
Proposed Hazard Reduction and Reforestation Operations

In the Aftermath of the Upper Waiohuli Wildfire

January 23 – February 5, 2007, Kula Forest Reserve



March 5, 2007

Department of Land and Natural Resources
Division of Forestry and Wildlife

I. Introduction

During the period of January 23 to February 5, 2007, a wildfire burned approximately 2,300 acres of forested public lands within Kula Forest Reserve (see attached map). In terms of size and intensity, this wildland fire event was one of the most devastating to have occurred for many decades in Hawaii. The burn unit was dominated by mature closed canopy forest comprised primarily of pines, cypresses, and redwoods. Approximately 500 acres within the burn unit were subject to relatively lighter fire intensities, and the forest areas therein are anticipated to recover. Approximately 1,800 acres within the burn unit were severely burned with little remaining live vegetation.

Principal project objectives include:

1. Mitigate public hazards caused by burned trees that are now dead but still standing in terms of current public safety and future fire potential.
2. Protect and stabilize soils that are now exposed and highly prone to erosion..
3. Control the onslaught and impact of invasive species which are likely to colonize this newly opened site.
4. Re-establish recreational values to these lands that were formerly a very important and highly used recreational area (e.g. hiking, hunting) for the residents of Maui.
5. Restore important hydrological and ground water benefits that the burned upland forested watershed formerly provided.
6. Enhance native species habitat and native ecosystem recovery.

The scope of this proposed project exceeds both budgetary and staffing capacity of the Department, which therefore seeks emergency funding to facilitate: Salvage recovery of lumber and woody biomass from dead or dying trees to control remaining fire hazards; restoration of fence and road infrastructure; and intensive reforestation efforts at a scale that has not occurred on public lands in Hawaii for over 25 years.

II. Scope of Proposed Work

- A. Hazard tree and biomass survey: Public safety and future fire hazards remaining in the aftermath of the Upper Waiohuli Wildfire are of immediate concern. A survey of residual trees that now present hazards along roads, trails, fences and other infrastructure will facilitate their removal. Furthermore, surveying and clearing biomass from key areas within a buffer along the primary Forest Reserve access road will reduce remaining biomass that could support a future wildfire. Such clearing would simultaneously create an important fire break to assist in future fire suppression efforts that may occur in this steep area. Funding will be used to support travel for current Forestry staff from the Department who will conduct the field survey and data/map analyses.

- B. Hazard tree and biomass removal: Felling and/or removing hazardous trees and biomass identified will immediately follow the survey, and will be accomplished via a combination of Departmental staff time and contracted services.
- C. Fencing: Repair of existing fence lines and establishment of new fences will be employed for public safety purposes and to protect planted seedlings in the reforestation area from ungulate damage. This item includes the procurement of fence materials, bulldozer capacity, and contract installation crews, and will be accomplished via a combination of Departmental staff time and contracted services.
- D. Site preparation and tree planting: In accessible areas, residual brush and woody debris will be chipped to reduce wildfire fuel loads. In other areas such debris will be removed from seedling planting points. Dead standing trees that pose a hazard to public safety or infrastructure will be felled. Digging tree planting holes and tree seedling planting operations will be conducted mechanically, by hand or a combination of the two methods. Approximately 50, 30 and 20 percent of the 1,800 acre reforestation area will be planted to native trees (a koa – ohia mixture), redwoods, and grass/shrublands, respectively. The latter cover type is intended to provide forest openings for wildlife and game habitat. This item includes the procurement of bulldozer capacity, site preparation, seed, nursery production of seedlings, seedling delivery and tree planting, and will be accomplished via a combination of Departmental staff time and contracted services.
- E. Road repair: Impacts of fire suppression equipment in addition to those anticipated to occur during timber salvage and reforestation operations will collectively leave the primary access road to Kula Forest Reserve and the Poli Poli Spring State Recreation Area in need of repairs. Such repairs will include but not be limited to procurement of bulldozer capacity for grading and application of gravel, selected paving of high impact points and installation of water bars, culverts and other drainage features. Road repair activities will be accomplished via a combination of Departmental staff time and contracted services.
- F. Plantation maintenance: After initial plantings are complete, supplemental planting to replace seedling mortality, rodent control, weed control and fertilization programs will be implemented on an annual basis for several years to enhance tree seedling survival and forest establishment. Maintenance activities will be accomplished via a combination of Departmental staff time and contracted services.

III. Budget

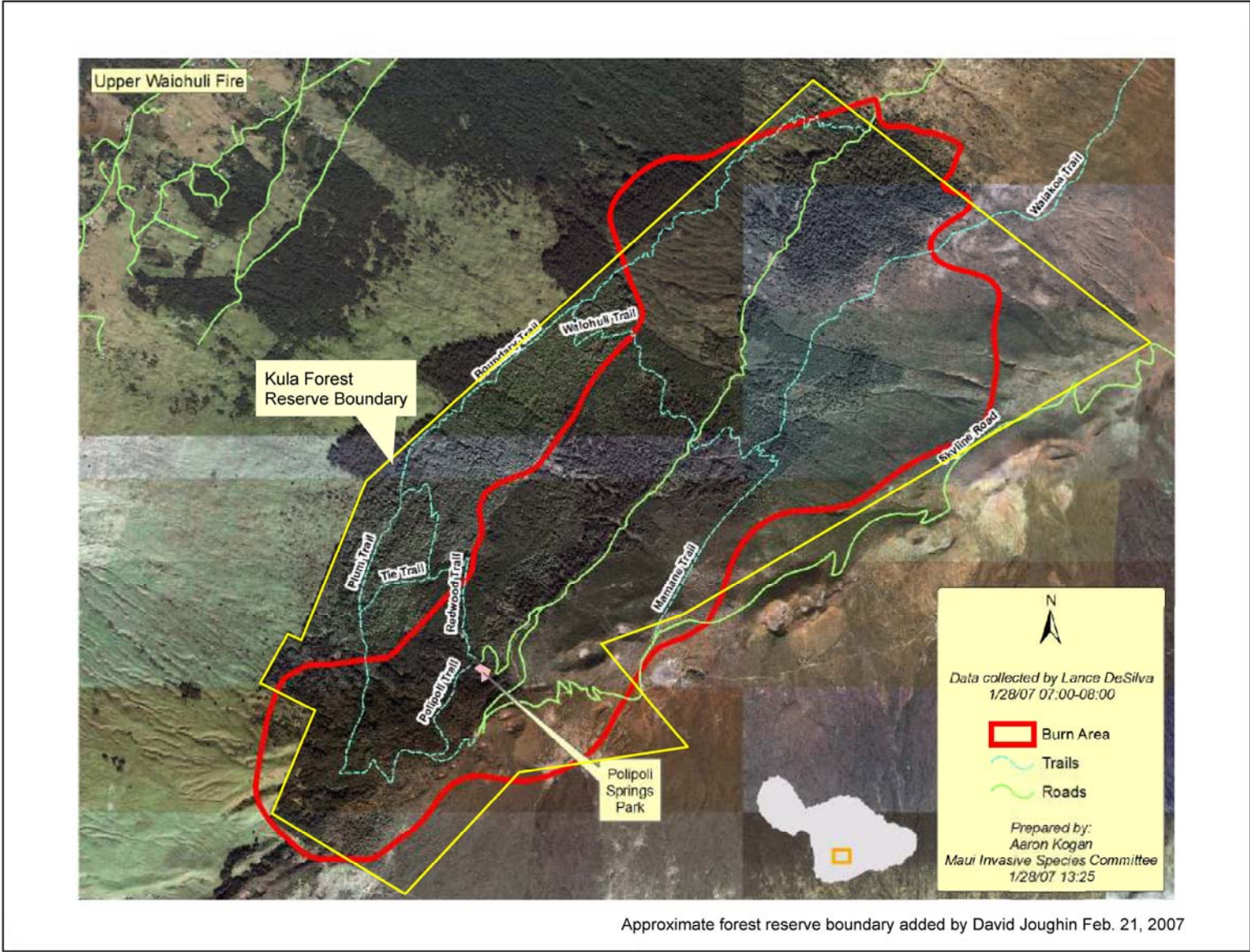
Immediate Needs	Phase	Time Frame	Cost
Timber survey	I	Mar. 07 - Apr. 07	10,000
Hazard tree and biomass removal	I	Apr. 07 - Mar. 08	30,000
Fence repair and installation – 4.5 miles	I	Mar. 07 - Nov. 07	800,000
Initiate nursery operations - tree and shrub seedlings	I	Mar. 07 - Dec. 07	500,000
Sub-total			1,340,000

Principal Operations	Phase	Time Frame	Cost
Site preparation and tree planting – 1,800 acres	II	Nov. 07 - Oct. 08	2,640,000
Road Repair – 9 miles	III	Nov. 08 - Apr. 09	250,000
Sub-total			2,890,000

Maintenance Operations	Phase	Time Frame	Cost
Plantation maintenance	III	FY 09	225,000
Plantation maintenance	IV	FY 10	125,000
Plantation maintenance	IV	FY 11	100,000
Sub-total			450,000

Total project cost:

\$4,680,000



Approximate forest reserve boundary added by David Joughin Feb. 21, 2007

Kula State Forest Reserve – Planting Maps and Info

1. Site 1

- **320 acres total** (divided into lower/upper sections based on access road)
- 225 acres (lower, 15'x15' spacing) = 43560
 - 26190 (koa ~ 60%)
 - 10890 (ohia ~ 25%)
 - 4356 (mamane ~ 10%)
 - 2178 (a'ali'I ~ 5%)
- 94 acres (upper, 15'x15' spacing) = 18236
 - 7294 (aalii ~ 40%)
 - 3647(mamane ~ 20%)
 - 3647 (naio ~ 20%)
 - 1823 (ohia ~ 10%)
 - 911 (koa ~ 10%) *Transition road corridors

2. Site 2

- **360 acres total**
- 69840 total trees/shrubs
 - 27936 (aalii ~ 40%)
 - 20952 (mamane ~ 30%)
 - 6984 (naio ~ 10%)
 - 6984 (koa ~ 10%) *Planted along the lower section of Site 2
 - 6984 (ohia ~ 10%)

3. Site 3

- **340 acres** (20% grass, 80% trees)
- spacing 20'x20'
- 68 acres = grass
- 272 acres = trees (redwood)
- 29920 trees

4. Site 4

- **178 acres** (20% grass, 80% trees)
- spacing 20'x20'
- 35 acres = grass
- 143 acres = trees (redwood)
- 15730 trees

5. Site 5

- **251 acres**
- 51 acres grass
- 100 acres (redwood)
- Spacing 20'x20'
- 10900 trees
- 100 acres (native)

