does the project site provide habitat for endangered species of plants, birds, or mammals? | <input checked="" type="checkbox"/> | |
| 10. Is any such habitat located near the project site? | <input checked="" type="checkbox"/> | |
| 11. Is a wetland located on the project site or parcel? | <input checked="" type="checkbox"/> | |
| 12. Is the project site situated in or abutting a Natural Area Reserve, Marine Life Conservation District, Marine Fisheries Management Area, or an estuary? | | <input checked="" type="checkbox"/> |
| 13. Will the proposed action occur on or near a coral reef or coral colonies? | | <input checked="" type="checkbox"/> |

Discussion: Explain “Yes” responses to the questions above. If more space is needed, attach a separate sheet, or append additional information.

ECONOMIC USES

Objective: Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies:

- 1) Concentrate coastal development in appropriate areas.
- 2) Ensure that coastal dependent development and coastal related development are located, designed, and constructed to minimize exposure to coastal hazards and adverse social, visual, and environmental impacts in the coastal zone management area.
- 3) Direct the location and expansion of coastal development to areas designated and used for that development and permit reasonable long-term growth at those areas, and permit coastal development outside of designated areas when:
 - a) Use of designated locations is not feasible;
 - b) Adverse environmental effects and risks from coastal hazards are minimized; and
 - c) The development is important to the State's economy.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section that follows:

	<u>Yes</u>	<u>No</u>
1. Does the proposed action involve a harbor or port?		<input checked="" type="checkbox"/>
2. Is the proposed action a visitor industry facility or a visitor industry related activity?	<input checked="" type="checkbox"/>	
3. Does the project site include agricultural lands or lands designated for such use?		<input checked="" type="checkbox"/>
4. Does the proposed action relate to commercial fishing or seafood production?		<input checked="" type="checkbox"/>
5. Is the proposed action related to energy production or transmission?		<input checked="" type="checkbox"/>

ECONOMIC USES (continued)

Discussion: Explain “Yes” responses to the questions above. If more space is needed, attach a separate sheet, or append additional information.

COASTAL HAZARDS

Objective: Reduce hazard to life and property from coastal hazards.

Policies:

- 1) Develop and communicate adequate information about the risks of coastal hazards.
- 2) Control development, including planning and zoning control, in areas subject to coastal hazards.
- 3) Ensure that developments comply with requirements of the National Flood Insurance Program.
- 4) Prevent coastal flooding from inland projects.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section that follows:

- | | <u>Yes</u> | <u>No</u> |
|---|-------------------------------------|-------------------------------------|
| 1. Is the project site on or adjacent to a sandy beach? | <input checked="" type="checkbox"/> | |
| 2. If “Yes” to question no. 1, has the project parcel or adjoining shoreline areas experienced erosion? | | <input checked="" type="checkbox"/> |
| 3. Is the project site within a potential tsunami inundation area?
Refer to tsunami evacuation maps at:
https://dod.hawaii.gov/hiema/public-resources/tsunami-evacuation-zone/ | | <input checked="" type="checkbox"/> |
| 4. Is the project site within a flood hazard area according to a FEMA Flood Insurance Rate Map?
Refer to FEMA maps at: https://msc.fema.gov/portal/home | <input checked="" type="checkbox"/> | |
| 5. Is the project site susceptible to or has it experienced ocean related impacts?
E.g., sea water inundation, high tides, wave runup, sea level rise, storm surge, ground water intrusion, or subsidence. | | <input checked="" type="checkbox"/> |
| 6. Is the project site susceptible to or has it experienced either stormwater or groundwater impacts? | | <input checked="" type="checkbox"/> |



COASTAL HAZARDS (continued)

Discussion: Explain “Yes” responses to the questions above. If more space is needed, attach a separate sheet, or append additional information.

MANAGING DEVELOPMENT

Objective: Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Policies:

- 1) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development.
- 2) Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements.
- 3) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section that follows:

- | | <u>Yes</u> | <u>No</u> |
|---|-------------------------------------|-------------------------------------|
| 1. List the permits or approvals required for the proposed action and provide the status of each in the Discussion section below. | | <input checked="" type="checkbox"/> |
| 2. Does the proposed action conform with state and county land use designations for the site? | <input checked="" type="checkbox"/> | |
| 3. Has an environmental impact statement or environmental assessment been prepared for the proposed action? | <input checked="" type="checkbox"/> | |
| 4. Has the public, applicable neighborhood board, or community groups been notified of the proposed action? | <input checked="" type="checkbox"/> | |

MANAGING DEVELOPMENT (continued)

Discussion: Explain “Yes” responses to the questions above. If more space is needed, attach a separate sheet, or append additional information.

PUBLIC PARTICIPATION

Objective: Stimulate public awareness, education, and participation in coastal management.

Policies:

- 1) Promote public involvement in coastal zone management processes.
- 2) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities.
- 3) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section that follows:

	<u>Yes</u>	<u>No</u>
1. Has information about the proposed action been disseminated to the public, applicable neighborhood board, or community groups?	<input checked="" type="checkbox"/>	
2. Has the public been provided an opportunity to comment on the proposed action?	<input checked="" type="checkbox"/>	
3. Has or will a public hearing or public informational meeting be held?	<input checked="" type="checkbox"/>	

Discussion: Explain “Yes” responses to the questions above. If more space is needed, attach a separate sheet, or append additional information.

BEACH AND COASTAL DUNE PROTECTION

Objective:

- (A) Protect beaches and coastal dunes for:
 - (i) Public use and recreation;
 - (ii) The benefit of coastal ecosystems; and
 - (iii) Use as natural buffers against coastal hazards; and
- (B) Coordinate and fund beach management and protection.

Policies:

- 1) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion.
- 2) Prohibit construction of private shoreline hardening structures, including seawalls and revetments, at sites having sand beaches and at sites where shoreline hardening structures interfere with existing recreational and waterline activities.
- 3) Minimize the construction of public shoreline hardening structures, including seawalls and revetments, at sites having sand beaches and at sites where shoreline hardening structures interfere with existing recreational and waterline activities.
- 4) Minimize grading of and damage to coastal dunes.
- 5) Prohibit private property owners from creating a public nuisance by inducing or cultivating the private property owner's vegetation in a beach transit corridor.
- 6) Prohibit private property owners from creating a public nuisance by allowing the private property owner's unmaintained vegetation to interfere or encroach upon a beach transit corridor.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section that follows:

	<u>Yes</u>	<u>No</u>
1. Will the proposed action occur on a shoreline parcel?		<input checked="" type="checkbox"/>
2. Will the proposed action occur in an area or parcel that is adjacent to a shoreline parcel?		<input checked="" type="checkbox"/>
3. Is the proposed action located within the shoreline setback area?		<input checked="" type="checkbox"/>
4. Will the proposed action affect natural shoreline processes?		<input checked="" type="checkbox"/>
5. Will the proposed action affect recreational activities?		<input checked="" type="checkbox"/>
6. Will the proposed action affect public access to or along the shoreline?		<input checked="" type="checkbox"/>



BEACH AND COASTAL DUNE PROTECTION (continued)

Discussion: Explain “Yes” responses to the questions above. If more space is needed, attach a separate sheet, or append additional information.

MARINE AND COASTAL RESOURCES

Objective: Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

Policies:

- 1) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial.
- 2) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency.
- 3) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone.
- 4) Promote research, study, and understanding of ocean and coastal processes, impacts of climate change and sea level rise, marine life, and other ocean resources to acquire and inventory information necessary to understand how coastal development activities relate to and impact ocean and coastal resources.
- 5) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section that follows:

	<u>Yes</u>	<u>No</u>
1. Will the proposed action involve the use or development of marine or coastal resources?		<input checked="" type="checkbox"/>
2. Will the proposed action affect the use or development of marine or coastal resources?		<input checked="" type="checkbox"/>
3. Does the proposed action involve research of ocean processes or resources?		<input checked="" type="checkbox"/>
4. Will the proposed action occur in or abutting a Natural Area Reserve, Marine Life Conservation District, Marine Fisheries Management Area, or an estuary?		<input checked="" type="checkbox"/>



MARINE AND COASTAL RESOURCES (continued)

Discussion: Explain “Yes” responses to the questions above. If more space is needed, attach a separate sheet, or append additional information.