Introduction

The Cape Prominence Aircraft Warning Service (AWS) Station is a Formerly Used Defense Site (FUDS) located on Unalaska Island, Alaska. The Defense Environmental Restoration Program (DERP) – FUDS program is responsible for the cleanup of environmental contamination released during the operation of historic military facilities. The site is located within the Aleutian Islands Unit of the Alaska Maritime National Wildlife Refuge (NWR) and is under the jurisdiction and management of the U.S. Fish and Wildlife Service (USFWS). Cape Prominence is located on a remote peninsula on the south side of the island, approximately 30 air miles from the City of Dutch Harbor/Unalaska, Alaska (Figure 1).

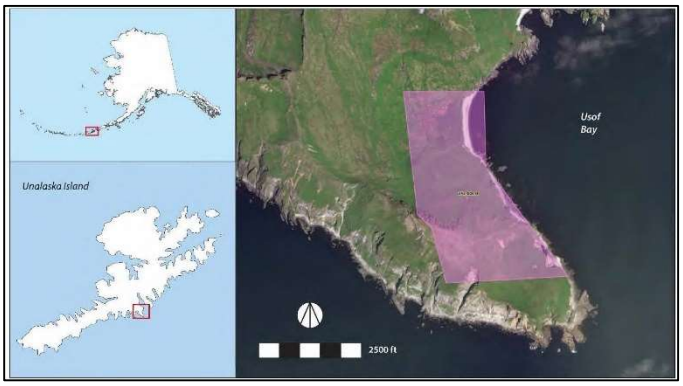

FIGURE 1 GENERAL LOCATION OF CAPE PROMINENCE, UNALASKA ISLAND, ALASKA

Cape Prominence AWS operated as a Signal Corps Radio (SCR)-271(fixed) radar detector station from 1942-1945 during World War II. The site served as an early warning detection of approaching aircraft for military facilities at Dutch Harbor, Unalaska Island and Fort Glenn, Umnak Island. The site covers approximately 160 acres and consists of two primary areas; the Lower Camp site located near the shoreline in a natural valley and the Upper Camp site located on a high rocky bluff. The two sites were connected by a tramway over 2,400-feet long (Photos 1, 2, and 3).

PHOTO 1 VIEW LOOKING DOWN TRAMWAY FROM UPPER CAMP TO LOWER CAMP/BEACH STAGING AREA.

The troops and supplies traveled along the 2,400-foot long tramway, or railroad pulled by a cable, from the Lower Camp where they lived, to the work site atop a hill at the Upper Camp. The tramway had an average grade of 52 percent (with sections reaching 81 percent) and a vertical rise of 1,250-feet. The rails remain, rusting into the tundra. In total, 19 structures have been identified at the Cape Prominence AWS; 7 at the Upper Camp and 13 at the Lower Camp. Structures at the Upper Camp include the former SCR-271 radar site, storage areas, latrine, and powerhouses. Structures at the Lower Camp include former barracks, storage areas, dock, and powerhouse.

Much of Unalaska Island consists of rugged mountainous terrain with low-lying vegetation; the coastline contains numerous bays and fjords with beaches and tidal benches. Numerous

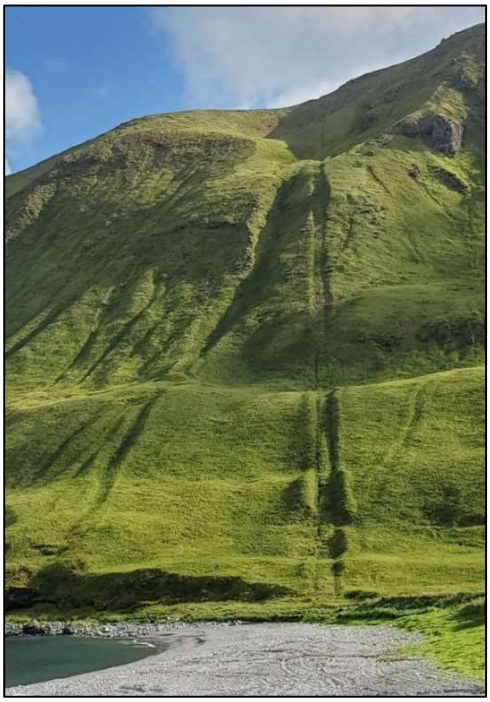

PHOTO 2 VIEW OF TRAMWAY FROM BEACH. (2020)

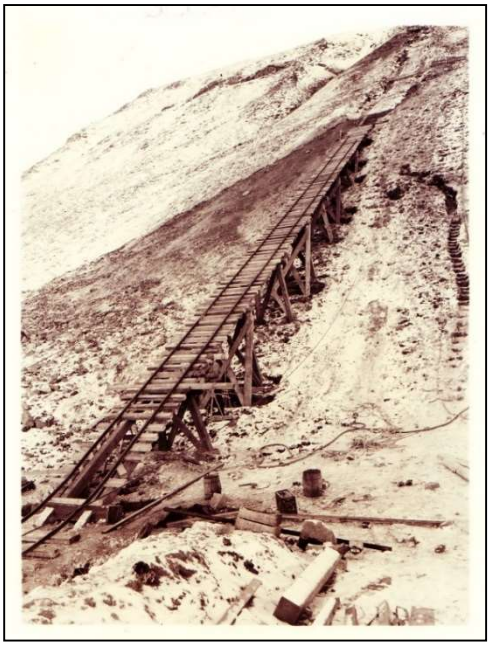

PHOTO 3 COMPLETED TRAMWAY TRESTLE, SHOWING ALL BENTS AND RAILS, 12 DECEMBER 1942.

streams and rivers drain the island, which generally flow towards the ocean.

The Eastern Aleutian Islands have been inhabited by the Unangan people for at least 10,000 years, but no archaeological sites are known to exist in the vicinity of Cape Prominence. The site is historically significant based on its World War II use as an early warning detection radar station of approaching aircraft for military facilities at nearby Dutch Harbor and Fort Glenn.

The Alaska Maritime NWR was established to conserve marine mammals, seabirds, other migratory birds, and the marine resources upon which they rely. Land use is primarily governed by the Alaska National Interest Lands Conservation Act (ANILCA), which protects the ecological integrity of the Alaska Maritime NWR for present and future generations.

The site is extremely remote with the only access being by boat or helicopter. A surgical approach to the removal action was conducted using low ground pressure equipment and helicopter support by slinging equipment and supplies whenever possible.

The Cape Prominence FUDS Team completed the environmental restoration of the site while simultaneously overcoming challenges due to the COVID-19 pandemic, harsh Aleutian Island weather, persistent fog/wind, rugged site terrain, sensitive ecosystem and wilderness/wildlife concerns, and ocean access. Coordination, communication, and logistical planning was key in the success of this project. Agility and adaptation to the ever changing project conditions were also vital to mission execution.

Background

The overall objective of the Cape Prominence FUDS environmental restoration program was to remove sources of contamination, both containerized and incidental contaminated soil and metallic debris (i.e., aboveground and underground storage tanks, drums, and drum remnants). The cleanup focused on protection of human health and addressing risk to natural resources, with the primary risk from fuel-related releases.

The environmental restoration was completed over two field seasons beginning in May 2019 and finishing in August 2020. Field work included the removal and disposal of contaminated soil, drums, underground storage tanks, aboveground storage tanks, and miscellaneous debris. All field work at the challenging, remote Cape Prominence was conducted with safety as a top priority. Field kickoff and daily tailgate safety meetings were held between the contractors and USACE personnel. A helicopter was used to provide daily

PHOTO 4. VIEW OF HELICOPTER SLINGING CONTAMINATED SOIL FROM UPPER CAMP TO BEACH STAGING AREA. (2020)

transportation between Dutch Harbor and Cape Prominence. Slinging operations were also conducted to transport equipment and contaminated soil between the excavation areas and the beach staging area (Photo 4). The helicopter service contractor conducted safety briefings with the field team to ensure that everyone was briefed on the specific helicopter model. Barge contractors conducted boat and water safety meetings with the crews. No incidents/accidents or lost time occurred during the field work in 2019 and 2020. Total field man hours = 7,250.

In 2019, the cleanup contractor decommissioned tanks, consolidated and removed drums, which included the removal of 4,295 pounds of metallic debris. In addition, petroleum-oil-lubricant (POL) contaminated soil was excavated and removed from both the Upper Camp site features (100 tons) and Lower Camp Powerhouse (1,000 tons). Contaminated soil from the Upper Camp was containerized into bulk bags with a mini-excavator and slung via helicopter to the beach staging area; contaminated soil/debris from the Lower Camp was also containerized into bulk bags with an excavator and traversed cross country via improved trails to the beach staging area. Low-level mercury/POL-impacted soil (10 tons) were also removed from the Lower Camp. Total 2019 cost = $1.8M.

In 2020, the cleanup contractor completed the removal action by excavating the remaining POL contaminated soil from the Upper Camp (59 tons) and the Lower Camp (202 tons). Contaminated soil from the Upper Camp was containerized into bulk bags with a mini-excavator (Photo 5) slung via helicopter to the beach staging area; contaminated soil from the Lower Camp was also containerized into bulk bags with an excavator traversed cross country via improved trails to the beach staging area. Total 2020 cost = $1.1M.

PHOTO 5 EXCAVATING CONTAMINATED SOIL WITH MINI-EXCAVATOR AT THE UPPER CAMP. (2020)

Residual liquid waste from fuel tanks and drums was containerized and shipped offsite for proper disposal during both 2019 and 2020. Groundwater, surface water, and sediment samples were also collected to assess environmental impacts (Photo 6). The source removals were completed before the releases affected these media, which would have further escalated costs.

The Cape Prominence Team proactively sought input from the local community, Alaska Native tribes, land manager, and other stakeholders. USACE prepared an Environmental Assessment and Finding of No Significant Impact, which included a public comment period. The USACE archaeologist completed a detailed survey to document the historical features at Cape Prominence. Cultural resource impacts to this

historical site were evaluated by the USACE archaeologist and coordination was conducted with the State Historic and Preservation Office (SHPO) and USFWS to create a Memorandum of Agreement (MOA) that mitigated adverse effects to the site. Collaboration between the USACE and the Alaska Department of Environmental Contamination (ADEC) was also imperative to ensure all work was done in compliance with the state regulations. All planned work was viewed as net positive and efforts were made to keep things moving forward so that the removal action could be completed to protect and preserve the environment.

PHOTO 6 MEASURING WATER LEVEL IN MONITORING WELL. (2020)

The cleanup action also complied with the Endangered Species Act and the Magnuson-Stevens Fishery Conservation and Management Act. The environmental assessment supported the conclusion that the action does not constitute a major federal action significantly affecting the quality of the human and natural environment. The team conducted informal consultation with the National Marine Fisheries Service, which concluded the proposed action may affect, but is not likely to adversely affect the endangered Western Distinct Population Segment Steller sea lions, endangered Western Pacific humpback whales, and endangered North Pacific right whales, among other species.

Additionally, this project caught the eye of the local newspaper, The Dutch Harbor Fisherman. Reporter Mr. Jim Paulin wrote several articles detailing the historical significance and interesting findings at the site. The USACE also coordinated a site visit for Mr. Paulin via helicopter for a firsthand experience. This interaction greatly strengthened the already excellent community relations that the USACE has developed from years of transparency and communication with the public.

Summary of Accomplishments

Accelerated Environmental Cleanup

The first field season successfully removed contractual quantities, but additional soil was identified beyond the contract limits. The second field season was in jeopardy of postponement due to the challenges surrounding the COVID-19 pandemic and uncertain restrictions on personnel movement within Alaska. The team identified a joint mobilization approach which streamlined field operations and utilized one contractor for two different Aleutian Island projects, providing cost savings of approximately $1.5M and avoided costly delays until 2021.

PHOTO 7 HOISTING OF ANTENNA ON DETECTOR BUILDING, 15 JUNE 1942

Cape Prominence Aircraft Warning Service (AWS) Station, Formerly Used Defense Site (FUDS), Unalaska Island, Alaska

Executing environmental cleanup in the remote Aleutian Islands is difficult during normal times, and the challenges were magnified by COVID-19. During the spring and summer of 2020, the Cape Prominence FUDS teammates from across the District collaborated with our industry partners, communities and regulators to successfully execute multiple challenging projects in the Aleutians, including the waste removal at Cape Prominence. Working closely with industry partners, the team adapted and found ways to keep the mission moving despite COVID-19. Multiple other projects were affected by changing transportation hubs, since the City of Adak in the western Aleutians requested the government postpone all fieldwork in the vicinity and not mobilize or traverse through the area. The Cape Prominence team identified a joint mobilization approach which streamlined field operations at two different Aleutian Island locations, allowing both projects to move forward and avoid the City of Adak. They developed plans to mobilize via an alternate transportation hub out of Unalaska/Dutch Harbor. Public affairs and the Alaska District tribal liaison were instrumental in responding to community concerns voiced by the City of Adak.

The lack of commercial flights in the Aleutians with the bankruptcy of Raven Air added further logistical challenges. COVID-19 mitigations plans were developed and updated frequently as required by the State of Alaska and City of Unalaska. Alternate plans concluded with a combination of charter flights, helicopter support, long boat rides, and strategically timed sample collections to meet laboratory hold times.

PHOTO 8 VIEW OF EXCAVATOR LOADING LOW GROUND PRESSURE TRACKED EQUIPMENT (MOROOKA®) WITH BULK BAG CONTAINING CONTAMINATED SOIL FOR TRANSPORT TO THE BEACH STAGING AREA. (2020)

Management and technical staff reviewed and communicated the mitigation plan alterations as state mandates were altered as COVID-19 restrictions were adjusted with time. Contracting quickly and efficiently analyzed and awarded the contract, which addressed the changed site conditions and altered mobilization plans. The field teams simultaneously addressed the challenges of remote site work under adverse weather conditions in the Aleutians.

During the 2019 fieldwork, the contractor set up a mobile field screening laboratory in a hard-sided unit, which was staged in Dutch Harbor, Alaska. The hard-sided laboratory unit included two gas chromatography (GC) instruments, a sample refrigerator, and all associated laboratory equipment to support field screening activities. The field screening laboratory utilized a calibrated GC instrument to provide expedited field screening results for petroleum compounds (diesel range and residual range organics) in soil (using Alaska Test Methods) in order to quickly guide excavation efforts. The field crew

also utilized a photoionization detector to guide daily excavation activity. Environmental samples were also collected for submittal to the applicable fixed-based project laboratory.

Innovative Technology

The cleanup crew utilized a surgical approach, using a small mini-excavator and other low-ground impact heavy equipment to minimize disturbances to the historic military site (Photo 5, 8). This low impact approach was advocated by the USFWS to avoid large ground scars and landscape disturbances to the refuge lands.

PHOTO 9 FINAL GRADING OF THE LOWER CAMP STANDBY POWERHOUSE FOLLOWING EXCAVATION OF CONTAMINATED SOIL. VIEW OF TEMPORARY TRAIL TO BEACH IN BACKGROUND. (2020)

Contaminated soil was excavated using the small mini-excavator at the Upper Camp, where it then took a helicopter ride to the beach over 1,000 feet below (Photo 10). The former tramway corridor was impossible to safely and efficiently restore for moving equipment and waste between the lower and upper sites, therefore a helicopter was utilized to access the rocky cliff. The helicopter slung bags of soil in multiple trips down to the beach in supersacks. The team avoided grading access roads and switchbacks to reach the extreme elevation.

As the contaminated soils were removed, the field team carefully preserved and set-aside the surficial vegetation mat. Upon completion, the excavations were recontoured (Photo 9) to match the surrounding topography and the organic layer was replaced to further enhance the site restoration and promote natural revegetation of the site. This suite of equipment, slinging using helicopters, and site restoration procedures can be applied to other Aleutian Island sites on sensitive wildlife refuge or Alaska Native lands important for subsistence activities or ecosystem preservation.

PHOTO 10 VIEW FROM HELICOPTER OF BEACH STAGING AND CAMP AREA AFTER ESTABLISHMENT OF ROAD, WITH SUPERSACKS STAGED TO BE PICKED UP BY BARGE. (2019)

Partnerships Addressing Environmental Restoration Issues Between DoD and other Entities

Early coordination with the USFWS, Aleutian Pribilof Islands Association, the Alaska SHPO and the ADEC ensured that all stakeholder goals and objectives were accounted for. The project team and archaeologist worked closely with all parties to ensure the cleanup preserved the history and unique wilderness aspects of the property following the National Historic Preservation Act (NHPA) Section 106 guidance. The site meets the criterion for recognition in the National Register of Historic Places, based mainly on retaining its setting in an undeveloped location and for preserving the feeling of the times. While all the buildings are either gone or collapsed, the revetments

PHOTO 11 ARCHAEOLOGICAL MONITORING, DISPLAY OF SIGNIFICANT FINDINGS. (2019)

(dug out areas protecting buildings from extreme wind common in the Aleutian Islands) remain. The Cape Prominence revetments that surround many of the buildings and the tramway provide distinct landscape that makes the site recognizable as a World War II Aircraft Warning Service Station and retains its feeling and historical integrity, according to the historic survey. Artifacts from the war found at the site include screw pickets (Photo 12), antipersonnel corkscrew-shaped spear hazards which were once abundant around Unalaska and Dutch Harbor. Other items (Photo 11) found include: bottles, magazines, flare strikers, kitchenware, mason jars, light bulbs, and miscellaneous metal parts related to fuel distribution.

Technical staff provided critical quality assurance oversight and archaeological monitoring during the fieldwork. A USACE archaeologist was onsite during the 2019/2020 field work to document and record discoveries in accordance with the MOU stipulations. The archaeological monitor guided placement of staging areas, landing areas, and fuel storage areas, and motorized access routes. A detailed survey report was completed after each field season.

Reducing Risk to Human Health and the Environment

The Cape Prominence removal actions conducted in 2019/2020 reduced risk to human health and the environment by excavating and containerizing all contaminant sources and related contaminated soil. Rigorous soil screening (during excavation) and analytical confirmation sampling (following excavation) was conducted in accordance with ADEC regulations and guidelines to ensure that all contamination was removed. These efforts, conducted with oversight by the USACE and in coordination with stakeholders/regulators, lead to successful mission execution during back to back field seasons. The Cape Prominence AWS Station is staged to be closed out within the FUDS and ADEC contaminated site databases in 2021/2022.

PHOTO 12 SCREW PICKET DISCOVERED DURING ARCHAEOLOGICAL MONITORING AT CAPE PROMINENCE. (2019)

Green Remediation

In an effort to reduce costs and increase efficiencies, the Cape Prominence removal action was coupled with another similar Aleutian Island removal action project further west along the Aleutian chain. This reduced the amount of barge fuel required to mobilize/demobilize equipment and supplies. This logistical forethought eliminated the need to initiate a separate mobilization/demobilization effort for each project, saving thousands of gallons of fuel from being burned and reducing the overall carbon footprint related to these removal actions.