



Final

15 August 2012

OU B-2 Cultural Resources Survey Report

Former Adak Naval Complex

Adak, Alaska

Department of the Navy

Naval Facilities Engineering Command Northwest

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**FINAL
OU B-2 CULTURAL RESOURCES SURVEY REPORT
FORMER ADAK NAVAL COMPLEX, ADAK ISLAND, ALASKA**

**Prepared by
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EXECUTIVE SUMMARY

This report details the results of a cultural resources survey conducted by URS archaeologists in September 2011 within Operable Unit (OU) B-2 at the former Adak Naval Complex at Adak Island, Alaska. The U.S. Navy (Navy) proposes to remove munitions and explosives of concern (MEC) from 11 sites in OU B-2. Five of these were closely examined for the presence of cultural resources, including prehistoric sites and historic features associated with World War II (WWII) and Cold War activities. The cultural resources survey was conducted to assist the Navy in complying with stipulations of Sections 106 and 110 of the National Historic Preservation Act.

Sites that received an intensive cultural resources survey (10-meter pedestrian transects) include OB/OD-01, the southern part of RR-01, ALDA-01, and ALSW-01, while HG-01 and the northern part of RR-01 were examined with more widely spaced 30-meter transects. The survey effort resulted in the identification and recordation of 10 cultural resources, including 7 historic sites containing landscape features and 3 historic isolates. No prehistoric cultural material was encountered.

The seven historic sites recorded within OU B-2 consist of an underground bunker and four Quonset hut depressions (ALDA-01-01); an underground bunker (ALSW-01-01); a hand grenade range containing protective walls, bunkers, and a magazine (HG-01-01); two diversion dams (MI-03-01); three collapsed wooden structures (OB/OD-01-01); an abandoned bridge (OB/OD-01-03); and a rifle range (RR-01-01). The three historic isolates include a debris pile (OB/OD-01-02), a single yarder (RR-01-02), and scattered segments of a redwood water pipe (RR-01-03). Other than the newly discovered resources, no previously recorded cultural resource occurs within the project area.

Of the 10 newly recorded cultural resources (historic sites and historic isolates), eight are considered to be associated with the WWII occupation of the island. These eight resources comprise elements of the Adak National Historic Landmark and also form part of the Adak Island Cultural Landscape Historic District. However, not all eight resources are considered contributing elements to the Adak National Historic Landmark and the Adak Island Cultural Landscape Historic District. The eight WWII-related resources include an underground bunker and four Quonset hut depressions (ALDA-01-01), an underground bunker (ALSW-01-01), two diversion dams (MI-03-01), three collapsed wooden structures (OB/OD-01-01), a debris pile (OB/OD-01-02), an abandoned bridge (OB/OD-01-03), a rifle range (RR-01-01), and a redwood water pipe (RR-01-03). The remaining two resources, a yarder (RR-01-02) and a hand grenade range containing protective walls, bunkers, and a magazine (HG-01-01), appear to relate to Cold War activities on the island, rather than WWII activities.

Evaluation of the identified cultural resources in terms of historic significance, integrity, and National Register of Historic Places (NRHP) eligibility indicates that six of the seven recorded historic sites are eligible for inclusion in the NRHP, based on their association with events important to the broad pattern of U.S. history (Criterion A) and their direct association with the WWII-era Adak National Historic Landmark and the Adak Island Cultural Landscape Historic District. The seventh is a Cold War-era property that does not appear to meet any of the criteria for NRHP eligibility. The three historic isolates (a debris pile [OB/OD-01-02], a yarder [RR-01-02], and a redwood water pipe [RR-01-03]) are considered ineligible for listing in the NRHP because of their poor integrity and clear lack of association with known elements of the Adak National Historic Landmark.

FINAL OU B-2 CULTURAL RESOURCES SURVEY
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ABBREVIATIONS AND ACRONYMS

ACHP	Advisory Council on Historic Preservation
ADEC	Alaska Department of Environmental Conservation
AHRS	Alaska Heritage Resources Survey
BP	before present
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
EPA	U.S. Environmental Protection Agency
°F	degree Fahrenheit
FFA	Federal Facilities Agreement
HARP	Historic and Archaeological Resources Protection
MEC	munitions and explosives of concern
NAF	Naval Air Facility
Navy	U.S. Navy
n.d.	no date
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
OU	operable unit
RAA	remedial action area
SAERA	State-Adak Environmental Restoration Agreement
TAC	The Aleut Corporation
URS	URS Corporation
USFWS	U.S. Fish and Wildlife Service
UXO	unexploded ordnance
WWII	World War II

1.0 INTRODUCTION

The U.S. Navy (Navy) proposes to remove munitions and explosives of concern (MEC) at Operable Unit (OU) B-2 at the former Adak Naval Complex at Adak Island, Alaska (Figure 1-1). This report presents the results of a cultural survey conducted in September 2011, as well as the research design that guided inventory, historic site recordation, and National Register of Historic Places (NRHP) evaluation tasks. The cultural resources survey was conducted according to the methods and standards required by the Historic and Archaeological Resources Protection (HARP) Plan (U.S. Navy 1996) and Sections 106 and 110 of the National Historic Preservation Act (NHPA).

1.1 FORMER ADAK NAVAL COMPLEX BACKGROUND

The former Adak Naval Complex is located on Adak Island, which is approximately 1,300 air miles southwest of Anchorage, Alaska, in the Aleutian chain (Figure 1-1). The Navy base occupied the northern half of the island and closed operationally on March 31, 1997. The U.S. Fish and Wildlife Service (USFWS) manages the southern portion of the island (117,265 acres), which is a designated wilderness within the Alaska Maritime National Wildlife Refuge System. The developed portion of Adak is limited to the northern portion of the island. The former Adak Naval Complex had two main developed areas: Naval Air Facility (NAF) Adak and Naval Security Group Activity. NAF Adak was located in the downtown area of Adak, and Naval Security Group Activity was located approximately 5 miles north of downtown at the northwestern corner of Clam Lagoon.

Military presence on Adak began in 1942 with its occupation as a staging area to mount a counter-offensive to dislodge the Japanese from Attu and Kiska Islands (U.S. Navy, USEPA, and ADEC 2000). The Navy presence at Adak was officially recognized by Public Land Order 1949, dated August 19, 1959, which withdrew the northern portion of Adak Island, approximately 76,800 acres, for use by the Navy for military purposes. The Navy also used the base to conduct a variety of Cold War-era military activities. NAF Adak was on the list of Department of Defense installations recommended for closure in 1995, and that recommendation became final when Congress did not disapprove the list. The active Navy mission ceased, and the base operationally closed on March 31, 1997, through the Base Realignment and Closure (BRAC) process.

In September 2000, the federal government entered into a land transfer agreement with The Aleut Corporation (TAC), a Native corporation, as documented in the Agreement Concerning the Conveyance of Property at the Adak Naval Complex, Adak, Alaska. This agreement set forth

the terms and conditions for the conveyance of approximately 47,000 acres of the former Adak Naval Complex property to TAC. The actual conveyance or transfer of property occurred on March 17, 2004. The land transfer included all of the downtown area, housing units, and industrial facilities. Excluded from the transfer were any offshore islands, islets, rocks, reefs, and spires; those fixtures and equipment owned by the United States and associated with the airfield; those improvements owned by the United States and managed by the Federal Aviation Administration; and those improvements owned by the United States and managed by the USFWS. The Navy retained control of 5,600 acres of land, known as Parcel 4 (Figure 1-2).

Investigation and cleanup activities at the former Adak Naval Complex have been ongoing since 1986. Adak was initially proposed for placement on the National Priorities List in 1992 and was officially listed in 1994. The Navy, as lead agency, entered into a three-party Federal Facilities Agreement (FFA) with the U.S. Environmental Protection Agency (EPA) and the Alaska Department of Environmental Conservation (ADEC), as well as a two-party State-Adak Environmental Restoration Agreement (SAERA) with ADEC to facilitate investigation and cleanup activities. In 1993, the Navy, EPA, and ADEC signed the FFA, which incorporates EPA's cleanup process under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986. The CERCLA exclusion of petroleum as a hazardous substance required that cleanup of petroleum-related chemicals would follow State of Alaska regulations. Therefore, the FFA stated that petroleum-contaminated sites would be evaluated under a separate two-party agreement between the Navy and the State of Alaska. This agreement, the SAERA, was signed in April 1994.

In May 1997, the Navy and ADEC agreed to integrate the cleanup-decision process for petroleum with the cleanup-decision process being conducted for hazardous-substance-release sites under CERCLA. Adak was divided into OU A and OU B in 1998 for technical and administrative purposes through an amendment to the FFA. OU A includes CERCLA and petroleum sites, and OU B includes MEC sites. The final Record of Decision for OU A was signed in April 2000. In 2001, OU B was further divided into OU B-1 and OU B-2 to accommodate land transfer under the BRAC program. The OU B-1 Record of Decision was signed in December 2001. Thirty-nine MEC sites currently comprise OU B-2, and all of the OU B-2 sites are located within the boundaries of Parcel 4. Of the 39 sites, 15 sites met the requirements for no further action in the preliminary assessment and did not require further evaluation in the remedial investigation and feasibility study (U.S. Navy 2000). The remaining 24 sites were evaluated further in the remedial investigation and feasibility study (U.S. Navy 2012).

The 24 sites were divided into four distinct categories of sites in the feasibility study. Three of the categories consist of those OU B-2 sites that require either additional investigation or limited actions only (institutional controls). The fourth category consists of 11 OU B-2 sites that require active remedies to address explosive hazards incompatible with the designated future land use. Table 1-1 contains a description of the 11 OU B-2 sites, and Figure 1-3 shows the relative locations of these 11 sites.

The Navy is planning removal/remedial actions at these 11 OU B-2 sites in the near future. The areas where active remedies are planned are designated as remedial action areas (RAAs). Five RAAs were created and the 11 sites have been grouped into these RAAs based on the expected types and depths of MEC. The five RAAs and the 11 OU B-2 sites are as follows:

- RAA-01: OB/OD-01
- RAA-02: C1-01
- RAA-03 East: HG-01 and RR-01
- RAA-03 West: MI-01, MI-02, and MI-03
- RAA-04: SA93-01 and SA93-03
- RAA-05: ALDA-01 and ALSW-01

Note that in most cases the entire site is not included within the boundaries of the RAA, because only the areas of a site where active remedies are planned are included within the RAA.

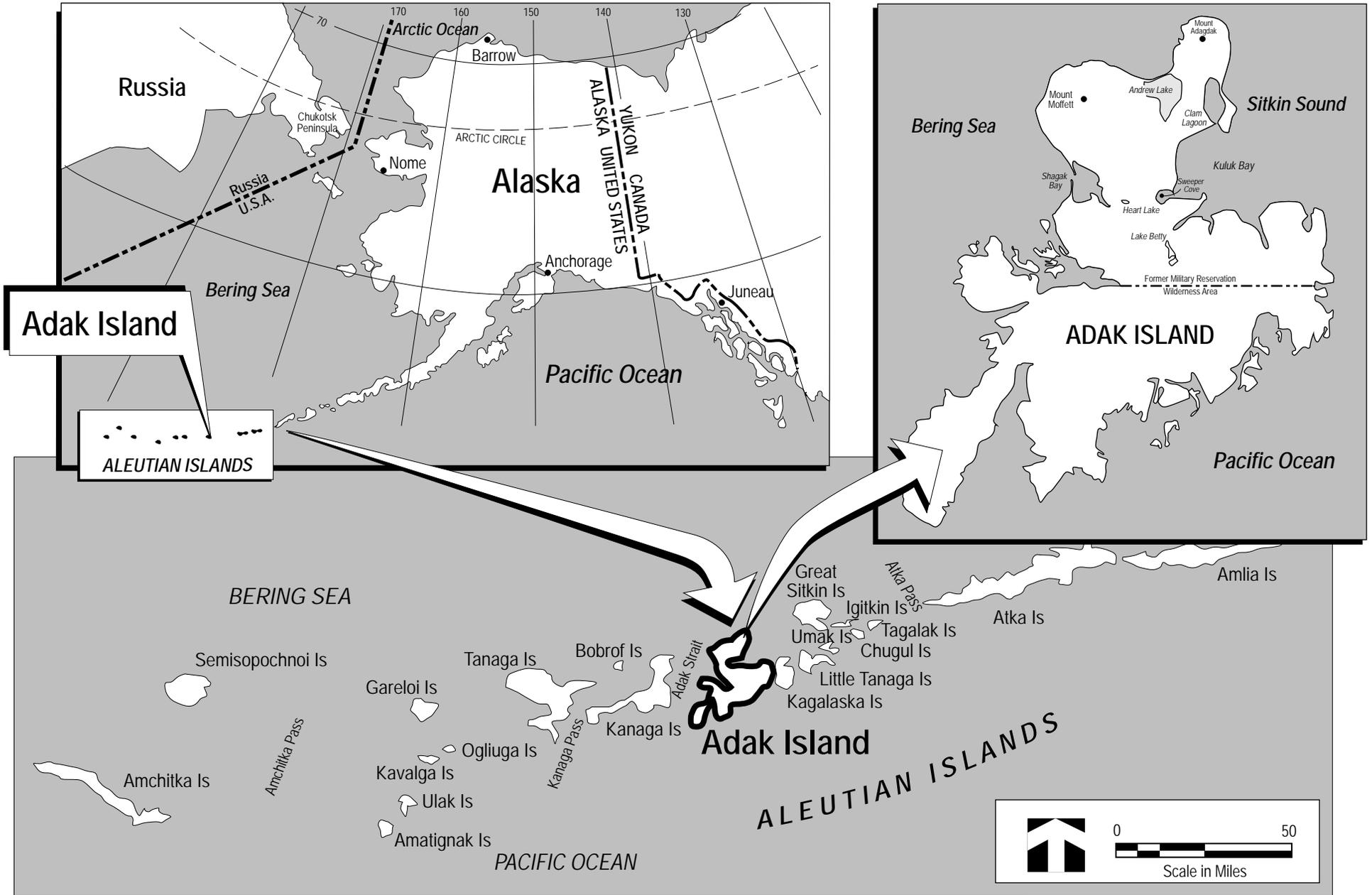
1.2 REGULATORY FRAMEWORK

The HARP Plan (U.S. Navy 1996) provides guidance for compliance with the NHPA. In accordance with Section 110 of the NHPA, the Navy is responsible for the stewardship of historic property under its jurisdiction and should undertake the preservation of such properties to the extent feasible. In addition, these regulations specify that the Navy shall afford the Advisory Council on Historic Preservation (ACHP) established under Title II of this act a reasonable opportunity to comment on the effects of any actions on historic properties. Under Section 106 of the NHPA, the Navy must consider the effects of actions it undertakes, assists, or licenses on historic properties. No absolute requirement to preserve these properties exists. A Section 106 review may result in a conclusion that the destruction of a historic property is in the general public interest. The key to NHPA compliance is protective management of and timely consultation regarding National Register resources. Such resources are defined as historic, archeological, and architectural resources and cultural values that are listed in or eligible for listing in the NRHP (National Register or NRHP). The HARP Plan recommends specific actions relating to the management of these resources considering the closure of the base. The HARP

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Plan also provides standard operating procedures and management standards and guidelines to be followed by the Navy prior to closure and by any receiving agency if the property is transferred.

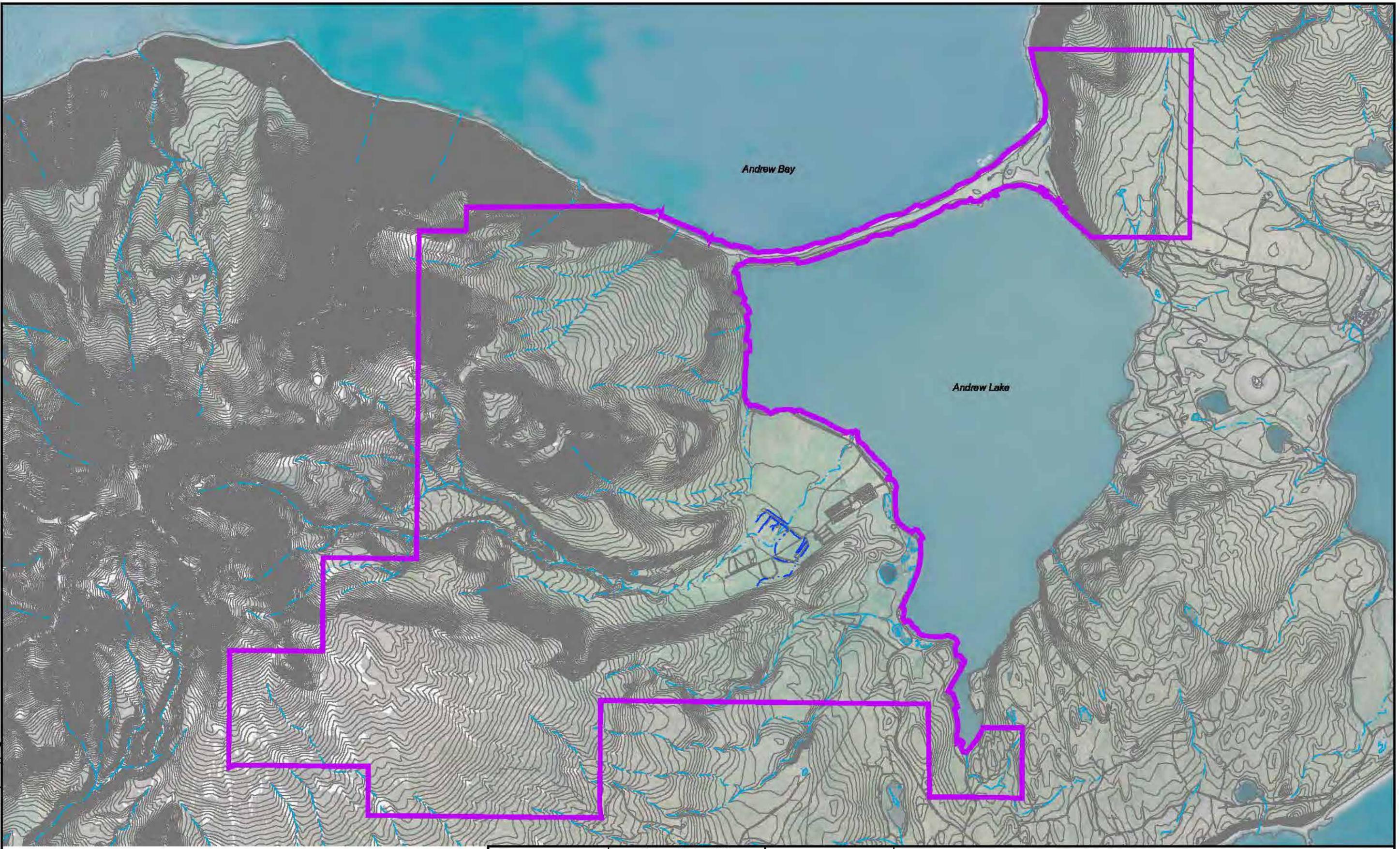


U.S. NAVY

**Figure 1-1
Adak Island Location Map**

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Adak Island, AK
OUB-2 Cultural Resources Surveys

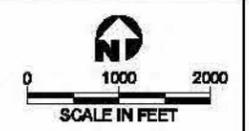
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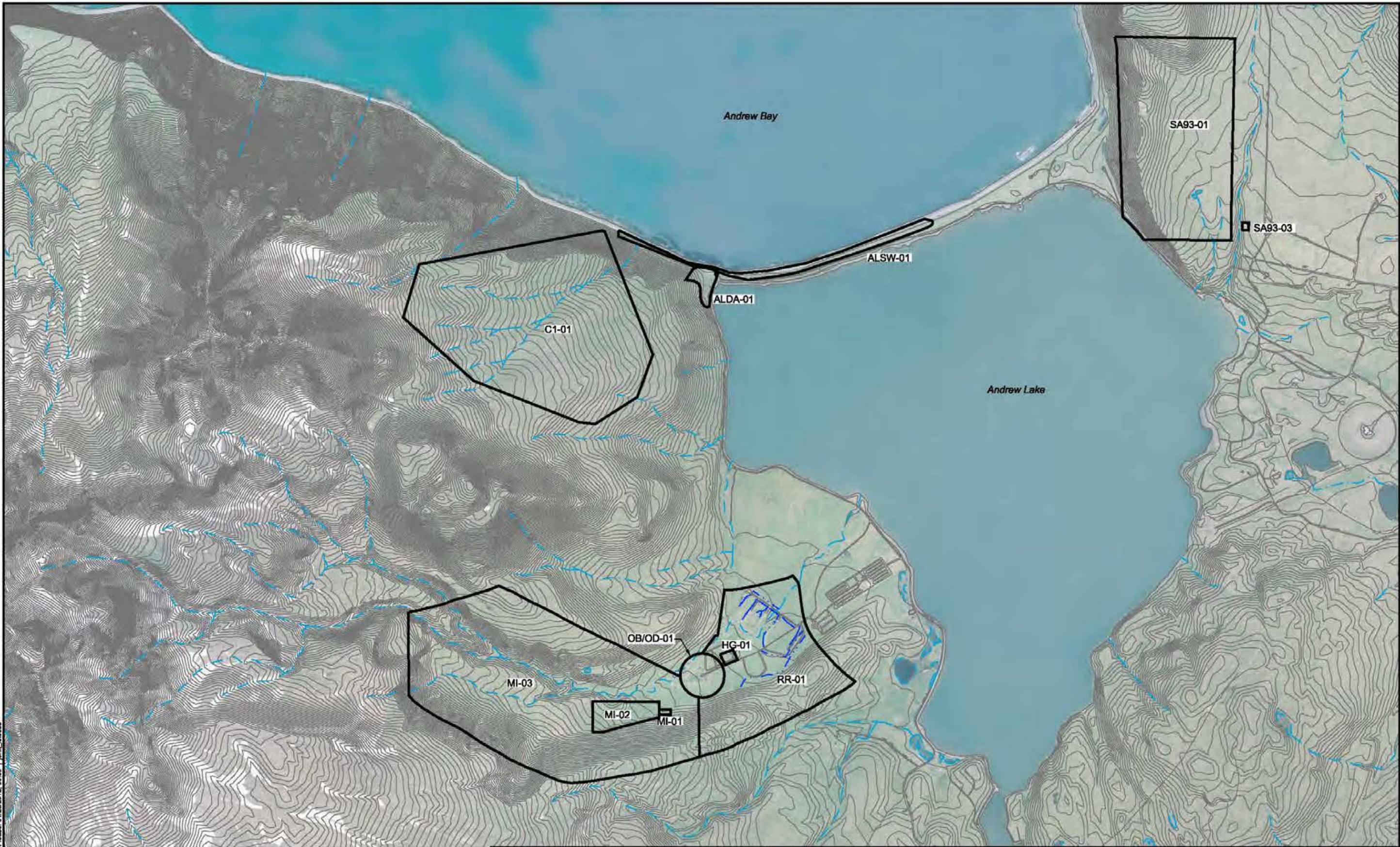
Legend:
Parcel 4 Boundary

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**Figure 1-2
Parcel 4 Boundary**



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Legend:
 — Site Boundary

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 RESOURCES SURVEY



Figure 1-3
OU B-2 Project Sites Surveyed

1
 2

Table 1-1
OU B-2 Sites Included in Cultural Resources Survey

RAA	Site Designation	Site Name	Site Description
RAA-01	OB/OD-01	Andrew Lake Open Burn/ Open Detonation Disposal Range	OB/OD-01 is a circular area with a radius of 182 meters (600 feet) that covers 18 acres. The boundary encompasses visible historical demolition craters and an ample buffer zone around the craters to account for kick-outs during disposal operations. It is bordered by RR-02 to the northwest; RR-01 to the northeast, east, and southeast; and MI-03 to the south and west. The elevation at this site ranges from about 33 to 40 meters (110 to 130 feet) asl. There is direct access to this site via the gravel range entry road, which branches from the main access road along the west side of Andrew Lake. This main road is gated (locked steel gate) near the south end of the lake to deter general access. A locked cable barrier also deters access to the range entry road. The terrain is relatively flat, but hummocky in some locations and marshy in others. There are several craters in this area resulting from previous disposal events. The site is generally covered in knee-high, grassy tundra; however, there are relatively barren areas surrounding some of the disposal craters. Moffett Creek runs from west to northeast through the northwestern portion of the site. In addition, standing water has been observed in the disposal craters. The valley floor is composed of a silty, gravelly, sandy, alluvial/colluvial, and/or outwash material overlying andesitic basalt bedrock or consolidated ash tuff. The groundwater is shallow, as evidenced by standing water in the disposal craters. Groundwater is in hydraulic communication with the creek (i.e., there is interconnection between the creek and the groundwater aquifer in this area).
RAA-02	C1-01	Combat Range #1 – Mortar Target Area	C1-01 is a target/impact area that covers 387 acres. C1-01 is located north of the former Range Complex at Andrew Lake. It is roughly oval in shape. C1-01 is situated on a sloping plateau above and west of ALDA-01 on the flanks of Mount Moffett. Elevations range from about 152 to 396 meters (500 to 1,300 feet) asl. It is bordered on all sides by C1-03. ALDA-01 and ALDA-02 are located northeast of this site, and Andrew Lake lies to the east. There is indirect access to this site via a moderate hike from the Andrew Lake range area. Access to the range area is via a locked steel gate near the south end of Andrew Lake. The terrain is moderately steep and rocky in most areas, and the site is inaccessible along the northern boundary. Vegetation consists primarily of sparse short grasses, lichens, and small alpine flowers ranging in height from 1 to 4 inches. An ephemeral drainage channel cuts across C1-01, outfalling north over a steep cliff to a rocky shelf beside Andrew Bay. The geology of the site is characterized by shallow soils with rock outcrops. According to observations made during the preparation of the groundwater study report (U.S. Navy 1995), the occurrence of groundwater outside of the downtown area is limited by the absence of significant accumulations of permeable materials and the presence of a blanket of low-permeability tephra deposits that inhibit infiltration.

Table 1-1 (Continued)
OU B-2 Sites Included in Cultural Resources Survey

RAA	Site Designation	Site Name	Site Description
			As a result, most of the precipitation falling in the remote areas discharges as surface water runoff. Therefore, much of the surface of these remote areas is covered by a maze of stream channels, small impoundments, bogs, and lakes perched over the tephra layer.
RAA-03 East	HG-01	Andrew Lake Hand Grenade Range	HG-01 is a target/impact area. It is a small, square area of about 2 acres located within the former Range Complex at Andrew Lake. Remnants of a berm with incorporated throwing pits are located near the east side of the range. The pits are reinforced with heavy timbers and, at one time, offered protection from exploding grenades during training exercises. The elevation in this site is approximately 33.5 meters (110 feet) asl. This site is located wholly within RR-01. There is direct access to this site via the gravel range entry road, which branches from the main access road along the western side of Andrew Lake. This main road is gated (locked steel gate) near the south end of the lake to deter general access. A locked cable barrier also deters access to the range entry road. The terrain is relatively flat. There are steep slopes on the berm protecting the throwing pits. Vegetation consists of tall tundra grasses up to 18 inches tall interspersed with wildflowers. The valley floor is composed of a silty, gravelly, sandy, alluvial/colluvial, and/or outwash material overlying andesitic basalt bedrock or consolidated ash tuff. Groundwater is anticipated to be shallow, and there may be intermittent standing water at certain times of the year.
RAA-03 East	RR-01	Andrew Lake Range Remainder – Hand Grenade/ 40-mm Area	RR-01 is a target/impact area that covers 182 acres. It is located in the south-central portion of the Range Complex at Andrew Lake. RR-01 is bordered by RR-02 to the north; OU B-1 to the south; RR-04 to the east; and OB/OD-01, RG-01, and MI-03 to the west. HG-01 is located wholly within this site. The elevation in this site ranges from about 15 to 152 meters (50 to 500 feet) asl. There is direct access to this site via the range entry road, which branches from the main access road along the west side of Andrew Lake. This main road is gated (locked steel gate) near the south end of the lake to deter general access. A locked cable barrier also deters access to the range entry road. The terrain is generally flat in the northern portion, but can be uneven and marshy. The steep slopes to the south make the southern third of the site largely inaccessible. The vegetation is predominantly dense, lush tundra grass in accessible lowland portions. Moffett Creek flows from west to northeast through the northern portion of this site. Lowland areas bordering this creek are often saturated with pooled water at certain times of the year. Groundwater is in hydraulic communication with the creek. The valley floor is composed of a silty, gravelly, sandy, alluvial/colluvial, and/or outwash material overlying andesitic basalt bedrock or consolidated ash tuff. The groundwater is anticipated to be shallow in lowland areas.

Table 1-1 (Continued)
OU B-2 Sites Included in Cultural Resources Survey

RAA	Site Designation	Site Name	Site Description
RAA-03 West	MI-01	Andrew Lake Mortar Impact Area – Rocket Disposal Area	MI-01 is a target/impact area that covers 0.7 acre. It is located along the southern side of the mortar impact valley in the Range Complex at Andrew Lake (west of Andrew Lake). It is bordered by MI-02 immediately to the west and is otherwise surrounded by MI-03. Elevation in the site ranges from 48 to 55 meters (160 to 180 feet) asl. There is indirect access to this site via the gravel range entry road that terminates at OB/OD-01, which branches from the main access road along the western side of Andrew Lake. This main road is gated (locked steel gate) near the south end of the lake to deter general access. A locked cable barrier also deters access to the range entry road. The terrain at the site slopes gently to the north toward the floor of the mortar impact valley. Dominant vegetation is a mixture of grasses and lowland tundra species ranging in height from 12 to 24 inches. The valley floor is composed of a silty, gravelly, sandy, alluvial/colluvial, and/or outwash material overlying andesitic basalt bedrock or consolidated ash tuff. Based on the elevation and proximity to stream channels, groundwater is anticipated to be shallow in lowland areas.
RAA-03 West	MI-02	Andrew Lake Mortar Impact Area – 40-mm Projectile Impact Area	MI-02 is a target/impact area that covers 19 acres. It is located along the southern side of the mortar impact valley in the Range Complex at Andrew Lake (west of Andrew Lake). It is bordered by MI-01 to the east and is otherwise surrounded by MI-03. The elevation at this site ranges from about 49 to 104 meters (160 to 340 feet) asl. There is indirect access to this site via a gravel range entry road that terminates at OB/OD-01, which branches from the main access road along the western side of Andrew Lake. This main road is gated (locked steel gate) near the south end of the lake to deter general access. A locked cable barrier also deters access to the range entry road. The terrain is relatively flat, rising moderately to the west toward Mount Moffett. The area is somewhat flatter in the eastern portion closer to Andrew Lake. The area is bordered on the south by steep terrain that becomes inaccessible near the top of the ridge delineating the southern boundary of MI-02 and the Range Complex at Andrew Lake. Steep terrain also forms the northern boundary of this site to the west. Vegetation is grassy with lowland tundra species ranging in height from 12 to 24 inches. Intermittent standing water in the eastern portion of the site (i.e., lowland area) may possibly be present because of shallow groundwater. The valley floor is composed of a silty, gravelly, sandy, alluvial/colluvial, and/or outwash material overlying andesitic basalt bedrock or consolidated ash tuff. Based on the elevation and proximity to stream channels, groundwater is anticipated to be shallow in lowland areas.

Table 1-1 (Continued)
OU B-2 Sites Included in Cultural Resources Survey

RAA	Site Designation	Site Name	Site Description
RAA-03 West	MI-03	Andrew Lake Mortar Impact Area – Mortar Impact Area	MI-03 is a target/impact area that covers 425 acres. It consists of a steep valley draining west to east from the flanks of Mount Moffett toward Andrew Lake. MI-03 is bordered by OU B-1 (MM-11 and various components of MM-10) to the west, south, and north. Three OU B-2 sites border MI-03 to the east: OB/OD-01, RR-01, and RR-02. MI-01 and MI-02 are located wholly within this site. The elevation in MI-03 ranges from about 40 meters (130 feet) asl at the eastern edge to about 280 meters (920 feet) asl along the western edge on the flanks of Mount Moffett. There is indirect access to this site via a gravel range entry road that terminates at OB/OD-01, which branches from the main access road along the western side of Andrew Lake. This main road is gated (locked steel gate) near the south end of the lake to deter general access. A locked cable barrier also deters access to the range entry road. The terrain ranges from relatively low and flat in the eastern portion nearest the OB/OD area to steep and inaccessible at the western end and along the southern border. There is a steep ridgeline near the northern side of the site with a relatively flat top. The top of this ridge is shared with RR-02. Vegetation is grassy in the east with lowland tundra species ranging in height from 12 to 24 inches. The vegetation transitions to upland species (mixed grasses, heaths, and mosses) of shorter stature in the west. Runoff channels or streams within the site run easterly toward Moffett Creek, which is partially located within this site. Groundwater is anticipated to be shallow in the lowland areas, which provides the potential for groundwater seeps. Small ponds or lakes are present at two locations. The valley floor is composed of a silty, gravelly, sandy, alluvial/colluvial, and/or outwash material overlying andesitic basalt bedrock or consolidated ash tuff.
RAA-04	SA93-01	Source Area #93 – Multiple Ordnance Impact Area	SA93-01 is a target/impact area that covers 263 acres. It is located to the northeast of Andrew Lake. Most of the site is on a plateau some 91 to 122 meters (300 to 400 feet) above the lake, but a small strip of this site along the southwestern corner abuts the shoreline of the lake. This site is bordered by SA93-02 to the east, areas lying outside Parcel 4 to the north and south, and Andrew Lake to the southwest. It is also bordered by MAG-01 to the west, but the two areas are not physically contiguous because of a steep cliff (i.e., MAG-01 is at the base of the cliff). Elevations in the central portion of this site range from about 67 to 98 meters (220 to 320 feet) asl. Along the western edge of this site, a steep ridge rises to just over 152 meters (500 feet) and then falls very rapidly (cliff) to elevations below 100 feet asl. To the north, a steep ridge rises to over 213 meters (700 feet) on the flanks of a small mountain peak. There is indirect access to this site from the gravel road originating from the east side of Andrew Lake near the Recreation Center. The entire historical impact area in which this site resides is currently fenced (4-strand barbed wire), with posted signage to deter public

Table 1-1 (Continued)
OU B-2 Sites Included in Cultural Resources Survey

RAA	Site Designation	Site Name	Site Description
			<p>access. On the west side of this site, a steep ridge forms a cliff above Andrew Lake. To the east of this ridge, the terrain falls gently toward a deep drainage ravine near the east side of this site. Vegetation is generally a mixture of grasses, sedges, mosses, and heaths ranging in height from 18 to 30 inches. A deep ravine at the eastern edge of the site carries runoff southward toward Andrew Lake. Also, there are areas of standing water or streams in the south-central portion of the site. According to observations made during the preparation of the groundwater study report (U.S. Navy 1995), the occurrence of groundwater outside of the downtown area is limited by the absence of significant accumulations of permeable materials and the presence of a blanket of low-permeability tephra deposits that inhibit infiltration. As a result, most of the precipitation falling in the remote areas discharges as surface water runoff. Therefore, much of the surface of these remote areas is covered by a maze of stream channels, small impoundments, bogs, and lakes perched over the tephra layer.</p>
RAA-04	SA93-03	Source Area #93 – Firing Point	<p>SA93-03 is a target/impact area that covers 0.6 acre. This small, rectangular site is located wholly within SA93-02 near the southern boundary of that site. This area was initially believed to be the principal firing point for 2.36-inch rockets found within SA93-01 (located across the ravine to the west). On the basis of items found during the 1999 site inspection, however, this site is now thought to be a rocket impact area. Nevertheless, the original name of this site has been retained to prevent confusion. The elevation of this site is about 29 meters (95 feet) asl, but a deep ravine abuts the site, falling to about 12 meters (40 feet) asl. There is indirect access to this site from the gravel road originating from the east side of Andrew Lake near the Recreation Center. The entire historical impact area in which this site resides is currently fenced (4-strand barbed wire), with posted signage to deter public access. The terrain is generally flat. However, a deep ravine abuts the site on the west. Vegetation consists of low-growing upland tundra species ranging in height from 6 to 12 inches. According to observations made during the preparation of the groundwater study report (U.S. Navy 1995), the occurrence of groundwater outside of the downtown area is limited by the absence of significant accumulations of permeable materials and the presence of a blanket of low-permeability tephra deposits that inhibit infiltration. As a result, most of the precipitation falling in the remote areas discharges as surface water runoff. Therefore, much of the surface of these remote areas is covered by a maze of stream channels, small impoundments, bogs, and lakes perched over the tephra layer.</p>

Table 1-1 (Continued)
OU B-2 Sites Included in Cultural Resources Survey

RAA	Site Designation	Site Name	Site Description
RAA-05	ALDA-01	Andrew Lake Disposal Area – Landfill Area	ALDA-01 is a large-scale burial area, with wash-up of DMM from the offshore area of ALSW-01. ALDA-01 is located at the northwest corner of Andrew Lake and covers 6.7 acres. The site boundary is dog-legged and wider at the north end of the site near Andrew Bay. Most of this site lies at elevations ranging from about 6.1 to 12.2 meters (20 to 40 feet) asl; however, a cliff on the west side of this site rises to heights of more than 200 feet asl. There is a distinct elevation break running across the site from northwest to southeast that separates the low-lying portion of the site into higher and lower elevation areas. The elevation difference of this feature is about 8 feet. The lower elevation area is a depositional environment from Andrew Bay, with this portion of the site experiencing wash-up of DMM from offshore (see ALSW-01 description below). This site is bordered by ALDA-02 to the west, Andrew Lake to the east, ALSW-01 to the northeast, and a thin strip of ALSW-01 to the north. Parcel 4 areas outside of OU B-2 border this site to the southwest. There is direct access to this site via the main access road running along the western shore of Andrew Lake. This road is gated with a locking steel gate near the south end of the lake to deter general access. The terrain is generally flat, except for steep slopes along the western edge. A line of craters trends northwest to southeast across the site. Vegetation is predominantly grass ranging in height from 12 to 18 inches, which is sparser toward the beach area, but still thick enough to hide the underlying cobbled surface. The geology of the site is characterized by shallow bedrock with a thin layer of soil. The soil is dominated by cobbles and boulders. There should be no groundwater because of the shallow bedrock.
RAA-05	ALSW-01	SWMU 8, Andrew Lake Seawall	ALSW-01 is a wash-up area for potential disposal at sea and along the shoreline. ALSW-01 consists of the western portion of the seawall located along the north shoreline of Andrew Lake and covers 10 acres. The seawall is narrow and elongated, similar to a dike with a narrow flat top and steep sides. The seawall separates the freshwater lake from Andrew Bay to the north, which is an embayment of the Bering Sea. A munitions dump may be located offshore of the seawall. The location and amount of munitions offshore are unknown. Elevations in the upland portion of the site range from about 3 to 9.1 meters (10 to 30 feet) asl. This site is bordered by ALDA-01 to the west, Andrew Lake to the south, the Andrew Bay beach area to the north, and non-OU B-2 areas to the east. The Navy periodically performs sweeps on the Andrew Bay beach, within the tidal zone, to remove MEC items that have washed up from offshore dump sites. The area below the mean higher high water mark on the Andrew Bay side of the seawall is owned by other agencies. There is direct access to this site via an unimproved road originating on the east side of Andrew Lake near the Recreation Center. There is a locked steel gate and rock barrier on this roadway just north of the Recreation

Table 1-1 (Continued)
OU B-2 Sites Included in Cultural Resources Survey

RAA	Site Designation	Site Name	Site Description
			Center to deter public access. There is also indirect access via a walk from the main access road running along the western shore of Andrew Lake. This road is gated (locked steel gate) near the south end of the lake to deter general access. The terrain transitions from generally flat atop the seawall to very steep along the sides (north and south). Vegetation consists of short, relatively sparse grass atop the wall and tussocks of taller grass along the sides where adequate soil is present. A natural spillway at the northwest corner of Andrew Lake allows some flow of freshwater into Andrew Bay. At times, the spillway is obstructed and discharge is limited to water flowing through the cobble substrate of the seawall to Andrew Bay. The seawall is a man-made feature composed of boulders, cobbles, gravel, large metal debris, and wood.

Notes:

- asl - above sea level
- DMM - discarded military munitions
- MEC - munitions and explosives of concern
- mm - millimeter
- OU - operable unit
- RAA - remedial action area

2.0 ENVIRONMENTAL SETTING

2.1 CLIMATE AND WEATHER

Adak Island experiences a polar maritime climate characterized by persistently overcast skies, high winds, frequent and often violent storms, and a narrow range of temperature fluctuation throughout the year. The average total annual precipitation for Adak Island is about 60 inches, most of which falls as rain in the lower elevations. Average monthly precipitation varies from a low of about 3 inches during June and July to a high of 7 to 8 inches during November and December. Snowfall averages over 100 inches a year at sea level (U.S. Navy, USEPA, and ADEC 2000). Adak is located in the region of the polar front, the zone of convergence between temperate westerly winds (which actually blow from the southwest at this latitude) and the polar easterly winds. In the area of the Aleutian Islands, this interface of air masses creates a semi-permanent low-pressure zone, which is particularly strong in the winter and generates the frequent low-pressure (cyclonic) storms characteristic of the North Pacific region. Weather on the island can be very localized, with fog, low ceilings, precipitation, and clear weather occurring simultaneously within a distance of a few miles of each other. Storms occur during all seasons, with the most frequent and severe storms during winter.

Wind conditions are typified by local directional shifts and rapid changes in velocity. Average wind velocity is 12 knots, with gusts in excess of 100 knots recorded during winter storms. High winds, with gusts higher than 50 knots, are frequent during the summer months.

Monthly temperatures range from a low of 32.9°F in February to a high of 51.3°F in August. The highest recorded temperature for Adak Island is 75°F (recorded in August 1956); the lowest recorded temperature is 3°F (recorded in January 1963 and again in February 1964).

2.2 GEOLOGY AND SOILS

Adak Island was formed by geologic events that included volcanic eruption and tectonic subduction. Seismic activity along the Aleutian Islands is considerable, and several large earthquakes have occurred near Adak Island. Advancing and receding glaciers, frequent rainfall, and high winds have shaped Adak Island into dramatic hills, valleys, cliffs, and floodplains. The northern region of Adak is dominated by the remnants of three volcanoes, the highest of which is Mount Moffett (elevation approximately 1,181 meters [3,875 feet]). In addition, some cliffs on the island rise 762 meters (2,500 feet) above sea level. The majority of the island is underlain by a thick (estimated at 2,438 meters [8,000 feet]) sequence of rock designated the Finger Bay

volcanics (Coats 1956). This material was developed 50 to 60 million years ago as a result of an outpouring of lava, primarily below sea level.

Adak Island consists primarily of volcanic and sedimentary rocks, with a relatively thin mantle of unconsolidated material (generally less than 10 feet) covering much of the bedrock. Only the downtown area is known to have a thick sequence of unconsolidated material (greater than 100 feet). Surficial deposits across the island were formed primarily by three geologic processes: glaciation, volcanic activity, and erosion and deposition. Some localized slumping, landslides, or small-scale debris flows have been observed and noted in isolated areas, including at several OU B-2 sites. These have been noted mainly in association with areas that have relatively steep slopes.

The geology of the Andrew Bay Seawall area reflects the high-energy nature of the Andrew Bay coastline, with rocks (up to 3 feet in diameter) and cobbles making up the steeply sloped beach and nearby areas. The seawall itself is partially natural and partially an artificial berm constructed of large rocks, boulders, wood, and metal. The area just south of the seawall, which includes ALDA-01, is also covered with rocks and cobbles. The geology of Parcel 4 on the west side of Andrew Lake is primarily composed of deposits of tephra that overlie undifferentiated alluvial (river) deposits. This area is generally composed of debris flow deposits, which consist of poorly sorted, matrix- and clast-supported, angular bouldery gravel. Discrete areas on the west side of Parcel 4 are composed of modern stream alluvium that consists of well sorted to moderately sorted, angular to rounded gravel, sand and minor silt along present-day streams and creeks. Other areas on the west side of Parcel 4 are composed of delta deposits that consist of alluvium deposited at the confluence of a river and standing water. The deposit consists of moderately sorted sand and gravel usually overlain by tephra, indicative of formerly higher lake levels.

Parcel 4 areas on the east side of Andrew Lake contain a medley of geologic units. They are mainly composed of debris flow deposits consisting of poorly sorted, matrix- and clast-supported, angular bouldery gravel and perhaps of reworked lahar deposits, colluvium, and talus. Isolated areas here are composed of landslide deposits, which are discrete bodies of reworked, unconsolidated sediment formed by slumping, sliding, or short-distance debris flow. These bodies consist of poorly sorted to intact blocks of soil and sediment found, generally, a short distance from the source. Discrete sites within this area are composed of unsorted, massive, matrix-supported, cobble and boulder gravel. The matrix consists of silt, clay, and fine sand. The thickness of deposits varies from 1 to 15 meters. Further discrete sites within this area are composed of undifferentiated bedrock outcrops, which may include minor amounts of talus and colluvium.

2.3 HYDROLOGY

The surface water hydrology in the vicinity of the OU B-2 sites is characterized by several short, steep-gradient streams draining radially from Mount Moffett and Mount Adagdak. One major stream, Moffett Creek, drains off Mount Moffett into the valley on the western side of Andrew Lake and runs through the valley where many of the OU B-2 sites are located. A smaller unnamed creek is located north of Moffett Creek. On the eastern side of Andrew Lake, a smaller drainage, Mitchell Creek, runs through the sites located in the SA93 area from north to south and drops down a steep ravine to Andrew Lake. Both Moffett and Mitchell Creeks remain active throughout the year, although the flow may fluctuate seasonally based on snowpack and snowmelt, rainfall, and surface or shallow groundwater drainage. Several small ponds or marshy areas are reported to exist seasonally or year-round in the lower elevations (U.S. Navy 2008).

Andrew Lake is the largest freshwater body in the vicinity of OU B-2 and borders the majority of the OU B-2 sites. Andrew Lake drains into Andrew Bay, when the level of the lake rises, via a spillway on the northwest corner of the lake. Based on historical aerial photography, the spillway has been in existence since the 1943 to 1944 time frame. Andrew Bay is a marine environment with a high-energy beach susceptible to heavy surf.

2.4 HYDROGEOLOGY

The hydrogeology of northern Adak Island is limited by the low permeability of native surface materials and bedrock, steep slopes, and discontinuity of sporadically located permeable zones. Most undisturbed areas are mantled by tephra (ash) deposits. Combined with steep slopes, these conditions offer little opportunity for infiltration. Additionally, the combination of a thin mantle of unconsolidated material over poorly jointed bedrock results in groundwater that is intermittent and not laterally extensive. The most notable exception is the laterally extensive flat area with permeable soil located in the downtown area.

Where it exists, groundwater on Adak Island occurs predominantly in areas of high permeability, such as artificial fill or beaches, and in low-lying areas, such as deposits laid down by water or wind. Groundwater also occurs in the upland areas of coarse-grained volcanic deposits that are often characterized by fragments of rocks ejected during eruptions. Smaller amounts of groundwater also occur in localized deposits and within fractured bedrock. No aquifer or significant quantity of groundwater exists where deposits of fine-grained volcanic ash overlie bedrock.

2.5 VEGETATION

The native vegetation of Adak Island is that of a terrestrial-maritime tundra ecosystem. Vegetation on Adak Island is classified as maritime tundra. The maritime tundra of Adak Island is treeless and typified by low-growing grasses, forbs, and shrubs. Ferns are conspicuous, and mosses and lichens are common on the ground surface. The terrestrial vegetation is composed primarily of perennial species that grow close to the ground and form rather continuous monotonous stands. Most species die back to ground level following the brief growing season (May through September) and overwinter as bulbs, corms, tubers, and rhizomes. However, a few plants, such as crowberry (*Empetrum nigrum*) and alpine azalea (*Loiseleuria procumbens*), are evergreen and provide food for animals throughout the year.

Undeveloped areas within the project boundaries are sedge-dominated tundra (*Carex* spp.) typically found in the Aleutians. The creek beds are covered by sedge-dominated plants intermixed with wet area plants such as red fescue (*Festuca rubra*) and hairgrass (*Deschampsia beringensis*). No tree of value to wildlife is in either the developed or undeveloped areas.

Upland vegetation varies with environmental factors, including the presence of wetlands, altitude, presence or absence of seasonal snowpack, and shelter from wind. Wetland vegetation consists of hydrophytic sedges, rushes, willows (small shrub types), horsetails, buttercups, ferns, and butterworts. Upland meadows not classified as wetlands can support a wide variety of vegetation, including crowberry, sedges, mosses, lichens, various grasses, willows (shrub types) (*Salix* sp.), northern monkshood (*Aconitum maximum*), lupines (*Lupinus nootkatensis*), buttercups (*Ranunculus* sp.), anemone (*Anemone narcissiflora* ssp. *villosissima*), and cow parsnip (*Heraclium lanatum*). Lakes are generally lacking in vegetation, but the vegetation, when present, includes algae. Streams support algae, and streambanks support vegetation common to wetlands and meadows, including buttercups, watermelon berry (*Streptopus amplexifolius*), and umbels. Vegetation in seeps can be very dense. Rocky shores support rockweed and kelp (USFWS 1995a).

2.6 FISH AND WILDLIFE

Because of Adak Island's harsh climate conditions and relative lack of vegetative structure, the diversity of wildlife inhabiting the island is fairly low. However, several species together characterize the wildlife assembly found in and around Adak. Wildlife typically found around developed areas includes two open-field bird species, the snow bunting (*Plectrophenax nivalis*) and Lapland longspur (*Calcarius lapponicus*). Song sparrows (*Melospiza melodia*) and tundra voles (*Microtus oeconomus*) are the major inhabitants of the dense vegetation lining creek beds, and rock ptarmigan (*Lagopus mutus*) inhabit the hillside areas near Mount Moffett. The beach

fringes at the mouth of the major creeks provide foraging opportunities for several species of birds, including the bald eagle (*Haliaeetus leucocephalus*), common raven (*Corvus corax*), several species of gulls, rock sandpiper (*Calidris ptilocnemis*), gray-crowned rosy finch (*Leucosticte tephrocotis*), and winter wren (*Troglodytes troglodytes*) (USFWS 1992, 1995a, and 2010).

Marine mammals found in the bays and harbors of Adak Island, both year-round and on a migratory basis, include the harbor seal (*Phoca vitulina*), orca (*Orcinus orca*), northern harbor porpoise (*Phocoena phocoena*), Dall's porpoise (*Phocoenoides dalli*), sperm whale (*Physeter macrocephalus*), Baird's beaked whale (*Berardius bairdii*), goosebeaked whale (*Ziphius cavirostris*), gray whale (*Eschrichtius robustus*), minke whale (*Balaenoptera acutorostrata*), fin whale (*Balaenoptera physalus*), humpback whale (*Megaptera novaeangliae*), right whale (*Eubalaena japonica*), sea otter (*Enhydra lutris*), and Steller's sea lion (*Eumetopias jubatus*) (USFWS 1995a and 2011). Sea otters also occur in Andrew Lake.

The USFWS reports that three streams on the west side of Andrew Lake, including Moffett Creek, support several species of anadromous fish. These are the only sensitive ecological receptors identified by USFWS that are located within OU B-2. Five different fish species were identified in Andrew Lake and the streams entering the lake during surveys in 1993 and 1994. The species include Dolly Varden (*Salvelinus malma malma*), residual coho salmon (*Oncorhynchus kisutch*), kokanee salmon (*O. nerka*), threespine stickleback (*Gasterosteus aculeatus*), and coast range sculpin (*Cottus aleuticus*). Dolly Varden, coast range sculpin, sockeye (anadromous and lacustrine forms) (*O. nerka*), pink salmon (*O. gorbuscha*), and coho salmon were observed in streams entering the lake. Anadromous fish access to this watershed is restricted during some years by debris that accumulates in the Andrew Lake spillway connecting the lake to Andrew Bay (USFWS 1995b).

3.0 CULTURAL CONTEXT

3.1 PREHISTORY

Human occupation of the Aleutian Islands has been documented back to at least 8,000 years before present (BP), based on the recovery of stone tools and apparent semi-subterranean house remains on Anangula Island in the eastern Aleutians. An apparent hiatus of 2,000 or more years followed, after which evidence of continuous occupation is relatively widespread across the island chain. The initial aspects of this second period of occupation resemble those noted elsewhere in coastal Alaska, but by 2,500 BP, the Aleutian tradition was well established, persisting with a few stylistic changes until the European era. The Aleutian tradition is characterized by a highly developed sea hunting technology, distinctive bone and stone tools, and deep midden sites of accumulated sea urchin, shellfish, and fish remains (Luttrell 2000).

Archaeological investigations have resulted in the recordation of a number of prehistoric and historic sites that document the human use of Adak. Archaeological investigations on the island have been limited in both number and extent (Luttrell 2000). A study conducted by the USFWS in 1999, however, focused on evaluation of 10 previously recorded sites and documented the presence of 21 new sites, all located on the northern portion of the island in the vicinity of Clam Lagoon. All documented sites are prehistoric in origin and appear to date to between 2,500 and 150 years BP. Most of the sites were determined to have received relatively minimal impacts from military activities and were demonstrated to contain significant data on prehistoric economy and social systems, as well as environmental change over the past 3,000 years (Luttrell 2000).

3.2 ETHNOHISTORY AND HISTORY

The ethnographic inhabitants of the Andreanof Islands, the group of central Aleutian Islands that includes Adak, were the Unangas, a subgroup of the Aleut. The Aleut occupied the westernmost section of the Alaska Peninsula along the curving Aleutian chain to Attu, the last island east of the International Date Line. The Aleut followed a basically Eskimo culture, adapted to take advantage of a rich hunting and fishing area. Most food came from the sea and included most whale species, sea lions, fur seals, sea otters, and occasionally walrus. Salmon, halibut, codfish, flounder, and other species were dietary staples, as were sea urchins, clams, limpets, and mussels. Sea birds and their eggs, as well as various edible plants, were also utilized. Indigenous land animals were rare, with the exception of caribou, bears, and wolves that had migrated to Unimak Island (Lantis 1984 and U.S. Navy 2012).

Aleut settlements were typically located near a stream entering into a bay, with a nearby headland offering a lookout. Beaches and kayaks were essential for travel. Houses were large, semi-subterranean, oblong or rectangular structures, with walls sunk 3 to 4 feet into the ground and roofs made of skins, grass, and sod overlaying wooden posts and logs. Implements were constructed of wood, stone, and bone, and baskets were produced for storage and carrying. Skin-covered Aleut kayaks, often called baidarkas, were long in proportion to draft and often had two or three hatches (Lantis 1984).

3.2.1 Exploration and Euroamerican Settlement

Aleut lifeways were significantly altered following Vitus Bering's discovery of the Aleutians in 1741 and the expansion of the Russian fur trade into the region. Aleuts were forced into hunting sea mammals for the Russians, often transported far from home, and death from disease, punishment for resistance, malnutrition, suicide, and exposure seriously reduced the Aleut population. The more vicious practices were gradually ended in the first quarter of the nineteenth century, but by then, populations had been largely devastated (Lantis 1984). By the early 1800s, Adak had been largely abandoned, as Aleut Island hunters followed the Russian fur trade east, and famine set in on the Andreanof Islands. Active hunting and fishing around the island, however, continued until World War II (WWII) (U.S. Navy 2012).

In 1867, the United States purchased Alaska, including the Aleutian Islands, from Russia. The Alaska Territory offered a wealth of gold and furs, but by 1910, overhunting and exploitation had greatly depleted the population of fur-bearing species. In response, in 1913, the Aleutian Islands National Wildlife Refuge was established by President Taft (U.S. Navy 2012).

3.2.2 History of the Adak Naval Complex

The United States declared war on Japan in December 1941, following the attack on Pearl Harbor. In June 1942, the Japanese attacked Dutch Harbor, on the Aleutian Island of Unalaska. Following the attack, the Japanese forces retreated west and occupied the islands of Kiska and Attu, at the western end of the Aleutian chain. Because of its strategic position, Adak was selected by the military as a base of operations to counteract the invasion. Mitchell Field, the first naval facility on the island, was established in 1943. The U.S. Army established a base at the same time and by the summer of 1943, 100,000 soldiers and 100 ships were stationed at Adak. After WWII, the military presence on the island was dramatically reduced. The U.S. Army controlled operations in the downtown area until 1950, when the U.S. Air Force took control of the airfield and renamed it Davis Air Force Base. The Navy conducted seaplane operations in Andrew Lake (as well as on Mitchell Field) from 1943 to 1959, when all operations were moved to Davis Air Force Base. In August 1959, Public Land Order 1949 designated the northern portion of Adak for use by the Navy for military purposes. The OU B-2 areas, like

other MEC areas on Adak, were used primarily during and just after WWII for military training purposes (for example, as firing ranges and target areas). Some areas dedicated to small-arms training and MEC disposal were used until the late 1980s, and others became dormant soon after the war. Other areas of Adak were dedicated to infrastructure and support of military operations.

3.2.3 Adak Army Base and Adak Naval Operating Base National Historic Landmark

The Adak National Historic Landmark was officially designated as a landmark in February 1987, and at the same time, the landmark was placed within the NRHP. The landmark was listed as a site of historical and cultural value associated with Adak's role as a WWII military base. Although no formal boundary was delineated for the landmark, a set of Universal Transverse Mercator coordinates was provided to mark the location of the landmark. Eighteen contributing elements of the landmark were identified, and among these are Andrew Lake, Clam Lagoon, and the Andrew Bay Infantry Outpost.

3.2.4 Adak World War II Cultural Landscape Historic District

Two WWII-era historic resources at Adak have been determined eligible for listing in the NRHP, including the Old Chapel and what has been named the Adak Island Cultural Landscape Historic District (U.S. Navy 1996). The Historic District is identified as a defined area of the Army and Navy bases associated with events important to the broad pattern of U.S. history (Criterion A) that embodies distinctive characteristics of U.S. military construction, style, and technology (Criterion C). According to Birnbaum (1994), there are four basic types of cultural landscapes, including historic sites, historic designed landscapes, historic vernacular landscapes, and ethnographic landscapes, of which none is mutually exclusive. The Adak Island Cultural Landscape Historic District includes both designed landscapes and historic sites. Significant landscape features associated with the Historic District include such things as abandoned bunkers and Quonset huts, depressions formed by the removal of Quonset huts, roads, dams, waterlines, and other ruins. Also included in the proposed Historic District are Clam Lagoon and Andrew Lake, two water bodies important for their use as water runways for naval amphibious patrol aircraft (U.S. Navy 1996).

4.0 RESEARCH APPROACH AND METHODS

4.1 RESEARCH ISSUES

Basic to any cultural resources study is the identification of the types of cultural materials present within a site or region. Knowledge of the kinds of artifacts that occur within an assemblage may aid in the identification of site function, chronology, the organization of settlement systems, and subsistence practices. In addition, knowledge of the relative condition or preservation of archaeological and historical materials and features is useful for addressing research questions, site integrity, and significance.

To determine the nature of past and potential impacts, research questions relating to site structure and assemblage composition must be explored and documented. This assessment includes identification of surface features, definition of the vertical extent of each cultural deposit, and a description of site integrity. These data allow for definition of site boundaries, identification of activity areas or temporally discrete components useful for addressing research questions, and assessment of site integrity and its role in each site's research potential.

Basic questions that may be addressed by survey and site recordation include the following:

- What artifact classes are present, and what do these materials tell us about site chronology and function?
- Is there evidence of both historic and prehistoric occupations within the project area?
- What types of features are present, and in what condition are the features? What artifacts are associated with features?
- What is the vertical extent of the site deposit? Can discrete activity areas be identified?
- What is the integrity of each archaeological and historical site? Is there evidence of recent site damage or vandalism?
- What site types occur within the study area? Do the sites represent single or multiple occupations by one or more cultural groups? What temporal periods are represented?

- Does archaeological evidence within the project area support the written record?

4.2 DOCUMENTARY RESEARCH

The cultural resources investigation was initiated with a literature review and records search conducted at the Alaska Office of History and Archaeology in Anchorage on September 15, 2011. This review was used to collect information on previous archaeological studies conducted on Adak, as well as to obtain information on previously recorded archaeological and historic sites in the project area. Additional research was performed on September 29, 2011, reviewing pertinent records at the Adak Town Hall.

URS obtained copies of the following previous investigations, plans, and agreement, which were reviewed prior to beginning field work:

- *Final Northern Adak Island Alaska Andrew Lake Seawall Area & Vicinity Historical Photographic Analysis* (U.S. Navy 2011c)
- *Historic and Archaeological Resources Protection (HARP) Plan for the Adak Naval Complex, Naval Air Facility Adak, Naval Security Group Activity Adak* (U.S. Navy 1996)
- *Archaeological Investigations on Northeast Adak Island* (Luttrell 2000)
- *Adak Island Defense Plan, Short Title – “DPA,” Adak Island Alaska* (U.S. Navy n.d.)
- Preservation Agreement Regarding the Adak Army Base and Adak Naval Operating Base National Historic Landmark and Associated Landscape and associated correspondence (1997 to 2006)

4.3 SURVEY METHODS

Following completion of the records search, historical and cultural field studies were conducted by a crew of three archaeologists and one unexploded ordnance (UXO) technician during the period of September 24 to 28, 2011, in accordance with the work plan (U.S. Navy 2011a). Areas surveyed are shown on Figures 4-1, 4-2, and 4-3. The areas surveyed covered approximately 600 acres and were based on the RAA boundaries as defined at the time of the field work. These boundaries were included in the February 2011 draft final feasibility study (U.S. Navy 2011b).

Following the completion of the cultural resources survey field work, the boundaries of the RAAs were refined, as included in the March 2012 final feasibility study (U.S. Navy 2012). Figures 4-1, 4-2, and 4-3 include both the 2011 survey area boundaries and the current RAA boundaries.

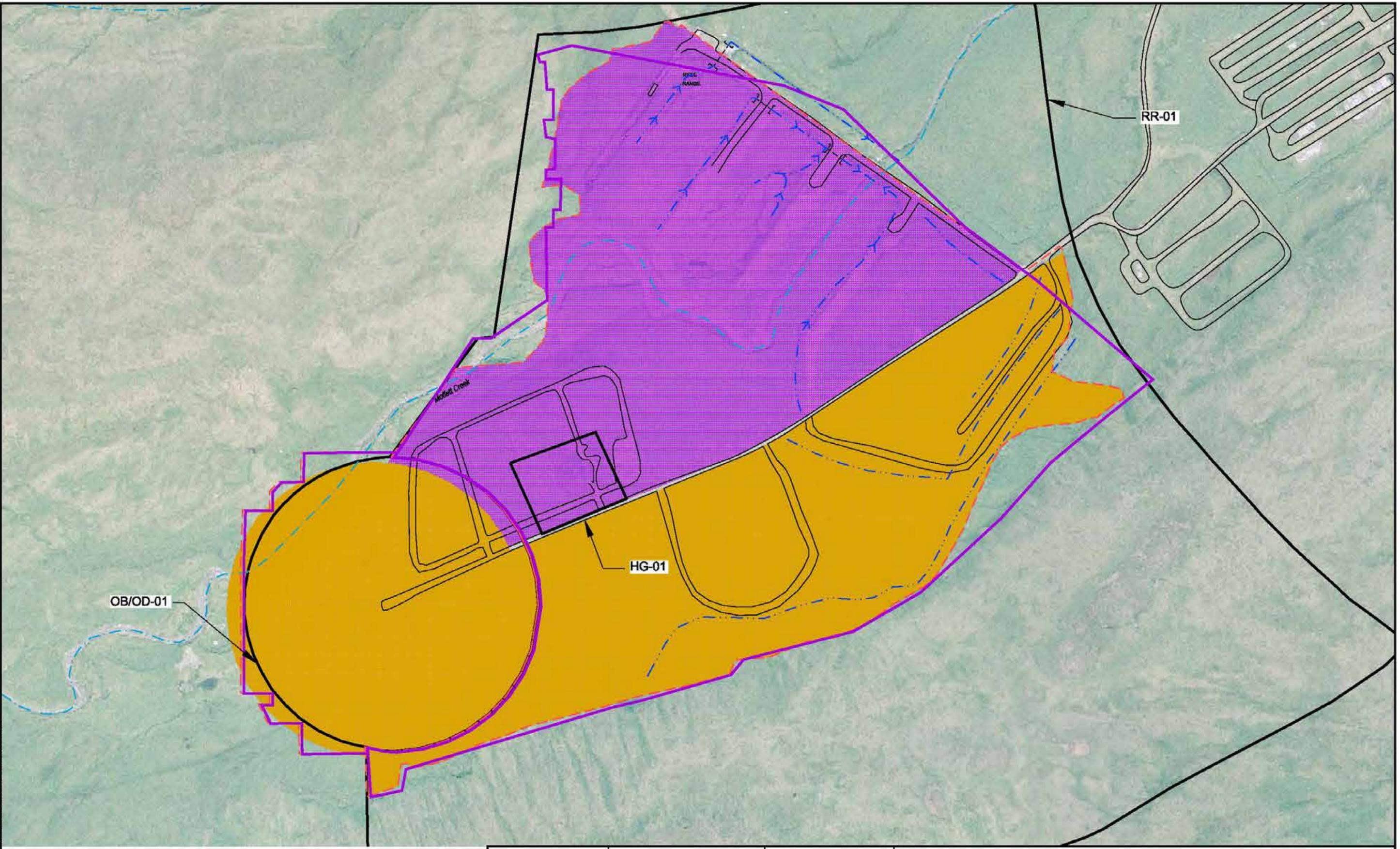
Because of the danger of encountering MEC, no subsurface testing was conducted. Rather, the inventory focused on close examination of exposed ground surfaces. Field efforts documented all historic sites, and sites associated with military occupation, especially of WWII era, were particularly important for this effort.

The cultural resources survey was focused on intensive pedestrian examination of three OU B-2 sites within Moffett Valley, including OB/OD-01, HG-01, and RR-01. Intensive survey within these areas was initiated at 10-meter transect intervals. Such intervals were employed during the first two days of survey within OB/OD-01 and the southern half of RR-01, with three archaeologists walking in single file behind the UXO technician. Because the survey crew was limited to a single UXO staff member, this survey approach proved inefficient. The high visibility of military features within the areas also demonstrated that the technique was unnecessary. As a result, transect intervals were increased to between 15 and 30 meters within HG-01 and the northern portion of the RR-01 remedy areas. Following this approach, the UXO technician cleared the area in front of the three archaeologists, allowing inspection of wider areas where appropriate. In addition, these areas were quickly determined to be covered with historic materials that would require detailed investigation and documentation as historic sites. This documentation was conducted following completion of the inventory, the results of which are presented in Section 5.

In addition to the three areas described above, the cultural field crew examined other areas where possible cultural resources had been noted by the biology crew. This included the cursory examination of a small part of C1-01, where a possible dug-out feature was reported, and the intensive survey of ALDA-01 (transects spaced at no greater than 10-meter intervals), where numerous craters had been identified. The ALDA-01 area had also been identified in the records search as the location of a military dump. Once the historic sites at Moffett Valley and ALDA-01 had been recorded, the cultural crew conducted an intensive survey (transects spaced at no greater than 10-meter intervals) of the western half of the ALSW-01 area (walking parallel to the length of the seawall), where a large amount of historic debris associated with the military dump was noted on the surface, as well as a cursory survey of the outskirts of SA93. The boundary of SA93 was examined from the adjacent roadway to determine if previously recorded historic and prehistoric sites extended within the RAA.

Cultural resource data were recorded using Alaska Heritage Resources Survey (AHRS) site forms (see Appendix A), providing detailed information on the location, nature, and condition of previously or newly identified historic resources. Identified historic sites were mapped and photographed and their locations documented using Differential Global Positioning System instruments. Photographic logs were also maintained, with date, time, site, direction (north, south, east, or west), and subject recorded. This information will be given directly to the Alaska Office of History and Archaeology.

T:\ADAK\IDIS\Sub-Task\DO 41\Cultural Resources\Draft Final Report\Fig 4-1 OB, HG, RR.dwg
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Legend:

-  Site Boundary
-  2011 Survey Area
-  Remedial Action Area
-  Area Surveyed Using 10 Meter Transect Intervals
-  Area Surveyed Using 15 to 30 Meter Transect Intervals

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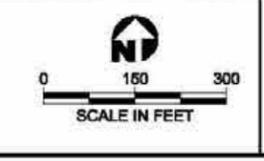


Figure 4-1
OB/OD-01, HG-01, and RR-01 Cultural Survey Area

T:\ADAK\IDIS\Sub-Task\DOA\Cultural Resources\Draft Final Report\Fig 4-2 ALDA, ALSW.dwg
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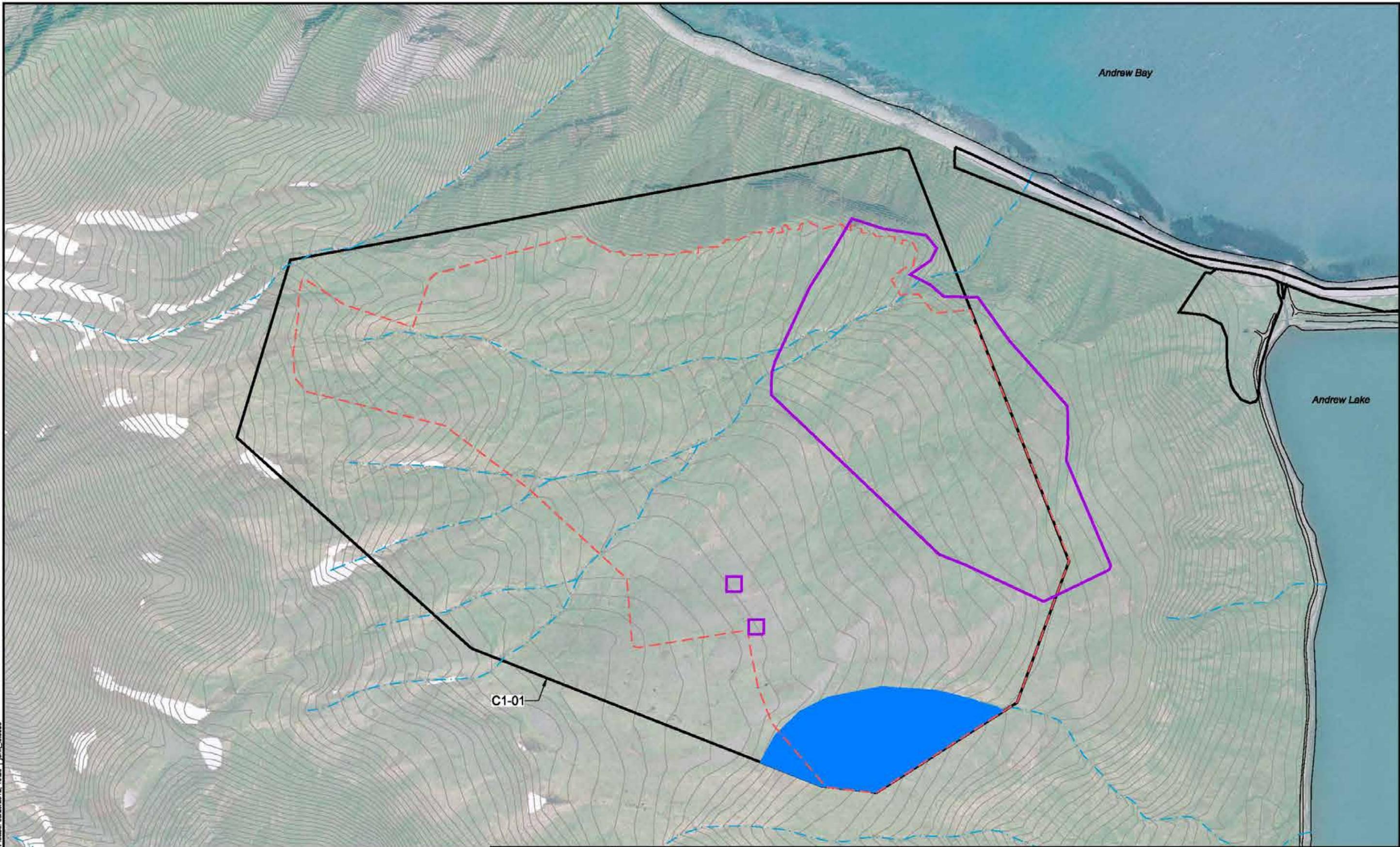
-  Site Boundary
-  2011 Survey Area
-  Remedial Action Area
-  Area Surveyed Using 10 Meter Transect Intervals

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Figure 4-2
ALDA-01 and ALSW-01 Cultural Survey Area



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Legend:

- Site Boundary
- 2011 Survey Area
- Remedial Action Area

Cursory Survey Area

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Figure 4-3
C1-01 Cultural Survey Area

5.0 SURVEY RESULTS

5.1 SURVEY RESULTS

The survey effort resulted in the identification and recordation of 10 cultural resources, comprising 7 historic sites (including landscape features) and 3 historic isolates (Figures 5-1 and 5-2). No prehistoric archaeological material was encountered. The seven historic sites recorded within OU B-2 are an underground bunker and four Quonset hut depressions (ALDA-01-01); an underground bunker (ALSW-01-01); a hand grenade range containing protective walls, bunkers, and a magazine (HG-01-01); two diversion dams (MI-03-01); three collapsed wooden structures (OB/OD-01-01); an abandoned bridge (OB/OD-01-03); and a rifle range (RR-01-01). The three historic isolates include a debris pile (OB/OD-01-02), a single yarder (RR-01-02), and at least three scattered segments of a redwood water pipe (RR-01-03). Besides the newly discovered resources, no previously recorded cultural resource occurs within the project area.

Brief descriptions of 10 cultural resources, including 7 historic sites and 3 historic isolates, are presented below. AHRS site forms, location maps, sketch maps, and photographs are presented in Appendix A of this report.

5.2 HISTORIC SITES

5.2.1 Underground Bunker and Four Quonset Hut Depressions (ALDA-01-01, AHRS #ADK-00296)

This historic site includes the remains of four aboveground features and one below ground feature. These include four WWII-era Quonset hut depressions and one underground bunker cut into the base of a slope at the west end of the Andrew Lake seawall. The Quonset huts are now gone, but rectangular depressions show that they were semisubterranean because of the strong winds, similar to other huts on the island. These rectangular depressions are believed to represent Quonset hut locations because they have similar dimensions to existing Quonset huts found south of Andrew Lake. A road once extended below the Quonset huts at ALDA-01-01. In addition, there are many large, deep, circular craters (visible in the modern aerial photographs) in the old road bed.

Feature 1 is a rectangular Quonset hut depression measuring approximately 15 by 30 feet and 6 feet deep at the base of the slope. Feature 1 is the southernmost of the four depressions. One portion of a 10-inch-diameter telephone pole with guy wire is present within the structure, possibly having fallen in after abandonment. Adjacent to the pole is a large bomb fragment.

Feature 2 is a rectangular Quonset hut depression measuring approximately 20 by 55 feet. It lies 50 feet to the north of Feature 1 and is at a slightly lower elevation. One upright wood 4- by 4-inch post is located at the north end of the depression.

Feature 3 is a rectangular Quonset hut depression measuring approximately 20 by 55 feet cut approximately 6 feet into the hillside at its upslope side. It is located 50 feet upslope and slightly west of Feature 2.

Feature 4 is a rectangular Quonset hut depression and an underground bunker cut into the hillside. The Quonset hut depression measures 18 by 30 feet. It is similar in form to the other depressions, but includes a subterranean observation post in the north wall. The entrance of the bunker is lined with a corrugated pipe that leads to an opening facing the north mouth of the bay. The steel portal entrance tunnel measures 36 inches in diameter, and the viewing portal is approximately 30 inches in diameter. The interior room of the underground bunker is composed of an 8-foot-diameter corrugated-steel pipe with wood planking and burlap lining at both ends and measures approximately 108 inches in diameter.

5.2.2 Underground Bunker (ALSW-01-01, AHRS #ADK-00297)

This historic site consists of a small WWII-era underground observation bunker located on the seaward side and halfway across the Andrew Lake seawall, situated within a WWII-era Anti-Aircraft Training Center range.

The WWII-era observation bunker (Feature 1) consists of an upright corrugated steel culvert surrounded by timbers forming a roof. The observational bunker is heavily camouflaged with earth and vegetation and is embedded in cobbles that form the outer edge of the Andrew Bay seawall. The upright culvert measures 6 feet high by 8 feet in diameter, and approximately 4 feet of the culvert are imbedded in the ground. Several large upright timber posts surround the outside of the culvert, extending 4 feet above the sides. Several timbers are planked across the upright posts forming a flat roof. At the bottom of the culvert is a collapsed tunnel that appears to provide a horizontal entry and exit into the bunker. The interior of the bunker is filled with debris washed in from the ocean.

5.2.3 Hand Grenade Range (HG-01-01, AHRS #ADK-00298)

This historic site consists of an abandoned, earthen-bermed hand grenade range, two steel shrapnel protection bunkers, wood-lined earthen throwing pits with protective walls, a concrete ammunitions magazine, and a dirt pile with an abandoned bulldozer blade. The two cylindrical shrapnel protection features likely postdate the grenade range and relate to the later use of this area for ordnance disposal.

Feature 1 is a steel cylindrical tank, measuring 10 feet diameter by 8 feet high with a cut doorway and observation port, which was used to provide protection during demolition of discarded ordnance. The structure has likely been modified from a heavy-duty storage tank designed for a different purpose. Ten burn barrels, scrap metal, chain, and other metal debris are present outside Feature 1. The entire range is surrounded by a rectangular berm.

Feature 2 consists of a set of throwing pits constructed of large 12-inch-diameter cylindrical timbers enclosed within an earthen berm. The overall structure measures 10 by 10 feet in width, oriented north-south, with the throwing area to the north. A rectangular grid of pits to the west may represent the target area. The throwing pits are divided into two 5- by 10-foot rectangular pits. The structure is built of creosote-coated telephone poles stacked three courses high, to an overall height of about 5 feet. One pole contains a circular aluminum tag stamped "Baxter-Wychoff 66" and the number "412," likely dating to the period of use of Feature 1.

Feature 3 is a second shrapnel protection structure, measuring 10 feet in diameter, identical to and likely the second half of the tank used for Feature 1. Large rolls of unused barbed wire are stacked near Feature 3.

Feature 4 is a cylindrical concrete ammunition magazine transported from elsewhere on the naval installation. This feature measures 6 feet in depth and 15 feet in diameter, with double steel doors designated with the number "4." The structure was likely used for storage of demolition supplies. As originally designed, this would have been placed within an earthen bunker.

Feature 5 is a dirt pile and bulldozer blade. The damaged bulldozer blade is marked with the number "384."

5.2.4 Diversion Dams (MI-03-01, AHRS #ADK-00299)

This historic site consists of the remains of two small check dams, one located in an open creek channel of Moffett Creek (Feature 1) and a second located 75 yards downstream and above the mouth of a small tributary (Feature 2).

Feature 1 is a larger structure on the main fork of Moffett Creek. The structure extends partially across the creek from the west bank. This feature consists of a small dam constructed of 2- by 6-inch milled lumber, including some tongue and groove boards, and 4-inch wire nails. The dam is oriented east-west across a small stream in a ravine where the stream flows from north to south. The stream measures about 25 feet wide and 1 to 2 feet deep. The remnant of the dam on the west side of the stream is built of lumber, while a section of poured concrete (2 by 2 feet) occurs on the east side of the creek. Earthen berms extend out east and west of the wood and

concrete dam. The remains of the wood dam on the west creek bank measures 14 feet long and 4 feet tall. Feature 1 was likely used to divert water into a gravity flow pipeline to provide water to the target range located east and downslope of the dam.

Feature 2 consists of a 4- by 6-inch timber placed across a tributary creek 20 feet above the mouth. A plank is placed at a drop in the creek, slowing the flow of water into the main channel. No water pool occurs beyond the dam, although a gate may have been present at one time. The remains of upright planks are visible on the upstream side of the structures. The creek is approximately 6 feet wide at this location, and structures extend south 4 feet from the north bank.

5.2.5 Collapsed Wooden Structures (OB/OD-01-01, AHRS #ADK-00300)

This historic site consists of a WWII- and Cold War-era complex of three collapsed structures and an earthen berm on the valley floor south of Moffett Creek on the west side of Andrew Lake. The remains of the structures are likely associated with a WWII-era Radio-Controlled Airplane Target Range.

Feature 1 consists of a shallow rectangular depression containing the remains of a collapsed wooden structure. The structure measures approximately 12 by 12 feet and appears to have collapsed to the south. Tongue and groove floorboards (2 inches wide) run north-south, overlaid by 2-by-4, 2-by-6, and 2-by-8 lumber. The 2-by-4s appear to have been in an “A-Frame” construction style to support walls. All construction used nails and bolts. The depression is less than 1 foot deep, but water is present below the floorboards. Fragments of sheet metal are also present.

Feature 2 is the wooden floor of a larger structure to the west of Feature 1. It measures approximately 30 by 60 feet and consists almost entirely of floorboards laid end to end in a north-south arrangement. Floorboards vary from 1 to 12 inches in width and 10 to 15 feet in length. Some fragments of 2-by-6 and 6-by-6 timbers are present, but little of the superstructure is present. Construction employed 3½-inch nails and 1-inch spikes. The structure is enclosed within a 2-foot-wide by 2-foot-high earthen berm, and the floorboards lie directly on the original ground surface. Modern “M60 fuse igniters” are also present within the feature area. This feature may be the floor of a canvas structure.

Feature 3 consists of the remains of a third wooden structure. The structure measures approximately 20 by 30 feet and lies within a 2- to 3-foot-deep rectangular depression. Some floorboards are present, overlain by a variety of 2-by-4, 2-by-6, 2-by-8, 4-by-4, and 6-by-6 lumber. The structure is oriented north-south. Large 4-by-12 timbers 15 feet in length are also present, as are large wooden blocks that may have supported a wooden foundation. Some of the boards show evidence of charring.

Feature 4 is an earthen berm supported by 12-inch horizontal poles 25 feet in length and two upright poles extending 3 feet above ground surface. Earth is banked to a height of about 4 feet on the north side of the poles to a width of about 4 feet. This appears to be a protective wall used by explosive ordnance disposal crews. It is similar to protective walls at a nearby grenade range (HG-01-01).

5.2.6 Abandoned Bridge (OB/OD-01-03, AHRS #ADK-00302)

This historic site includes the remains of a bridge that once crossed Moffett Creek, including 15 upright 12-inch-diameter posts. When complete, the bridge would have spanned approximately 20 feet, running north-south. An additional set of posts and timbers, of an unknown function, is located within the road bed 50 feet to north that includes a 50-gallon drum. The road leading to and from the bridge is now barely visible, because it is covered with tall, thick grass. It appears as a raised berm near the bridge remains.

5.2.7 Rifle Range (RR-01-01, AHRS #ADK-00303)

The Andrew Lake Known Distance Rifle Range consists of the remains of one fixed target line with a mechanical pop-up target system and three firing lines used during the WWII/Cold War era for small arms weapons training, including pistols, small bore rifles, and shotguns.

Feature 1 is the target complex. It consists of a very large earthen berm oriented east-west. The eastern portion of the berm is backed by an 8-foot-high concrete wall with a mechanized target-raising system, allowing the raising and lowering of 10 sets of targets. The concrete wall is embossed with "MCB/9/1962." A more recent prefabricated Federal Aviation Administration building behind the berm is also present and has been used for the more recent storage of targets. Paper and plastic targets are present in very large quantities, and these items appear modern, likely dating to within the past 20 years. A dumpster and metal target storage container are also present. A metal container is at the far western end of berm. At least 25 boxes and multiple piles of paper targets and six boxes of plastic silhouettes are present within the storage facility. Numerous artifacts are present, including ammunition cans, barrels, plywood, rope, chain, and other debris, most appearing to be more modern items. While the exact age of these items cannot be determined, it is clear that much of the material associated with this feature and several of the other features present at the site have been recently deposited and are not associated with the WWII or Cold War use of this facility.

Feature 2 is a smaller berm oriented east-west and stacked with sand bags. It is located to the east of Feature 1, in alignment with the larger berm. The presence of thousands of expended automatic Colt pistol cartridges suggests use as a pistol range. Evidence of shotgun firing is also present. The back and sides of the berm are supported by 4- by 4-inch and 4- by 6-inch timbers.

Feature 3 is a large, heavy-duty wall constructed behind the concrete wall that fences in the target range. It is constructed of very large 12-foot by 16-inch creosote-impregnated poles six courses in height supported by double upright posts and steel cable.

Feature 4 is a collapsed plywood 2- by 4-foot structure with large amounts of trash also present. Folding tables, barbed wire, telephone poles, boxes of nails, ammunition boxes, expended cartridges, bullets, tools, and wire are present.

Feature 5 is a row of four waist-high vertical posts fashioned from cut utility poles. These posts are located at the south end of a raised berm firing line. Attached hardware indicates that this alignment formed a small barrier fence.

Feature 6 is a wooden foot bridge over Moffett Creek, located below and east of the access road. The foot bridge is constructed of two wood pilings, 2-by-8 planks, and a single 2-by-4 railing, 16 feet in length and 2½ feet wide, with a tar paper cover. Below the bridge are two 36-inch corrugated steel culverts supported by 15 courses of solidified concrete bags. The adjacent roadway also crosses over these culverts.

5.3 HISTORIC ISOLATES

5.3.1 Debris Pile (OB/OD-01-02, AHRS #ADK-00301)

This historic isolate consists of three 10-foot-long 6- by 6-inch-square cut timbers, two scraps of galvanized sheet metal, and one piece of 1- by 6-inch milled lumber. These materials occur in a discrete pile adjacent to a raised soil berm.

5.3.2 Yarder (RR-01-02, AHRS #ADK-00304)

This historic isolate consists of a 1950s-era heavy-duty iron logging yarder. The Skagit yarder is a Type 2-30m Model embossed with “BU-30-F MCH SER 917 MTR SER SPEC NO. 771-4 BM. NO. 898, SKAGIT STEEL & IRON WORKS, SEATTLE WA USA.” The BU series of Skagit yarders, produced by Skagit Steel, were manufactured in the post-war years of 1946 to 1953. The yarder was likely used to drag heavy equipment or operate a boom for moving and loading supplies. It may be associated with the nearby storage yard for used equipment, or with the placement of targets.

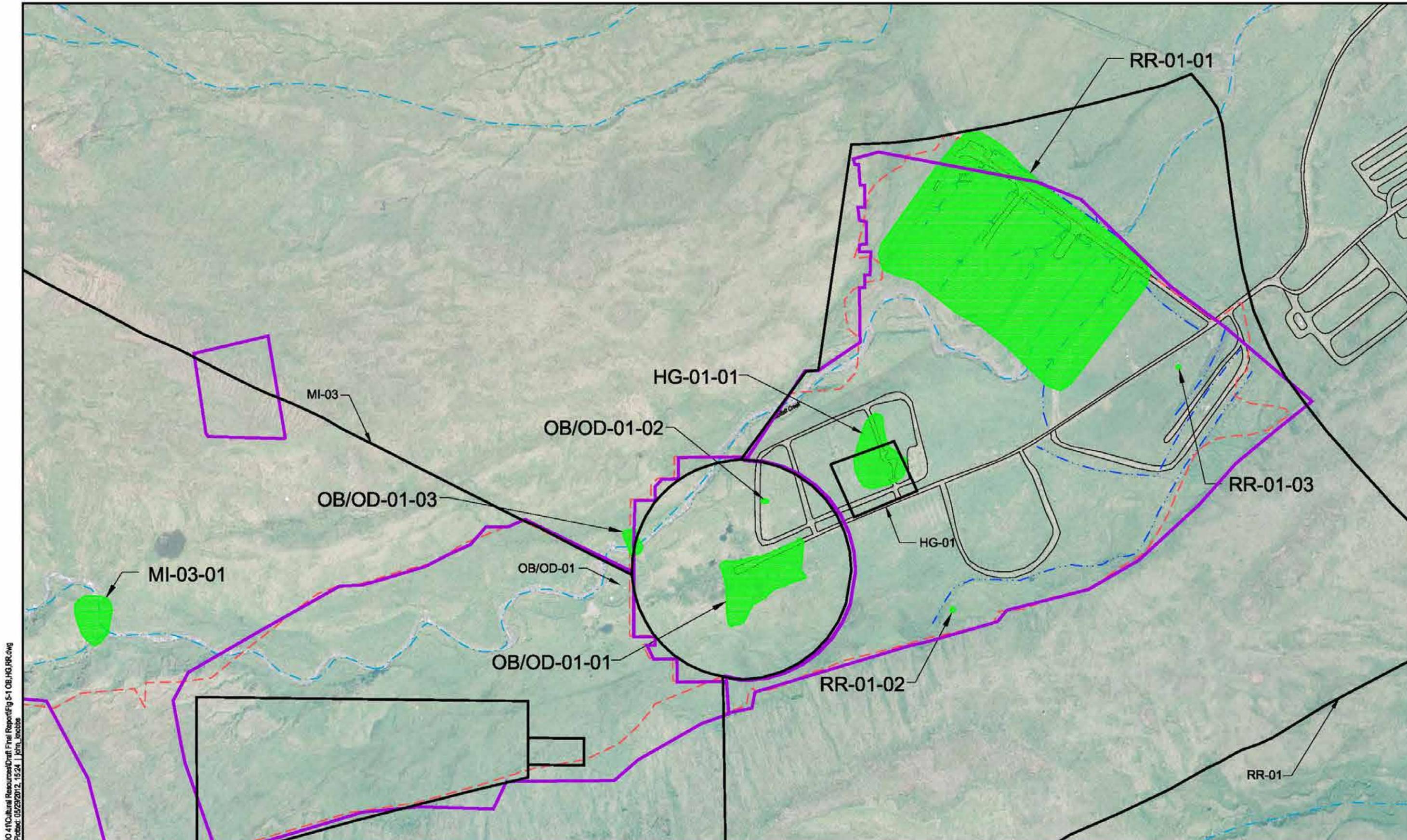
5.3.3 Redwood Water Pipe (RR-01-03, AHRS #ADK-00305)

This historic isolate includes several segments of a wire-wrapped redwood water pipe scattered about a grassy flat. This wooden water pipe may be associated with the water system that

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included the diversion dams (MI-03-01). The pipe was broken up and pushed around by heavy equipment. The pipe likely relates to the WWII occupation.



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Legend:

- Site Boundary
- 2011 Survey Area
- Remedial Action Area
- Historic Site

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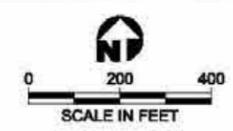
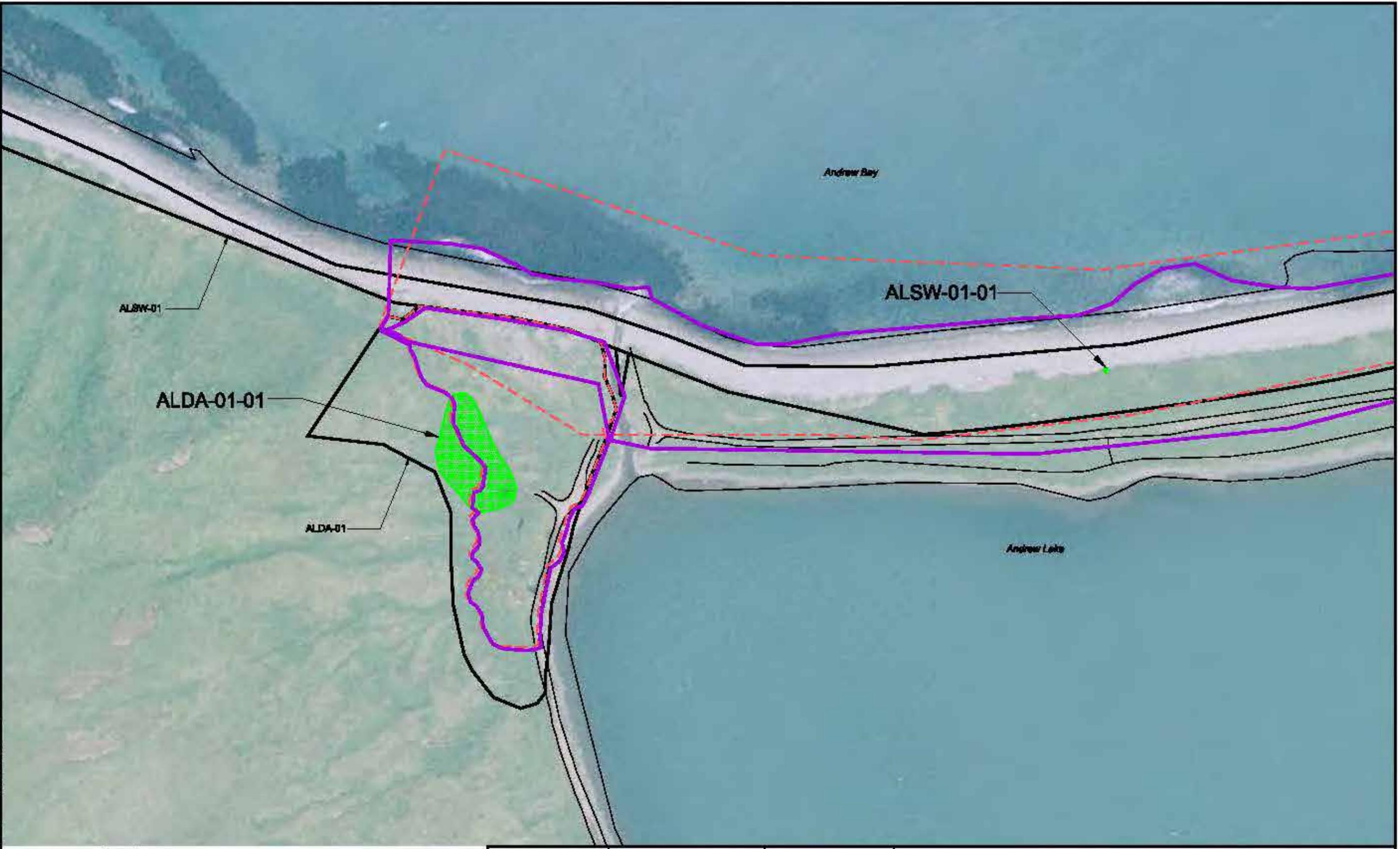


Figure 5-1
Locations of Historic Sites in
OB/OD-01, HG-01 and RR-01

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Map 041102012_1128 | Photo: 05202012_1128 | John Tomlin



Legend

- Site Boundary
- 2011 Survey Area
- Remedial Action Area
- Historic Site

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Figure 5-2
Location of Historic Sites in
ALDA-01 and ALSW-01

6.0 NATIONAL REGISTER ELIGIBILITY

6.1 NRHP EVALUATION METHODOLOGY

The NRHP is the official federal list of historic properties, including districts, sites, buildings, structures, and objects, significant in American history, architecture, archeology, engineering, and culture. A historic property may be of national, state, or local significance and is defined as the place or places where the remnants of a past culture survive in a physical context that allows for the interpretation of those remains.

The significance of a property is best judged and explained when it is evaluated within its historic context—those patterns or trends by which a specific occurrence, property, or site is understood and its meaning and significance within history or prehistory is made clear (NPS 2002). It serves as the framework within which NRHP criteria are applied to specific properties. A key principle of historic contexts is that resources, properties, or events do not occur in isolation, but rather are part of larger developments, associations, or patterns.

After identifying the relevant historic context with which a property is associated, four criteria of evaluation are considered to assess significance. These criteria serve as the standards by which every property nominated to the NRHP is judged. The criteria are written broadly to recognize the Nation's wide variety of historic properties and to identify the range of resources and kinds of significance that qualify properties for NRHP listing. The criteria recognize associative, design, and information values, as listed in the Code of Federal Regulations (CFR), Title 36, Part 60:

The quality of significance in American history, architecture, archeology, engineering and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling and association, and

- (a) That are associated with events that have made a significant contribution to the broad patterns of our history; or
- (b) That are associated with the lives or persons significant in our past; or
- (c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) That has yielded, or may be likely to yield, information important in prehistory and history.

To be listed on the NRHP, a property must not only be shown to be significant under one or more criteria, but it also must have integrity. Within the concept of integrity, the NRHP recognizes seven aspects or qualities that, in various combinations, define integrity (NPS 2002). The seven aspects of integrity are location, design, setting, materials, workmanship, feeling, and association. It is recognized that all properties change over time, and it is not necessary for one to retain all historic physical characteristics or features. It must, however, retain essential physical features that enable it to convey its historic identity and that define why it is significant and when it was significant (NPS 2002).

If a resource is determined eligible to the NRHP, Section 106 of the NHPA (80 Stat. 915; 16 United States Code 470) and its implementing regulations (36 CFR 800) require that effects of a proposed project to that resource be determined. If NRHP-eligible properties are identified and will be adversely affected by the project implementation, then prudent and feasible measures to avoid or reduce adverse impacts must be taken. In addition, the ACHP and the State Historic Preservation Officer must be provided an opportunity to review and comment on these measures. The ACHP has adopted regulations (36 CFR 800) that implement this commenting authority.

6.2 NRHP EVALUATION OF HISTORIC SITES AND ISOLATES

The following provides the NRHP evaluation of the seven historic sites and three historic isolates identified at the OU B-2 sites surveyed.

6.2.1 Underground Bunker and Four Quonset Hut Depressions (ALDA-01-01, AHRS #ADK-00296)

This historic site is within the Adak WWII Cultural Landscape Historic District and Adak Army Base and Adak Naval Operating Base National Historic Landmark (National Register Number 87000841). The site is likely associated with infantry outpost #33, depicted on a 1944 map of the former Adak Naval Complex (U.S. Navy n.d.) and is associated with events important in the broad patterns of U.S. history, namely the Aleutian Campaign of WWII (Criterion A). ALDA-01-01 contributes to the overall WWII landscape and is a contributing element to the Historic District and the National Historic Landmark.

6.2.2 Underground Bunker (ALSW-01-01, AHRS #ADK-00297)

This historic site, found on the Andrew Lake seawall, is within the Adak WWII Cultural Landscape Historic District and Adak Army Base and Adak Naval Operating Base National Historic Landmark (National Register Number 87000841). It is within a WWII-era Anti-Aircraft Training Center range identified on a WWII-era map. The site contributes to the overall historic landscape, as it is associated with events important in the broad patterns of U.S. history, namely the Aleutian Campaign of WWII (Criterion A). The underground bunker is a contributing element of the Historic District and the National Historic Landmark.

6.2.3 Hand Grenade Range (HG-01-01, AHRS #ADK-00298)

This historic site is within the Adak WWII Cultural Landscape Historic District and Adak Army Base and Adak Naval Operating Base National Historic Landmark (National Register Number 87000841). While the features noted at the site appear more modern than WWII, with the exception of the earthen berm visible in 1944 aerial photographs, it is likely that the area was used for training during the 1940s. The protective wall and magazine currently in place appear to date from the Cold War era, while the steel bunkers may be more modern features used for explosive ordnance disposal activities. The hand grenade range is not listed in the HARP Plan (U.S. Navy 1996) as a potentially NRHP-eligible resource, and while its good integrity of layout and design conveys a visual sense of the overall historic environment relating to the Cold War occupation of Adak, the range itself is a type of feature that would have been built by the Navy regardless of the Cold War (e.g., Waddell 2003). It is therefore not recommended for listing on the NRHP.

6.2.4 Diversion Dams (MI-03-01, AHRS #ADK-00299)

This historic site is within the Adak WWII Cultural Landscape Historic District and Adak Army Base and Adak Naval Operating Base National Historic Landmark (National Register Number 87000841). Both water diversion Features 1 and 2 retain sufficient integrity to contribute to the overall historic landscape, as they are associated with events important in the broad patterns of U.S. history, namely the Aleutian Campaign of WWII (Criterion A), and are contributing elements of the Historic District and the National Historic Landmark.

6.2.5 Collapsed Wooden Structures (OB/OD-01-01, AHRS #ADK-00300)

This historic site is within the Adak WWII Cultural Landscape Historic District and Adak Army Base and Adak Naval Operating Base National Historic Landmark (National Register Number 87000841). The site is associated with events important in the broad patterns of U.S. history,

namely the Aleutian Campaign of WWII (Criterion A). The structural ruins are contributing elements to the Historic District and the National Historic Landmark.

6.2.6 Abandoned Bridge (OB/OD-01-03, AHRS #ADK-00302)

This historic site, found along Moffett Creek, is within the Adak WWII Cultural Landscape Historic District and Adak Army Base and Adak Naval Operating Base National Historic Landmark (National Register Number 87000841). The site contributes to the overall historic landscape, as it is associated with events important in the broad patterns of U.S. history, namely the Aleutian Campaign of WWII (Criterion A). It is a contributing element of the Historic District and the National Historic Landmark.

6.2.7 Rifle Range (RR-01-01, AHRS #ADK-00303)

This historic site, identified as a known distance rifle range within Moffett Valley, is within the Adak WWII Cultural Landscape Historic District and Adak Army Base and Adak Naval Operating Base National Historic Landmark (National Register Number 87000841). The site contributes to the overall historic landscape, as it is associated with events important in the broad patterns of U.S. history, namely the Aleutian Campaign of WWII (Criterion A). It is a contributing element of the Historic District and the National Historic Landmark.

6.2.8 Historic Isolates

Three cultural resources located within Moffett Valley were recorded as historic isolates, including a debris pile (OB/OD-01-02, AHRS #ADK-00301), a yarder (RR-01-02, AHRS #ADK-00304), and scattered segments of a redwood water pipe (RR-01-03, AHRS #ADK-00305). The first isolate, the historic debris pile, exhibits poor integrity and is not associated with any particular feature or person of significance. The artifacts (milled lumber and sheet metal) do not appear to represent the ruins of a local structure, but were derived from an unknown location. The second isolate, the yarder, may be considered a single object that was once mobile and likely used to drag targets or other heavy objects across the valley floor. The yarder is incomplete, missing much of the electronics, steel cable, and wooden parts. The third isolate consists of the scattered pieces of a disturbed water pipe that likely dates to WWII. This feature no longer retains integrity of place or design. Overall, the isolates are considered ineligible for inclusion in the NRHP, particularly given the fact that they exhibit poor integrity. The yarder dates to the 1950s and is therefore not associated with the WWII landscape. While the scattered debris within OB/OD-01 may date to the 1940s, it is not associated with any particular feature or person of significance. Finally, the age of the water pipe segments is uncertain, although it may date to the time of WWII. However, it is questionable whether these pipe segments are in or near their original context, and they are in very poor condition. None of

the three historic isolates may be considered landscape features, sites, or objects that contribute to the significance or historic character of either the Adak National Historic Landmark or the National Register Historic District.

6.3 CONCLUSIONS

Of the 10 newly recorded cultural resources (historic sites and historic isolates), 8 are considered to be associated with the WWII occupation of the island. These eight resources comprise elements of the Adak National Historic Landmark and form part of the Adak Island Cultural Landscape Historic District. However, not all eight resources are considered contributing elements to the Adak National Historic Landmark and the Adak Island Cultural Landscape Historic District. These eight WWII-related resources include an underground bunker and four Quonset hut depressions (ALDA-01-01), an underground bunker (ALSW-01-01), two diversion dams (MI-03-01), three collapsed wooden structures (OB/OD-01-01), a debris pile (OB/OD-01-02), an abandoned bridge (OB/OD-01-03), a rifle range (RR-01-01), and a redwood water pipe (RR-01-03). The remaining two resources, a yarder (RR-01-02) and a hand grenade range containing protective walls, bunkers, and a magazine (HG-01-01), appear to relate to Cold War activities on the island, rather than WWII activities.

Evaluation of the identified cultural resources in terms of historic significance, integrity, and NRHP eligibility indicates that six of the seven recorded historic sites are eligible for inclusion in the NRHP, based on their association with events important to the broad pattern of U.S. history (Criterion A). These six historic sites are also NRHP eligible, based on their direct association with the WWII-era Adak National Historic Landmark and the Adak Island Cultural Landscape Historic District. While these features may not be unique on an individual basis, the number and integrity of these features clearly contributes to the characteristics of the Adak historic landscape. Although the structures themselves are no longer standing, the patterned distribution of depressions, extant road system, and other archaeological features remain largely intact, while few modern intrusive features have been added to the landscape. As a result, aspects of integrity, such as context, association, and setting, remain undisturbed. The seventh site (HG-01-01) is a Cold War-era property and is recommended as not eligible for listing. The three historic isolates (a debris pile [OB/OD-01-02], a yarder [RR-01-02], and a redwood water pipe [RR-01-03]) are considered ineligible for listing in the NRHP because of their poor integrity and clear lack of association with known elements of the Adak National Historic Landmark (Table 6-1).

**Table 6-1
 Cultural Resource Summary and NRHP Eligibility**

Historic Site or Isolate	NRHP Eligibility/Site Significance
Underground Bunker and Four Quonset Hut Depressions (ALDA-01-01, AHRS #ADK-00296)	NRHP eligible based on direct association with the Adak WWII Cultural Landscape Historic District and Adak Army Base and Adak Naval Operating Base National Historic Landmark
Underground Bunker (ALSW-01-01, AHRS #ADK-00297)	NRHP eligible based on direct association with the Adak WWII Cultural Landscape Historic District and Adak Army Base and Adak Naval Operating Base National Historic Landmark
Hand Grenade Range (HG-01-01, AHRS #ADK-00298)	Historic Cold War-era site considered ineligible for listing in the NRHP because of lack of association with known elements of the Adak National Historic Landmark and because not directly associated with persons or activities determined to be significant to the Cold War
Diversion Dams (MI-03-01, AHRS #ADK-00299)	NRHP eligible based on direct association with Adak WWII Cultural Landscape Historic District and Adak Army Base and Adak Naval Operating Base National Historic Landmark
Collapsed Wooden Structures (OB/OD-01-01, AHRS #ADK-00300)	NRHP eligible based on direct association with the Adak WWII Cultural Landscape Historic District and Adak Army Base and Adak Naval Operating Base National Historic Landmark
Debris Pile (OB/OD-01-02, AHRS #ADK-00301)	Historic isolate considered ineligible for listing in the NRHP because of poor integrity and clear lack of association with known elements of the Adak National Historic Landmark
Abandoned Bridge (OB/OD-01-03, AHRS #ADK-00302)	NRHP eligible based on direct association with Adak WWII Cultural Landscape Historic District and Adak Army Base and Adak Naval Operating Base National Historic Landmark
Rifle Range (RR-01-01, AHRS #ADK-00303)	NRHP eligible based on direct association with Adak WWII Cultural Landscape Historic District and Adak Army Base and Adak Naval Operating Base National Historic Landmark
Yarder (RR-01-02, AHRS #ADK-00304)	Historic isolate considered ineligible for listing in the NRHP because of poor integrity and clear lack of association with known elements of the Adak National Historic Landmark
Redwood Water Pipe (RR-01-03, AHRS #ADK-00305)	Historic isolate considered ineligible for listing in the NRHP because of poor integrity and clear lack of association with known elements of the Adak National Historic Landmark

Notes:
 NRHP - National Register of Historic Places
 WWII - World War II

7.0 REFERENCES

- Birnbaum, Charles A. 1994. *Preservation Brief 36: Protecting Cultural Landscapes: Planning, Treatment, and Management of Historic Landscapes*. Preservation Assistance Division, National Park Service, U.S. Department of the Interior. Washington, D.C.
- Coats, R. 1956. *Geology of Northern Adak Island, Alaska*. U.S. Geological Survey Bulletin 1028-C. U.S. Government Printing Office, Washington D.C.
- Lantis, M. 1984. "Aleut." In *Handbook of North American Indians*. Vol. 5, Arctic, David Damas (ed.) 161–184. Smithsonian Institution Press. Washington, D.C.
- Luttrell, M. 2000. *Archaeological Investigations on Northeast Adak Island, Alaska*. U.S. Fish and Wildlife Services. Anchorage, AK. July 1999.
- National Park Service (NPS). 2002. *How to Apply the National Register Criteria for Evaluation*. National Register Bulletin 15. USDI National Park Service, Washington, D.C. Available at <http://www.nps.gov/nr/publications/bulletins/nrb15/>
- U.S. Fish and Wildlife Service (USFWS). 2011. Alaska Maritime National Wildlife Refuge, Native Mammals list. Accessed at <http://alaskamaritime.fws.gov/wildlife-wildlands/wildlife/mammals/pdf/mammalslist.pdf>. August 22, 2011.
- . 2010. *Adak Bird List*. Accessed at http://alaskamaritime.fws.gov/pdf/adak_bird_list.pdf.
- . 1995a. Ecological Survey of Potentially Contaminated Sites Identified in the Federal Facility Agreement, Naval Air Facility, Adak Island, Alaska. Ecological Services. Anchorage, AK.
- . 1995b. Survey of the Fishery Resources on Adak Island, Alaska Maritime National Wildlife Refuge, 1993 and 1994.
- . 1992. *Winter Waterfowl and Wildlife Survey of Northeastern Adak Island*. U.S. Fish and Wildlife Service Report AMNWR, Aleutian Island Unit. Adak Island, AK.
- U.S. Navy. 2012. *Final Feasibility Study Report for OU B-2 Sites, Former Naval Air Facility, Adak, Alaska*. Prepared by USA Environmental, Inc. and CH2M Hill for NAVFAC Northwest under Contract No. N62470-11-D-8007-11, CTO JP02. Silverdale, Washington. May 2012.

- . 2011a. Final Work Plan, OU B-2 Biological Assessment, Wetland/Tundra Delineation, and Cultural Landscape and Historical Features Survey, Former Adak Naval Complex, Adak, Alaska. Prepared by URS Group, Inc. for Naval Facilities Engineering Command Northwest under Contract No. N44255-09-D-4001, Delivery Order 41. Silverdale, Washington. September 2011.
- . 2011b. *Draft Final Feasibility Study Report for OU B-2 Sites, Former Naval Air Facility, Adak, Alaska*. Prepared by USA Environmental, Inc. for NAVFAC Northwest under Contract No. N62742-05-D-1868, CTO KR04. Silverdale, Washington. February 2011.
- . 2011c. *Final Northern Adak Island Alaska Andrew Lake Seawall Area & Vicinity Historical Photographic Analysis*. Prepared by U.S. Army Geospatial Center for Naval Facilities Engineering Command Northwest. Silverdale, Washington. December 2011.
- . 2008. *Final Remedial Investigation Work Plan, Operable Unit B-2, Former Naval Air Facility, Adak, Alaska*. Prepared by Tetra Tech for NAVFAC Northwest under Contract No. N44255-01-D-2000, RAC 3, Task Order No. 62. Silverdale, Washington. June 2008.
- . 2000. *Draft Final Preliminary Assessment Report Volume I—Report Text, Selected Areas of Concern in Operable Unit B, Former Naval Air Facility, Adak Island, Adak Alaska, Delivery Order No. 0083*. Prepared by Foster Wheeler Environmental Corporation for Engineering Field Activity, Northwest. Poulsbo, Washington. December 2000.
- . 1996. Historic and Archaeological Resources Protection (HARP) Plan for the Adak Naval Complex, Naval Air Facility Adak, Naval Security Group Activity Adak. Prepared by EDAW, Inc., for Engineering Field Activity Northwest. Poulsbo, Washington. October 1996.
- . 1995. *Final Groundwater Study Report, NAF, Adak, Alaska*. Prepared by URS Consultants, Inc. and Shannon & Wilson, Inc., for Engineering Field Activity, Northwest, under CLEAN Contract No. N62474-89-D-9295, TO 0124. Poulsbo, Washington. March 1995.
- . n.d. Adak Island Defense Plan, Short Title – “DPA,” Adak Island Alaska.

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U.S. Navy, U.S. Environmental Protection Agency (USEPA), and Alaska Department of Environmental Conservation (ADEC). 2000. *Draft Final Record of Decision for Operable Unit A, Former Adak Naval Complex, Adak Island, Alaska*. Prepared by URS Greiner, Inc., for Engineering Field Activity, Northwest, under CLEAN Contract No. N62474-89-D-9295. Poulsbo, Washington. Accepted as final April 2000.

Waddell, K. 2003. *Cold War Historical Context 1951–1991, Fort Richardson, Alaska, United States Army Alaska*. CEMML TPS 02-5. Prepared by Center for the Environmental Management of Military Lands, Colorado State University, Fort Collins, for Natural Resources Branch, U.S. Army Alaska, Fort Richardson. March 2003.

APPENDIX A

Alaska Heritage Resource Survey Site Forms

ALDA-01-01
AHRIS #ADK-00296

Alaska Heritage Resources Survey

AHRS #: ADK-00296 **Aliquot:** T95S R195W SEC.15 SM
Lat./Long.: 51.9515092N -176.667645W NAD83 **Acreage:** 0.71
Map sheet: ADAK C2NW **UTM:** 5755697mN 522841mE NAD83

Site Name(s): UNDERGROUND BUNKER AND FOUR QUONSET HUT DEPRESSIONS
(ALDA-01-01)

Site Description: This historic site includes the remains of four aboveground features and one below ground feature. These include four WWII-era Quonset hut depressions and one underground bunker cut into the base of a slope at the west end of the Andrew Lake seawall. The Quonset huts are now gone, but rectangular depressions show that they were semisubterranean because of the strong winds, similar to other huts on the island. These rectangular depressions are believed to represent Quonset hut locations because they have similar dimensions to existing Quonset huts found south of Andrew Lake. A road once extended below the Quonset huts at ALDA-01-01. There are many large, deep, circular craters (visible in the modern air photographs) in the old road bed.

Feature 1 is a rectangular Quonset hut depression measuring approximately 15 by 30 feet and 6 feet deep at the base of the slope. Feature 1 is the southernmost of the four depressions. One portion of a 10-inch-diameter telephone pole with guy wire is present within the structure, possibly having fallen in after abandonment. Adjacent to the pole is a large bomb fragment.

Feature 2 is a rectangular Quonset hut depression measuring approximately 20 by 55 feet. It lies 50 feet to the north of Feature 1 and is at a slightly lower elevation. One upright wood 4- by 4-inch post is located at the north end of the depression.

Feature 3 is a rectangular Quonset hut depression measuring approximately 20 by 55 feet cut approximately 6 feet into the hillside at its upslope side. It is located 50 feet upslope and slightly west of Feature 2.

Feature 4 is a rectangular Quonset hut depression and an underground bunker cut into the hillside. The Quonset hut depression measures 18 by 30 feet. It is similar in form to the other depressions, but includes a subterranean observation post in the north wall. The entrance of the bunker is lined with a corrugated pipe that leads to an opening facing the north mouth of the bay. The steel portal entrance tunnel measures 36 inches in diameter, and the viewing portal is approximately 30 inches in diameter. The interior room of the underground bunker is composed of an 8-foot-diameter corrugated-steel pipe with wood planking and burlap lining at both ends and measures approximately 108 inches in diameter.

Significance: This historic site is likely associated with infantry outpost #33, depicted on a 1944 map of the former Adak Naval Complex (U.S. Navy n.d.) and is associated with events important in the broad patterns of U.S. history, namely the Aleutian Campaign of WWII (Criterion A). The site contributes to the overall WWII landscape and is a contributing element to the Adak WWII Cultural Landscape Historic District and Adak Army Base and Adak Naval Operating Base National Historic Landmark.

Location: This historic site is situated within the boundaries of the Operable Unit (OU) B-2 Andrew Lake Disposal Area (ALDA-01) site at the former Adak Naval Complex at Adak Island, Alaska (U.S. Navy 2011). ALDA-01 is located at the northwest corner of Andrew Lake and lies at elevations ranging from about 6.1 to 12.2 meters (20 to 40 feet) above sea level (asl), and a cliff on the west side of this site rises to heights of more than 200 feet asl. There is direct access to this site via the main access road running along the western shore of Andrew Lake. The terrain is generally flat, except for steep slopes along the western edge. A line of craters trends northwest to southeast across the site. Vegetation is predominantly grass ranging in height from 12 to 18 inches, which is sparser toward the beach area, but still thick enough to hide the underlying cobbled surface. The geology of the site is characterized by shallow bedrock with a thin layer of soil. The soil is dominated by cobbles and boulders.

Citations:

U.S. Navy. 2011. *Final Work Plan, OU B-2 Biological Assessment, Wetland/Tundra Delineation, and Cultural Landscape and Historical Features Survey, Former Adak Naval Complex, Adak, Alaska*. Prepared by URS Group, Inc. for Naval Facilities Engineering Command Northwest under Contract No. N44255-09-D-4001, Delivery Order 41. Silverdale, Washington. September 2011.

———. 1996. *Historic and Archaeological Resources Protection (HARP) Plan for the Adak Naval Complex, Naval Air Facility Adak, Naval Security Group Activity Adak*. Prepared by EDAW, Inc. for Engineering Field Activity Northwest. Poulsbo, Washington. October 1996.

———. n.d. *Adak Island Defense Plan, Short Title – “DPA” Adak Island Alaska*.

Danger of Destruction: High; given the previous function of this site as a debris disposal area and possible bombing and munitions demolition area, that munitions and explosives of concern have been found during previous investigations within the historic site boundaries, and that intrusive removal activities will be performed within those boundaries. Furthermore, because rocks and cobbles are present at the site, heavy equipment will most likely be necessary for the intrusive removal activities.

Present Condition: Good; depressions remain in good condition and are rectangular with squared vertical walls.

Ecosystem: Moist Tundra

Pertinent Dates: A.D. 1942 to 1945

Period: Historic; WWII

Resource Nature: Site; WWII, Military, Defense, Lookout, Quonset Hut Depressions, Underground Bunker

Cultural Affiliation: Euroamerican

Preservation Status and Date: This historic site is situated within the Adak Army Base and Adak Naval Operating Base National Historic Landmark listed in the National Register of Historic Places (1987) and

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the associated Adak WWII Cultural Landscape Historic District determined eligible for inclusion in the National Register of Historic Places as a Historic District (1995).

Property Owner: U.S. Navy

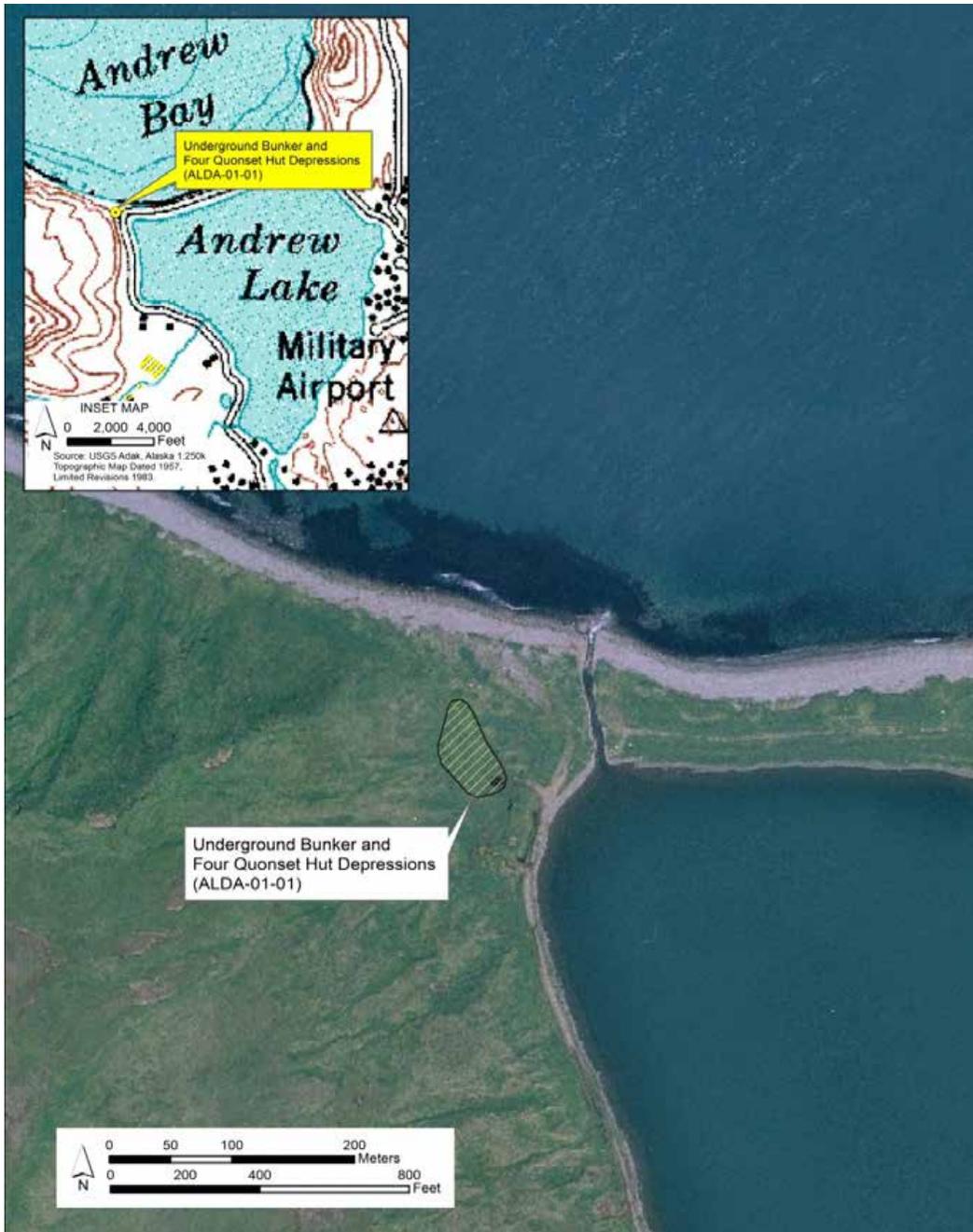
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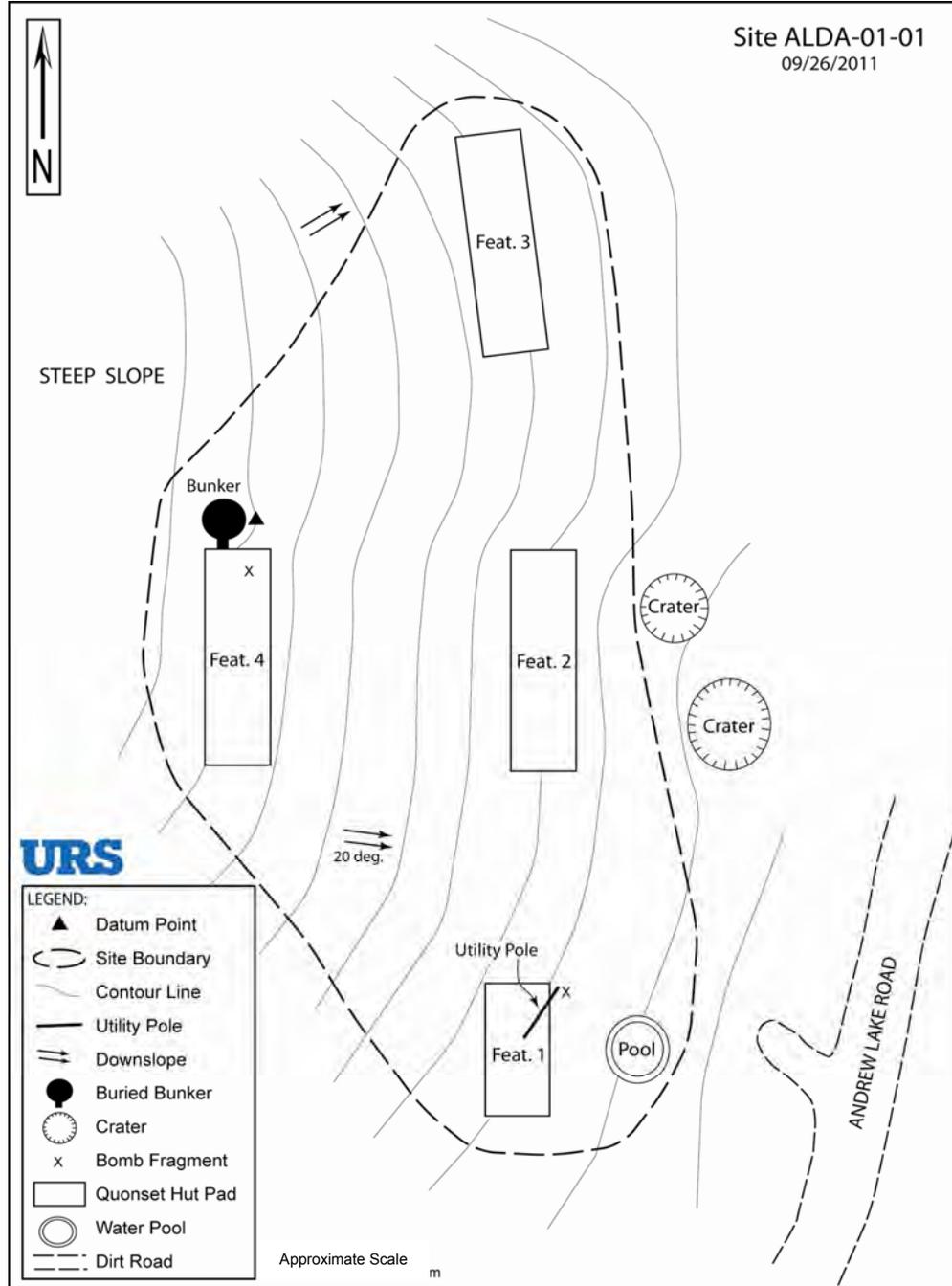
BIA/BLM #: N/A

Other # (specify): ALDA-01-01

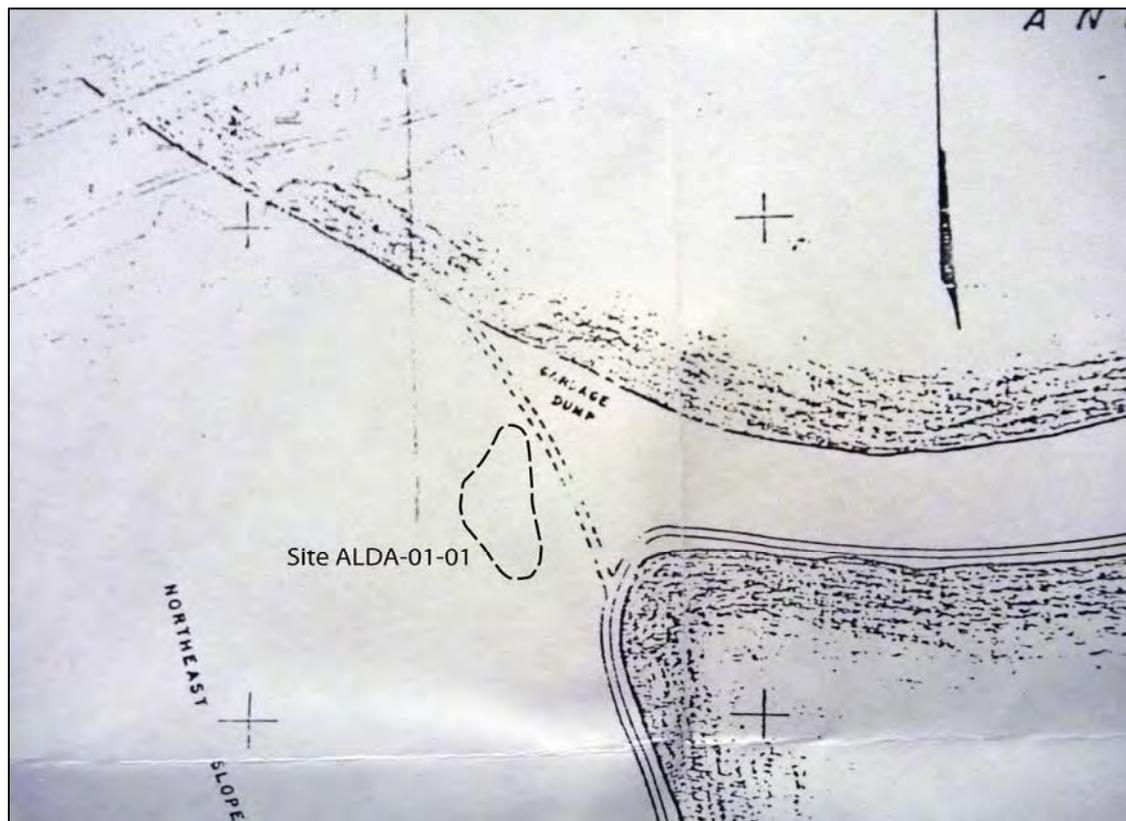
LOCATION MAP



SKETCH MAP

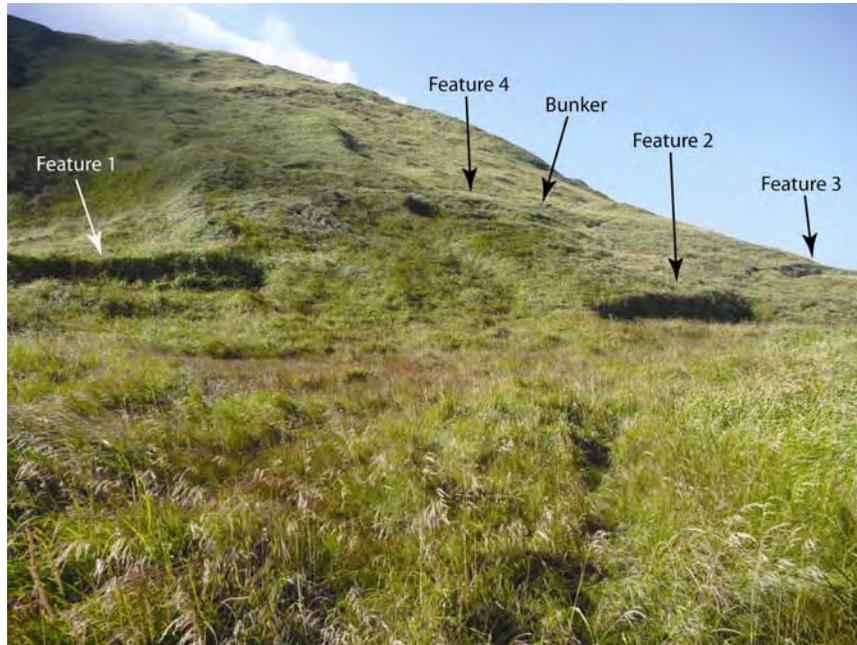


HISTORIC MAP



Historic map depicting the garbage dump and access road, with overlay of site ALDA-01-01 (Source: "Naval Air Station Adak Base Map, Small Arms Range, Approved 12/5/88, Sheet 1 of 73" Adak City Hall archives, Adak Island, AK)

PHOTOGRAPHS



Site overview facing northwest



Feature 1 Quonset hut depression, view west

PHOTOGRAPHS



Feature 2 Quonset hut depression, view northwest



Feature 3 Quonset hut depression, view north

PHOTOGRAPHS



Feature 4 Underground bunker lookout hole, view northwest



Feature 4 Underground bunker interior, view south

ALSW-01-01
AHRIS #ADK-00297

Alaska Heritage Resources Survey

AHRS #: ADK-00297 **Aliquot:** T95S R195W SEC.15 SM
Lat./Long.: 51.952029N -176.661039W NAD83 **Acreeage:** 0.01
Map sheet: ADAK C2NW **UTM:** 5755757mN 523295mE NAD83

Site Name(s): UNDERGROUND BUNKER (ALSW-01-01)

Site Description: This historic site consists of a small WWII-era underground observation bunker located on the seaward side and halfway across the Andrew Lake seawall, situated within a WWII-era Anti-Aircraft Training Center range.

The WWII-era observation bunker (Feature 1) consists of an upright corrugated steel culvert surrounded by timbers forming a roof. The observational bunker is heavily camouflaged with earth and vegetation and is embedded in cobbles that form the outer edge of the Andrew Bay seawall. The upright culvert measures 6 feet high by 8 feet in diameter, and approximately 4 feet of the culvert are imbedded in the ground. Several large upright timber posts surround the outside of the culvert, extending 4 feet above the sides. Several timbers are planked across the upright posts forming a flat roof. At the bottom of the culvert is a collapsed tunnel that appears to provide a horizontal entry and exit into the bunker. The interior of the bunker is filled with debris washed in from the ocean.

Significance: This historic site is within a WWII-era Anti-Aircraft Training Center range identified on a WWII-era map. It contributes to the overall historic landscape, as it is associated with events important in the broad patterns of U.S. history, namely the Aleutian Campaign of World War II (Criterion A). The underground bunker is a contributing element of the Adak WWII Cultural Landscape Historic District and Adak Army Base and Adak Naval Operating Base National Historic Landmark.

Location: This historic site is situated within the Operable Unit (OU) B-2 Andrew Lake Seawall (ALSW-01) site at the former Adak Naval Complex at Adak Island, Alaska (U.S. Navy 2011). The seawall is a partially man-made feature composed of boulders, cobbles, gravel, large metal debris, and wood. The seawall is narrow and elongated, similar to a dike with a narrow flat top and steep sides. The terrain transitions from generally flat atop the seawall to very steep along the sides (north and south). Vegetation consists of short, relatively sparse grass atop the wall and tussocks of taller grass along the sides where adequate soil is present. There is direct access to this site via an unimproved road originating on the east side of Andrew Lake near the Recreation Center.

Citations:

- U.S. Navy. 2011. *Final Work Plan, OU B-2 Biological Assessment, Wetland/Tundra Delineation, and Cultural Landscape and Historical Features Survey, Former Adak Naval Complex, Adak, Alaska*. Prepared by URS Group, Inc. for Naval Facilities Engineering Command Northwest under Contract No. N44255-09-D-4001, Delivery Order 41. Silverdale, Washington. September 2011.
- . 1996. *Historic and Archaeological Resources Protection (HARP) Plan for the Adak Naval Complex, Naval Air Facility Adak, Naval Security Group Activity Adak*. Prepared by EDAW, Inc. for Engineering Field Activity Northwest. Poulsbo, Washington. October 1996.

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Danger of Destruction: Low; proposed beach sweeps are nonintrusive.

Present Condition: Fair; structure has deteriorated but is still intact. The culvert pipe is intact, while the wood-lined access tunnel has partially collapsed. The wood covering has also deteriorated.

Ecosystem: Moist Tundra

Pertinent Dates: A.D. 1942 to 1945

Period: Historic; WWII era

Resource Nature: Site; WWII, Military, Defense

Cultural Affiliation: Euroamerican

Preservation Status and Date: This historic site is situated within the Adak Army Base and Adak Naval Operating Base National Historic Landmark listed in the National Register of Historic Places (1987) and the associated Adak WWII Cultural Landscape Historic District determined eligible for inclusion in the National Register of Historic Places as a Historic District (1995).

Property Owner: U.S. Navy

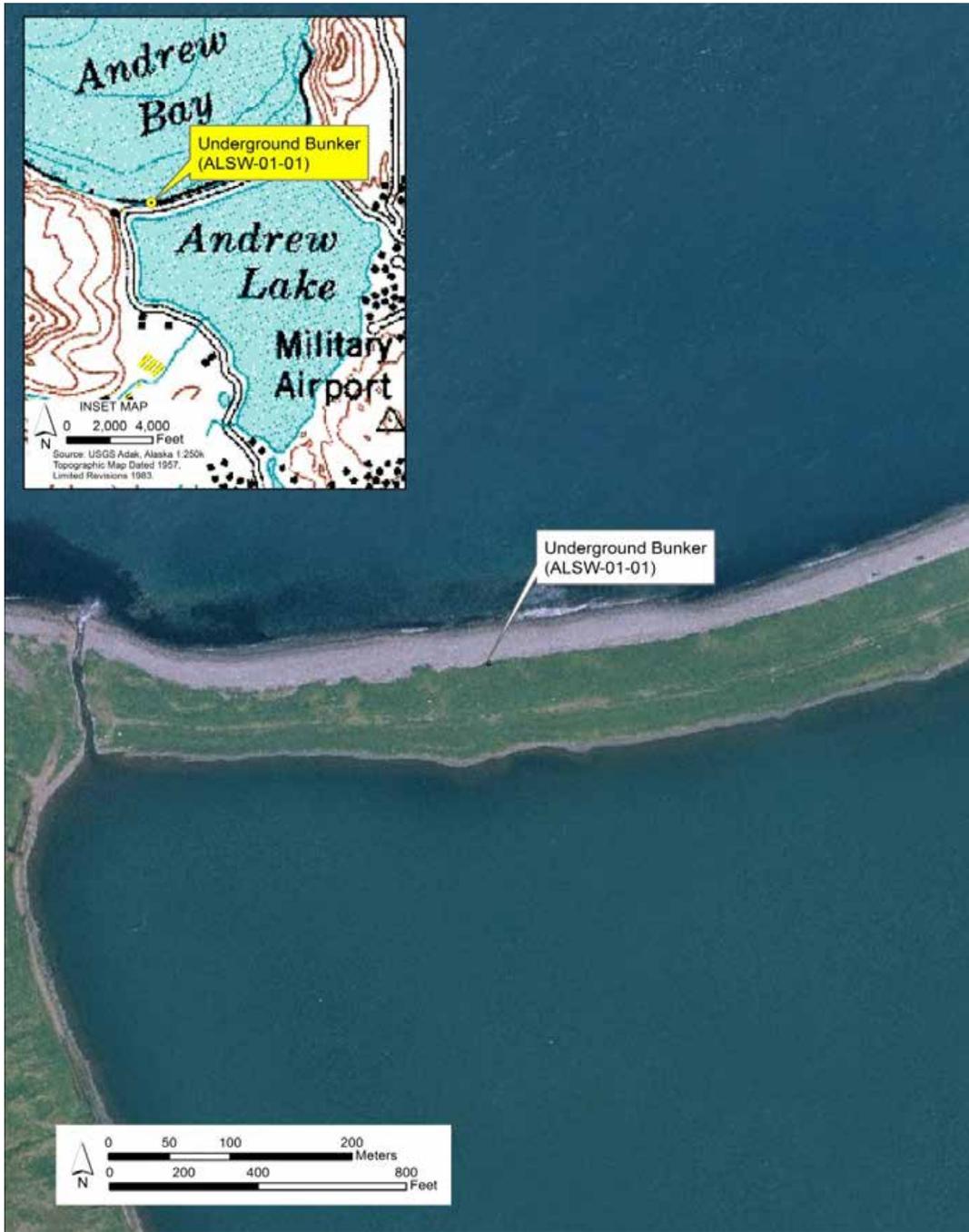
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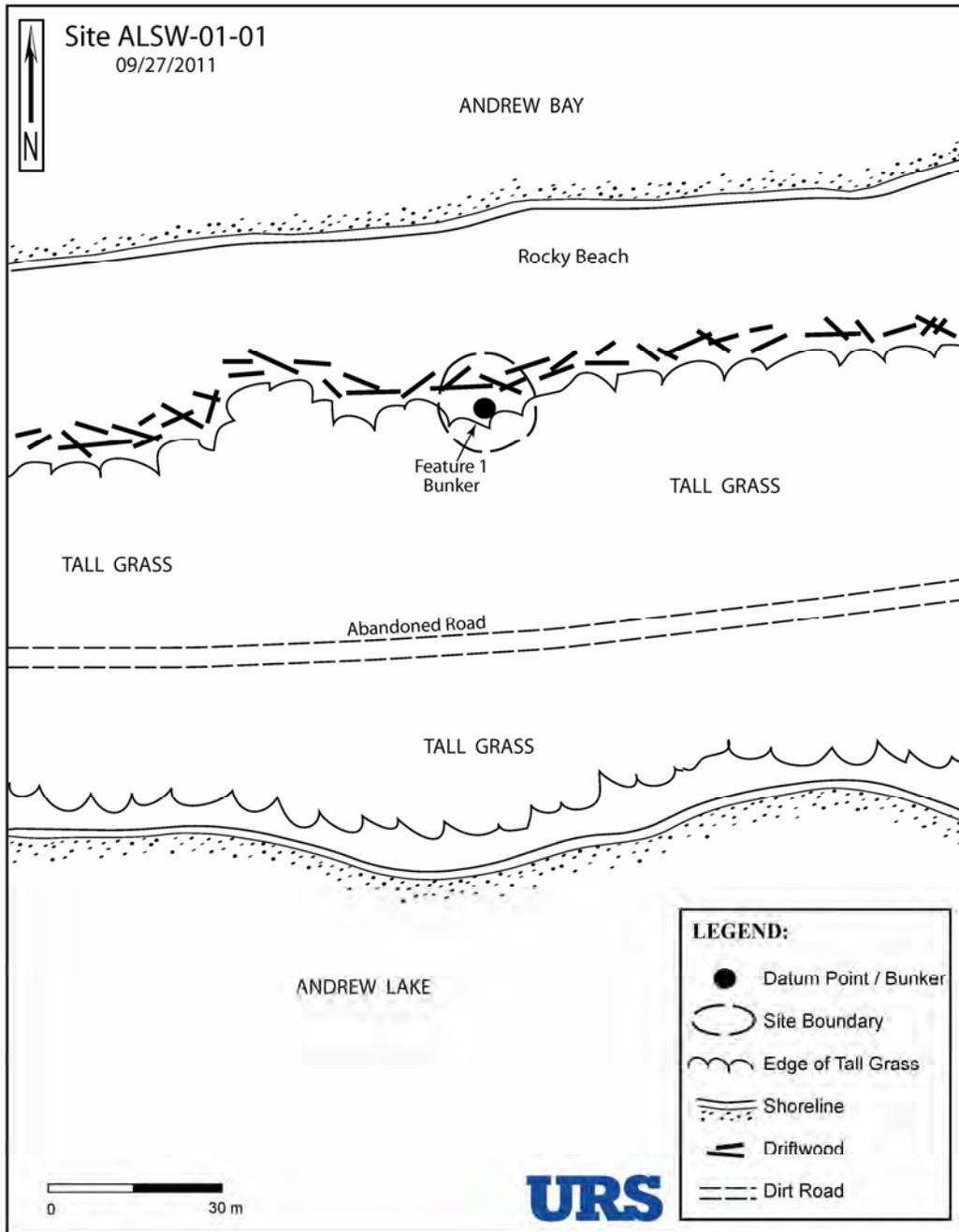
BIA/BLM #: N/A

Other # (specify): ALSW-01-01

LOCATION MAP



SKETCH MAP



PHOTOGRAPHS



Overview of underground bunker, view south



Photograph of ALSW-01-01 taken in 1966-1967 (Source:
www.navycthistory.com/adak_worthington.html)

HG-01-01
AHRIS #ADK-00298

Alaska Heritage Resources Survey

AHRS #: ADK-00298 **Aliquot:** S095S195W15
Map sheet: ADAK C2NW **Lat./Long.:** 51.929061N -176.664276W NAD83 **Acreage:** 0.65
UTM: 5753201mN 523084mE NAD83

Site Name(s): HAND GRENADE RANGE (HG-01-01)

Site Description: This historic site consists of an abandoned, earthen-bermed hand grenade range, two steel shrapnel protection bunkers, wood-lined earthen throwing pits with protective walls, a concrete ammunitions magazine, and a dirt pile with an abandoned bulldozer blade. The two cylindrical shrapnel protection features likely postdate the grenade range and relate to the later use of this area for ordnance disposal.

Feature 1 is a steel cylindrical tank measuring 10 feet diameter by 8 feet high with a cut doorway and observation port, which was used to provide protection during demolition of discarded ordnance. The structure has likely been modified from a heavy-duty storage tank designed for a different purpose. Ten burn barrels, scrap metal, chain, and other metal debris are present outside Feature 1. The entire range is surrounded by a rectangular berm.

Feature 2 consists of a set of throwing pits constructed of large 12-inch-diameter cylindrical timbers enclosed within an earthen berm. The overall structure measures 10 by 10 feet in width, oriented north-south, with the throwing area to the north. A rectangular grid of pits to the west may represent the target area. The throwing pits are divided into two 5- by 10-foot rectangular pits. The structure is built of creosote-coated telephone poles stacked three courses high, to an overall height of about 5 feet. One pole contains a circular aluminum tag stamped "Baxter-Wychoff 66" and the number "412," likely dating to the period of use of Feature 1.

Feature 3 is a second shrapnel protection structure, measuring 10 feet in diameter, identical to and likely the second half of the tank used for Feature 1. Large rolls of unused barbed wire are stacked near Feature 3.

Feature 4 is a cylindrical concrete ammunition magazine transported from elsewhere on the naval installation. This feature measures 6 feet in depth and 15 feet in diameter, with double steel doors designated with the number "4." The structure was likely used for storage of demolition supplies. As originally designed, this would have been placed within an earthen bunker.

Feature 5 is a dirt pile and bulldozer blade. The damaged bulldozer blade is marked with the number "384."

Significance: While the features noted at the site appear more modern than WWII, with the exception of the earthen berm visible in 1944 aerial photographs, it is likely that the area was used for training during the 1940s. The protective wall and magazine currently in place appear to date from the Cold War era, while the steel bunkers may be more modern features used for explosive ordnance disposal activities. The hand grenade range is not listed in the HARP Plan (U.S. Navy 1996) as a potentially NRHP-eligible resource. While its good integrity of layout and design conveys a visual sense of the overall historic

environment relating to the Cold War occupation of Adak, the range itself is a type of feature that would have been built by the Navy regardless of the Cold War. It is therefore not recommended for listing on the NRHP.

Location: The historic site is situated within the Operable Unit (OU) B-2 Andrew Lake Hand Grenade Range (HG-01) site at the former Adak Naval Complex at Adak Island, Alaska (U.S. Navy 2011). The site lies within Moffett Valley, west of Andrew Lake and south of the Moffett Access Road that leads directly to the site. The elevation in this site is approximately 33.5 meters (110 feet) above sea level. There is direct access to this site via the gravel range entry road, which branches from the main access road along the western side of Andrew Lake. The terrain is relatively flat. Vegetation consists of tall tundra grasses up to 18 inches tall interspersed with wildflowers. The valley floor is composed of a silty, gravelly, sandy, alluvial/colluvial, and/or outwash material overlying andesitic basalt bedrock or consolidated ash tuff.

Citations:

- U.S. Navy. 2011. *Final Work Plan, OU B-2 Biological Assessment, Wetland/Tundra Delineation, and Cultural Landscape and Historical Features Survey, Former Adak Naval Complex, Adak, Alaska*. Prepared by URS Group, Inc. for Naval Facilities Engineering Command Northwest under Contract No. N44255-09-D-4001, Delivery Order 41. Silverdale, Washington. September 2011.
- . 1996. *Historic and Archaeological Resources Protection (HARP) Plan for the Adak Naval Complex, Naval Air Facility Adak, Naval Security Group Activity Adak*. Prepared by EDAW, Inc. for Engineering Field Activity Northwest. Poulsbo, Washington. October 1996.
- . n.d. *Adak Island Defense Plan, Short Title – “DPA,” Adak Island Alaska*.

Danger of Destruction: High; given the previous function of this site as a hand grenade range and munitions demolition area, that munitions and explosives of concern have been found during previous investigations within the historic site boundaries, and that intrusive removal activities will be performed within those boundaries.

Present Condition: Fair; structures have deteriorated but are still intact.

Ecosystem: Moist Tundra

Pertinent Dates: A.D. 1945 to 1980s

Period: Historic; Cold War era

Resource Nature: Site; Cold War, Military, Defense

Cultural Affiliation: Euroamerican

Preservation Status and Date: This historic site is situated within the Adak Army Base and Adak Naval Operating Base National Historic Landmark listed in the National Register of Historic Places (1987) and the associated Adak World War II Cultural Landscape Historic District determined eligible for inclusion in the National Register of Historic Places as a Historic District (1995). However, HG-01-01 is not

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among those features identified as contributing elements to the significance of the Adak National Historic Landmark (U.S. Navy 1996).

Property Owner: U.S. Navy

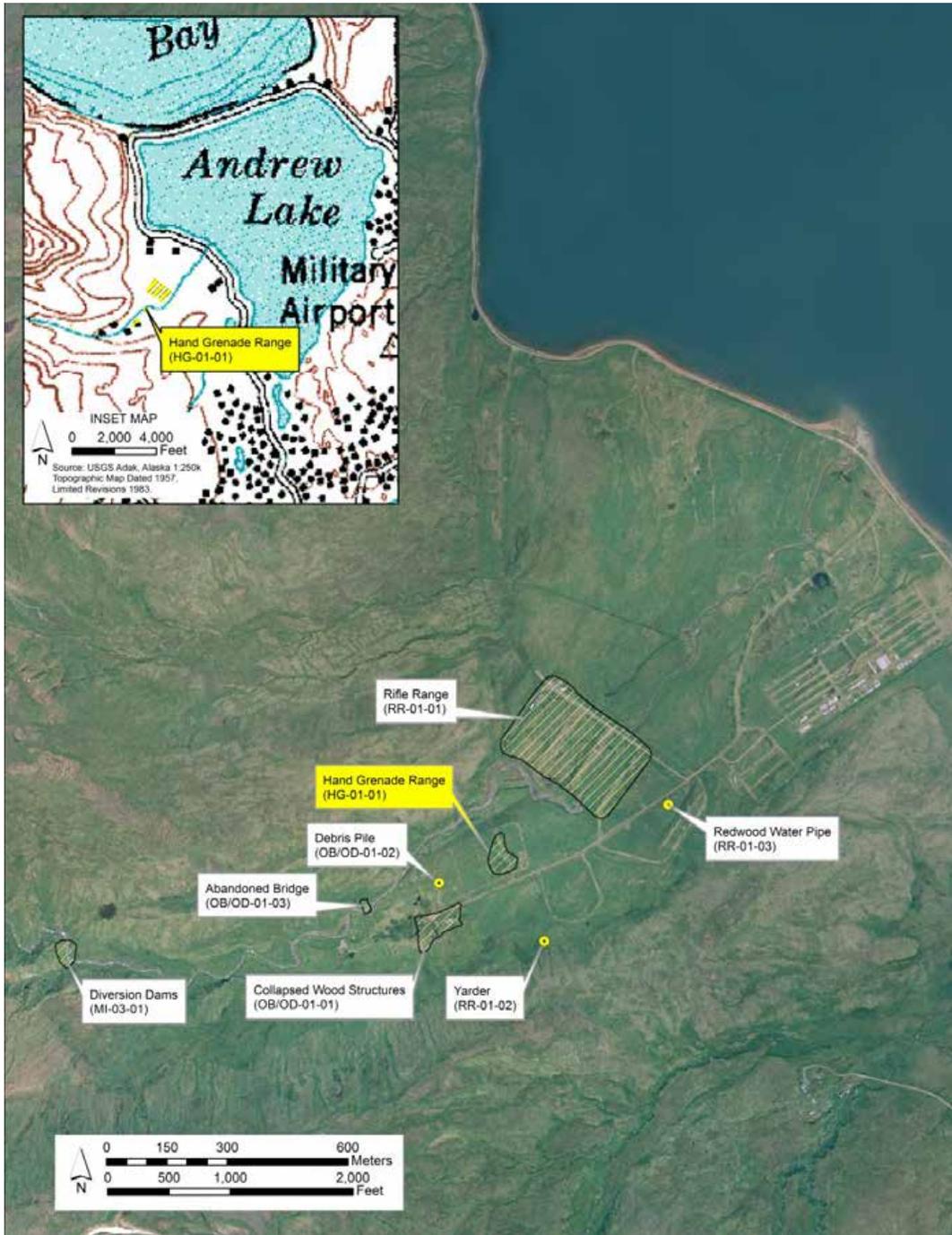
Repository: N/A

Accession #: N/A

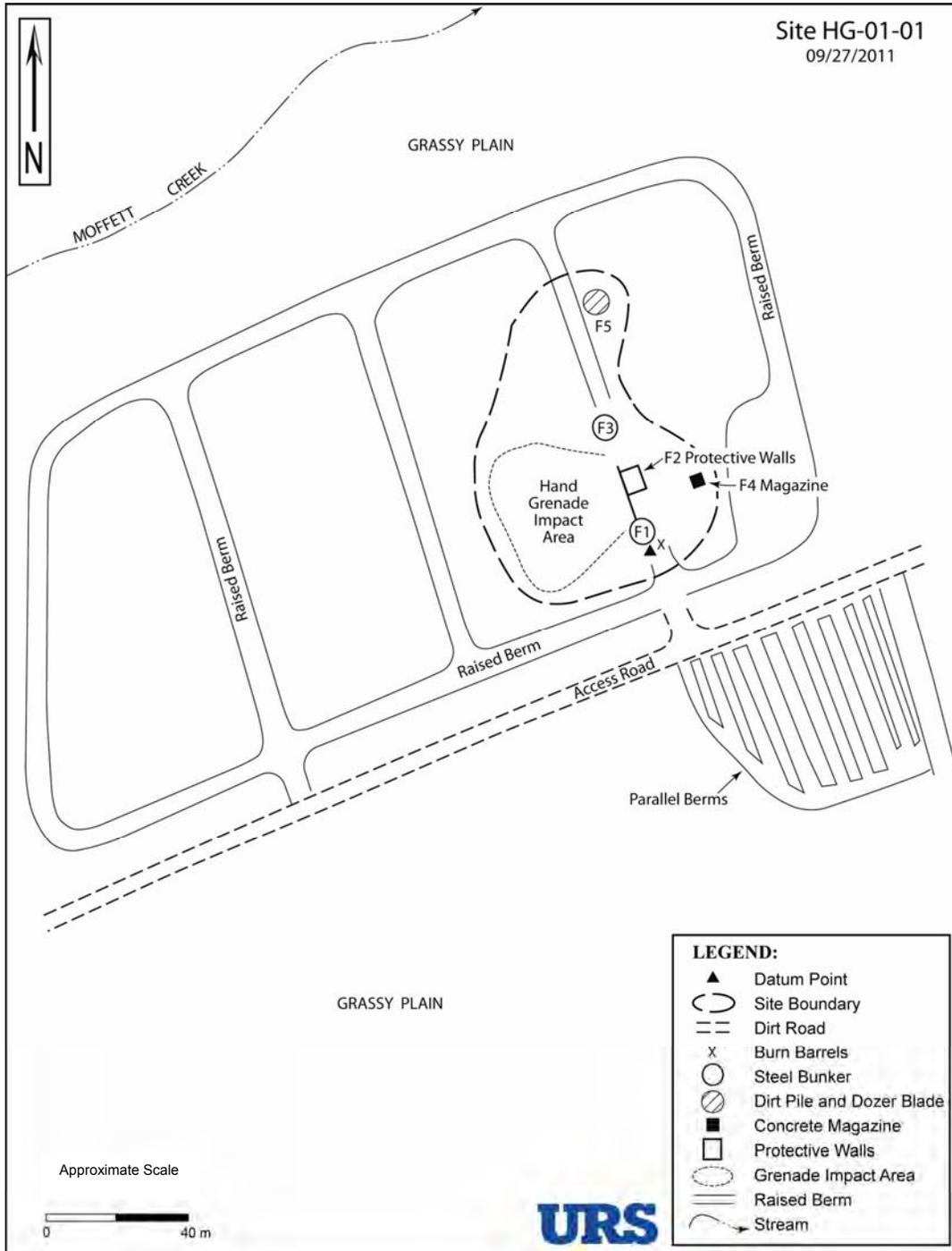
BIA/BLM #: N/A

Other # (specify): HG-01-01

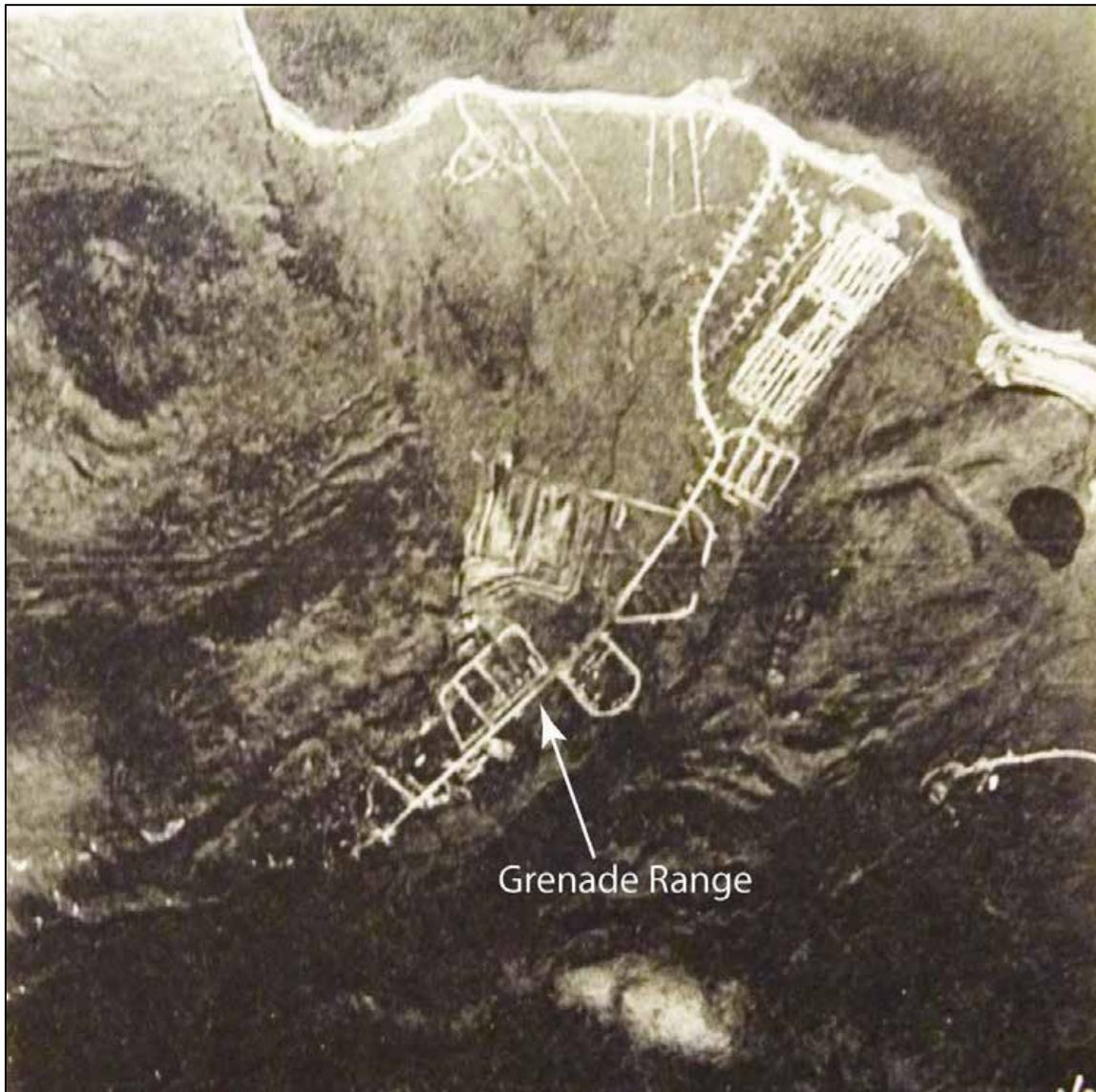
LOCATION MAP



SKETCH MAP



HISTORIC MAP



1944 air photograph of the Moffett Valley target range, taken from 10,000 ft. elevation
(Source: "Naval Air Station Adak Base Map, Small Arms Range, Approved 12/5/88, Sheet 1 of 73," Adak City Hall archives, Adak Island, AK)

PHOTOGRAPHS



Feature 1 structure, view north



Feature 2 pit, view west



Feature 3 structure, view northwest



MI-03-01
AHRIS #ADK-00299

Alaska Heritage Resources Survey

AHRS #: ADK-00299 **Aliquot:** T95S R195W SEC.15 SM
Lat./Long.: 51.926717N -176.680041W NAD83 **Acreage:** 0.08
Map sheet: ADAK C2NW **UTM:** 5752936mN 522001mE NAD83

Site Name(s): DIVERSION DAMS (MI-03-01)

Site Description: This historic site consists of the remains of two small check dams, one located in an open creek channel of Moffett Creek (Feature 1) and a second located 75 yards downstream and above the mouth of a small tributary (Feature 2).

Feature 1 is a larger structure on the main fork of Moffett Creek. The structure extends partially across the creek from the west bank. This feature consists of a small dam constructed of 2- by 6-inch milled lumber, including some tongue and groove boards, and 4-inch wire nails. The dam is oriented east-west across a small stream in a ravine where the stream flows from north to south. The stream measures about 25 feet wide and 1 to 2 feet deep. The remnant of the dam on the west side of the stream is built of lumber, while a section of poured concrete (2 by 2 feet) occurs on the east side of the creek. Earthen berms extend out east and west of the wood and concrete dam. The remains of the wood dam on the west creek bank measures 14 feet long and 4 feet tall. Feature 1 was likely used to divert water into a gravity flow pipeline to provide water to the target range located east and downslope of the dam.

Feature 2 consists of a 4- by 6-inch timber placed across a tributary creek 20 feet above the mouth. A plank is placed at a drop in the creek, slowing the flow of water into the main channel. No water pool occurs beyond the dam, although a gate may have been present at one time. The remains of upright planks are visible on the upstream side of the structures. The creek is approximately 6 feet wide at this location, and structures extend south 4 feet from the north bank.

Significance: Both water diversion Features 1 and 2 retain sufficient integrity to contribute to the overall historic landscape, as they are associated with events important in the broad patterns of U.S. history, namely the Aleutian Campaign of WWII (Criterion A), and are contributing elements of the Adak Army Base and Adak Naval Operating Base National Historic Landmark and the associated Adak WWII Cultural Landscape Historic District.

Location: This historic site is situated within the Operable Unit (OU) B-2 Andrew Lake Mortar Impact Area (MI-03) site at the former Adak Naval Complex at Adak Island, Alaska (U.S. Navy 2011). MI-03 is located in a steep valley draining west to east from the flanks of Mount Moffett toward Andrew Lake. The elevation ranges from about 40 meters (130 feet) above sea level (asl) at the eastern edge to about 280 meters (920 feet) asl along the western edge on the flanks of Mount Moffett. There is indirect access to this site via a gravel range entry road that branches from the main access road along the western side of Andrew Lake. Vegetation is grassy in the east, with lowland tundra species ranging in height from 12 to 24 inches. The vegetation transitions to upland species (mixed grasses, heaths, and mosses) of shorter stature in the west. Runoff channels or streams within the site run easterly toward Moffett Creek. The valley floor is composed of a silty, gravelly, sandy alluvial/colluvial, and/or outwash material overlying andesitic basalt bedrock or consolidated ash tuff.

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Citations:

U.S. Navy. 2011. *Final Work Plan, OU B-2 Biological Assessment, Wetland/Tundra Delineation, and Cultural Landscape and Historical Features Survey, Former Adak Naval Complex, Adak, Alaska.* Prepared by URS Group, Inc. for Naval Facilities Engineering Command Northwest under Contract No. N44255-09-D-4001, Delivery Order 41. Silverdale, Washington. September 2011.

———. 1996. *Historic and Archaeological Resources Protection (HARP) Plan for the Adak Naval Complex, Naval Air Facility Adak, Naval Security Group Activity Adak.* Prepared by EDAW, Inc. for Engineering Field Activity Northwest. Poulsbo, Washington. October 1996.

———. n.d. *Adak Island Defense Plan, Short Title – “DPA,” Adak Island Alaska.*

Danger of Destruction: Low; historic site is located outside the boundaries of the remedial action areas where intrusive removal activities are planned.

Present Condition: Poor; collapsed structure

Ecosystem: Moist Tundra

Pertinent Dates: A.D. 1942 to 1945

Period: Historic; WWII era

Resource Nature: Site; WWII, Military, Defense

Cultural Affiliation: Euroamerican

Preservation Status and Date: This historic site is situated within the Adak Army Base and Adak Naval Operating Base National Historic Landmark listed in the National Register of Historic Places (1987) and the associated Adak WWII Cultural Landscape Historic District determined eligible for inclusion in the National Register of Historic Places as a Historic District (1995).

Property Owner: U.S. Navy

Repository: N/A

Accession #: N/A

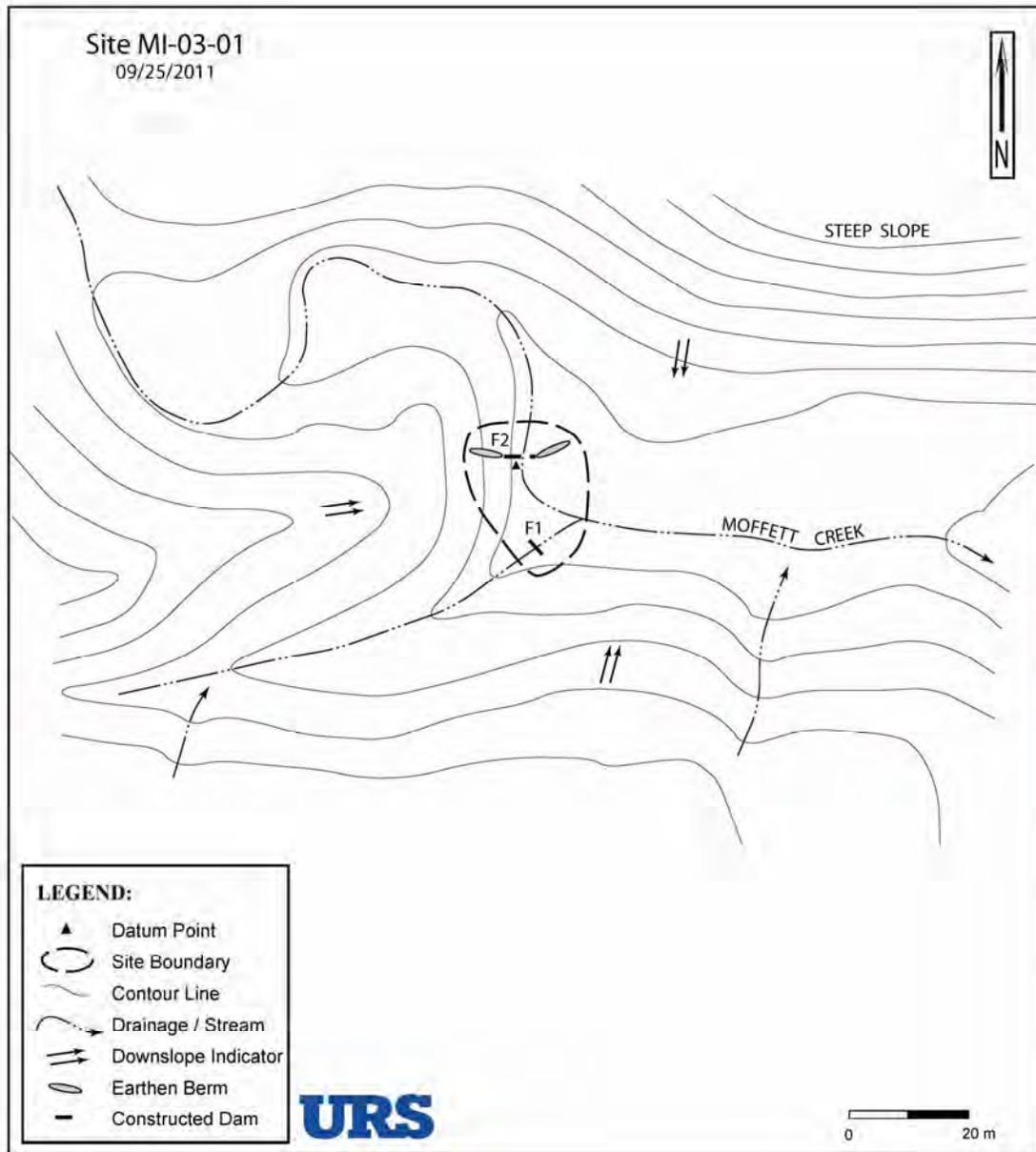
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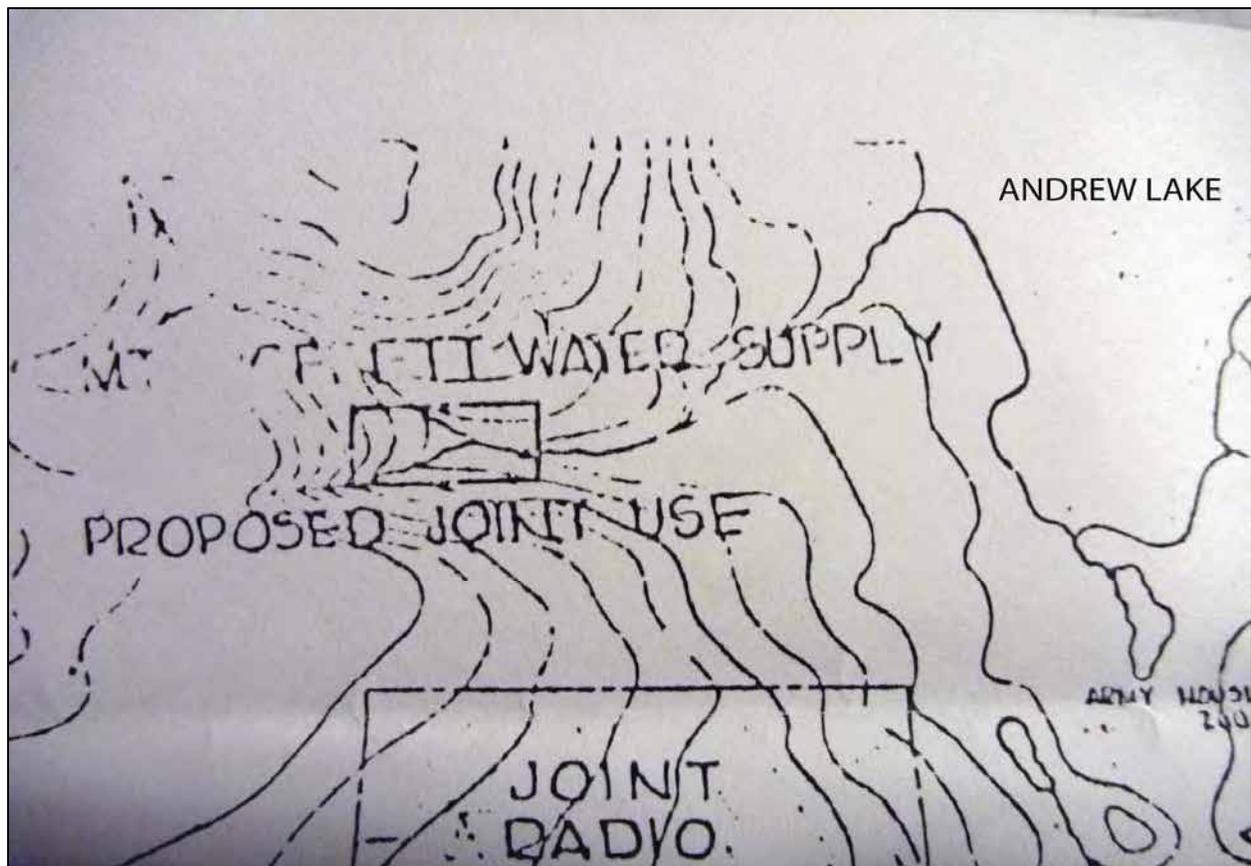
LOCATION MAP



SKETCH MAP



HISTORIC MAP



World War II-era map showing general area of the Mount Moffett water supply
(Source: "Plans for Future Development, Stage 1 & 2, Space Allocation" dated September 2, 1943, Adak City Hall archives, Adak Island, AK)

PHOTOGRAPHS



Feature 1 diversion dam, view north



Feature 2 diversion dam, view north

OB/OD-01-01
AHRIS #ADK-00300

Alaska Heritage Resources Survey

AHRS #: ADK-00300 **Aliquot:** T95S R195W SEC.15 SM
Lat./Long.: 51.927271N -176.666785W NAD83 **Acreage:** 1.76
Map sheet: ADAK C2NW **UTM:** 5753002mN 522912mE NAD83

Site Name(s): COLLAPSED WOODEN STRUCTURES (OB/OD-01-01)

Site Description: This historic site consists of a WWII- and Cold War-era complex of three collapsed structures and an earthen berm on the valley floor south of Moffett Creek on the west side of Andrew Lake. The remains of the structures are likely associated with a WWII-era Radio-Controlled Airplane Target Range.

Feature 1 consists of a shallow rectangular depression containing the remains of a collapsed wooden structure. The structure measures approximately 12 by 12 feet and appears to have collapsed to the south. Tongue and groove floorboards (2 inches wide) run north-south, overlaid by 2-by-4, 2-by-6, and 2-by-8 lumber. The 2-by-4s appear to have been in an "A-Frame" construction style to support walls. All construction used nails and bolts. The depression is less than 1 foot deep, but water is present below the floorboards. Fragments of sheet metal are also present.

Feature 2 is the wooden floor of a larger structure to the west of Feature 1. It measures approximately 30 by 60 feet and consists almost entirely of floorboards laid end to end in a north-south arrangement. Floorboards vary from 1 to 12 inches in width and 10 to 15 feet in length. Some fragments of 2-by-6 and 6-by-6 timbers are present, but little of the superstructure is present. Construction employed 3½-inch nails and 1-inch spikes. The structure is enclosed within a 2-foot-wide by 2-foot-high earthen berm, and the floorboards lie directly on the original ground surface. Modern "M60 fuse igniters" are also present within the feature area. This feature may be the floor of a canvas structure.

Feature 3 consists of the remains of a third wooden structure. The structure measures approximately 20 by 30 feet and lies within a 2- to 3-foot-deep rectangular depression. Some floorboards are present, overlain by a variety of 2-by-4, 2-by-6, 2-by-8, 4-by-4, and 6-by-6 lumber. The structure is oriented north-south. Large 4-by-12 timbers 15 feet in length are also present, as are large wooden blocks that may have supported a wooden foundation. Some of the boards show evidence of charring.

Feature 4 is an earthen berm supported by 12-inch horizontal poles 25 feet in length and two upright poles extending 3 feet above ground surface. Earth is banked to a height of about 4 feet on the north side of the poles to a width of about 4 feet. This appears to be a protective wall used by explosive ordnance disposal crews. It is similar to protective walls at a nearby grenade range (HG-01-01).

Significance: This historic site is associated with events important in the broad patterns of U.S. history, namely the Aleutian Campaign of WWII (Criterion A). The structural ruins are contributing elements to the Adak WWII Cultural Landscape Historic District and Adak Army Base and Adak Naval Operating Base National Historic Landmark.

Location: This historic site is situated within the Operable Unit (OU) B-2 Andrew Lake Open Burn/Open Detonation Disposal Range (OB/OD-01) site at the former Adak Naval Complex at Adak

Island, Alaska (U.S. Navy 2011). The complex of three collapsed structures and an earthen berm are located on the valley floor south of Moffett Creek on the west side of Andrew Lake. OB/OD-01 encompasses visible historical demolition craters and an ample buffer zone around the craters to account for kick-outs during disposal operations. The elevation in this site ranges from about 33 to 40 meters (110 to 130 feet) above sea level. There is direct access to this site via the gravel range entry road, which branches from the main access road along the west side of Andrew Lake. The terrain is relatively flat, but hummocky in some locations and marshy in others. There are several craters in this area resulting from previous disposal events. The site is generally covered in knee-high, grassy tundra; however, there are relatively barren areas surrounding some of the disposal craters. Moffett Creek runs from west to northeast through the northwestern portion of the site. The valley floor is composed of a silty, gravelly, sandy, alluvial/colluvial, and/or outwash material overlying andesitic basalt bedrock or consolidated ash tuff.

Citations:

U.S. Navy. 2011. *Final Work Plan, OU B-2 Biological Assessment, Wetland/Tundra Delineation, and Cultural Landscape and Historical Features Survey, Former Adak Naval Complex, Adak, Alaska*. Prepared by URS Group, Inc. for Naval Facilities Engineering Command Northwest under Contract No. N44255-09-D-4001, Delivery Order 41. Silverdale, Washington. September 2011.

———. 1996. *Historic and Archaeological Resources Protection (HARP) Plan for the Adak Naval Complex, Naval Air Facility Adak, Naval Security Group Activity Adak*. Prepared by EDAW, Inc. for Engineering Field Activity Northwest. Poulsbo, Washington. October 1996.

Danger of Destruction: High; given the previous function of this site as a munitions demolition area, that munitions and explosives of concern have been found during previous investigations in close proximity to the historic site, and that intrusive removal activities will be performed within the historic site boundaries.

Present Condition: Poor; structures have collapsed.

Ecosystem: Moist Tundra

Pertinent Dates: A.D. 1942 to 1945

Period: Historic; WWII era

Resource Nature: Site; WWII, Military, Defense

Cultural Affiliation: Euroamerican

Preservation Status and Date: This historic site is situated within the Adak Army Base and Adak Naval Operating Base National Historic Landmark listed in the National Register of Historic Places (1987) and the associated Adak World War II Cultural Landscape Historic District determined eligible for inclusion in the National Register of Historic Places as a Historic District (1995).

Property Owner: U.S. Navy

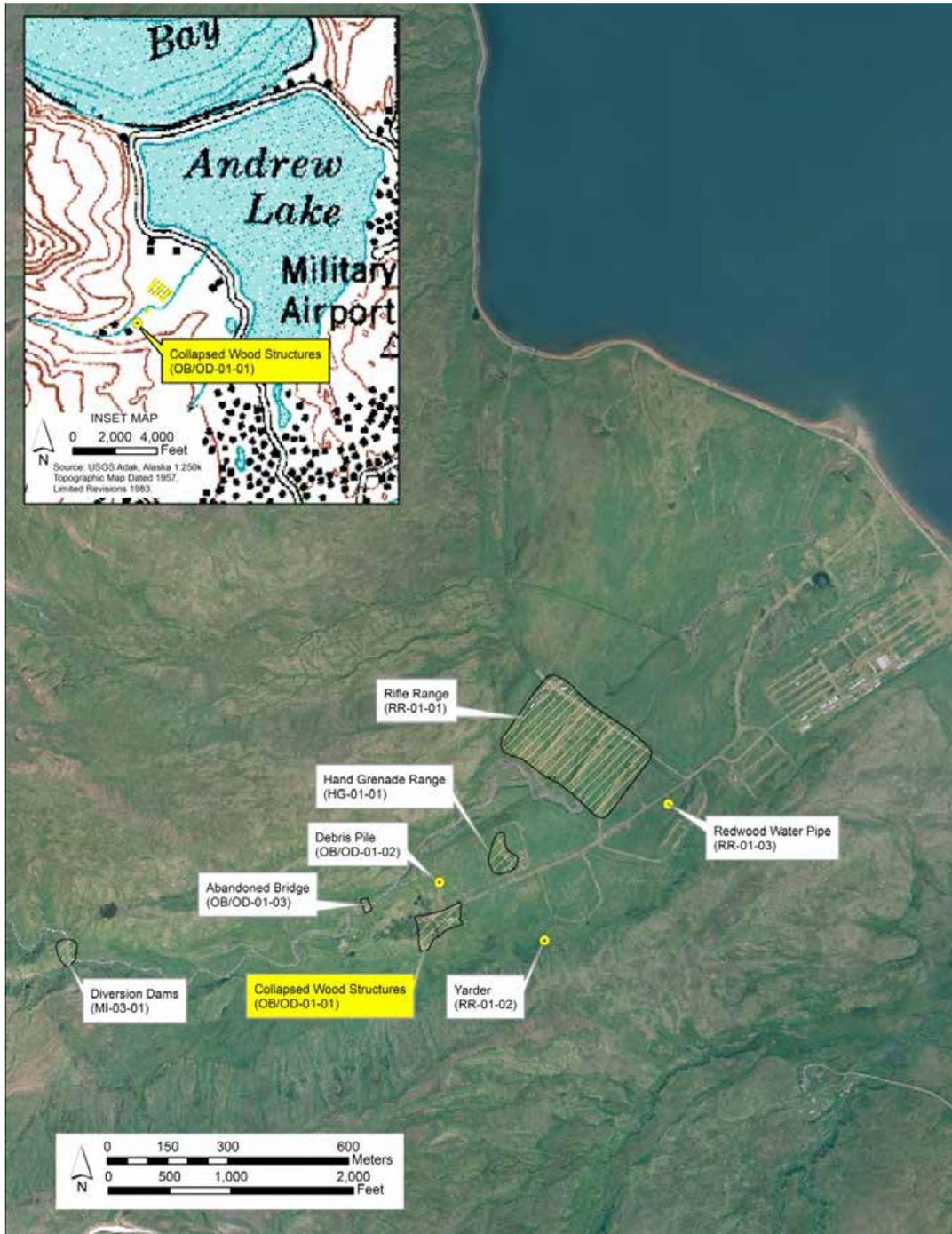
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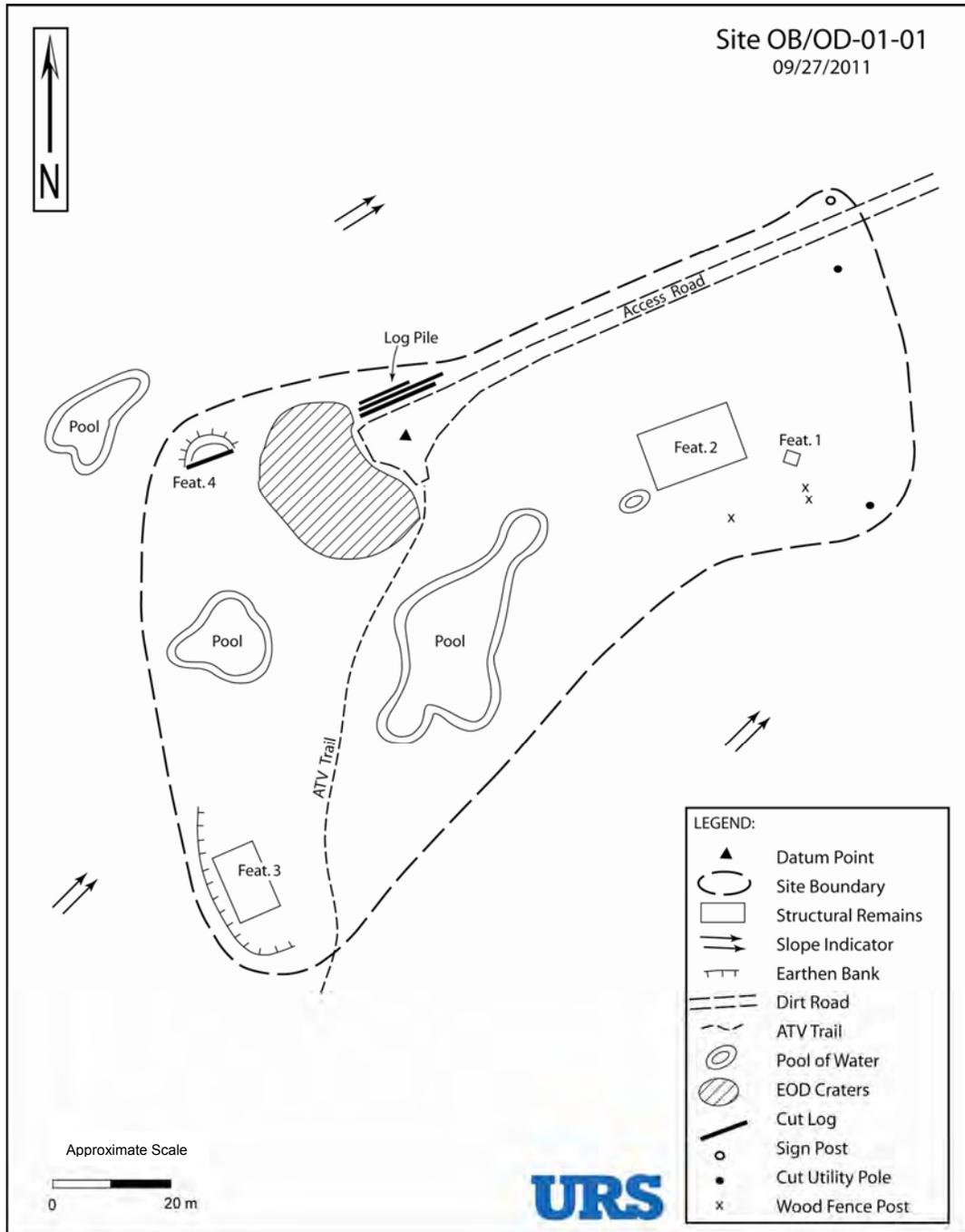
Repository: N/A
Accession #: N/A
BIA/BLM #: N/A

Other # (specify): OB/OD-01-01

LOCATION MAP



SKETCH MAP



PHOTOGRAPHS



Feature 1 structure, view north



Feature 2 floor, view east



Feature 3 floor, view east



Feature 4 retaining wall, view north

OB/OD-01-02
AHRIS #ADK-00301

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Alaska Heritage Resources Survey

AHRS #: ADK-00301 **Aliquot:** T95S R195W SEC.15 SM
Lat./Long.: 51.928022N -176.666548W NAD83 **Acreage:** 0.01
Map sheet: ADAK C2NW **UTM:** 5753085mN 522928mE NAD83

Site Name(s): DEBRIS PILE (OB/OD-01-02)

Site Description: This historic isolate consists of three 10-foot-long 6- by 6-inch-square cut timbers, two scraps of galvanized sheet metal, and one piece of 1- by 6-inch milled lumber. These materials occur in a discrete pile adjacent to a raised soil berm.

Significance: The artifacts (milled lumber and sheet metal) do not appear to represent the *in-situ* ruins of a local structure, but were derived from an unknown location. The isolate lacks direct association with any known person or event of historic significance (Criteria A and B), does not display distinctive characteristics of a type, period, or method of construction (Criterion C), is unlikely to yield information important to local or regional history (Criterion D), and displays poor integrity. Therefore, this historic isolate is considered ineligible for listing in the NRHP.

Location: This historic isolate is situated within the boundaries of the Operable Unit (OU) B-2 Andrew Lake Open Burn/Open Detonation Disposal Range (OB/OD-01) site at the former Adak Naval Complex at Adak Island, Alaska (U.S. Navy 2011). The elevation ranges from about 33 to 40 meters (110 to 130 feet) above sea level. There is direct access to this site via the gravel range entry road, which branches from the main access road along the west side of Andrew Lake. The terrain is relatively flat, but hummocky in some locations and marshy in others. The area in the vicinity of the isolate is generally covered in knee-high, grassy tundra. The valley floor is composed of a silty, gravelly, sandy, alluvial/colluvial, and/or outwash material overlying andesitic basalt bedrock or consolidated ash tuff.

Citations:

- U.S. Navy. 2011. *Final Work Plan, OU B-2 Biological Assessment, Wetland/Tundra Delineation, and Cultural Landscape and Historical Features Survey, Former Adak Naval Complex, Adak, Alaska*. Prepared by URS Group, Inc. for Naval Facilities Engineering Command Northwest under Contract No. N44255-09-D-4001, Delivery Order 41. Silverdale, Washington. September 2011.
- . 1996. *Historic and Archaeological Resources Protection (HARP) Plan for the Adak Naval Complex, Naval Air Facility Adak, Naval Security Group Activity Adak*. Prepared by EDAW, Inc. for Engineering Field Activity Northwest. Poulsbo, Washington. October 1996.
- . n.d. *Adak Island Defense Plan, Short Title – “DPA,” Adak Island, Alaska*.

Danger of Destruction: High; given the location of this site within a previously active firing range and in close proximity to the munitions demolition area, that munitions and explosives of concern have been found during previous investigations in close proximity to the historic site, and that intrusive removal activities will be performed within the historic site boundaries.

Present Condition: Poor; structural hardware and dimensional lumber with no integrity of place or design

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Ecosystem: Moist Tundra

Pertinent Dates: A.D. 1944 to 1980s

Period: Historic; Cold War era

Resource Nature: Isolated find; Cold War, Military, Defense

Cultural Affiliation: Euroamerican

Preservation Status and Date: This historic isolate is situated within the Adak Army Base and Adak Naval Operating Base National Historic Landmark listed in the National Register of Historic Places (1987) and the associated Adak World War II Cultural Landscape Historic District determined eligible for inclusion in the National Register of Historic Places as a Historic District (1995). However, OB/OD-01-02 is not among those features identified as contributing elements to the significance of the Adak National Historic Landmark (U.S. Navy 1996).

Property Owner: U.S. Navy

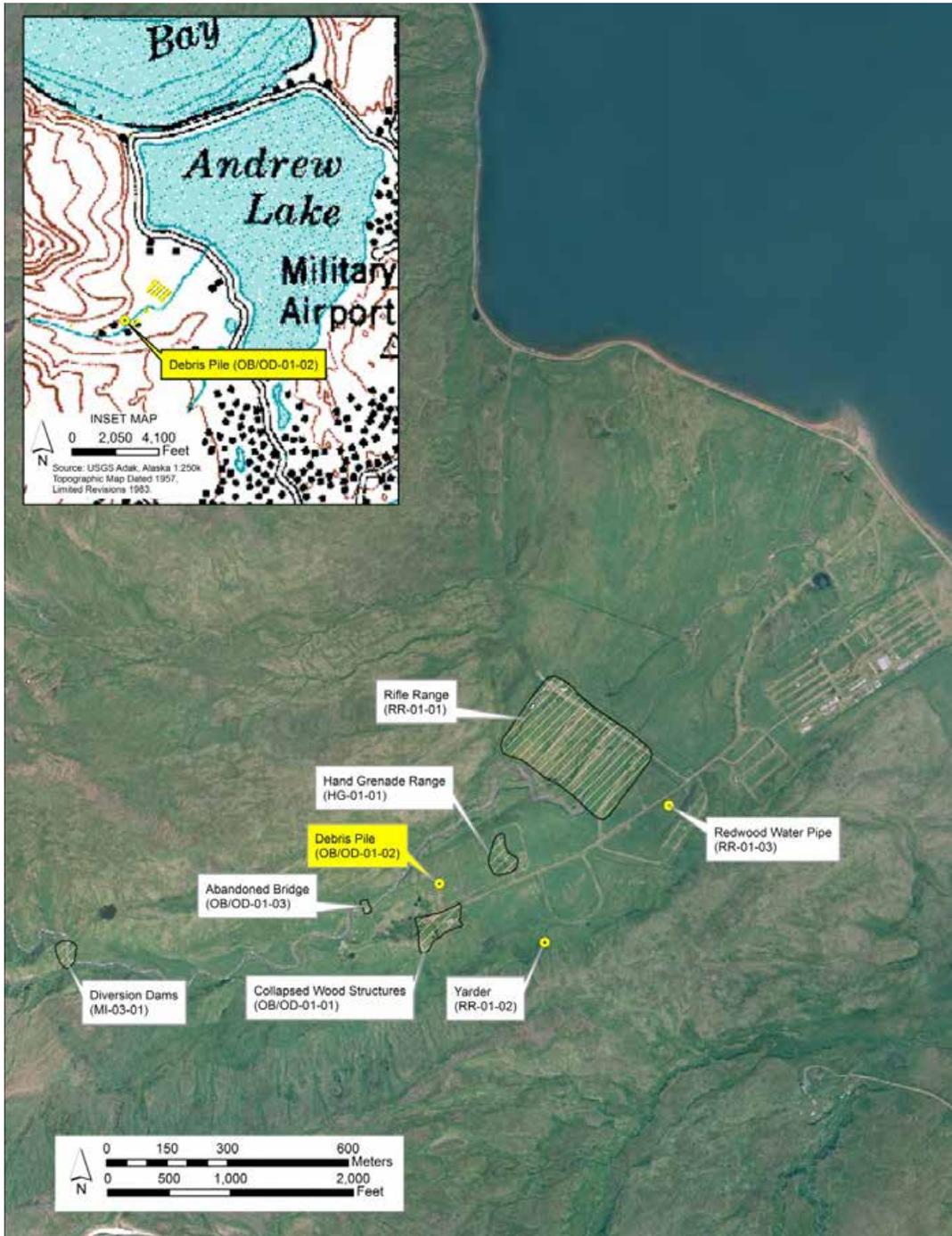
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Accession #: N/A

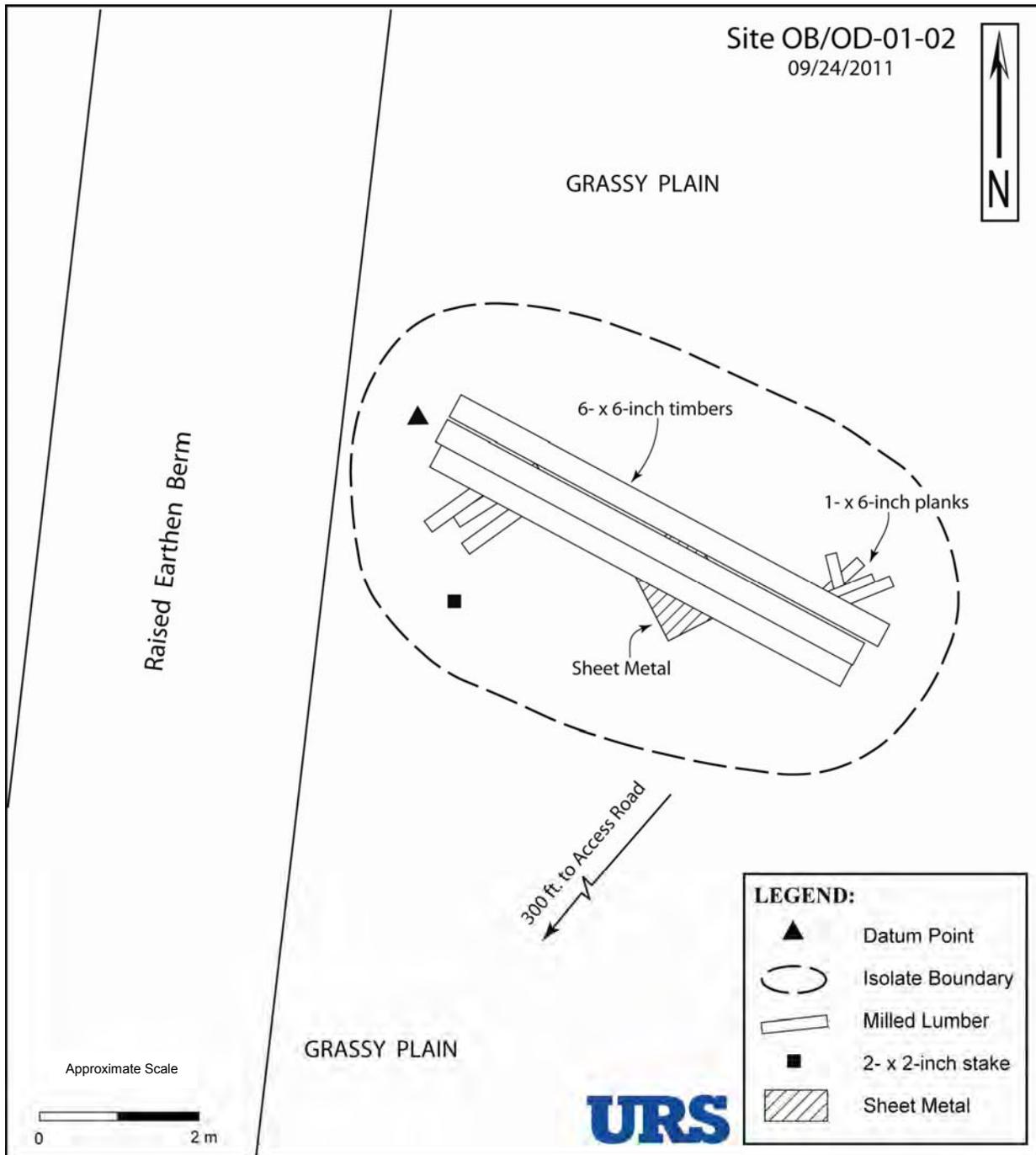
BIA/BLM #: N/A

Other # (specify): OB/OD-01-02

LOCATION MAP



SKETCH MAP



PHOTOGRAPHS



Site OB/OD-01-02 timbers, view west

OB/OD-01-03
AHRIS #ADK-00302

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Alaska Heritage Resources Survey

AHRS #: ADK-00302 **Aliquot:** T95S R195W SEC.15 SM
Lat./Long.: 51.927531N -176.669227W NAD83 **Acreage:** 0.16
Map sheet: ADAK C2NW **UTM:** 5753030mN 522744mE NAD83

Site Name(s): ABANDONED BRIDGE (OB/OD-01-03)

Site Description: This historic site includes the remains of a bridge that once crossed Moffett Creek, including 15 upright 12-inch-diameter posts. When complete, the bridge would have spanned approximately 20 feet, running north-south. An additional set of posts and timbers, of an unknown function, is located within the road bed 50 feet to north that includes a 50-gallon drum. The road leading to and from the bridge is now barely visible, because it is covered with tall, thick grass. It appears as a raised berm near the bridge remains.

Significance: This historic site contributes to the overall historic landscape as it is associated with events important in the broad patterns of U.S. history, namely the Aleutian Campaign of WWII (Criterion A). It is a contributing element of the Adak WWII Cultural Landscape Historic District and Adak Army Base and Adak Naval Operating Base National Historic Landmark.

Location: This historic site is situated within the boundaries of the Operable Unit (OU) B-2 Andrew Lake Open Burn/Open Detonation Disposal Range (OB/OD-01) site at the former Adak Naval Complex at Adak Island, Alaska (U.S. Navy 2011). There is direct access to this site via the gravel range entry road, which branches from the main access road along the west side of Andrew Lake. The terrain is relatively flat, but hummocky in some locations and marshy in others. The site is generally covered in knee-high, grassy tundra. Moffett Creek runs from west to northeast through the site. The valley floor is composed of a silty, gravelly, sandy, alluvial/colluvial, and/or outwash material overlying andesitic basalt bedrock or consolidated ash tuff.

Citations:

U.S. Navy. 2011. *Final Work Plan, OU B-2 Biological Assessment, Wetland/Tundra Delineation, and Cultural Landscape and Historical Features Survey, Former Adak Naval Complex, Adak, Alaska.* Prepared by URS Group, Inc. for Naval Facilities Engineering Command Northwest under Contract No. N44255-09-D-4001, Delivery Order 41. Silverdale, Washington. September 2011.

———. 1996. *Historic and Archaeological Resources Protection (HARP) Plan for the Adak Naval Complex, Naval Air Facility Adak, Naval Security Group Activity Adak.* Prepared by EDAW, Inc. for Engineering Field Activity Northwest. Poulsbo, Washington. October 1996.

Danger of Destruction: Low; given that most of this site is within close proximity to Moffett Creek where intrusive removal activities are not planned.

Present Condition: Poor; little remains of the bridge beyond upright support posts.

Ecosystem: Moist Tundra

Pertinent Dates: A.D. 1942 to 1945

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Period: Historic; WWII era

Resource Nature: Site; WWII, Military, Defense

Cultural Affiliation: Euroamerican

Preservation Status and Date: This historic site is situated within the Adak Army Base and Adak Naval Operating Base National Historic Landmark listed in the National Register of Historic Places (1987) and the associated Adak WWII Cultural Landscape Historic District determined eligible for inclusion in the National Register of Historic Places as a Historic District (1995).

Property Owner: U.S. Navy

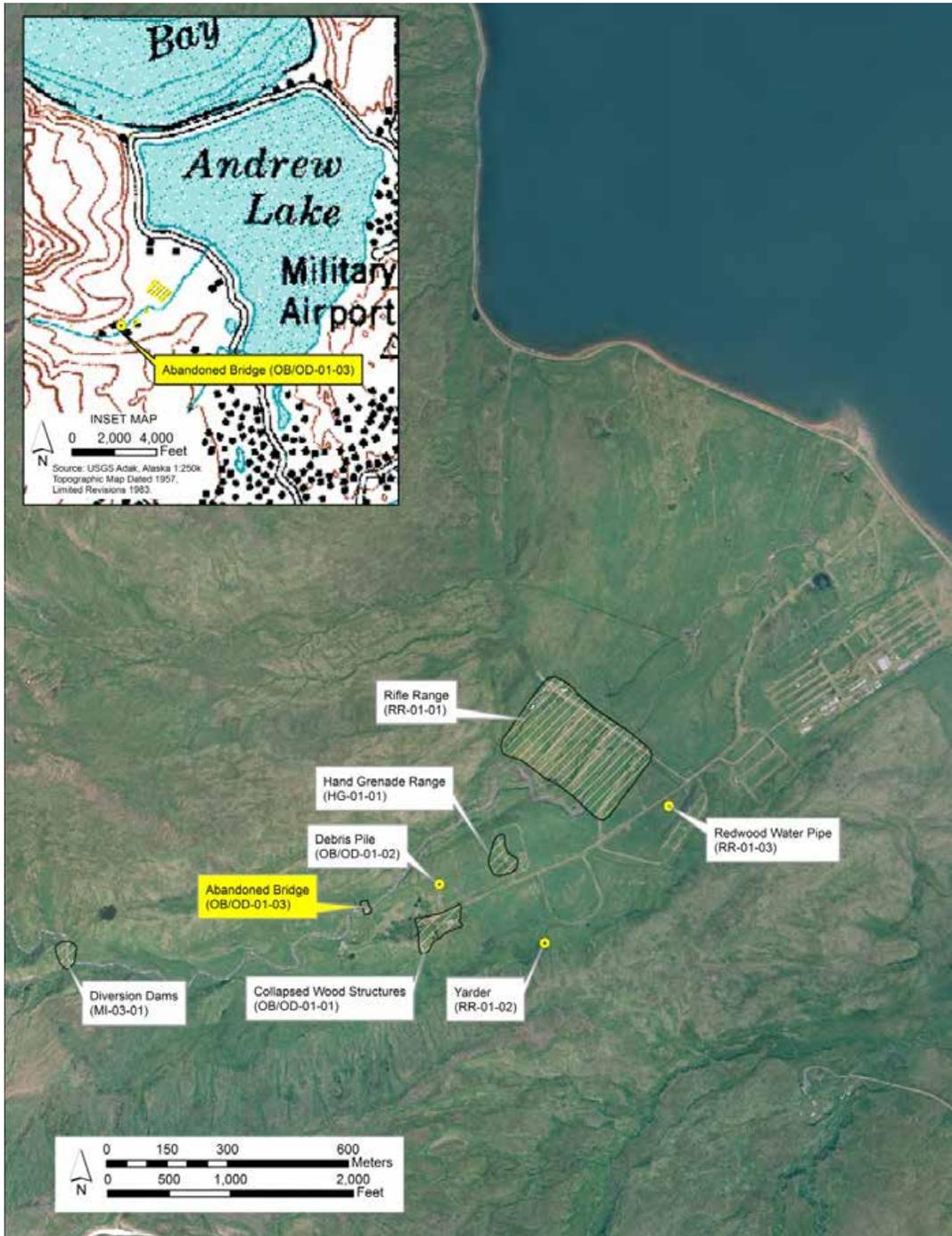
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Accession #: N/A

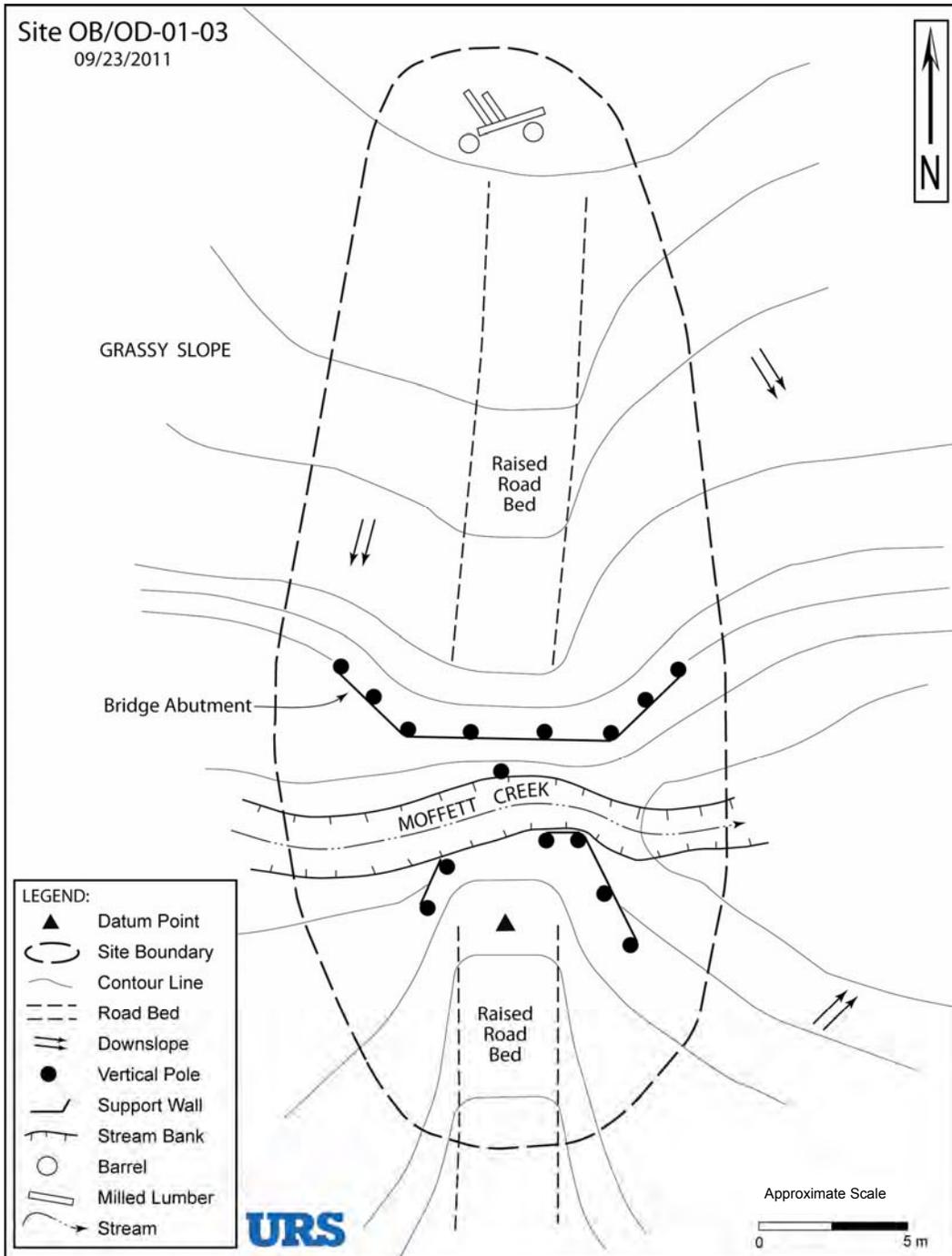
BIA/BLM #: N/A

Other # (specify): OB/OD-01-03

LOCATION MAP



SKETCH MAP



PHOTOGRAPHS



Site OB/OD-01-03, lumber, view north



Site OB/OD-01-03, bridge, view north



Site OB/OD-01-03, bridge, view north

RR-01-01
AHS #ADK-00303

Alaska Heritage Resources Survey

AHRS #: ADK-00303 **Aliquot:** T95S R195W SEC.15 SM
Lat./Long.: 51.932453N -176.662548W NAD83 **Acres:** 1.40
Map sheet: ADAK C2NW **UTM:** 5753579mN 523201mE NAD83

Site Name(s): RIFLE RANGE (RR-01-01)

Site Description: The Andrew Lake Known Distance Rifle Range consists of the remains of one fixed target line with a mechanical pop-up target system and three firing lines used during the WWII/Cold War era for small arms weapons training, including pistols, small bore rifles, and shotguns.

Feature 1 is the target complex. It consists of a very large earthen berm oriented east-west. The eastern portion of the berm is backed by an 8-foot-high concrete wall with a mechanized target-raising system, allowing the raising and lowering of 10 sets of targets. The concrete wall is embossed with "MCB/9/1962." A more recent prefabricated Federal Aviation Administration building behind the berm is also present and has been used for the more recent storage of targets. Paper and plastic targets are present in very large quantities, and these items appear modern, likely dating to within the past 20 years. A dumpster and metal target storage container are also present. A metal container is at the far western end of berm. At least 25 boxes and multiple piles of paper targets and six boxes of plastic silhouettes are present within the storage facility. Numerous artifacts are present, including ammunition cans, barrels, plywood, rope, chain, and other debris, most appearing to be more modern items. While the exact age of these items cannot be determined, it is clear that much of the material associated with this feature and several of the other features present at the site have been recently deposited and are not associated with the WWII or Cold War use of this facility.

Feature 2 is a smaller berm oriented east-west and stacked with sand bags. It is located to the east of Feature 1, in alignment with the larger berm. The presence of thousands of expended automatic Colt pistol cartridges suggests use as a pistol range. Evidence of shotgun firing is also present. The back and sides of the berm are supported by 4- by 4-inch and 4- by 6-inch timbers.

Feature 3 is a large, heavy-duty wall constructed behind the concrete wall that fences in the target range. It is constructed of very large 12-foot by 16-inch creosote-impregnated poles six courses in height supported by double upright posts and steel cable.

Feature 4 is a collapsed plywood 2- by 4-foot structure with large amounts of trash also present. Folding tables, barbed wire, telephone poles, boxes of nails, ammunition boxes, expended cartridges, bullets, tools, and wire are present.

Feature 5 is a row of four waist-high vertical posts fashioned from cut utility poles. These posts are located at the south end of a raised berm firing line. Attached hardware indicates that this alignment formed a small barrier fence.

Feature 6 is a wooden foot bridge over Moffett Creek, located below and east of the access road. The foot bridge is constructed of two wood pilings, 2-by-8 planks, and a single 2-by-4 railing, 16 feet in length and 2½ feet wide, with a tar paper cover. Below the bridge are two 36-inch corrugated steel culverts

supported by 15 courses of solidified concrete bags. The adjacent roadway also crosses over these culverts.

Significance: This historic site contributes to the overall historic landscape, as it is associated with events important in the broad patterns of U.S. history, namely the Aleutian Campaign of WWII (Criterion A). It is a contributing element of the Adak WWII Cultural Landscape Historic District and Adak Army Base and Adak Naval Operating Base National Historic Landmark.

Location: This historic site is situated within the Operable Unit (OU) B-2 Andrew Lake Range Remainder – Hand Grenade/40-mm Area (RR-01) site at the former Adak Naval Complex at Adak Island, Alaska (U.S. Navy 2011). The vegetation is predominantly dense, lush tundra grass in lowland accessible portions. Moffett Creek runs from west to northeast through the northern portion of this site. Lowland areas bordering this creek are often saturated with pooled water at certain times of the year. Groundwater is in hydraulic communication with the creek. The valley floor is composed of a silty, gravelly, sandy, alluvial/colluvial, and/or outwash material overlying andesitic basalt bedrock or consolidated ash tuff.

Citations:

U.S. Navy. 2011. *Final Work Plan, OU B-2 Biological Assessment, Wetland/Tundra Delineation, and Cultural Landscape and Historical Features Survey, Former Adak Naval Complex, Adak, Alaska*. Prepared by URS Group, Inc. for Naval Facilities Engineering Command Northwest under Contract No. N44255-09-D-4001, Delivery Order 41. Silverdale, Washington. September 2011.

———. 1996. *Historic and Archaeological Resources Protection (HARP) Plan for the Adak Naval Complex, Naval Air Facility Adak, Naval Security Group Activity Adak*. Prepared by EDAW, Inc. for Engineering Field Activity Northwest. Poulsbo, Washington. October 1996.

———. n.d. *Adak Island Defense Plan, Short Title – “DPA,” Adak Island, Alaska*.

Danger of Destruction: High; given the location of this site within a previously active firing range, that munitions and explosives of concern have been found during previous investigations within the historic site boundaries, and that intrusive removal activities will be performed within those boundaries.

Present Condition: Good; berms and targeting mechanism are largely intact.

Ecosystem: Moist Tundra

Pertinent Dates: A.D. 1942 to the 1980s

Period: Historic; WWII era

Resource Nature: Site; WWII, Military, Defense

Cultural Affiliation: Euroamerican

Preservation Status and Date: This historic site is situated within the Adak Army Base and Adak Naval Operating Base National Historic Landmark listed in the National Register of Historic Places (1987) and the associated Adak WWII Cultural Landscape Historic District determined eligible for inclusion in the National Register of Historic Places as a Historic District (1995).

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Property Owner: U.S. Navy

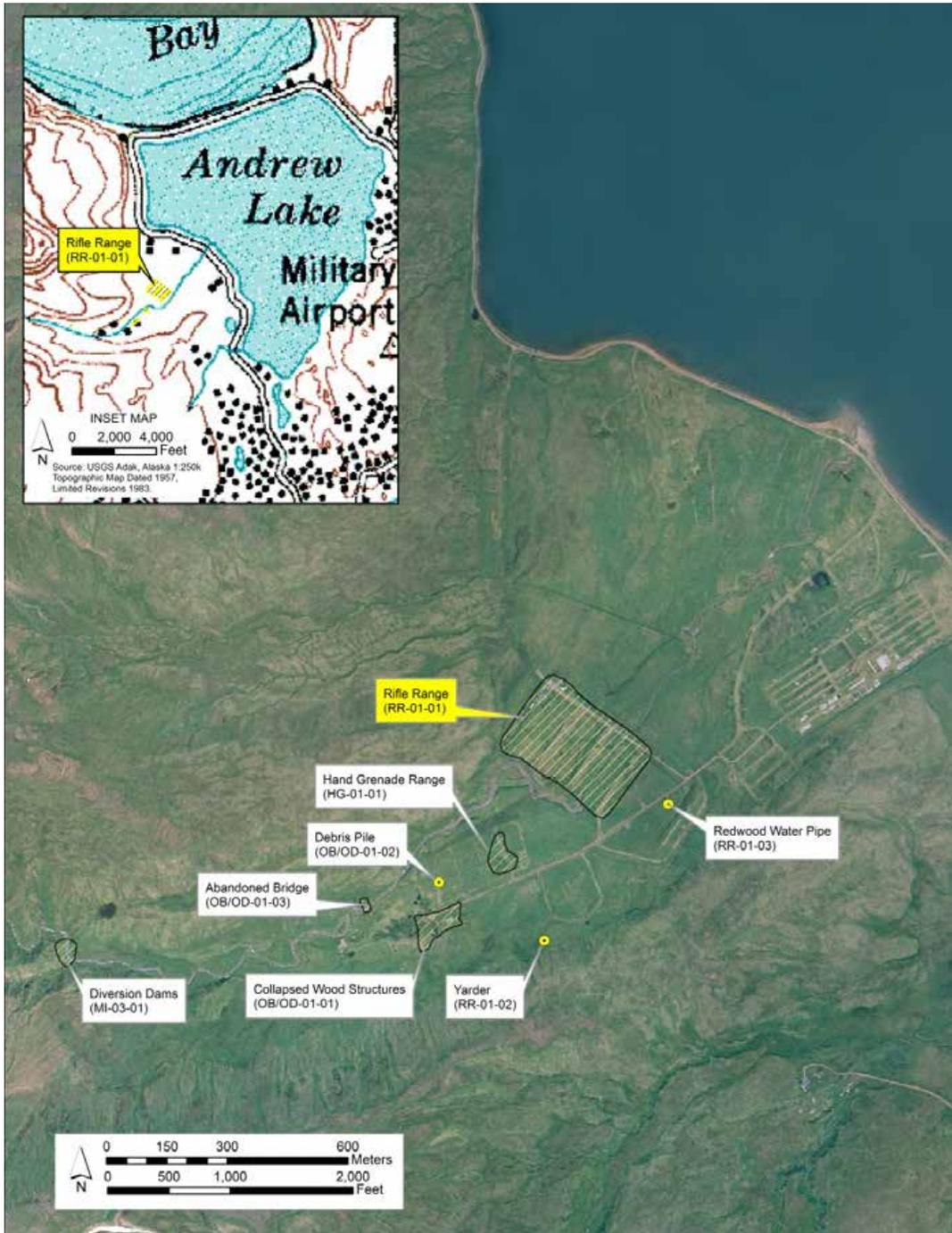
Repository: N/A

Accession #: N/A

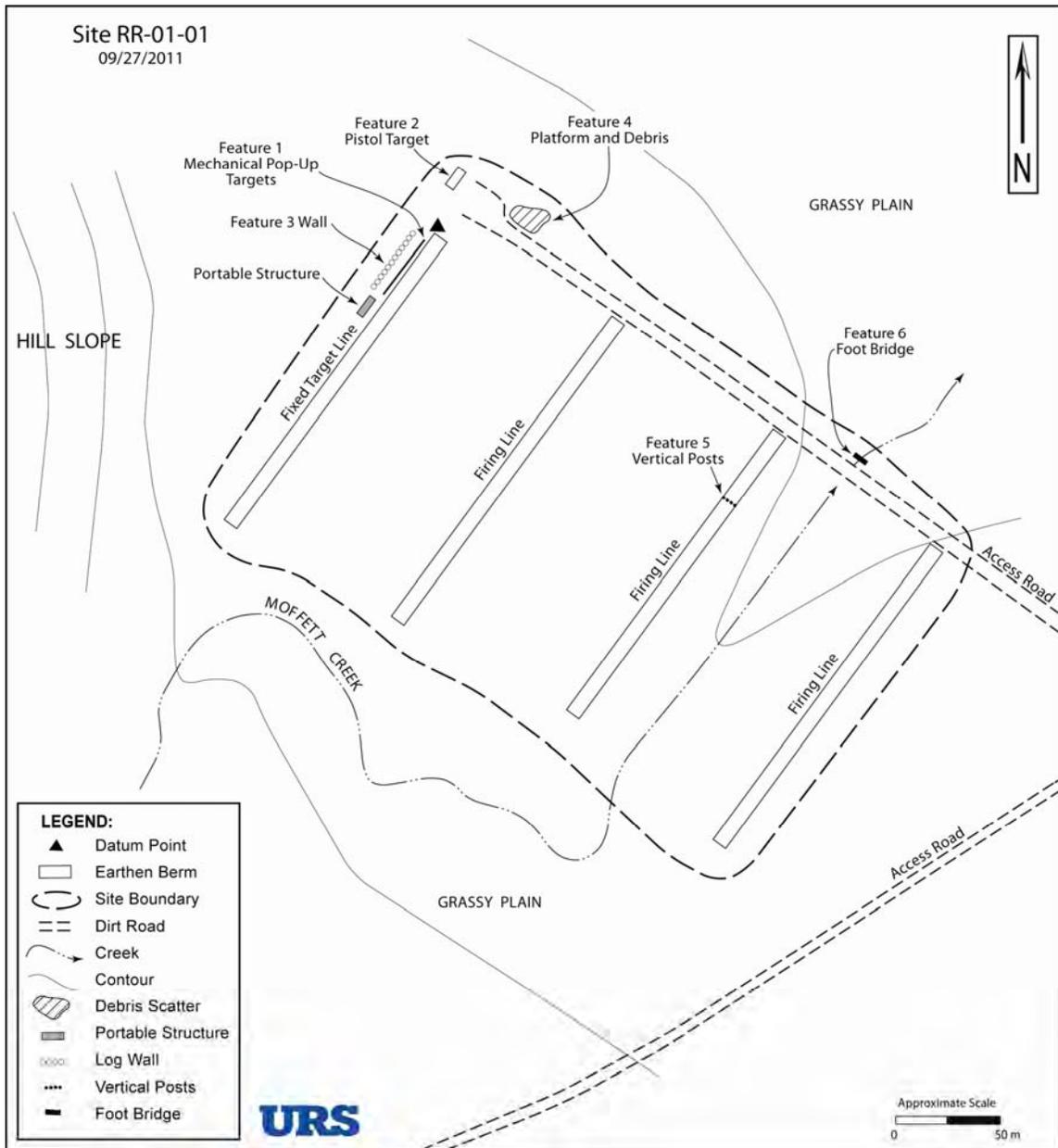
BIA/BLM #: N/A

Other # (specify): RR-01-01

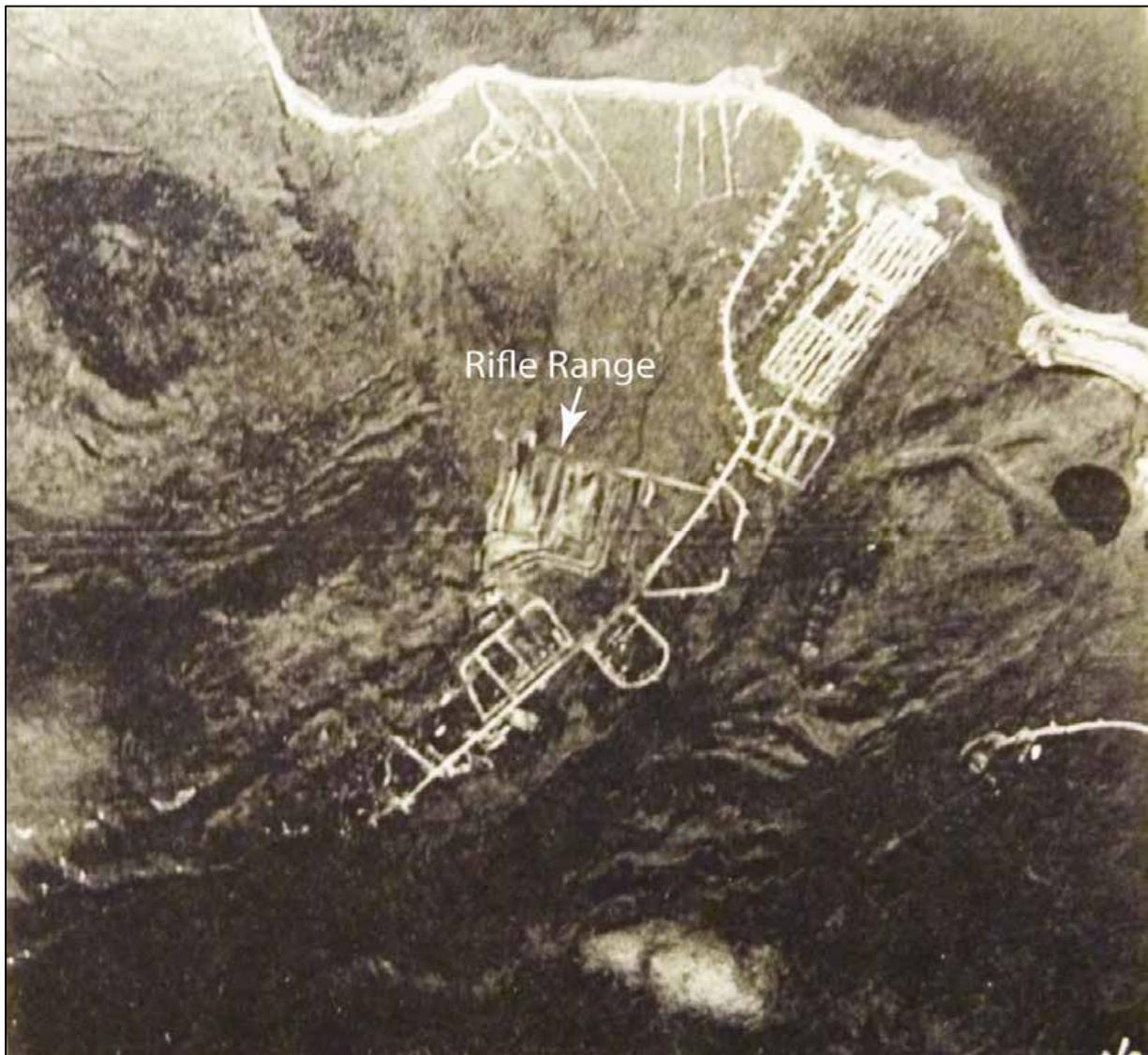
LOCATION MAP



SKETCH MAP



HISTORIC MAP



1944 air photograph of the Moffett Valley target range, taken from 10,000 ft. elevation
(Source: "Naval Air Station Adak Base Map, Small Arms Range, Approved 12/5/88, Sheet 1 of 73"
Adak City Hall archives, Adak Island, AK)

PHOTOGRAPHS



Feature 1 target berm, view southeast



Feature 2 pistol berm, view north



Feature 3 log wall, view southwest



Feature 4 dump, view east



Feature 5 posts, looking northwest



Feature 6 bridge

RR-01-02
AHRS #ADK-00304

Alaska Heritage Resources Survey

AHRS #: ADK-00304 **Aliquot:** T95S R195W SEC.15 SM
Lat./Long.: 51.926719N -176.662751W NAD83 **Acres:** 0.01
Map sheet: ADAK C2NW **UTM:** 5752941mN 523190mE NAD83

Site Name(s): YARDER (RR-01-02)

Site Description: This historic isolate consists of a 1950s-era heavy-duty iron logging yarder. The Skagit yarder is a Type 2-30m Model embossed with “BU-30-F MCH SER 917 MTR SER SPEC NO. 771-4 BM. NO. 898, SKAGIT STEEL & IRON WORKS, SEATTLE WA USA.” The BU series of Skagit yarders, produced by Skagit Steel, were manufactured in the post-war years of 1946 to 1953. The yarder was likely used to drag heavy equipment or operate a boom for moving and loading supplies. It may be associated with the nearby storage yard for used equipment, or with the placement of targets.

Significance: The yarder dates to the 1950s and is therefore not associated with the WWII landscape. The isolate lacks direct association with any known person or event of historic significance (Criteria A and B), does not display distinctive characteristics of a type, period, or method of construction (Criterion C), is unlikely to yield information important to local or regional history (Criterion D), and displays poor integrity. Therefore, RR-01-02 is considered ineligible for listing in the NRHP.

Location: This historic isolate is situated within the Operable Unit (OU) B-2 Andrew Lake Range Remainder – Hand Grenade/40-mm Area (RR-01) site at the former Adak Naval Complex at Adak Island, Alaska (U.S. Navy 2011). The vegetation is predominantly dense, lush tundra grass in lowland accessible portions. Moffett Creek runs from west to northeast through the northern portion of RR-01. Lowland areas bordering this creek are often saturated with pooled water at certain times of the year. Groundwater is in hydraulic communication with the creek. The valley floor is composed of a silty, gravelly, sandy, alluvial/colluvial, and/or outwash material overlying andesitic basalt bedrock or consolidated ash tuff.

Citations:

Bourasaw, Noel V. 2005. “The Birth of Sedro-Woolley Iron Works and Skagit Steel and Iron Works and a Timeline to 1953.” Available at <http://www.skagitriverriverjournal.com/S-W/Business/Post1900/SS/SkagitSteel01-BirthTimeline.html>.

U.S. Navy. 2011. *Final Work Plan, OU B-2 Biological Assessment, Wetland/Tundra Delineation, and Cultural Landscape and Historical Features Survey, Former Adak Naval Complex, Adak, Alaska*. Prepared by URS Group, Inc. for Naval Facilities Engineering Command Northwest under Contract No. N44255-09-D-4001, Delivery Order 41. Silverdale, Washington. September 2011.

———. 1996. *Historic and Archaeological Resources Protection (HARP) Plan for the Adak Naval Complex, Naval Air Facility Adak, Naval Security Group Activity Adak*. Prepared by EDAW, Inc. for Engineering Field Activity Northwest. Poulsbo, Washington. October 1996.

Danger of Destruction: High; given the location of this site within a previously active firing range, that munitions and explosives of concern have been found during previous investigations in close proximity to the historic site, and that intrusive removal activities will be performed within the historic site boundaries.

FINAL OUB-2 CULTURAL RESOURCES SURVEY
FORMER ADAK NAVAL COMPLEX
Naval Facilities Engineering Command Northwest
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Present Condition: Poor; only the metal parts remain intact

Ecosystem: Moist Tundra

Pertinent Dates: A.D. 1950s

Period: Historic; Cold War era

Resource Nature: Isolated find; Cold War, Military, Defense

Cultural Affiliation: Euroamerican

Preservation Status and Date: This historic isolate is situated within the Adak Army Base and Adak Naval Operating Base National Historic Landmark listed in the National Register of Historic Places (1987) and the associated Adak World War II Cultural Landscape Historic District determined eligible for inclusion in the National Register of Historic Places as a Historic District (1995). However, RR-01-02 is not among those features identified as contributing elements to the significance of the Adak National Historic Landmark (U.S. Navy 1996).

Property Owner: U.S. Navy

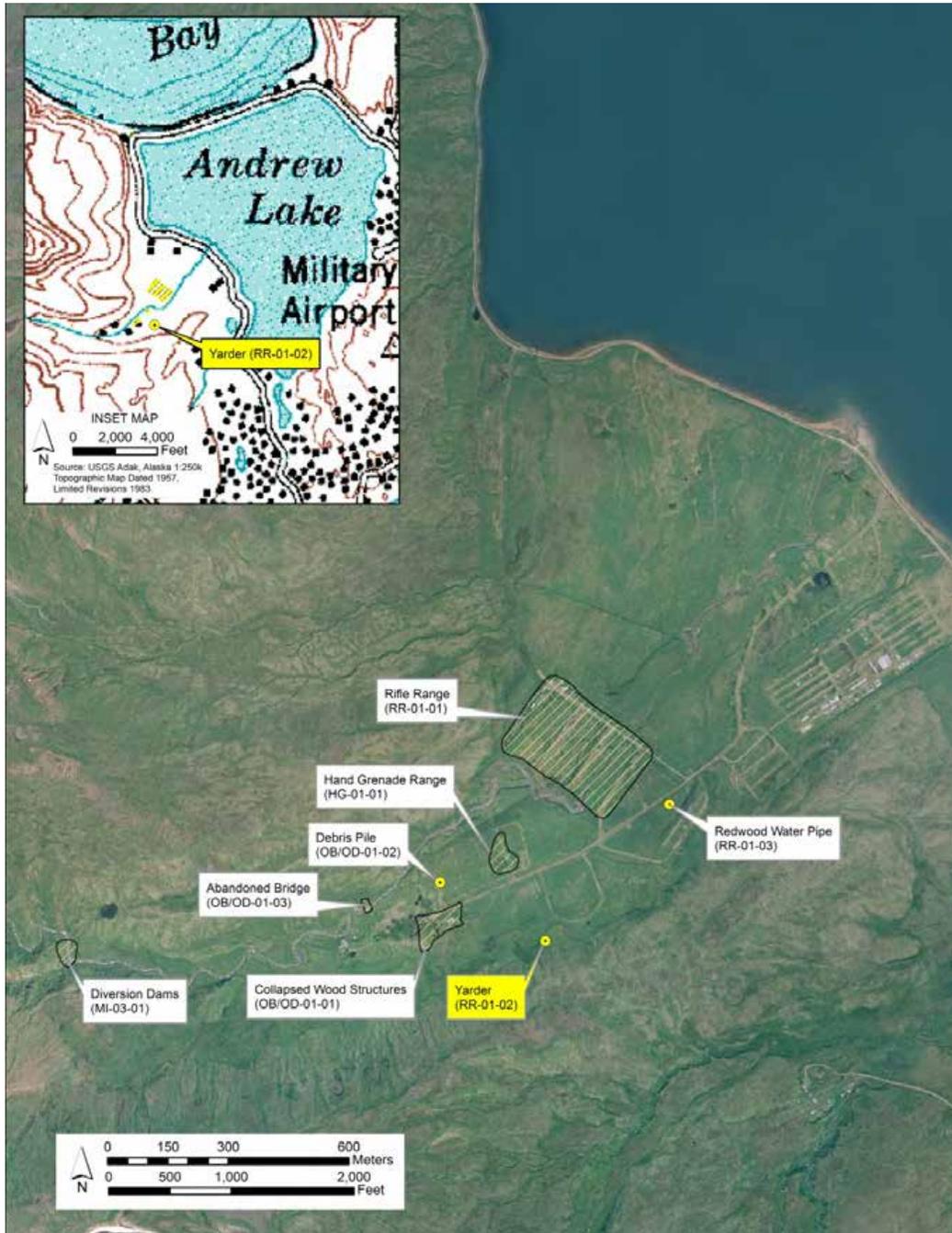
Repository: N/A

Accession #: N/A

BIA/BLM #: N/A

Other # (specify): RR-01-02

LOCATION MAP



PHOTOGRAPHS



Site RR-01-02 Skagit logging yarder/winch

RR-01-03
AHRIS #ADK-00305

Alaska Heritage Resources Survey

AHRS #: ADK-00305 **Aliquot:** T95S R195W SEC.15 SM
Lat./Long.: 51.929747N -176.658239W NAD83 **Acreage:** 0.01
Map sheet: ADAK C2NW **UTM:** 5753280mN 523499mE NAD83

Site Name(s): REDWOOD WATER PIPE (RR-01-03)

Site Description: This historic isolate includes several segments of a wire-wrapped redwood water pipe scattered about a grassy flat. This wooden water pipe may be associated with the water system that included the diversion dams (MI-03-01). The pipe was broken up and pushed around by heavy equipment. The pipe likely relates to the WWII occupation.

Significance: The age of the water pipe segments is uncertain, although it may date to the time of WWII. However, it is questionable whether these pipe segments are in or near their original context, and they are in very poor condition. The isolate lacks direct association with any known person or event of historic significance (Criteria A and B), does not display distinctive characteristics of a type, period, or method of construction (Criterion C), is unlikely to yield information important to local or regional history (Criterion D), and displays poor integrity. It therefore is considered to be ineligible for listing in the NRHP.

Location: This historic isolate is situated within the Operable Unit (OU) B-2 Andrew Lake Range Remainder – Hand Grenade/40-mm Area (RR-01) site at the former Adak Naval Complex at Adak Island, Alaska (U.S. Navy 2011). The vegetation is predominantly dense, lush tundra grass in lowland accessible portions. Moffett Creek runs from west to northeast through the northern portion of RR-01. Lowland areas bordering this creek are often saturated with pooled water at certain times of the year. Groundwater is in hydraulic communication with the creek. The valley floor is composed of a silty, gravelly, sandy, alluvial/colluvial, and/or outwash material overlying andesitic basalt bedrock or consolidated ash tuff.

Citations:

U.S. Navy. 2011. *Final Work Plan, OU B-2 Biological Assessment, Wetland/Tundra Delineation, and Cultural Landscape and Historical Features Survey, Former Adak Naval Complex, Adak, Alaska.* Prepared by URS Group, Inc. for Naval Facilities Engineering Command Northwest under Contract No. N44255-09-D-4001, Delivery Order 41. Silverdale, Washington. September 2011.

———. 1996. *Historic and Archaeological Resources Protection (HARP) Plan for the Adak Naval Complex, Naval Air Facility Adak, Naval Security Group Activity Adak.* Prepared by EDAW, Inc. for Engineering Field Activity Northwest. Poulsbo, Washington. October 1996.

Danger of Destruction: High; given the location of this site within a previously active firing range, that munitions and explosives of concern have been found during previous investigations in close proximity to the historic site, and that intrusive removal activities will be performed within the historic site boundaries.

Present Condition: Poor; it is questionable whether these pipe segments are in or near their original context.

Ecosystem: Moist Tundra

FINAL OU B-2 CULTURAL RESOURCES SURVEY
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Pertinent Dates: A.D. 1942 to 1945

Period: Historic; WWII era

Resource Nature: Object; Isolated Find, WWII, Military, Defense

Cultural Affiliation: Euroamerican

Preservation Status and Date: This historic isolate is situated within the Adak Army Base and Adak Naval Operating Base National Historic Landmark listed in the National Register of Historic Places (1987) and the associated Adak WWII Cultural Landscape Historic District determined eligible for inclusion in the National Register of Historic Places as a Historic District (1995). However, RR-01-03 is not among those features identified as contributing elements to the significance of the Adak National Historic Landmark (U.S. Navy 1996).

Property Owner: U.S. Navy

Repository: N/A

Accession #: N/A

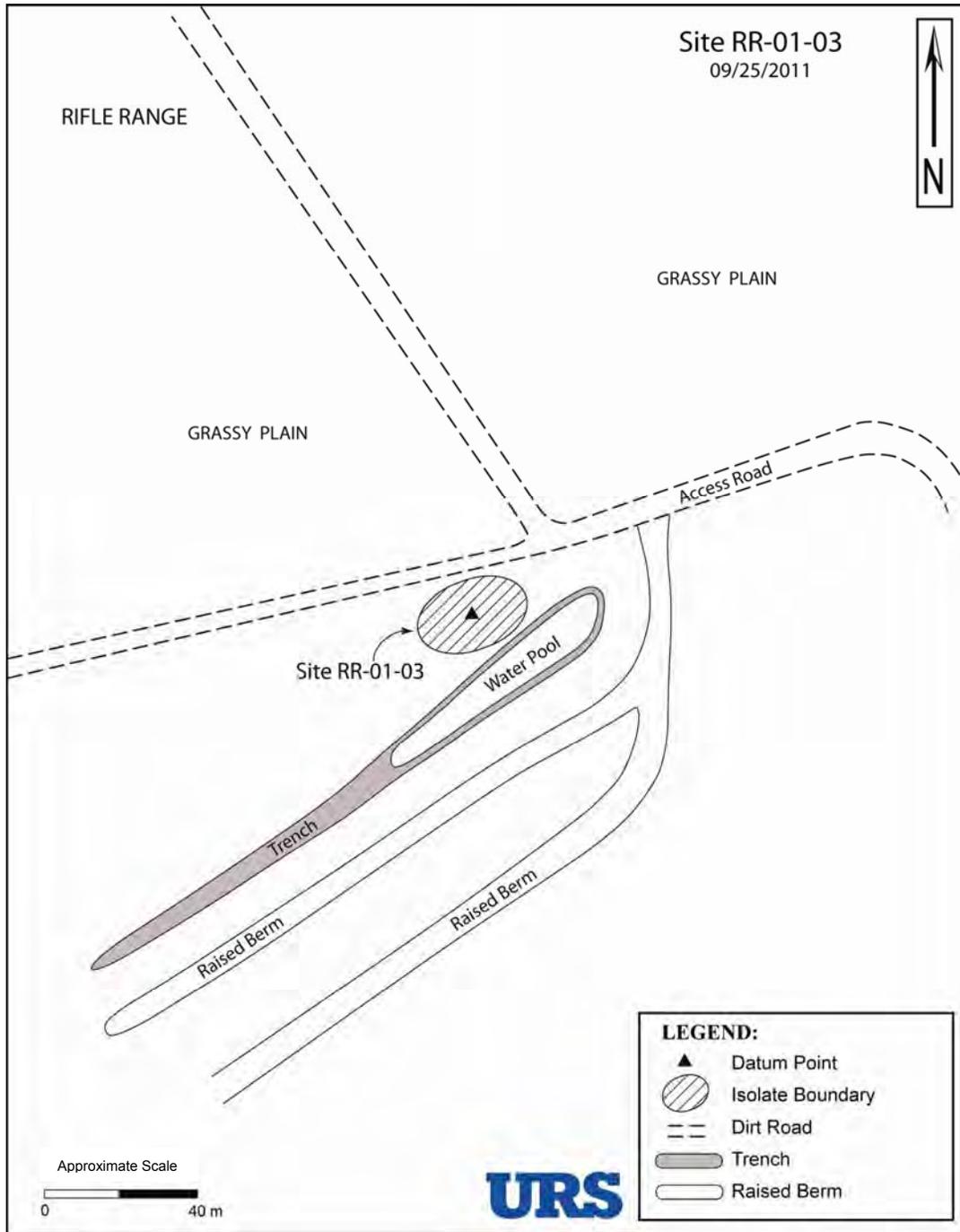
BIA/BLM #: N/A

Other # (specify): RR-01-03

LOCATION MAP



SKETCH MAP



PHOTOGRAPHS



Redwood water pipe segment in tall grass



Redwood water pipe segment in tall grass