



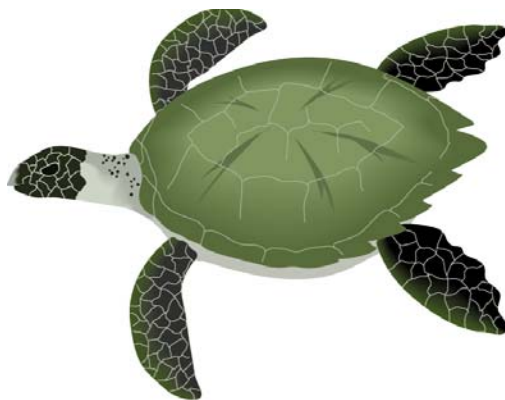
United States Air Force
15th Airlift Wing
Environmental Restoration Program

Draft

PROJECT COMPLETION REPORT

REMOVE BELLOWS LANDFILL LF24,
MARINE CORPS TRAINING AREA,
BELLOWS

OAHU, HAWAII



APPENDIX H

LF24 Revegetation Plan



Revegetation and Landscaping Plan Bellows Landfill LF 24 Marine Corps Training Area Base, Hawaii

Hui Ku Maoli Ola, LLC has been contracted by CH2M Hill Constructors, Inc. to perform restoration services at a former Air Force Landfill (Site LF24) on the Marine Corps Training Area Base (MCTAB). CH2M Hill successfully removed approximately 8,500 tons of miscellaneous debris and trash from the 45,000 square foot landfill. The result of removing the landfill is an exposed sand depression susceptible to wind erosion. Experiencing significant trade-winds more than seventy percent of the year, the exposed sand potentially causes risk to drivers, pedestrians (blowing sand,) and training opportunities. In addition, sand will continuously be deposited on roadways leading to increased swerving, loss of control as well as increased maintenance costs. Hui Ku Maoli Ola will perform re-vegetation and landscape maintenance of LF24 to decrease these risks.

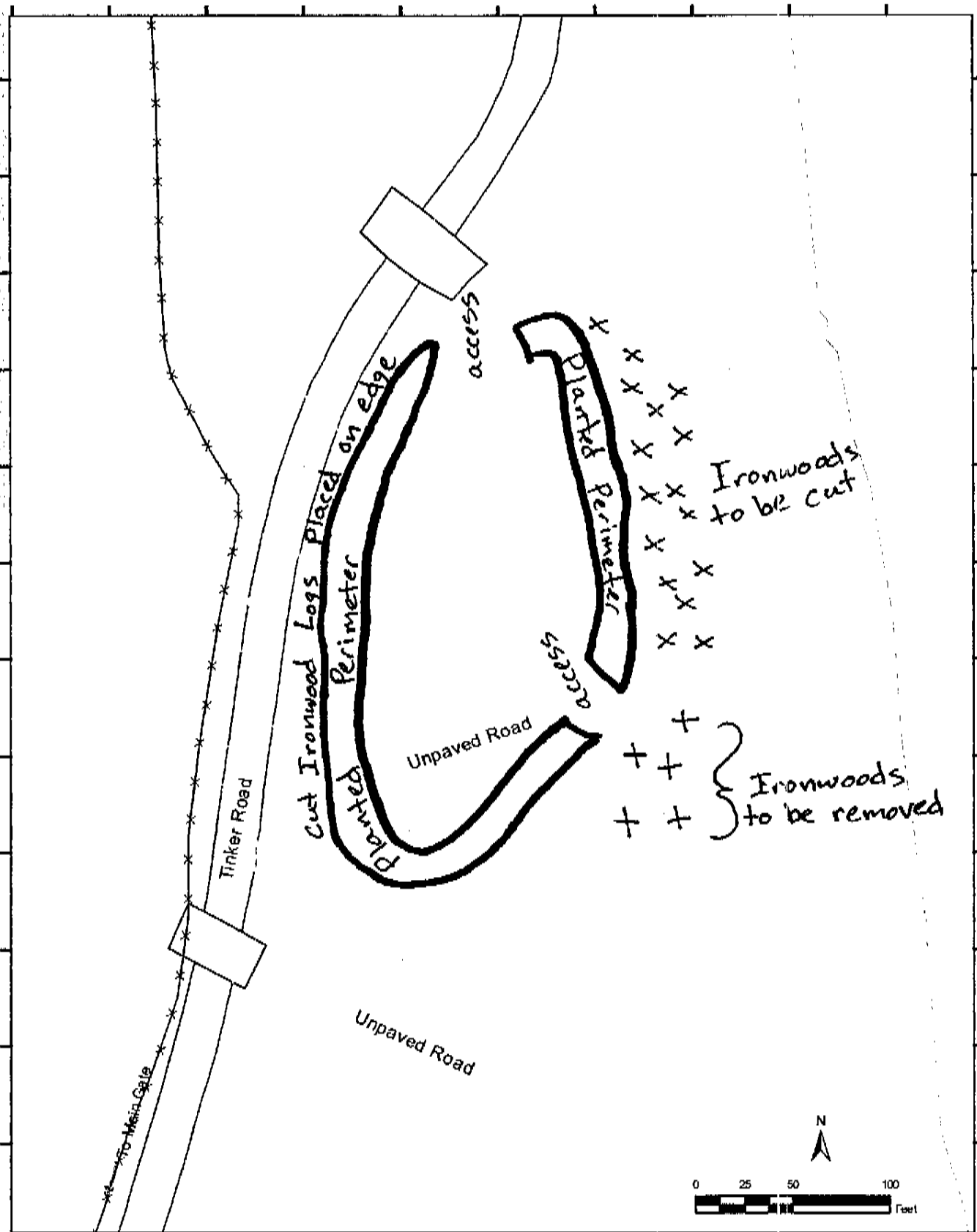
There are three phases to this re-vegetation plan: invasive species removal, native restoration, and maintenance of the site. The existing vegetation is a mix of non-native invasive ironwoods (*Casuarina equisetifolia*), native naupaka (*Scaevola sericea*), pohuehue (*Ipomea pes-caprae*), 'aki'aki grass (*Sporobolus virginicus*), and various smaller weedy herb species. The ironwoods will be targeted for removal, and the naturally occurring native plants will be supplemented with more plantings of native plant species.

The first phase focuses on the removal of approximately twenty ironwood trees along the eastern edge of the site. Ironwoods have been notorious throughout Hawaii to be poorly designed at controlling erosion. Unlike native coastal dune species, ironwoods release biomolecules to inhibit the growth of other vegetation. These biomolecules are collectively known as allelochemicals. By controlling the other plant species, ironwoods are able to ensure healthy survival through regeneration. The result of this well designed allelochemical is an exposed under-story which increases potential of dune erosion through various natural mechanisms. We have proposed the removal of these ironwoods to guarantee a better success with the restoration efforts. The trees will be cut down to stumps and treated with Garlon 3 to prevent re-growth. Once cut, the smaller limbs will be relocated on MCTAB to an approved location. The larger logs will be placed around the perimeter of the project to protect future plantings from vehicular traffic during the establishment period. Along the south east corner, approximately five ironwoods will be cut and stumps removed. This section (refer to attached map) will be an access point for training purposes. During the removal of the stumps, an approved cultural advisor will be on site to assure no native Hawaiian burial sites are disturbed.





Once the removal of the ironwoods is completed, the re-vegetation of LF24 will begin. A twenty foot wide band of plants will be installed along the perimeter of the project. Appropriate entrance and exit points for training purposes will not be planted. This perimeter planting will serve as a double line of defense against erosion as well as allowing for military use. The eastern edge will catch all the sand blowing off the beach and eventually form a taller dune while the western edge will catch and prevent sand from building up along the roadway. The plant list is compiled based on existing species, ability to survive in the current ecosystem, ability to control erosion, and xerotypic characteristics. All are both wind and salt tolerant. Species to be out-planted include: two tree species hala and kou to replace shady ironwoods, two shrub species naupaka and naio and three ground cover species pohuehue, pohinahina and nanea. All plants will

be installed at two feet on center and will be grown in four inch pots. Smaller plants will be installed because they have an easier time acclimating to the environment than larger plants.

Once all plants are installed, the final phase of the project begins. The maintenance period of the project is until August 2009. Invasive weed species will be removed on a regular basis until out-plantings are able to sustain on their own. No large scale irrigation will be required for this project. Plants will be watered for the first couple of weeks using a 100 gallon tank and hose system. Once acclimated to the existing environment, the plants will only be watered as needed. The project will be turned over with established plants capable of surviving on their own.



Legend

-  Paved road
-  Pacific Ocean
-  Fence
-  Topography (Ft.)