Probability Assessment
For
Munitions and Explosives of Concern

H09HI0484 Makalapa Crater Former Navy Salvage Yard,
Honolulu, Oahu, Hawaii

27 February 2024

Prepared by

Honolulu District
U.S. Army Corps of Engineers

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1 GENERAL DISCUSSION

1.1 Introduction

US Army Corps of Engineers (USACE), Honolulu District (CEPOH), Environmental Branch completed a probability assessment for munitions and explosives of concern (MEC) for the Makalapa Crater Former Navy Salvage Yard (NSY) FUDS Property Number H09HI0484, located in the Halawa Ahupuaa, Ewa District of Honolulu, Honolulu, Island of Oahu, Hawaii. MEC consist of unexploded ordnance (UXO), discarded military munitions (DMM), or munitions constituents present in high enough concentrations to pose an explosive hazard.

The Lead CEPOH Ordnance and Explosive Safety Specialist (OESS) prepared this Probability Assessment using available information on the Makalapa Crater Former NSY. The gathered information consisted of previously conducted environmental assessments and removal actions completed by Department of Defense (DoD).

Historical records were gathered and reviewed by the USACE St. Louis District. The USACE Huntsville Military Munition Design Center as well as the USACE Environmental and Munitions Center of Expertise provided technical review of this document.

1.2 Site Description

The Makalapa Crater Former NSY FUDS consists of 19.2705 acres near Halawa, District of Ewa, Island of Oahu, Hawaii, located in Island of Oahu County. The FUDS includes the Radford High School (RHS) Field and Athletic Complex (RFAC) including the RHS football field, gymnasium, soccer/practice field, the baseball and softball fields, tennis courts, and parking areas. It also includes Makalapa Elementary School open fields, basketball courts, parking areas, and playground.

***Figure 1** – Makalapa Crater Former Navy Salvage Yard Property Map*[1]

Legend

- Confirmed FUDS Property No. H09HI0484
- Joint Base Pearl Harbor Hickam (JBPHH)
- Radford High School (including FUDS and non-FUDS portions)
- Makalapa Elementary School (including FUDS and non-FUDS portions)

1.3 Project Objectives

The objectives of this assessment are as follows:

- Review existing documentation and coordinate with responsible explosive ordnance disposal (EOD) units to gather information relative to site history and previous MEC and material potentially presenting an explosive hazard (MPPEH) findings;

- Determine the probability of encountering MEC when accessing the project site, by categorizing the Makalapa Crater Former NSY into a “no”, “low”, or “moderate/high probability” in accordance with the Defense Explosive Safety Regulation 6055.09, dated 13 January 2019; and

- Recommend appropriate explosive safety precautions based on the findings of the assessment following DoD guidance and regulations.

1.4 Scope of Probability Assessment

1.4.1 Historical Data Review

This assessment relies on the following documents to develop the MEC probability assessment and recommendations for explosives safety precautions:

- Final Action Memorandum for Time Critical Removal Action Radford High School Field and Athletic Complex, January 2015;[2]
- Preliminary Assessment, Makalapa Crater Former Navy Salvage Yard, 30 June 2016;[3]
- After Action Report (AAR) Time Critical Removal Action for a Portion of the Makalapa Crater Geographic Study Area (GSA), February 2017[4]
- Final Removal Verification Report Time Critical Removal Action at Radford Hight School Field and Athletic Complex, Makalapa Crater, May 2017;[5]
- Final Remedial Investigation (RI) Report for Defense Restoration Program (DERP) Formerly Used Defense Site (FUDS) Navy Salvage Yard, June 2021;[6] and
- Phase II Targeted Brownfields Assessment Munitions and Explosives of Concern Digital Geophysical Mapping Survey Report, Targeted Brownfields Assessment (TBA), Makalapa Elementary School & Radford High School, 20 April 2022.[7]

2 HISTORICAL REVIEW

2.1 Site Background (1939 – 2000s)

The Navy acquired the majority of the FUDS (18.577 acres) in 1939 as part of the Makalapa Crater expansion of the Pearl Harbor Navy Yard. The Navy used the crater for dredge spoil disposal and placed housing and administrative facilities on the west side of the crater. The east side of the crater remained undeveloped, except for open storage, until after the beginning of WWII, when the Navy established a scrap material salvage yard on the northeast side of the crater by January 1943.[8]

Figure 2 *– Handling Scrap Steel at Berth 23 headed for Makalapa Salvage – 18 January 1943*[9]

Figure 3 *– Unprepared Scrap at Makalapa Salvage Yard – 29 October 1944*[10]

The Navy also established an open burn area to the south of the salvage yard and began filling the eastern perimeter of the crater with non-burnable refuse, practices that would continue until April 1946.

Following the end of salvage and dump operations at Makalapa Crater, the Navy leased, and eventually deeded, lands to the City and County of Honolulu for the athletic fields for RHS (15 acres) beginning in August 1956 and the Makalapa Elementary School (3.577 acres) beginning in August 1971. The remaining FUDS portion (0.6935 acres) appears to have remained undeveloped by the military and was transferred in 1985 to RHS. [11]

2.2 Recent Investigations (2014 - present)

On 19 December 2013, the State of Hawaii Department of Education's (DOE) construction contractor encountered buried debris during excavation work to replace the old cinder running track at RHS. Munitions related scrap was among the debris the DOE contractor found in the excavated soil. The Air Force 647th Civil Engineering Squadron Explosive Ordnance Disposal Flight (647th CES AF EOD Flight) responded and observed a projectile fuze at the site. Subsequent site walks and photograph reviews by the 647th CES AF EOD Flight and Naval Ordnance Safety and Security Activity (NOSSA) identified three other items: a 105 mm projectile cartridge base; a 90 mm howitzer cartridge; and a cartridge case for the 5-inch Mk 4 Mod 0 Navy projectile. All items from the site walk were deemed to have no explosive hazard.[12]

On 25 August 2014, Naval Engineering Facilities Command (NAVFAC) began work on a Time-Critical Removal Action (TCRA) at the RHS football field and two nearby locations.[13] Soil excavation and MPPEH screening of over 14,00 cubic yards (CY)

commenced on 8 September 2014. Soil was excavated, staged in stockpiles, and fed through a mechanical screener. The screener was continuously monitored by a UXO technician and screened material larger than ¾-inch was spread out in shallow lifts and scanned by a UXO team using analog metal detectors.

The TCRA recovered 844 pieces of munitions debris during field efforts. Of this, 842 recovered items were determined to be free of explosive hazards and certified as Material Documented as Safe (MDAS) by the contractor. The two items which could not be verified to be free of explosive hazards were transferred to Mobile Diving and Salvage Unit One Detachment Explosive Ordnance Disposal (MDSU-1 Det EOD). EOD confirmed both items contained no explosive hazard and were MDAS.[14]

In June 2015, the gas company excavated an area measuring approximately 1,000 square feet in the southwest corner of the Makalapa Elementary School playground to repair a buried gas pipeline. As a result, previously buried soil and debris ended up on the ground surface. A surface sweep conducted by the contractor, CAPE UXOSO, revealed no MEC or MPPEH in the exposed surface soil. No MEC was recovered during the TCRA.[15]

In early 2015, USACE began investigations to document the eligibility of the property for the FUDS program and concurrently complete a preliminary assessment (PA). On 9 August 2015, USACE approved the property eligibility for the FUDS program and on 19 September 2015 USACE approved an inventory project report (INPR) than included a site-wide remediation of contaminated soil and buried debris beneath the top soil under the western portions of RHS and Makalapa Elementary School, including the athletic fields and playgrounds based on the draft PA. The approved INPR did not include a Military Munitions Response Project (MMRP).[16]

In June 2016, USACE finalized the PA. The PA reported the disposal of munitions scrap during landfill operations inadvertently included MEC on occasion. However, reviewing the cited historic records indicates no MEC was discovered. The only live loads and explosives noted were machine gun cartridges.

In 2016, USACE began a remedial investigation (RI) at the Makalapa Crater Former NSY which included a digital geophysical mapping (DGM) survey and multi-increment sampling. Soil cores were visually inspected and screened with a magnetometer with no MEC or MPPEH observed. In July 2018, Par Hawaii conducted maintenance work for an approximate 150-ft segment of petroleum pipeline at the FUDS Makalapa Crater Former NSY. A UXO consultant was present during the excavation activities and did not identify MPPEH or MEC.[17]

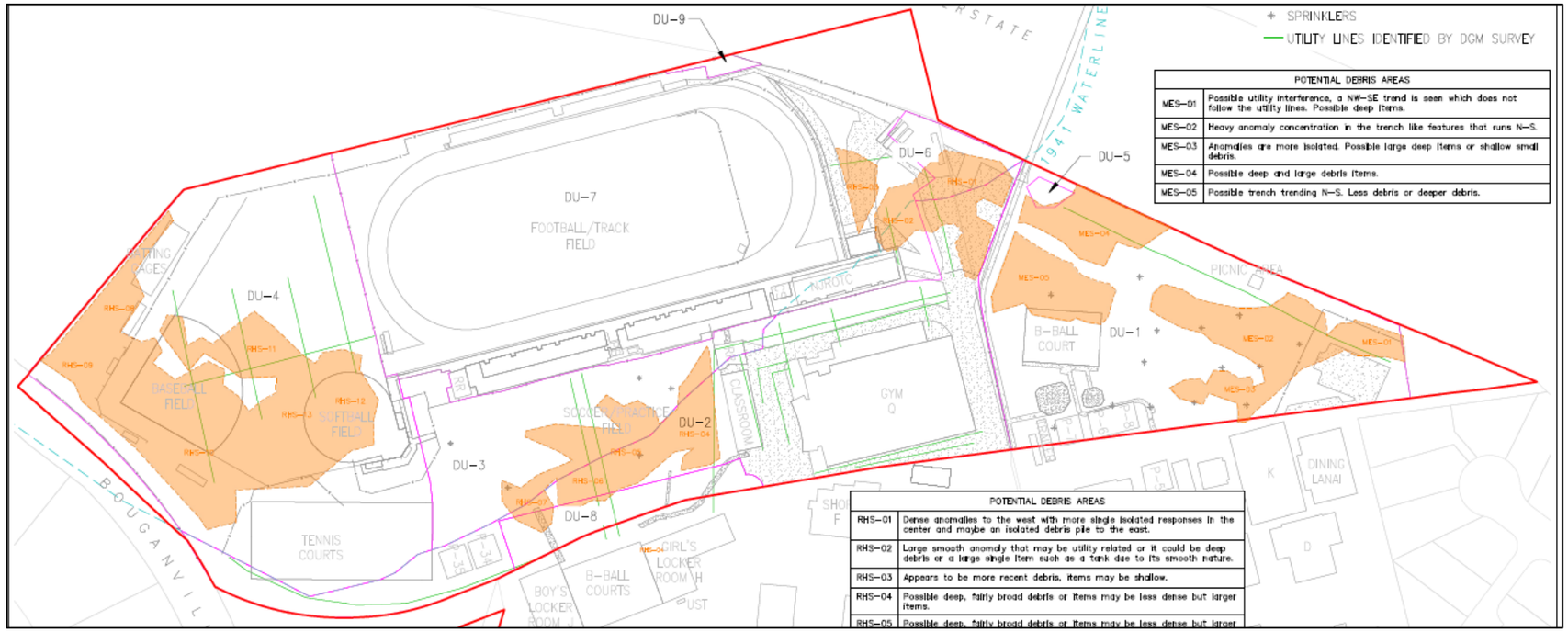

Figure 4 *– Potential Buried Debris Areas Draft Final RI – June 2021*[18]

The U.S. Environmental Protection Agency (USEPA) Region 9 completed a Targeted Brownfields Assessment (TBA) Phase II MEC DGM survey for the Hawaii State DOE at the Makalapa NSY FUDS site in 2022. The DGM survey detected 6,707 target anomalies and 2.82 acres of apparent heavy debris areas. The report concluded that, if MEC or MPPEH is discovered at the site during future construction activities, workers should contact the USACE FUDS program manager and follow "the 3Rs of explosives safety."[19]

2.3 EOD Incidents

The team queried the Explosive Ordnance Disposal Information Management System (EODIMS) Unexploded Ordnance (UXO) incident response reports in the vicinity of the Makalapa Crater. The EODIMS is a joint database repository of military EOD reports maintained by the Air Force. The EODIMS includes EOD response actions conducted by the 647th CES AF EOD Flight, the Army's 303rd Ordnance Battalion and 706th and 74th Ordnance Company EOD at Schofield Barracks, and the Marine Corps Base Hawaii (MCBH) EOD on Hawaii. EODIMS records go as far back as 1986. Earlier EOD response reports are no longer available.

Air Force EOD – Contact was made with SMSgt Steven Dauck and MSgt Dustin Frey from the 154th Civil Engineer Squadron's 154th EOD. The 647th CES AF EOD Flight previously mentioned in this report transitioned in June 2022 to the 154th CES AF EOD Flight from the Hawaii Air National Guard. The unit confirmed the following emergency response to RHS:

- 24 January 2014 – 647th CES AF EOD Flight responded to RHS and recovered one fuze. Team was unable to determine if the fuze contained an explosive hazard through X-ray. As explosive safety status could not be obtained, out of an abundance of caution the fuze was transported to Schofield Barracks and disposed of by demolition.[20]

Navy EOD – Contact was made with Lt Greg Pruett from MDSU-1 Det EOD. Lt Pruett confirmed the following emergency responses to RHS:

- 16 September 2014 – MDSU-1 Det EOD responded to RHS for an ordnance item which was reported by NAVFAC contractor CAPE UXOSO. Team identified the outer housing of an expended M-100 series bomb fuze. Item was X-rayed and verified to contain no explosive hazard; and

- 06 November 2014 – MDSU-1 DET EOD responded to RHS for a TYPE-89 Japanese fuze that had burned out. The item was recovered during screening operations as part of the NAVFAC TCRA. The EOD team remotely opened the fuze to verify there was no explosive hazard and deemed the item as MDAS.

Army EOD – Contact was made with CPT Dallas Sutton and 1SG Christopher Brown of the 74th EOD Company stationed at Schofield Barracks, Hawaii. They confirmed the 74th EOD unit had no emergency response calls to the FUDS.

Contact was made with LTC Clinton Pierce of the 303rd EOD Battalion. The unit confirmed the 303rd EOD Battalion nor the 706th EOD Company which was formerly stationed at Schofield Barracks had record of emergency responses to the FUDS property.

Naval Ordnance Safety and Security Activity (NOSSA) – Although not an EOD unit, NOSSA was contacted as there are multiple references to NOSSA conducting a site walk of the area and identifying three pieces of MDAS (105mm Cartridge, 90mm Cartridge, 5-inch cartridge). NOSSA provided the after-action report for the Navy's TCRA response confirming the items recovered during the TCRA were MDAS.

3 EVALUATION FOR POTENTIAL MUNITIONS

While it's clear the Navy disposed of munitions scrap during salvage operations at Makalapa Crater during WWII, there is no evidence that the Navy sanctioned or permitted disposal of explosive material in Makalapa Crater. Historic records noting scrap with live loads or explosives were specifically identified as machine gun cartridges.[21] These incidences were against standing regulations. Furthermore, the Navy had established policies that required the responsible salvage officer to attest in writing that *"all salvage materials delivered for shipment have been properly screened by competent personnel and does not contain any explosive materials."*[22] These documents certify that the Navy did not condone explosive material coming into the salvage yard. The success of those historic screening efforts is evident from the results of the TCRA, with 844 munitions related items discovered ultimately being classified as MDAS. Furthermore, numerous intrusive activities occurred on site since 2014 and did not encounter MEC or MPPEH.

Based on the information presented in this Probability Assessment, it is the opinion of the undersigned that the probability of encountering MEC during ground disturbing activities is Low.

In the future if MEC is found within the FUDS, or new information about historical use becomes available, a new probability assessment will be conducted and documented.

4 RECOMMENDATIONS

The MEC probability assessment team recommends that the 3R's of Explosive Safety be followed when working in the Formerly Used Defense Site.

Recognize - when you may have encountered a munition and that munitions are dangerous.

Retreat—do not approach, touch, move or disturb it, but carefully leave the area.

Report—call 911 and advise the police of what you saw and where you saw it.

Probability Assessment for Munitions and Explosives of Concern

FUDS Property Number H09HI0484
Makalapa Crater Former Navy Salvage Yard
Honolulu, Oahu, Hawaii

Prepared By:

JONES.STEVEN.KEITH.1268315256 Digitally signed by JONES.STEVEN.KEITH.1268315256 Date: 2024.02.27 17:11:31 -10'00'

Steven K. Jones
Lead Ordnance & Explosive Safety
USACE Honolulu District

27-Feb-2024
Date

Approved By:

PEVEY.CHRISTOPHER.RYAN.1268868999 Digitally signed by PEVEY.CHRISTOPHER.RYAN.1268868999 Date: 2024.03.05 07:58:11 -10'00'

Christopher Ryan Pevey
LTC, EN
Commander, Honolulu District

5-Mar-2024
Date

References

[1] 2016-06-30 Final PA H09HI0484--_01.09_0001_a.pdf, Figure 15.

[2] 2015-01 Final Action Memo TCRA H09HI0484--_02.17_0500_a.pdf.

[3] 2016-06-30 Final PA H09HI0484--_01.09_0001_a.pdf.

[4] 2017-07-10 AAR-ltr-to-DDESB_Makalapa-Crater_w-encl.pdf
2017-02 AAR Makalapa-Crater_Appendix D - MEC Forms.pdf

[5] 2017-05-17 Final Radford RVR_complete.pdf.

[6] 2019-06 DF RI Report H09HI0484--_03.10_0001_a.pdf.

[7] 2022-04-20 Phase II TBA DGM Survey MES_RHS.pdf.

[8] 2016-06-30 Final PA H09HI0484--_01.09_0001_a.pdf, Section 1.2.

[9] 2016-06-30 Final PA H09HI0484--_01.09_0001_a.pdf, Figure 26
1943-01-18 Handling Scrap Steel.PDF.

[10] 2016-06-30 Final PA H09HI0484--_01.09_0001_a.pdf, Figure 30; and
1944-10-29 Naval Admin Hist WWII CinCPAC Amphib Forces Append 38-12 Salvage.pdf.

[11] 2016-06-30 Final PA H09HI0484--_01.09_0001_a.pdf, Section 4.1.3.1.

[12] 2016-06-30 Final PA H09HI0484--_01.09_0001_a.pdf, Section 4.2.1.1.
2014-01-14 USAF_647 CES-CED Hickam AFB HI_EOD Incident Report_ RadfordHS.pdf.

[13] 2016-06-30 Final PA H09HI0484--_01.09_0001_a.pdf, Section 2.2.9;
2014 BLNR - Consent for Issuance of Right-of-Entry Item M-1.pdf;
2015-07-14 RHS_TCRA_RAB Fact Sheet.pdf; and
2015-01 Final Action Memo_RHS_TCRA_signed.pdf.

[14] 2017-07-10 AAR-ltr-to-DDESB_Makalapa-Crater_w-encl.pdf
2017-02 AAR Makalapa-Crater_Appendix D - MEC Forms.pdf
2017-05-17 Final Radford RVR_complete.pdf

[15] 2017-05-17 Final Radford RVR_complete.pdf.

[16] 2015-09-23 H09HI0484 MAKALAPA with Attachments-SEPT 2015 H09HI0484--_01.08_0502_p.pdf, pages 2-16.

[17] 2019-06 DF RI Report H09HI0484--_03.10_0001_a.pdf.

[18] 2019-06 DF RI Report H09HI0484--_03.10_0001_a.pdf, Figure 4-1.

[19] 2022-04-20 Phase II TBA DGM Survey MES_RHS.pdf.

[20] 2014-01-14 USAF_647 CES-CED Hickam AFB HI_EOD Incident Report_ RadfordHS.pdf.

[21] 1944-01-01 Live Ammunition Sent to Makalapa Salvage Lot.pdf.

[22] 1944-08-16 Disposition of Salvage and Surplus.pdf.