Proposed Plan
Former LO-58 Nike Battery Launch Site
Caribou, Maine

The Proposed Plan

This Proposed Plan was prepared by the U.S. Army Corps of Engineers (the Corps), New England, to present the findings of the Remedial Investigations/Feasibility Study (RI/FS) and the proposed response to contamination for the Former LO-58 Nike Battery Launch Site in Caribou, Maine.

Introduction

This Proposed Plan provides information to the public on the Corps' recommended response for contamination at the former LO-58 Nike Battery Launch Site in Caribou, Maine. This Proposed Plan presents the Corps' rationale for the preferred approach for the Former LO-58 NIKE Battery Launch Site (the Site) and is a tool to encourage and facilitate community participation. The Site is one of five Formerly Used Defense Sites (FUDS) in northern Aroostook County, Maine.

Federal and state environmental laws govern characterization and response activities at federal facilities. The investigation and environmental restoration of the Site are being conducted under the Defense Environmental Restoration Program – Formerly Used Defense Sites (DERP-FUDS).

The overall goal under the DERP-FUDS is to achieve environmental restoration of the Site and to address potential human health and environmental risks associated with past Department of Defense (DOD) activities. The federal statute, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), establishes procedures for site investigation, evaluation, and remediation. The Corps has been working within the framework of CERCLA to identify the scope of the problem and the appropriate remedial response. The Maine Department of Environmental Protection (MEDEP) has been a partner in this process. The Corps has also been conferring with local stakeholders.

As the lead agency for implementing the environmental response program for the Site, the Corps has prepared this Proposed Plan in accordance with CERCLA Section 117(a) and Section 300.430(f)(2) of the National Contingency Plan (NCP) to continue its community awareness efforts and to encourage public participation. After the public has the opportunity to review and comment on this Proposed Plan, the Corps will summarize and respond to the comments received during the public comment period and at a public meeting. Information on the times and places for public comment and the public meeting are shown in the box below.

The Corps will carefully consider all comments received from the public and provide responses which will be compiled into a Responsiveness Summary. The decision on which action is appropriate for the Site will be detailed in a Decision Document, which will include the Responsiveness Summary.

This Proposed Plan highlights key information from the Remedial Investigation/Feasibility Study (RI/FS) Report (USACE, 2017). The overall objectives of the RI/FS were: 1) to characterize the nature and extent of contamination; 2) to evaluate the environmental fate and transport of Site-related contamination; 3) to assess the potential risks to human health and the environment posed by contamination at the Site; and 4) to use this information in the FS to support the evaluation and development of potential remedial alternatives for the Site.

Site Background

Where is the Former LO-58 Nike Battery Launch Site?

The Site is a 17-acre land parcel located at 253 Van Buren Road (Route 1) in Caribou, Aroostook

Public Comments Are Requested

PUBLIC COMMENT PERIOD

22 June 2018 – 30 July 2018

Written comments on this Proposed Plan can be submitted to the Corps during this comment period. Comment letters must be postmarked no later than 30 July 2018 and can be sent to Mr. James Kelly, Project Manager, US Army Corps of Engineers New England District 696 Virginia Road Concord, MA 01742-2751Comments can also be sent by email to: James.A.Kelly@usace.army.mil

PUBLIC MEETING

18 July 2018

The Corps will host an information session from 6:00 to 7:00 PM at the Caribou City Hall, 25 High Street, Caribou, ME to provide information and answer questions in an informal setting. This meeting will include a brief introduction and summary by the Corps and an opportunity to submit public comments – whether verbally or in writing.

County, Maine (see Figure 1). The Site is currently owned by the Lister-Knowlton Veterans of Foreign Wars (VFW) Post 9389 and is identified by the City of Caribou Assessor's Office as Map 14, Lot 50. Consistent with the typical location of Nike Missile Batteries, the Site is located on a topographic high, east of Van Buren Road. Elevations at the Site vary by approximately 60 feet (ft), from approximately 540 ft above mean sea level (amsl) at the former Barracks Building, which is located at the bottom of the hill near Van Buren Road, to approximately 600 ft amsl at the former Launcher Area, which is situated near the topographic high for the property.

What was the Former LO-58 Site used for?

The LO-58 Nike Missile Launch Battery was one of four Nike Ajax sites placed around Loring Air Force Base for the protection of the United States Air Force (USAF) Strategic Air Command B-52 Stratofortresses as well as northeastern approaches to the United States. The site was a part of the overall Nike facility which also included a control area and housing area located approximately 2 miles east of the launch area. The Launch Area originally consisted of the former Nike missile launcher area, the former Generator Building, the former Test Building, the Acid Fueling/Neutralization Station (AFNS), and the former Barracks Building.

Nike Ajax: The launcher facility was originally designed to carry and deploy the Ajax-type guided missile. The Ajax missile used a blend of jet petroleum-4 (JP-4), inhibited red fuming nitric acid, and approximately one pint of unsymmetrical dimethylhydrazine to make the mixture hyperbolic, and hence capable of spontaneous ignition without the need for an additional ignition source. Reportedly, the missiles were periodically de-fueled at the AFNS so the maintenance checks could be performed. There were reportedly 10 Ajax missiles within each of the three missile magazines (see Figure 2)

Nike Hercules: In 1960, the Site operations converted to the Hercules missile. Several changes occurred at Nike missile launching sites as a result of the conversion from Nike Ajax to Nike Hercules missiles. Some of these changes included the construction of the Warhead Building within the AFNS area, the construction of a larger Test Building, and an upgrade to the launchers, missile elevators, motors, and related power elements associated with the three on-Site missile magazines. After conversion, each magazine contained six Hercules missiles.

Closure: At the time of its closure, the Site consisted of the former Nike Missile Launcher Area, the former Generator Building, the former Test Building, the Former AFNS, the former Warhead Building, and the former Barracks Building. Additionally, the Site consisted of smaller areas including the former Sentry Station, the former Canine Kennel and Exercise Area, the former Ajax Transfer Rack, and the former Acid Storage Shed, all of which have been reduced to concrete pads and footings (See Figure 2).

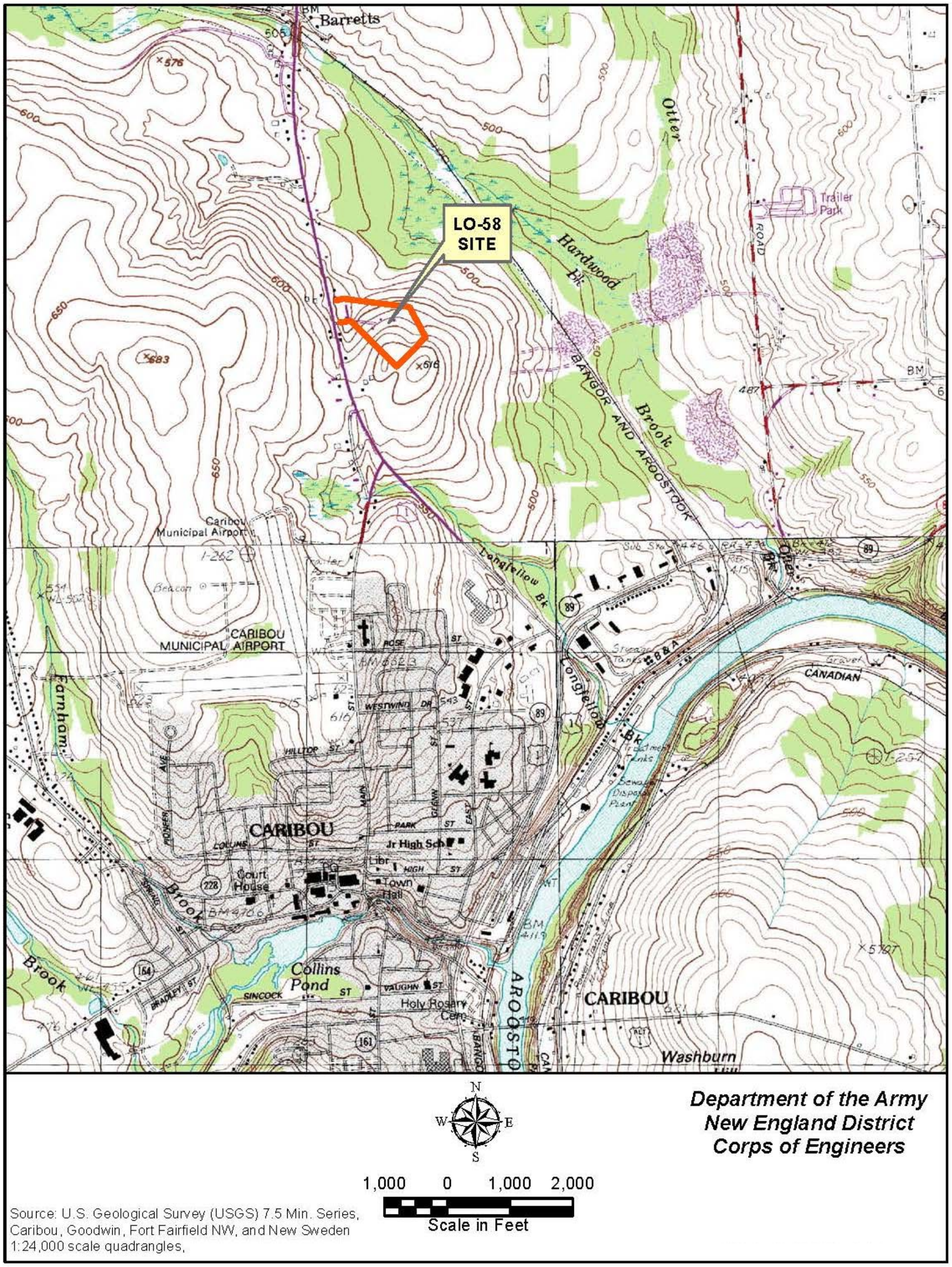
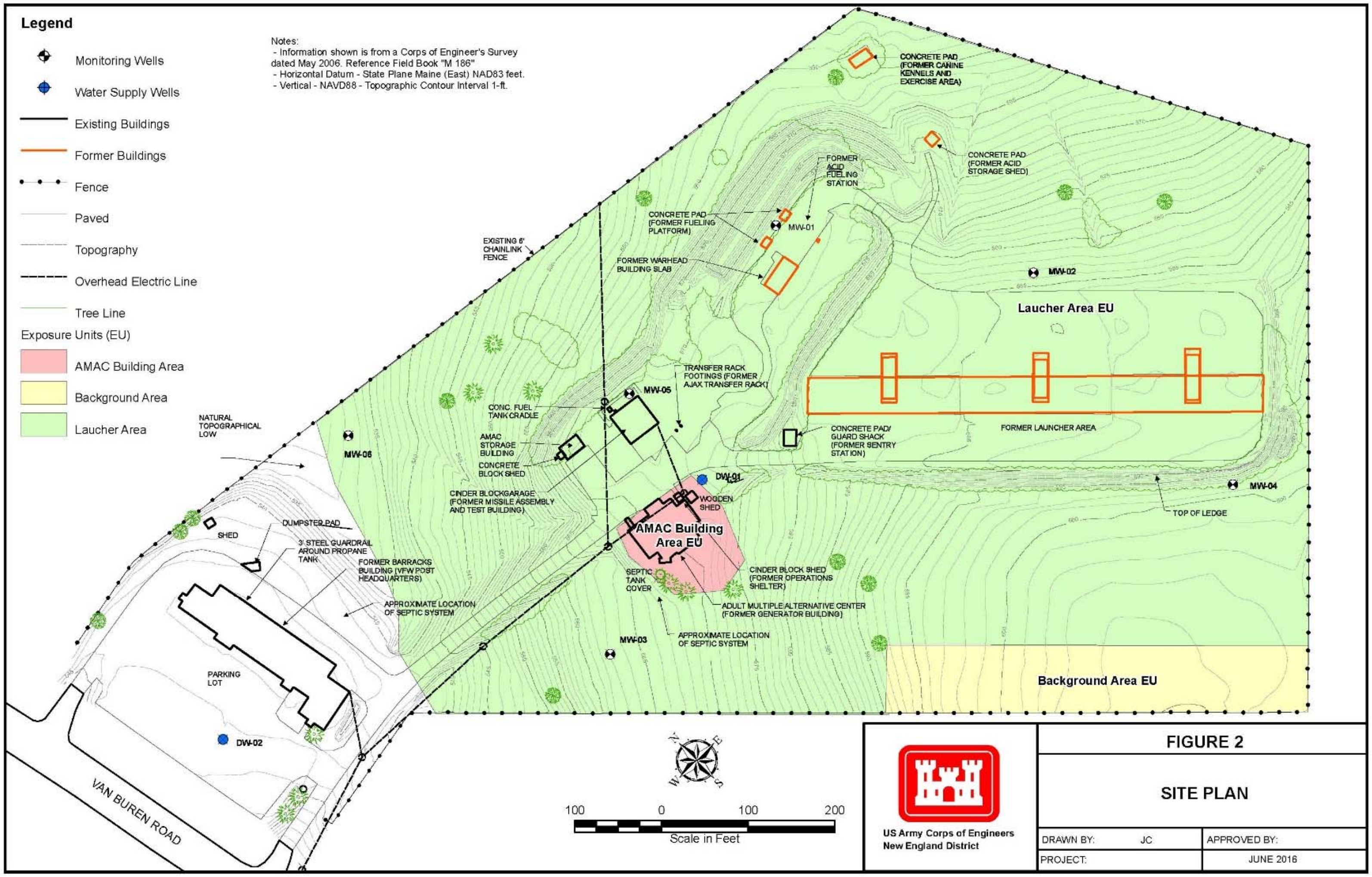


Figure 1 - Map showing the location of the Former LO-58 Site in Caribou, Maine


Legend
Monitoring Wells
Water Supply Wells
Existing Buildings
Former Buildings
Fence
Paved
Topography
Overhead Electric Line
Tree Line
Exposure Units (EU)
AMAC Building Area
Background Area
Laucher Area
Notes:
- Information shown is from a Corps of Engineer's Survey dated May 2006. Reference Field Book "M 186"
- Horizontal Datum - State Plane Maine (East) NAD83 feet.
- Vertical - NAVD88 - Topographic Contour Interval 1-ft.
CONCRETE PAD (FORMER CANINE KENNELS AND EXERCISE AREA)
CONCRETE PAD (FORMER ACID STORAGE SHED)
FORMER ACID FUELING STATION
CONCRETE PAD (FORMER FUELING PLATFORM)
MW-01
EXISTING 6' CHAINLINK FENCE
FORMER WARHEAD BUILDING SLAB
MW-02
Laucher Area EU
TRANSFER RACK FOOTINGS (FORMER AJAX TRANSFER RACK)
MW-05
CONC. FUEL TANK CRADLE
AMAC STORAGE BUILDING
CONCRETE BLOCK SHED
CINDER BLOCKGARAGE (FORMER MISSILE ASSEMBLY AND TEST BUILDING)
CONCRETE PAD/ GUARD SHACK (FORMER SENTRY STATION)
FORMER LAUNCHER AREA
NATURAL TOPOGRAPHICAL LOW
MW-06
DW-01
WOODEN SHED
MW-04
TOP OF LEDGE
AMAC Building Area EU
DUMPSTER PAD
SHED
3' STEEL GUARDRAIL AROUND PROPANE TANK
FORMER BARRACKS BUILDING (VFW POST HEADQUARTERS)
APPROXIMATE LOCATION OF SEPTIC SYSTEM
SEPTIC TANK COVER
CINDER BLOCK SHED (FORMER OPERATIONS SHELTER)
ADULT MULTIPLE ALTERNATIVE CENTER (FORMER GENERATOR BUILDING)
MW-03
APPROXIMATE LOCATION OF SEPTIC SYSTEM
Background Area EU
PARKING LOT
DW-02
VAN BUREN ROAD
100 0 100 200
Scale in Feet
US Army Corps of Engineers
New England District
FIGURE 2
SITE PLAN
DRAWN BY: JC
APPROVED BY:
PROJECT:
JUNE 2016

The United States acquired a total of 45.29 acres in fee and easements for Nike Battery LO-58 from the Town of Caribou by condemnation on 15 March 1956 for the construction of a Nike missile launching facility. This Site was one of four Nike Ajax sites placed around Loring Air Force Base for the protection of the United States Air Force (USAF) Strategic Air Command B-52 Stratofortresses as well as northeastern approaches to the United States. The site was deactivated in 1966. General Services Administration (GSA) conveyed the launch area (20.75 acres fee and 0.23-acre easement) to the City of Caribou on 8 October 1969. The deed did not contain a recapture or restoration clause or other special conditions. The City of Caribou used the site for storage of municipal property. In 1970, the property was purchased by the current owner, the Lister-Knowlton VFW Post 9389.

What is the history of the LO-58 Site?

Between 1955 and 1957, the LO-58 Launch Site was constructed as part of the LO-58 Site facility. The Site began operations in 1957. Since its closure, several components of the former launch site have since been deconstructed, including the subsurface portion of the former Nike Missile Launcher Area, which was closed in 1994, and the aboveground portion of the former Warhead Building which was demolished in spring 2007 (following a fire during the summer of 2006), leaving only the concrete foundation slab in place. The only other activity at the Site since the decommissioning of the Nike Missile Battery Launch facility was a small farm machinery repair shop that operated for less than a year in the former Test Building.

The VFW purchased the property in 1970 and currently uses the former Barracks Building as its headquarters for meetings and social functions and leases the former Generator Building to the Adult Multiple Alternative Center (AMAC). Since 1994, the former generator building (AMAC Building) has had 2 or 3 additions built by AMAC over the life of their lease. The only other original buildings that remain standing are the former sentry station and the former Missile Assembly and Test Building. An empty 500-gallon fuel oil above ground storage tank (AST) is located behind the former Test Building. AMAC had a new storage building constructed west of the Test Building at the location of a block shed which was removed. The septic system serving AMAC was improved, and the drain field was relocated across the driveway/road from the AMAC Building in 2005. The only other portion of the Site currently utilized is the southern portion of the former Launcher Area, which serves as a shooting range for the City of Caribou Police Department and Customs and Border Patrol.

What was the contamination problem and where did it come from?

Several areas of the LO-58 Site were identified as potential sources of contamination including the former Launcher Area, the former AFNS, and the former Test Building. At the former Launcher Area, ten catch basins were located on the concrete pad adjacent to the missile silos. The catch basins were connected to drainage pipes that carried runoff away from the pad and into drainage swales along the northwestern and northeastern corners of the former Launcher Area. Historical information pertaining to the use and maintenance of the missiles indicated that they were periodically cleaned with a TCE-based solution. Runoff of this solution could have entered the catch basins where it would have migrated to the drainage swales in the grassy areas surrounding the pad. One of the drainage swales was observed to be between the former Launcher Area and the former Generator Building (currently operated as the AMAC). This supports TCE concentrations detected in the water supply are due to historical use of TCE at the LO-58 Site.

Historical contaminants at the Site consist of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polynuclear aromatic hydrocarbons (PAHs), pesticides, polychlorinated biphenyls (PCBs), total petroleum hydrocarbons (TPH), and metals in surface and subsurface soils; VOCs, SVOCs, TPH, and metals in groundwater; VOCs and air-phase petroleum hydrocarbons (APH) in sub-slab soil gas; and VOCs and APH in indoor air.

Based on the results of Site investigations the primary types of contamination present at the Site are:

1) trichloroethene (TCE) contamination in groundwater;

2) VOCs in indoor air at the AMAC Building; and

3) petroleum contamination in groundwater associated with the presence of an AST behind the former missile assembly building.

Site Characterization

What has the Corps done to investigate the LO-58 Site?

Several environmental investigations have been conducted at the Site by various parties for the purpose of identifying environmental concerns, risk, and/or hazards associated with the Site. These investigations are summarized below.

According to available documents, including an Inventory Project Report for the Site, at least three Site visits were performed between the mid-1980s and 1993 for the purpose of identifying environmental hazards associated with the Site. The site visits identified documents indicating that three fuel storage tanks were historically used at the facility.

In addition to identifying former fuel storage tanks, the pre-1996 Corps of Engineers, New England (CENAE) inspections recommended action regarding the three former missile magazines.

Closure activities associated with the three magazines at the Site were performed by Mason and Maine Environmental Engineering Company between August 1994 and October 1994.

In fall 1996, MEDEP responded to a complaint made by the current owner, concerning water odors from drinking water well DW-01, which serves the AMAC Building. Two rounds of groundwater sampling and analysis were performed and confirmed the presence of TCE contamination. The analytical results of these sampling events indicated TCE concentrations above the applicable USEPA Maximum Contaminant Level (MCL) of 5 µg/L, which is also the Maine Maximum Exposure Guideline (MEG). MEDEP immediately installed a dual granular-activated carbon filtration point-of-entry (POE) treatment system and initiated a monitoring program. Since 1996, TCE has consistently been detected in samples of untreated water collected as part of this monitoring program, with concentrations remaining fairly steady over time ranging from 1.2 to 8.4 µg/L. The post-treatment drinking water samples have not contained detectable concentrations of TCE. MEDEP performed the monitoring until 2002 when the USACE took over the monitoring program. Monitoring will continue as part of the selected remedy.

In May 1998, DW-02, which serves the former Barracks Building (currently the VFW), was added to the ongoing quarterly monitoring program. Analytical results from all sampling events have indicated VOC concentrations below applicable MCLs and MEGs.

A Preliminary Site Assessment was conducted in 1999 followed by supplemental investigations between October 2000 and May 2001. Based on the results of the site investigation and supplemental site investigation activities, the following conclusions were reached:

- VOCs were detected in groundwater from monitoring wells at the Site, but at concentrations below EPA MCLs and MEDEP MEGs;
- VOCs were detected in the AMAC drinking water supply well at concentrations above Federal MCLs and MEDEP MEGs;
- No source areas of the chlorinated solvents detected in the AMAC drinking water supply well were detected in overburden soils at the Site;
- The general direction of groundwater flow across the Site is to the north and west.

The site investigation concluded that no further action was warranted to locate source areas of VOC or TPH contamination in Site overburden soils and recommended the continued monitoring of the five bedrock monitoring wells and two on-site drinking water supply wells to evaluate the nature and extent of substances within the bedrock water-bearing zone.

Following the completion of the site investigations in 2001, a Long-Term Monitoring Program (LTMP) was developed for the site. The LTMP included monitoring of the five bedrock monitoring wells and the two drinking water supply wells at the Site on a semiannual basis for a period of at least two years to assess whether or not a remedial action was required. Samples were submitted for laboratory analysis of GRO, DRO, and VOCs. Laboratory analytical results for samples collected during these events indicated that concentrations of TCE, DRO and GRO remained above the applicable standards.

In May 2008, geologic, geophysical, and hydrophysical investigations were conducted at the LO-58 Site. The purpose of the investigation was to gather additional site-specific hydrogeologic information to further refine the conceptual site model for groundwater flow.

Overburden soil at the site is primarily glacial till ranging in thickness from 0 to 16 feet with little or no saturated thickness. Groundwater flow is primarily in the bedrock beneath the overburden soil, and within bedrock fractures. The orientation, size, and interconnection of fractures within the bedrock will dominate groundwater flow direction and contaminant distribution.

A RI/FS was completed in February 2017. The overall objectives of this RI/FS were: 1) to characterize the nature and extent of contamination; 2) to evaluate the environmental fate and transport of Site-related contamination; 3) to assess the potential risks to human health and the environment posed by contamination at the Site; and 4) to use this information in the FS to support the evaluation and development of potential remedial alternatives for the Site.

What did the RI, HHRA, and SLERA conclude?

A CERCLA compliant RI/FS was completed in 2017 with the following findings:

Field Investigation

- Soil, groundwater, soil gas, and indoor air have been impacted by releases of petroleum hydrocarbons and chlorinated solvents related to the historical operations of the Site;
- Petroleum contamination in groundwater has been identified in MW-05;
- The presence of petroleum contamination in the area near MW-05 may be promoting enhanced biological activity in the groundwater samples, thus contributing to elevated manganese concentrations reported in the well;
- No widespread or well-defined source of soil contamination by chlorinated volatile organic compounds (CVOCs) has been identified despite extensive soil sampling across the site. Sporadic, low level detections of VOCs were reported in soil samples from discrete grab samples collected from soil borings;
- Petroleum compounds and CVOCs have been detected in soil gas beneath the AMAC Building and in indoor air within the AMAC Building;
- CVOCs and petroleum hydrocarbons have been detected in pre-treatment samples collected from the AMAC Building drinking water supply well (DW-01);
- Depth profiling of groundwater entering DW-01 indicates CVOCs are following preferential pathways in the subsurface geology as they infiltrate into the well at multiple depths through fractures observed in the well boring; and
- No evidence of Site-specific contamination has been identified in three other sampled drinking water supply wells that are located on downgradient abutting properties (DW-02 at the former Barracks Building, 271 and 241 Van Buren Rd.).

Human Health Risk Assessment (HHRA)

As part of the RI, a HHRA was conducted to estimate the current and future potential adverse effects of contaminants on human health. The HHRA was developed using Environmental Protection Agency (EPA) guidance. Based on previous investigations, a site visit to the area, an analysis of data gaps, and the current and reasonably anticipated future uses, soil (surface and subsurface), groundwater, and indoor air (resulting from the vapor intrusion [VI] pathway) were evaluated as the media of potential concern to human receptors.

The HHRA calculated risks for three exposure areas (EAs): the AMAC Building Area, the Launcher Area, and the Entire Site and focused on those human populations likely to be exposed to each of the potentially contaminated Site media currently and/or in the future and included AMAC building staff, AMAC building clients, Site workers, trespassers, construction workers, commercial/industrial workers, and possible residents.

The contaminants of potential concern (COPCs) that were evaluated in the HHRA included VOCs, PAHs, and metals. Three Site-specific background samples were collected for metals in surface soil and were incorporated into a soil background comparison within the HHRA. Regional background soil levels were also included in the background comparison.

Risks calculated in the HHRA were evaluated to determine the need for a remedial action. For cancer effects, a "cancer risk" was calculated. For example, a cancer risk of 1 x 10-4 translates to a "1 in 10, 000 chance." In other words, for every 10,000 people that could be exposed, one extra cancer may occur as a result of exposure to Site contaminants. An extra cancer case means that one more person could get cancer than would normally be expected to from all other causes. For noncancer health effects, a "hazard index" (HI) was calculated. The key concept for a noncancer HI is that a "threshold level" (measured as an HI of less than or equal to one) exists below which noncancer health hazards are not expected to occur.

According to EPA guidance, COPCs that exceed a 1 x 10-4 cancer risk or an HI of one typically require remedial action at the Site. If remediation is required, the remediation goals are set with consideration of the CERCLA acceptable cancer risk limit of 1 x 10-4 to 1 x 10-6 which corresponds to a one in ten thousand to a one in a million-extra cancer risk, and an HI of one for noncancer effects.

The HHRA concluded the following:

- Current receptor cancer risks and noncancer HIs across all media were either within or below the EPA acceptable cancer risk range of 1E-06 to 1E-04 and were less than the noncancer target benchmark of 1.0.

- The cumulative cancer risk for the possible future resident slightly exceeded the upper end of EPA's risk range. The future commercial/industrial worker had a cumulative cancer risk within the EPA acceptable cancer risk range of 1E-06 to 1E-04. The possible l future resident and future commercial/industrial worker cumulative noncancer HIs exceeded the noncancer threshold level of 1.0.

- Arsenic and chromium levels in surface soil were either below or within Site-specific and regional background levels and are therefore not likely attributable to site-related activities.

- The primary risk drivers for the residential groundwater scenario selected as Site COCs are 1-methylnaphthalene, and manganese.

- The primary risk drivers for residential indoor air exposure selected as Site COCs are chloroform, naphthalene, and TCE.

Screening Level Ecological Risk Assessment (SLERA)

As part of the RI, a SLERA was conducted to characterize and quantify the current impact of contamination on the Site from historical activities as well as the potential baseline ecological risk (i.e., risks that might exist if no remediation were applied at the Site). The SLERA was developed using EPA guidance. Based on previous investigations, a site visit, and an analysis of data gaps, the SLERA documents the potential exposure and consequent risks to ecological receptors exposed to soil and drainageway soil contamination within the study area.

The contaminants of potential ecological concern (COPECs) that were evaluated in the SLERA included VOCs, PAHs, PCBs, and metals. The communities and representative target receptors evaluated in the SLERA were as follows: vascular plants; soil invertebrates/microbes; herbivorous birds/mammals (song sparrow – *Melospiza melodia* and deer mouse – *Peromyscus maniculatus*); and invertivorous bird/mammals (American robin – *Turdus migratorius* and short-tailed shrew – *Blarina brevicauda*).

Hazard quotients (HQs) were developed to determine potential effects to target receptors from exposure to COPECs in soil and prey items. The HQ reflects the magnitude by which the sample concentration or dose exceeds or is less than the toxicity reference value (i.e., soil screening level, ecological benchmark, criterion or estimated dose). In general, if an HQ exceeds 1, there is a potential for the exposure to elicit an adverse effect.

The SLERA concluded that there were no ecologically significant site-related risks (i.e., risks from site-specific COPECs that could adversely affect evaluated receptor populations) identified for exposures to site or drainageway soils.

Basis for Action

The basis for action for groundwater is due to:

- Unacceptable cumulative cancer and non-cancer risks associated with reasonably-foreseeable future uses at the Site.

The basis for action for indoor air is due to:

- Unacceptable non-cancer risk associated with reasonably-foreseeable future uses at the Site.

Technology Evaluation

What is a Feasibility Study (FS)?

A FS is an engineering study of the potential cleanup remedies for the site. The initial steps in the development of remedial alternatives include:

- Identify Applicable or Relevant and Appropriate Requirements (ARARs). ARARs identified for LO-58 are presented in Table 1;
- Develop RAOs that are protective of human health and the environment and comply with ARARs; and
- Identify Contaminants of Concern (COCs) and develop Preliminary Remediation Goals (PRGs) that permit a range of treatment and containment alternatives.

What are the Remedial Action Objectives (RAOs) for the Site?

RAOs are based on human health and environmental risks that drive the formulation and implementation of response actions. Alternatives have been developed based on the criteria outlined under CERCLA.

The incorporation of ARARs is considered in the development of RAOs and in the evaluation of remedial alternatives. ARARs are used to develop the remedial action cleanup levels that are used to determine the appropriate extent of site cleanup.

COCs were selected based on 1) maximum detected concentrations in exceedance of ARARs or TBCs, 2) human health cancer risks exceeding 1E-05, or 3) non-cancer HIs exceeding 1.0. Groundwater COCs were identified as TCE, C9-C10 Aromatic Hydrocarbons, 1-methylnaphthalene, and manganese. ARARs exist only for TCE in groundwater (Federal MCLs). TBCs (ME MEGS) exist for C9-C10 Aromatic Hydrocarbons and Manganese in groundwater. The indoor air COCs were identified as chloroform, naphthalene, and TCE. ARARs do not exist for indoor air COCs.

The Proposed RAOs for the Site have an overall objective of addressing human health risks associated with groundwater and indoor air/soil vapor.

Specific RAOs established to address the groundwater and indoor air/soil vapor pathway are:

- Prevent ingestion of water containing COCs in excess of MCLs or MEGs, a unacceptable cumulative cancer risk greater than 1E-04, and cumulative non-cancer HIs greater than the 1.0 threshold level.
- Prevent exposure to indoor air COCs in excess of preliminary remediation goals (1E-05 risk-based) that pose cumulative cancer risk greater than 1E-04 or non-carcinogenic HIs greater than the threshold level of 1.0.

Indoor Air PRGs

COC	PRG ($\mu g/m^3$)	Source of PRG
Chloroform	1.1	Risk
Naphthalene	0.7	Risk
Trichloroethene	2	Risk

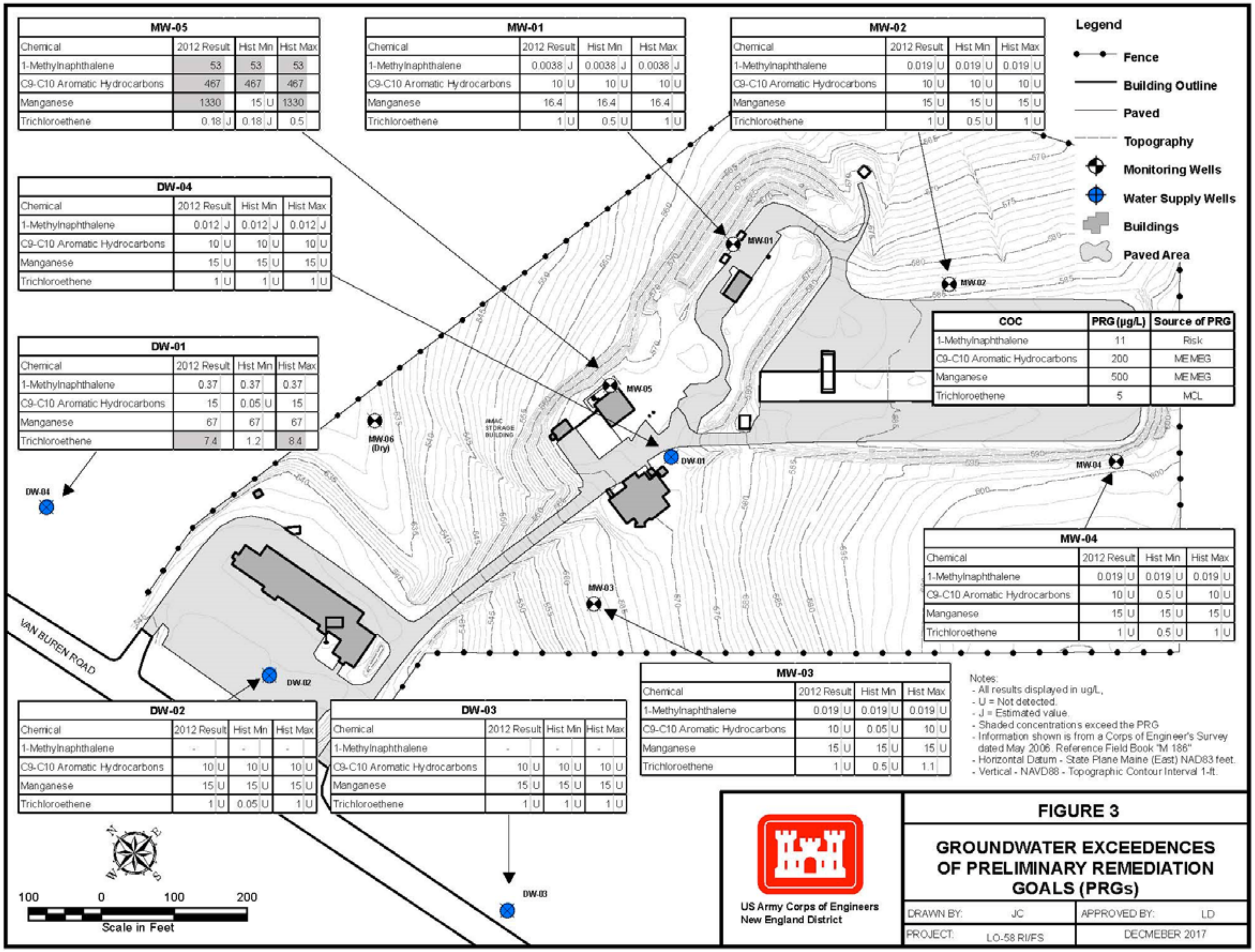
Groundwater PRGs

COC	PRG ($\mu g/L$)	Source of PRG
Trichloroethene	5	MCL
1-Methylnaphthalene	11	Risk
C9-C10 Aromatic Hydrocarbons	200	ME MEG
Manganese	500	ME MEG

Figure 3 shows wells that exceed PRGs.

Authority	Medium	Requirement	Status	Synopsis of Requirement	Action to be Taken to Attain Requirement
Chemical Specific ARARs					
FEDERAL	Ground Water	National Primary Drinking Water regulations (40 C.F.R. Part 141.61)	Relevant & Appropriate	These regulations establish Maximum Contaminant Levels (MCLs) for common organic and inorganic contaminants applicable to public drinking water supplies. MCLs are relevant and appropriate cleanup standards for aquifers and surface water bodies that are current or potential drinking water sources. Chemical of Concern included for this ARAR is TCE	The selected groundwater remedy will comply with the ARAR by preventing current and future exposure to contaminants above MCLs.

Table 1. Chemical Specific ARARs for Groundwater



MW-05

Chemical	2012 Result	Hist Min	Hist Max
1-Methylnaphthalene	53	53	53
C9-C10 Aromatic Hydrocarbons	467	467	467
Manganese	1330	15 U	1330
Trichloroethene	0.18 J	0.18 J	0.5

MW-01

Chemical	2012 Result	Hist Min	Hist Max
1-Methylnaphthalene	0.0038 J	0.0038 J	0.0038 J
C9-C10 Aromatic Hydrocarbons	10 U	10 U	10 U
Manganese	16.4	16.4	16.4
Trichloroethene	1 U	0.5 U	1 U

MW-02

Chemical	2012 Result	Hist Min	Hist Max
1-Methylnaphthalene	0.019 U	0.019 U	0.019 U
C9-C10 Aromatic Hydrocarbons	10 U	10 U	10 U
Manganese	15 U	15 U	15 U
Trichloroethene	1 U	0.5 U	1 U

DW-04

Chemical	2012 Result	Hist Min	Hist Max
1-Methylnaphthalene	0.012 J	0.012 J	0.012 J
C9-C10 Aromatic Hydrocarbons	10 U	10 U	10 U
Manganese	15 U	15 U	15 U
Trichloroethene	1 U	1 U	1 U

DW-01

Chemical	2012 Result	Hist Min	Hist Max
1-Methylnaphthalene	0.37	0.37	0.37
C9-C10 Aromatic Hydrocarbons	15	0.05 U	15
Manganese	67	67	67
Trichloroethene	7.4	1.2	8.4

COC	PRG (µg/L)	Source of PRG
1-Methylnaphthalene	11	Risk
C9-C10 Aromatic Hydrocarbons	200	MEMEG
Manganese	500	MEMEG
Trichloroethene	5	MCL

MW-04

Chemical	2012 Result	Hist Min	Hist Max
1-Methylnaphthalene	0.019 U	0.019 U	0.019 U
C9-C10 Aromatic Hydrocarbons	10 U	0.5 U	10 U
Manganese	15 U	15 U	15 U
Trichloroethene	1 U	0.5 U	1 U

MW-03

Chemical	2012 Result	Hist Min	Hist Max
1-Methylnaphthalene	0.019 U	0.019 U	0.019 U
C9-C10 Aromatic Hydrocarbons	10 U	0.05 U	10 U
Manganese	15 U	15 U	15 U
Trichloroethene	1 U	0.5 U	1.1

DW-02

Chemical	2012 Result	Hist Min	Hist Max
1-Methylnaphthalene	-	-	-
C9-C10 Aromatic Hydrocarbons	10 U	10 U	10 U
Manganese	15 U	15 U	15 U
Trichloroethene	1 U	0.05 U	1 U

DW-03

Chemical	2012 Result	Hist Min	Hist Max
1-Methylnaphthalene	-	-	-
C9-C10 Aromatic Hydrocarbons	10 U	10 U	10 U
Manganese	15 U	15 U	15 U
Trichloroethene	1 U	1 U	1 U

Notes:
- All results displayed in ug/L.
- U = Not detected.
- J = Estimated value.
- Shaded concentrations exceed the PRG
- Information shown is from a Corps of Engineer's Survey dated May 2006. Reference Field Book "M 186"
- Horizontal Datum - State Plane Maine (East) NAD83 feet.
- Vertical - NAVD88 - Topographic Contour Interval 1-ft.

FIGURE 3

GROUNDWATER EXCEEDENCES OF PRELIMINARY REMEDIATION GOALS (PRGs)

DRAWN BY: JC	APPROVED BY: LD
PROJECT: LO-58 RI/FS	DECMEBER 2017

What alternatives were considered in the FS?

The ***Remedial Alternatives*** box summarizes the alternatives that were identified and evaluated in the FS for the Site. The five groundwater alternatives were developed to provide a range of options to address the contaminated bedrock groundwater.

Remedial Alternatives – Vapor Intrusion

Alternative VI1 – No Further Action:

No Further Action will be taken at the Site to address indoor air VI risks.

Alternative VI2 – Limited Action – Institutional Controls and LTM:

No active treatment will occur, however institutional controls in the form of a landowner notifications specifying that new or existing structures cannot be used for residential purposes unless a vapor management system is in-place and functioning will be used to prevent future human health risks, and monitoring will be performed to verify that the alternative remains protective.

Alternative VI3 – Active Sub-slab Vapor Mitigation, Institutional Controls and LTM:

A sub-slab vapor mitigation system will be used to vent contaminated vapors into the atmosphere. This system will utilize horizontal vapor extraction wells installed under the AMAC Building. Institutional controls will be implemented and monitoring will be performed as described previously.

Alternative VI4 – Vapor Barrier Installation, Institutional Controls and LTM:

An impermeable membrane will be installed on top of the existing floor of the AMAC Building to prevent the migration of contaminated soil vapors into indoor air. A protective layer would cover the membrane to prevent direct contact with the barrier. This will require demolition, removal, and reconstruction of the interior flooring. Institutional controls will be implemented, and long-term monitoring well be performed as described above.

Remedial Alternatives – Ground Water

Alternative GW1 – No Further Action:

No Further Action will be taken at the Site to address groundwater contamination.

Alternative GW2 – Continued POE Treatment, Institutional Controls (annual notifications to landowner), Monitored Natural Attenuation (MNA)and LTM:

MNA/LTM will require that up to four bedrock groundwater monitoring wells to be installed in northwestern and southern portions of the Site to monitor possible off-site migration of groundwater toward abutting residences. Groundwater monitoring will be conducted annually in these wells plus 10 existing wells.

Alternative GW3 – Installation of New Drinking Water Supply Line, Institutional Controls, MNA, and LTM:

A new drinking water supply line will be installed which connects DW-02 to the AMAC Building. Several precautions including additional insulation and heating cables will be installed. Institutional controls as specified in GW2 will be implemented. Monitoring will be performed as described in GW2.

Alternative GW4 – Bench Scale/Pilot Testing, In-Situ Treatment of Bedrock Groundwater, Installation of New Drinking Water Supply Line, Institutional Controls as described previously, new monitoring well installations as described previously, and groundwater monitoring for approximately two years

In-Situ chemical treatment of bedrock groundwater will be performed to restore bedrock aquifer. Chemical oxidation was selected as the representative process option.

Alternative GW5 – Groundwater Extraction, Treatment, and Discharge, Institutional Controls, MNA, and LTM:

Includes removing contaminated groundwater using the DW-01 well, treatment of the removed groundwater, and infiltrating the treated groundwater downgradient from the site. Institutional controls and new monitoring wells, and LTM performed as described previously.

Summary of Alternative Evaluation

A summary of the nine evaluation criteria required by the NCP to evaluate the selected remedial alternatives is presented in the FS. The nine criteria are divided into the following three groups and summarizes on Table 2. The comparative analysis of remedial alternatives is presented in Table 3:

Table 2

Explanation of the Nine Evaluation Criteria		
CERCLA and NCP [40 CFR 300.430(e)(9)(iii)(A)-(I)] require the evaluation of each alternative to address the following nine criteria :		
Criteria	Threshold	1. **Overall Protection of Human Health and the Environment** – Evaluates whether a cleanup alternative provides protection and evaluates how risks are eliminated, reduced, or controlled through treatment, engineering controls, or local government controls.
		2. **Compliance with Applicable or Relevant and Appropriate Requirements** – Evaluates whether a remedial alternative meets substantive cleanup standards, standards of control, or other requirements promulgated in other federal or state environmental laws or regulations that have been determined to be applicable or relevant and appropriate to the alternative or justifies any waivers.
	Primary Balancing	3. **Long-Term Effectiveness and Permanence** – Considers any remaining risks after cleanup is complete and the ability of a cleanup option to maintain reliable protection of human health and the environment over time once cleanup goals are met.
		4. **Reduction of Toxicity, Mobility, or Volume through Treatment** – Evaluates a cleanup option's use of treatment to reduce the harmful effects of the contaminants, their ability to move in the environment, and the amount of contamination present.
		5. **Short-Term Effectiveness** – Considers the time needed to clean up a site and the risks and adverse effects a cleanup option may pose to workers, the community, and the environment until the cleanup goals are met.
		6. **Implementability** – The technical and administrative feasibility of implementing a cleanup option, including factors such as the relative availability of goods and resources.
		7. **Cost** – Includes estimated capital and annual operations and maintenance costs.
	Modifying	8. **State Acceptance** – Considers whether the state (Maine) agrees with USACE's analyses and recommendations as described in the proposed plan.
		9. **Community Acceptance** – Considers whether the local community) agrees with USACE's analyses and proposed cleanup plan. The comments USACE receives on its preferred alternative are important indicators of community acceptance.

Table 3
Comparative Analysis of Alternatives

	Threshold Criteria		Balancing Criteria						
	Protection of Human Health & Environment	Compliance with ARARs	Long-Term Effectiveness & Permanence	Reduction of Toxicity, Mobility, & Volume Through Treatment	Short-Term Effectiveness	Implementability	Total Present Value Cost		Time to Achieve Residential PRGs/RAOs (Cancer Risk = 10^{-5})
Groundwater Alternatives									
GW1 - No Action [Groundwater]	☒	☒	None	None	Very High	None	None	$0	90 yrs
GW2 - Continued POE System Operation, Institutional Controls, LTM & MNA	☑	☑	Very High	High	Very High	Very High	Low	$628,038	90 yrs
GW3 - Shut Down POE System; Reroute Drinking Water Supply Line, Institutional Controls, LTM & MNA	☑	☑	High	None	High	High	Medium	$697,556	90 yrs
GW4 - In-Situ Treatment; Install Drinking Water Supply Line, Institutional Controls, LTM & MNA	☑	☑	High	High	Medium	Low	Very High	$1,009,881	2 yrs
GW-05 - Groundwater Extraction, Treatment, Discharge, Install Drinking Water Supply Line, Institutional Controls, LTM & MNA	☑	☑	High	Very High	High	Low	High	$922,217	52 yrs
Vapor Intrusion Alternatives									
VI1 - No Action [Vapor Intrusion]	☒	☑	None	None	Medium	High	None	$0	>300 yrs
VI2 - Institutional Controls	☑	☑	Medium	None	Medium	Medium	Low	$263,166	>300 yrs
VI3 - Vapor Removal, Institutional Controls	☑	☑	High	None	High	Low	Medium	$364,218	Immediately upon completion of installation
VI4 - Vapor Barrier, Institutional Controls	☑	☑	High	None	Low	None	High	$384,262	Immediately upon completion of installation

Legend **Threshold Criteria**
☒ Does not meet criterion
☑ Meets criterion

Balancing Criteria
Relative alternative ranking from 0 (lowest ranked) to 4 for the GW alternatives or to 3 for the VI alternatives
Rankings may be tied for criteria in which there is little to no difference between the alternatives

The following is a brief summary of the comparative evaluation process. It should be noted that state and community acceptance of all alternatives would be addressed in the Decision Document once all comments have been received.

Threshold Criteria (Must Be Met)

<u>Overall Protection of Human Health and the Environment</u>

With the exception of Alternative Groundwater (GW)1, all of the proposed alternatives would be protective of human health. Alternative GW1 provides the least amount of protection of human health and the environment because no actions will be taken to reduce the ongoing risks posed by groundwater contamination. Alternative GW1 will not meet the NCP threshold criterion of protection of human health and the environment. The remaining groundwater alternatives achieve this criterion by preventing ingestion of groundwater containing CoCs exceeding MCLs and placing institutional controls in the form of annual notice letters to owners of property where contaminants of concern could potentially be present in groundwater and/or indoor air. Although no VI alternatives are required to be protective of human health for the present use of the AMAC Building, there is potential future residential unacceptable risk based on exposure to indoor air at the AMAC Building.

Alternative VI1 provides no protection of human health because no action will be taken. VI2 uses institutional controls to limit potential future exposure by providing notifications to landowners informing them that vapor mitigation would be necessary for any future residential uses. DERP Manual, DoDM 4715.20, Encl. 3, p.48, provides "The DoD Component shall provide notice of potential vapor intrusion risks to non-DoD property owners in writing and, as appropriate, include such notice in DDs and transfer documents.". VI3 and VI4 use active mechanisms and barriers to protect future users of the AMAC Building. VI2, VI3 and VI4 all will use institutional controls to provide for vapor mitigation in future residential buildings.

Compliance with ARARs

Alternative GW1 does not meet the MCLs. Alternatives GW2 and GW3 do meet the MCLs by providing treatment for the active drinking water supply (GW2) or by re-routing the drinking water supply source (GW3); both preventing exposure to contaminated groundwater. Alternatives GW4 and GW5 meet the MCLs, because they prevent exposure to contaminated groundwater by re-routing the drinking water supply source. The only additional ARAR (Underground Injection Control) is met by the GW4 alternative.

Primary Balancing Criteria (Identifies Major Trade-offs Among Alternatives)

Long-Term Effectiveness and Permanence

Alternative GW1 provides the least long-term effectiveness and permanence. Any reduction in risk will be a result of unmonitored natural attenuation. No controls will be put in place to prevent improper use or exposure to contaminated groundwater. Alternative GW2 will provide a reduction in risk through continued POE treatment of groundwater. Alternatives GW3, GW4, and GW5 each provide drinking water via a rerouted water supply line to DW-02. GW4 and GW5 also include in-situ groundwater treatment and groundwater extraction, treatment, and discharge, respectively. Under all groundwater alternatives risks are expected to slowly decrease over time through dissolution/anaerobic degradation of source materials and monitored natural attenuation of groundwater contamination.

The main differences between the groundwater alternatives involve the adequacy and reliability of the controls. The POE system has been operational for a long duration and has demonstrated reliability throughout that period. Although the subsurface conditions have been studied, the heterogeneities within the limestone fractured bedrock cannot be fully understood. Therefore, uncertainty in the controls exists for alternatives GW3, GW4, and GW5. Without further hydrologic study (as recommended in the alternative), the behavior of the aquifer in response to the additional load on water supply well DW-02 particularly with a groundwater extraction system operating (alternative GW5) is not known. This uncertainty is most impactful to alternative GW4 in that the addition of chemical reagents to the subsurface may result in undesirable impacts such as the liberation of inorganics (including the CoC manganese) from the host rock, or injected reagents migrating to unanticipated/undesirable locations.

Although an acceptable amount of risk exists under the current property use, Alternative VI1 does not reduce future risk of residential use. risk. Alternative VI2 reduces risk in the long term through institutional controls requiring VI mitigation systems in future residential construction or rehabilitation of the existing building for residential use.

Alternatives VI3 and VI4 reduce current-use risk via active sub-slab vapor recovery and passive vapor barrier system installation. Rehabilitation of the current building to residential use may be performed under alternatives VI3 and VI4 (assuming the vapor mitigation systems are maintained), and other future residential construction would be required to install and maintain a vapor management system under an institutional control.

Short-Term Effectiveness

Alternative GW1 does not involve any construction activities; therefore, there are no risks to the community, workers, or the environment. The continued operation of the POE treatment system under Alternative GW2, and the installation of a new potable water supply line under Alternative GW3, will pose no additional risks to the community and will pose minimal short-term risks to workers and the environment. These risks can be minimized with proper health and safety and construction housekeeping procedures. It is estimated that these alternatives result in a longer time to achieve cleanup goals than alternatives GW4 and GW5.

Alternative GW4 poses the highest short-term risk to the community, site workers, and the environment. These risks are associated with the on-site storage of chemicals, pressurized injection of reactive chemicals, and altering the chemistry of the bedrock aquifer that is currently used for drinking water. However, this alternative results in a relatively short estimated time to achieve cleanup goals

Alternative GW5 poses slightly higher short-term risk to the community than GW2 and GW3, but less than GW4 This risk relates to the on-site discharge of treated groundwater, as well as the off-site disposal of spent activated carbon. Short-term risks to site workers are minimal, and include risks associated with construction of the infiltration gallery and maintenance of the groundwater extraction and treatment system. Short-term risks to the environment are minimal under this alternative and are associated with the potential for dewatering surrounding areas. This alternative results in a shorter estimated time to cleanup than alternatives GW2 and GW3, but longer than alternative GW4.

Alternatives VI1 and VI2 do not involve any construction activities; therefore, there are no risks to the community, workers, or the environment associated with these alternatives; however, residual risks remain unchanged and the estimated time to achieve remedial goals is significant compared to alternatives VI3 and VI4. The construction-related impacts to the community associated with alternatives VI3 and VI4 would be significant in that AMAC building operations would be limited under alternative VI3 and significantly limited (or temporarily terminated) under alternative VI4.

<u>Reduction in Toxicity, Mobility, or Volume Through Treatment</u>

Under Alternatives GW1 and GW3, no active reduction of mass, toxicity, mobility, or volume of groundwater contamination will take place which does not satisfy the statutory preference for treatment. However, groundwater contamination will gradually decrease over time through dissolution/anaerobic degradation of contaminants.

Alternatives GW2, GW4, and GW5 satisfy the statutory preference for treatment. The mass, toxicity, mobility, and volume of contamination within the bedrock aquifer will be decreased via extraction and ex-situ treatment under Alternatives GW2 and GW5, and through in-situ treatment under Alternative GW4. Both of these treatment technologies are irreversible.

The highest degree of treatment exists under GW5 followed by GW4. The least amount of treatment occurs with GW2.

Treatment residuals will exist for each of the treatment technologies, including a small amount of spent activated carbon (GW2), a larger amount of spent carbon (GW5), and altered groundwater geochemistry (GW4) which could potentially result in liberation of inorganic constituents including the CoC manganese from host rock.

None of the VI alternatives satisfy the statutory preference for treatment.

<u>Implementability and Costs</u>

With no proposed actions, Alternative GW1 is the easiest to undertake when compared with the other alternatives; however, it is not reliable and is not monitored. There are no costs for Alternative GW1. Alternative GW2 will be slightly more difficult to implement than alternative GW-1, as it will involve the installation of new groundwater monitoring wells, the continued operation and monitoring the POE system, long-term groundwater and MNA monitoring, implementation of institutional controls as described above. These activities are easily implementable, able to be monitored, and do not limit potential future remedial actions. Alternative GW3 is more difficult to implement than GW2 in that a pumping test to demonstrate that adequate water supply is available, and excavation (likely within bedrock) for the water supply line will be required. The same institutional controls included in alternative GW2 will be implemented in this alternative as well. No limitation of future remedial actions is associated with alternative GW-3.

Alternative GW4 will be significantly more difficult to implement than Alternatives GW2 or GW3. This alternative will involve the installation of approximately five bedrock injection wells, as well as the injection of treatment reagents into the bedrock aquifer. Effectively targeting individual bedrock fractures or fracture sets for treatment is difficult to implement, control, and monitor. Bench and pilot-scale testing will be tailored to attempt to address this concern. Modification of the subsurface geochemistry may result in reduced effectiveness of certain remedial technologies (such as biological treatments, or extraction and carbon treatment).

Alternative GW5 is likely to be at least as difficult to implement as alternative GW4. Installation of an upgraded treatment system using approximately the same floorspace and installing an upgraded well pump will be easily implementable. However, the nearest surface water body is too far from the Site to discharge treated groundwater, so an on-site subsurface infiltration system is proposed. The shallow bedrock, the site topography, and the in-place soil materials are not conducive to draining even relatively small volume of continuous water flow. Additionally, application of certain remedial actions (such as in-situ techniques) within the infiltration system footprint may not be possible.

With no proposed actions, Alternative VI1 is the easiest to implement when compared with the other alternatives. There are no costs for Alternative VI1. VI2 involves institutional controls and is therefore slightly more difficult to implement.

Alternative VI3 is more difficult to implement than Alternative VI2. This involves horizontal drilling beneath the AMAC Building and installation of a vapor extraction system and will require some coordination with the AMAC business to safely construct, test, and monitor the alternative. Additional remedial actions would need avoid impacting the active vapor mitigation infrastructure. Alternative VI4 will be the most difficult alternative to implement, because it will require the disruption (or temporary termination/ relocation) of the AMAC Building business for a period of approximately three months. It will be necessary to completely strip the interior of the building so that the membrane can be sprayed across the entire floor. A wear layer will be installed above the floor, and the interior will then be re-constructed throughout the entire building. If additional remedial measures were required, any protrusions through the vapor barrier would need to be repaired and tested prior to acceptance.

The estimated costs for the groundwater alternatives are as follows:

	Capital Cost	Present Worth O&M Cost	Present Worth Cost
GW1	$0	$0	$0
GW2	$62,780	$565,258	$628,038
GW3	$191,760	$505,806	$697,556
GW4	$951,904	$57,977	$1,009,881
GW5	$347,423	$574,794	$922,217

The estimated costs for the vapor intrusion alternatives are as follows:

	Capital Cost	Present Worth O&M Cost	Present Worth Cost
VI1	$0	$0	$0
VI2	$18,225	$244,941	$263,166
VI3	$115,994	$248,224	$364,218
VI4	$139,322	$244,941	$384,262

Although the estimated time to cleanup for each of these alternatives is estimated in the FS, the estimates are uncertain and therefore are conservative. As a result, with the exception of alternative GW4, a 30-year period for long-term monitoring and five-year reviews was established in the O&M cost estimates. Alternative GW4 is estimated to achieve cleanup goals within two years, and therefore two years of monitoring will be required for this alternative and no five-year reviews will be needed.

Preferred Alternative

What is the preferred alternative for the Site?

The preferred alternative for groundwater is alternative GW2. GW2 was chosen due to its already demonstrated protectiveness of human health and the environment, compliance with ARARs, already demonstrated effectiveness in both the short- and long-terms, lack of additional risks to the community or workers, satisfaction of the government's preference for treatment (although the estimated time to achieve cleanup is longer than other treatment alternatives), lack of significant implementation barriers, and overall cost-effectiveness. It should be noted that the estimated time to cleanup are conservative, and may achieve cleanup sooner than estimated.

The preferred alternative for vapor intrusion is VI2. VI2 was chosen due to its protectiveness of future human health (current human health risk is considered acceptable), the lack of significant implementation barriers, lack of the short-term impacts to on-site operators or workers faced by two of the other VI alternatives, and overall cost effectiveness.

Figure 4 shows a site plan for the proposed remedy.

If a new Building is constructed on the restricted zone of this property shown as the AMAC building area on Figure 2, the property owner will be responsible for installation of an appropriate vapor mitigation system and complying with Maine building code requirements relating to installation of radon indoor air mitigation systems in new buildings. Indoor air testing will be performed by USACE to verify that no vapor intrusion issues are occurring. If vapor intrusion issues exist and pose an unacceptable risk due to site contaminants, USACE will evaluate the need to conduct further investigation.

The recommended alternative also adds an increased measure of protectiveness through annual notice letters to owners of property where contaminants of concern could potentially be present in groundwater and/or indoor air. DERP Manual, DoDM 4715.20, Encl. 3, p.48, provides "The DoD Component shall provide notice of potential vapor intrusion risks to non-DoD property owners in writing and, as appropriate, include such notice in DDs and transfer documents." The Land Use Control Zone or AMEC building area, may be modified, if necessary, based upon future data from the Groundwater Monitoring Program.

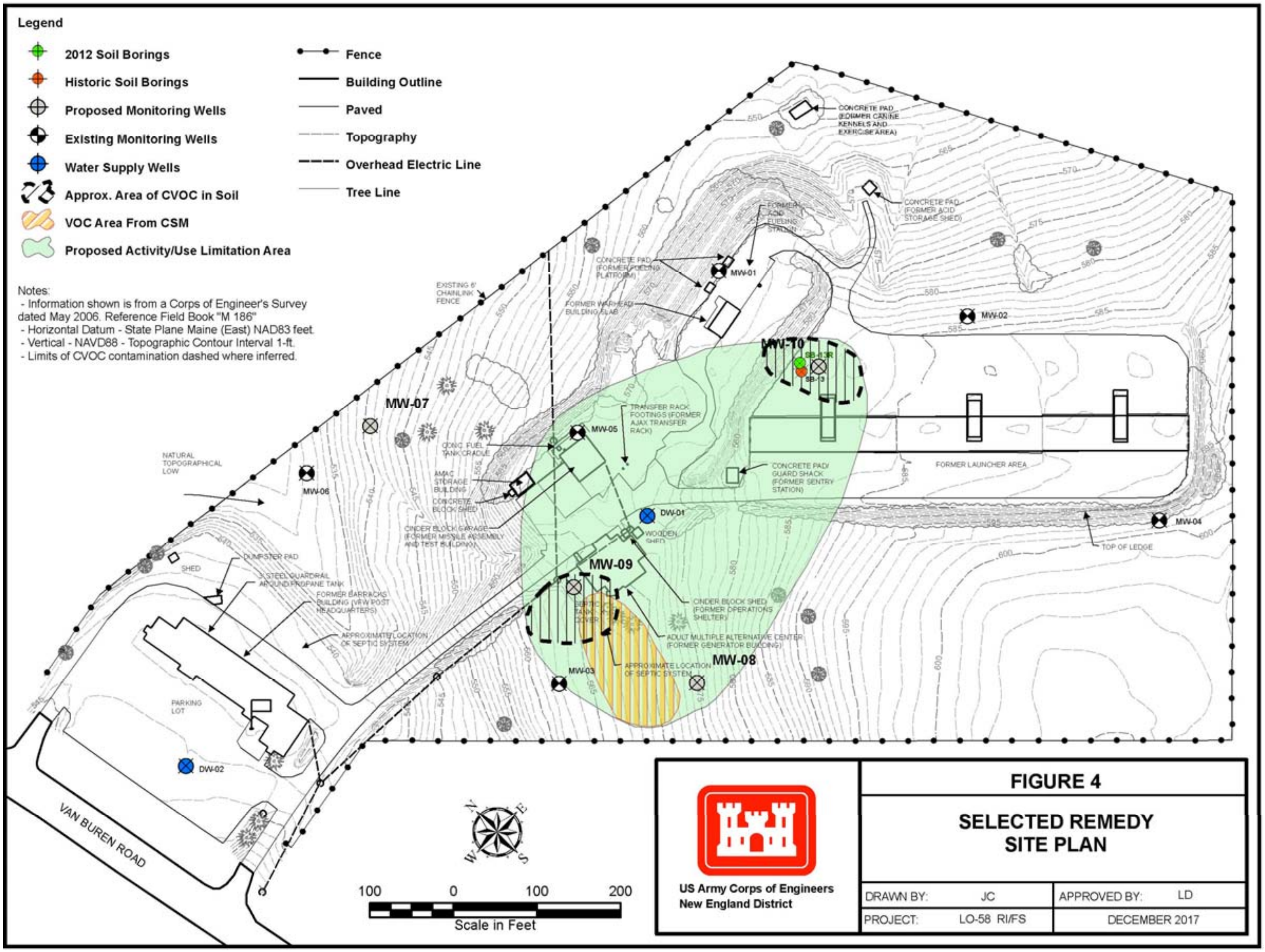
Land Use Control within the AMAC building area is shown on Figure 2. This area includes locations where groundwater contaminants of concern exceed ARARs.

How will the Land Use Controls work?

The proposed AMAC building area land use controls will include any new well installed to be tested and treated, if necessary, and may also be added to the Long-Term Monitoring Plan. Annual notice letters will be sent to the property owner for the AMAC building area.

Regarding vapor intrusion risks, current Maine building codes require installation of radon indoor air mitigation technologies in new buildings. No additional indoor air mitigation systems are expected to be needed, other than that required by Maine building codes.

Land use controls for AMAC building area will include annual notice letters to current or future property owner to ensure that they are aware of the potential for contaminated groundwater under their property; and to indicate that the USACE is willing to test any new drinking water well for COC's, and to install and maintain GAC filters on a drinking water well, if MCLs are exceeded, or if concentrations are trending toward an MCL exceedance. The AMAC building Area notice letters will be sent by the USACE to property owners. The Town tax records will be checked each year by the USACE to ensure that the current owners of the property receive the notice


Legend
2012 Soil Borings
Historic Soil Borings
Proposed Monitoring Wells
Existing Monitoring Wells
Water Supply Wells
Approx. Area of CVOC in Soil
VOC Area From CSM
Proposed Activity/Use Limitation Area
Fence
Building Outline
Paved
Topography
Overhead Electric Line
Tree Line
Notes:
- Information shown is from a Corps of Engineer's Survey dated May 2006. Reference Field Book "M 186"
- Horizontal Datum - State Plane Maine (East) NAD83 feet.
- Vertical - NAVD88 - Topographic Contour Interval 1-ft.
- Limits of CVOC contamination dashed where inferred.
MW-01
MW-02
MW-03
MW-04
MW-05
MW-06
MW-07
MW-08
MW-09
MW-10
DW-01
DW-02
SB-13
FORMER LAUNCHER AREA
TOP OF LEDGE
VAN BUREN ROAD
PARKING LOT
100 0 100 200
Scale in Feet
US Army Corps of Engineers
New England District
FIGURE 4
SELECTED REMEDY
SITE PLAN
DRAWN BY: JC
APPROVED BY: LD
PROJECT: LO-58 RI/FS
DECEMBER 2017

Next Steps

What happens next?

The Corps will conduct a public meeting on 18 July 2018, at the Caribou City Hall. Once the community has reviewed this Proposed Plan, the Corps and the MEDEP will consider all comments received from the public. The Corps will provide written responses to all substantive comments and combine them into a Responsiveness Summary, which will be included in the Decision Document for the Site. The Decision Document will describe the determination and summarize community participation in the selection process. The Corps and MEDEP anticipate that the Decision Document will be finalized and signed before the end of 2018, at which time it will be made available to the public.

Glossary of Terms

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA): A federal law passed in 1980 and amended in 1986 by the Superfund Amendments and Reauthorization Act (SARA), commonly known as Superfund. The Corps' characterization and remediation at DERP FUDS sites is conducted under the framework of CERCLA/SARA, while funded by the Defense Environmental Restoration Program (DERP).

Corps of Engineers (the Corps): The U.S. Army Corps of Engineers provides comprehensive environmental restoration services for the Army, DOD, Environmental Protection Agency (EPA), Department of Energy (DOE), and other federal agencies. The DOD has designated the Corps to oversee the environmental program at the Site, under the Formerly Used Defense Site (FUDS) program.

Decision Document: A legal, technical and public document that explains the rationale and remedy decision for a given site. It also summarizes the public's involvement in the decision process.

Feasibility Study (FS): An engineering study of the potential remedies for a site.

Human Health Risk Assessment: An analysis of the potential adverse human health effects caused by hazardous-substance exposure in the absence of any actions to control or mitigate these exposures under current and future site uses.

Remedial Investigation (RI): The collection of data and information necessary to characterize the nature and extent of contamination at a site. The RI also includes information as to whether or not the contamination poses significant risk to human health and/or the environment.

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