



# Feasibility Study Waikane Valley Impact Area

Munitions Response Program  
Kaneohe, Hawaii

## Introduction

The Waikane Valley Impact Area (WVIA) is a 187 acre site that was used by the Marine Corps and Army for training from 1953 to 1976. WVIA, outlined in red in Figure 1, is located within the Waikane Valley Training Area in the Waiahole and Waikane Valleys, on Oahu's windward side (Kaneohe, Hawaii), approximately 10 miles northwest of Kaneohe Bay.

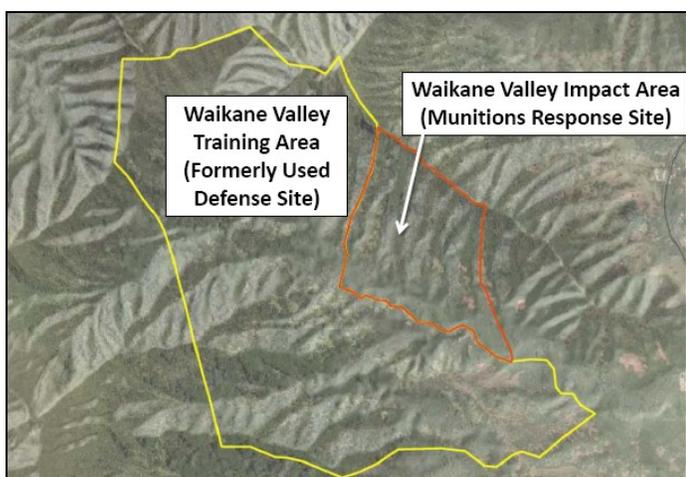


Figure 1: Map of Waikane Valley Impact Area

The former WVIA has been investigated under the Munitions Response Program to determine what types of cleanup actions are needed to reduce risks from munitions and explosives of concern (MEC) or munitions constituents remaining from past training activities.

### ***Munitions and Explosives of Concern (MEC):***

Items posing a potential explosive hazard including unexploded ordnance and discarded military munitions.

***Munitions Constituents (MC):*** Chemical components of munitions which could pose a potential risk to human health or the environment.

Previous investigations (2008 Site Inspection and 2010 Remedial Investigation) concluded no further action is needed to address munitions constituents in the WVIA because they are not present in concentrations high enough to pose unacceptable risks to human health or the environment. However, hazards were identified from exposure to MEC potentially remaining on WVIA which require further action.

## Feasibility Study

The purpose of the WVIA Feasibility Study (FS) is to compare potential environmental cleanup and land management actions and select the alternatives which best meet the following objectives:

- **Protect human health and the environment by reducing MEC hazards.**
- **Restore site to support existing/future land use (agricultural, recreational, forest reserve).**
- **Protect and provide access to cultural sites.**
- **Prevent migration of MEC into accessible areas.**

The WVIA is divided into three areas for the FS analysis based on the distribution of munitions items found during previous investigations (see Figure 2).

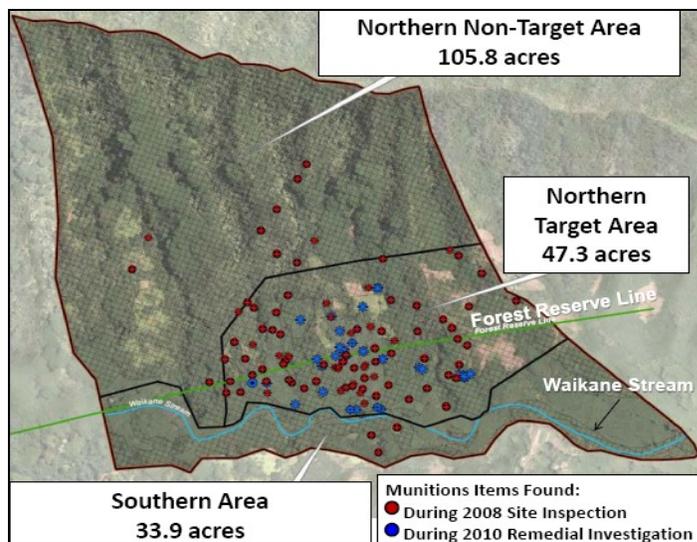


Figure 2: Areas Defined for Feasibility Study

The **Southern Area** contains most of the cultural features. Although it shows no evidence of MEC, clearance is recommended to confirm. Three practice munitions were found, but evidence strongly suggests they were carried out from the Northern Target Area.

The **Northern Non-Target Area** includes the steepest slopes of WVIA, with field teams unable to investigate the majority of the area. The accessible portions contain minimal MEC, but the area still has potential for explosive hazards because it cannot be investigated completely.

The **Northern Target Area** contains the highest concentration of MEC and has the highest potential explosive hazards. Most of the slopes in this area are also extremely steep.

## Remedial Alternatives

The following actions were considered as potential environmental cleanup or land management options for the WVIA:

- **No action** - Site remains as is.
- **Surface Clearance** - Removal of MEC from the ground surface.
- **Subsurface clearance** - Removal of MEC from subsurface soil to maximum depth of 2 feet (the max depth at which any evidence of munitions was found).
- **Land use controls (LUCs)** - Required for any cleanup action, they control access to the site and maximize safety. LUCs include controls such as fences, signs, and deed restrictions. May include construction support by explosives safety experts for activities involving soil disturbance/digging below the maximum clearance depth.

## Analysis of Alternatives

The following alternatives were analyzed for each of the three response action areas.

- No Action
- LUCs
- Surface clearance of accessible land with LUCs
- Surface and subsurface clearance of accessible land with LUCs

## Evaluation Criteria

Federal law requires that each remedial alternative be analyzed using the following nine USEPA evaluation criteria:

- Threshold Criteria:
  - Overall protection of human health & the environment
  - Compliance with applicable, relevant and appropriate requirements
- Balancing Criteria:
  - Long-term effectiveness and permanence
  - Reduction of mobility, toxicity or volume through treatment
  - Short-term effectiveness
  - Implementability
  - Cost
- Modifying Criteria
  - State acceptance
  - Community acceptance

Threshold criteria must be met for an alternative to be evaluated further. Balancing criteria provide a process to compare the benefits and drawbacks of each alternative using a relative scoring system which includes five categories. The most favorable is scored "5" and least favorable is scored "1". Tables summarizing the analysis for each area within WVIA are included on page 3 of this fact sheet. Modifying criteria will be evaluated upon receipt of comments from stakeholders and the public.

## Recommended Alternatives

***The FS analysis recommends Surface Clearance for all accessible land within the WVIA. Land Use Controls would also be required to control access to the site and reduce potential safety risks.***

***Estimated total cost—\$7,530,000***

The scoring in the tables suggest that Surface Clearance with LUCs be the preferred alternative for all three areas. Surface Clearance with LUCs meets the remedial action objectives by minimizing risks of exposure to MEC, preventing migration of MEC to accessible areas, restoring accessible land to light agricultural/recreational use, and supporting access to cultural areas. The No Action alternative scores equally with Surface Clearance because the No Action condition restricts site access, providing protection for the public from potential explosive hazards. However, the No Action alternative does not meet our remedial action objectives and so must be dismissed as unrealistic.

<b>WVIA Accessible Land</b>		
<b>WVIA Area</b>	<b>Total Acres</b>	<b>Accessible Acres</b>
<b>Southern</b>	<b>33.9</b>	<b>30.5</b>
<b>Northern Target</b>	<b>47.3</b>	<b>17.5</b>
<b>Northern Non-Target</b>	<b>105.8</b>	<b>2.9</b>
<b>Totals</b>	<b>187.0</b>	<b>50.9</b>

**Accessible Land**—Much of the terrain within WVIA is too steep to allow for investigation and environmental cleanup actions due to safety issues and technology limitations. Accessible acreage listed above includes land with a slope less than 30 degrees plus a small amount of additional acreage that is considered accessible based on previous investigation efforts.

## Future Land Use Options:

**Southern Area:** If MEC is found during remedial action work then future land use options will likely be cultural, light agricultural, and recreational with LUCs. If MEC is not found, the land may be suitable for future unrestricted use.

**Northern Areas:** MEC history prevents unrestricted use because the explosive hazard for the area will never be completely eliminated. Future land use will likely be cultural, light agricultural, and recreational with LUCs for accessible areas.

## Comparative Analysis—Southern Area

Criteria		Remedial Alternative			
		No Action	LUCs	Surface Clearance of Accessible Land with LUCs	Surface and Subsurface Clearance of Accessible Land with LUCs
Threshold Criteria	Overall Protection of Human Health and the Environment	Yes	Yes	Yes	Yes
	Compliance with ARARs	Yes	Yes	Yes	Yes
Balancing Criteria	Long-Term Effectiveness and Permanence	1	2	4	5
	Reduction of Toxicity, Mobility, or Volume	1	1	4	5
	Short-Term Effectiveness	4	4	3	2
	Implementability	5	4	3	2
	Comparative Cost	5	4	2	1
Relative Overall Rating		16	15	16	15
Estimated Cost of Alternative		\$0	\$1,310,000	\$2,270,000	\$5,060,000

## Comparative Analysis—Northern Non-Target Area

Criteria		Remedial Alternative				
		No Action	LUCs	LUCs with Construction Support	Surface Clearance of Accessible Land with LUCs	Surface and Subsurface Clearance of Accessible Land with LUCs
Threshold Criteria	Overall Protection of Human Health and the Environment	Yes	Yes	Yes	Yes	Yes
	Compliance with ARARs	Yes	Yes	Yes	Yes	Yes
Balancing Criteria	Long-Term Effectiveness and Permanence	1	2	2	4	5
	Reduction of Toxicity, Mobility, or Volume	1	1	1	4	5
	Short-Term Effectiveness	4	4	4	3	2
	Implementability	5	4	4	3	2
	Comparative Cost	5	4	3	2	1
Relative Overall Rating		16	15	14	16	15
Estimated Cost of Alternative		\$0	\$1,510,000	\$1,630,000	\$2,300,000	\$2,610,000

## Comparative Analysis—Northern Target Area

Criteria		Remedial Alternative				
		No Action	LUCs	LUCs with Construction Support	Surface Clearance of Accessible Land with LUCs	Surface and Subsurface Clearance of Accessible Land with LUCs
Threshold Criteria	Overall Protection of Human Health and the Environment	Yes	Yes	Yes	Yes	Yes
	Compliance with ARARs	Yes	Yes	Yes	Yes	Yes
Balancing Criteria	Long-Term Effectiveness and Permanence	1	2	2	4	5
	Reduction of Toxicity, Mobility, or Volume	1	1	2	4	5
	Short-Term Effectiveness	4	4	3	2	1
	Implementability	5	4	4	3	1
	Comparative Cost	5	4	4	3	1
Relative Overall Rating		16	15	15	16	13
Estimated Cost of Alternative		\$0	\$1,470,000	\$1,840,000	\$2,960,000	\$5,130,000

**Light Agricultural Land Use**—Grazing or other agricultural activities that does not involve soil disturbance.

**Cultural and Recreational Land Use**—Visitation and use of cultural sites and recreation activities such as hiking that do not involve soil disturbance.

### Next Steps

State/Agency acceptance and community acceptance are two additional criteria used to determine the final proposed action for WVIA. The draft version of the FS Report is now available for public comment until 21 October 2011. Based on the recommendations of the FS and state and public input, a Proposed Plan will be prepared to comprehensively describe the selected alternative. The public will have the opportunity to review and comment on the Proposed Plan as well.

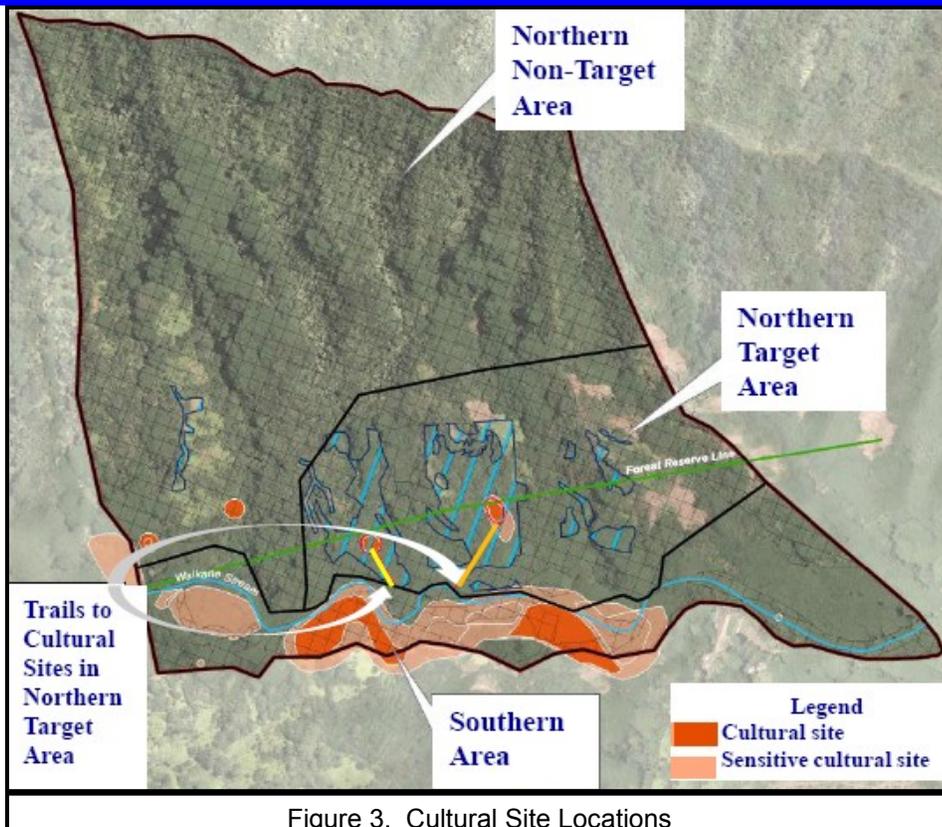


Figure 3. Cultural Site Locations

The anticipated schedule is as follows:

- **Draft FS Report Comments due 21 October 2011**
- Final FS Report - November 2011
- **Proposed Plan and Public Meeting - December 2011 (and 30 day public comment period)**
- Draft Decision Document - January 2012
- Decision Document - March 2012

### Community Safety Precautions

The fence and other safety precautions at WVIA are in place to protect the health and safety of the community. It is not safe to trespass within the WVIA. Residents can live and work safely near the WVIA provided they stay outside the fence surrounding Marine Corps property. Please help MCB Hawaii control access



to the fenced property, and remind your family, friends, and fellow community members that it is not safe to venture into the site without appropriate escort.

### **COMMUNITY INVOLVEMENT**

The Draft Feasibility Study Report for Waikane Valley Training Area Munitions Response Sites, Kaneohe, Hawaii (September 2011) is available for review at the following information repositories:

#### University of Hawaii at Manoa

Hamilton Library, Hawaiian & Pacific Collection  
2550 McCarthy Mall  
Honolulu, HI 96822  
Ms. Jean Kusano  
(808) 956-8227

#### Kaneohe Public Library

45-829 Kamehameha Hwy.  
Kaneohe, HI 96744  
Ms. Cynthia Chow  
(808) 233-5674

#### KEY Project

47-200 Waihee Road  
Kaneohe, HI 96744  
Ms. Lanette Mahelona  
(808) 239-5777

#### Marine Corps website

[www.mcbh.usmc.mil/q4/environ/WaikaneRAB.htm](http://www.mcbh.usmc.mil/q4/environ/WaikaneRAB.htm)

**For More information, Please Contact:**

Marine Corps Base Hawaii Public Affairs Office (808) 257-8840