Exhibit 8 – March 27, 2023, Finding of Effect Letter with Invitation to April 18, 2023, Informational Meeting; Meeting Reminder; and Meeting Summary and Q&A

Effects Assessment

U.S. Department of Transportation
Federal Aviation Administration

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

NATIONAL PARKS AIR TOUR MANAGEMENT PROGRAM

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 Hawai'i Volcanoes National Park (HICRIS Project 2022PR00353)

Dr. Alan Downer
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Hawai'i Department of Land and Natural Resources
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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 Hawai'i Volcanoes 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 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 the 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 1,449 total discrete comments during the comment period, including comments regarding the importance of the Park to Native Hawaiians and that the Park contains culturally significant resources including archeological sites, areas where traditional practices occur, sacred landscapes, and burials. Commenters noted that air tours disrupt traditional and customary practices and activities of spiritual and cultural significance. Commenters also noted the presence of Tūtū Pele and the importance of sites such as Kaluapele (Kīlauea Crater) and Wahinekapu amongst many others. One commenter also stated that the Park is eligible for listing as a Traditional Cultural Property (TCP) due to the importance to Native Hawaiians and their culture. Commenters expressed opposition to maintaining existing levels of air tours as it would not improve the current conditions and would continue to cause impacts to cultural resources. Commenters expressed support for no air tours as it would protect Native Hawaiian cultural practices. Commenters expressed opposition to mitigated alternatives and those that maintained the East Rift Zone route as they would still result in aircraft noise and would still result in the same cultural resources concerns as existing levels of air tours, even if to a lesser degree. Commenters also provided feedback on specific ATMP measures and noted that the proposed flight times should avoid interfering with cultural practices at sunrise and sunset and expressed concern regarding the 2-month notice requirement for cultural practices.

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=307&projectID=103522&documentID=118739

The undertaking for purposes of Section 106 is implementing an ATMP that applies to all commercial air tours over the Park and within ½ mile outside the 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 (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. Ten commercial air tour operators – Above it All, Inc.; Big Island Air, Inc.; Hawai'i Helicopters, Inc.; Helicopter Consultants of Maui, Inc.; K&S Helicopters; Manuiwa Airways, Inc.; Mokulele Flight Service, Inc.; Safari Aviation, Inc.; Schuman Aviation Company, Ltd.; Sunshine Helicopters, Inc. – hold IOA to conduct a combined total of 26,664 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 11,376 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 seven different operators[1] and are conducted using CE-337-T337H, CE-421-C, and C208B fixed-wing aircraft and AS-350-B2, AS-350-BA, EC-130-B4, EC-130-T2, HT-407-407, BHT-430-430, MD-369-D, and MD-369-E 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 along the east portion of the Park and around the Kīlauea Crater according to available automatic dependent surveillance-broadcast (ADS-B) systems[2] 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. above ground level (AGL), weather dependent and contingent on location over the island.

The proposed undertaking, which was referred to in prior consultation and the February 2022 Scoping Newsletter as Revised Public Scoping Alternative 4 – Reduction of Air Tours[3], would require operators to fly on three consolidated routes within the ATMP planning area in accordance with the conditions included in the ATMP. The ATMP will require operators to fly the designated routes depicted in **Attachment B**.

A summary of the undertaking is shown in the table below:

[1] Seven of the ten operators that hold IOA for the Park reported flying commercial air tours over the Park between 2013 and 2020.

[2] ADS-B systems periodically transmits aircraft location data in real-time.

[3] Revised Public Scoping Alternative 4 – Reduction of Air Tours is referred to as Alternative 3 Standard Day and QT Day in the Noise Technical Report.

SUMMARY OF ATMP ELEMENTS

General Description and Objectives	Three routes provide air tour access over the Park with soundscape mitigations, while keeping the heart of the Park free of air tours. Avoids flights over the summit of Kīlauea and minimizes impacts on coastal backcountry users. Air tours could 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 Number of Flights	Authorizes 1,565 flights per year.
Routes	Three routes (Kahuku Route, Coastal Route, and Pu'u'ō'ō Route with associated Pu'u'ō'ō Quiet Technology [QT] zone).
Minimum Altitudes	Minimum 1,500 ft. AGL; minimum 2,000 ft. AGL over Wilderness areas and sensitive sites. 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 Hawai'i Air Tour Common Procedures Manual.
Time of Day	On days where air tours are permitted: 10 AM – 2 PM for non-QT flights. 9 AM – 5 PM for QT flights.
Day of Week	No-fly days on Sunday. Air tours are permitted on the remaining week days, except that air tours conducted on Wednesdays must use QT aircraft.
Hovering, Loitering, and/or Circling	Permits limited loitering/circling (up to 5 minutes) on the Pu'u'ō'ō Route and in the Pu'u'ō'ō QT Zone.
Quiet Technology Incentives	QT flights may fly 9AM - 5PM. QT flights may fly on Wednesday. Additional fly locations in the Pu'u'ō'ō QT Zone for QT flights.
Interpretative Training and Education	Mandatory if offered by the Park.
Annual Meeting	Mandatory.
Restrictions for Particular Events	Mandatory 5-mile standoff distance limited to the ATMP planning area. Two months' notice provided to operators.
Adaptive Management	Resource condition monitoring, including soundscape monitoring by the NPS would occur to ensure the ATMP addresses park management objectives.
Monitoring and Enforcement	Operators would provide semi-annual reports, including the flight monitoring data. 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.
Operators, Initial Allocation of Air Tours, and Aircraft Types	The initial allocation would reflect the proportional number of air tours reported over the Park and the existing aircraft types of each of the seven 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.

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 21, 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 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 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.

Under the undertaking it is expected that operators would continue to fly to points of interest on the island outside of the ATMP planning area or continue routes over the Park similar to existing conditions but above 5,000 ft. AGL. It is reasonably foreseeable that operators would fly just outside of the ATMP planning area surrounding the volcanoes in order to view Kīlauea crater or any active lava. While operators currently fly along most of the eastern buffer of the ATMP planning area and along the flight paths proposed under the preferred alternative, ADS-B systems data of flight paths shows an absence of existing flights in a small area to the southwest of the ʻŌlaʻa Forest tract. It is reasonably foreseeable that if operators are unable to fly within the ATMP planning area, the implementation of the ATMP may result in flights in this area as they may be able to hover and view the crater.

Therefore, the APE comprises the Park, areas outside the park but within ½ mile of its boundary, and a small area to the southwest of the ʻŌlaʻa Forest tract between it and the main Park as depicted in **Attachment B**. 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 APE extends vertically from ground level to above 5,000 ft. AGL with no upper ceiling to encompass areas where historic properties may be affected by operators flying above the ATMP planning area. 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 flights at higher altitudes would provide limited value to a sightseeing operation.

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 21, 2023, to all consulting parties and included the revised APE. The FAA requested comments from all consulting parties including NHOs. The agencies 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 Kpuna 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 the 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 Kpuna consultation group, via letter on April 16, 2021, inviting them to participate in Section 106 consultations 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, and November 8, 2022. A complete list of all consulting parties contacted is included in **Attachment A**.

The agencies have held listening sessions and consulting party meetings to discuss the ATMP planning process, the range of alternatives, and Section 106 consultation. The agencies held an informational webinar on October 28, 2021, to provide background on the ATMP development process at the Park, a listening session for the Park's Kpuna consultation group on December 10, 2021, a second listening session with Kpuna and other consulting parties on March 11, 2022, and a consulting party meeting with all consulting parties on November 21, 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 Kpuna that they oppose air tours in the ATMP planning area. The Park's Kpuna 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 Kpuna 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 Kpuna emphasized that plants, animals, the sky, the ocean, and other natural resources are contributing features to cultural resources throughout the APE.

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. Additionally, the OHA requested that Kīpukakī be added to the historic property identification list. The Historic Hawai'i Foundation (HHF) provided comments on the initial APE and historic property list and expressed concerns regarding flights over the Halema'uma'u Crater higher than 5,000 ft. AGL, flights in areas where they do not currently fly, and flights over the designated and eligible wilderness areas. The National Trust for Historic Preservation endorsed the comments submitted by the HHF. The Department of Hawaiian Home Lands (DHHL) noted that they do not anticipate effects to their lands or beneficiaries but recommended consultation with NHOs and the Hawaiian Homestead community associations located within the moku of the Park.

The agencies also received comments from several individual consulting parties expressing opposition to air tours over the Park. Bobby Camara noted concerns regarding helicopter noise over Kaluapele (the summit caldera of Kīlauea volcano), the East Rift Zone (Makaopuhi, Maunaulu, etc.), and Mauna Loa. Mr. Camara noted that the noise obscured the voices of native birds, breezes, and the peace and quiet

of the remote location. John Carse suggested that the APE should be expanded to include areas outside the ATMP planning area to account for potential indirect effects and questioned how the regulation of flights over historic properties would be enforced. Aku Hauanio of the Kalapana Fishing Council provided comments regarding critically endangered birds in the APE, and Earl Louis provided comments noting that the coastline is pristine.

On February 21, 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 associated with cultural practices, customs, or beliefs that continue to be held or practiced today. In so doing, the FAA has taken into consideration the views of consulting parties, past planning, research and studies, the magnitude and nature of the undertaking, the degree of Federal involvement, the nature and extent of potential effects on historic properties, and the likely nature of historic properties within the APE in accordance with 36 CFR 800.4(b)(1).

The initial identification of historic properties relied upon data submitted by the NPS regarding known historic properties in the Park and data 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 8, 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 21, 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 letter dated February 21, 2023. The FAA received no comments from consulting parties in response to the February 21, 2023, letter.

These efforts resulted in identification of 43 historic properties within the APE for which feeling and setting may be characteristics that make the properties eligible for listing on the National Register, which are listed in **Attachment C.** Those historic properties identified 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 character of aircraft noise, the agencies considered whether there would be a change in the annual number, daily frequency, routes, or altitudes of commercial air tours, as well as the type of aircraft used to conduct those tours. The level of commercial air tour activity under the ATMP is expected to improve the protection of cultural resources within the ATMP planning area.

The ATMP reduces the existing average number of flights from 2017-2019 within the APE by 86% and designates an air tour route for access to the historically active east rift zone of Kīlauea, a route for air tours across the lower southern edge of Kahuku, and an offshore coastal flight route that would protect wilderness areas and backcountry campgrounds. The ATMP authorizes the use of the CE-337-T337H, CE-421-C, and C208B fixed-wing aircraft and AS-350-B2, AS-350-BA, EC-130-B4, EC-130-T2, HT-407-407, BHT-430-430, MD-369-D, and MD-369-E 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 these three consolidated routes at increased altitudes than are flown under existing conditions (minimum 1,500 – 2,000 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.

The ATMP also incentivizes the use of quiet technology (QT) aircraft by relaxing the time-of-day restrictions to allow QT aircraft to fly from 9:00 AM to 5:00 PM (four hours more than non-QT aircraft), relaxing the day-of-week restrictions to allow QT aircraft to fly on Wednesdays, and allowing QT aircraft to conduct commercial air tours in an additional area adjacent to the Pu‘u‘ō‘ō Route. The analysis below includes noise data for both standard days and QT-only days (Wednesdays).

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 ($L_{Aeq,\ 12\ hr}$) 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 dBA[4] lower than the $L_{Aeq,\ 12\ hr}$, 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 Yearly[5] 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 during operating hours. 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 and presents the noise contours (i.e., graphical illustration depicting noise exposure) and point data from the modeling. At some points, time above 35 dBA or 52 dBA may be higher for QT-only days compared to standard days because some QT aircraft, while quieter, are modeled to be audible for a slightly longer period of time than standard aircraft based on the location, route, and type of aircraft modeled for those points.

Time audible and maximum sound level 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

[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.

time above metrics and takes into consideration the natural ambient conditions that may mask or make human-sourced sounds more noticeable. Maximum sound level 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

Under existing conditions, based on flight tracking data and reported routes, the heaviest concentrations of commercial air tours occur around Kīlauea caldera then along the East Rift Zone. Generally, the undertaking will result in a decrease of noise levels across the majority of the APE and would most notably be reduced near the Kīlauea Crater and Halemaʻumaʻu Crater. Many historic properties are clustered near the Kīlauea Crater and in the northern region of the Park where noise would not reach above 35 dBA on days when commercial air tours would occur under the ATMP. Furthermore, the proposed flight paths will not cross over most of the historic properties in the APE that are most sensitive to noise intrusions, such as the Punaluʻu Heiau, Punaluʻu Springs, and many significant features of the Hawaiʻi Volcanoes National Park TCP including the Kīlauea Crater, Mokuʻāweoweo Caldera, and Kīpukakī. The undertaking would reduce noise impacts that could detract from the feeling and setting of these resources.

Portions of the APE along the proposed flight paths would experience $L_{Aeq,12h}$ sound levels between 35 dBA and 40 dBA, with small areas rising above 40 dBA but below 45 dBA. No areas in the ATMP planning area would experience DNL greater than 40 dB. Compared to existing conditions, the average $L_{Aeq,12h}$ sound levels would be lower for the interior regions of the park but may be higher in coastal regions and along the proposed Kahuku Route. As a whole, the noise footprint for the ATMP, as measured by areas where the $L_{Aeq,12h}$ sound levels exceed 35 dBA, would be reduced from 13% of the Park to 3% of the Park on standard days and to 2% of the Park on QT-only days (see the Noise Technical Report in **Attachment D**, Table 10). The ATMP would also reduce average $L_{Aeq,12h}$ sound levels to zero or near zero for locations near the heart of the Park (e.g., Halemaʻumaʻu Crater and the Kīlauea Visitor Center). Noise related to commercial air tours is modeled to be greater than 35 dBA for less than 45 minutes on a standard day and less than 60 minutes on a QT-only day within the ATMP planning area (with most portions of the ATMP planning area experiencing noise above 35 dBA for less than 15 minutes a day on both standard days and QT-only days) (see the Noise Technical Report in **Attachment D**, Figures 13 and 16, Tables 8, 9, 12 and 15). Areas outside of the Puʻuʻōʻō viewing area would experience time above 35 dBA for less than 15 minutes on both standard days and QT-only days. Noise related to commercial air tours is modeled to be greater than 52 dBA for less than 15 minutes a day within the APE.[7] Compared to existing conditions, the time above 35 dBA across the Park would be reduced by up to 70 minutes (see point 9, Puʻuʻōʻō) and the noise footprint for the ATMP as measured by time above 35 dBA potentially affects 31% less of the Park on a standard day and 39% less on a QT-only day. Compared to existing conditions, the time above 52 dBA would be reduced by up to 19 minutes (see point 5, Cone Peak, Nāpau Area).

Flights in the ATMP planning area would decrease from a peak month-average day (PMAD) level of 48.5 aircraft to approximately 5 aircraft under the ATMP, but some areas may experience a slight increase in the number of flights compared to existing conditions due to the consolidation of routes currently flown. The ATMP will also require 1,500 to 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 undertaking would

[7] See note preceding Figure 1 in the Noise Technical Analysis (Attachment D) regarding minor altitude adjustments not reflected in the noise modeling.

result in increases in noise at points near the proposed Coastal Route and Kahuku Route; however, the coastal areas have a higher natural ambient level compared to the interior portions of the Park. Therefore, noise from air tours may not necessarily be more intrusive compared to existing conditions in coastal areas. Median levels of natural ambient sounds at the coast are between 45 and 55 dBA, similar levels to light traffic noise, and 10 to 25 dB higher than in many interior areas. The higher natural ambient sound levels at the coast may help mask human-sourced sound, such as air tour noise. The existing and cumulative ambient sound levels, which include human-caused sound sources and existing air tours, remains in the same range as natural ambient at coastal locations (see Chapter 3 of the Noise Technical Report in **Attachment D** for Time Audible for Natural Ambient for existing conditions).

Points with Increased Noise

Nine location points (14, 17, 18, 19, 20, 24, 39, 40, 41) would experience increases in noise under the FAA and NPS metrics. The agencies identified whether these points were near any historic properties that have a quiet setting or natural sounds as a significant characteristic. The agencies then evaluated the changes in noise duration and intensity that would be experienced at those properties under the ATMP compared to existing conditions. Table 13 in **Attachment D** shows the difference between the existing $L_{Aeq,\ 12\ hr}$ compared to the modeled $L_{Aeq,\ 12\ hr}$ under the ATMP, Table 14 shows the difference in the time audible for natural ambient, Table 15 shows the difference in time above 35 dBA, Table 16 shows the difference in time above 52 dBA, and Table 17 shows the difference in the maximum sound levels. 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.

The following location points may experience an increase in duration of noise, but at a lower intensity: 14, 18, 19, 20 (see Figure 7 of the Noise Technical Report in **Appendix D** for modeled point locations and Tables 13-17 for comparison of point data). Point 14 represents coastal areas of Hawai'i Volcanoes National Park TCP, Puna-Ka'ū Historic District, and coastal Historic Trails. Point 18 represents a visitor use area near the coast and within Hawai'i Volcanoes National Park TCP, Puna-Ka'ū Historic District, and Kalapana Fishing and Homesteading Rights (TCP), and near coastal Historic Trails. Point 19 represents coastal areas of Hawai'i Volcanoes National Park TCP, Puna-Ka'ū Historic District, and coastal Historic Trails. Point 20 represents the Pu'uloa Petroglyphs and Chain of Craters Road, as well as areas of the Hawai'i Volcanoes National Park TCP, Puna-Ka'ū Historic District, Kalapana Fishing and Homesteading Rights (TCP), and coastal Historic Trails that are slightly inland but closer to the Pu'u'ō'ō viewing area. Of these six properties, Hawai'i Volcanoes National Park TCP, the Puna-Ka'ū Historic District, Kalapana Fishing and Homesteading Rights (TCP), coastal Historic Trails, and Pu'uloa Petroglyphs have natural sounds or quiet setting as a significant characteristic. At most of these points, time above 35 dBA would increase between 4 and 15 minutes, with the greatest increase being at point 18, where sound levels would be above 35 dBA for up to 15 more minutes than under existing conditions. These points would also see an increase between 1.5 and 130 minutes in time audible. However, modeling of $L_{Aeq,\ 12\ hr}$ indicates the undertaking will remain similar to existing conditions (around 31-33 dBA) at points 14 and 18 and decrease at points 19 and 20, with a reduction of around 20 dBA at point 19. The maximum sound levels would decrease noticeably at all these points, by as much as 33.9 dBA at point 19 on QT-only days. Noise will not reach above 52 dBA at points 19 and 20 and will only be above 52 dBA for just over a minute at points 14 and 18, which is only seconds longer than existing conditions. This indicates that the air tours may be audible for a longer amount of time due to the increased altitudes of the flights under the ATMP, but they would not be as loud as existing conditions.

Points 17, 24, 40, and 41 show increases in duration as well as intensity on standard days; on QT-only days the intensity of the noise would be similar to or lower than existing conditions. On standard days maximum sound levels will increase by 4-7 dBA, a perceptible but not a significant increase. The maximum sound level would remain around 60 dBA or less, which is below the level of normal speech at a distance of 3 ft. (see the Noise Technical Report in **Attachment D**, Figure 1 for comparative noise levels). The equivalent sound level ($L_{Aeq,12h}$) would remain under 35 dBA in all scenarios. The increases in time above metrics are minimal on both standard and QT-only days and span across the operating period: time above 35 dBA would increase by up to 11.2 minutes, and time above 52 dBA would increase by up to 2.2 minutes total each day. The air tours may be audible for up to 90 minutes longer than existing conditions on a standard day but less than an hour longer on QT-only days (point 17). Points 17 and 40 represent coastal locations of Hawai‘i Volcanoes National Park TCP, Puna-Ka‘ū Historic District, Kalapana Fishing and Homesteading Rights (TCP), and coastal Historic Trails. Resources contributing to the Puna-Ka‘ū Historic District and Kalapana Fishing and Homesteading Rights (TCP) that are in the vicinity of these points include fishing shrines, trails, traditional fishing areas, culturally sensitive sites, culturally used lava tubes, and other features that require a quiet and/or natural setting. Point 41 represents a coastal point farther south but also within the Hawai‘i Volcanoes National Park TCP and Puna-Ka‘ū Historic District and near the Ala Wai‘i Parcel. Point 24 is an inland point along the Kahuku Route that represents Kīpuka Ka‘ōpapa, which is in the southwestern section of the Hawai‘i Volcanoes National Park TCP, at the southeast corner of the Kahuku Ranch Cultural Landscape, just northeast of the Kahuku-Pūhue Parcel Archaeological Sites, just east of the Kahuku-‘Āpua Trail, and near the Kahuku Ranch Base Camp. Kīpuka Ka‘ōpapa, contributing features to the Hawai‘i Volcanoes National Park TCP, and Kahuku-Pūhue Parcel Archaeological Sites in the vicinity of point 24 include agricultural features and trails that require a natural setting with natural sounds. The other historic properties near point 24 do not include natural or quiet settings as significant characteristics.

Only point 39 shows increases in all modeled noise metrics. Point 39 represents a coastal point within the Hawai‘i Volcanoes National Park TCP, Kalapana Fishing and Homesteading Rights (TCP), and the Puna-Ka‘ū Historic District, and is also near coastal Historic Trails. Contributing features to the TCPs and Historic District in the vicinity of point 39 include traditional fishing areas, trails, and other features that require a quiet and/or natural setting. $L_{Aeq,12h}$ would increase almost 10 dBA at point 39, which means sound exposure would almost double on standard days and QT-only days; however, overall, the sound levels would remain low (20-30 dBA). The maximum sound level would increase by 2 dBA on QT days and almost 8 dBA on standard days. Increases below ±3 dB are generally not perceptible, and the maximum level of 60.7 dBA is similar to a commercial area or dishwasher in the next room. Time above 35 dBA and 52 dBA are modeled to slightly increase under the ATMP, with time above 35 dBA experienced for a total of 7 minutes on a standard day and 10 minutes on a QT-only day, and time above 52 dBA experienced for 1 minute on both a standard day and on a QT-only day. Therefore, while increasing, noise levels generally remain low.

For features that require a quiet setting, the time audible is a useful indicator as it takes into account the natural ambient noise; time audible accounts for all air tour noise that an attentive listener could hear during operating hours of a single day, including noise that is below 35 dBA, which is lower than the sound levels of an average library and is generally considered to be the sound level that begins degrading experiences in outdoor venues. Note that the time audible is not in consecutive minutes but the total is spread out across time. At point 39, air tours would be audible for 36 minutes on QT-only days and about an hour on standard days, increasing from 0 minutes, which could temporarily disrupt experiences that require a quiet setting if they take place during hours that air tours are in operation.

The Hawai‘i Volcanoes National Park TCP, Puna-Ka‘ū Historic District, Kalapana Fishing and Homesteading Rights (TCP), and Historic Trails extend to the coast but encompass large areas and contain a multitude of contributing features that are inland and would experience significant decreases in noise levels due to the ATMP. While coastal points may experience increases in noise duration and/or intensity, the ATMP will remove the potential for air tours to fly directly over the contributing features of these properties, and contributing features that are further from the Coastal Route and more inland would experience significant decreases in noise across all or most of these metrics (see points 8, 9, 10, 11, 12, 13, and 19 in the Noise Technical Report in **Appendix D**). The noise increases at the coastal points, as analyzed above, are limited and would not significantly degrade the integrity or use of these four historic properties.

The consolidated Coastal Route would also remove the potential for air tours to fly directly over the Pu‘uloa Petroglyphs (point 20) and Ala Wai‘i Parcel (near point 41). The Pu‘uloa Petroglyphs would experience an increase in noise duration but not intensity, as the maximum sound level would decrease – as noted in the analysis above, this increase in duration is likely due to the increased altitude and the use of QT aircraft that may make air tour noise quieter but audible for a longer period of time. Point 41 near the Ala Wai‘i Parcel would experience an increase in noise duration, but noise intensity would only increase on a standard day. The increase in noise duration at these two properties would not occur at a single point in time and would be spread throughout the operating day. Furthermore, the increases in time above 35 dBA and/or time above 52 dBA at these points are minimal; time above 35 dBA increases by up to 5 minutes for point 20 and up to 8 minutes for point 41, and time above 52 dBA decreases for point 20 and increases by just 1 minute for point 41. The maximum sound level at point 41 near the Ala Wai‘i Parcel would only increase by 2.5 dBA on a standard day, which would not be obvious to an observer, and the maximum sound level on a QT-only day would decrease. Additionally, while the duration of noise is expected to increase at point 41 near the Ala Wai‘i Parcel, the site’s contributing features that are further from the Coastal Route would likely experience similar or decreased noise compared to existing conditions. Overall, the modeled increases at these two properties are limited and would not significantly degrade their integrity or use.

The consolidated Kahuku Route would remove the potential for air tours to fly directly over Kīpuka Ka‘ōpapa and contributing features of the Kahuku-Pōhue Parcel Archaeological Sites (near point 24). Many noise-sensitive contributing features to the Kahuku-Pōhue Parcel Archaeological Sites are further from the Kahuku Route or near the coastline and would likely experience similar or decreased sound levels compared to existing conditions. Additionally, the use of QT would reduce the intensity of the noise on QT-only days compared to existing conditions. While noise duration is expected to increase at point 24 under the ATMP, with time audible increasing by up to 36 minutes, this increase in duration would not occur at a single point in time and would be spread throughout the operating day. Furthermore, while the maximum sound level at point 24 would increase from 52.2 dBA to 56.9 dBA on a standard day, time above 35 dBA at this point would only increase up to 11 minutes, and time above 52 dBA would increase less than one minute on a standard day and would decrease on a QT-only day. Overall, the increases in noise duration and intensity are limited and would not significantly degrade the integrity or use of Kīpuka Ka‘ōpapa or the Kahuku-Pōhue Parcel Archaeological Sites.

Noise Effects Summary

Because noise is modeled using conservative assumptions (see **Attachment D**) and implementing the ATMP will result in limiting the number of flights to 14% of the three-year average of flights flown from 2017-2019 using three consolidated routes and the same aircraft to fly at higher altitudes than existing

conditions, noise impacts are expected to overall be reduced under the ATMP. The ATMP will not introduce new audible elements into the APE because air tours are currently occurring in these areas. Overall, historic properties in the APE would see a reduction in noise impacts as inland flights are reduced and the undertaking avoids audible effects to many historic properties in the APE and preserves the sanctity of the Kīlauea Crater. Contributing features near the coastal points or Kahuku Route may experience an increase in number of flights in the vicinity compared to existing conditions. Measures have been included in the undertaking to avoid or minimize effects, including reducing the number of flights and where the flights can take place, increasing altitude, incentivizing QT aircraft, and including no-fly days and restricted times for air tours, all of which are improvements over existing conditions. The designated Coastal Route would be flown offshore and would not occur directly over coastal cultural resources such as fishing areas, which would reduce potential impacts to traditional practices in these locations. The designated Kahuku Route is intended to prevent aircraft from flying directly over wilderness areas where quiet is crucial and also avoids many cultural resources.

The agencies recognize that air tours are disruptive to traditional practices, and the measures included in the ATMP reduce the likelihood that traditional uses of cultural resources will be impacted. While some contributing features to historic properties may be affected by air tours as a result of the undertaking, these effects are temporary and transient in nature. Overall, the increases in noise duration and/or intensity would not be frequent, with an estimated 5 flights per designated flight path anticipated each day; therefore, these resources would only experience noise effects for a limited time over the course of an operating day. The annual limit, time-of-day restrictions to avoid sunrise and sunset, QT incentives, and limiting flights to certain days of the week minimizes the likelihood that an air tour would interrupt Native Hawaiian traditional practices such as ceremonies, fishing, or other traditional activities, as compared to existing conditions.

While there are some increases in noise along the proposed Coastal Route and Kahuku Route, these increases in intensity and/or duration will not substantially hinder or prevent one from experiencing the property within its historic context compared to existing conditions. Therefore, the undertaking would not adversely affect the overall quiet and/or natural setting of the Hawai'i Volcanoes National Park TCP, Puna-Ka'ū Historic District, Kalapana Fishing and Homesteading Rights (TCP), coastal Historic Trails, Ala Wai'i Parcel, Pu'uloa Petroglyphs, Kīpuka Ka'apapa, and Kahuku-Pāhoehoe Parcel Archaeological Sites. Due to the overall reduction in noise levels and implementation of minimization measures, noise resulting from the undertaking will 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 qualifies it for inclusion in the National Register. Aircraft are transitory elements in a scene and visual impacts tend to be relatively short. While there may be an increased number of flights along the coast and the Kahuku Route under the ATMP, overall flights in the ATMP planning area will be reduced. The short duration and low number of flights make it unlikely a historic property would experience an adverse visual effect from the undertaking.

The ATMP will not introduce new aircraft into the viewshed within the APE, and the level of commercial air tour activity in the APE under the ATMP is expected to be reduced. The undertaking will not alter the characteristics of historic properties within the APE because there will be no significant increase in visual

effects from existing conditions. The ATMP significantly 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 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 a mandatory 5-mile standoff for special events that could be impacted by air tours, 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 1,565 tours on three consolidated routes: an average of five air tours per day per route. The average annual number of air tours from 2017-2019 is 11,376 flights; on days with peak air tour activity (defined as a 90th percentile day), as many as 90 commercial air tours occurred. Therefore, visual intrusions to historic properties are expected to significantly decrease compared to flights currently occurring because the number of authorized flights under the ATMP will be substantially less than the average number of flights from 2017-2019.

The ATMP will remove flights in the northern part of the ATMP planning area near Kīlauea Crater. The areas in the vicinity of the proposed flight paths already experience visual intrusions by air tours under existing conditions. Although more flights may occur over the Kahuku Route and Coastal Route compared to existing conditions, the ATMP will reduce the overall number of air tours in the planning area and establish proposed flight paths that do not cross directly over many historic properties except for small portions of the Puna-Kaʻū Historic District and the Hawaiʻi Volcanoes National Park TCP, and over the edge of the Kahuku-Pōhue Parcel Archaeological Sites and the Kahuku Ranch Cultural Landscape. Furthermore, the increased altitude will minimize visual intrusions to historic properties near the proposed flight path.

Properties in the APE that have viewshed as a significant characteristic include the Puna-Kaʻū Historic District, Hawaiʻi Volcanoes National Park TCP, Hilina Pali Road, and the Park's Historic Trails, to name a few. The transitory nature and short duration of aircraft as well as the restrictions under the ATMP – including the consolidated routes, limits to annual flight numbers, time-of-day limits, no-fly days, and increase in minimum altitude – will limit the overall visual effects of air tours on these historic properties. As a result of these provisions in the ATMP, the undertaking will not introduce visual elements that may alter the characteristics of any historic property that qualifies it for inclusion in the National Register.

Assessment of Indirect Effects

As the undertaking will reduce flights in the ATMP planning area and potentially displace some of those flights to outside of the ATMP planning area, it is reasonably foreseeable that current air tour operators may increase flights in areas not regulated by the ATMP, referred to as "air tour displacement." The agencies therefore considered the potential for indirect impacts to cultural resources within the APE that could occur from air tours displaced outside the ATMP planning area as a result of the undertaking. 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 Hawaiʻi 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 the Kīlauea Crater and other park features may be visible. Helicopter flights above 5,000 ft. AGL in the northern portion of the Park are unlikely due to the ground elevation in that area and safety requirements for unpressurized aircraft; however, fixed-wing flights with a pressurized cabin may still fly above 5,000 ft. AGL in these areas. 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 near a small area to the southwest of the ʻŌlaʻa Forest tract in the APE where flights may be more likely to hover to view the Kīlauea Crater compared to existing operations. For flights above 5,000 ft. AGL, 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 therefore result in a reduction of noise and visual effects to historic properties in the northern portion of the Park, including the Mokuʻāweoweo Caldera and several contributing resources to the Park 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 impacts 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 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.

The undertaking significantly reduces the number of air tours within the ATMP planning area, moves the air tours away from most sensitive cultural resources, avoids direct overflights of most historic properties, and increases the altitude at which air tours must fly, which avoids effects to many historic properties in the APE. Although the ATMP will shift authorized air tour operations to the three proposed flight routes and may expose some historic properties to increased noise and visual effects, any increases in noise and visual effects would not overall substantially diminish the integrity of these resources. The ATMP restrictions minimize the effects of air tours to historic properties in the ATMP planning area and reduce the likelihood that an air tour would interrupt Native Hawaiian traditional practices. Furthermore, air tours are transitory in nature, and any noise and visual impacts to historic properties would be temporary, infrequent, and in many cases less intrusive than existing conditions in the Park. 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 18, 2023, at 9:00 a.m. to 10:30 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 Routes
C. List of Historic Properties in the APE and Description of Historic Characteristics
D. Noise Technical Analysis: Hawai‘i Volcanoes National Park
E. Connection Information for April 18, 2023, Consulting Party Meeting for Hawai‘i Volcanoes National Park

ATTACHMENT A

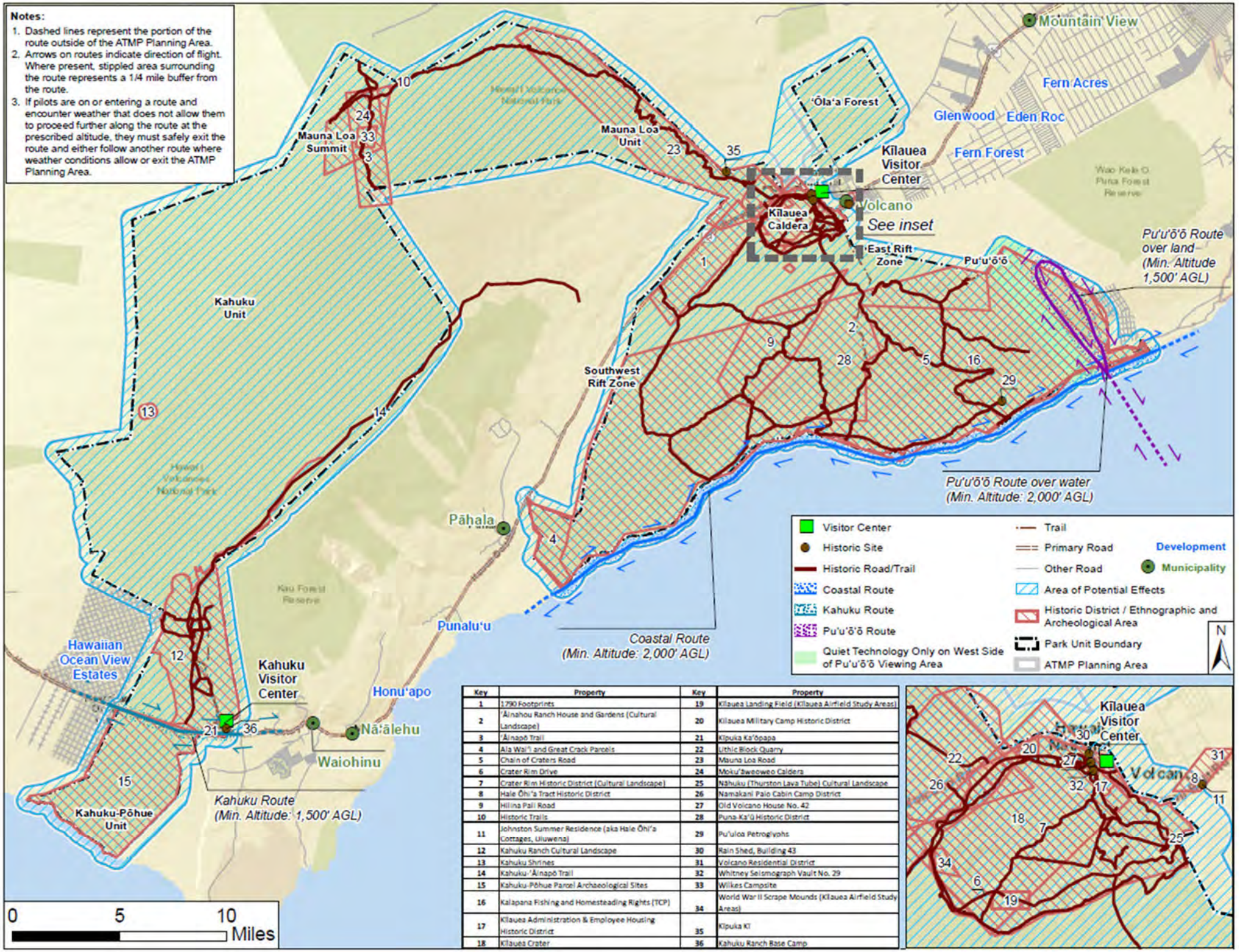
List of Consulting Parties

Above it All, Inc. (Island Hoppers, Iolani Air, Sporty's Academy Hawaii, Hawaii Island Hoppers, Hawaii Airventures, Benchmark Flight Center)
Aha Moku
Ala Kahakai National Historic Trail
Big Island Air, Inc. (Big Island Air)
Bobby Camara (Individual)
Brian Kaniela Naeʻole Naauao
County of Hawaiʻi
County of Hawaiʻi Department of Water Supply
Demetrius Olivera (Individual)
Department of Hawaiian Home Lands
Earl Louis (Individual)
Edith Kanaka'ole Foundation
Elizabeth Bell (Individual)
Gladys Brigham (individual)
Gladys Konanui (Individual)
Greg Herbst (Individual)
Hana Laulima Lāhui O Kaʻū
Hawaiʻi DLNR Division of Forestry and Wildlife
Hawaiian Civic Club of Kaʻū
Helicopter Consultants of Maui, LLC (Blue Hawaiian Helicopters)
Helicopter Consultants of Maui, LLC (Hawaii Helicopters)
Historic Hawaiʻi Foundation
Jamie Kawauchi (Individual)
Jessie Ke (Individual)
John Carse (Individual)
John Replogle (Individual)
JoniMae Makuakane-Jarrell (Individual)
Julie Leialoha (Individual)
K & S Helicopters, Inc. (Paradise Helicopters)
Kalapana Fishing Council
Kalapana ʻOhana Association
Kalauonaone O Puna Association
Kamehameha Schools
Kauilani Almeida (Individual)
Kaʻū Advisory Council
Kaʻū Multicultural Society
Keauhou Bird Conservation Center
Kekuhi Keliikanakaole (Individual)
Kona Hawaiian Civic Club
Larry Kuamoʻo (Individual)
Leialoha Ilae-Kaleimamahu (Individual)

Maku‘u Farmers Association
Manuiwa Airways, Inc. (Volcano Helicopters, Volcano Heli-Tours)
Mary Kawena Pūku‘i Cultural Preservation Society
Mokulele Flight Service, Inc. (Mokulele Airlines)
Naki‘i Ke Aho
Na Kupuna Moku O Keawe
Na Ohana O Kalapana
National Trust for Historic Preservation
Natural Resources Conservation Service Hilo Service Center
The Nature Conservancy
Nona and Herb Wilson (Individual)
Office of Hawaiian Affairs
Office of Native Hawaiian Relations, US DOI
O Ka‘ū Kakou
Paulette K. Ke (Individual)
Piilani Kaawaloa (Individual)
Royal Hawaiian Academy of Traditional Arts
Safari Aviation, Inc. (Safari Helicopter Tours)
Sam Kahookaulana (Individual)
Schuman Aviation Company, Ltd. (Makani Kai Helicopters, Magnum Helicopters)
Sunshine Helicopters, Inc.
Three Mountain Alliance
USDA Forest Service Institute of Pacific Islands Forestry
USFWS Big Island NWRC
USFWS Hakalau Forest NWR
Violet Makuakane (Individual)

ATTACHMENT B

Area of Potential Effects Map
Including
Proposed Commercial Air Tour Routes



Key	Property	Key	Property
1	1790 Footprints	19	Kilauea Landing Field (Kilauea Airfield Study Areas)
2	ʻĀinahou Ranch House and Gardens (Cultural Landscape)	20	Kilauea Military Camp Historic District
3	ʻĀlinapō Trail	21	Kīpuka Kaʻōpapa
4	Ala Waiʻī and Great Crack Parcels	22	Lithic Block Quarry
5	Chain of Craters Road	23	Mauna Loa Road
6	Crater Rim Drive	24	Mokuʻāweoweo Caldera
7	Crater Rim Historic District (Cultural Landscape)	25	Nāhuku (Thurston Lava Tube) Cultural Landscape
8	Hale Ōhiʻa Tract Historic District	26	Namakani Paio Cabin Camp District
9	Hilina Pali Road	27	Old Volcano House No. 42
10	Historic Trails	28	Puna-Kaʻū Historic District
11	Johnston Summer Residence (aka Hale Ōhiʻa Cottages, Uluwena)	29	Puʻuloa Petroglyphs
12	Kahuku Ranch Cultural Landscape	30	Rain Shed, Building 43
13	Kahuku Shrines	31	Volcano Residential District
14	Kahuku-ʻĀlinapō Trail	32	Whitney Seismograph Vault No. 29
15	Kahuku-Pōhue Parcel Archaeological Sites	33	Wilkes Campsite
16	Kalapana Fishing and Homesteading Rights (TCP)	34	World War II Scrape Mounds (Kilauea Airfield Study Areas)
17	Kīlauea Administration & Employee Housing Historic District	35	Kīpuka Kī
18	Kīlauea Crater	36	Kahuku Ranch Base Camp

ATTACHMENT C

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

Property Name	Property Type	Eligibility Status	Significant Characteristics
1790 Footprints	District, SIte	Listed	The 1790 Footprints are scattered sets of footprints of men, women, and children and hoofprints of hogs in hardened, cement-like ash that may have been laid down during the 1790 phreatic explosions of the Kīlauea volcano. The footprints are significant for their potential association with the warriors of Keoua Kuahu‘ula, a high Hawaiian chief, who passed through the Ka‘u Desert during the 1790 eruption of Kīlauea. They are also significant for their potential to yield information for this historic period. Significant characteristics for the site include its location, cement-like ash, and the size, spacing, and configuration of the footprints.
‘Āinahou Ranch House and Gardens (Cultural Landscape)	Cultural Landscape	Listed	The ‘Āinahou Ranch House and Gardens is significant for its association with Herbert C. Shipman, a Big Island rancher, horticulturist, philanthropist, and conservationist. It is also significant as an example of a Craftsman/Bungalow style of architecture in Hawai‘i. The period of significance extends from 1941, when Shipman constructed the house as a safe haven from possible Japanese invasion during World War II, to 1971. Although the plant species on the property are more limited than during the period of significance, the landscape still retains several plant varieties, and the landscape design and association with agriculture contributes to the property’s significance. Other significant characteristics include the property’s Craftsman bungalow style, intact materials, and Japanese-influenced design.
‘Āinapō Trail	Structure	Listed	The ‘Āinapō Trail was a 34-mile-long trail that served as the customary route to the summit of Mauna Loa from the prehistoric period until 1916. The trail was engineered to ensure availability of shelter, drinking water, and firewood between the nearest permanent settlement and the summit crater; it was often used during summit eruptions to honor Pele, the goddess of volcanoes, with chants and offerings. The U.S. Army constructed a new trail to the summit for volcanologists headquartered at Kīlauea in 1916, which led to diminished usage of the ‘Āinapō Trail. The trail is significant for its prehistoric and historic use as the main route to the summit, for its engineering, and for its potential to yield information. The trail’s alignment, association with the summit of Mauna Loa, and secluded, natural setting are all significant characteristics.

Property Name	Property Type	Eligibility Status	Significant Characteristics
Ala Wai‘i Parcel	TBD	Unevaluated[8]	The Ala Wai‘i Parcel has not been formally evaluated, but it contains known significant archeological resources (Pu‘uUla‘ula) within the parcel as well as traditional fishing areas. Potential significant characteristics of the sites include extant material culture remains, natural sounds, quiet setting for traditional practices, an association with the ocean and surrounding landscape.
Boles Field (Kīlauea Airfield Study Areas)	Site	Eligible	Boles Field was named after the Park’s first superintendent, Thomas R. Boles, and was constructed on the bluff between Uwēkahuna and the Kīlauea Military Camp in 1925. Boles Field was constructed after the previous landing field, built in 1923, was destroyed by the eruption of Halema‘uma‘u. Soon after construction, Boles Field was found to be dangerously short, but it was used over the next 15 years. It was also used as a location for military trucks and heavy equipment during World War II. It is significant for its association with aviation and World War II history on the island; significant characteristics include the site’s location and configuration as a landing field.
Chain of Craters Road	Structure	Unevaluated	Chain of Craters Road was constructed starting in 1927. The first iteration of the road was opened in 1928 with the original alignment connecting 8 craters to Makaopuhi Crater. The road was lengthened into the Kalapana Extension in 1960, opening in 1964. The Mauna Ulu eruptions of 1969-1974 covered portions of the original alignment, which was rebuilt in 1979. The road was again damaged by eruptions in 1983. During the Kīlauea eruptions of 2014, the road was again extended into the Kalapana extension as an emergency access road. It is one of the primary roadways in the Park connecting the summit to the coastal area. Potential significant characteristics of the property include the road’s alignment and its association with several craters, the summit, and the coast.
Crater Rim Drive	District, Structure	Listed	Crater Rim Drive is a 10.6-mile scenic main road within the Park that loops around the caldera rim and onto the caldera floor. The road passes through a variety of natural settings within the Park, including forests, high scrub desert, and lava fields. It is significant for its association with the early development of the Park, for its association with the Civilian Conservation Corps (CCC) program and NPS rustic style, and as an engineering feat that was designed around the Park’s natural landscape. The road’s alignment and design, natural setting, and association with the caldera and the CCC are all significant characteristics of the district.

[8] 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
Crater Rim Drive Historic District	District, Cultural Landscape	Listed	The Crater Rim Drive Historic District encompasses approximately 5,000 acres in and around the Kīlauea Caldera and contains Crater Rim Drive and its associated surrounding developments. It is significant for its association with the CCC program and early Park development between the periods of 1916 and 1942. It is also architecturally significant for its distinctive NPS Rustic-style architecture and naturalistic landscape architecture. Significant characteristics of the district include Crater Rim Drive's alignment and the district's natural setting, landscape design, rustic architecture, and association with the CCC.
Great Crack Parcel	TBD	Unevaluated	The Great Crack has not been formally evaluated, but it contains known potentially significant archeological resources and traditional fishing areas. Potential significant characteristics of the sites include any extant material culture remains and an association with the ocean and surrounding landscape.
Hale Ōhiʻa Tract Historic District	District	Listed	The Hale Ōhiʻa Tract Historic District is a small subdivision in Volcano Village containing historic buildings and structures that is marked by two large lava rock pillars. It is significant for its association with the development of the area of summer retreats in the early-twentieth century. Significant characteristics of the district include its varied, intact concentration of architecture, stone pillars, narrow roadway, and association with Volcano Village as a summer retreat.
Hawaiʻi Volcanoes National Park	TCP	Eligible	The entirety of Hawaiʻi Volcanoes National Park is significant as a Traditional Cultural Property (TCP) for its association with Native Hawaiian culture, traditions, and sacred uses. This includes the physical manifestations of the volcano, the forested areas as well as the soundscape and the airspace. Many Native Hawaiian cultural practitioners also come to Kīlauea for ceremonies, hoʻokupu, and paying tribute to the deity Pelehonuamea. The exceptional stillness and serenity of the TCP are significant characteristics that allow Native Hawaiians to continue conducting traditional ceremonies that require a quiet setting.
Hilina Pali Road	District	Listed	Hilina Pali Road is a secondary road in the Park road system that was built by the CCC between 1933 and 1942 and extends westerly from Chain of Craters Road for approximately 8.35 miles in a descent towards an overlook with a historic shelter overlooking the coastline. The road has several developed areas that are connected to the roadway containing a total of over 69 acres. It is significant for its association with the CCC and early Park development, as well as for its distinctive design and construction, including its use of NPS Rustic-style architecture. Significant characteristics of the district include the road's alignment and design, its viewshed of the surrounding landscape, rustic design, descent towards the Hilina Pali overlook, and location near the coastline.

Property Name	Property Type	Eligibility Status	Significant Characteristics
Historical Corral and Chute	Structure	Eligible	The Historical Corral and Chute is significant for its association with the agricultural history of the Kahuku Ranch. Significant characteristics include the structure's materials and association with the Kahuku Ranch.
Historic Trails	Structures	Eligible	The majority of the trails in the Park are historic, ranging in age from ancient trails, trails associated with cattle ranching, historical Park trails, CCC era trails, and trails related to Thomas Jaggar and the Buffalo Soldiers (Mauna Loa Trail). Significant characteristics of various historic trails throughout the Park include their locations, alignments, viewsheds, natural setting, natural sounds, and surrounding landscapes.
Johnston Summer Residence (aka Hale Ōhi'a Cottages, Uluwena)	Building	Listed	The Johnston Summer Residence, constructed in 1931, consists of a main house, maid's quarters, and two-story carriage house with a landscaped Japanese garden. It is significant for its association with the development of Volcano Village as a summer retreat and as an example of the Queen Anne style. The residence's Queen Anne features (including its asymmetrical layout, complex roof form, fishscale shingles, turret and bay windows), association with summer tourism in the area, and surrounding landscape designed to hide the property from the street are all significant characteristics of the property.
Kahuku Ranch Base Camp	Site	Eligible	The Kahuku Ranch Base Camp Historic Site spans over 5 acres and is part of the larger Kahuku Ranch. It is significant for the U.S. military's use of the ranch between 1939 to 1947 for strategic operations during World War II. The site's significant characteristics include its rolling, pastoral landscape and location near Mauna Loa.
Kahuku Ranch Cultural Landscape	District, Cultural Landscape	Eligible	The Kahuku Ranch Cultural Landscape is locally significant for its association with the patterns of development in the cattle industry on the Island of Hawai'i and is particularly representative of the transition point in ranching history from land-responsive methods of cattle operations to more intensive infrastructure development and range management to support ranching operations in the first half of the twentieth century. The period of significance begins in 1912 when Kahuku underwent the first development as a part of the Parker Ranch and ends in 1947 when this initial phase of development was completed, and the ranch was sold to James W. Glover. This period reflects the establishment of the foundation of modern cattle ranching on the island. The Parker-era Kahuku represents the integration of early ranching practices, of large pastures and open ranges, and the first efforts to operate the ranch through infrastructural development and range management. Significant characteristics include the rolling, pastoral landscape and association with cattle ranching.
Kahuku Shrines	Site	Eligible	The entire archeological complex of the Kahuku Shrines is significant in its named association with the 16th/17th century ruling chief 'Umi-a-Līloa. Although the ties of this chief to specific

Property Name	Property Type	Eligibility Status	Significant Characteristics
			features within the complex are tenuous, there are sufficient other regional associations with camps, trails, and temples in the high elevation area that support this evaluation. The Kahuku shrine also embodies the distinctive characteristics of Emory's Necker-style marae and those of shrines on Mauna Kea and Haleakalā. Further, the complex exhibits distinctive construction methods of stacked and set slabs on edge and end that are not typically found in such concentrations in low elevation areas and thus may represent an alpine/sub-alpine construction style. Additionally, the 'Umi Caverns complex offers an opportunity to examine the convergence of high elevation land use, transportation, and ceremonial activities. Significant characteristics of the complex include its high elevation, quiet setting, and distinctive construction methods and style.
Kahuku-'Āinapō Trail	Structure	Eligible	The Kahuku-'Āinapō Trail is a segment of an "old trail system" that was used in historic times for driving cattle between various cattle ranching operations associated with Parker Ranch (ca. 1912-1947). Stop over locations includes various ranches in route including Kapāpala Ranch, Keahou Ranch, Humuula Sheep Station, and Pu'u'ō'ō Ranch. The trail is significant as it contributes to broad patterns of history and has the potential to yield information. Significant characteristics of the trail include its alignment and its association with and location near various ranches.
Kahuku-Pōhue Parcel Archaeological Sites	Site	Eligible	The Kahuku-Pōhue Parcel contains a total of 60 sites made up of hundreds of archeological features and ethnographic resources that have the potential to yield information on Hawaiian history and prehistory. The parcel contains four resources that have architectural/engineering significance, including the traditional Hawaiian village at Kahakahakea, which was designed around the local topography. Sites also include a quarry, habitation features, shrines, and trail segments associated with the traditional practice of commuting between residences. Significant characteristics of the site include extant material culture remains, their configuration and materials, Kahakahakea's landscape design, natural sounds, quiet setting for traditional practices, the surrounding topography, and trail alignments and their association with residences.
Kalapana Fishing and Homesteading Rights (TCP)	TCP	Eligible	The Kalapana Fishing and Homesteading Rights area is a TCP significant for its association with Native Hawaiian culture and traditions. It is located within the Puna-Ka'ū Historic District and is contributing to the district. Pursuant to the act of June 20, 1938 (52 Stat. 781; 16 U.S.C. 391b and 396a) Native Hawaiian residents of the villages adjacent to the Kalapana extension area added to the Park by the above act and visitors under their guidance are granted the exclusive privileges of fishing or gathering seafood from parklands (above the

Property Name	Property Type	Eligibility Status	Significant Characteristics
			high waterline) along the coastline of such extension area. These persons may engage in commercial fishing under proper State permit. Significant characteristics of the TCP include its use and association with the ocean and coastline, quiet setting for traditional practices, and its natural coastal sounds and setting.
Kīlauea Administration and Employee Housing Historic District (Cultural Landscape)	District, Cultural Landscape	Eligible	The Kīlauea Administration and Employee Housing Historic District encompasses a collection of small-scale, rustic houses and buildings along the northeast edge of the Kīlauea Caldera. Most of the buildings and landscape features were built by CCC crews and designed following a series of master plans developed from 1931 to 1941 by the NPS Landscape and Engineering Division. The period of significance for the district is between 1927 and 1942, and it is significant for its association with the CCC and early Park planning and for its NPS Rustic-style architecture and landscape design. Significant characteristics of the district include the configuration and rustic design of the buildings, its location near the caldera, landscape design, and association with the CCC.
Kīlauea Crater	Site	Listed	Kīlauea Crater is located within the summit depression of Kīlauea Volcano, one of the earth's most active volcanoes. It is significant for its association with Native Hawaiian culture and tradition centered around the goddess Pele. It is also significant as a focal point of tourism and scientific study within the Park. The crater is used for traditional practices. Significant characteristics of the site include its quiet setting that allows Native Hawaiians to continue conducting traditional ceremonies.
Kīlauea Landing Field (Kīlauea Airfield Study Areas)	Site	Eligible	Kīlauea Landing Field was a military landing field that was built in 1923 at the request of the US Army Hawaiian Department. It was the first airfield constructed on the Island of Hawai'i and used to photograph the Caldera for the first time from the air. The field was destroyed by the eruption of Halema'uma'u in the following year and was replaced by Boles Field. Kīlauea Landing Field is significant for its association with Hawaiian aviation history, military history, aerial photography, and the 1924 eruption of Kīlauea. The site's significant characteristics include its association with and location near Kīlauea.
Kilauea Military Camp Historic District (Cultural Landscape)	District, Cultural Landscape	Eligible	The Kilauea Military Camp Historic District was established in 1916 and encompasses approximately 50 acres of land. It served as the location for training the local National Guard members and also served as a rest and relaxation facility for the military. During World War II, the camp was used as a Japanese internment and prisoner-of-war camp. It is significant for its association with the military history of the area as well as for its planning and design. Significant characteristics of the district include its architecture and landscape design.

Property Name	Property Type	Eligibility Status	Significant Characteristics
Kīpuka Kaʻōpapa	Site	Eligible	Kīpuka Kaʻōpapa is a significant archeological resource and is a vestige of the Ka'ū Agricultural Field Systems, an expansive area of intensive agriculture that was built as early as the 1400s. The site is made up of a complex network of rock walls, mounds and structures and is eligible for having information potential into past traditional agricultural practices. The site's stone materials, extant structures and features and their configurations, natural sounds, and the agricultural landscape are all significant characteristics.
Kīpukakī	Site	Unevaluated	Kīpukakī has not been formally evaluated, but it is considered an ʻŌiwi holy place of worship. Potential significant characteristics include the natural soundscape including birds singing and the sound of leaves in the wind.
Lithic Block Quarry	Site	Eligible	The Lithic Block Quarry is a traditional ancient stone tool production site that is significant for its potential to yield information regarding production practices. It has been mapped with 277 individual workshops where fine-grained basalt rocks were shaped into stone tools by Native Hawaiians after the late-1600s. Significant characteristics include the extant remains of lithic production and the site's geology and location.
Mauna Loa Road	District	Listed	Mauna Loa Road, constructed between 1934 and 1962, is a secondary road through the Park that has several developments along its route. It is significant for its association with the CCC and for its NPS Rustic-style design. Significant characteristics include the road's alignment and location near the Kīlauea Crater and Mauna Loa and the district's rustic architecture and landscape design.
Mokuʻāweoweo Caldera	Site	Eligible	Mokuʻāweoweo Caldera is located at the summit of Mauna Loa and is considered a sacred place and ethnographic resource to many Native Hawaiians. Significant characteristics of the site include its quiet setting that allows Native Hawaiians to continue conducting traditional ceremonies.
Nāhuku (Thurston Lava Tube) Cultural Landscape	District, Cultural Landscape	Eligible	The Nāhuku (Thurston Lava Tube) Cultural Landscape is significant for its role in the development of tourism at Hawaiʻi Volcanoes National Park and the Hawaiian Islands. The identification of the lava tube in 1912 and its popularity as a visitor destination drew attention to the site as the Park was being established. The Thurston Lava Tube complex is also significant in the history of volcanology, allowing scientists and visitors to experience the effects of volcanic activity at close range. Furthermore, features of the Thurston Lava Tube complex are significant for the association with the history of NPS design and construction and the NPS Rustic style. Certain features, such as stone walls and steps, constructed with native materials, are associated with the work of the CCC. Other improvement campaigns are related to Mission 66 goals. The Thurston Lava Tube complex is also contributing to the

Property Name	Property Type	Eligibility Status	Significant Characteristics
			National Register-nominated Crater Rim Drive Historic District. Significant characteristics of the district include its rustic architecture, natural design, association with the CCC and Mission 66, and association with tourism.
Nāmakanipaio Cabin Camp District	District	Eligible	The Nāmakanipaio Cabin Camp District is a campground built in the 1960s that contains rustic cabins, camp sites, comfort stations, and picnic areas. It is significant due to its construction and design as part of the Mission 66 program and as a rare example of Hawaiian Mission 66-style architecture. Significant characteristics of the district include its rustic design and its association with camping and the Mission 66 program.
1877 Volcano House (Old Volcano House No. 42)	Building	Listed	The 1877 Volcano House (Old Volcano House No. 42) is a one-story building built in 1877 that formerly served as a hotel for visitors of Kīlauea Volcano. It is significant for its association with tourism and visitation within the Park and as an early representation of Western architecture in the area.
Piʻi Mauna Dump Site	Site	Unevaluated	The Piʻi Mauna Dump Site has not been formally evaluated, but it is a historic-age dump site encompassing approximately 450 square meters that contains a large rubble pile of old concrete, red clay fire bricks, boulders, metal fragments, and ceramics. Potential significant characteristics include the extant material culture remains.
Puna-Kaʻū Historic District	District	Listed	The Puna Kaʻū Historic District encompasses over 300 sites including village complexes, temple sites, cave shelters, petroglyph fields, and coastal trails. These sites are significant for their potential to yield information regarding Native Hawaiian socio-political religious systems, land use, and arts. The district encompasses land that is used for traditional practices. Significant characteristics include extant material culture and structure remains, trail alignments, natural sounds, quiet setting for traditional practices, and other evidence of prehistoric and historic land use.
Punaluʻu Heiau	Site	Unevaluated	The Punaluʻu Heiau is a Native Hawaiian temple constructed of heavy lava slabs. It is potentially significant for its association with Native Hawaiian rituals and culture. Potential significant characteristics include the heiau's materials and natural sounds and setting.
Punaluʻu Springs	Site	Unevaluated	The Punaluʻu Springs, also referred to as "Queen's Bath," is the location of a natural spring associated with Native Hawaiian culture. It was covered by lava flows in the 1980s and 1990s. Potential significant characteristics include the site's natural sounds and setting.
Puʻuloa Petroglyphs	Cultural Landscape	Eligible (and contributing feature to the	Puʻuloa is a very sacred and religious place for many of the people of Hawaiʻi and has been used ritually for over 500 years. It is the largest petroglyph field in the state. There are more than 23,000 petroglyph images, mostly *poho* (cupules, or depressions) in which a portion of the umbilical cord of a newborn was placed to ensure a long life. Motifs of circles, other

Property Name	Property Type	Eligibility Status	Significant Characteristics
		Puna-Kaʻū Historic District)	geometric designs, as well as cryptic designs of human representations known as anthropomorphisms, canoe sails, and even feathered cape motifs can all be found in this dense concentration. Significant characteristics of the cultural landscape include the petroglyph designs and configurations and the site's natural sounds and quiet setting for traditional practices.
Rain Shed, Building 43	Building	Eligible	The Rain Shed, Building 43 is eligible for its design and engineering. The water collection system is an example of how water supplies were developed in areas lacking wells and how the collection technology changed over time. The water collection system was an essential element in the development of the Park. Significant characteristics of the building include its extant historic materials from the period of significance, such as its corrugated metal siding and roof, and its engineering.
Volcano Residential District	District	Eligible	The Volcano Residential District encompasses several residences in Volcano Village, located just east of the Park, that were constructed prior to World War II. The district is significant for its architecture and design. Significant characteristics of the district include its location and near Hawai'i Volcanoes National Park, its architecture, and its secluded and forested setting.
Whitney Seismograph Vault No. 29	Building	Listed	The Whitney Seismograph Vault No. 29 is an underground room constructed in 1912 that housed the study of volcanic and seismic activity at Kīlauea and Mauna Loa by American scientists between 1912 and 1961. The above-ground portion of the vault consists of a free-standing, reinforced concrete pier. The building is significant for its association with the history of the study of volcanic and seismic activity in the area. Significant characteristics of the vault include its location and association with Kīlauea.
Wilkes Campsite	Site	Listed	Wilkes Campsite is the location and remains of an 1840-1841 expedition by American scientists on the summit of Mauna Loa. It is significant for its association with military history and the history of scientific study on the island as well as for its association with Lieutenant Charles Wilkes, the leader of the expedition. It is also significant in the areas of transportation and engineering. The campsite's secluded location at Mauna Loa, volcanic setting, and extant remains of the campsite are all significant characteristics.
World War II Scrape Mounds (Kīlauea Airfield Study Areas)	Site	Eligible	The World War II Scrape Mounds were the result of efforts by the CCC and the U.S. military to destroy the two airfields and any other potential landing site for Japanese military aircraft after the Pearl Harbor attack. The features were generally caused by a 1.5-meter bulldozer bucket that was used to create mounds and depressions across the landscape. The mounds are significant due to their association with the CCC personnel efforts to deny use to the

Property Name	Property Type	Eligibility Status	Significant Characteristics
			airfields, World War II in Hawai‘i, and their information potential. Significant characteristics include the extant remains of the scrape mounds and depressions.

ATTACHMENT D

Noise Technical Analysis: Hawai‘i Volcanoes National Park

Noise Technical Analysis: Hawai‘i Volcanoes National Park

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1. Introduction

The purpose of this report is to document the noise results used in the alternatives impact analysis discussed in the Air Tour Management Plan (ATMP) Environmental Assessment (EA) for Hawai'i Volcanoes National Park (park) 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; and Wilderness.

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. 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] Thus 20 dBA would be perceived as twice as loud as 10 dBA, 30 dBA would be perceived as 4 times louder than 10 dBA, 40 dBA would be perceived as 8 times louder than 10 dBA, etc. 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 areas, such as the park, are often lower than those of the 'common' outdoor areas shown, in the range of 20-30 dBA.

[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.

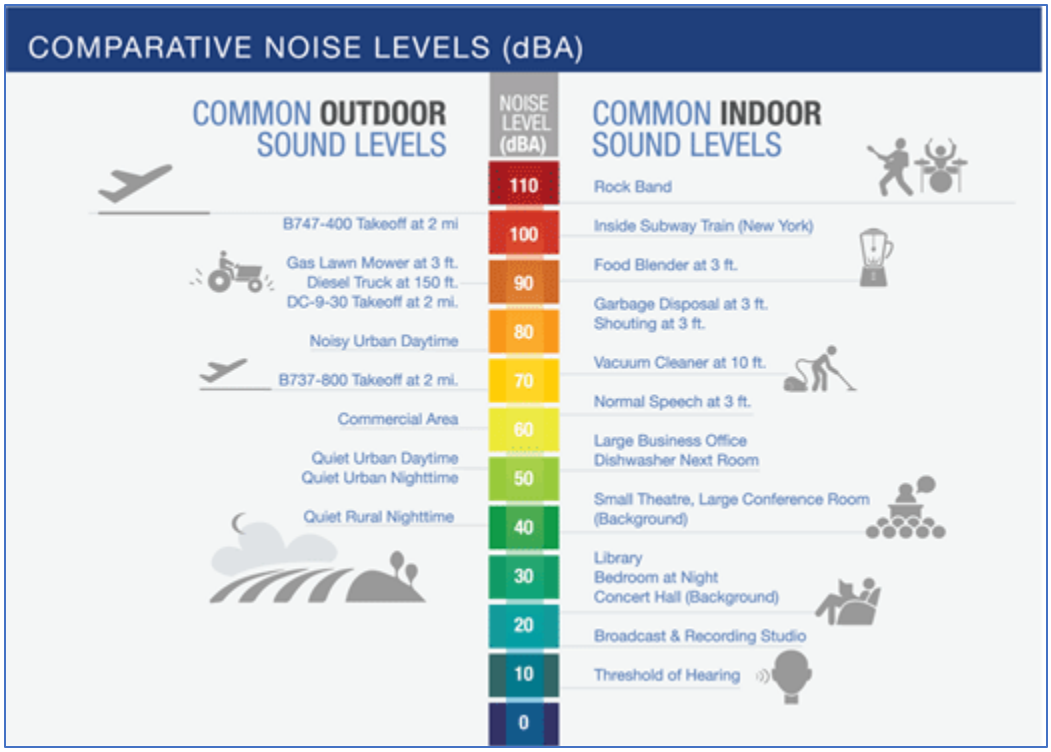

Figure 1. Comparative Sound Levels[2]

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.

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 effects of noise and park management objectives (e.g., 35 and 52 dB), and maximum sound level. These metrics are discussed further in Table 1.

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

Table 1. Primary metrics used for the noise analysis

Metric	Relevance and citation
Equivalent sound level, $L_{Aeq, 12\ hr}$	The logarithmic average of commercial air tour sound levels, in dBA, over a 12-hour day. The selected 12-hour period is 7:00 AM to 7:00 PM to represent typical daytime commercial air tour operating hours.
Day-night average sound level, L_{dn} (or DNL)	The logarithmic average of sound levels, in dBA, over a 24-hour day, DNL takes into account the increased sensitivity to noise at night by including a 10 dB penalty between 10:00 PM and 7:00 AM local time. Note: Both $L_{Aeq, 12hr}$ and DNL characterize: • Increases in both the loudness and duration of noise events • The number of noise events during specific time period (12 hours for $L_{Aeq, 12hr}$ and 24-hours for DNL) If there are no nighttime events, then $L_{Aeq, 12hr}$ is arithmetically three dBA higher than DNL.
Time Audible Natural Ambient L_{50}	The total time (minutes) that aircraft noise levels are audible to an attentive listener with normal hearing under natural ambient conditions. 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.
Time Above 35 dBA	The amount of time (in minutes) that aircraft sound levels are above a given threshold (i.e., 35 dBA) In quiet settings, outdoor sound levels exceeding 35 dB degrade experience in outdoor performance venues (American National Standards Institute (ANSI), 2007). This level is also shown to cause blood pressure increases in sleeping humans (Haralabidis et al., 2008); as well as exceeding recommended maximum background noise level inside classrooms (ANSI S12.60/Part 1-2010).
Time Above 52 dBA	The amount of time (in minutes) that aircraft sound levels are above a given threshold (i.e., 52 dBA) 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).

Metric	Relevance and citation
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 and ambient conditions. 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. Some common naturally occurring sounds in the park are surf action at the shoreline, winds spilling across volcanic flows or rustling leaves, native Hawaiian birds calling and singing, rain falling on tree canopies, and crickets vocalizing in the rain forest. Some of the park's most notable sounds include those related to volcanic activity such as the hissing and crackling of new lava flows, clinking of glass-like surfaces of active lava flows, booming methane explosions or, more rarely, the roar of fountaining events.

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.

To characterize the natural and existing ambient, detailed sound level measurements were conducted at 22 locations across the park from 2002-2003, resulting in the identification of ten acoustic zones representing regions with similar acoustic conditions (Table 2) (Lee et al., 2016). These acoustic sampling zones were chosen to be representative of the natural ecological zones or broad ecosystems of the park and ATMP planning area.[3] Median daytime natural ambient sound levels (L_{50}) ranged from 20

[3] 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.

dBA in backcountry areas to 54 dBA along the shoreline (Lee et al., 2016); median daytime existing ambient sound levels for these areas exhibit similar variability, ranging from 20 dBA to 54 dBA. The median or L_{50} sound level (in decibels) is the sound level exceeded 50 percent of the day.

Additional sound level data were collected at four locations in the Kahuku Unit in 2013 to assist with air tour management planning and to determine ambient sound levels (Beeco and Pipkin, 2018). The locations were chosen to best assess noise impacts to sites at varying elevations and habitats within the Kahuku Unit. It was found that the Kahuku Unit is dominated by natural sounds impacted very little by anthropogenic noise. All four sites had nearly untouched natural soundscapes with no more than 0.3 dBA added to the ambient sound level from anthropogenic sound sources. Locations at higher elevations were found to be particularly quiet. Results indicated that the natural ambient sound levels (L_{nat}) [4] during the monitoring period ranged from 16.8 to 27.7 dBA during the daytime. These results were used to assign ambient data for computer modeling to this area.

Table 2 Ambient sound levels measured in Hawai'i Volcanoes National Park in 2002-2003

Acoustic Sampling Area	Daytime Natural Ambient, L_{50} (dBA)	Daytime Existing Ambient, L_{50} (dBA)	Description
Zone 1 (Shoreline)	47-54	47-54	Highest natural ambient sound levels in the park, similar to light traffic noise. Natural sounds in this zone are surf, strong winds, and birds. Human sounds include noise from vehicles and, when applicable, visitors at the lava viewing area at the end of the road and commercial air tour aircraft on the coastline.
Zone 2 (Coastal Lowlands)	28-33	28-33	Gently sloped lands immediately above the shoreline zone, this zone has low natural ambient sound levels. Sounds originate from strong trade winds blowing through the grasses that dominate the vegetation of much of this zone and insects. Human sounds include aircraft activity and vehicle noise.
Zone 3 (Sparsely Vegetated Region of Coastal Lowlands)	20-33	20-37	This zone is dominated by low scattered native 'ōhi'a scrub or nearly barren, recent lava flows. Wind blowing through low trees and shrubs and over volcanic landforms is the dominant natural sound. Human sounds include human activity, aircraft activity and vehicle sounds.
Zone 4 (Montane Rainforest)	34	33	Sources of natural sounds in this zone include chirps of native crickets, bird vocalization, and frequent rains falling on the continuous canopy of

[4] 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).

Acoustic Sampling Area	Daytime Natural Ambient, L_{50} (dBA)	Daytime Existing Ambient, L_{50} (dBA)	Description
			vegetation. Human sounds include aircraft activity and vehicle sounds.
Zone 5 (Mauna Loa montane/subalpine)	22-35	23-35	Broad elevational area from 4,000-8,000 feet (ft.) on the slopes of Mauna Loa, dominated by a wide range of vegetation types including forest, small grasslands, shrublands, and lava flows. Human sounds include aircraft activity and vehicle sounds.
Zone 6 (Arid Dry ʻŌhiʻa Woodlands)	28-33	30-33	Located on the leeward slopes of Kīlauea above the coastal lowlands. Dominant natural sounds in this region include wind blowing through tree canopies and insects. Human sounds are from aircraft activity.
Zone 7 (Alpine Areas)	No data	No data	This zone was not studied during the initial study period in the early 2000s due to inclement weather, so data from other zones (Zone 3) was applied to this zone for noise modeling based on NPS guidance.
Zone 8 (Natural Sounds of the Young Rainforest)	30-43	31-43	Located along the wet, eastern edge of Kīlauea Caldera and the east rift zone of Kīlauea. Natural sounds include rain falling on the canopy, insects, and vocalizations from high populations of native forest birds. Human sounds include human activity, vehicles sounds (from Highway 11) and aircraft activity.
Zone 9 (New Lava Flows)	25-29	29-33	Located adjacent to the young rain forest on the east rift of Kīlauea. Natural sounds include lava flows, bird vocalizations, insects, wind, and rocks falling on the slopes of cinder cones or walls of pit craters. Noise attributed to aircraft activity is the dominant human sound, along with vehicle sounds.
Zone 10 (Kahuku Pastures)	No data	No data	Natural sounds at this site include wind, birds, insects. Human sounds were heard less than 1% of the time and include aircraft and vehicles. This zone was not a part of the park when the sample study was being conducted, so data from other zones (Zone 3) was applied to this zone for noise modeling based on NPS guidance.

Ambient Map Data

From the detailed data collected in 2002-2003, an ambient "map" of the natural soundscape[5] of the ATMP planning area was developed to be used in computer modeling (Figure 2). Lee et al., 2016

[5] Natural Ambient/Soundscape (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.

provides further technical detail on the acoustical monitoring and development of the ambient map used in the computer modeling.

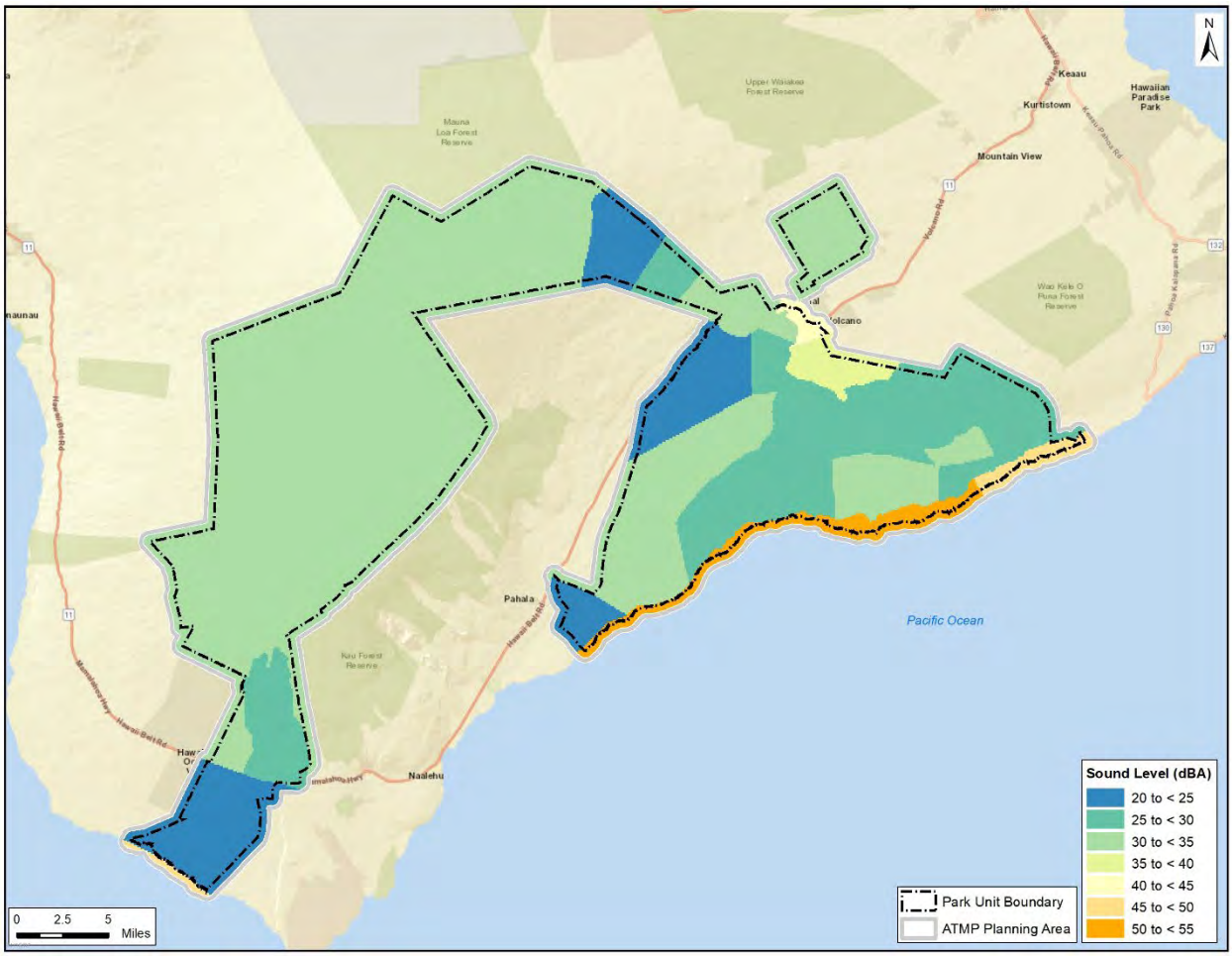

Figure 2. Ambient map – Natural Ambient L_{50}.

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 Existing Conditions (as described in the No Action Alternative and in Section 3). The existing ambient under Existing 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).

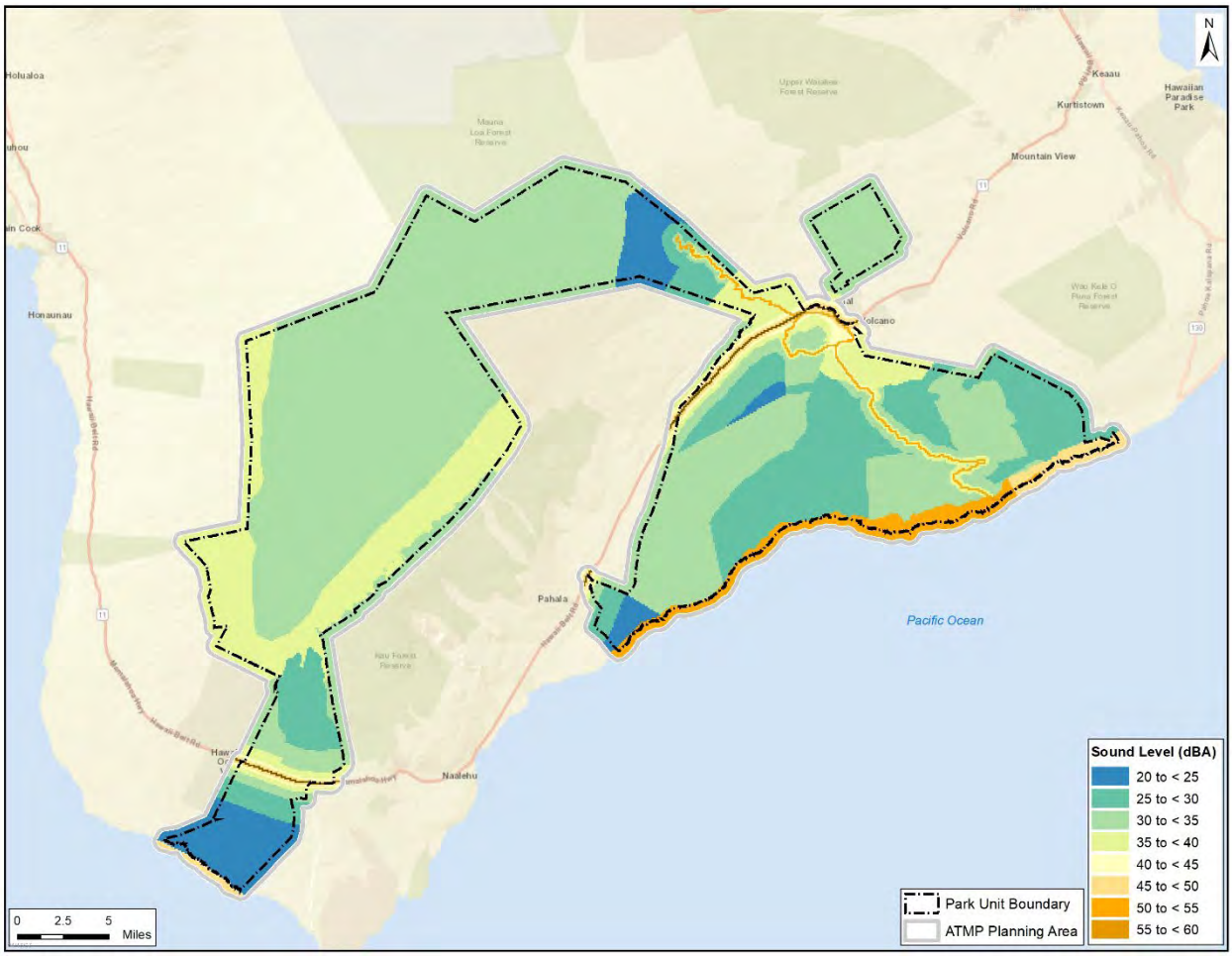

Figure 3. Ambient map – Existing Ambient without Air Tours L_{50} [6]

[6] 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.

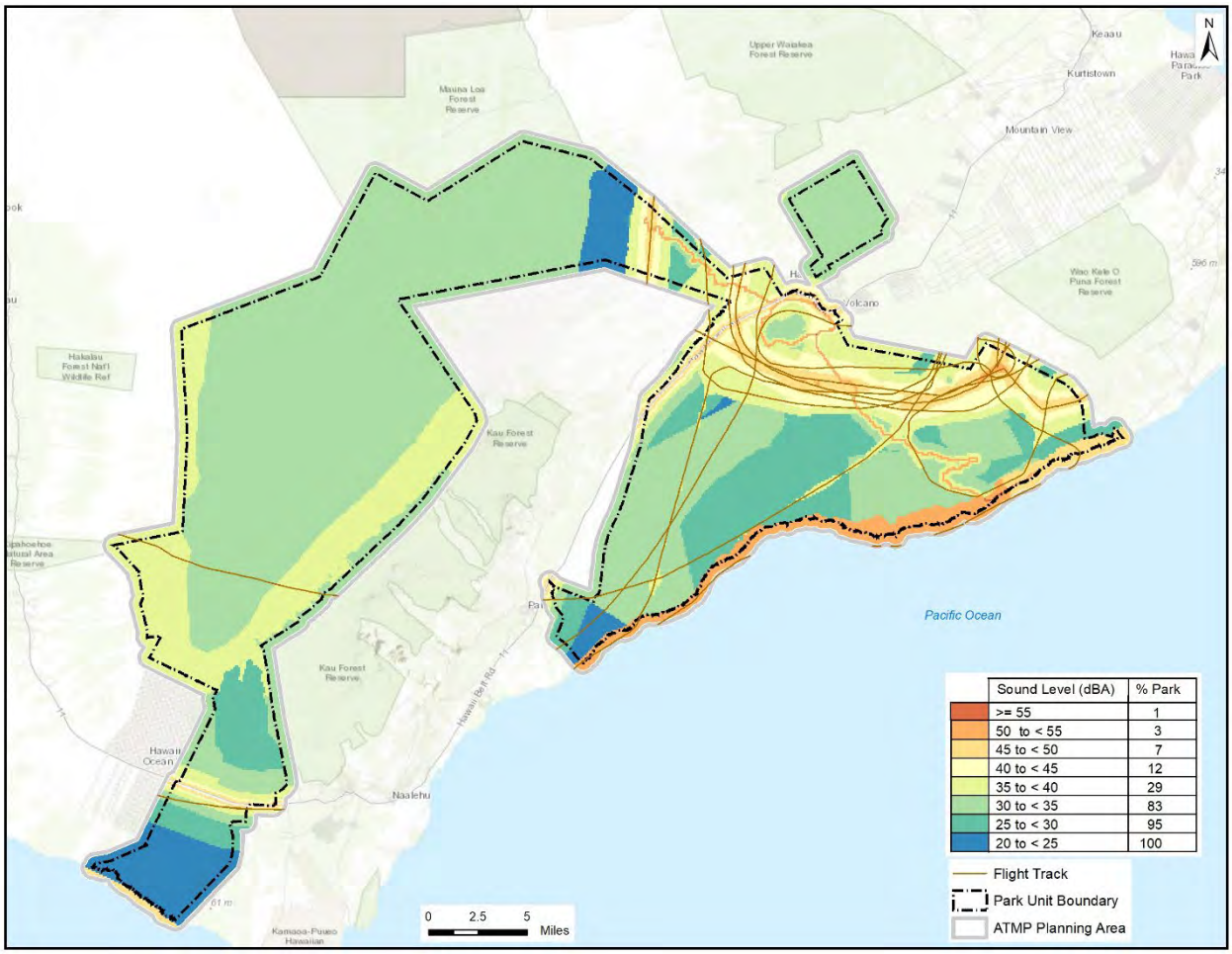

Figure 4. Cumulative Existing Ambient for Existing Conditions

4. Noise Model Method

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

The noise model requires detailed information regarding the aircraft source, operational, and flight route information, as well as other information[7] 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.

[7] 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 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 78 degrees Fahrenheit and 67% relative humidity and computed according to SAE-ARP-5534.

Aircraft Data

The aircraft types and flight routes used for modeling the No Action Alternative are shown in Table 3 and Figure 5; the aircraft types and flight routes specified for Alternative 3 are shown in Tables 4 and 5, and Figure 6. The Alternative 3 routes were modeled as a single continuous route.

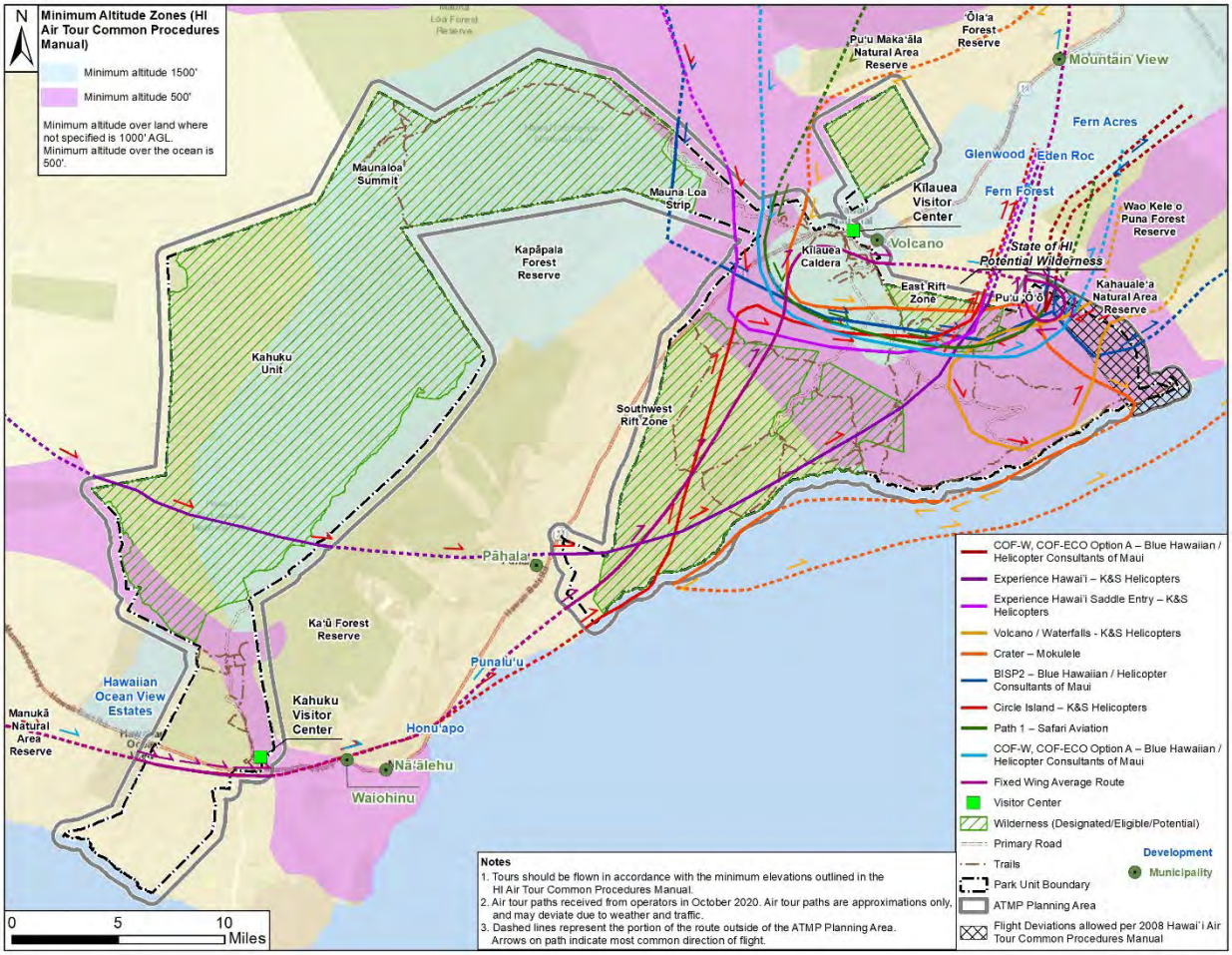

Figure 5. Air Tour Routes for modeling the No Action Alternative

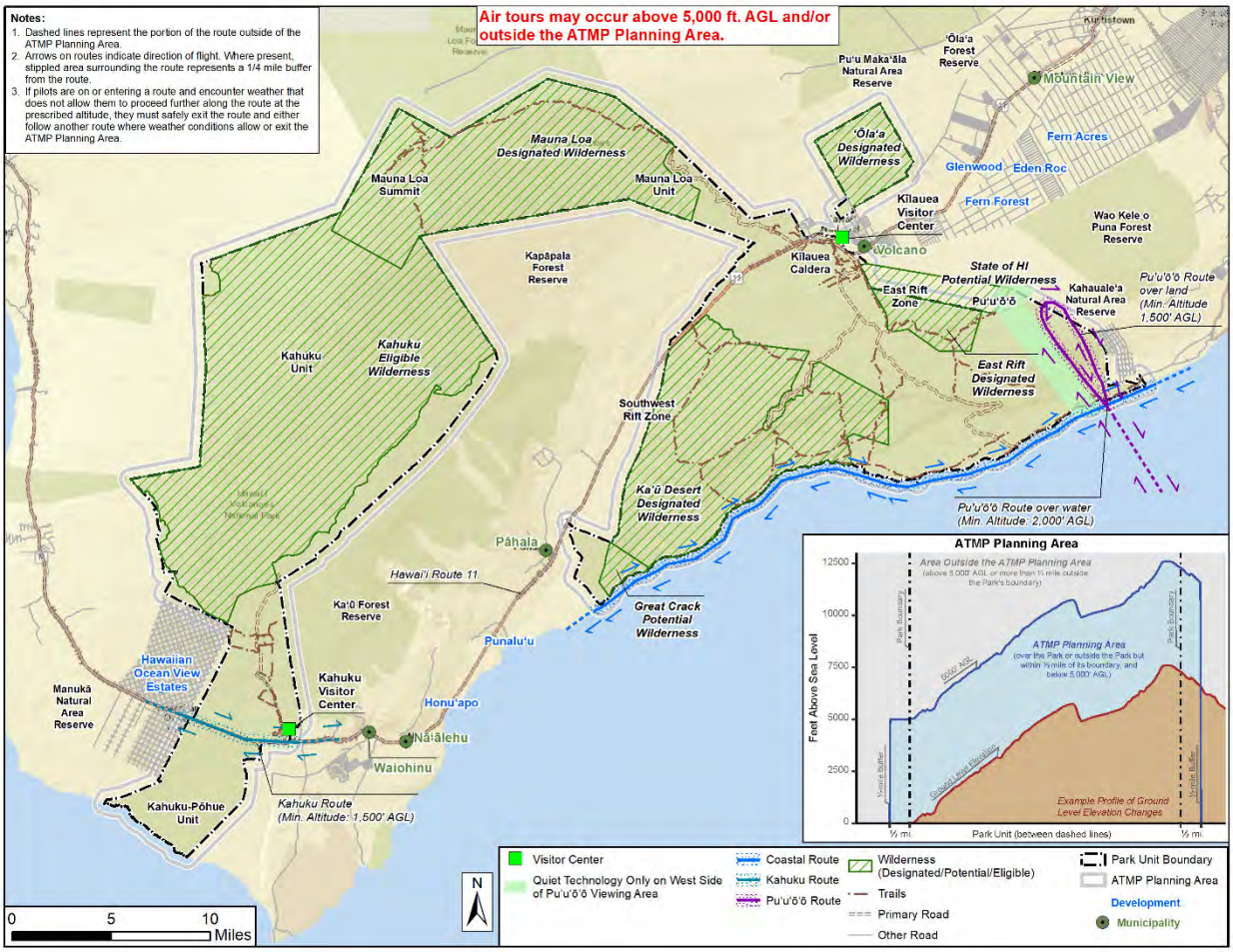

Figure 6. Air Tour Routes for Alternative 3

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 day[8] (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 3. The process of averaging and apportioning a peak month of flights to daily flights can result in a fractional number. Altitudes were modeled according to the minimum altitudes

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

identified in the 2008 FAA Hawai'i Air Tour Common Procedures Manual (HI Common Procedures Manual)[9].

Table 3. Aircraft and Number of Operations for the No Action Alternative (2017-2019 PMAD)

Aircraft	Route	Peak month average day Number of Flights
Aerospatiale SA-350D	BISP2 – Blue Hawaiian	1.0
Aerospatiale SA-350D	Path 1 – Safari Aviation	4.7
Aerospatiale SA-350D	COFW/COFECO/Option A – Blue Hawaiian	5.3
Eurocopter EC-130	BISP2 – Blue Hawaiian	12.0
Eurocopter EC-130	102V_A – Sunshine Helis	2.8
Eurocopter EC-130	COFW/COFECO/Option A – Blue Hawaiian	17.1
Cessna 208	Fixed-Wing Average – Big Island Air	0.2
Bell 407	Circle Island - K&S Helicopters	1.1
Bell 407	Experience Hawaii – K&S Helicopters	1.1
Bell 407	Experience Hawaii with Saddle Entry – K&S Helicopters	1.1
Bell 407	Volcano/Waterfalls – K&S Helicopters	1.1
Cessna 208	Crater – Mokulele	1.0
Total		**48.5**

Alternative 3 contains provisions for both a standard day and a quiet technology-only day. The aircraft types and number of operations used to model this alternative are summarized in Table 4 and Table 5.

Table 4. Aircraft and Number of Operations for Alternative 3, Standard Day

Aircraft	Route	Daily Number of Flights
Aerospatiale SA-350D	Proposed Route	1
Eurocopter EC-130	Proposed Route	3
Cessna 208	Proposed Route	1
Total		**5**

Table 5. Aircraft and Number of Operations for Alternative 3, Quiet Technology-only Day

Aircraft	Route	Daily Number of Flights
Eurocopter EC-130	Proposed Route	5
Total		**5**

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

[9] FAA DOCUMENT NUMBER: AWP13-136A

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 46 location points, geographically located both within and outside[10] the ATMP planning area, where noise levels were to be evaluated. These locations are listed in Table 6 and indicated as blue dots in Figure 7.

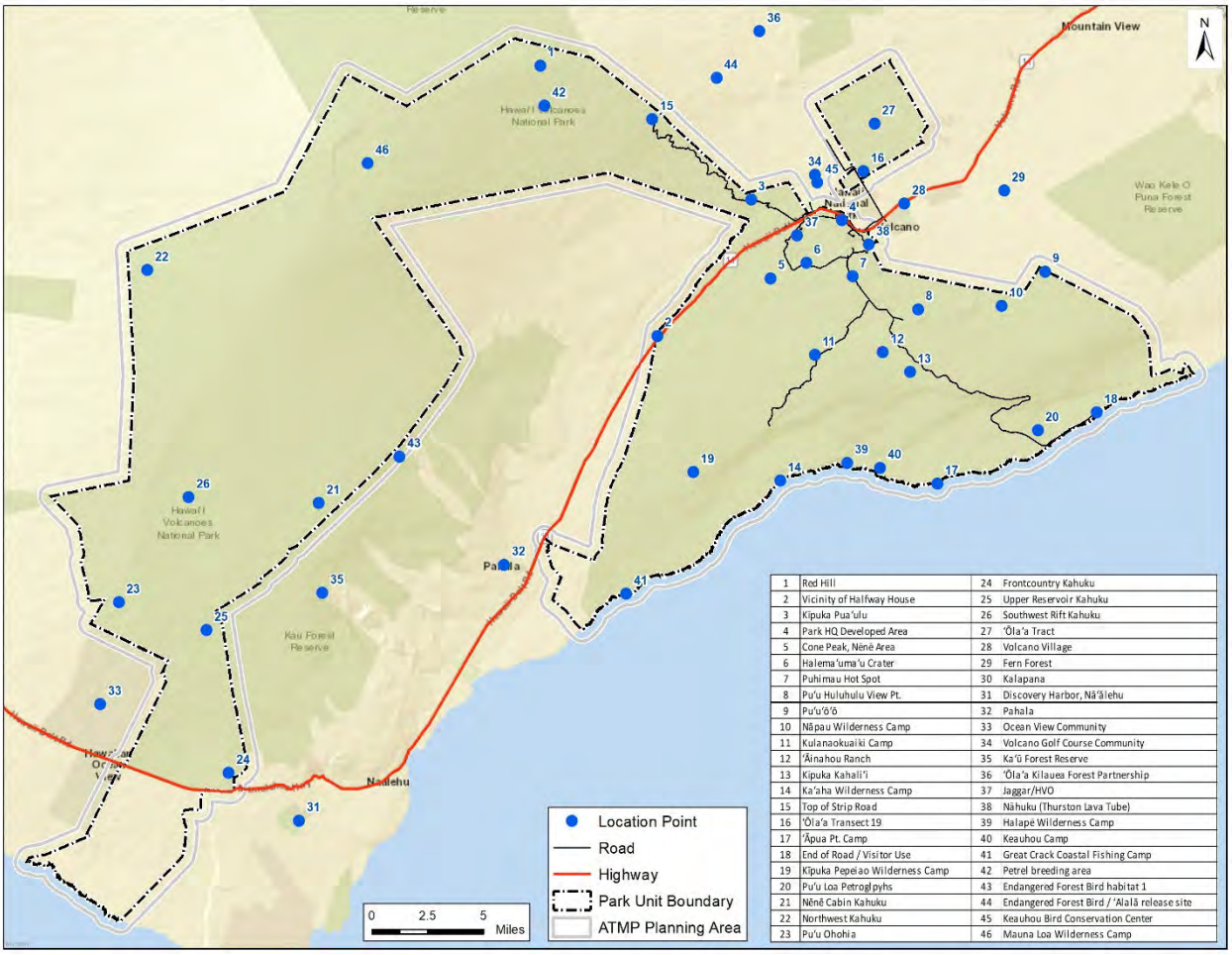

Figure 7. Location Points modeled for Hawai'i Volcanoes National Park

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

Table 6. Location Points modeled for Hawai'i Volcanoes National Park

Location	Longitude (decimal degrees)	Latitude (decimal degrees)	Natural Ambient L_{50} (dBA)
1. Red Hill	19.530080	-155.463806	20-25
2. Vicinity of Halfway House	19.354498	-155.383443	30-35
3. Kīpuka Pua'ulu	19.443013	-155.319367	30-35
4. Park HQ Developed Area	19.429500	-155.257024	25-30
5. Cone Peak, Nēnē Area	19.391809	-155.306063	45-50
6. Halema'uma'u Crater	19.401895	-155.281344	45-50
7. Puhimau Hot Spot	19.393122	-155.249878	20-25
8. Pu'u Huluhulu View Pt.	19.371587	-155.204829	20-25
9. Pu'u'ō'ō	19.395983	-155.117809	30-35
10. Nāpau Wilderness Camp	19.373704	-155.147660	20-25
11. Kulanaokuaiki Camp	19.342075	-155.275604	25-30
12. 'Āinahou Ranch	19.343754	-155.229135	30-35
13. Kīpuka Kahali'i	19.330945	-155.210557	45-50
14. Ka'aha Wilderness Camp	19.260423	-155.299501	45-50
15. Top of Strip Road	19.495138	-155.387203	30-35
16. 'Ōla'a Transect 19	19.461362	-155.242431	20-25
17. 'Āpua Pt. Camp	19.258268	-155.191981	20-25
18. End of Road / Visitor Use	19.304565	-155.082882	30-35
19. Kīpuka Pepeiao Wilderness Camp	19.266049	-155.359056	30-35
20. Pu'u Loa Petroglpyhs	19.292883	-155.123081	30-35
21. Nēnē Cabin Kahuku	19.245769	-155.615353	20-25
22. Northwest Kahuku	19.396874	-155.732880	20-25
23. Pu'u Ohohia	19.181269	-155.751963	20-25
24. Frontcountry Kahuku	19.070518	-155.676666	20-25
25. Upper Reservoir Kahuku	19.163253	-155.691977	20-25
26. Southwest Rift Kahuku	19.249415	-155.704322	20-25
27. 'Ōla'a Tract	19.492338	-155.234663	20-25
28. Volcano Village*	19.440378	-155.214365	N/A
29. Fern Forest*	19.448609	-155.145953	N/A
30. Kalapana*	19.486885	-154.907556	N/A
31. Discovery Harbor, Nā'ālehu*	19.039437	-155.628610	N/A
32. Pahala*	19.205774	-155.488392	N/A
33. Ocean View Community*	19.114855	-155.764518	N/A
34. Volcano Golf Course Community*	19.458975	-155.275586	N/A
35. Ka'ū Forest Reserve*	19.187431	-155.612783	N/A
36. 'Ōla'a Kilauea Forest Partnership*	19.552280	-155.313631	N/A
37. Jaggar/HVO	19.419586	-155.287864	30-35
38. Nāhuku (Thurston Lava Tube)	19.413692	-155.238797	20-25
39. Halapē Wilderness Camp	19.271900	-155.253700	45-50
40. Keauhou Camp	19.268650	-155.231190	45-50
41. Great Crack Coastal Fishing Camp	19.187000	-155.405000	30-35
42. Petrel breeding area	19.504000	-155.461000	20-25
43. Endangered Forest Bird habitat 1	19.276000	-155.560000	20-25
44. Endangered Forest Bird / 'Alalā release site*	19.522000	-155.343000	N/A
45. Keauhou Bird Conservation Center*	19.454000	-155.274000	N/A
46. Mauna Loa Wilderness Camp	19.466470	-155.582010	20-25

6. Noise Model Results / Environmental Consequences

This section provides figures and tables showing the detailed noise results, organized by alternative. Presented first within each alternative 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 total park area covered by each contour level.

Alternative 1 (No Action Alternative)

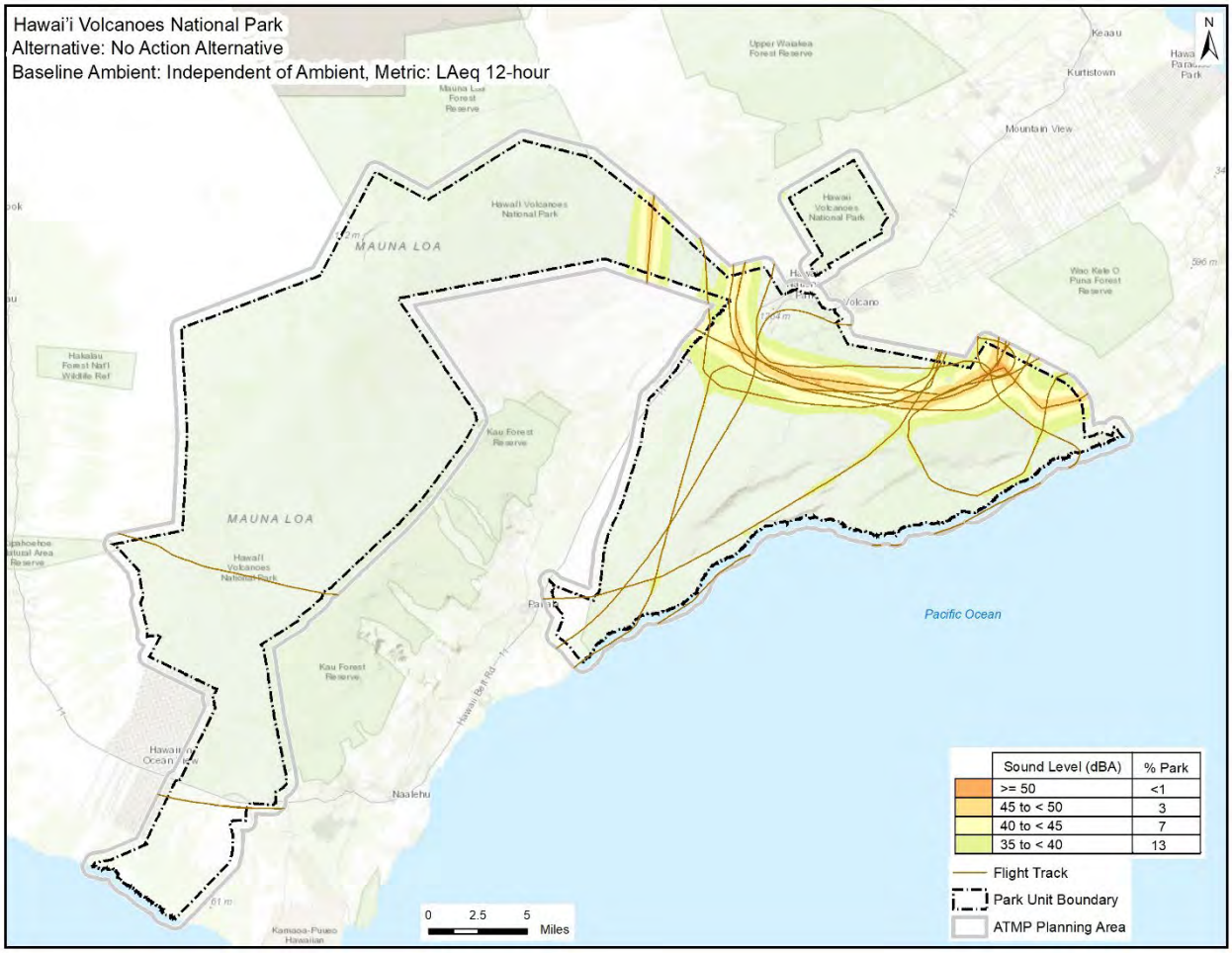

Figure 8. 12-hour equivalent sound level ($L_{Aeq,12h}$) map for the No Action Alternative

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

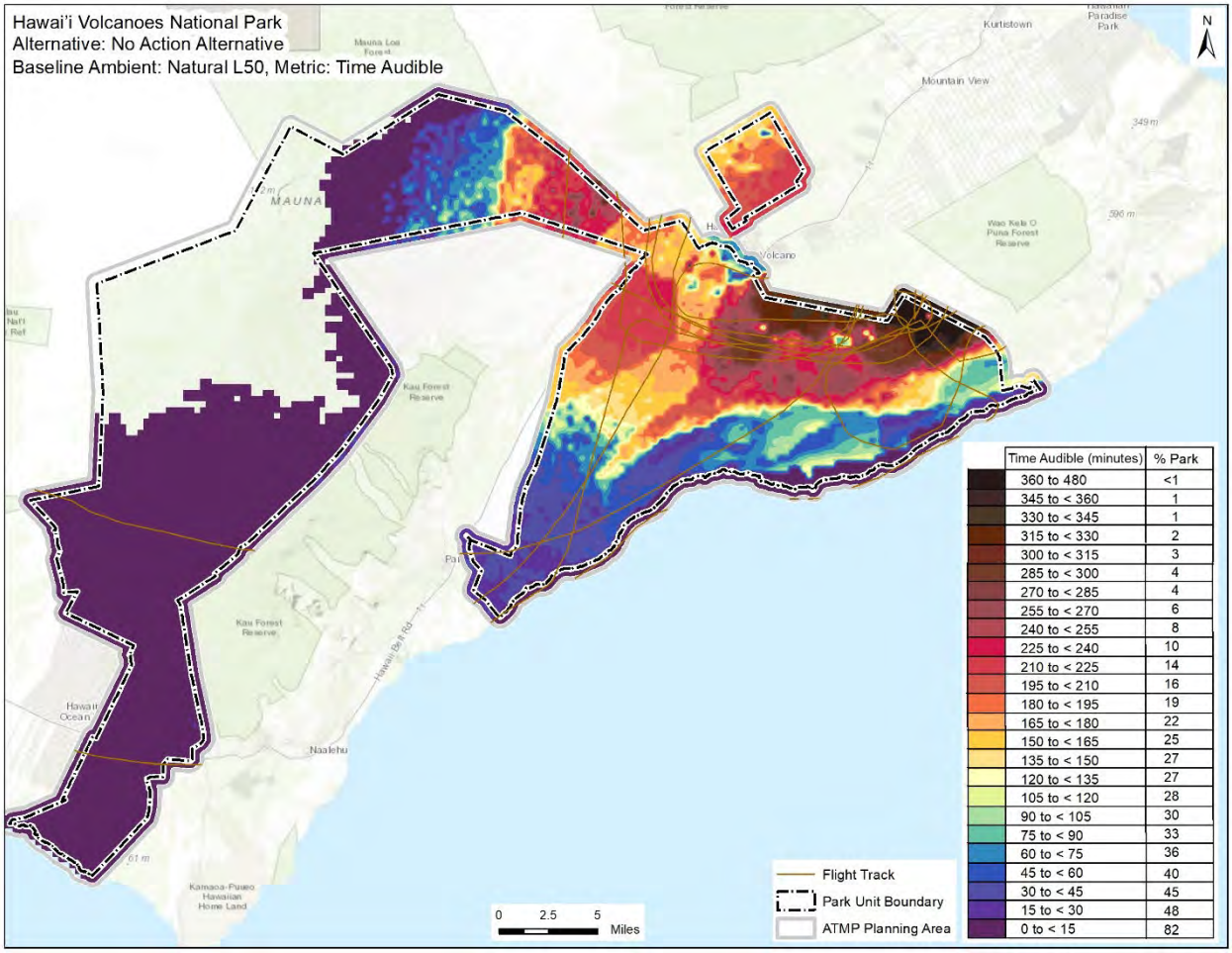

Figure 9. Time audible (for natural ambient) map for the No Action Alternative

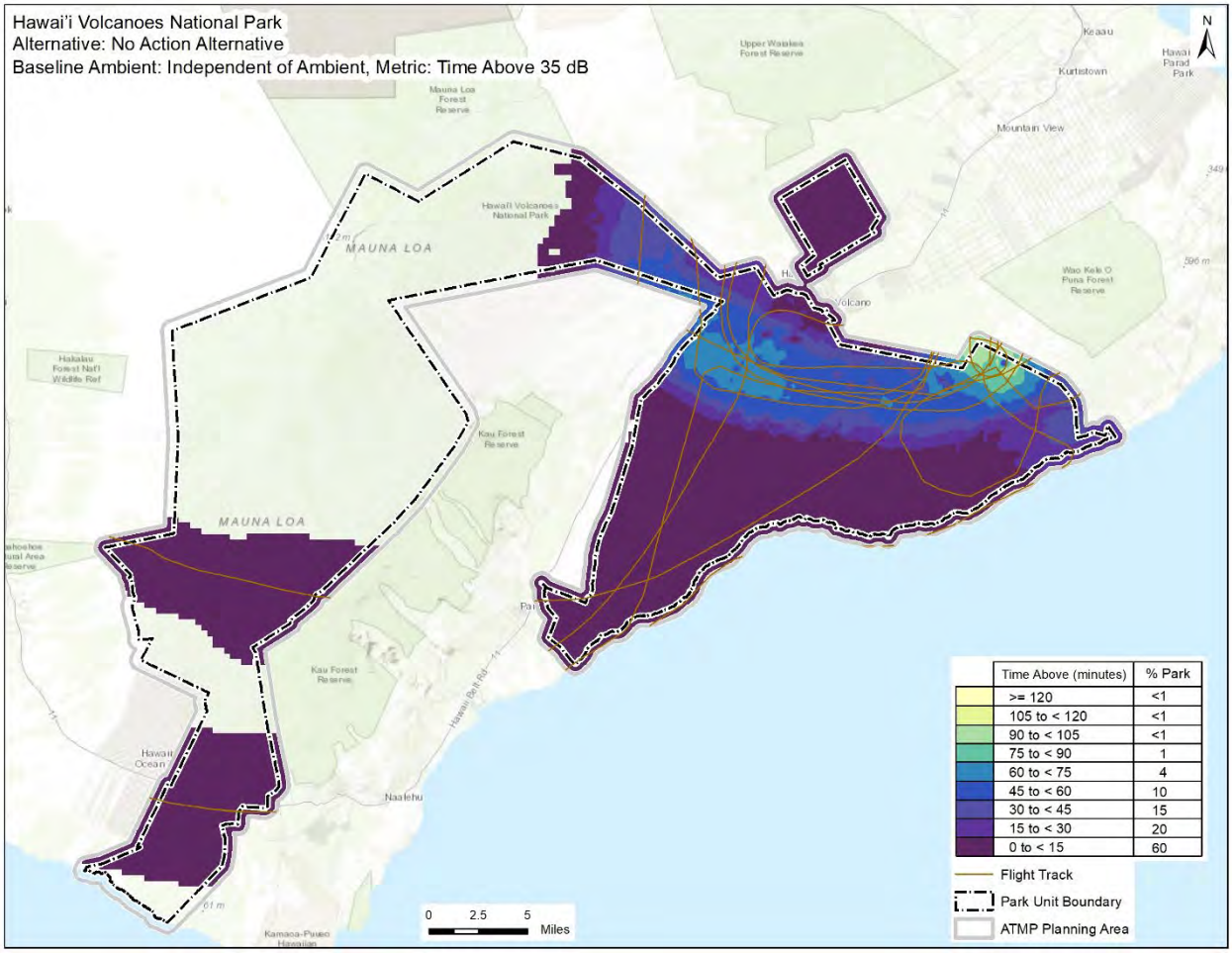

Figure 10. Time Above 35 dBA map for the No Action Alternative

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. Red Hill	10.3	30.6	0.0	0.0	32.3
2. Vicinity of Halfway House	19.9	164.3	0.8	0.0	38.7
3. Kīpuka Puaʻulu	42.3	150.0	21.0	6.9	70.4
4. Park HQ Developed Area	23.5	88.1	4.5	<0.1	62.1
5. Cone Peak, Nēnē Area	46.8	218.9	58.0	18.9	72.0
6. Halemaʻumaʻu Crater	32.2	163.0	51.8	0.2	54.1
7. Puhimau Hot Spot	15.1	75.4	0.1	0.0	50.2
8. Puʻu Huluhulu View Pt.	27.7	73.1	9.7	0.5	57.5
9. Puʻuʻōʻō	43.0	402.9	98.2	17.0	67.2
10. Nāpau Wilderness Camp	38.4	269.2	43.0	6.8	62.1
11. Kulanaokuaiki Camp	31.9	223.6	46.3	0.7	58.6
12. ʻĀinahou Ranch	33.4	280.9	47.5	0.5	55.3
13. Kīpuka Kahaliʻi	29.0	259.6	18.7	0.3	54.3
14. Kaʻaha Wilderness Camp	33.9	2.1	3.5	1.1	66.7
15. Top of Strip Road	42.1	247.3	34.2	12.9	64.5
16. ʻŌlaʻa Transect 19	17.3	192.7	0.5	0.0	43.7
17. ʻĀpua Pt. Camp	24.4	1.1	1.8	0.3	58.5
18. End of Road / Visitor Use	31.5	9.4	12.6	0.8	64.7
19. Kīpuka Pepeiao Wilderness Camp	28.6	34.1	4.9	0.7	58.8
20. Puʻu Loa Petroglpyhs	29.0	57.5	4.6	0.9	59.2
21. Nēnē Cabin Kahuku	10.8	5.6	0.5	0.0	36.7
22. Northwest Kahuku	0.0	0.0	0.0	0.0	4.5
23. Puʻu Ohohia	0.0	0.0	0.0	0.0	21.9
24. Frontcountry Kahuku	16.8	10.2	1.8	<0.1	52.2
25. Upper Reservoir Kahuku	3.6	8.5	0.0	0.0	33.2
26. Southwest Rift Kahuku	10.9	5.3	0.7	0.0	38.6
27. ʻŌlaʻa Tract	17.4	101.4	2.7	0.0	41.4
28. Volcano Village**	16.9	N/A	0.8	0.0	43.6
29. Fern Forest**	29.4	N/A	13.6	0.5	55.1
30. Kalapana**	8.4	N/A	0.0	0.0	24.6
31. Discovery Harbor, Nāʻālehu**	13.4	N/A	1.3	0.0	46.3
32. Pahala**	28.5	N/A	3.0	0.8	59.7
33. Ocean View Community**	4.0	N/A	0.1	0.0	36.8
34. Volcano Golf Course Community**	24.0	N/A	7.7	0.2	55.4
35. Kaʻū Forest Reserve**	19.9	N/A	2.5	0.0	49.3
36. ʻŌlaʻa Kilauea Forest Partnership**	31.5	N/A	8.3	1.5	59.6
37. Jaggar/HVO	28.2	242.3	26.6	0.2	66.4
38. Nāhuku (Thurston Lava Tube)	24.6	59.1	3.9	<0.1	68.8
39. Halapē Wilderness Camp	20.4	0.0	1.8	0.1	53.0
40. Keauhou Camp	21.7	0.0	2.2	0.2	54.1
41. Great Crack Coastal Fishing Camp	29.0	0.8	2.9	0.9	60.7
42. Petrel breeding area	10.8	43.6	0.0	0.0	28.4
43. Endangered Forest Bird habitat 1	4.5	9.8	0.0	0.0	26.0

Location	12-Hour Equivalent Sound Level (dBA)*	Time Audible for Natural Ambient (minutes)	Time Above 35 dBA (minutes)	Time Above 52 dBA (minutes)	Maximum Sound Level (dBA)
44 Endangered Forest Bird / Alala Release Site**	26.0	N/A	12.1	0.0	47.6
45 Keauhou Bird Conservation Center**	24.3	N/A	8.4	0.2	54.5
46 Mauna Loa Wilderness Camp	0.0	0.0	0.0	0.0	10.5

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

** Location point is outside the ATMP planning area

Alternative 3 Standard Day

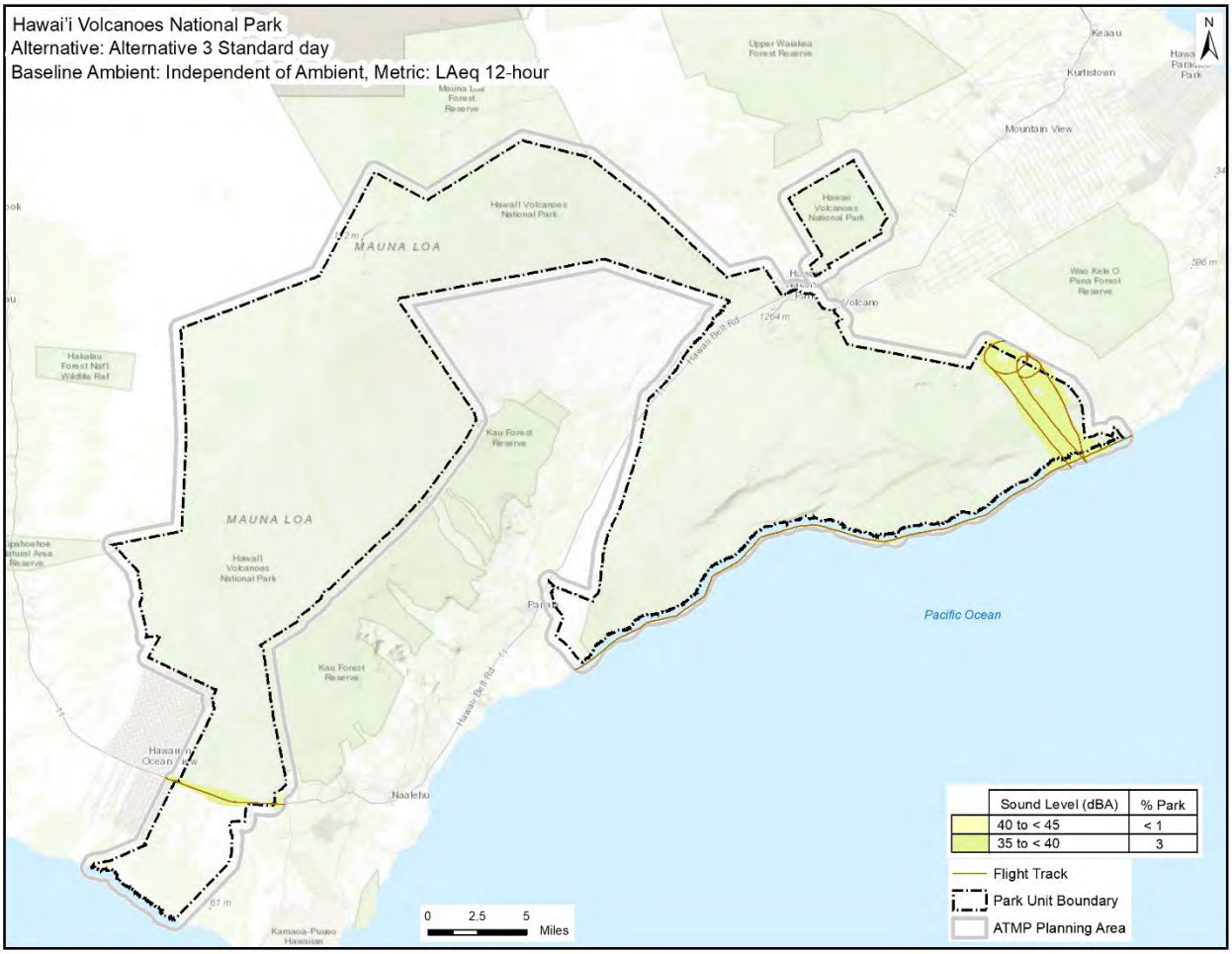

Figure 11. 12-hour equivalent sound level ($L_{Aeq,12h}$) map for Alternative 3 Standard Day

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 9:00 AM and 5:00 PM (i.e., 8 hours), then the 8-hour equivalent sound level would be 1.8 dBA greater than the 12-hour equivalent sound level.

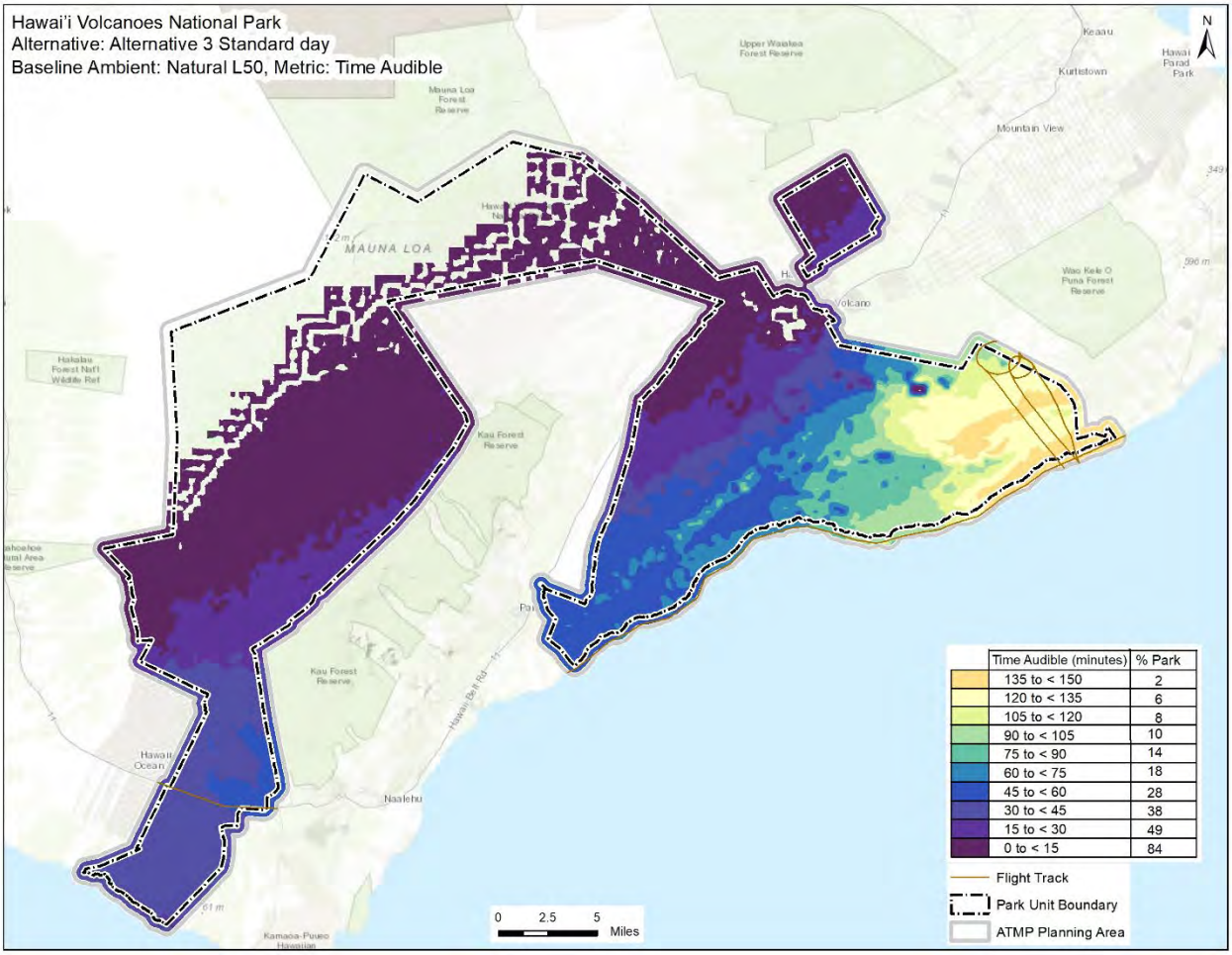

Figure 12. Time Audible (for natural ambient) map for Alternative 3 Standard Day

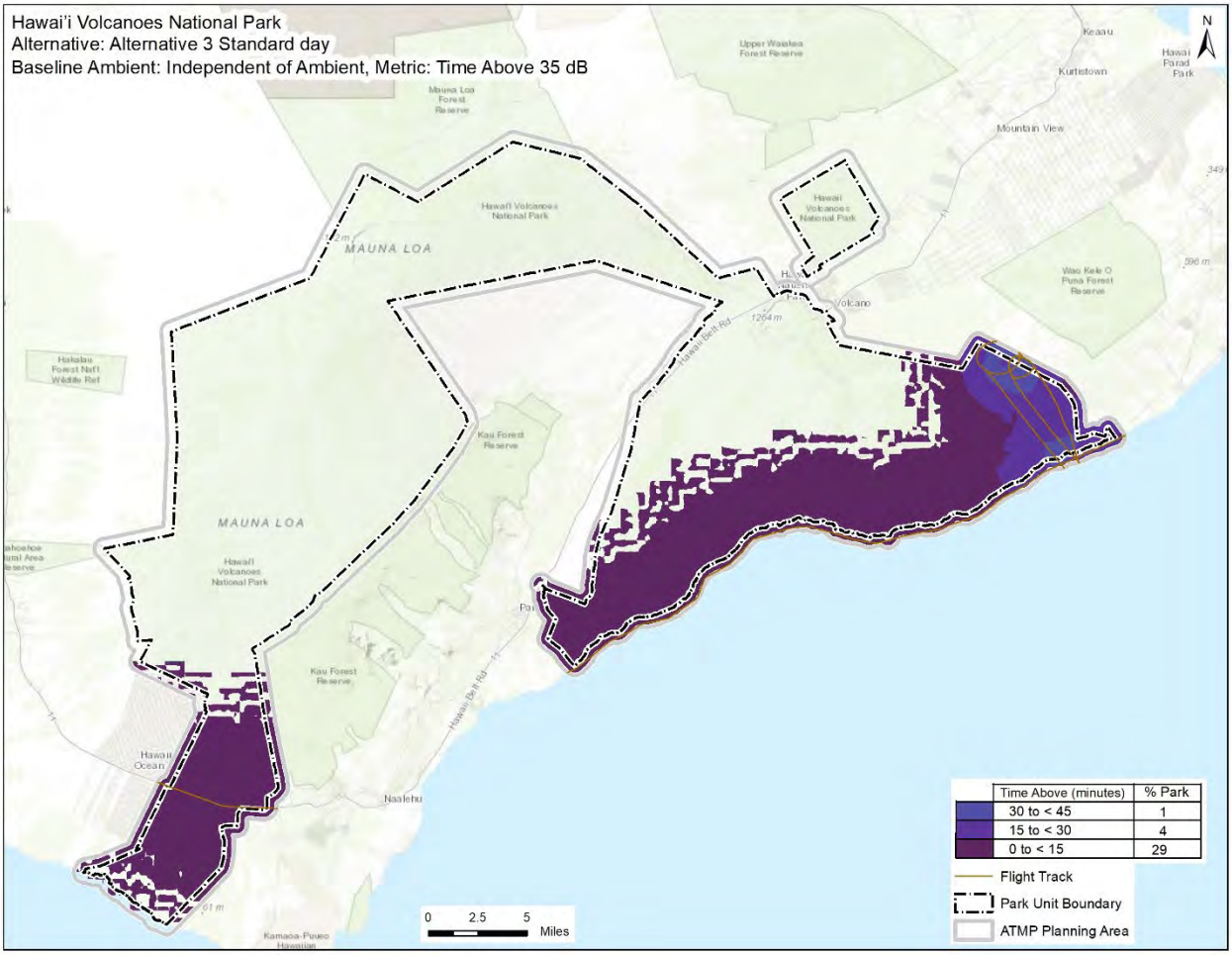

Figure 13. Time Above 35 dBA map for Alternative 3 Standard Day

Table 8. Location point results for Alternative 3 Standard Day

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. Red Hill	0.0	0.0	0.0	0.0	9.5
2. Vicinity of Halfway House	0.0	12.1	0.0	0.0	16.6
3. Kīpuka Puaʻulu	0.0	11.1	0.0	0.0	15.3
4. Park HQ Developed Area	0.0	15.1	0.0	0.0	17.6
5. Cone Peak, Nēnē Area	0.0	13.8	0.0	0.0	16.8
6. Halemaʻumaʻu Crater	0.0	11.5	0.0	0.0	17.1
7. Puhimau Hot Spot	0.0	0.0	0.0	0.0	6.5
8. Puʻu Huluhulu View Pt.	0.0	0.0	0.0	0.0	11.5
9. Puʻuʻōʻō	38.1	101.5	27.3	5.8	61.5
10. Nāpau Wilderness Camp	20.3	92.2	3.4	0.0	38.7
11. Kulanaokuaiki Camp	0.0	33.5	0.0	0.0	23.3
12. ʻĀinahou Ranch	7.5	93.8	0.0	0.0	27.8
13. Kīpuka Kahaliʻi	7.5	87.6	0.0	0.0	28.2
14. Kaʻaha Wilderness Camp	30.7	62.2	7.3	1.4	62.3
15. Top of Strip Road	0.0	0.0	0.0	0.0	11.4
16. ʻŌlaʻa Transect 19	0.0	15.6	0.0	0.0	18.0
17. ʻĀpua Pt. Camp	33.2	94.2	8.0	2.1	63.7
18. End of Road / Visitor Use	32.5	140.6	23.9	1.5	60.9
19. Kīpuka Pepeiao Wilderness Camp	8.7	51.5	0.0	0.0	34.1
20. Puʻu Loa Petroglpyhs	25.1	130.9	8.8	0.0	51.2
21. Nēnē Cabin Kahuku	0.0	17.6	0.0	0.0	20.2
22. Northwest Kahuku	0.0	0.0	0.0	0.0	0.0
23. Puʻu Ohohia	0.0	15.0	0.0	0.0	21.2
24. Frontcountry Kahuku	30.1	46.6	10.9	0.7	56.9
25. Upper Reservoir Kahuku	2.9	25.9	0.0	0.0	26.5
26. Southwest Rift Kahuku	0.0	8.2	0.0	0.0	17.7
27. ʻŌlaʻa Tract	0.0	2.3	0.0	0.0	14.3
28. Volcano Village**	1.2	N/A	0.0	0.0	20.5
29. Fern Forest**	7.3	N/A	0.0	0.0	28.2
30. Kalapana**	0.0	N/A	0.0	0.0	19.7
31. Discovery Harbor, Nāʻālehu**	24.4	N/A	7.2	0.0	52.3
32. Pahala**	9.9	N/A	0.0	0.0	33.7
33. Ocean View Community**	19.3	N/A	2.7	0.0	46.9
34. Volcano Golf Course Community**	0.0	N/A	0.0	0.0	16.4
35. Kaʻū Forest Reserve**	6.2	N/A	0.0	0.0	29.9
36. ʻŌlaʻa Kilauea Forest Partnership**	0.0	N/A	0.0	0.0	11.8
37. Jaggar/HVO	0.4	35.8	0.0	0.0	21.5
38. Nāhuku (Thurston Lava Tube)	0.0	20.8	0.0	0.0	16.8
39. Halapē Wilderness Camp	30.0	60.6	7.2	1.2	60.7
40. Keauhou Camp	29.3	88.6	7.7	0.8	58.7
41. Great Crack Coastal Fishing Camp	32.7	48.0	7.2	2.0	63.2
42. Petrel breeding area	0.0	0.0	0.0	0.0	7.5
43. Endangered Forest Bird habitat 1	1.5	28.5	0.0	0.0	24.9
44. Endangered Forest Bird / ʻAlalā	0.0	N/A	0.0	0.0	13.6

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
release site**					
45. Keauhou Bird Conservation Center**	0.0	N/A	0.0	0.0	16.6
46. Mauna Loa Wilderness Camp	0.0	0.0	0.0	0.0	3.0

* 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 9:00 AM and 5:00 PM (i.e., 8 hours), then the 8-hour equivalent sound level would be 1.8 dBA greater than the 12-hour equivalent sound level.

** Location point is outside the ATMP planning area

Alternative 3 Quiet Technology-only Day

Figure 14. 12-hour equivalent sound level ($L_{Aeq,12h}$) map for Alternative 3 Quiet Technology-only Day

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 9:00 AM and 5:00 PM (i.e., 8 hours), then the 8-hour equivalent sound level would be 1.8 dBA greater than the 12-hour equivalent sound level.

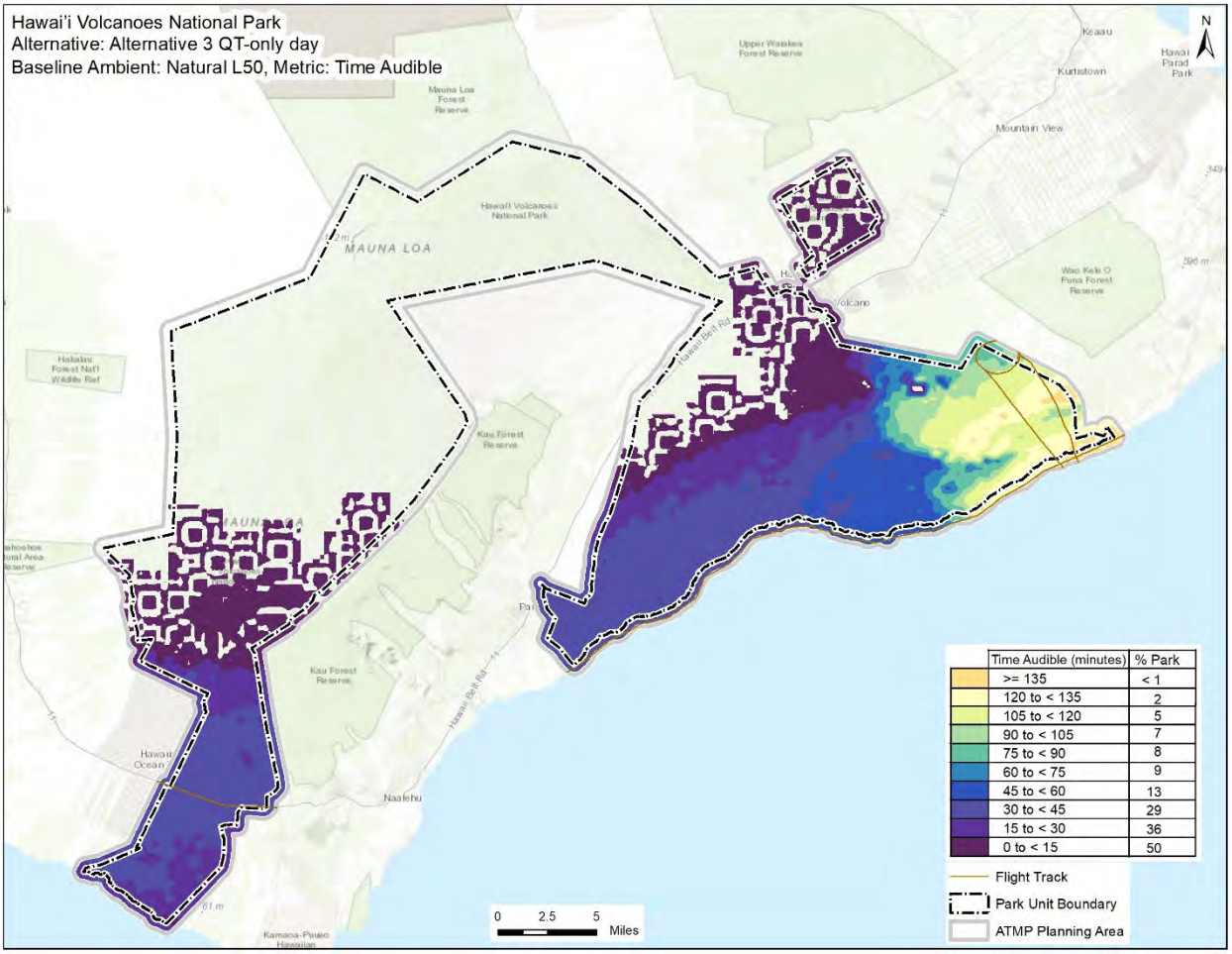

Figure 15. Time Audible (for natural ambient) map for Alternative 3 Quiet Technology-only Day

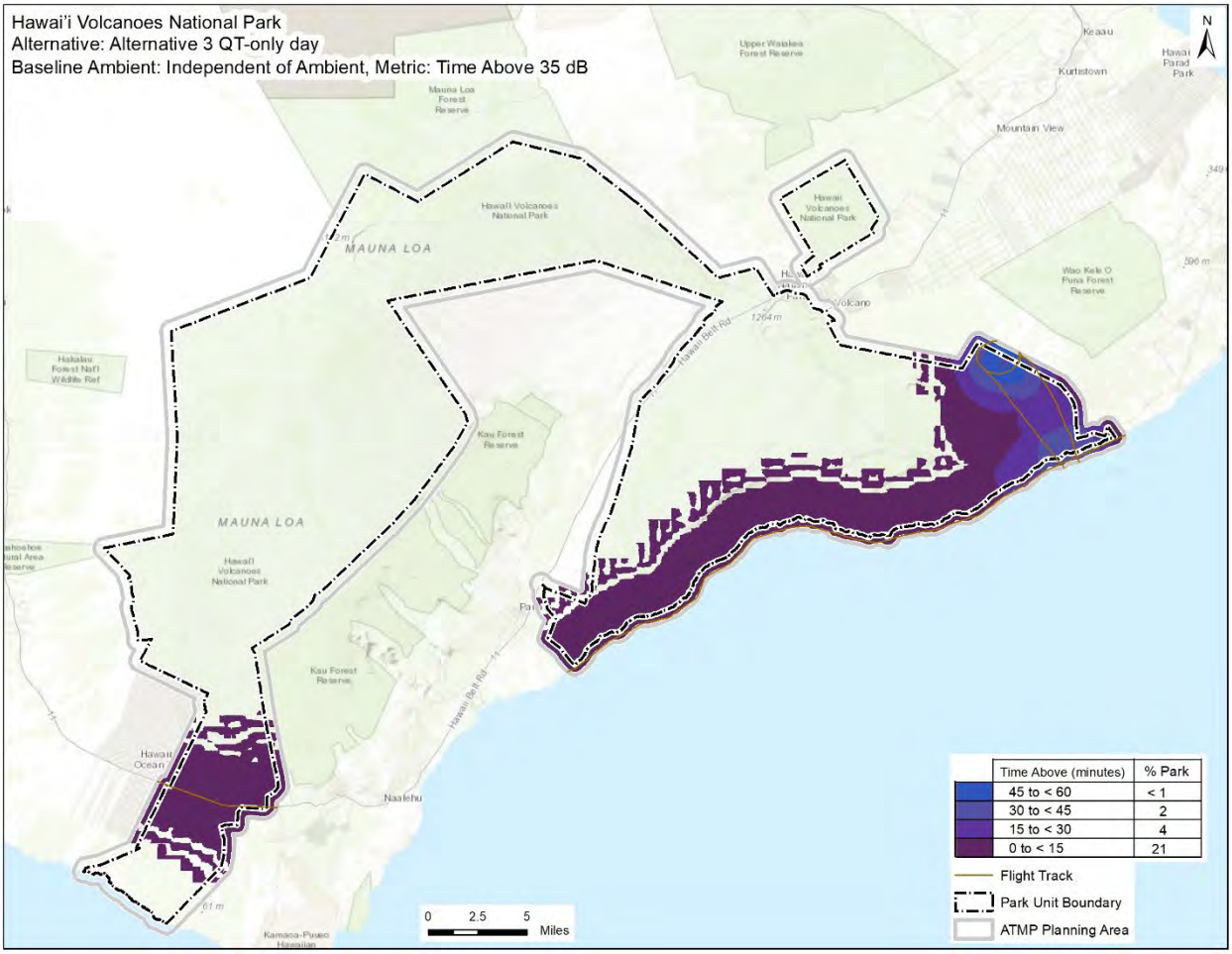

Figure 16. Time Above 35 dBA map for Alternative 3 Quiet Technology-only Day

Table 9. Location point results for Alternative 3 Quiet Technology-only Day

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. Red Hill	0.0	0.0	0.0	0.0	0.4
2. Vicinity of Halfway House	0.0	0.0	0.0	0.0	3.6
3. Kīpuka Puaʻulu	0.0	0.0	0.0	0.0	7.8
4. Park HQ Developed Area	0.0	0.0	0.0	0.0	11.1
5. Cone Peak, Nēnē Area	0.0	0.0	0.0	0.0	8.2
6. Halemaʻumaʻu Crater	0.0	0.0	0.0	0.0	10.2
7. Puhimau Hot Spot	0.0	0.0	0.0	0.0	0.3
8. Puʻu Huluhulu View Pt.	0.0	0.0	0.0	0.0	6.1
9. Puʻuʻōʻō	40.2	80.6	41.6	9.7	61.5
10. Nāpau Wilderness Camp	21.9	81.0	4.0	0.0	37.4
11. Kulanaokuaiki Camp	0.0	7.3	0.0	0.0	11.2
12. ʻĀinahou Ranch	6.9	51.5	0.0	0.0	21.1
13. Kīpuka Kahaliʻi	5.7	45.2	0.0	0.0	19.4
14. Kaʻaha Wilderness Camp	31.0	39.9	10.4	1.6	57.0
15. Top of Strip Road	0.0	0.0	0.0	0.0	2.9
16. ʻŌlaʻa Transect 19	0.0	0.0	0.0	0.0	11.1
17. ʻĀpua Pt. Camp	32.9	53.0	11.1	2.5	58.3
18. End of Road / Visitor Use	32.5	128.6	27.0	1.4	55.4
19. Kīpuka Pepeiao Wilderness Camp	8.0	35.6	0.0	0.0	24.9
20. Puʻu Loa Petroglpyhs	24.1	109.1	9.7	0.0	45.1
21. Nēnē Cabin Kahuku	0.0	0.0	0.0	0.0	8.6
22. Northwest Kahuku	0.0	0.0	0.0	0.0	0.0
23. Puʻu Ohohia	0.0	0.0	0.0	0.0	12.6
24. Frontcountry Kahuku	29.9	37.7	13.0	0.0	52.0
25. Upper Reservoir Kahuku	0.0	5.5	0.0	0.0	19.6
26. Southwest Rift Kahuku	0.0	0.0	0.0	0.0	9.1
27. ʻŌlaʻa Tract	0.0	0.0	0.0	0.0	4.6
28. Volcano Village**	2.7	3.9	0.0	0.0	14.2
29. Fern Forest**	8.6	N/A	0.0	0.0	22.1
30. Kalapana**	0.0	N/A	0.0	0.0	6.8
31. Discovery Harbor, Nāʻālehu**	24.3	N/A	8.0	0.0	46.7
32. Pahala**	7.8	N/A	0.0	0.0	23.0
33. Ocean View Community**	16.1	N/A	0.9	0.0	35.8
34. Volcano Golf Course Community**	0.0	N/A	0.0	0.0	9.2
35. Kaʻū Forest Reserve**	0.0	N/A	0.0	0.0	17.1
36. ʻŌlaʻa Kilauea Forest Partnership**	0.0	N/A	0.0	0.0	3.5
37. Jaggar/HVO	1.6	5.4	0.0	0.0	14.4
38. Nāhuku (Thurston Lava Tube)	0.0	0.0	0.0	0.0	10.0
39. Halapē Wilderness Camp	29.9	36.5	10.0	1.2	55.2
40. Keauhou Camp	28.7	51.5	10.3	0.4	52.8
41. Great Crack Coastal Fishing Camp	32.3	35.2	10.1	2.3	57.8
42. Petrel breeding area	0.0	0.0	0.0	0.0	0.0
43. Endangered Forest Bird habitat 1	0.0	0.0	0.0	0.0	11.1
44. Endangered Forest Bird / ʻAlalā	0.0	N/A	0.0	0.0	5.5

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
release site**					
45. Keauhou Bird Conservation Center**	0.0	N/A	0.0	0.0	9.5
46. Mauna Loa Wilderness Camp	0.0	0.0	0.0	0.0	0.0

* 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 9:00 AM and 5:00 PM (i.e., 8 hours), then the 8-hour equivalent sound level would be 1.8 dBA greater than the 12-hour equivalent sound level.

** Location point is outside the ATMP planning area

7. Comparison of Alternatives by Metric

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

- 12-hour Equivalent Sound Level (Table 10 and Table 13):
    - Compared to the No Action Alternative, the average sound levels under Alternative 3 would be lower for the regions of the park near Halemaʻumaʻu Crater and the Kilauea Visitor Center (see points 3, 4, 5, 11, and 15) but may be higher in coastal regions (See results for points 24, 31, 33, 39, 40, 41).
    - The noise footprint for Alternative 3 potentially affects 10% less of the park on standard days, and 11% less on quiet technology-only days.
- Time Audible Natural Ambient (Table 11 and Table 14):
    - Compared to the No Action Alternative, the overall time audible noise footprint for Alternative 3 potentially would be 2% larger than the No Action Alternative due to higher aircraft altitudes under Alternative 3. For the quiet technology-only day the overall time audible noise footprint potentially is 32% smaller than the No Action Alternative. The approximately 25% of the park where time audible exceeds 150 minutes would no longer exceed this threshold on both standard and quiet technology-only days.
    - The largest reductions would be at point 9 (Puʻuʻōʻō, 301 minutes) and point 15 (Top of Strip Road, 247 minutes).
    - However, increases in time audible would occur at 14 locations (14, 17, 18, 19, 20, 21, 23, 24, 25, 26, 39, 40, 41, and 43).
- Time Above 35 (Table 12 and Table 15):
    - Compared to the No Action Alternative, the time above 35 dBA under Alternative 3 would be up to 70 minutes less (see point 9, Puʻuʻōʻō).
    - However, time above 35 dBA would be greater under Alternative 3 at ten locations, (up to 11 minutes).
    - The noise footprint for Alternative 3 (standard day) potentially affects 31% less of the ATMP planning area and 39% less for Alternative 3 quiet technology-only day.
- Time Above 52 (Table 16):
    - Compared to the No Action Alternative, the time above 52 dBA under Alternative 3 would be up to 19 minutes less (see point 5 Cone Peak, Nēnē Area).
    - Time above 52 dBA would be only slightly greater (up to 2.2 minutes) under Alternative 3 at 7 locations (points 14, 17, 18, 24, 39, 40 and 41).
- Maximum Sound Level (Table 17):
    - Compared to the No Action Alternative, the maximum sound levels under Alternative 3 would be significantly lower (more than 20 dBA) in 27 locations in areas surrounding near Halema'uma'u Crater and the Kilauea Visitor Center.
    - Standard day maximum sound levels may be greater at points such as 33 (Ocean View Community; 10 dBA greater), 39 (Halapē Wilderness Camp; 8 dBA greater), and 31

(Discovery Harbor; 6 dBA greater), as well as 17, 24, and 40 (all 5 dBA greater). These increases, however, would be potentially mitigated under quiet technology-only days as the maximum sound levels would be 5-10 dB lower than on standard days.

Table 10. 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 Standard Day	% Park for Alternative 3 Quiet Technology-only Day
50 to < 55	<1	0	0
45 to < 50	3	0	0
40 to < 45	7	<1	<1
35 to < 40	13	3	2

Table 11. 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 Standard Day	% Park for Alternative 3 Quiet Technology-only Day
360 to 480	<1	0	0
345 to < 360	1	0	0
330 to < 345	1	0	0
315 to < 330	2	0	0
300 to < 315	3	0	0
285 to < 300	4	0	0
270 to <285	4	0	0
255 to < 270	6	0	0
240 to < 255	8	0	0
225 to < 240	10	0	0
210 to < 225	14	0	0
195 to < 210	16	0	0
180 to < 195	19	0	0
165 to < 180	22	0	0
150 to < 165	25	0	0
135 to < 150	27	2	<1
120 to < 135	27	6	2
105 to < 120	28	8	5
90 to < 105	30	10	7
75 to < 90	33	14	8
60 to < 75	36	18	9
45 to < 60	40	28	13
30 to < 45	45	38	29
15 to < 30	48	49	36
0 to < 15	82	84	50

Table 12. Comparison of contour results for Time Above 35 dBA

Time Above 35 dBA Contour Results	% Park for No Action	% Park for Alternative 3 Standard Day	% Park for Alternative 3 Quiet Technology-only Day
>=120	<1	0	0
105 to < 120	<1	0	0
90 to < 105	<1	0	0
75 < 90	1	0	0
60 to < 75	4	0	0
45 to < 60	10	0	<1
30 to < 45	15	1	2
15 to < 30	20	4	4
0 to < 15	60	29	21

Table 13. Comparison of location point results for 12-hour Equivalent Sound Level (dB(A))

Location	No Action	Alternative 3, Standard Day	Alternative 3, Quiet Technology-only Day
1. Red Hill	10.3	0.0	0.0
2. Vicinity of Halfway House	19.9	0.0	0.0
3. Kīpuka Puaʻulu	42.3	0.0	0.0
4. Park HQ Developed Area	23.5	0.0	0.0
5. Cone Peak, Nēnē Area	46.8	0.0	0.0
6. Halemaʻumaʻu Crater	32.2	0.0	0.0
7. Puhimau Hot Spot	15.1	0.0	0.0
8. Puʻu Huluhulu View Pt.	27.7	0.0	0.0
9. Puʻuʻōʻō	43.0	38.1	40.2
10. Nāpau Wilderness Camp	38.4	20.3	21.9
11. Kulanaokuaiki Camp	31.9	0.0	0.0
12. ʻĀinahou Ranch	33.4	7.5	6.9
13. Kīpuka Kahaliʻi	29.0	7.5	5.7
14. Kaʻaha Wilderness Camp	33.9	30.7	31.0
15. Top of Strip Road	42.1	0.0	0.0
16. ʻŌlaʻa Transect 19	17.3	0.0	0.0
17. ʻĀpua Pt. Camp	24.4	33.2	32.9
18. End of Road / Visitor Use	31.5	32.5	32.5
19. Kīpuka Pepeiao Wilderness Camp	28.6	8.7	8.0
20. Puʻu Loa Petroglpyhs	29.0	25.1	24.1
21. Nēnē Cabin Kahuku	10.8	0.0	0.0
22. Northwest Kahuku	0.0	0.0	0.0
23. Puʻu Ohohia	0.0	0.0	0.0
24. Frontcountry Kahuku	16.8	30.1	29.9
25. Upper Reservoir Kahuku	3.6	2.9	0.0
26. Southwest Rift Kahuku	10.9	0.0	0.0
27. ʻŌlaʻa Tract	17.4	0.0	0.0
28. Volcano Village**	16.9	1.2	2.7
29. Fern Forest**	29.4	7.3	8.6
30. Kalapana**	8.4	0.0	0.0
31. Discovery Harbor, Nāʻālehu**	13.4	24.4	24.3
32. Pahala**	28.5	9.9	7.8
33. Ocean View Community**	4.0	19.3	16.1
34. Volcano Golf Course Community**	24.0	0.0	0.0
35. Kaʻū Forest Reserve**	19.9	6.2	0.0
36. ʻŌlaʻa Kilauea Forest Partnership	31.5	0.0	0.0
37. Jaggar/HVO	28.2	0.4	1.6
38. Nāhuku (Thurston Lava Tube)	24.6	0.0	0.0
39. Halapē Wilderness Camp	20.4	30.0	29.9
40. Keauhou Camp	21.7	29.3	28.7
41. Great Crack Coastal Fishing Camp	29.0	32.7	32.3
42. Petrel breeding area	10.8	0.0	0.0
43. Endangered Forest Bird habitat 1	4.5	1.5	0.0
44. Endangered Forest Bird / ʻAlalā release site**	26.0	0.0	0.0
45. Keauhou Bird Conservation Center**	24.3	0.0	0.0
46. Mauna Loa Wilderness Camp	0.0	0.0	0.0

Table 14. Comparison of location point results for Time Audible for Natural Ambient (minutes)

Location	No Action	Alternative 3, Standard Day	Alternative 3, Quiet Technology-only Day
1. Red Hill	30.6	0.0	0.0
2. Vicinity of Halfway House	164.3	12.1	0.0
3. Kīpuka Puaʻulu	150.0	11.1	0.0
4. Park HQ Developed Area	88.1	15.1	0.0
5. Cone Peak, Nēnē Area	218.9	13.8	0.0
6. Halemaʻumaʻu Crater	163.0	11.5	0.0
7. Puhimau Hot Spot	75.4	0.0	0.0
8. Puʻu Huluhulu View Pt.	73.1	0.0	0.0
9. Puʻuʻōʻō	402.9	101.5	80.6
10. Nāpau Wilderness Camp	269.2	92.2	81.0
11. Kulanaokuaiki Camp	223.6	33.5	7.3
12. ʻĀinahou Ranch	280.9	93.8	51.5
13. Kīpuka Kahaliʻi	259.6	87.6	45.2
14. Kaʻaha Wilderness Camp	2.1	62.2	39.9
15. Top of Strip Road	247.3	0.0	0.0
16. ʻŌlaʻa Transect 19	192.7	15.6	0.0
17. ʻĀpua Pt. Camp	1.1	94.2	53.0
18. End of Road / Visitor Use	9.4	140.6	128.6
19. Kīpuka Pepeiao Wilderness Camp	34.1	51.5	35.6
20. Puʻu Loa Petroglpyhs	57.5	130.9	109.1
21. Nēnē Cabin Kahuku	5.6	17.6	0.0
22. Northwest Kahuku	0.0	0.0	0.0
23. Puʻu Ohohia	0.0	15.0	0.0
24. Frontcountry Kahuku	10.2	46.6	37.7
25. Upper Reservoir Kahuku	8.5	25.9	5.5
26. Southwest Rift Kahuku	5.3	8.2	0.0
27. ʻŌlaʻa Tract	101.4	2.3	0.0
28. Volcano Village**	N/A	N/A	N/A
29. Fern Forest**	N/A	N/A	N/A
30. Kalapana**	N/A	N/A	N/A
31. Discovery Harbor, Nāʻālehu**	N/A	N/A	N/A
32. Pahala**	N/A	N/A	N/A
33. Ocean View Community**	N/A	N/A	N/A
34. Volcano Golf Course Community**	N/A	N/A	N/A
35. Kaʻū Forest Reserve**	N/A	N/A	N/A
36. ʻŌlaʻa Kilauea Forest Partnership**	N/A	N/A	N/A
37. Jaggar/HVO	242.3	35.8	5.4
38. Nāhuku (Thurston Lava Tube)	59.1	20.8	0.0
39. Halapē Wilderness Camp	0.0	60.6	36.5
40. Keauhou Camp	0.0	88.6	51.5
41. Great Crack Coastal Fishing Camp	0.8	48.0	35.2
42. Petrel breeding area	43.6	0.0	0.0
43. Endangered Forest Bird habitat 1	9.8	28.5	0.0
44. Endangered Forest Bird / ʻAlalā release site**	N/A	N/A	N/A
45. Keauhou Bird Conservation Center**	N/A	N/A	N/A
46. Mauna Loa Wilderness Camp	0.0	0.0	0.0

Table 15. Comparison of location point results for Time Above 35 dBA (minutes)

Location	No Action	Alternative 3, Standard Day	Alternative 3, Quiet Technology-only Day
1. Red Hill	0.0	0.0	0.0
2. Vicinity of Halfway House	0.8	0.0	0.0
3. Kīpuka Puaʻulu	21.0	0.0	0.0
4. Park HQ Developed Area	4.5	0.0	0.0
5. Cone Peak, Nēnē Area	58.0	0.0	0.0
6. Halemaʻumaʻu Crater	51.8	0.0	0.0
7. Puhimau Hot Spot	0.1	0.0	0.0
8. Puʻu Huluhulu View Pt.	9.7	0.0	0.0
9. Puʻuʻōʻō	98.2	27.3	41.6
10. Nāpau Wilderness Camp	43.0	3.4	4.0
11. Kulanaokuaiki Camp	46.3	0.0	0.0
12. ʻĀinahou Ranch	47.5	0.0	0.0
13. Kīpuka Kahaliʻi	18.7	0.0	0.0
14. Kaʻaha Wilderness Camp	3.5	7.3	10.4
15. Top of Strip Road	34.2	0.0	0.0
16. ʻŌlaʻa Transect 19	0.5	0.0	0.0
17. ʻĀpua Pt. Camp	1.8	8.0	11.1
18. End of Road / Visitor Use	12.6	23.9	27.0
19. Kīpuka Pepeiao Wilderness Camp	4.9	0.0	0.0
20. Puʻu Loa Petroglpyhs	4.6	8.8	9.7
21. Nēnē Cabin Kahuku	0.5	0.0	0.0
22. Northwest Kahuku	0.0	0.0	0.0
23. Puʻu Ohohia	0.0	0.0	0.0
24. Frontcountry Kahuku	1.8	10.9	13.0
25. Upper Reservoir Kahuku	0.0	0.0	0.0
26. Southwest Rift Kahuku	0.7	0.0	0.0
27. ʻŌlaʻa Tract	2.7	0.0	0.0
28. Volcano Village**	0.8	0.0	0.0
29. Fern Forest**	13.6	0.0	0.0
30. Kalapana**	0.0	0.0	0.0
31. Discovery Harbor, Nāʻālehu**	1.3	7.2	8.0
32. Pahala**	3.0	0.0	0.0
33. Ocean View Community**	0.1	2.7	0.9
34. Volcano Golf Course Community**	7.7	0.0	0.0
35. Kaʻū Forest Reserve**	2.5	0.0	0.0
36. ʻŌlaʻa Kilauea Forest Partnership**	8.3	0.0	0.0
37. Nāhuku (Thurston Lava Tube)	26.6	0.0	0.0
38. Jaggar/HVO	3.9	0.0	0.0
39. Halapē Wilderness Camp	1.8	7.2	10.0
40. Keauhou Camp	2.2	7.7	10.3
41. Great Crack Coastal Fishing Camp	2.9	7.2	10.1
42. Petrel breeding area	0.0	0.0	0.0
43. Endangered Forest Bird habitat 1	0.0	0.0	0.0
44. Endangered Forest Bird / ʻAlalā release site**	12.1	0.0	0.0
45. Keauhou Bird Conservation Center**	8.4	0.0	0.0
46. Mauna Loa Wilderness Camp	0.0	0.0	0.0

Table 16. Comparison of location point results for Time Above 52 dBA (minutes)

Location	No Action	Alternative 3, Standard Day	Alternative 3, Quiet Technology-only Day
1. Red Hill	0.0	0.0	0.0
2. Vicinity of Halfway House	0.0	0.0	0.0
3. Kīpuka Puaʻulu	6.9	0.0	0.0
4. Park HQ Developed Area	<0.1	0.0	0.0
5. Cone Peak, Nēnē Area	18.9	0.0	0.0
6. Halemaʻumaʻu Crater	0.2	0.0	0.0
7. Puhimau Hot Spot	0.0	0.0	0.0
8. Puʻu Huluhulu View Pt.	0.5	0.0	0.0
9. Puʻuʻōʻō	17.0	5.8	9.7
10. Nāpau Wilderness Camp	6.8	0.0	0.0
11. Kulanaokuaiki Camp	0.7	0.0	0.0
12. ʻĀinahou Ranch	0.5	0.0	0.0
13. Kīpuka Kahaliʻi	0.3	0.0	0.0
14. Kaʻaha Wilderness Camp	1.1	1.4	1.6
15. Top of Strip Road	12.9	0.0	0.0
16. ʻŌlaʻa Transect 19	0.0	0.0	0.0
17. ʻĀpua Pt. Camp	0.3	2.1	2.5
18. End of Road / Visitor Use	0.8	1.5	1.4
19. Kīpuka Pepeiao Wilderness Camp	0.7	0.0	0.0
20. Puʻu Loa Petroglpyhs	0.9	0.0	0.0
21. Nēnē Cabin Kahuku	0.0	0.0	0.0
22. Northwest Kahuku	0.0	0.0	0.0
23. Puʻu Ohohia	0.0	0.0	0.0
24. Frontcountry Kahuku	<0.1	0.7	0.0
25. Upper Reservoir Kahuku	0.0	0.0	0.0
26. Southwest Rift Kahuku	0.0	0.0	0.0
27. ʻŌlaʻa Tract	0.0	0.0	0.0
28. Volcano Village**	0.0	0.0	0.0
29. Fern Forest**	0.5	0.0	0.0
30. Kalapana**	0.0	0.0	0.0
31. Discovery Harbor, Nāʻālehu**	0.0	0.0	0.0
32. Pahala**	0.8	0.0	0.0
33. Ocean View Community**	0.0	0.0	0.0
34. Volcano Golf Course Community**	0.2	0.0	0.0
35. Kaʻū Forest Reserve**	0.0	0.0	0.0
36. ʻŌlaʻa Kilauea Forest Partnership**	1.5	0.0	0.0
37. Jaggar/HVO	0.2	0.0	0.0
38. Nāhuku (Thurston Lava Tube)	<0.1	0.0	0.0
39. Halapē Wilderness Camp	0.1	1.2	1.2
40. Keauhou Camp	0.2	0.8	0.4
41. Great Crack Coastal Fishing Camp	0.9	2.0	2.3
42. Petrel breeding area	0.0	0.0	0.0
43. Endangered Forest Bird habitat 1	0.0	0.0	0.0
44. Endangered Forest Bird / ʻAlalā release site**	0.0	0.0	0.0
45. Keauhou Bird Conservation Center**	0.2	0.0	0.0
46. Mauna Loa Wilderness Camp	0.0	0.0	0.0

Table 17. Comparison of location point results for Maximum Sound Level (dB(A))

Location	No Action	Alternative 3, Standard Day	Alternative 3, Quiet Technology-only Day
1. Red Hill	32.3	9.5	0.4
2. Vicinity of Halfway House	38.7	16.6	3.6
3. Kīpuka Puaʻulu	70.4	15.3	7.8
4. Park HQ Developed Area	62.1	17.6	11.1
5. Cone Peak, Nēnē Area	72.0	16.8	8.2
6. Halemaʻumaʻu Crater	54.1	17.1	10.2
7. Puhimau Hot Spot	50.2	6.5	0.3
8. Puʻu Huluhulu View Pt.	57.5	11.5	6.1
9. Puʻuʻōʻō	67.2	61.5	61.5
10. Nāpau Wilderness Camp	62.1	38.7	37.4
11. Kulanaokuaiki Camp	58.6	23.3	11.2
12. ʻĀinahou Ranch	55.3	27.8	21.1
13. Kīpuka Kahaliʻi	54.3	28.2	19.4
14. Kaʻaha Wilderness Camp	66.7	62.3	57.0
15. Top of Strip Road	64.5	11.4	2.9
16. ʻŌlaʻa Transect 19	43.7	18.0	11.1
17. ʻĀpua Pt. Camp	58.5	63.7	58.3
18. End of Road / Visitor Use	64.7	60.9	55.4
19. Kīpuka Pepeiao Wilderness Camp	58.8	34.1	24.9
20. Puʻu Loa Petroglpyhs	59.2	51.2	45.1
21. Nēnē Cabin Kahuku	36.7	20.2	8.6
22. Northwest Kahuku	4.5	0.0	0.0
23. Puʻu Ohohia	21.9	21.2	12.6
24. Frontcountry Kahuku	52.2	56.9	52.0
25. Upper Reservoir Kahuku	33.2	26.5	19.6
26. Southwest Rift Kahuku	38.6	17.7	9.1
27. ʻŌlaʻa Tract	41.4	14.3	4.6
28. Volcano Village**	43.6	20.5	14.2
29. Fern Forest**	55.1	28.2	22.1
30. Kalapana**	24.6	19.7	6.8
31. Discovery Harbor, Nāʻālehu**	46.3	52.3	46.7
32. Pahala**	59.7	33.7	23.0
33. Ocean View Community**	36.8	46.9	35.8
34. Volcano Golf Course Community**	55.4	16.4	9.2
35. Kaʻū Forest Reserve**	49.3	29.9	17.1
36. ʻŌlaʻa Kilauea Forest Partnership**	59.6	11.8	3.5
37. Jaggar/HVO	66.4	21.5	14.4
38. Nāhuku (Thurston Lava Tube)	68.8	16.8	10.0
39. Halapē Wilderness Camp	53.0	60.7	55.2
40. Keauhou Camp	54.1	58.7	52.8
41. Great Crack Coastal Fishing Camp	60.7	63.2	57.8
42. Petrel breeding area	28.4	7.5	0.0
43. Endangered Forest Bird habitat 1	26.0	24.9	11.1
44. Endangered Forest Bird / ʻAlalā release site**	47.6	13.6	5.5
45. Keauhou Bird Conservation Center**	54.5	16.6	9.5
46. Mauna Loa Wilderness Camp	10.5	3.0	0.0

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 (11,376 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 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 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 altitude (500 ft. AGL for helicopters and 1,000 ft. AGL for fixed-wing aircraft) on a common route outside the ATMP planning area. The noise analysis considers aircraft activity in two ways:

- For the aircraft type with the loudest noise level, what is the activity level that would generate a noise level at or above DNL 65 dB?
- For the aircraft types and fleet mix distribution within the 2017-2019 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 level[11] currently operating at the park is the Bell 407. For overflight operations at 500 ft. AGL, the number of operations over a 12-hour period to exceed a DNL 65 dB level is 494 (see **Error! Reference source not found.**Table 18). Other aircraft operating at the park are the Aerospatiale SA350D, Eurocopter EC-130 and the Cessna 208. The number of operations over a 12-hour period to exceed a DNL 65 dB level for these aircraft are 1,654, 11,534, and 3,855 respectively.

Table 18. Overflight sound exposure levels of aircraft currently operating at Hawai'i Volcanoes and number of daily fights of each aircraft type that would generate a noise exposure level at or above DNL 65 dB

Aircraft	Altitude, AGL (ft)	Overflight Sound Exposure Level	# daily flights for DNL to exceed 65
B407	500	87.4	494
SA350D	500	82.2	1,654
EC130	500	73.7	11,534
Cessna 208	1000	78.5	3,855

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 2,478 operations at low altitude over a 12-hour period to exceed a DNL 65 dB level (see Table 19). This activity level represents an increase in daily operations of 2,429 compared to the PMAD (49 operations) and an increase of 2,388 compared to the peak day (90 operations). This, coupled with the likely dispersal of air tours outside the boundary for the reasons discussed previously, indicates that it would be highly unlikely that air tours that are displaced to outside the boundary under these Alternatives would generate noise at or above DNL 65 dB.

Table 19. Number of daily fights of each aircraft type that would generate a 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	# daily flights in 2017-2019 PMAD	2017-2019 PMAD Fleet Distribution %	# daily flights for DNL to exceed 65
B407	500	87.4	5	10.2%	253
SA350D	500	82.2	11	22.5%	557
EC130	500	73.7	32	65.3%	1,617
Cessna 208	1000	78.5	1	2.0%	51
	Total		**49**	**100%**	**2,478**

[11] 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.

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ATTACHMENT E

Connection Information for April 18, 2023, Consulting Party Meeting for Hawai'i Volcanoes National Park

The consulting party meeting will be held on Tuesday, April 18, 2023, at 9:00 a.m. to 10:30 a.m. HST over Zoom.

Web link:
https://usdot.zoomgov.com/j/1601243000?pwd=TmUydkllN2owWFZjNFZER1VPR2tTZz09

Meeting ID: 160 124 3000
Passcode: 723413

Call-in:
Dial by your location
+1 669 254 5252 US (San Jose)
+1 646 828 7666 US (New York)
+1 646 964 1167 US (US Spanish Line)
+1 551 285 1373 US
+1 669 216 1590 US (San Jose)
+1 415 449 4000 US (US Spanish Line)
Meeting ID: 160 124 3000
Passcode: 723413

U.S. Department of Transportation
Federal Aviation Administration

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

NATIONAL PARKS AIR TOUR MANAGEMENT PROGRAM

April 10, 2023

Re: Continuing Consultation under Section 106 of the National Historic Preservation Act for the development of an Air Tour Management Plan at Hawai‘i Volcanoes National Park

Dear Consulting Party:

The Federal Aviation Administration (FAA) and the National Park Service (NPS) are continuing consultation for the development of an Air Tour Management Plan (ATMP) at Hawai‘i Volcanoes National Park. This is a reminder that the agencies are holding a virtual Section 106 consulting party meeting on **Tuesday, April 18, 2023, at 9:00 a.m. to 10:30 a.m. HST** over Zoom. The purpose of this meeting is to explain how the FAA arrived at the proposed finding of no adverse effect on historic properties. The initial meeting invitation accompanied the March 27, 2023, Finding of Effects letter for Hawai‘i Volcanoes National Park.

In preparation for the meeting, the FAA is providing the enclosed PowerPoint slide presentation for your review. Information on how to access the meeting is included below.

Web link:
https://usdot.zoomgov.com/j/1601243000?pwd=TmUydkllN2owWFZjNFZER1VPR2tTZz09

Meeting ID: 160 124 3000
Passcode: 723413

Call-in:
Dial by your location
+1 669 254 5252 US (San Jose)
+1 646 828 7666 US (New York)
+1 646 964 1167 US (US Spanish Line)
+1 551 285 1373 US
+1 669 216 1590 US (San Jose)
+1 415 449 4000 US (US Spanish Line)
Meeting ID: 160 124 3000
Passcode: 723413

Should you have any questions about the information provided in the Finding of Effects letter, please contact me at (202) 267–4185 or at judith.walker@faa.gov, copying ATMPTeam@dot.gov. If you have any logistical issues accessing the meeting or meeting materials, please reach out to ATMPTeam@dot.gov [redacted]

Sincerely,

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

Attachments

A. PowerPoint Slides for the April 18, 2023, Consulting Party Meeting

ATTACHMENT A

POWERPOINT SLIDES
FOR THE
APRIL 18, 2023, CONSULTING PARTY MEETING

Section 106 Consulting Party Meeting for Hawai‘i Volcanoes National Park Air Tour Management Plan

April 18, 2023

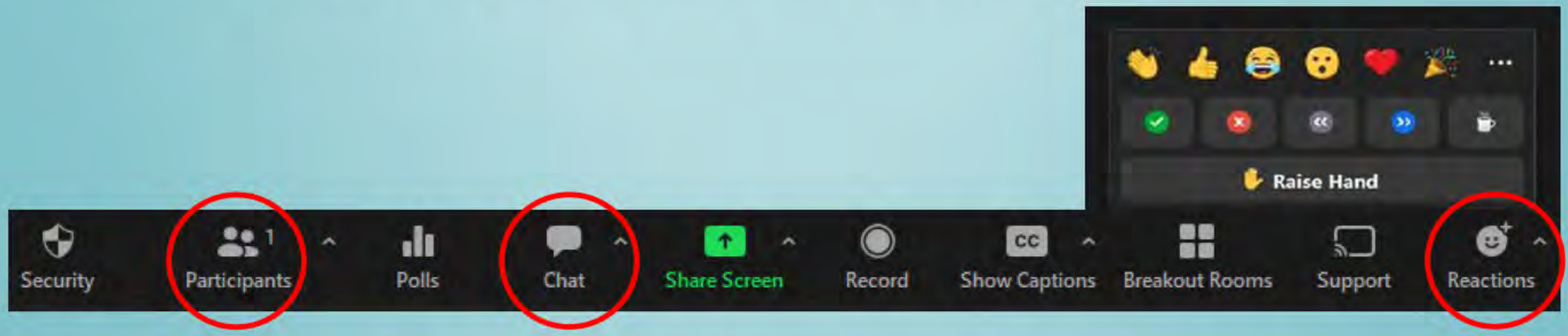
NPS Photo

Agenda

- Housekeeping
- Introductions
- Oli/‘ōlelo no‘eau
- Overview of Undertaking
- Overview of Effects Analysis
  - How the FAA analyzes effects
  - Noise analysis
    - Noise Metrics
    - Overall Trends
  - Visual analysis
  - Summary of No Adverse Effects
- Next Steps

Housekeeping

- Please mute your mic except when talking, this improves the sound quality for all.
- Please type your full name in chat box or change your display name to identify yourself if your name does not appear in Zoom.
  - To change your display name: click on “Participants” in the tool bar, hover over your name in the “Participants” sidebar, click on the three dots, and choose “Rename”
- If you have any questions/comments please use the “Raise Hand” icon or submit your comment in the chat box.
  - The raise your hand icon can found under "Reactions" on the tool bar.



Introductions – Federal Agencies

Federal Aviation Administration

- Judith Walker – Federal Preservation Officer

National Park Service, Hawai‘i Volcanoes National Park

- Rhonda Loh - Superintendent
- Danielle Foster- Environmental Protection Specialist
- Summer Roper Todd - Archeologist & Cultural Resources Program Manager
- Charone O'Neil-Naeole – Hawai‘i Volcanoes National Park Kūpuna Council Liaison

National Park Service, Natural Sounds and Night Skies Division

- Vicki Ward – Overflights Program Manager

USDOT Volpe Center

- Amanda Rapoza – Noise Specialist

Introductions – Consulting Parties

- Native Hawaiian Organizations
- Kūpuna
- Hawai‘i State Historic Preservation Division (SHPD)
- Property Owners or Land Managers
- Operators
- Additional consulting parties

Oli

E Hō Mai

Composed by: Edith Kanaka'ole

E Hō Mai

E hō mai (i) ka 'ike mai luna mai ē	Grant us the knowledge from above
'0 nā mea huna no'eau o nā mele ē	Concerning the hidden wisdom of songs,
E hō mai	Grant,
E hō mai	Grant,
E hō mai ē (a)	Grant us these things

Repeat 3x

Edith K. Kanaka'ole composed this *oli* (chant) for her hula school, *Hālau 0 Kekuhi.* Students would perform the chant to ask for guidance from their ancestors for the undertaking that lay ahead.

Today, this oli is used to start an event or gathering in order to ask for guidance and direction with the endeavor at hand.

Proposed Finding of No Adverse Effect

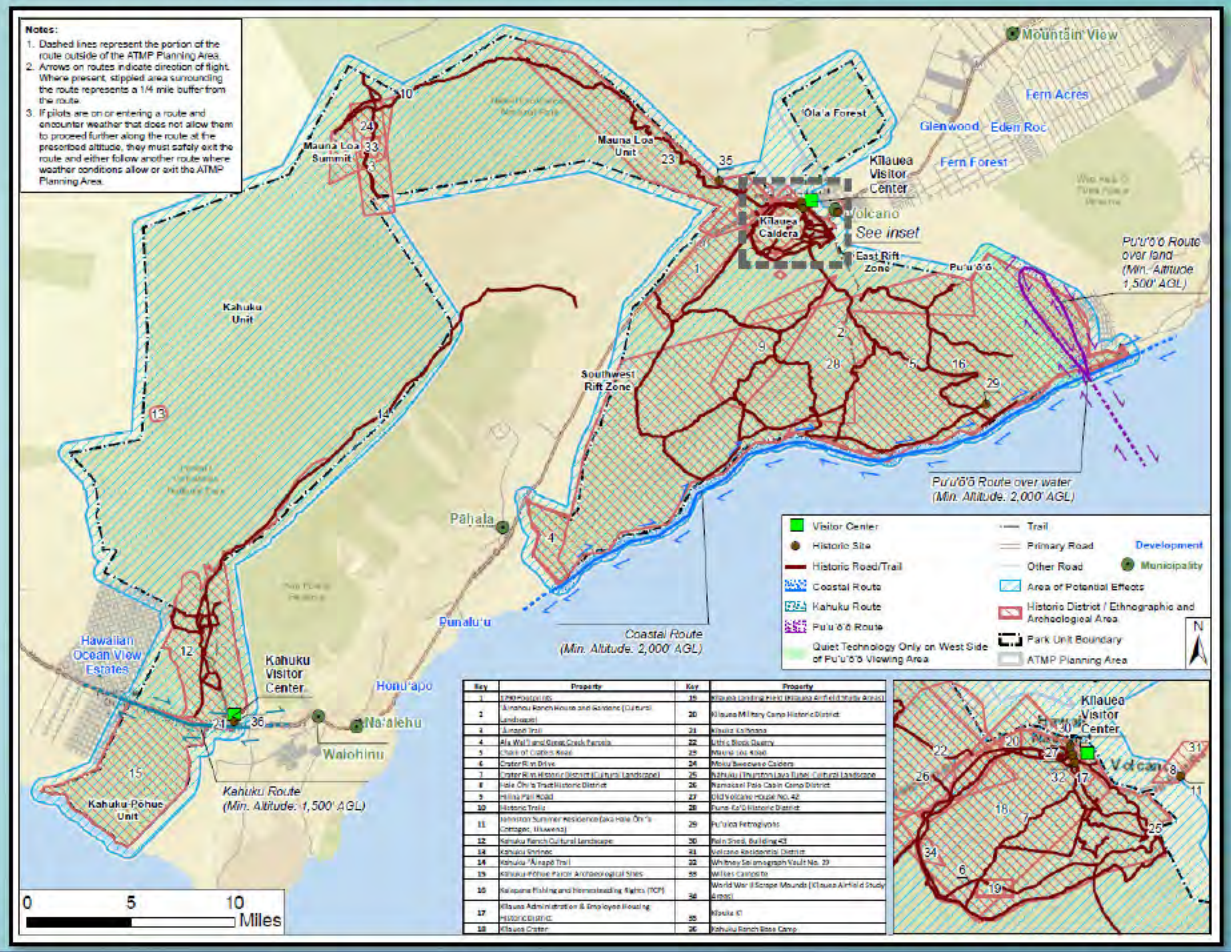
- A Finding of Effect letter with the FAA's proposed finding of **no adverse effect to historic properties** was sent to the Hawai'i SHPD and all consulting parties on March 27, 2023.
- The following slides will explain how the FAA arrived at the proposed finding.

The FAA seeks your concurrence with the proposed finding of no adverse effect by **Friday, April 28, 2023**.

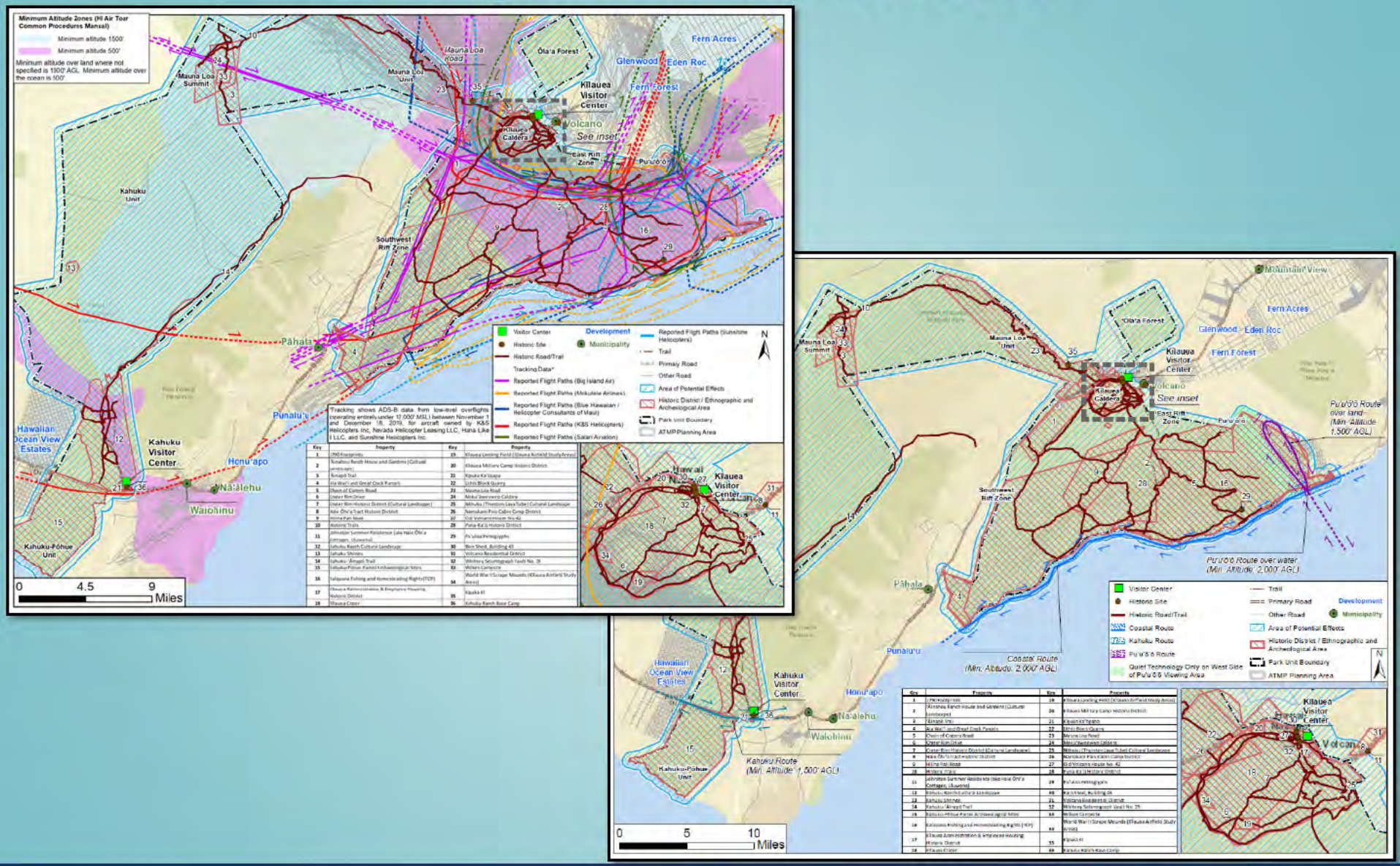
The Undertaking for Hawai‘i Volcanoes National Park

Implementation of the ATMP – Revised Public Scoping Alternative 4 (Reduction of Air Tours)

- **Annual limit of air tours over the Park: 1,565**
- **Designates three flight paths with minimum altitudes ranging from 1,500 – 2,000 ft. AGL**
- **No air tours allowed Sundays**
- **Quiet-technology (QT) air tours only on Wednesdays**
- **Air tours permitted between 10 AM – 2 PM on remaining days**
- **QT air tours allowed from 9 AM – 5 PM on Mondays – Saturdays**
- **NPS can establish restrictions for particular events with two months’ notice provided to operators**
- **Up to 5 minutes of loitering/circling is permitted on the Pu‘u‘ō‘ō Route and in the Pu‘u‘ō‘ō QT Zone**



Existing Conditions vs. the ATMP



Existing Conditions vs. the ATMP

Attribute	Existing Air Tour Conditions	Draft ATMP
Number of Air Tours Authorized Per Year	IOA: 26,664 flights per year 3-Yr. Average (2017-2019): 11,376	1,565 flights per year
Routes and Altitudes	No mandatory routes or no-fly zones. Altitudes flown in accordance with the HI Common Procedures Manual (generally between 500 – 1,500 ft. AGL).	Three routes including the Kahuku Route, Coastal Route, and the Puʻuʻōʻō Route with minimum altitude requirements of 1,500 ft. AGL over land and 2,000 ft. AGL over the ocean.
Time-of-Day Restrictions	No restrictions, may occur at any time	On days where air tours are permitted: 10:00 AM – 2:00 PM for non-quiet technology flights. 9:00 AM – 5:00 PM for quiet technology flights.
Day-of-Week Restrictions	No restrictions, may occur on any day of the week	No-fly days on Sunday Wednesdays are quiet technology-only days
Restrictions for Particular Events	No restrictions, may occur on any day of the year	Mandatory 5-mile standoff distance limited to the ATMP planning area. Two months' notice provided to operators.
Training, Education, and Meetings	No interpretive training, education or annual meeting.	Mandatory training and annual meeting. Operators required to complete the FAA Introduction to Fly Neighborly training.

Effects Analysis Overview – Standards

- Air tours have been conducted over the Park for over 20 years and are currently conducted under the Interim Operating Authority (IOA) that the FAA was required to grant operators by NPATMA.
- The agencies focused the assessment of effects on the potential for adverse effects from the *introduction* of **audible or visual elements** *beyond existing conditions* that could diminish the integrity of the property's significant historic features.
- **Criteria of Adverse Effect (36 CFR § 800.5(a)(1)):** An **adverse effect** is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would *diminish the integrity* of the property's location, design, setting, materials, workmanship, feeling, or association.

Significant Characteristics of Historic Properties

- Due to the nature of the undertaking, the implementation of the ATMP has the potential to adversely affect setting and feeling of historic properties.
- Therefore, the agencies focused the assessment on historic properties within the APE that have a quiet setting, natural setting, and/or viewshed as a significant characteristic.

Kīlauea Overlook, within the Hawai'i Volcanoes National Park Traditional Cultural Property (TCP) and Crater Rim Drive Historic District and facing the Kīlauea Crater

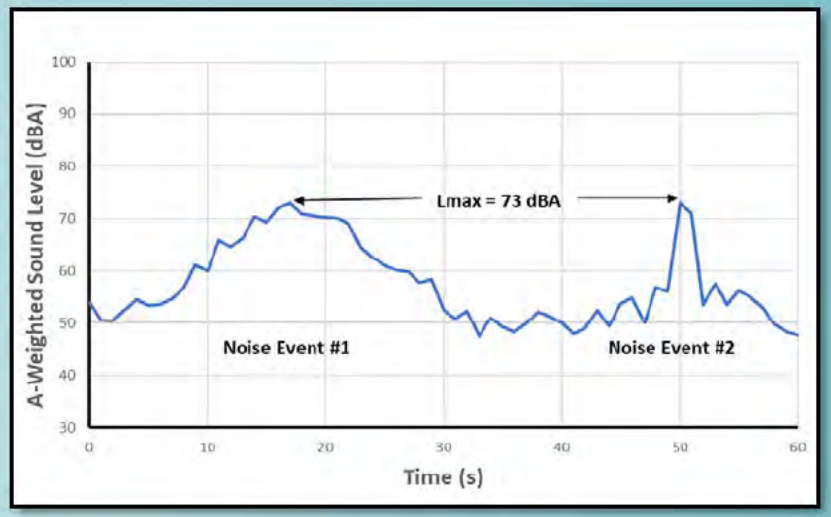
Halapē, within the Hawai'i Volcanoes National Park TCP, Kalapana Fishing and Homesteading Rights (TCP), and the Puna-Ka'ū Historic District, and near coastal Historic Trails

Ōhi'a forest, within the Hawai'i Volcanoes National Park TCP

Questions?

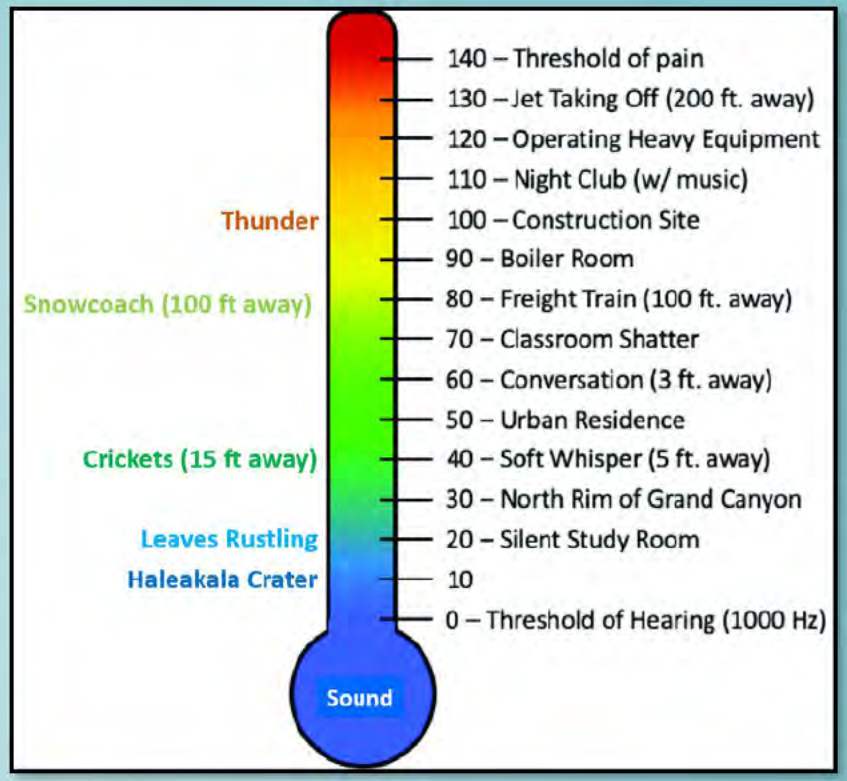
Noise Metrics

- **Equivalent sound level, LAeq, 12hr:** Average of commercial air tour sound levels (in decibels – dBA) over a 12-hour period. The 12-hour period represents typical daytime commercial air tour operating hours.
- **Maximum sound level, Lmax:** The loudest sound level (in dBA) generated by air tours during the 12-hour period. Lmax does not provide any context of the number of tour overflights or the duration.
- **Time Above 35 dBA:** The amount of time (in minutes) that aircraft sound levels are above 35 dBA
  - In quiet settings, outdoor sound levels exceeding this level degrade experience in outdoor performance venues.
- **Time Above 52 dBA:** The amount of time (in minutes) that aircraft sound levels are above 52 dBA
  - This metric represents the level at which one may reasonably expect interference with Park interpretive programs.



Noise Metrics

- **Natural Ambient:** The natural ambient is the sound level of all natural sounds in a given area. Natural ambient includes all sounds of nature but does not include any human or mechanical sounds.
- **Existing Ambient:** The sound level of all sounds in a given area, including all natural sounds and all mechanical, electrical, and other human-caused sounds.
- **Time Audible Natural Ambient:** The total time in minutes that aircraft noise levels are audible to an attentive listener with normal hearing under natural ambient conditions. Time audible does not indicate how loud the event is, only if it might be heard.



Questions?

Overall Trends: Noise Decreases in the APE – Duration vs. Intensity

Overall, historic properties in the APE would see a reduction in noise impacts compared to existing conditions.

- Duration vs. Intensity:
  - **Intensity** – how loud it is
  - **Duration** – how long you hear it
- Some areas near the proposed Coastal Route and the Kahuku Route may experience increases in noise intensity and/or duration.
  - Some points may experience a decrease in noise intensity but an increase in noise duration compared to existing conditions.
  - Some points may experience an increase in noise intensity and duration on standard days, but on QT-only days would experience similar levels or a decrease in noise intensity compared to existing conditions.
  - Only one point shows an increase in all modeled noise metrics compared to existing conditions.
- The finding of effect letter interprets the noise data from these metrics and finds that the changes in noise at various points throughout the Park **do not have the potential to cause adverse effects to historic properties** in the APE.

Overall Trends: Noise Decreases in the APE – Time Above 35 dBA

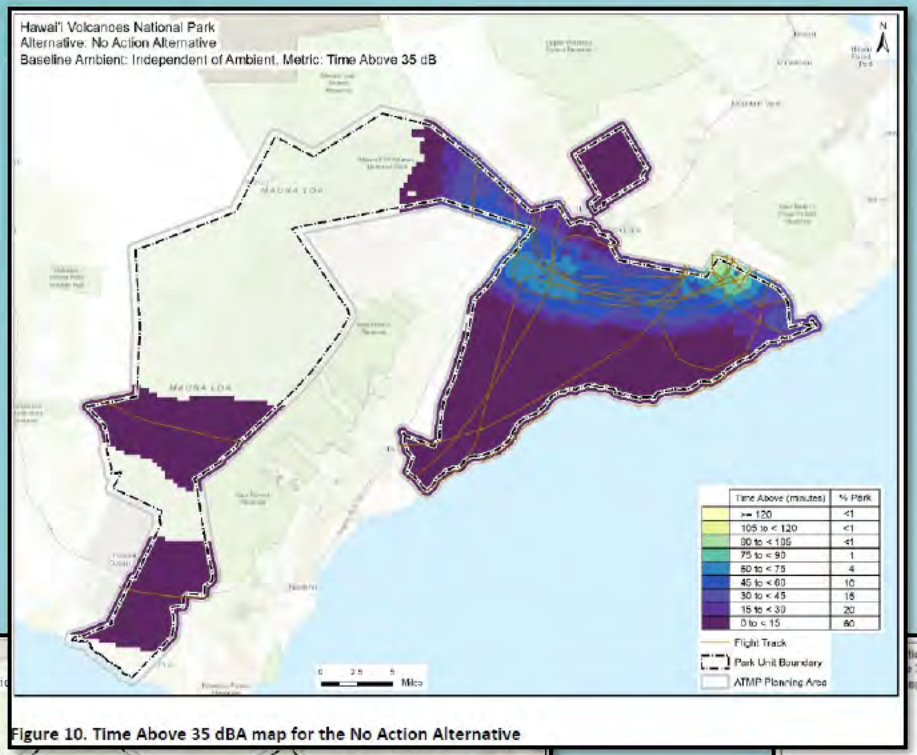


Figure 10. Time Above 35 dBA map for the No Action Alternative

	Time Above (minutes)	% Park
	>= 120	<1
	105 to < 120	<1
	90 to < 105	<1
	75 to < 90	1
	60 to < 75	4
	45 to < 60	10
	30 to < 45	15
	15 to < 30	20
	0 to < 15	60

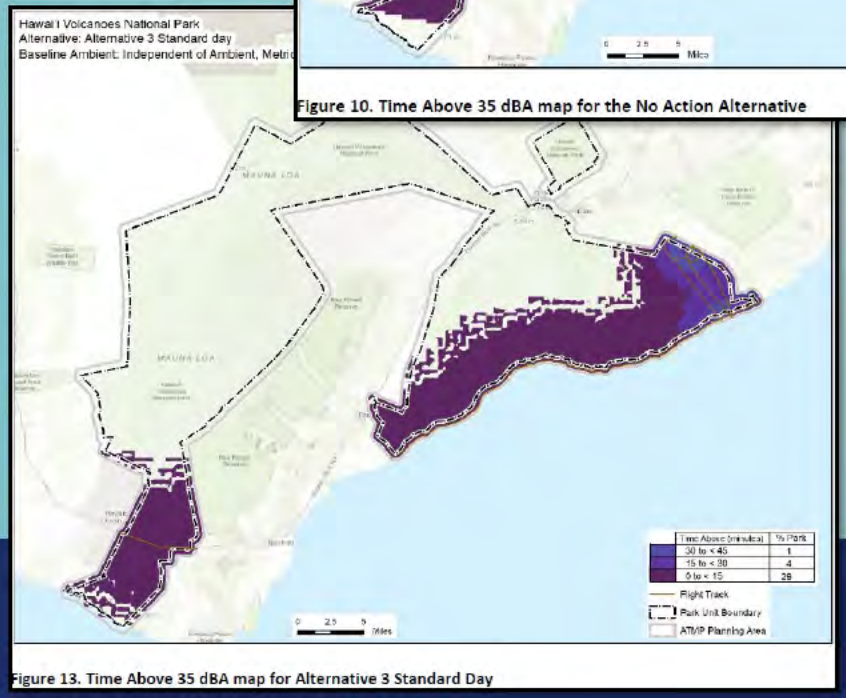


Figure 13. Time Above 35 dBA map for Alternative 3 Standard Day

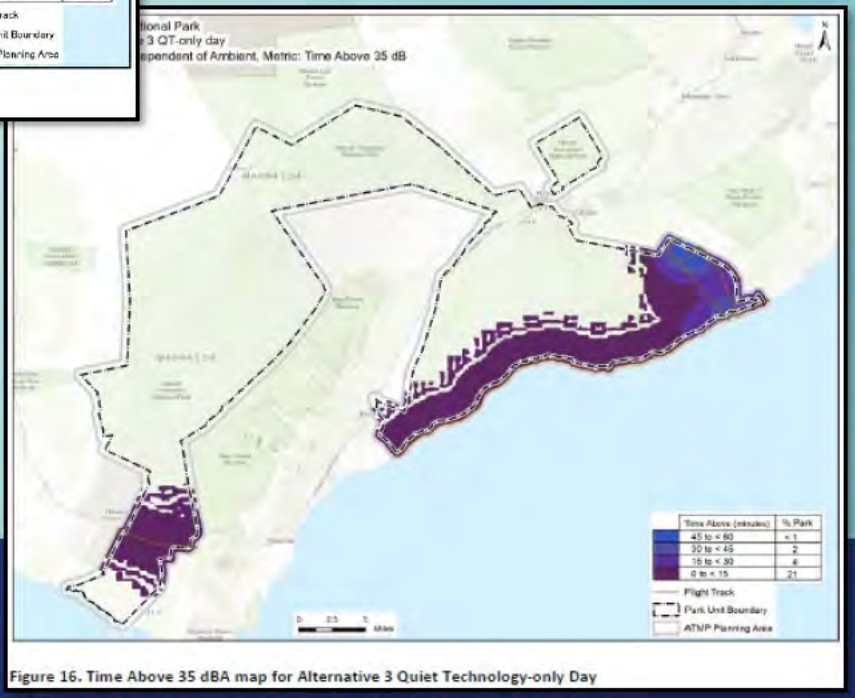


Figure 16. Time Above 35 dBA map for Alternative 3 Quiet Technology-only Day

Overall Trends: Noise Decreases in the APE – Time Audible for Natural Ambient

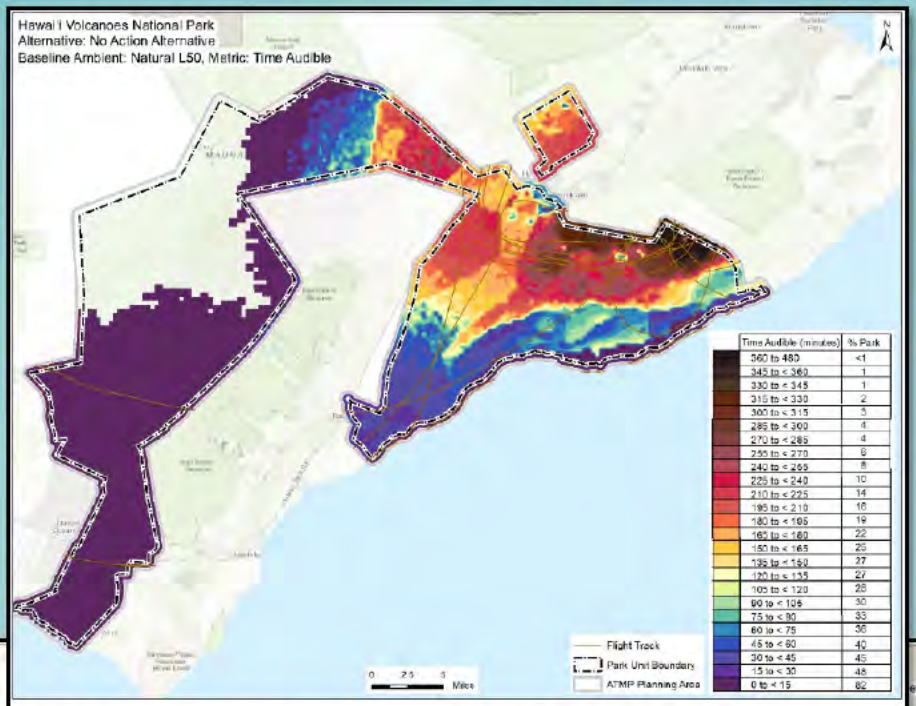


Figure 9. Time audible (for natural ambient) map for the No Action Alternative

Time Audible (minutes)	% Park
360 to 480	<1
345 to < 360	1
330 to < 345	1
315 to < 330	2
300 to < 315	3
285 to < 300	4
270 to < 285	4
255 to < 270	6
240 to < 255	8
225 to < 240	10
210 to < 225	14
195 to < 210	16
180 to < 195	19
165 to < 180	22
150 to < 165	25
135 to < 150	27
120 to < 135	27
105 to < 120	28
90 to < 105	30
75 to < 90	33
60 to < 75	36
45 to < 60	40
30 to < 45	45
15 to < 30	48
0 to < 15	82

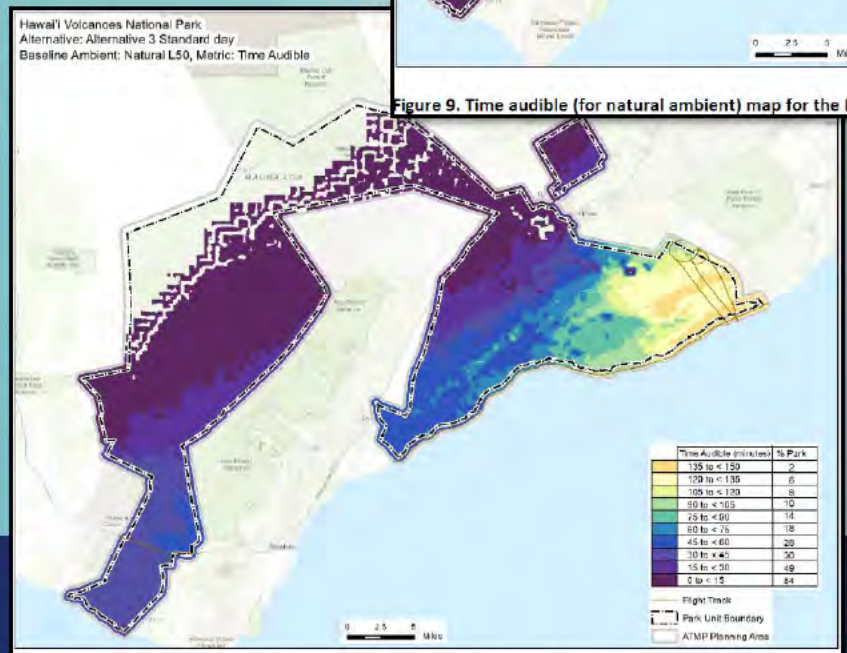


Figure 12. Time Audible (for natural ambient) map for Alternative 3 Standard Day

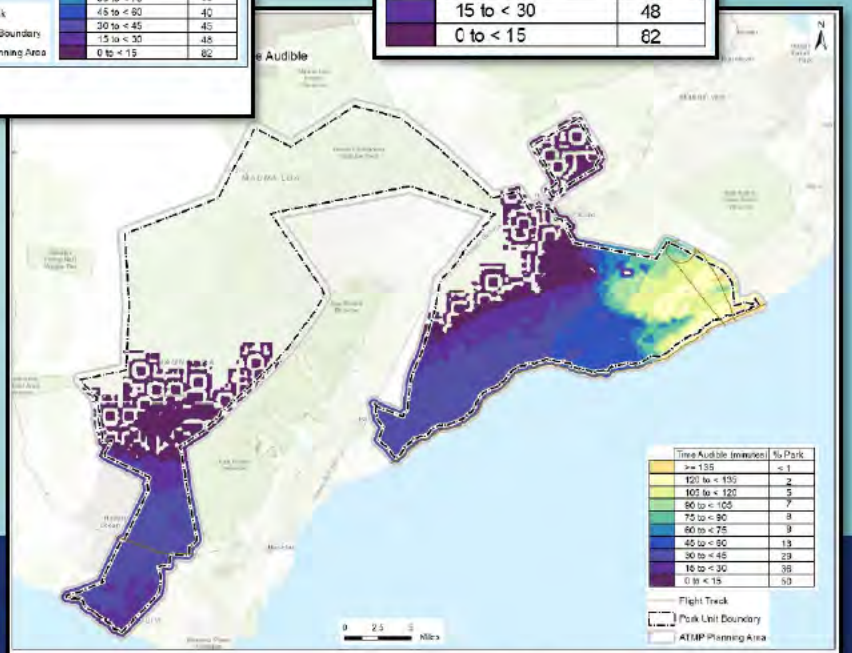


Figure 15. Time Audible (for natural ambient) map for Alternative 3 Quiet Technology-only Day

Overall Trends: Noise Decreases in the APE – 12-hour Equivalent Sound Level

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

	Sound Level (dBA)	% Park
	>= 50	<1
	45 to < 50	3
	40 to < 45	7
	35 to < 40	13

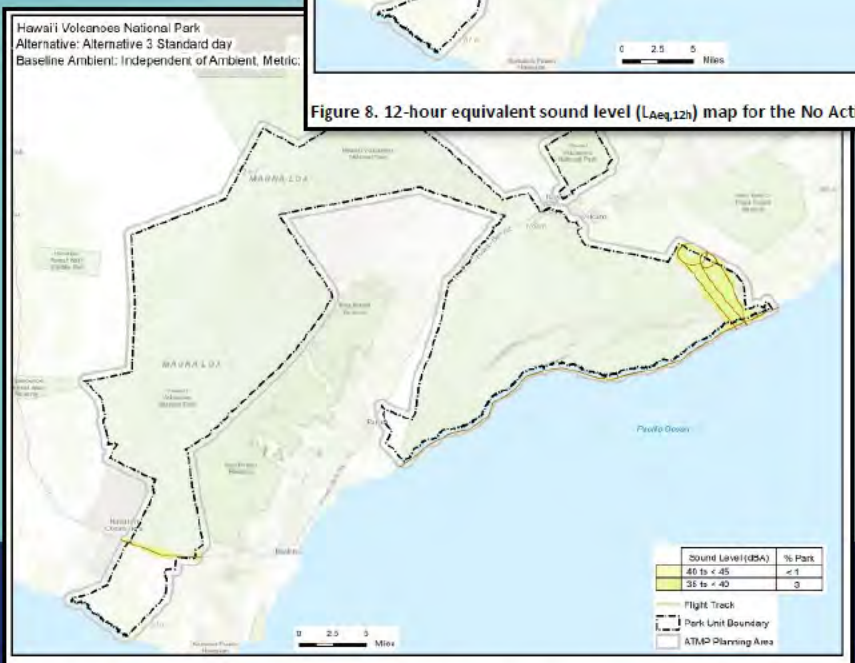


Figure 11. 12-hour equivalent sound level ($L_{Aeq,12h}$) map for Alternative 3 Standard Day

Figure 14. 12-hour equivalent sound level ($L_{Aeq,12h}$) map for Alternative 3 Quiet Technology only Day

Overall Trends: Noise Decreases in the APE – Intensity Down vs. Duration Up (Points 14, 18, 19, and 20)

What does this mean?

Intensity down – Maximum sound level and 12-hour equivalent are lower

+

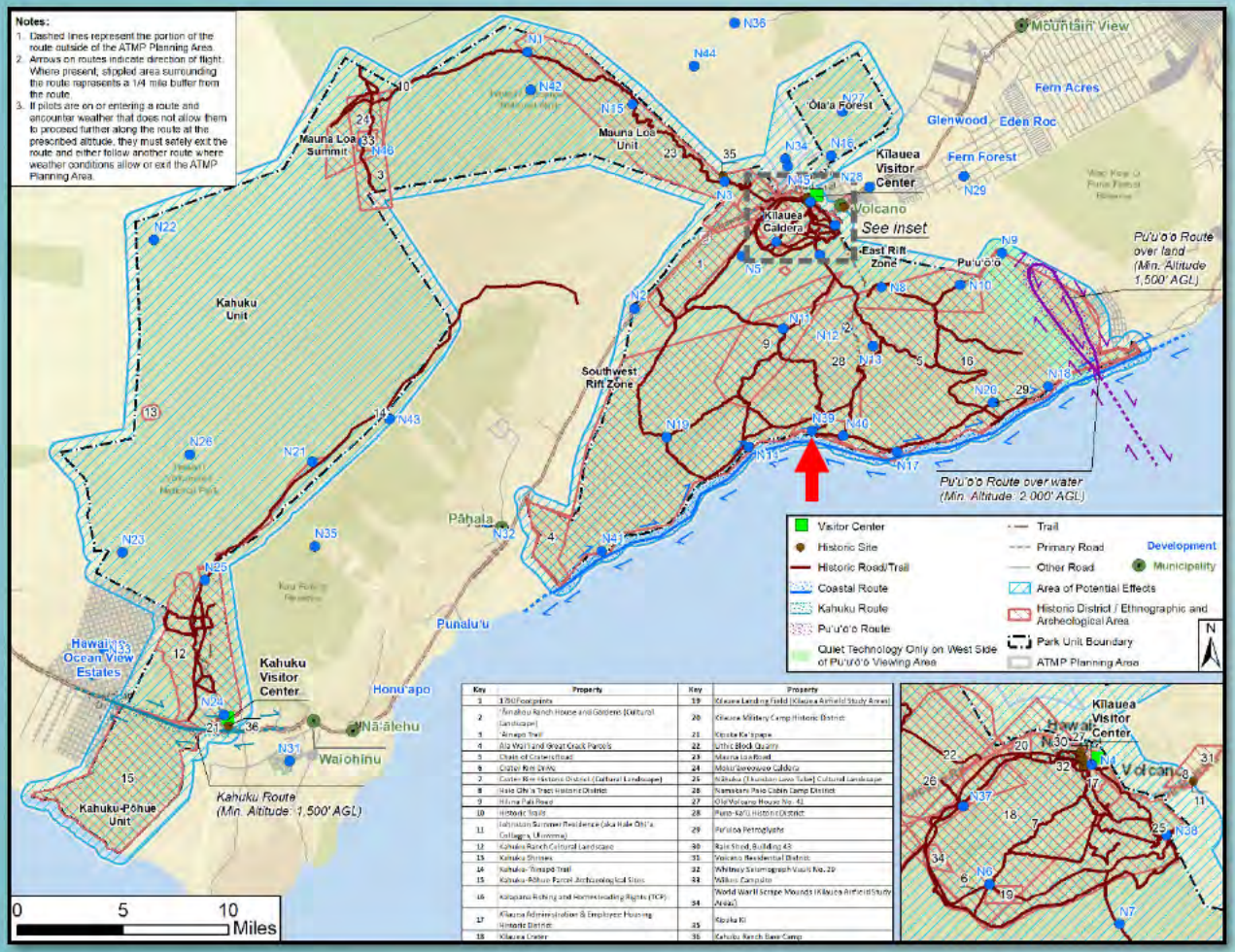
Duration up – Time above and time audible metrics are higher

=

Increases in altitude result in air tours potentially being heard for a longer amount of time, although they are quieter

Historic properties affected, but not adversely: Puʻuloa Petroglyphs; portions of Hawaiʻi Volcanoes National Park TCP, Puna-Kaʻū Historic District, and Kalapana Fishing and Homesteading Rights (TCP); and coastal Historic Trails.

Overall Trends: Noise Decreases in the APE – Limited Increases in Intensity and Duration (Point 39)



Point 39 (Halapē Wilderness Camp) represents a coastal point within the Hawai'i Volcanoes National Park TCP, and the Puna-Ka'ū Historic District, and is also near Kalapana Fishing and Homesteading Rights (TCP) and coastal Historic Trails.

Overall Trends: Noise Decreases in the APE – Limited Increases in Intensity and Duration (Point 39)

- 12-hour equivalent (in dBA) increases but remains low:

Existing Conditions	Standard Day under ATMP	QT-only Day under ATMP
20.4	30.0	29.9

- Duration (in minutes) increases but remains low and occurs over time:

Existing Conditions, Time Audible for Natural Ambient	Standard Day under ATMP Time Audible for Natural Ambient	QT-only Day under ATMP Time Audible for Natural Ambient	Existing Conditions, Time Above 35 dBA	Standard Day under ATMP Time Above 35 dBA	QT-only Day under ATMP, Time Above 35 dBA	Existing Conditions, Time Above 52 dBA	Standard Day under ATMP Time Above 52 dBA	QT-only Day under ATMP, Time Above 52 dBA
0.0	60.6	36.5	1.8	7.2	10.0	0.1	1.2	1.2

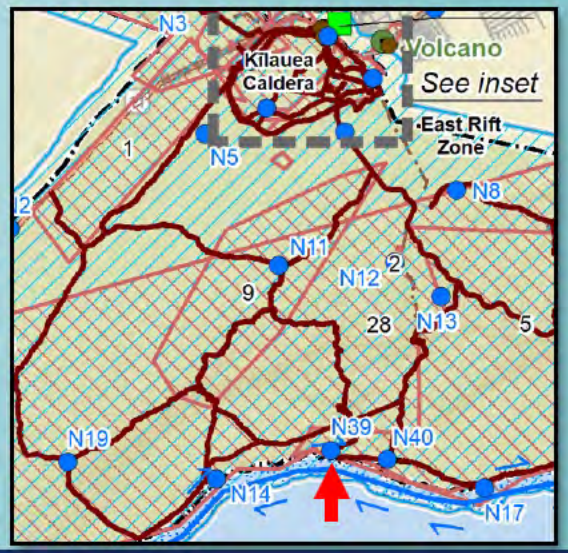
- Maximum sound levels (in dBA) increase but QT minimizes:

Existing Conditions	Standard Day under ATMP	QT-only Day under ATMP
53.0	60.7	55.2

Overall Trends: Noise Decreases in the APE – Limited Increases in Intensity and Duration (Point 39)

What does this mean?

- Under existing conditions, there are only approximately 2 flights per day in this area, which will be increased to approximately 5 flights per day with the route proposed under the ATMP.
- Impacts are minor as flights will be at a higher altitude and overall are decreased in the ATMP Planning Area.
- Increases in noise levels will affect the cultural resources near this point; however, the ATMP is not anticipated to significantly degrade the integrity of these resources.
  - Minor increases
  - Noise levels remain low
  - Time metrics are spread out across the day and are not all at once
  - Given annual limits, the frequency of flights will be low (approximately 5 per day)
  - Noise at several other points within these districts will experience decreases across all or some metrics.



No Adverse Noise Effects

Overall, the ATMP reduces flights and increases altitudes, thereby reducing impacts.

Quiet Technology Incentives Minimize Effects

- Intensity is lower on quiet technology (QT)-only days than standard days.
- Maximum sound levels are reduced or similar to existing conditions.
- Equivalent sound level remains at or under 40 dBA on QT-only days.
- There are minimal increases in time above metrics where present.
- Time audible is less on QT days than standard days.

Additional ATMP Restrictions also Reduce Likelihood Historic Properties will be Affected

- No fly days
- Time of day restrictions to avoid sunrise and sunset
- Shifting and consolidating routes avoids direct overflights of most historic resources

Questions?

Visual Analysis: Viewshed Intrusions Reduced

- Visual intrusions to historic properties are expected to significantly decrease compared to existing conditions.
  - Historic properties in the APE already experience visual intrusions by air tours under existing conditions.
  - The ATMP reduces flights in the ATMP planning area by 86%, raises the minimum altitude of air tours, and implements time-of-day and day-of-week limits.
- Air tours are transitory by nature.
- The implementation of the ATMP will not introduce visual elements that may alter the characteristics of any historic property that qualifies it for inclusion in the National Register of Historic Places.

Kīlauea Summit

Pepeiao Trail, overlooking the coastal wilderness

Summary of No Adverse Effects

- The undertaking – the implementation of the ATMP – will result in:
  - Significant reduction in the number of air tours and times in which air tours are allowed.
  - Three routes that move air tours away from the most sensitive cultural resources in APE and avoid direct overflights of most resources, including the Kīlauea Crater area.
  - Reduction of noise footprint within Park.
  - Effects to resources along Coastal Route and Kahuku route where daily flights may be increased.
    - These effects are not adverse as flights already exist in these areas.
      - Air tours are transitory in nature, and any noise and visual impacts to historic properties would be temporary, infrequent, and in many cases less intrusive than existing conditions in the Park.
      - The ATMP restrictions minimize the effects of air tours to historic properties and reduce the likelihood that an air tour would interrupt Native Hawaiian traditional practices.

The undertaking would not alter the significant characteristics of any historic properties located within the APE in a manner that would diminish its integrity.

Questions?

Next Steps:

- Based on this analysis, the FAA proposes a finding of no adverse effect on historic properties. We request that you review the information provided in the March 27, 2023, Finding of No Adverse Effect letter and respond whether you concur with the proposed finding by **April 28, 2023**.
- Should you have questions regarding the effects assessment, please contact:
  - Judith Walker at (202) 267-4185 or at judith.walker@faa.gov, copying ATMPTeam@dot.gov
  - Mailing address:

    United States Department of Transportation
    FEDERAL AVIATION ADMINISTRATION
    Office of Policy, International Affairs & Environment
    Office of Environment and Energy
    800 Independence Ave, SW, Suite 900 West
    Washington DC 20591

THANK YOU

U.S. Department of Transportation
Federal Aviation Administration

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

NATIONAL PARKS AIR TOUR MANAGEMENT PROGRAM

April 28, 2023

Re: Continuing Consultation under Section 106 of the National Historic Preservation Act for the development of an Air Tour Management Plan at Hawai'i Volcanoes National Park

Dear Consulting Party:

The Federal Aviation Administration (FAA) and the National Park Service (NPS) held a virtual Section 106 informational meeting on Tuesday, April 18, 2023, to explain how the FAA arrived at the proposed finding of no adverse effect on historic properties for the Air Tour Management Plan (ATMP) at Hawai'i Volcanoes National Park. The initial meeting invitation accompanied the March 27, 2023, Finding of Effects letter, and the agencies provided a copy of the PowerPoint slide presentation to all consulting parties prior to the meeting.

The FAA is providing the enclosed meeting summary with a list of questions received during the meeting and the agencies' responses for your awareness.

Should you have any questions, please contact me at (202) 267–4185 or at judith.walker@faa.gov, copying ATMPTeam@dot.gov.

Sincerely,

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

Attachments

A. April 18, 2023, Consulting Party Meeting Summary and Q&A

ATTACHMENT A

APRIL 18, 2023, CONSULTING PARTY MEETING SUMMARY AND Q&A

Section 106 Consulting Party Meeting for the Development of an Air Tour Management Plan (ATMP) at Hawai'i Volcanoes National Park

Meeting Summary and Q&A

Date: Tuesday, April 18, 2023, at 3:00 PM ET / 9:00 AM HT

Attendees:

- **Agency/Park staff:** Judith Walker (FAA), Shauna Haas (U.S. DOT Volpe Center), Amy Hootman (U.S. DOT Volpe Center), Charone O'Neil-Naeole (NPS), Summer Roper Todd (NPS), Danielle Foster (NPS), Sarah Killinger (NPS), Rhonda Loh (NPS), Jessica Ferracane (NPS), Vicki Ward (NPS), Amanda Rapoza (U.S. DOT Volpe Center), Eric Elmore (FAA), Karen Trevino (NPS)
- **Other Attendees:** Jamie Kawauchi (HAVO Kūpuna Council and Ka'ū Advisory Council), Keola Lindsey (Kamehameha Schools), Bobby Camara (HAVO Kūpuna Council – via phone), Sharon Moraes (HAVO Kūpuna Council), Kamakana Ferreira (Office of Hawaiian Affairs), Kiersten Faulkner (Historic Hawai'i Foundation), Nāmaka Whitehead (Kamehameha Schools), Heather Bailey (Natural Resources Conservation Service Hilo Service Center), John Carse, Cade Clark (Helicopter Association International), Betsy Merritt (National Trust for Historic Preservation), Christopher Cody (National Trust for Historic Preservation), Eric Hamp (Blue Hawaiian Helicopters – via phone)

Meeting Summary:

<u>Introduction</u>

- The Federal Aviation Administration (FAA) welcomed attendees, and the National Park Service (NPS) led the Oli.
- The FAA stated that the purpose of the meeting is to review the analysis of how the agency arrived at the finding of no adverse effect to historic properties.
- The FAA provided an overview of the basic features of Zoom and noted that the meeting would not be recorded. A meeting summary and responses to questions would be provided to consulting parties after the meeting.
- The FAA and NPS staff introduced themselves to attendees and asked for the other attendees to introduce themselves.
- The FAA sent a letter with the proposed finding of no adverse effect to historic properties to all consulting parties on March 27, 2023. The FAA seeks concurrence with the finding in writing by Friday, April 28, 2023. Mailed responses must be postmarked by April 28, 2023.

<u>The Undertaking</u>

- The FAA provided an overview of the Undertaking (the implementation of the ATMP) compared to existing conditions. The APE (or the area where the ATMP will affect cultural resources) is the Park and the half mile around the Park's boundary and also includes a small area to the southwest of the 'Ōla'a Forest tract.
- The ATMP:
    - Reduces air tour operations from an average of 26,664 annual flights down to a limit of 1,565 annual flights.

    - Designates three flight paths: the Kahuku Route, Coastal Route, and Pu‘u‘ō‘ō Route with minimum altitude requirements of 1,500 ft. AGL over land and 2,000 ft. AGL over the ocean.
    - Imposes time-of-day and day-of-week limits, including:
        - No air tours on Sundays
        - Quiet technology (QT)-only air tours on Wednesdays
        - Air tours permitted only between 10AM – 2PM on remaining days
        - QT air tours allowed from 9AM – 5 PM on Mondays through Saturdays
    - Includes quiet technology (QT) incentives and restrictions for particular events.
    - Allows up to 5 minutes of loitering/circling on the Pu‘u‘ō‘ō Route and in the Pu‘u‘ō‘ō QT Zone.
- The FAA provided an overview of the existing conditions compared to the ATMP. The FAA shared maps showing the existing flights in and surrounding the ATMP planning area and the three designated flight paths under the ATMP.
- Under existing conditions, air tour operators are not required to fly any designated routes or adhere to no-fly zones.

<u>Assessment of Effects</u>

- Air tours have been conducted in the Park for over 20 years and are currently conducted under the Interim Operating Authority (IOA) that the FAA was required to grant operators by the National Parks Air Tour Management Act of 2000 (NPATMA).
- The agencies focused the assessment of effects on the potential for adverse effects from the introduction of audible or visual elements beyond existing conditions that could diminish the integrity of a historic property.
- An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register of Historic Places (NRHP) in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.
- The Undertaking would not result in physical effects to historic properties but has the potential to affect resources for which feeling and setting are contributing elements. Due to the nature of the Undertaking, the agencies focused the assessment on historic properties that have a quiet setting, natural setting, and/or viewshed as a significant characteristic.

<u>Noise Assessment</u>

- The NPS provided an overview of the noise metrics used for the effects assessment, including: 12-hour equivalent sound level, maximum sound level, time above metrics, natural ambient, existing ambient, and time audible natural ambient. Each of these metrics measure different aspects of noise, and the agencies used them all together to get the big picture of potential noise effects. These metrics and noise modeling results are explained further in the March 27, 2023, Finding of No Adverse Effect letter.
- Overall, historic properties in the APE would see a reduction in noise impacts compared to existing conditions.
    - Some areas may experience a decrease in noise intensity and an increase in noise duration compared to existing conditions.
    - Some areas may experience an increase in noise intensity and duration compared to existing conditions.

    - The agencies find that the changes in noise at various points throughout the Park do not have the potential to cause adverse effects to historic properties in the APE.
- The agencies provided an overview of points where noise intensity decreases but noise duration increases. Increases in altitude result in air tours potentially being heard for a longer amount of time, but they would be quieter. This may affect historic properties, but not adversely, as it would ultimately not diminish the integrity of the property's feeling and/or setting.
- The agencies provided an overview of Point 39 (Halapē Wilderness Camp), which would experience the most increases in the intensity and duration of noise.
    - Point 39 experiences limited increases across all noise metrics, but overall noise levels remain low. Additionally, this point represents historic districts that will overall experience large decreases in all noise metrics at inland points.
- Overall, the ATMP would reduce flights and increase altitudes, thereby reducing noise impacts to historic properties and reducing the likelihood that traditional uses would be interrupted.

Visual Assessment

- The agencies provided an overview of the visual analysis. By reducing the number of air tours, the ATMP will reduce visual intrusions within the APE. compared to existing conditions.
    - The ATMP would reduce air tours in the ATMP planning area by 86%, raise the minimum altitude of air tours, and implement time-of-day and day-of-week restrictions.
    - Air tours are transitory by nature and intrusions would be brief.
    - The ATMP would avoid direct overflights of most historic properties.
    - The implementation of the ATMP would not introduce visual elements that may alter the characteristics of any historic property that qualifies it for inclusion in the National Register of Historic Places.

Summary of No Adverse Effects

- The FAA summarized the noise and visual effects assessment and how the ATMP would avoid adverse effects.

Next Steps

- The FAA requested that consulting parties review the information provided in the March 27, 2023, Finding of No Adverse Effect letter and respond whether they concur with the proposed finding of no adverse effect on historic properties by April 28, 2023. Written comments are due or postmarked by April 28, 2023, to the email or mailing addresses below.
- For questions regarding the effects assessment, please contact Judith Walker at (202) 267-4185 or at Judith.Walker@faa.gov, copying ATMPTeam@dot.gov.
- Mailing address:
  United States Department of Transportation
  FEDERAL AVIATION ADMINISTRATION
  Office of Policy, International Affairs & Environment
  Office of Environment and Energy
  800 Independence Ave, SW, Suite 900 West
  Washington DC 20591

Meeting Questions and Answers:

Q.1. Can the agencies clarify where the designated flight paths are located?

A.1. The three routes are the Kahuku Route, Coastal Route, and Puʻuʻōʻō Route with associated Puʻuʻōʻō Quiet Technology (QT) zone. These routes are shown in the area of potential effects (APE) map on page 21 of the March 27, 2023, Finding of No Adverse Effect letter.

- The Kahuku Route runs bi-directionally across the south side of the Kahuku Unit following Highway 11. Air tours on the Kahuku Route must maintain a minimum altitude of 1,500 ft. AGL. No hovering, loitering, and/or circling is allowed on the Kahuku Route.
- The Coastal Route runs bi-directionally offshore along the edge of the Park boundary, but within the ATMP boundary. It does not extend along the coast in the Kakuhu-Pōhue unit of the park. Air tours on the Coastal Route must maintain 2,000 ft. lateral distance from shore and a minimum altitude of 2,000 ft. No hovering, loitering, and/or circling is allowed on the Coastal Route.
- The Puʻuʻōʻō Route consists of a route on the east rift of Kīlauea in the Puʻuʻōʻō area with a single entry and exit over the ocean near the eastern boundary. Commercial air tours conducted on the Puʻuʻōʻō Route and in the Puʻuʻōʻō Quiet Technology Zone must maintain a minimum altitude of 1,500 ft. AGL over land and 2,000 ft. AGL over water. Hovering, loitering, and/or circling for up to five minutes is allowed on the Puʻuʻōʻō Route and in the Puʻuʻōʻō Quiet Technology Zone.

Q.2. Will there be flights over the Mauna Loa summit?

A.2. There will be no commercial air tours over areas of the Park within the ATMP planning area other than the three designated routes – the routes do not pass over the Mauna Loa summit. NPATMA only applies to air tours, so other types of flights may continue, and flights outside the ATMP boundary may continue.

Q.3. Why was the area of potential effects (APE) expanded outside the ATMP jurisdictional boundaries? Can the ATMP jurisdictional boundaries be expanded? A consulting party expressed concern regarding air tour impacts on adjacent lands.

A.3. In determining the APE, the agencies considered 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 APE is different from the ATMP planning area. The ATMP planning area is defined in the National Parks Air Tour Management Act (NPATMA) and cannot be expanded.

Q.4. Did the agencies consider the possibility of increased flights outside the ATMP planning area and around Kīlauea Crater when delineating the area of potential effects (APE)?

A.4. Yes, the agencies considered areas outside the ATMP planning area where the undertaking may directly or indirectly cause alterations to the character or use of historic properties. Areas around Kīlauea Crater were taken into consideration when delineating the APE. Flights are already occurring in most of this area, and the agencies cannot speculate as to how many flights will occur in those areas in the future. As further described on page 5 of the March 27, 2023, letter from FAA, the APE was expanded to include a small area to the southwest of the ʻŌlaʻa Forest tract where flight tracking indicated an absence of flights under existing conditions but where operators may be more likely to hover to view the Kīlauea Crater under the ATMP. APE is also addressed in Questions 3 and 7.

Q.5. One consulting party noted that approaching helicopters at 1,500 ft. AGL can be heard for at least a few miles away. How would helicopter sounds impact wilderness areas in the Park along the coast such as at Halapē and at Mauna Loa? They also expressed concern regarding the area west of the ʻŌlaʻa Forest Reserve and adjacent to the Park, especially near a breeding facility for endangered Hawaiian crows.

A.5. Overall, noise in the designated Wilderness areas in the Park is expected to significantly decrease. The number of flights authorized per year was selected to avoid or minimize unacceptable impacts to Wilderness values, cultural resources including Native Hawaiian traditional practices and sacred sites, the natural acoustic environment, and visitor experience. The routes selected reduce average sound levels to zero or near zero for locations near the heart of the Park (e.g., Halemaʻumaʻu Crater and the Kīlauea Visitor Center) and over endangered forest bird habitat in the Park. All routes have been established to avoid flying over Wilderness. The minimum altitudes of 1,500 ft AGL and 2,000 ft AGL over sensitive resources (including the coast) will reduce air tour noise in order to protect Park resources, Native Hawaiian traditional practices and sacred sites and visitor experience. The ATMP also includes no fly days and time of day restrictions to avoid sunrise and sunset to minimize the likelihood that traditional uses will be interrupted.

As discussed in more detail on pages 12 and 13 of the March 27, 2023 letter, and as illustrated on slides 22-24 of the presentation, Point 39 (Halapē Wilderness Camp) would experience increases in the intensity and duration of noise as the coastal route may result in more flights in the vicinity than under existing conditions. However, the sound levels remain low (20-30 dBA 12-hour equivalent), and the increases will not substantially hinder or prevent one from experiencing the historic properties at this point within their historic context compared to existing conditions. The time above metrics only reach 10 minutes above 35 dBA (increasing from 1.8 minutes) and 1.2 minutes above 52dBA (increasing from 0.1 minutes), which is not all at once but spread out across the operating day. In addition, the frequency of flights will be low (average of 5 with the annual limits) and flights are not allowed on certain days of the week and times of the day.

Under the ATMP, noise levels will significantly decrease at Mauna Loa, where air tour noise will no longer reach above 35 dBA and will not be audible under natural ambient conditions on days when only quiet-technology flights are allowed. Air tours may be audible on standard days in the vicinity of noise point 26, which is within designated wilderness on Mauna Loa to the southwest of the summit, but only for up to 8.2 minutes, increasing from 5.3 minutes under current conditions. Time audible under natural ambient will be reduced or maintained at 0 minutes at the other noise points in wilderness areas on Mauna Loa. Air tours will no longer be able to fly within the ATMP planning area around Mauna Loa. The decreases in noise on Mauna Loa are further discussed in the Noise Technical Analysis provided in Attachment D of the March 27, 2023, letter.

Noise modeling point 45 represents the breeding facility for endangered Hawaiian crows in the area west of the ʻŌlaʻa Forest Reserve. Both noise duration and noise intensity will decrease at this location under the ATMP. Time above 35 dBA at this point will decrease from 8.4 minutes to 0 minutes. The maximum sound level will also significantly decrease from 54.5 dBA to a maximum of 16.6 dBA. The decreases in noise at this point are further discussed in the Noise Technical Analysis provided in Attachment D of the March 27, 2023, letter.

Impacts to endangered species and Wilderness areas will be further analyzed in the Environmental Assessment (EA) for the ATMP, which will be released in May and will include opportunity for public comment. Consulting parties will be notified when this is released.

Q.6. Are air tours allowed within the ½-mile buffer along the coast?

A.6. Yes, but only on specified routes in the proposed ATMP. Air tours would be allowed at the coast along the designated Coastal Route within the ATMP planning area, which must remain 2,000 feet from the coast and at an altitude of 2,000 feet above ground level. The Coastal Route does not extend along the coast in the Kakuhu-Pōhue unit of the park. Commercial air tours may also occur along the coast as long as they are outside of the ATMP planning area which would mean those specific flights would be outside the ½ mile buffer and above 5,000 feet AGL.

Q.7. Can the agencies consider expanding the APE to include other areas? Did noise modeling take into account the potential for air tours to continue or increase outside of the APE as a result of the reduction of flights in the ATMP planning area under the ATMP?

A.7. In establishing the APE, the agencies 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 agencies considered the flight track data, operator-reported routes, and reasonably foreseeable flight path changes to delineate the APE. More detail on APE is provided on page 5 of the March 27, 2023, letter and in Questions 3 and 4 above.

The effects assessment looks at the delta between the existing conditions and what is reasonably foreseeable under the ATMP. Air tour operators currently fly outside the ATMP planning area, and they would still be able to do so after the implementation of the ATMP. NPATMA does not regulate outside of the ATMP planning area, and the undertaking would not change that. It is difficult to predict with specificity if, where, and to what extent any air tours would fly in 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 Hawai'i Air Tour Common Procedures Manual and may vary greatly. These flights outside of the ATMP planning area were not included in the noise modeling as it would be too speculative to quantify in a meaningful way using specific metrics and measures as we do within the ATMP planning area where the routes are known. The Indirect Effects section of the March 27, 2023, letter goes into more detail on this issue.

Q.8. Are the agencies inviting attendees to provide written responses to the presentation?

A.8. No. The purpose of the consulting party meeting was to explain the finding of effects letter, which was sent to all consulting parties on March 27, 2023. The finding of effects letter has a 30-day comment period. Consulting parties are invited to provide written responses to the finding of effects letter, and to state whether they concur or do not concur with the findings. If sent through mail, the agencies will accept if it is postmarked by April 28, 2023. Contact information is provided in the letter and the last slide of the presentation.

Q.9. What is "reasonably foreseeable" in terms of where flights will increase as a result of these restrictions? Have the agencies considered cumulative impacts?

A.9. The agencies did consider reasonably foreseeable operations as a result of the ATMP implementation in developing the APE. See Questions 3,4, and 7 on where flights were determined to reasonably foreseeably increase.

Q.10. How were the designated flight paths under the preferred alternative chosen?

A.10. The NPS considered all the cultural and natural resources, Wilderness character and visitor experience in the areas, and past input from the public and consulting parties, to create the alternatives, and then sent the alternatives out for public comment. The agencies took public comments into consideration and deleted what was originally the third alternative and revised the fourth alternative which is now considered the third alternative and undertaking.

Q.11. Do the agencies have an idea of where air tour operators want to fly?

A.11. The operators have provided their existing routes, and the agencies also have flight tracking data for existing conditions.

Q.12. The proposed alternative is less harmful compared to the existing conditions, but shouldn't the agencies be looking at whether it is an "effect" not just "better?"

A.12. The agencies looked at how the undertaking may affect historic properties as compared to current conditions. Under Section 106 an agency may find that an undertaking has no effect, no adverse effect, or an adverse effect to historic properties. Effect means alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register. An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's significant features, such as a quiet setting or important viewshed. While the undertaking would cause an effect to some historic properties, the agencies have determined that it would not cause an *adverse* effect to those historic properties, as further described in pages 7-16 and summarized on pages 13 and 16 of the March 27, 2023, letter.

Overall, the undertaking is improving the existing conditions across the park, including the inland areas of the historic properties where noise increases are noted. The undertaking significantly reduces the number of air tours within the ATMP planning area, moves the air tours away from most sensitive cultural resources, avoids direct overflights of most historic properties, and increases the altitude at which air tours must fly, which avoids effects to many historic properties in the APE. The undertaking is not introducing new noise impacts or new visual impacts as air tours already exist in the ATMP planning area. Although the ATMP will shift authorized air tour operations to the three proposed flight routes and may expose some historic properties to increased noise and visual effects, any increases in noise and visual effects would not overall substantially diminish the integrity of these resources. The annual limit, time-of-day restrictions to avoid sunrise and sunset, QT incentives, and limiting flights to certain days of the week minimizes the likelihood that an air tour would interrupt Native Hawaiian traditional practices such as ceremonies, fishing, or other traditional activities, as compared to existing conditions. Furthermore, air tours are transitory in nature, and any noise and visual impacts to historic properties would be temporary, infrequent, and in many cases less intrusive than existing conditions in the Park. Therefore, the undertaking will not result in any adverse effects to historic properties in the APE.

Q.13. Why didn't the agencies choose the no air tour alternative (Alternative 2)?

A.13. Section 106 is a consultative process that does not require a particular outcome. The agencies' objectives were to develop an ATMP that protected park resources and considered concerns from affected parties without compromising aviation safety. The optimal set of conditions varies from park to park as a result. The terms and conditions of an ATMP are determined through analysis of impacts to resources, flight safety, and consultation with Native Hawaiians and other consulting parties. This process is how the agencies arrived at a particular preferred alternative. In the case of Hawai'i Volcanoes, Native Hawaiian organizations, park Kūpuna consulting groups, and individuals articulated a preference for zero air tours because of concerns about impacts from air tours. However, the size and topography of Hawai'i Volcanoes National Park provided several opportunities for reducing air tour impacts. The preferred alternative was developed to protect Park resources while allowing air tours by moving flights away from noise sensitive areas in the Park; creating no fly zones over the summits of Kilauea and Mauna Loa to provide greater protection from noise impacts to cultural resources, Native Hawaiian cultural practices, ceremonial sites, and Traditional Cultural Properties; setting minimum altitudes; significantly limiting number of flights; and establishing no fly days. Further information on how the preferred alternative was chosen will be provided through the NEPA process, and the consulting parties can review the Environmental Assessment (EA) that will be released to the public soon. Consulting parties will be notified when the draft EA and ATMP are available for review and what the specific comment period dates are when it is made available to the public.

Q.14. One consulting party questioned the potential precedent a no adverse effect finding might set. If the condition is already adverse, don't the agencies have to consider that? A comparison was provided where the National Park Service (NPS) owns a historic structure and is not maintaining it, and then the NPS has an undertaking that proposes to put a couple band-aids on it, they could say that is improving conditions and not causing an adverse effect.

A. 14. This comparison is not fair for this undertaking (the implementation of the ATMP). Commercial air tours have been operating over the Park for over 20 years. Prior to NPATMA, the FAA did not have the authority to 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. This is why the agencies are taking the existing condition as the baseline.

Q.15. How would the ATMP be enforced?

A.15. There will be monitoring and enforcement of the ATMP no later than 180 days after the effective date of the ATMP. Monitoring will include flight following and operator reporting. The NPS and the FAA are both responsible for the monitoring and oversight of the ATMP. If the NPS identifies instances of noncompliance, the NPS will report such findings to the FAA's Flight Standards District Office (FSDO) with geographic oversight of the Park, which is the Honolulu FSDO. The public may also report noncompliance with this ATMP to the FSDO. The FSDO will investigate and respond to all written reports consistent with applicable FAA guidance.

FAA determination of noncompliance may result in loss of authorization to conduct commercial air tours authorized by this ATMP. Any violation of OpSpecs shall be treated in accordance with FAA Order 2150.3, FAA Compliance and Enforcement Program.

Q.16. Have operators improved their safety measures?

A.16. The agencies do not have specific information for actions individual operators have taken as related to safety. However, operators must adhere to existing certification requirements and aviation regulations applicable to the area. In addition, the ATMP requires additional criteria such as having flight monitoring technology and reporting data to both the NPS and FAA, using a common frequency for in-flight communication to report when they enter and depart a route, and when made available, additional training.

Q.17. Is there an estimated timeline for release of the draft Environmental Assessment (EA) and ATMP?

A.17. The draft Environmental Assessment (EA) and draft ATMP will be released in May. Consulting parties will be notified when the documents are available for review and what the specific comment period dates are when it is made available to the public.