

**ENVIRONMENTAL ACTION STATEMENT SCREENING FORM  
FOR SAFE HARBOR AGREEMENTS**

**I. Project Information**

**A. Project name:**

Safe Harbor Agreement between the U.S. Fish and Wildlife Service (Service or USFWS) and Kamehameha Schools (Applicant) for Keauhou and Kilauea Forest Lands on the Island of Hawaii, Hawaii.

**B. Affected species:**

The species addressed under this Safe Harbor Agreement (Agreement) include the federally endangered Hawaii Creeper (*Oreomystis mana*), Hawaii Akepa (*Loxops coccineus coccineus*), Akiapolaau (*Hemignathus munroi*), Io (or Hawaiian hawk, *Buteo solitarius*), Nene (or Hawaiian Goose, *Branta sandvicensis*), Alala (or Hawaiian crow, *Corvus hawaiiensis*), Opeapea (or Hawaiian hoary bat, *Lasiurus cinereus semotus*) and twenty-five endangered plant species, including: *Asplenium peruvianum* var. *insulare*, *Clermontia lindseyana* (Oha wai), *Cyanea shipmanii* (Haha), *Cyanea stictophylla* (Haha), *Phyllostegia racemosa* (Kiponapona), *Phyllostegia velutina*, *Plantago hawaiiensis*, *Vicia menziesii*, *Argyroxiphium kauensis* (Ahinahina), *Clermontia peleana* (Oha), *Cyanea tritomantha* (Aku), *Cyrtandra giffardii* (Haiwale), *Cyrtandra tintinnabula* (Haiwale), *Hibiscadelphus giffardianus* (Hau kuahiwi), *Joinvillea ascendens* (Ohe), *Melicope zahlbruckneri* (Alani), *Neraudia ovata*, *Nothocestrum breviflorum* (Aiea), *Phyllostegia floribunda*, *Phyllostegia parviflora*, *Ranunculus hawaiiensis* (Makou), *Sicyos alba* (Anunu), *Sicyos macrophyllus* (Anunu), *Silene hawaiiensis*, and *Stenogyne angustifolia*. The Agreement also addresses a species proposed for Federal listing as threatened, the Iiwi (*Vestiaria coccinea*). These species are hereafter referred to as the “Covered Species.”

**C. Project size (in acres):**

The property (hereafter referred to as the “Enrolled Property”) subject to this Agreement encompasses 32, 280 acres of Keauhou and Kilauea Forest Lands owned in fee title by the Applicant on the Island of Hawaii in the State of Hawaii.

**D. Brief project description including conservation elements of the plan:**

The purpose of the Agreement is to conserve the Covered Species. The Service proposes to issue an Enhancement of Survival Permit under section 10 of the Endangered Species Act (ESA) to authorize take of these Covered Species by the Applicant in accordance with activities described in the Agreement on the 32, 280 acres of land covered under the Agreement.

Population declines of the Covered Species are due primarily to destruction and loss of habitat and negative effects from non-native species. Beneficial management activities, such as those described in this Agreement, are likely to contribute to the recovery and conservation of the Covered Species by maintaining, enhancing, and restoring habitat, controlling non-native species, and potentially expanding the range and distribution of the Covered Species within the Enrolled Property. The term of the proposed Agreement is 50 years.

The Enrolled Property is bounded by Federal lands to the west and south (Hawaii Volcanoes National Park), State lands to the east (Puu Makaala Natural Area Reserve) and north (Mauna Loa Forest Reserve), and State-leased lands to the north (Kipuka Ainahou Nene Sanctuary). The forests of Kilauea and Keauhou are separated by the Palakea fence line and are actively protected and managed by Kamehameha Schools for their natural and cultural resources. Kilauea Forest and Keauhou Forest are fully fenced and managed and maintained as “zero tolerance” for feral ungulates. The Kilauea Forest portion of the Enrolled Property is in the State of Hawaii’s Conservation District Protective subzone.

The Kilauea Forest portion of the Enrolled Property has been largely unaltered and has long been recognized for its native bird populations. The area within the Keauhou Forest boundary was formerly altered by ranching and logging operations. Ranching operations ended in 2003 and since that time both the Keauhou and Kilauea forests have been managed to preserve and restore native forests via fencing, ungulate removal, reforestation, and out-plantings of native and rare species. In addition to native forest restoration activities, portions of the Keauhou Forest (but not Kilauea) will, under the Agreement, also include forest management practices for the purposes of sustainably harvesting native hardwoods.

For purposes of the Agreement, forest habitat baselines were delineated into two “strata” (inside and outside Forest Bird Stratum 1) based on forest bird occupancy and vegetative characteristics (Section 5, Figure 3 of the Agreement). Populations of Covered Species of plants or “founders” (i.e., individual plants that occur naturally and whose ancestors are also thought to have occurred naturally), also occur primarily inside Forest Bird Stratum 1 (Section 5, Figure 6 - 7 of the Agreement). The two strata approach allows for clear management and monitoring decisions to be made based on species occupancy.

The Agreement also includes provisions for surveys and monitoring of the Covered Species throughout the term of the Agreement.

### Covered Activities

Covered Activities associated with the SHA include: (1) removal of invasive predators; (2) habitat restoration and native plant community outplantings; (3) koa silviculture; (4) ungulate fence installation/maintenance and ungulate control; (5) invasive weed control; (6) fire threat management; (7) response efforts for Rapid Ohia Death; and (8) other activities on the Enrolled Property that are not likely to result in take of the Covered Species due to the incorporation of avoidance and minimization measures. All of the Covered Activities are associated with the

maintenance and enhancement of native forest, and are likely to result in a net benefit to each of the Covered Species.

Under the Agreement, the Applicant will implement conservation measures and provide a large expanse of habitat to benefit the Covered Species and to facilitate an increase in their ranges and populations. The cumulative management activities that will be implemented pursuant to this Agreement directly support recovery actions and conservation objectives outlined in conservation and recovery plans for the Covered Species (USFWS 1984a, USFWS 1984b, USFWS 1996, USFWS 1998a, USFWS 1998b, USFWS 1998c, USFWS 2004, USFWS 2006, USFWS 2009, Hawaii DLNR 2015, and Fraiola and Rubenstein 2007) including: protection, management, restoration, and conservation of suitable and known habitat, ungulate control, alien species control, and re-establishing connectivity of current fragmented habitats.

### ***Removal of Predators***

The Covered Species under this Agreement are extremely vulnerable to mammalian disturbance and predation. Under this Agreement, predator control strategies will be implemented to protect both native plants and animals, and increase their survivorship. Under this Agreement, predator control strategies will target rodents (rats and mongoose) and feral cats and dogs. The Applicant will remove feral dogs to eliminate the threat of feral dogs to the Nene and other Covered Species. These activities are likely to result in significant beneficial effects to the Nene and the Alala.

Additionally, if Alala occupy the Enrolled Property in the future, the Applicant agrees to allow access for predator control efforts and monitoring through the coordination of the multi-agency Alala Working Group (AWG), of which Kamehameha Schools is a member. The type and level of predator control would be determined by the location, distribution, and breeding status of the Alala occurring on the Enrolled Property. Alala are extremely curious, and it is anticipated that predator control activities and traps will need to be modified so that Alala are not attracted to, and inadvertently harmed or captured by these activities. Predator control activities to benefit the Alala will be determined by the AWG and informed by best information available at the time. Any adverse effects to Alala likely to result from predator control activities will be addressed in and covered by the ESA section 7 consultation associated with issuance of an ESA section 10(a)(1)(A) Recovery Permit for the reintroduction of the species, and are not addressed under this Agreement. Predator control activities to protect the Alala from mammalian predators on the Enrolled Property will also likely have direct benefits to the other Covered Species included in this Agreement.

To avoid and minimize potential adverse effects to Covered Species from predator control activities, the following measure is incorporated in to the Agreement:

Predator control activities to benefit the Alala and other Covered Species shall be designed and implemented in a manner that is consistent with those considered for issuance of the Recovery Permit issued by the Service for reintroduction of the Alala into the wild, and consistent with

any applicable terms and conditions under that Recovery Permit with respect to predator control activities.

### ***Restoration & Outplanting***

Forest restoration involving the outplanting of a variety of common native tree and shrub species has been an ongoing activity by the Applicant and watershed partners for over a decade. This action will continue year-round under the Agreement to increase biodiversity and native forest cover across the Enrolled Property. Forest restoration activities include out-planting of native common and rare species and improvement of existing forested areas. Work will occur throughout the Enrolled Property with a minimum of 20,000 native seedlings planted every five years throughout the life of the Agreement. Site preparation may include the use of herbicide, mechanical spot cultivation, scarification or hand clearing. All plants used for outplanting will be grown in facilities that employ best management practices for propagation, including phytosanitation protocols. Genetics, historic range, habitat suitability, climate change, and best practices will be considered in site selection and outplanting. Under the Agreement, these restoration efforts are likely to contribute to forest diversity and to provide high quality habitat and beneficial effects for forest birds, the Hawaiian hawk, and the Hawaiian hoary bat. This activity is also likely to benefit the Alala should it occupy the Enrolled property in the future.

To avoid and minimize adverse effects to Covered Species from restoration and outplanting activities, the following measures are incorporated into the Agreement:

- All personnel working on forest restoration will receive training on the tasks they are performing and on avoiding impacts to Covered Species (animal and plant) prior to starting work, or be directly overseen during field work by an individual so-trained.
- A minimum of 50-foot, no disturbance buffers will be established around known individual founder plants of the covered plant species.
- No work will occur around known nests of covered bird species during each species' breeding season (Section 6.1.2, Table 5 of the Agreement).

The above measures are not likely to fully avoid adverse impacts to covered plant species, with the exception of three species of special concern (“Special Concern Species”). While efforts will be made to protect plant Covered Species founders, restoration activities may result in the loss or destruction of individual plants (outplants, propagules). Additionally, due to the ephemeral nature of some of the plant Covered Species life histories, plants may be missed during surveys, resulting in their loss or destruction from restoration activities. The Service anticipates the impact of this loss to be minor or negligible to the survival and recovery of the Covered Species because only a limited number of individual plants are likely to be adversely affected and many more individuals are likely to be beneficially affected.

Based on the incorporation of avoidance and minimization measures, no adverse effects are likely to occur under the Agreement to forest bird species, the Alala, Nene, Hawaiian Hawk, or to the Hawaiian hoary bat during their respective breeding seasons. While all of these species

may be temporarily displaced or flushed by disturbance in the non-breeding season, it is not likely to result in harm (i.e., reduced fitness or survivorship).

To ensure full avoidance of adverse effects to the three Special Concern Species (*Vicia menziesii*, *Phyllostegia racemosa*, and *Cyanea stictophylla*), the Applicant will ensure restoration and silviculture activities which occur in the Area of Additional Conservation Measures (Section 5, Figure 7 of the Agreement) will include the following protective measures: (1) staff/contractors will be trained by experts in species identification and on how to minimize adverse impacts to Special Concern Species; (2) 50-foot buffer areas around known or recently known locations of Special Concern Species will be surveyed by a species expert in advance of implementing restoration and silviculture activities; (3) ground-disturbing machinery shall be prohibited within marked 50-foot buffer areas around Special Concern Species; (4) tree-felling and thinning operations shall be prohibited within the 50-foot buffer areas around Special Concern Species; and (5) monitoring within the designated 50-foot buffers of Special Concern Species shall be implemented after the management activity/disturbance is implemented. It is anticipated that these measures are likely to collectively avoid all adverse effects to the three Special Concern Species.

### ***Silviculture***

Under the Agreement, the Applicant plans to continue Koa silviculture activities which they have done on the Enrolled property for over 40 years. After phasing out cattle operations in 2003, the Applicant began reforestation and silviculture activities on the former Keauhou Forest pasture lands. These activities include reforestation and stand improvement (thinning and selective harvest). In addition to the 600 acres of koa established on the parcel since 2005, the Applicant plans to restore approximately 1000 acres of new koa forest in formerly logged areas and degraded pasture lands on the Enrolled Property during the 50-year term of the Agreement. Benefits from these activities are anticipated to be an increase in nesting and foraging habitat for Hawaiian forest birds (the Akiapolaau, Hawaii Creeper, Akepa, Iiwi, and the Alala), the Hawaiian hawk, and the Hawaiian hoary bat. These species are likely to greatly benefit from additional restored habitat of high quality, increased food resources provided by that habitat, and improved habitat connectivity.

Reforestation practices and mixed age selective harvest will follow criteria outlined in the Agreement and threat minimization measures will be implemented based on the stratum in which the activity will occur (Section 6.1.3, Table 6 and Figure 3 of the Agreement). Silviculture activities are separated into those that will occur *inside* Forest Bird Stratum 1 where Covered Species of forest birds, plants, the Hawaiian hoary bat, and the Hawaiian hawk are present, and those silviculture activities that will occur *outside* Forest Bird Stratum 1 where Covered Species include the Hawaiian hoary bat and the Hawaiian hawk. Threat minimization measures for these respective areas are as follows:

### Forest Bird Stratum 1

To avoid adverse impacts to wildlife Covered Species in Forest Bird Stratum 1 (outlined in Section 5 “Baseline Determination” of the Agreement), the Applicant will not conduct selective harvesting, clearing of understory, thinning, or other such land management activity during the breeding seasons (January – September) of the covered forest bird species, the Alala, Nene, Hawaiian hoary bat, and the Hawaiian Hawk. No more than two, live-standing, old growth ohia and koa trees greater than 10 meters in height and more than 65 centimeter dbh (diameter at breast height) will be cut in any 10-year period within this Stratum. Although forest birds, the Alala, Hawaiian hoary bat, and the Hawaiian Hawk may be temporarily disturbed or flushed during the non-breeding season by these activities, this disturbance is not likely to significantly disrupt their normal feeding, breeding, or roosting behavior/activities and is not likely to result in harm (i.e., result in reduced fitness or survivorship). No adverse impacts to wildlife Covered Species are likely to occur from silviculture activities that occur outside of the breeding season. Therefore, this measure is likely to fully avoid adverse impacts to the wildlife Covered Species associated with silviculture activities.

### Forest Bird Stratum 2

To avoid adverse impacts to the Hawaiian hoary bat and the Hawaiian Hawk in Stratum 2, the Applicant will not conduct selective harvesting, thinning, or other such land management activity affecting trees greater than 15-feet in height during the breeding seasons (March - September) of the Nene, Hawaiian hoary bat, and the Hawaiian Hawk. For that reason, this disturbance is not likely to significantly disrupt their normal feeding, breeding, or roosting behavior/activities and is not likely to result in harm (i.e., result in reduced fitness or survivorship). No adverse impacts to the Alala are likely to occur with implementation of these Covered Activities as the species is not likely to utilize areas outside of Forest Bird Stratum 1.

Take of forest bird Covered Species (the Akiapolaau, Hawaii Creeper, Hawaii Akepa, and the Iiwi) is likely to occur from covered silviculture activities when those species become established in new koa stands. Koa thinning activities will be conducted in accordance with the methods and schedule described in Section 6.1.3 of the Agreement. At the time of harvest, it is anticipated that an individual koa stand will support low densities of breeding forest bird Covered Species. While selective harvest will still continue to provide valuable habitat for forest bird use, it is also likely that harvest will result in the take of forest bird nests either from disturbance caused by harvest activities or direct loss. However, these adverse effects to forest bird Covered Species are likely to be more than offset by the increase in high quality forest habitat likely to be caused by silviculture and other activities covered under the Agreement. This increase is likely to facilitate an increase in forest bird Covered Species distribution and abundance on the Enrolled Property.

## Measures Common to Both Forest Bird Stratum 1 and Stratum 2

To avoid and minimize adverse effects to plant Covered Species from silviculture activities, the following measures are incorporated into the Agreement:

- No disturbance buffer distances of a minimum of 50 ft will be established around known individual founder plants of Covered Species.
- No more than two live-standing, old growth ‘ōhi‘a and koa trees > 10 m in height and > 65 cm dbh will be cut every 10 years in Forest Bird Stratum 1.
- All personnel working on silviculture activities will receive training by experts on the tasks they are performing and on avoiding impacts to Covered Species of plants prior to starting work, or be directly overseen during field work by an individual so-trained.

While these measures will minimize the potential, it is likely that some adverse effects to plant Covered Species will occur. While efforts will be made to protect plant Covered Species founders, silviculture activities may result in the loss or destruction of individual outplants/propagules. Additionally, due to the ephemeral nature of some of the plant Covered Species life histories, plants may be missed during surveys, resulting in their loss or destruction from silviculture activities. The Service anticipates the impact of this loss to be minor or negligible to the survival and recovery of the Covered Species because relatively few individuals are likely to be adversely affected and many more individuals are likely to benefit from these and other activities implemented under the Agreement.

To ensure full avoidance of adverse impacts to three plant species of special concern (*Vicia menziesii*, *Phyllostegia racemosa*, and *Cyanea stictophylla*), the Applicant will ensure restoration and silviculture activities which occur in the Area of Additional Conservation Measures (Section 5, Figure 7 of the Agreement) will include the following protective measures: (1) staff/contractors will be trained by experts in species identification and on how to minimize adverse impacts to Special Concern Species; (2) 50-foot buffer areas around known or recently known locations of Special Concern Species will be surveyed by a species expert in advance of implementing restoration and silviculture activities; (3) ground-disturbing machinery shall be prohibited within marked 50-foot buffer areas around Special Concern Species; (4) tree-felling and thinning operations shall be prohibited within the 50-foot buffer areas around Special Concern Species; and (5) monitoring within the designated 50-foot buffers of Special Concern Species shall be implemented after the management activity/disturbance is implemented. It is anticipated that these measures are likely to collectively avoid all adverse effects to the three Special Concern Species.

### ***Fencing and Ungulate Management***

The Enrolled Property has been managed as an ungulate-free (“zero-tolerance”) fenced conservation management area since 2005. Ungulate management and fencing have been conducted by the Applicant in partnership with the Three Mountain Watershed Alliance (TMA)

and neighboring landowners from Hawaii Volcanoes National Park and the adjacent State-owned Puu Makaala Natural Area Reserve (NAR). For the 50-year term of the Agreement, the Applicant will continue to actively manage the Enrolled Property as an ungulate-free fenced conservation management area (~29,000 acres). The Applicant will check the integrity of the fences at least quarterly. Fencelines will be replaced as their condition deteriorates during the term of the Agreement. Methods utilized for control of ungulates may include: trapping, snaring, and hunting. The maintenance of the Enrolled Property as ungulate-free will result in a net benefit to all Covered Species over the term of the Agreement.

To avoid adverse impacts to the Hawaiian hoary bat, which is known to collide with barbed wire fences (Zimpfer and Bonnacorso 2010), the Applicant has removed all barbed wire from their external management fences and will remove remaining barbed wire above grass level from leased land and internal management fences during the Agreement. New management fences or fences that will be replaced on the property during the term of the Agreement will not include a top strand of barbed wire. On that basis, no new fences are likely to result in take of Hawaiian hoary bats. Existing fences that have not yet been retrofitted do pose a possible threat to Hawaiian hoary bats, however, the likelihood of take is discountable (extremely unlikely to occur) because best available information from analysis of known incidents indicate that the rate of take is approximately 0.0010869 bats snagged per linear mile. Given the small amount of remaining barbed wire and the plans to retrofit existing wire as fences are replaced, any take associated with remaining barbed wire is not likely to occur.

To avoid adverse impacts to all of the Covered Species, any new fence lines will be planned to fully avoid plant Covered Species and sensitive areas where bird Covered Species are known to occur. Tree/shrub removal will be restricted as described in the Silviculture section (Section 6.1.3, Table 6. of the Agreement) to avoid impacts to forest birds, the Alala, Nene, Hawaiian hawk, and the Hawaiian hoary bat during their breeding seasons.

Detection of some individuals of some listed plant species could be missed during surveys due to their life history. For that reason, these species may be impacted by the construction of a new fence line; however, this threat is considered discountable (extremely unlikely to occur) because of the training required for all monitors and the high level of monitoring occurring on the property.

To avoid adverse impacts from ungulate control efforts on the Nene, hunting with dogs will only occur when dogs are under the direct control of a handler, and will not be used as a management tool in areas where molting or nesting Nēnē are known to occur. The inclusion of this measure is likely to fully avoid adverse effects to the Nene from ungulate control efforts.

To ensure full avoidance of adverse impacts to the three plant species of special concern (*Vicia menziesii*, *Phyllostegia racemosa*, and *Cyanea stictophylla*), the Applicant will ensure restoration and silviculture activities that are implemented in the Area of Additional Conservation Measures (Section 5, Figure 7 of the Agreement) will include the following protective measures: (1) staff/contractors will be trained by experts in species identification and

on how to minimize adverse impacts to Special Concern Species; (2) 50-foot buffer areas around known or recently known locations of Special Concern Species will be surveyed by a species expert in advance of implementing restoration and silviculture activities; (3) ground-disturbing machinery shall be prohibited within marked 50-foot buffer areas around Special Concern Species; (4) tree-felling and thinning operations shall be prohibited within the 50-foot buffer areas around Special Concern Species; and (5) monitoring within the designated 50-foot buffers of Special Concern Species shall be implemented after the management activity/disturbance is implemented. It is anticipated that these measures are likely to collectively avoid all adverse effects to the three Special Concern Species.

### ***Weed Control***

The Applicant currently conducts, and will, under the Agreement, continue efforts to control and suppress weeds on the Enrolled Property to protect native habitat from being invaded by non-native, ecosystem-altering species. Past weed control efforts have focused on priority weeds including Myrica faya (*Morella faya*), ginger (*Hedychium gardnerianum*), strawberry guava (*Psidium cattleianum*) and Himalayan raspberry (*Rubus ellipticus*). The Applicant will suppress priority weeds below 10% on the Enrolled Property within conservation fences provided that adjacent landowner management includes continued weed control. All of the Covered Species are likely to benefit from weed control activities occurring under the Agreement.

Methods for controlling weed species may involve manual, mechanical and herbicide control. Aerial herbicide application in grasslands and low stature tree stands (e.g., blackberry stands) may be considered by the Applicant in areas where Covered Species are not present. Additionally, the Applicant may consider the application of aerial pesticides in their forestry management operations. If the Applicant anticipates aerial spraying of herbicides or pesticides in Forest Bird Stratum 1, they will coordinate with the Service and DLNR on appropriate adverse impact avoidance and minimization measures.

To avoid and minimize adverse effects to Covered Species, the following additional measures will be incorporated into all weed control activities implemented under the Agreement:

- All personnel working on weed control will receive training on the tasks they are performing and on avoiding impacts to Covered Species prior to starting work, or be directly overseen during field work by an individual so-trained.
- A minimum of 50-foot, no disturbance buffers will be established around known individual founder plants of Covered Species.
- No work will occur around known nests of covered bird species during the breeding seasons (Table 5).
- Within Forest Bird Stratum 1, no chemical herbicides or chainsaws will be used on trees with known nests of covered bird species or within 50 feet of known nest trees

of covered bird species during the breeding season.

- Within and outside of Forest Bird Stratum 1, no chemical herbicides or chainsaws will be used within 50 feet of known Nene or Io nests during their breeding seasons.
- Low-impact weed suppression, such as herbicide spraying with a backpack, may occur year-round on the Enrolled Property provided that 50-foot buffers are established near known nests of covered bird species.

Incorporation of the above measures will not fully avoid adverse impacts to Covered Species. Weed control activities may result in the loss or destruction of individuals of covered plant species (outplants, propagules), excluding Special Concern Species. Additionally, due to the ephemeral nature of some of these species' life histories, individual plants may be missed during surveys and subject to injury or death from weed control activities. However, this impact is anticipated to be minor or negligible to the survival and recovery of the Covered Species because many more individuals are likely to be benefitted than are adversely impacted by weed control activities. Based on specific protective measures prescribed under the Agreement (see Section 6.2.1), no adverse impacts are expected to the three Special Concern Species (*Vicia menziesii*, *Phyllostegia racemosa*, and *Cyanea stictophylla*).

For covered bird species (forest birds, the Alala, Hawaiian hawk, and the Nene), 50-foot no disturbance buffers will be established around all known active nest sites during the forest bird breeding season (January-September). However, the occasional use of mechanical methods to remove weeds outside of the 50-foot buffer may result in harassment of breeding adults, leading to nest abandonment or reduced fitness or survivorship of dependent young. Additionally, due to their cryptic nature, some forest bird nests in trees may be missed during surveys, and therefore not receive the protective buffer. Mechanical weed control around nests that were not found and protected with the 50-foot buffer are likely to be abandoned or have reduced success. However, this impact is anticipated to be minor or negligible to the survival and recovery of the Covered Species because many more individuals of the covered bird species are likely to be benefitted than are adversely impacted by weed control activities.

Although adult Hawaiian hoary bats may be temporarily displaced or flushed due to disturbance throughout the year in conjunction with weed control activities, this disturbance is not likely to result in harm (i.e., reduced fitness or survivorship) because such disturbance is not likely to result in a significant disruption of their breeding, feeding, and sheltering behavior.

### *Fire Threat Management*

Under the Agreement, the Applicant will maintain water sources to include tanks and reservoirs located on the Enrolled Property for the purposes of fire suppression. The Applicant will also maintain roads, which are vital for effective fire management and suppression. The Applicant's fire prevention plan includes employee education and awareness, continued good neighbor

relations, and awareness of present fire conditions. In addition, the Applicant works cooperatively with the NPS and DLNR on fire suppression assistance. The Applicant will maintain a similar water storage capacity (225,000 gallons) and water distribution system as exists today. The specific locations of water sources may change over the 50-year term of the Agreement. Controlled burning may be utilized in the event of a fire to minimize spread. Due to the devastating effects of fire within Hawaiian ecosystems, particularly in areas of high endemic biodiversity, these fire threat management activities are likely to result in substantial benefits to all of the Covered Species.

To avoid the potential for adverse effects to Covered Species, the following measures have been incorporated into the Agreement:

- Except in cases of active fire suppression, the tree/shrub cutting restrictions shown in Table 6 (Section 6.1.3 of the Agreement) will be followed.

No adverse impacts to any Covered Species are anticipated from fire threat management activities because the Covered Species are unlikely to occur in the immediate vicinity of the tanks, reservoirs, and roads, and incorporation of avoidance and minimization measures for tree and shrub removal will avoid adverse effects to breeding birds or the Hawaiian hoary bat.

#### *Response to Rapid Ohia Death*

Due to the recent outbreak of Rapid Ohia Death (ROD) on Hawaii Island, special procedures will be required to prevent the spread of this disease or related epidemic diseases. Any activities related to ROD or other disease epidemics that would be implemented on the Enrolled Property and that could affect Covered Species would be those prescribed by regulatory agencies or researchers from universities or government agencies and these activities would be coordinated with the Service and DLNR. Based on the threat of ROD being spread and guidance prescribed by the agencies managing this threat, the following measures to avoid and minimize adverse effects to Covered Species caused by the response to Ohia death have been incorporated into the Agreement:

- Unless otherwise directed by the Service and DOFAW in writing, all tree/shrub cutting restrictions as shown in Table 6 of the Agreement shall be implemented on the Enrolled Property.
- All personnel working on ROD response shall receive training on the tasks they are performing and on avoiding and minimizing impacts to Covered Species (animal and plant) prior to starting work, or be directly overseen during field work by an individual so-trained.
- To prevent the spread of ROD, the most up to date guidance will be followed.
- All actions taken for ROD response will avoid direct impacts to covered plant species.

It is anticipated that the inclusion of these avoidance and minimization measures will fully avoid adverse effects to all of the Covered Species because ROD response will be timed and planned to avoid any adverse effects.

### Other Activities on the Enrolled Property

Covered activities described below may or may not be implemented during the 50-year term of the Agreement and will be dependent on financial and managerial decisions within the Applicant's management and leadership team. All participants in these Covered Activities will receive information describing the Covered Species in the area proposed for the activity and any applicable restrictions imposed by the Agreement. The Applicant will incorporate restrictions into all new and renewed access agreements, leases, licenses and other similar agreements that provide for access on the Enrolled Property so others are aware of the adverse impact avoidance and minimization measures included in the Agreement, and act in accordance with its provisions. Access agreements will also specify that any sub-access agreements issued by the Applicant's lessees and licensees must also include such restrictions. Some activities listed below will be restricted to areas that are not designated as Conservation District Land, as per applicable requirements specified in State law and implementing rules unless applicable permits are obtained.

Activities covered under the Agreement that could occur on anywhere on the Enrolled Property:

- Educational activities.
- Ecotourism activities, such as guided hikes and overnight stays; filming and photography.
- Scientific research to be conducted on the Enrolled Property.
- Restoration of existing man-made structures, including the Keawewai cabin located in Forest Bird Stratum 1.
- Traditional and cultural practices.
- Gathering of non-timber forest products for cultural and educational purposes.
- Natural resources management trainings, such as primary bird counting and rare plant identification.
- Construction and operation of a network of trails. Trail construction activities may result in the loss or destruction of individual outplants or propagules of covered plant species, excluding Special Concern Species. Additionally, due to the ephemeral nature of some of these species' life histories, individual plants may be missed during surveys, resulting in their damage or loss as a result of trail construction or use. The impact of this loss or damage is anticipated to be minor or negligible to the survival and recovery of the covered plant species because of the extremely low likelihood of adverse effects and the complete avoidance of founder and reproductive individuals.
- Road construction activities. Road construction and maintenance is vital for natural resource management activities. Road construction activities may result in the loss or damage of individuals of covered plant species outplants and propagules, excluding

Special Concern Species. Additionally, due to the ephemeral nature of some of these species' life histories, individual plants may be missed during surveys, resulting in their damage or loss as a result of road construction activities. The impact of this loss or damage is anticipated to be minor or negligible to the survival and recovery of the covered plant species because of the extremely low likelihood of adverse effects and the complete avoidance of founder and reproductive individuals.

- Gathering of non-timber forest products, excluding propagules of the covered plant species, for commercial purposes with the proper permits obtained.
- Salvaging of fallen trees. To prevent the spread of ROD, any salvaging will be done following the ROD avoidance measures identified in Section 6.1.7 of the Agreement in order to reduce the spread of ROD.

Activities that could occur on the Enrolled Property only outside of Forest Bird Stratum 1:

- Construction and maintenance activities such as for ecotourism infrastructure (cabins, camp sites, raised platforms for bird viewing, etc.), a cultural interpretive center, or management infrastructure to include office and maintenance facilities, nursery facilities, a decontamination facility, management shelters, composting toilets, water catchment/storage, or fire-control infrastructure.
- Construction and operation of a field station to support conservation activities conducted by partners as well as education opportunities for students. The field station will enhance the ability to collect information for conservation and management purposes.
- Natural resource management trainings, such as all terrain vehicle, chainsaw, wilderness first aid, and wildland fire training.

The following measures are included in the Agreement for activities described in this section to avoid and minimize potential adverse effects to the Covered Species caused by the above covered activities:

- Helicopter landing zones will not be designated in areas where covered bird species (the Akiapolaau, Hawaii Creeper, Hawaii Akepa, Nene, Alala, and the Hawaiian Hawk) are known to nest.
- Any clearing activities for trails will occur outside of the breeding season for Covered Species (Section 6.1.2, Table 5 of the Agreement) and the tree/shrub cutting restrictions listed in Table 6 (Section 6.1.3 of the Agreement) will be applied.
- Any road construction activities will occur outside of the breeding season for Covered Species within Forest Bird Stratum 1 (Section 6.1.2, Table 5 of the Agreement), the tree/shrub cutting restrictions listed in Table 6 (Section 6.1.3 of the Agreement) will be applied, and disturbance/footprint will be kept to the minimum necessary to conduct these activities (use of small or hand equipment, reduced edge clearing, minimum road width).
- Salvage of dead and fallen trees or dead, standing trees will be done outside the breeding season for Covered Species within Forest Bird Stratum 1 (Table 5 Section 6.1.2 of the Agreement) and the tree/shrub cutting restrictions listed in Table 6 (Section 6.1.3 of the

- Agreement) will be applied.
- Construction of infrastructure facilities will not occur during the breeding season of any Covered Species known to have an active nest in the area.
  - Natural resource management activities will comply with the tree/shrub cutting restrictions listed in Table 6 (Section 6.1.3 of the Agreement).

With the above avoidance and minimization measures, no adverse impacts to Covered Species are anticipated for the activities described in this section because these measures avoid Covered Species exposure to stressors or minimize the effects of such exposure to a level of insignificance. The overall benefit to the Covered Species of the activities described above is their contribution to the overall awareness of and support for conservation in Hawaii and for species recovery.

### Covered Species Baseline

Baseline conditions are defined as the existing estimated population size and/or the extent and quality of habitat for the Covered Species on the Enrolled Property. Baseline conditions are species-specific and have been determined by surveys of the Enrolled Property undertaken by a person(s) deemed qualified by the Service and DLNR. The Service and DLNR have determined that site conditions have not changed since these surveys were completed and that these survey results accurately represent current species occurrences and distributions. Due to lack of statistical power in quantifying population numbers for rare forest bird Covered Species and the Hawaiian Hawk, and the inability to quantify the population size of the Hawaiian hoary bat using currently available methodologies, habitat was used as the baseline metric for these species (Section 5, Tables 3-4 of the Agreement).

Below are descriptions of each baseline condition respective to the Covered Species and the anticipated conservation benefit to these species provided by the Agreement. Baselines for the Covered Species are also depicted in maps (Section 5, Figures 3-7 of the Agreement) and these maps are referenced under each species baseline description.

### Forest Birds

#### *Baseline Condition*

Three federally endangered forest birds (the Akiapolaau, Hawaii Creeper, and the Hawaii Akepa), and one species proposed for listing as threatened (the Iiwi), occur in the Keauhou-Kilauea region. Due to lack of statistical power in quantifying population numbers for rare forest bird species, the extent and quality of occupied habitat was used as the baseline metric.

These species are present on the Enrolled Property in the area marked in Figure 3 of the Agreement. Based on this information, habitat baselines were delineated into two “strata” based on forest bird occupancy and vegetative characteristics (Jacobi 1989, 2016 in prep.). The two-

strata approach allows for clear management or monitoring decisions to be made based on species occupancy.

The habitat baseline for the Akiapolaau, Hawaii Creeper, Hawaii Akepa, and the Iiwi is 4,162 acres of occupied habitat within Forest Bird Stratum 1 dominated by mesic and wet koa and ohia forests (Section 5, Figure 3 of the Agreement).

#### *Conservation Benefit of Covered Activities to Covered Forest Bird Species*

Fence maintenance and ungulate management activities described in the Agreement are likely to provide for an increase in closed canopy cover or an increase in open canopy tree cover without a decrease in closed canopy tree cover and understory regeneration over the 50-year term of the Agreement. Such an increase would be considered a net benefit to forest bird Covered Species on the Enrolled Property because it reflects an increase in the capacity of forest habitats on the Enrolled Property to support the distribution and abundance of the forest bird covered species. The young koa stands planted by the Applicant are also likely to increase the habitat and food availability for forest birds and may serve as important foraging areas for rare bird species. Outplanting of native vegetation, preservation of old growth trees in Forest Bird Stratum 1, and maintenance of water sources and roads for fire suppression on the Enrolled Property under the Agreement will also enhance the recovery of forest bird Covered Species by increasing and protecting their habitat. Habitat management activities, including weed control, fencing and ungulate control, and habitat restoration and outplanting will be avoided during the nesting season (January- September) of the forest bird Covered Species to ensure undisturbed conditions for the Covered Species to complete the breeding cycle. Predator control activities implemented under the Agreement are likely to reduce predation of forest bird Covered Species by non-native mammals such as rats and mongoose.

#### *Threat Minimization*

In Forest Bird Stratum 1 (Section 5, Figure 3) where the Covered Species of forest birds are present, clearing of understory, koa thinning, or other such land management activity will be avoided during the forest bird nesting periods (January- September). No more than two live standing, old growth 'ōhi'a and koa trees > 10 m in height and > 65 cm dbh will be cut in any 10-year time frame inside Forest Bird Stratum 1. Preservation of old growth koa and ohia trees in Forest Bird Stratum 1 may provide nesting habitat for forest bird species.

#### Hawaiian Hawk

##### *Baseline Condition*

Surveys for Hawaiian hawks were conducted in the Keauhou and Kilauea forests, and this species was present on the Enrolled Property (Gorresen et. al, 2008). Similar to the forest birds covered under this Agreement, low densities of Hawaiian hawks on the Enrolled Property make it difficult to reliably estimate its population size on the Enrolled Property. Due to the lack of

statistical power in quantifying a population size for the Hawaiian hawk, habitat was used as the baseline metric. The baseline for the Hawaiian hawk on the Enrolled Property is approximately 18,517 acres of open or closed canopy tree cover as depicted in Section 5, Figure 4 of the Agreement.

#### *Conservation Benefit of Covered Activities to the Hawaiian Hawk*

Fence maintenance and ungulate management activities described in the Agreement are likely to provide for an increase in closed canopy cover or an increase in open canopy tree cover without a decrease in closed canopy tree cover and understory regeneration over the 50-year term of the Agreement. Such an increase is likely to also represent an increase in the preferred nesting habitat of the Hawaiian Hawk on the Enrolled Property.

Specific activities to be implemented under the Agreement that would enhance, restore, and maintain/protect native forests to benefit the Hawaiian hawk are forest restoration, fencing and ungulate control, weed control, and fire threat management. These activities would be highly beneficial to the current population of the Hawaiian hawk and would likely facilitate an increase its numbers and distribution on the Enrolled Property.

#### *Threat Minimization*

On the entire Enrolled Property there will be no timber harvesting, clearing of understory, thinning, weed control or other such land management activity within 500 feet of known Hawaiian hawk nesting trees during their nesting period (March – September).

#### Alala

##### *Baseline Condition*

Zero; the Alala is currently extirpated from the wild. A reintroduction plan for the Alala has been developed, and high-priority reintroduction sites are in close proximity to the Enrolled Property. The first releases of the Alala will occur over a 5-year period on State-protected land (Puu Makaala Natural Area Reserve) adjacent to the Enrolled Property beginning in November of 2016. Historically, the Alala was known to be present from the North Kona District to the vicinity of Kilauea Crater in the Kau District of Hawaii. Habitat conditions in Forest Bird Stratum 1 rank high in potential and quality of habitat for the Alala (Price and Jacobi, 2007). Potential release efforts adjacent to the Enrolled Property, if successful, indicate a high likelihood for the Alala to subsequently occupy the Enrolled Property. However, since this species does not currently exist in the wild, the baseline for the Alala under the Agreement is zero (0).

### *Conservation Benefit of Covered Activities to the Alala*

The maintenance and enhancement of habitat conditions for forest birds likely to result with implementation of the Agreement is likely to also provide protected high quality habitat for the Alala. If Alala occupy the Enrolled Property and begin to nest there in the future, the Applicant agrees to allow access for predator control efforts and monitoring in coordination with the multi-agency Alala Working Group, of which Kamehameha Schools is a member. Effective fencing, ungulate management, weed control, fire threat management, and predator removal are all likely to have significant beneficial effects to the survival and recovery of the Alala if it occupies the Enrolled Property. Restoration and outplantings are also likely to increase the amount and quality of available habitat and food resources for the Alala, which may facilitate an increase in its reproduction, numbers, and distribution on the Enrolled Property.

### *Threat Minimization*

If Alala occur on the Enrolled Property in the future, the same measures to avoid impacts to the other forest bird Covered Species will apply (see above). The Alala is not anticipated to occur outside of Forest Bird Stratum 1 habitat.

### Nene

#### *Baseline Condition*

DOFAW conducted weekly Nene surveys on the Keauhou and Kilauea portions of the Enrolled Property between October 2012 and February 2013 and portions of Applicant-leased lands between October 2014 and February 2015. The 2012-2013 Nene surveys included known nesting sites, previous Nene release sites, Nene telemetry locations, DOFAW's Nene sanctuary cabin site, reservoirs and known watering sites.

Recent surveys estimate that two breeding pairs (four Nene) still utilize the Keauhou Ranch area near the Keauhou Bird Conservation Center (KBCC) and approximately another 20 non-breeding Nene may transit the property during the non-breeding, flocking season. Non-breeding Nene are not resident and are not dependent on the Enrolled Property for breeding, feeding, or sheltering. Additionally, results of the survey indicate that one or two pairs of Nene were often observed in the vicinity of the DOFAW Nene cabin predator exclosures (Section 5, Figure 5 of the Agreement). No Nene nests were observed during the Applicant-leased lands surveys in 2014-2015, although some nesting behavior was observed for a single pair of Nene near KBCC.

Although the KBCC area is used by Nene, since 2003, biologists from the Hawaii Volcanoes National Park ("HAVO"), KBCC, DOFAW, and the Service have been working to encourage Nene nesting in areas away from KBCC because breeding amongst the buildings and parking lots of KBCC is not likely to result in successful fledging of young. If Nene nests become established near KBCC, Nene families are moved to Ainahou at HAVO shortly after successful

nests hatch out goslings. Thus far, this strategy has been successful, as offspring that are moved shortly after hatching have not returned to nest at KBCC and are nesting at HAVO. This management strategy increases the likelihood that Nene will become more prolific in areas where human interaction is minimized.

Based on the above information, for purposes of this Agreement, the baseline for Nene on the Enrolled Property is set as zero individuals. For Nene near KBCC, the goal is to move them to HAVO where existing Nene pens, monitoring, and protection measures are in place for flightless Nene.

#### *Conservation Benefit of Covered Activities to the Nene and Threat Minimization*

Fence maintenance and ungulate management activities implemented under the Agreement are likely to protect Nene nests, eggs, and young from predation by feral pigs. Similarly, management activities implemented under the Agreement for feral dog control are also likely to protect adult Nene, and Nene nests, eggs, and young from predation by feral dogs.

#### Hawaiian Hoary Bat

##### *Baseline Condition*

The U.S. Geological Survey (USGS) has been conducting surveys for Hawaiian hoary bats at Keauhou on a trimester or bi-monthly schedule since March of 2008. Survey results indicate that Keauhou exhibits a moderate to high level of bat occupancy. It is not yet possible to determine the actual size of the bat population using this area; however, surveys conducted since 2008 indicate stable levels of bat activity. Increased activity has been observed in higher elevations during the winter foraging months and at lower elevations during the summer breeding season. Absent the ability to quantify population size, habitat was used as the baseline metric for this covered species.

Baseline conditions equate to the total area of bat-occupied habitat, and consist of approximately 18,517 acres (Section 5, Figure 4 in the Agreement) of open and closed canopy trees, of which a majority is comprised of native koa and ohia trees.

#### *Conservation Benefit of Covered Activities to the Hawaiian Hoary Bat*

Under the Agreement, an increase in closed canopy cover or an increase in open canopy tree cover without a decrease in closed canopy tree cover and understory regeneration would be considered a net benefit to the Hawaiian hoary bat. An increase in canopy cover above baseline is likely to provide new breeding and roosting sites for Hawaiian hoary bats.

Specific activities implemented under the Agreement that are likely to maintain, enhance, restore, and protect native forests to benefit Hawaiian hoary bats are removal of predators, forest restoration, fencing and ungulate control, weed control, and fire threat management. These

activities would be highly beneficial to the current population of the Hawaiian hoary bat on the Enrolled Property by maintaining and enhancing habitat conditions that may facilitate an increase in its reproduction, numbers and distribution on the Enrolled Property.

### *Threat Minimization*

Under the Agreement, to avoid impacts to Hawaiian hoary bats, a top strand of barbed wire will not be used on any new management fences. Under the Agreement, removal of all remnant barbed wire above grass level on fences on the Enrolled Property will be completed and replaced with straight wire fencing. In addition, avoidance measures as specified in Section 6.1.3, Table 6 of the Agreement, will be followed to avoid sensitive periods during the bat pupping season (June 1 through September 15).

### Covered Plant Species

#### *Baseline Condition*

Baseline conditions for endangered plant species found on the Enrolled Property were determined based on the Fraiola and Rubenstein (2007) report and agreed upon by the DOFAW Endangered Species Recovery Committee (ESRC) on September 12, 2008. These species and the baseline numbers of plants are listed in Section 5, Table 4 of the Agreement and the area where these species are known to occur are shown in Section 5, Figure 6. The Service and DOFAW evaluated the data available on the presence of covered plant species, including individuals that had been outplanted on the property, and recommended a baseline number for species that were known at that time to be present on the Enrolled Property (Section 5, Table 4 of the Agreement).

Seventeen endangered plant species included in this Agreement are not currently known to be present on the Enrolled Property. These plants were determined to either have the potential to spread naturally onto the Enrolled Property or be reintroduced by the Applicant in the future. The baseline for these plants is zero (Section 5, Table 4 of the Agreement).

For the eight listed plant species currently known to occur on the Enrolled Property, their respective baselines are: *Asplenium peruvianum* var. *insulare* (128 individuals); *Clermontia lindseyana* (24 individuals); *Cyanea shipmanii* (463 individuals); *Cyanea stictophylla* (104 individuals); *Phyllostegia racemosa* (4 individuals); *Phyllostegia velutina* (38 individuals); *Plantago hawaiiensis* (1 individual); and *Vicia menziesii* (27 individuals).

Three of these eight plant Covered Species (*Vicia menziesii*, *Phyllostegia racemosa*, and *Cyanea stictophylla*) occur on the Enrolled Property in very low numbers (termed the “Special Concern” plant species) and therefore require additional protective measures, as detailed below.

### *Conservation Benefit of Covered Activities to the Covered Plant Species*

Maintenance of existing ungulate fencing and ungulate-free areas on the Enrolled Property are likely to provide a direct benefit throughout the permit term to the covered plant species. Restoration and outplanting activities are also likely to increase the populations and ranges of these species. Additional habitat benefits will also be provided by forest restoration and outplanting efforts, koa silviculture activities, management of fire breaks and water sources to minimize the threat of fire, and targeted predator control in areas where seed recruitment and survival of covered plant species may be impacted by introduced rodent populations.

### *Threat Minimization*

Threats to the recovery of native plants and birds include browsing by feral ungulate species and encroachment of non-native weed species into native-dominated plant communities. Threats to Covered Species of plants will be minimized by avoidance measures identified for each of the Covered Management Activities (Silviculture, Fencing and Ungulate Control, Weed Control, Restoration & Outplanting, Fire Threat Management, Removal of Predators). In addition, personnel will be trained to avoid impacts to Covered Species of plants prior to starting work or be directly overseen during field work by an individual so-trained. Personnel working on the Enrolled Property with Covered Species of plants will implement phytosanitation measures to prevent introduction of non-native weeds and pest species through land management activities.

### *Endangered Plant Species and Area Requiring Additional Conservation Commitments*

Three of the endangered plant species occur only on the Enrolled Property or exist in very low numbers: *Vicia menziesii*, *Phyllostegia racemosa*, and *Cyanea stictophylla*. All three species are designated as species that fall under the jurisdiction of the Plant Extinction Prevention Program (PEPP) which manages species that have 50 or fewer plants remaining of the species/taxon. Due to their low population numbers, additional conservation commitments are required for these three species in order to sustain the species and meet recovery objectives (Warshauer and Jacobi, 1982; USFWS 1984a; Jacobi in prep. 2016). An area of 3,192 acres at Keauhou Ranch (Warshauer and Jacobi, 1982; USFWS 1984a; Jacobi pers. comm. 2015) was established that contains habitat that meets the ecological requirements for these three species and is part of their historic range (see Section 5, Figure 7 of the Agreement) at Keauhou Ranch and Kilauea Forest (Warshauer and Jacobi 1982, Clarke et al. 1983). In the Agreement, this area is referred to as the “Area of Additional Conservation Commitments.” The additional commitments involve threat minimization measures to avoid adverse impacts to these species when conducting habitat management activities including: outplanting, koa thinning or cutting, soil scarification, fence construction, weed control, and road and trail construction. Threat minimization measures include: (1) staff/contractors will be trained by experts in species identification and on how to minimize adverse impacts to Special Concern Species; (2) 50-foot buffer areas around known or recently known locations of Special Concern Species will be surveyed by a species expert in advance of implementing restoration and silviculture activities; (3) ground-disturbing machinery shall be prohibited within marked 50-foot buffer areas around Special Concern Species; (4) tree-

felling and thinning operations shall be prohibited within the 50-foot buffer areas around Special Concern Species; and (5) monitoring within the designated 50-foot buffers of Special Concern Species shall be implemented after the management activity/disturbance is implemented. It is anticipated that these measures are likely to collectively avoid all adverse effects to the three Special Concern Species.

## **Monitoring**

Compliance Monitoring. Under the Agreement, annual reports will be prepared to cover the period from July 1 – June 30 of each year and be due on August 21 of each year. The Service and DLNR will provide any information/reports pertinent to their contributions for compliance monitoring under the Agreement to the Applicant by July 15 of each year. The Applicant will ensure reports are compiled and made available to the Service and DLNR and will include periodic verification that baseline(s) are being maintained (at a minimum) outside of Forest Bird Stratum 1 and enhanced in Forest Bird Stratum 1 to achieve an overall net benefit.

Biological Monitoring. Monitoring for each covered species-specific baseline will follow the regime outlined below. The monitoring program described here is intended to be a cooperative effort of the Applicant, Service, and DLNR.

### ***Monitoring Forest Birds and the Alala***

Baseline monitoring of the Akiapolaau, Hawaii Creeper, Hawaii Akepa, and the Iiwi will be done by monitoring habitat. Changes in habitat from the baseline of 4,162 acres of occupied habitat in Forest Bird Stratum 1 (Section 5, Figure 3) can be assessed through the use of satellite or other applicable imagery comparable to the baseline method described by Jacobi (2016, in prep.), or through field verification using methods to be developed that are approved by the Service and DLNR. Baseline monitoring will be conducted at a minimum frequency of every 10 years subsequent to issuance of the Enhancement of Survival Permit for the Agreement.

A decrease in closed canopy tree cover or any decrease in any other tree cover category without an equivalent or greater increase in a more dense tree cover category in Forest Bird Stratum 1 would be considered a reduction of baseline conditions. The net conservation benefit for this Agreement is defined in the Agreement as an increase in closed canopy tree cover or any increase in any other tree cover without a decrease in higher density tree cover categories.

### **Bird Surveys**

Forest bird and Alala occupancy surveys are planned on an annual basis following standardized variable circular plot protocols developed by multiple agencies and used throughout the State. Surveys will be conducted by the Service, DOFAW, USGS or other government or non-profit organizations as time and budget appropriations allow, with access and other logistical assistance to be provided by the Applicant. In the event that government agencies are not able to conduct the surveys and monitoring, the Applicant will be responsible for completing surveys and monitoring at a minimum of every 5 years. Results from all surveys and monitoring will be

included in annual reports prepared for this Agreement. If no survey has occurred in a given year, a planned or estimated schedule for the next forest bird survey will be provided in the annual report.

### ***Monitoring Hawaiian Hawks***

The baseline for the Hawaiian hawk is 18,517 acres of available habitat (Section 5, Figure 4 of the Agreement). A decrease in closed canopy tree cover or a decrease in open canopy tree cover category without an equivalent or greater increase in closed canopy tree cover anywhere on the Enrolled Property would be considered a reduction of the baseline habitat for the Hawaiian hawk. An increase in closed canopy cover or an increase in open canopy tree cover without a decrease in closed canopy tree cover, as evaluated every 10 years, would be considered a net conservation benefit to the Hawaiian hawk.

### **Hawaiian Hawk Surveys**

Under the Agreement, occupancy surveys for Hawaiian hawks will be conducted a minimum of every 5 years. Surveys will be conducted by the Service, DOFAW, USGS or other government or non-profit organization as time and budget appropriations allow, with access and other logistical assistance to be provided by the Applicant. Methodology for the surveys is described in Appendix 9 of the Agreement. Results from all surveys and monitoring will be included in annual reports for this Agreement. If no survey has occurred in a given year, a planned or estimated schedule for the next Hawaiian hawk survey will be provided in the annual report.

### ***Monitoring Hawaiian Hoary Bats***

A decrease in closed canopy tree cover or a decrease in open canopy tree cover category without an equivalent or greater increase in closed canopy tree cover anywhere on the Enrolled Property would be considered a reduction of baseline conditions for this species. Current habitat conditions provide 4,530 acres of closed canopy and 13,987 acres of open canopy tree cover habitat for a total of 18,517 acres. An increase in closed canopy cover or an increase in open canopy tree cover without a decrease in closed canopy tree cover, as evaluated every 10 years, would be considered a net conservation benefit to the Hawaiian hoary bat.

### **Bat Surveys**

Occupancy surveys involving acoustic monitoring for Hawaiian Hoary Bat activity (Appendix 9 of the Agreement) is planned every 5 years. Surveys will be conducted by the Three Mountain Alliance, the Service, DOFAW, USGS or other government or non-profit organizations as time and budget appropriations allow, with access and other logistical assistance to be provided by the Applicant. Results from all surveys and monitoring will be included in annual reports for this Agreement. If no survey has occurred in a given year, a planned or estimated schedule for the next bat survey will be provided in the annual report.

## ***Monitoring Nene***

### **Baseline Monitoring and Species Surveys**

Nene surveys also serve as the baseline monitoring. Baseline conditions for Nene are determined by the number of breeding pairs on the Enrolled Property, which is currently zero (0).

Surveys during the Nene breeding season, as described in Appendix 9 of the Agreement, are planned on an annual basis and will be conducted by DOFAW and will be included in the annual report. Reporting will provide information on population estimates, nesting success, and fledgling success.

## ***Monitoring Endangered Plants***

### **Baseline Monitoring and Species Surveys**

For plants, the species surveys also serve as the baseline monitoring. Baseline conditions for the endangered plant species were determined by the number of individuals currently present on the Enrolled Property.

Plant surveys will be conducted as outlined in Appendix 9 of the Agreement to determine the number of individuals present on the Enrolled Property and include the status of newly outplanted plants per methods outlined in Appendix 9 of the Agreement. To the extent possible, plant surveys will be conducted during the appropriate time of year in order to maximize the likelihood of species detection. Surveys for the endangered plant species in the Area of Additional Conservation Commitments will be conducted by biologists knowledgeable of the habitat and characteristics of these three species and who have conducted surveys for these species, or related species, or are individuals trained by experts to identify these species.

Surveys for PEPP species (<50 individuals) will be conducted by PEPP and other species by the Service and DLNR or associated cooperating parties agreeable to the Service and the Applicant. Surveys are planned on the following schedule as time and funding allow: PEPP founder plants will be surveyed annually, other endangered founder plants biannually, and outplants every 5 years. This schedule may be adjusted based on species status and PEPP program objectives. Survey intervals applied to all individual plant species in this Agreement are provided in Appendix 9 of the Agreement. In the event that the organizations specified to conduct the surveys are unable to do so based on that schedule, the Applicant will conduct surveys at least every five years over the 50-year term of the Agreement. Results from all surveys and monitoring will be included in annual reports required for this Agreement. If no survey has occurred in a given year, a planned or estimated schedule for the next plant survey will be provided in the annual report.

### *Endangered Plant Species and Area Requiring Additional Conservation Commitments*

Three of the endangered plant species which occur on the Enrolled Property exist in very low numbers: *Vicia menziesii*, *Phyllostegia racemosa*, and *Cyanea stictophylla*. Due to their low population numbers, additional surveys and monitoring will be required by the Applicant when the following Covered Activities are planned: outplanting, koa thinning or cutting, soil scarification, fence construction, weed control, and road and trail construction.

A 50-foot buffer around all known special concern plant species will be marked and surveyed thoroughly for additional vegetative propagules or seedlings of these species before and after all habitat management activities. The survey will be conducted by a species expert. These additional commitments will be implemented to ensure full avoidance of adverse impacts from covered activities to these three species within the Area of Additional Conservation Commitments.

### **II. Does the Agreement fit the criteria as described in the Safe Harbor Agreement policy (meet the standard of “net conservation benefit” and contribute to recovery)?**

Yes. The proposed issuance of an Enhancement of Survival Permit for this Agreement will meet the standard of net conservation benefit. In accordance with the Service’s Safe Harbor Policy, “net conservation benefit” means “the cumulative benefits of the management activities identified in a Safe Harbor Agreement that provide for an increase in a species’ population and/or the enhancement, restoration, or maintenance of covered species’ suitable habitat within the enrolled property, taking into account the length of the Agreement and any off-setting adverse effects attributable to the incidental taking allowed by the enhancement of survival permit. Net conservation benefits must be sufficient to contribute, either directly or indirectly, to the recovery of the covered species.”

Activities implemented under this Agreement will aid in increasing the current range of the Covered Species, restoring these species to part of their historic ranges, increasing the total population of these species, and re-establishing wild populations of these species, thus contributing to their overall recovery. Additionally, the Agreement will reduce habitat fragmentation by connecting a network of protected and managed State, Federal, and private lands within the south central region of Hawaii Island, and will also benefit other native species.

Specific activities included in the Agreement that will benefit wildlife Covered Species include: outplanting of 200,000 native plants, establishing 1,000 acres of new koa stands, thinning crowded koa silviculture to improve stand health, maintaining approximately 29,000 acres of ungulate-free conservation managed land, maintaining existing fences, maintaining roads and water sources for fire suppression, maintaining old growth trees in Forest Bird Stratum 1 (Figure 3 of the Agreement), and suppression of priority weeds.

Management activities will involve fence maintenance, removal of ungulates, weed control, reforestation, and silviculture (thinning and selective harvest). These conservation measures are

reasonably expected to result in the following net conservation benefits to the covered species: (1) increased availability of suitable breeding and foraging habitat through control of non-native grasses; (2) greater likelihood of increased population sizes of Covered Species in the general area; (3) maintenance of a viable dispersal corridor across the Enrolled Property; (4) potential conservation of genetic diversity for Covered Species metapopulations; and (5) minimization of the potential for covered species extirpation in the general area.

Forest restoration activities also provide educational outreach and volunteer participation which contributes to the overall awareness of and support for conservation in Hawaii and species recovery.

The cumulative management activities which will be implemented pursuant to this Agreement directly support recovery actions and conservation objectives outlined in conservation and recovery plans for the Covered Species (USFWS 1984a, USFWS 1984b, USFWS 1996, USFWS 1998a, USFWS 1998b, USFWS 1998c, USFWS 2004, USFWS 2006, USFWS 2009, Hawaii DLNR 2015, and Fraiola and Rubenstein 2007) including: protection, management, restoration, and conservation of suitable and known-occupied habitat, ungulate control, alien species control, and re-establishing connectivity of currently fragmented habitats.

The Service has determined that the Applicant's conservation measures, as described in the Agreement, will reasonably be expected to provide the net conservation benefits listed above for the federally endangered Hawaii Creeper, Hawaii Akepa, Akiapolaau, Hawaiian hawk, Nene, Alala, Hawaiian hoary bat, twenty-five endangered plant species, and a species petitioned for listing, the Iiwi. The Service has also determined that the 50-year term of the Agreement and associated Permit will reasonably be expected to be sufficient to achieve these net conservation benefits.

**A. Are the effects of the Safe Harbor Agreement minor or negligible on federally listed, proposed, or candidate species and their habitats covered under the Safe Harbor Agreement, prior to implementation of the minimization and mitigation measures, if any?**

Yes. There are likely to be net positive, beneficial effects to the Covered Species with implementation of the conservation measures in the Agreement. The incorporation of adverse impact avoidance and minimization measures reduces the likelihood that the Covered Activities will result in adverse effects to the Covered Species and ensures that any adverse effects are more than offset by the anticipated beneficial effects of Covered Activities on the Covered Species.

**B. Are the effects of the Safe Harbor Agreement minor or negligible on other components of the human environment, including environmental values and environmental resources (e.g. air quality, geology and soils, water quality and quantity, socio-economic, cultural resources, recreation, visual resources, etc.), prior to implementation of the minimization and mitigation measures?**

Changes in air quality, geology and soils, water quality and quantity, socio-economic resources, cultural resources, recreation, and visual resources are expected to be negligible as a result of implementing the Agreement.

**C. Would the incremental impacts of this Safe Harbor Agreement, considered together with the impacts of other past, present and reasonably foreseeable similarly situated projects not result, over time, in cumulative effects to environmental values or resources which would be considered significant?**

No significant cumulative adverse effects are expected to occur as a result of approving the Agreement, issuing the Permit, and implementing the Covered Activities under the Agreement. Ongoing land management activities are expected to continue regardless of approval of the proposed Agreement and issuance of the Permit. The Enrolled Property is surrounded by Federal and State-owned lands, and activities on these lands are not expected to change significantly in the foreseeable future. A significant beneficial effect is expected to occur as a result of approval of the Agreement, issuance of the Permit, and implementation of Covered Activities under the Agreement.

**III. Do any of the exceptions to categorical exclusions (extraordinary circumstances) listed in 43CFR 46.215 apply to this Safe Harbor Agreement?**

None of the exceptions to categorical exclusions apply to this Agreement.

**Would implementation of the Safe Harbor Agreement:**

**A. Have significant adverse effects on public health or safety?**

No. The minor or negligible adverse effects to all resources anticipated to occur with this Agreement are not likely to result in impacts to public health or safety.

**B. Have significant impacts on such natural resources and unique geographic characteristics as: historic or cultural resources; park, recreation or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands (Executive Order 11990) or floodplains (Executive Order 11988); national monuments; migratory birds, or other ecologically significant or critical areas?**

No. The lands adjacent to the Enrolled Property include Hawaii Volcanoes National Park and the State-managed Puu Makaala Natural Area Reserve. There are no historic or cultural resources, national or natural landmarks, parks, wild or scenic rivers, or sole or principle drinking water aquifers in the project area. The project will not adversely affect wetlands, floodplains, or ecologically significant or critical areas. Historic or cultural resources, parks, and wilderness areas outside the project area are already protected and will not be affected

adversely. Implementation of the Agreement will complement these conservation efforts. No adverse effects to these resources are anticipated from implementation of the Agreement.

**C. Have highly controversial environmental effects (defined at 43 CFR 46.30), or involve unresolved conflicts concerning alternative uses of available resources? [see NEPA section 102(2)(E)]**

No. Given the negligible impacts to all resources there is no scientific controversy over the environmental effects of implementing the Agreement.

**D. Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks?**

No. The proposed management activities are currently ongoing on the Enrolled Property as well as on the adjacent Hawaii Volcanoes National Park and Puu Makaala Natural Area Reserve. Implementation of the Agreement is anticipated to provide a net conservation benefit to the Covered Species and to other native species for the reasons discussed above.

**E. Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects?**

No. Future actions would be reviewed on their own merits in meeting requirements under the ESA, its implementing regulations, and other laws. Implementation of the Agreement meets the standards applied to all Safe Harbor Agreements.

**F. Have a direct relationship to other actions with individually insignificant but cumulatively significant environmental effects?**

No. The proposed Agreement is not related to other actions that will cumulatively cause significant environmental effects.

**G. Have significant impacts on properties listed, or eligible for listing, on the National Register of Historic Places?**

No. Properties listed or eligible for listing on the National Register of Historic Places do not occur on the Enrolled Property and would not be affected.

**H. Have significant impacts on species listed, or proposed to be listed, on the List of Endangered or Threatened Species, or have significant impacts on designated Critical Habitat for these species?**

For the reasons discussed above, implementation of the Agreement is likely to have a net conservation benefit on the covered listed species on the Enrolled Property.

**I. Violate a Federal law, or a State, local, or tribal law, or a requirement imposed for the protection of the environment.**

No. Implementation of the Agreement under the authority of the Permit is contingent upon compliance with all applicable Federal, State, or local laws.

**J. Have a disproportionately high and adverse effect on low income or minority populations (Executive Order 12898).**

No such effects are anticipated.

**K. Limit access to and ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites (Executive Order 13007).**

No such effects are anticipated. The Applicant currently maintains oversight regarding access to the Enrolled Property for cultural purposes, which will not be adversely affected.

**L. Contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of such species (Federal Noxious Weed Control Act and Executive Order 13112).**

No. Weed control and phytosanitation to prevent the threat and spread of noxious species is a high priority action covered in Section 6.1 of the Agreement.

**IV. ENVIRONMENTAL ACTION STATEMENT**

Based on the analysis above, the Applicant's management activities meet the qualifications for a Safe Harbor Agreement whose implementation represents a class of actions which do not individually or cumulatively have a significant effect on the human environment. Therefore, this action is categorically excluded from further NEPA documentation as provided by 516 DM 2, Appendix 1 and 516 DM 6, Appendix 1.

Other supporting documents (list): Safe Harbor Agreement

Concurrence:

\_\_\_\_\_  
(1) Field Supervisor

\_\_\_\_\_  
Date