

CHAPTER 1: UNGULATE MANAGEMENT

Notable projects from the 2016-2017 reporting year are discussed in the Project Highlights section of this chapter. This reporting year was from 1 July 2016 through 30 June 2017.

Threat control efforts are summarized for each Management Unit (MU) or non-MU land division. All totaled, about 200 meters of fencing was replaced during the reporting year due to environmental damages. No new fences were constructed and no large fence replacement projects were required. Ungulate control data is presented with minimal discussion.

UNGULATE CONTROL PROGRAM

The Oahu Army Natural Resources Program (OANRP) ended the large scale fence construction phase of its management program in 2012 and has since focused more on ecosystem management. OANRP transferred management of some Manage for Stability (MFS) plant populations in the MIP into the completed fences rather than building additional enclosures. Since Army training has not been shown to directly impact the Tier 2 or 3 species on Dillingham Military Reservation, Kahuku Training Area, Kawaihoa Training Area or Schofield Barracks Military Reservation, the program focused work on the OIP Tier 1 species that are impacted by training. This significantly reduces the number of fences required for management from the 2003 Oahu Biological Opinion. The adjustment to the fence building schedule from the original MIP/OIP is in the table below.

Table 1: Ungulate fences no longer scheduled for OANRP construction

Makua Implementation Plan MU fences	Oahu Implementation Plan MU fences
East Makaleha	Kawaiiki I/II
Kamaileunu/ Waianae Kai	Kawaihoa
Alaiheihe and Kaimuhole	Poamoho Lower
	Poamoho Lower II
	Poamoho Pond (*)
	Poamoho Upper (*)
	Opaeha Lower II
	South Kaukonahua II
	Kaipapau
	Manana
	North Kaukonahua (*)
	Waiawa I (!)
	Waiawa II (!)
	Kahana
	Kaukonahua-Punaluu (*)

Since 2012, OANRP has focused on working within partnerships to contract some of the above fence construction projects jointly [i.e. Native Ecosystem Protection and Management (NEPM) Program Partnerships]; these are marked with a (*). These opportunistic partnerships will allow all parties to share the costs rather than one program absorbing all of it. Some of these fence projects may also be completed by other programs through other funding means (!).

In regards to staffing and funding, OANRP budgeted for two ungulate management technician positions for fence monitoring/maintenance and ungulate control work. One position was filled, but we continue to look for a qualified interested person to fill the second. Funding was also secured to construct three small fences at Kaala, West Makaleha, and Palikea. The Kaala fence will better secure the summit area. The West Makaleha fence will provide more ungulate-free rare plant habitat at West Makaleha. At Palikea, an extension to the existing fence is planned to protect a new snail enclosure. These actions are scheduled for the 2018 report year.

Summary of Fencing Efforts

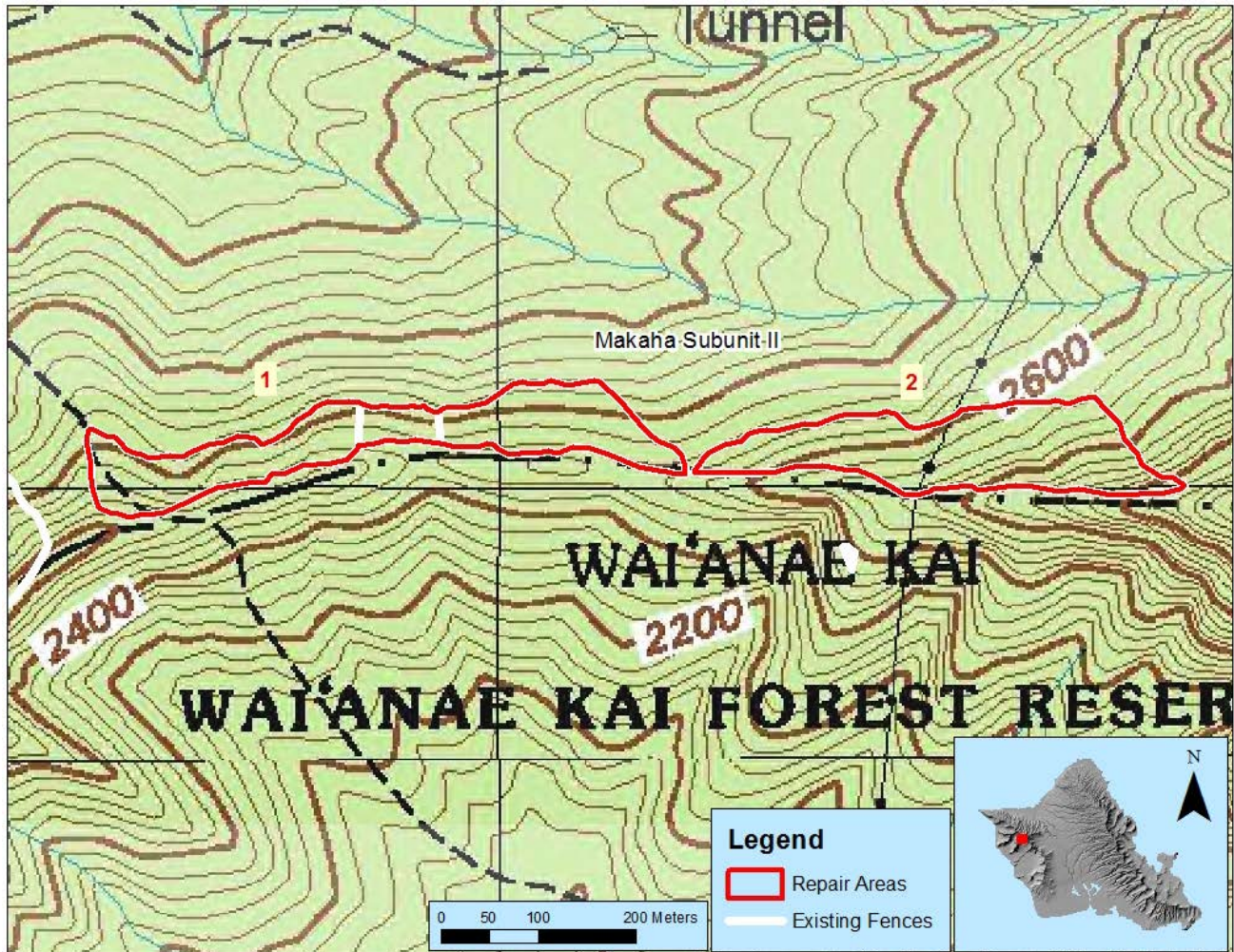


Figure 1: Map of fickle fence application and repair work at Makaha Subunit 2

- Makaha II:** In 2015, two small pigs were able to squeeze through the fences into both the upper (2) and lower (1) units of Makaha Subunit 2 (Figure 1). Due to the enormous amount of ungulate pressure on the outside of the fence, OANRP decided it was best to attach a chicken wire mesh (fickle) onto the fence to prevent further ingress. The crew completed this project. OANRP has observed over the past several years that the water flow coming down the Kumaipo trail along the southeastern line of the Upper unit was beginning to undercut the fence and destroy the trail in certain areas. Staff constructed nine water bars to direct water flow away from the fence and reinforce the sections of fence affected by heavy water flow during the reporting period.

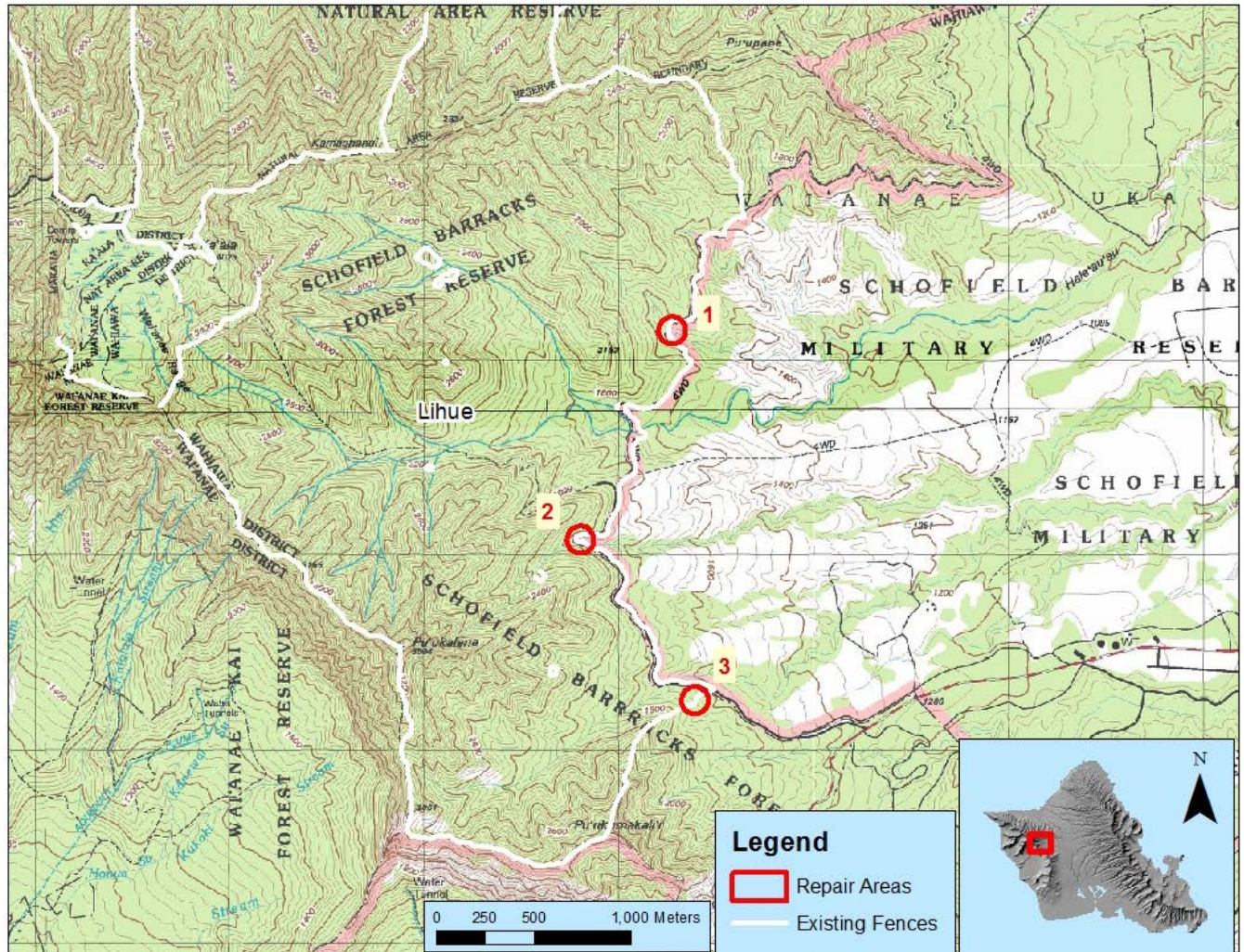


Figure 2: Map of fence repair/redirection at Lihue MU

- Lihue:** Throughout the reporting period, OANRP had to conduct repairs at three sites on the fenceline along the Firebreak road in the Lihue MU (Figure 2). Point 1 is located at “Dry Gulch” and has a small culvert that runs under the road. The culvert has a tendency to become blocked after heavy rainfalls so OANRP had to dig out the culvert on two occasions and installed new baffles to decrease the amount of debris building up on the culvert. Point 2 is located at “Banana Gulch” where the water flows over the road. Since construction of the fence, there has been a build-up of debris along the fence that has changed the natural flow of water crossing the road. This change in the flow has caused erosion problems in different areas along that section of fence. OANRP redirected the fence down into the gulch off the road to allow natural water flow again. At Point 3, the fence was cut and propped open by hunters to allow animal access. OANRP repaired the sabotage.

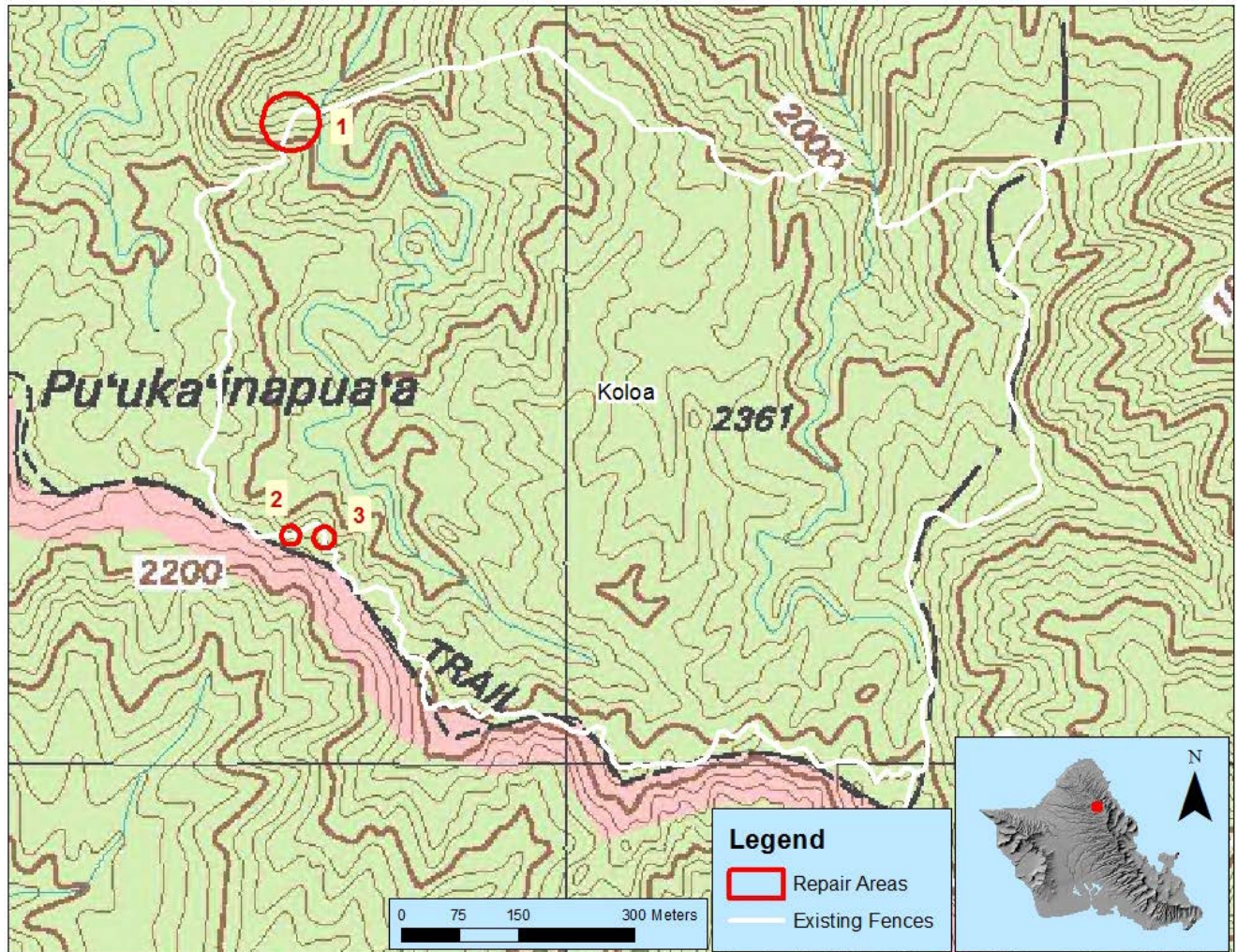


Figure 3: Map of fence repairs at Koloa MU

- **Koloa:** Heavy rains caused mud-slides that damaged the fence in three locations at the Koloa MU (Figure 3). OANRP did the necessary repairs and it appears no animals entered through the breaches. No sign has been found.

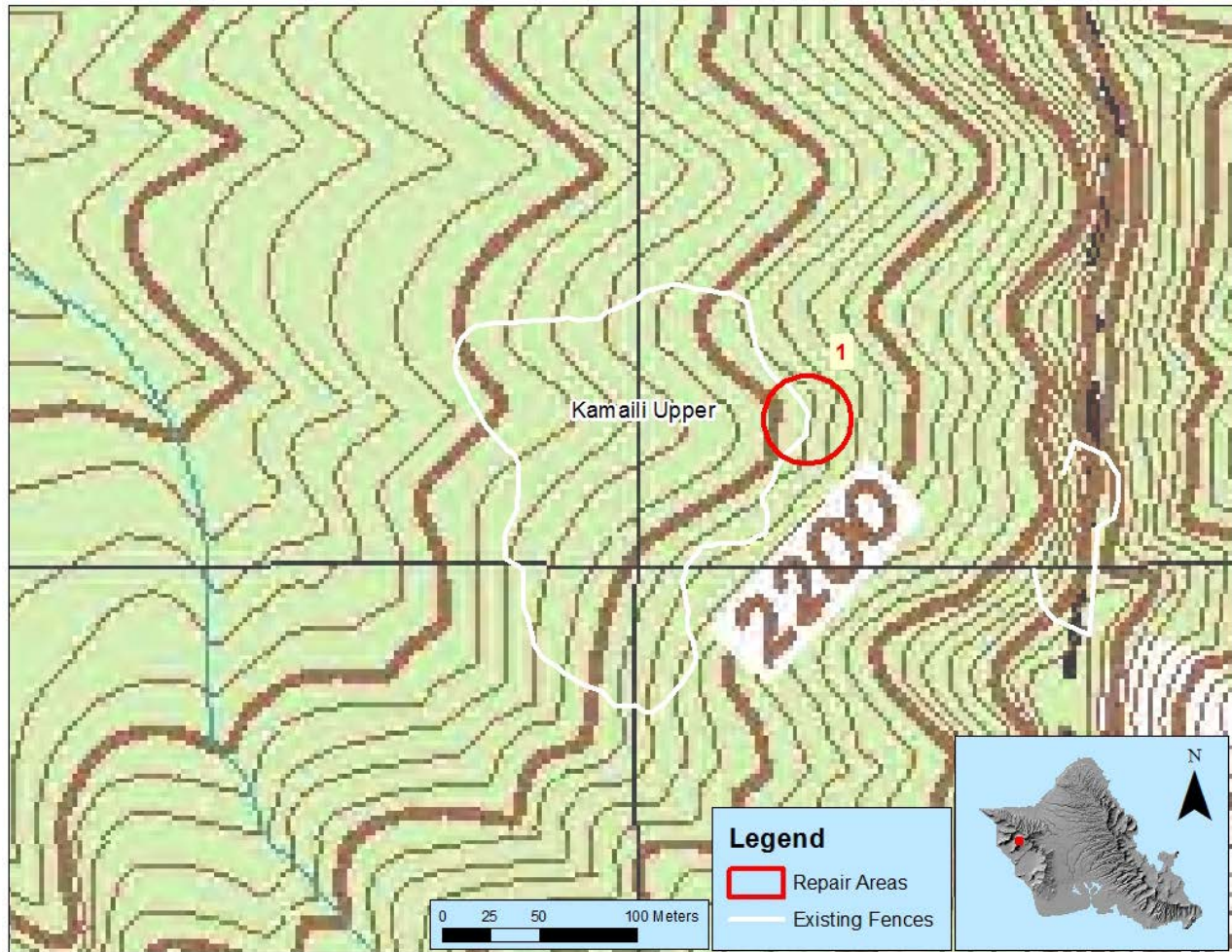


Figure 4: Map of fence repairs at Kamaili MU

- **Kamaili:** Rock falls continue to plague the Upper unit of the Kamaili MU fence (Figure 4). OANRP repaired the broken sections of fence and also installed several baffles to reduce the amount of damage. This section of fence is very prone to rock falls and will continuously need extra diligence.

Summary of Ungulate Removal Efforts

- Pig eradication efforts continued in Lihue MU. To date, a total of 544 pigs have been removed. Pig sign in all portions of the unit has been dramatically reduced but sign is still visible in a few areas. It seems that the few remaining animals have become snare shy, making them difficult to capture. Efforts are focused on increasing coverage in areas with few snares, and making sure all snares strategically set. OANRP is also running live traps along the firebreak road as an alternative to snaring exclusively. Access is limited so OANRP can only run those traps during the range maintenance week available each month.
- Occasionally, goats breach the ridge fence on Ohikilolo and OANRP is unclear as to where this is happening. Snaring occurs along the fence line to catch any of these wayward invaders. One goat was removed from the Ohikilolo MU fence area over the past reporting period.

- OANRP initiated an eradication effort for the Makua Military Reservation since the last section of fence was completed, enclosing the entire Valley. At this time, only snares are employed since there is no hunting with dogs allowed due to UXO risks. OANRP would like to install live traps and baiting/shooting stations to try some alternative methods at removal; however, RCUH currently does not have an approved firearm policy. To date, 129 pigs have been removed. OANRP continues to expand the snaring area into newer sites.

OIP/MIP Management Unit Fence Status

The MU status tables below (Table 1 and Table 2) shows the current status of all proposed and completed fence units, organized by MU. Shaded boxes identify where ungulate management or compliance documentations and authorizations are needed. The table identifies whether or not the fence is complete, whether it is ungulate free, identifies how many acres are actually protected versus acreage proposed in the IP, and lists the year the fence was completed or is expected to be completed. Fences which required a Conservation District Use Permit (CDUP), Cultural 106, MOU, ROE or RA, or a License agreement are checked in the appropriate box. The number of Manage for Stability Population Units (MFS) protected is also identified for each fence. For the sake of simplicity, this number also contains the number of Manage Reintroduction for Stability PUs. The MFS PUs are divided by taxa: P (Plants), I (Invertebrates) and V (Vertebrates). The table also contains notes giving the highlights and status of each fence and lists the current threats to each fence unit.

Table 1. MIP Management Unit Status

Management Unit	Management Unit Fence	Fenced	Ung Free	Acreage Current/Proposed	Year Complete or Proposed	CDUP	106	MOU/ROE/RA	Lic. Agr.	# MFS PUs					Notes	Current Threats
										MIP		OIP				
										P	I	P	I	V		
ARMY LEASED AND OWNED LANDS																
Kahanahaiki	Kahanahaiki I	Yes	Yes	64/64	1996					9	1	1			Complete and ungulate free.	None
	Kahanahaiki II	Yes	Yes	30/30	2013		X								Fence is complete and ungulate free.	None
Kaluakauila	Kaluakauila	Yes	Yes	104/104	2002					5					Complete. Fence is in need of some repair but still pig-free.	None
Opaeula Lower	Opaeula Lower	Yes	Yes	26/26	2011	X	X		X	1		1	1		Fence is complete and ungulate free.	None
Ohikilolo	Ohikilolo	Yes	No	4000/574	2002 2016		X			14	1				The Makua valley is complete, ungulate eradication has been initiated. There are six PU fences within the larger unit which are ungulate free. Since July 2006, 24 goats have been able to breach the fence. Snaring is being conducted all over the valley and along the fence line to remove them. One goat removed in past reporting year.	Pig/Goat
Ohikilolo Lower	Ohikilolo Lower	Yes	No	70/70	2000					3					This strategic fence is complete.	None
Puu Kumakalii	Puu Kumakalii	No	-	-	-	-	-	-	-	3					None needed but is partially included within the Lihue fence. Any potential goat issues will be dealt with as they arise.	None
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES																
Ekahanui	Ekahanui I	Yes	Yes	44/44	2001	X				6	1	2		1	Completed by TNCH.	Pigs
	Ekahanui II	Yes	Yes	165/159	2009	X	X								Complete and ungulate free. The completed fence is 3% larger than the original proposed MU fence.	None
Haili to Kealia	Haili to Kealia	No	-	-	-	X	-	-	-	1					As per DOFAW staff 'no fence needed'.	None

Management Unit	Management Unit Fence	Fenced	Ung Free	Acreage Current/ Proposed	Year Complete or Proposed	CDUP	106	MOU/ ROE/ RA	Lic. Agr.	# MFS PUs					Notes	Current Threats
										MIP		OIP				
										P	I	P	I	V		
Kaena	Kaena	Partial	-	-	-	X	-	-	-	1					There is a predator proof fence installed by State but it only protects a few <i>Euphorbia celastroides</i> var. <i>kaenana</i> plants.	None
Kaluaa/Waieli	Kaluaa/Waieli I	Yes	Yes	110/99	1999	X		X		6	1	2	1	Completed by TNCH. The completed fence is 9% larger than the original proposed MU fence.	None	
	Kaluaa/Waieli II	Yes	Yes	25/17	2006	X		X						Completed by TNCH. The completed fence is 7% larger than the original proposed MU fence.	None	
	Kaluaa/Waieli III	Yes	Yes	43/11	2010	X	X	X						Complete and ungulate free. The completed fence is 3% larger than the original proposed MU fence	None	
Keaau	Keaau Hibiscus	Yes	Yes	8/33	2014	X	X	X		2				Complete and ungulate free. DLNR requested OANRP reduce the size of original proposed MU fence.	None	
	Keaau III	Yes	Yes	4/33	2015	X	X	X			Fence was built by OPEP with assistance from WMWP and OANRP.	None				
Keaau/Makaha	Keaau/Makaha	Yes	Yes	1/3	2009	X	X			1				Complete and ungulate free. The completed fence is smaller than the original proposed due to the terrain limitations.	None	
Manuwai	Manuwai I	Yes	Yes	166/166	2011	X	X	X		3	1		1	Complete and ungulate free. Closed strategic section out of concern for possible ungulate breach.	None	
Napepeiaooelo	Napepeiaooelo	Yes	Yes	1/1	2009	X	X	X		0				Complete and ungulate free.	None	
Pahole	Pahole	Yes	Yes	215/215	1998	X				14	1			Complete and ungulate free.	None	
Palikea	Palikea I	Yes	Yes	23/21	2008	X		X		1	1	1	2	Complete and ungulate free. Extension to fence is planned to protect the new snail enclosure.	None	
Kapuna Upper	Kapuna I/II	Yes	Yes	32/182	2007	X		X		13	1			Complete and ungulate free.	None	
	Kapuna III	Yes	Yes	56/182	2007	X		X				Complete and ungulate free.	None			
	Kapuna IV	Yes	Yes	342/224	2007	X		X				Complete and ungulate free.	None			

Management Unit	Management Unit Fence	Fenced	Ung Free	Acreage Current/ Proposed	Year Complete or Proposed	CDUP	106	MOU/ ROE/ RA	Lic. Agr.	# MFS PUs					Notes	Current Threats
										MIP		OIP				
										P	I	P	I	V		
Waianae Kai	Slot Gulch	Yes	Yes	9/9	2010	X	X	X		1					Complete and ungulate free.	None
	Gouvit	Yes	Yes	1/1	2008	X		X		1					Complete and ungulate free.	None
	NerAng Mauka	No	No	1/1	2011	X	X	X							Complete. All management actions have been transferred to Kamaili unit due to the continuous rock fall damage and threat to personnel.	Pigs/Goats
West Makaleha	West Makaleha	Yes	Yes	7/11	2001 2016	X	X	X		5					The <i>Schiedea obovata</i> and <i>Cyanea grimesiana</i> subsp. <i>obatae</i> PU fences are complete and pig free. OANRP will expand the existing <i>C. grimesiana</i> fence to include more <i>Cyrtandra dentata</i> MFS plants in FY 2018.	None
BOARD OF WATER SUPPLY																
Kamaileunu	Kamaileunu	Yes	Yes	5/2	2008	X	X		X	1			1		Both of the <i>Sanicula mariversa</i> PU fences at Kamaileunu and Kawiwi are completed and ungulate free.	None
Makaha	Makaha I	Yes	Yes	85/96	2007					8	1				Complete and ungulate free. Pigs breached the fence and were removed.	None
	Makaha II	Yes	Yes	66/66	2013	X	X		X	5		1			Complete and ungulate free. Pigs breached the fence and were removed.	None

Table 2. OIP Management Unit Status

Management Unit	Management Unit Fence	Fenced	Ung Free	Acreage Current/Proposed	Year Complete or Propose	CDUP	106	MOU/ROE/RA	Lic. Agr.	# MFS PUs					Notes	Current Threats
										MIP		OIP				
										P	I	P	I	V		
ARMY LEASED AND MANAGED LANDS																
Kaala-Army	Kaala	Partial	No	183/183	2008		X					4	1		Strategic fences complete. Three pigs were caught in 2014, the first since 2010 and no sign since but there is a chance a pig can still come up from the Waianae Kai side. A line has been scoped for this section to close it up. OANRP is pursuing construction of this fence in FY 2018.	Pig
Kaunala	Kaunala	Yes	Yes	5/5	2006		X					1			Complete and ungulate free.	None
Lihue	Lihue	Yes	No	1800/980	2012		X			3	1	6			Completed. Encompasses six PU fences and the original three proposed units. A total of 544 pigs have been removed. There are very few pigs left in unit.	Pig
Oio	Oio	Yes	Yes	4/4	2006	X						1			Complete and ungulate free.	None
Opaepa / Helemano	Opaepa / Helemano	Yes	Yes	273/273	2001/2007							1			Complete and ungulate free.	None
Pahipahialua	Pahipahialua	Yes	Yes	2/2	2006	X						1			Complete and ungulate free.	None
South Kaukonahua	South Kaukonahua I	No	No	0/95	TBD		X					1			Postponed pending completion of Section 7 consultation in 2018. The Tier 1 taxa <i>Hesperomannia swezeyi</i> occurs within this MU.	Pig
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES																
Huliwai	Huliwai	Yes	Yes	.3/1	2014	X		X				1			Complete and ungulate free.	None
Ekahanui	Ekahanui III	Yes	Yes	8/8	2010	X	X					1			Complete and ungulate free.	None
Manuwai	Manuwai II	Yes	Yes	138/138	2011	X	X			10	1	1	1		Complete and ungulate free. The Lihue and Manuwai II unit share a strategic boundary and the ungulate free status is subject to pig traffic from Lihue which is unlikely but possible.	Pig
North Kaukonahua	North Kaukonahua	Yes	No	0/31	Cancelled	X	X	X				1			Is included within the larger Poamoho NAR fence. Fence is completed.	Pig

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										MIP		OIP				
										P	I	P	I	V		
Poamoho	Poamoho Lower II	Yes	Yes	5/5	2014	X	X	X				1			Included within the larger Poamoho NAR fence.	Pig
North Pualii	North Pualii	Yes	Yes	20/20	2006	X					1		1	1	Completed by TNCH and ungulate free.	None
BOARD OF WATER SUPPLY																
Kamaili	Kamaili	Yes	Yes	9/7	2014	X	X		X	1		1			Complete and ungulate free.	None
HAWAII RESERVES INC.																
Koloa	Koloa	Yes	Yes	177/160	2012	X	X		X			4			Complete and ungulate free.	None