

Final

Site-Screening Process Closeout Report Anti-Aircraft Target Rifle Range, 1944 Pistol Range, and 1953 Pistol Range

Naval Amphibious Base Little Creek
Joint Expeditionary Base Little Creek-Fort Story
Virginia Beach, Virginia



Prepared for

Department of the Navy
Naval Facilities Engineering Command
Mid-Atlantic

Contract No.
N62470-08-D-1000
CTO-036

September 2010

Prepared by

CH2MHILL

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Prepared by



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Virginia Beach, Virginia

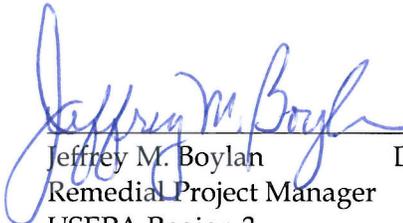
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Anti-Aircraft (A-A) Target Rifle Range, 1944 Pistol Range, and 1953 Pistol Range

In 2007, the Department of the Navy (Navy) completed the *Final Preliminary Assessment, Naval Amphibious Base Little Creek, Virginia* (Malcolm Pirnie, 2007) for the former MWR Skeet Range. Based on the findings of this report, the Naval Amphibious Base (NAB) Little Creek Project Management Team (PMT), a partnership between the Navy, the United States Environmental Protection Agency (USEPA) Region 3 and the Virginia Department of Environmental Quality (VDEQ), recommended additional investigation for this Military Munitions Response Program (MMRP) site. Additionally, during this assessment six MMRP Site Screening Areas (SSA) were identified for evaluation. The assessment of these six MMRP SSAs was completed, with findings for each SSA reported in the Preliminary Assessment (Malcolm Pirnie, 2007). Of the six SSAs evaluated in this report, four (Anti-Aircraft [A-A] Target Rifle Range, 1944 Pistol Range, 1953 Pistol Range, and Depth Charge Testing Area) were identified as potentially having a complete exposure pathway for exposure to munitions constituents (MC), and two (the 1942 Pistol Range and the Chemical Defense Area) were found to have incomplete exposure pathways.

Based on this information, the NAB Little Creek PMT determined that additional investigation was required for the four MMRP SSAs with complete exposure pathways, and two SSAs could be removed from further study due to incomplete exposure pathways. As the initial step in the further investigation of the four MMRP SSAs, the NAB Little Creek PMT conducted a comprehensive desktop evaluation, consisting of SSA visits, review of aerial photographs and SSA history, and the development of a conceptual site model (CSM) for each SSA. This Site Screening Process (SSP) Closeout Report addresses three of these MMRP SSAs (A-A Target Rifle Range, 1944 Pistol Range, and 1953 Pistol Range), the fourth SSA (Depth Charge Testing Area) will be addressed in a separate report.

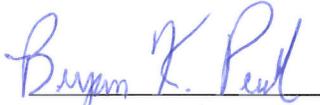
Based on the results of the desktop evaluation, SSA visits, Navy guidance, and professional judgment, it is the consensus of the Navy, in partnership with the USEPA Region 3, and the VDEQ, that these three MMRP SSAs do not pose a threat, or potential threat to public health, welfare, or the environment, and therefore, the area should be removed from further study in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended. Documentation and justification for the areas being removed from further study is summarized in this SSP Closeout Report. These three MMRP areas will be identified as being removed from further study in the annual update (Fiscal Years 2011 through 2015) of the Site Management Plan (SMP) as part of the Federal Facilities Agreement (FFA) between the Navy and USEPA. In the event contamination posing an unacceptable risk to human health or the environment is discovered after execution of this consensus agreement, the Navy will reevaluate the areas as deemed necessary.

 9.30.10

Jeffrey M. Boylan Date
Remedial Project Manager
USEPA Region 3

 9.30.10

Paul E. Herman Date
Remedial Project Manager
Virginia DEQ

 9/30/10

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Acronyms and Abbreviations

A-A	anti-aircraft
BERA	Baseline Ecological Risk Assessment
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-term Environmental Action—Navy
CSM	conceptual site model
CTO	Contract Task Order
DoD	Department of Defense
ER	Environmental Restoration
FFA	Federal Facilities Agreement
FFS	Focused Feasibility Study
HHRA	Human Health Risk Assessment
IAS	Initial Assessment Study
IR	Installation Restoration
JEB	Joint Expeditionary Base
LTM	long-term monitoring
LUC	land use control
MC	munitions constituent
MEC	munitions and explosives of concern
mm	millimeter
MMRP	Military Munitions Response Program
NAB	Naval Amphibious Base
NACIP	Naval Assessment and Control of Installation Pollutants
NATO	North Atlantic Treaty Organization
NAVFAC	Naval Facilities Engineering Command
Navy	Department of the Navy
NCP	National Contingency Plan
NPL	National Priorities List
PMT	Project Management Team
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RI	Remedial Investigation
ROD	Record of Decision

SARA	Superfund Amendment and Reauthorization Act
SMP	Site Management Plan
SSA	Site-Screening Area
SSP	Site-Screening Process
USEPA	United States Environmental Protection Agency
VDEQ	Virginia Department of Environmental Quality

Introduction

On October 1, 2009, Hampton Roads' first Department of Defense Joint Base was established. This new installation comprises the former NAB Little Creek and Army post of Fort Story; the new name is Joint Expeditionary Base (JEB) Little Creek-Fort Story. With the forming of this new command, the Navy assumes responsibility for management of both properties and will now merge meetings regarding the ongoing environmental restoration programs. However, separate records will be maintained to ensure the integrity of ongoing efforts at both properties. When required for public notices and distributions, the former bases will be individually identified as JEB Little Creek-Fort Story, Fort Story and JEB Little Creek-Fort Story, NAB Little Creek. For Environmental Restoration (ER) Program documents, the former names NAB Little Creek and Fort Story shall be used to maintain consistency within the program.

This Site-Screening Process (SSP) Closeout Report presents an evaluation of the information obtained to determine if any potential threats to human health or the environment exist related to the historical use of munitions at the former Anti-aircraft (A-A) Target Rifle Range, 1944 Pistol Range, and 1953 Pistol Range, located at NAB Little Creek, Virginia Beach, Virginia (**Figures 1-1 and 1-2**). Each Site-Screening Area (SSA) is a closed range identified as potentially having a complete exposure pathway for exposure to munitions constituents (MC), as summarized in the Preliminary Assessment (Malcolm Pirnie, 2007), and recommended for further investigation by the NAB Little Creek Project Management Team (PMT) consisting of representative of the Navy, United States Environmental Protection Agency (USEPA) Region 3, and Virginia Department of Environment Quality (VDEQ).

This report is prepared under the Naval Facilities Engineering Command (NAVFAC) Atlantic's Comprehensive Long-term Environmental Action – Navy (CLEAN) 1000 Program, Contract N62470-08-D-1000, Contract Task Order (CTO) 036 for submittal to NAVFAC Mid Atlantic, USEPA, and VDEQ.

The Department of Defense (DoD) established the Military Munitions Response Program (MMRP) under the Defense Environmental Restoration Program to address munitions and explosives of concern (MEC) and MC at closed ranges and other sites. The MMRP response action is conducted under the process outlined in the National Contingency Plan (NCP) as authorized by Comprehensive Environmental Response Compensation and Liability Act (CERCLA).

The NAB Little Creek Federal Facilities Agreement (FFA) between the Navy, USEPA, and VDEQ was executed in 2003 to ensure that environmental impacts from past and present activities are properly investigated, and establishes the procedural framework and schedule for the implementation of actions to complete such investigations. Following the site identification procedures of the FFA, the Navy identified the A-A Target Rifle Range, 1944 Pistol Range, and 1953 Pistol Range as SSAs in the *Site Management Plan, Fiscal Years 2009 through 2013* (CH2MHILL, 2008).

This SSP Closeout Report summarizes the SSA visits and desktop evaluation performed for each SSA and documents the decision that the A-A Target Rifle Range, 1944 Pistol Range, and 1953 Pistol Range areas do not pose a threat, or potential threat to public health, welfare, or the environment, and therefore, should be removed from further study. The evaluation presented in this report includes a review of the SSA history, aerial photographs, munitions use, and the conceptual site models (CSMs). The report comprises the following:

- Signature Concurrence Page
- Section 1 – Introduction
- Section 2 – Facility Background
- Section 3 – SSA Background and Summary of Field Activities
- Section 4 – Conclusions and Recommendations
- Section 5 – References

Figures and tables are located at the end of each section.



Legend

□ Installation Boundary

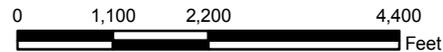


Figure 1-1
Base Location Map
Site Screening Process Closeout Report
Naval Amphibious Base Little Creek
Joint Expeditionary Base Little Creek - Fort Story
Virginia Beach, Virginia



Legend
 ■ MMRP Site
 □ Installation Area

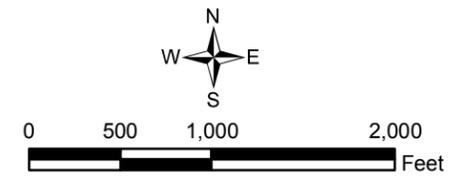


Figure 1-2
 Site Screening Areas Location Map
 Site Screening Process Closeout Report
 Naval Amphibious Base Little Creek
 Joint Expeditionary Base Little Creek - Fort Story
 Virginia Beach, Virginia

Facility Background

2.1 Facility Description

NAB Little Creek encompasses 2,215 acres in the northwest corner of Virginia Beach, Virginia, adjacent to the Chesapeake Bay (**Figure 1-1**). The facility is primarily industrial, with personnel providing logistics and support services for local commands, organizations, home-ported ships, and other United States and allied units to meet amphibious warfare-training requirements of the Armed Forces of the United States. Ancillary activities that have occurred at NAB Little Creek with potential for contaminant release include: vehicle and boat maintenance, boat painting and sandblasting, construction and repair of buildings and piers, mixing and application of pesticides, electroplating of musical instruments, laundry and dry cleaning operations, historical land filling of waste and construction debris, medical and dental treatment, generation of steam for heat, fuel storage and use, and ammunition storage and use. NAB Little Creek is also used for recreational, commercial, and residential purposes.

Land development surrounding the base is residential, commercial, and industrial. The surrounding area is low-lying and relatively flat, with several freshwater lakes (Chubb Lake, Lake Bradford, Little Creek Reservoir/Lake Smith, and Lake Whitehurst) located on or adjacent to the base. NAB Little Creek centers around four saltwater bodies: Little Creek Harbor, Little Creek Cove, Desert Cove, and the Little Creek Channel, which connects the coves and harbor with the Chesapeake Bay. Little Creek Reservoir/Lake Smith, located south of the base, serves as a secondary supply of drinking water for parts of the city of Norfolk.

2.2 Environmental History

Comprehensive environmental restoration activities at NAB Little Creek began in 1984 under the Navy Assessment and Control of Installation Pollutants (NACIP) and Installation Restoration (IR) (later termed ER) Programs. The purpose of the NACIP and ER programs was to identify, assess, characterize, and clean up or control contamination from past waste management activities at Navy and Marine Corps facilities. Environmental assessment efforts at NAB Little Creek began under the NACIP program with an Initial Assessment Study (IAS) (RGH, 1984), and continued with the Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) (A. T. Kearney, 1989). The NACIP program was changed in 1986 to reflect the requirements of CERCLA as amended by the Superfund Amendments and Reauthorization Act (SARA).

On May 10, 1999, NAB Little Creek was placed on the National Priorities List (NPL), and the FFA, negotiated between the Navy, USEPA, and VDEQ, was signed in October 2003. The FFA requires the Navy to annually update the Site Management Plan (SMP) to amend the facility's restoration planning and schedule. In accordance with the FFA and the annual SMPs, which amend the FFA, all past and future work at ER Program sites will be reviewed, and a course of action for future work requirements at each site will be developed.

SSA Background and Summary of Field Activities

A description of each SSA, the environmental history, munitions used, and results of SSA visits and historical field activities are presented in this section.

3.1 A-A Target Rifle Range/1944 Pistol Range

The A-A Target Rifle Range and the 1944 Pistol Range were grouped together as a single SSA, due to their close proximities to one another (approximately 10 feet apart), similar years of operation, and similar operational use.

3.1.1 SSA Description and History

The A-A Target Rifle Range and the 1944 Pistol Range were approximately 0.11 and 0.04 acres in size, respectively, located adjacent to one another within the western portion of NAB Little Creek between La Moure County Road and Whidbey Island Road (**Figure 3-1**). Both ranges were used in 1943 and 1944 and possibly until 1948. This area was undeveloped until range construction.

The A-A Target Rifle Range was limited to air rifles that used lead pellet ammunition (4.5-millimeter [mm]). An air rifle uses compressed air as a propellant. The 1944 Pistol Range was limited to the firing of small arms (primarily pistols) using small caliber ammunition (.22-, .38-, and .45-caliber). As a result, the primary potential MC at each range is lead from air rifle pellets and small caliber ammunition. Secondary potential MC may be present in minor amounts in the ammunition item or is typically released when the item is fired. Secondary potential MC at the SSA includes antimony, arsenic, copper, iron, nickel, and zinc from jacketed ammunition, and smokeless powder as a propellant. However, based on the limited size and operation of these ranges, none of these secondary MC constituents are expected to be present in measurable amounts at the SSA. There is no potential for MEC.

The 1942 pre-construction plan for the Pistol Range shows that the firing line was at the southern portion of the SSA with the direction of the fire north, towards a 4-foot berm and Little Creek (**Figure 3-2**). The direction of fire at the Rifle Range is also believed to be northward. Based on historic design of Air rifle ranges at other bases, it is assumed the targets would be positioned approximately 90 feet north of the suspected firing line and ammunition fired would not likely penetrate into the soil. Pistol range targets would be positioned approximately 50 feet north of the suspected firing line and ammunition fired would have a penetration depth less than one foot into the soil. The exact amount of pellets/ammunition fired at each SSA is unknown. A CSM of both ranges during the time of operation is shown in **Figure 3-3**.

Aerial photographs of the SSAs in 1949 and 1954 are shown in **Figures 3-4 and 3-5**, respectively. The 1949 historical photograph shows the previous shoreline extended

approximately 750 and 630 feet north of the Rifle Range and Pistol Range, respectively. The area surrounding and including the former ranges was extensively redeveloped between 1951 and 1954, which included dredging and construction of a bulkhead, roads, and buildings. It is believed that the entire area was redeveloped using fill material. The base of the fill material is estimated at a depth of 1 to 5 feet below ground surface (bgs), based on a comparison of present day elevations with the 1942 pre-construction plan. Currently, the majority of the ranges are developed and covered with 10-inch thick concrete. The CSM of both ranges at present day is shown in **Figure 3-6**.

The timeline of the environmental history of the A-A Target Range and the 1944 Pistol Range is summarized in **Figure 3-7**.

3.1.2 Field Activities

Site visits of the Rifle Range and Pistol Range were conducted in 2006 and 2009. There was no visible evidence of the former ranges.

3.2 1953 Pistol Range

3.2.1 SSA Description and History

The 1953 Pistol Range is approximately 0.6 acres in size and located in the northern portion of NAB Little Creek, west of the golf course and south of Beach Drive (**Figure 3-8**). The former pistol range was used in 1953 and possibly from 1950 to 1953. The SSA was not identified on historical maps or the 1954 aerial photograph (**Figure 3-9**).

The Pistol Range was limited to small arms, primarily pistol ammunition (.22, .38, and .45 caliber). The exact quantity of ammunition deployed or fired at the range is unknown and firing records were not available. The primary potential MC associated with the range is lead. Secondary potential MC includes antimony, arsenic, copper, iron, nickel, zinc, and smokeless powder constituents, but is not expected to be present in measurable quantities. There is no potential for MEC.

A historical map review and SSA visit suggests that a 5-foot berm located within the southwest portion of the range was most likely the firing line. A larger hill located in the northern portion of the range was most likely the firing berm. A hill in the eastern portion of the range was used as a barrier for the nearby incinerator plant. Ammunition fired at the range would have a penetration depth less than 1 foot into the soil.

A portion of the former pistol range is within an active training area. Fencing bounds the training area and runs between the suspected firing line and target area (**Figure 3-10**). The Navy uses live ammunition and blanks in the active training area, which is generally cleaned up after use. Ammunition used in the active training area includes the following:

- 12 gauge shotgun round, "00" buck shot (26 grains [1.68 grams] of smokeless powder) - Alpha 011
- 5.56 mm North Atlantic Treaty Organization (NATO) ball round (26 grains [1.68 grams] of smokeless powder) - Alpha 059

- 7.62 mm NATO ball round, shot with M-60 machine gun or M-14 rifle (45 grains [2.91 grams] of smokeless powder) – Alpha 130, 131
- 9 mm ball round, shot with M-9 9 mm pistol (6 grains [0.39 grams] of smokeless powder) – Alpha 363

The majority of the former pistol range is overlain by the land use control (LUC) boundary of ER Program Site 10, the Sewage Treatment Plant Landfill (**Figure 3-10**). The landfill comprises approximately 18 acres and operated from 1941 until 1968. Between 1941 and 1952, the landfill received all of the household and industrial wastes generated on the base, including a large quantity of demolition debris. Sewage sludge from the nearby sewage treatment plant was placed in the landfill, including the portion covering the former Pistol Range, from 1952 until the plant's closure in 1968. It is unknown if any grading activities were conducted prior to the placement of the sewage sludge. A 2-foot vegetated soil cover and LUCs are maintained at Site 10.

The present-day CSM for the 1953 Pistol Range is shown in **Figure 3-11**. The timeline of the environmental history of the 1953 Pistol Range is summarized in **Figure 3-12**.

3.2.2 Field Activities and Data Evaluation

Site visits to the range were conducted in 2006 and 2009. Two hills were observed that were believed to be the firing line and berm. A practice grenade and a 5.56 mm blank were observed but are likely related to the active range activities and not from the former Pistol Range.

The portion of the 1953 Pistol Range located within Site 10 was reviewed in the revised Remedial Investigation (RI)/ Human Health and Risk Assessment (HHRA)/Focused Feasibility Study (FFS) (CH2M HILL, 2001a) performed for Site 10 through the ER Program. This study included the collection of soil and groundwater samples; locations are shown in **Figure 3-10**. Surface soil sample LS10-SS068 and monitoring well LS10-MW01 were located within the former Pistol Range boundary. Results of the soil and groundwater sample results are summarized in **Tables 3-1 and 3-2**, respectively.

The primary potential MC, lead, was not observed above regulatory standards within soil or groundwater. Secondary potential MCs were identified at Site 10. Unacceptable human health risks related to Site 10 were identified for arsenic, cadmium, iron, manganese, thallium, and zinc in groundwater, but no risks were identified for soil. A Baseline Ecological Risk (BERA) completed in 2001 (CH2M HILL, 2001b) concluded that potential ecological risks were low and considered to be not unacceptable. A Record of Decision (ROD) was signed in December 2003 (CH2M HILL, 2003), which implemented a long-term monitoring (LTM) program for groundwater and LUCs. Activities which disturb the existing soil cover or use groundwater in the shallow aquifer, and residential development are prohibited at Site 10. The LUC area is shown on **Figure 3-10**.

A soil cover survey was conducted in 2000 at Site 10. Waste that was approximately 4 feet thick was covered with 2 to 6 feet of soil cover. Only one soil core was collected within the Pistol Range (adjacent to the northern hill) and no waste was found. Due to the similarity between the native soil and the soil cover and that waste was not encountered, there is uncertainty as to whether the soil cover extended over the 1953 Pistol Range.

TABLE 3-1
 Historical Soil Data Collected at the 1953 Pistol Range
 Naval Amphibious Base (NAB) Little Creek, VA

Station ID		
Sample ID	Residential Soil RSLs	LS10-SS68-0001
Sample Date		02/29/00
Chemical Name		
Total Metals (MG/KG)		
Antimony	3.1	0.68 UL
Arsenic	0.39	0.53 U
Copper	310	2.4 J
Iron	5500	345
Lead	400	3.5
Nickel	160	0.53 J
Zinc	2300	5.1

Notes:

U - Not detected

J - Result is estimated below the detection limit

L - Reported result may be biased low.

Collected as part of the Site 10 Remedial Investigation within the Pistol Range boundary

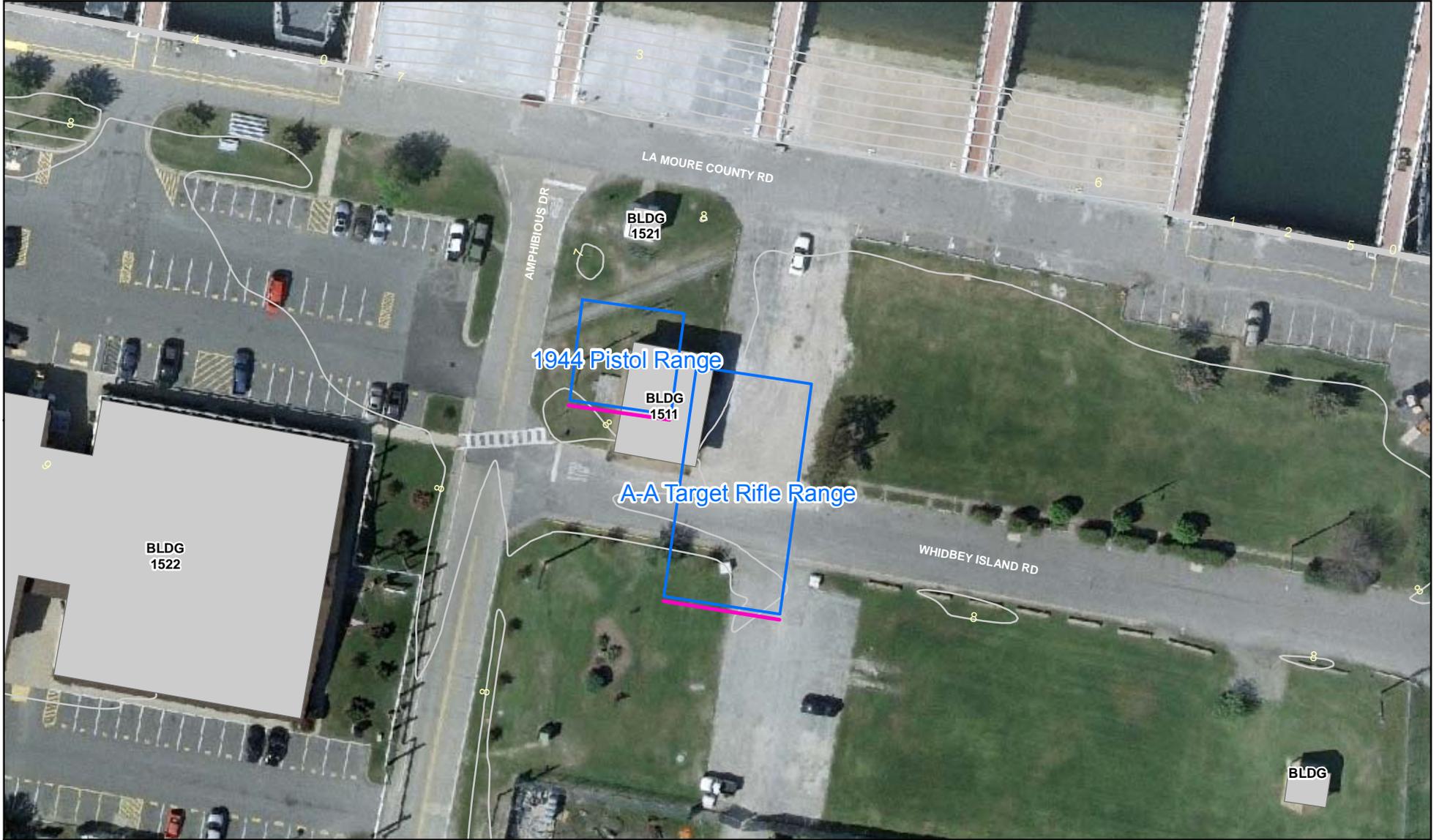
TABLE 3-2

Historical Groundwater Data Collected at the 1953 Pistol Range
 Naval Amphibious Base (NAB) Little Creek, VA

Station ID	Sample ID	Sample Date	Federal MCLs	Tap Water RSLs	LS10-MW01							
					LS10-MW01-96D	LS10-MW01-97B	LS10-MW01-97D	LS10-MW01-98B	LS10-MW01-98D	LS10-MW01-99B	LS10-MW01-00A	LS10-MW01-00B
					12/05/96	05/14/97	12/18/97	06/04/98	11/20/98	06/09/99	01/10/00	06/09/00
Chemical Name												
Total Metals (UG/L)												
Antimony	6	1.5	52 UL	2.8 J	2.7 J	2.3 U	3.1 J	4.9 U	4.9 R	3.1 U		
Arsenic	10	0.045	12.4	13.8	8.7 J	10.4	12.4	5.7 L	4.8 J	7.5 B		
Copper	1300	150	9.5 J	13 B	7.4 J	8.8 J	10.5 U	7.6 B	7 B	12.1 J		
Iron		2600	2,130 K	152	183	114 B	23,300	119 B	33.3 B	355		
Lead	15		1.3 L	1.2 K	1.6 U	1.7 U	2.1 J	2.4 U	2.4 UL	2 B		
Nickel		73	174	120	97.6	124	10 U	106	132	208		
Zinc		1100	11,100	8,030	6,740	8,870 J	7.5 U	7,760	9,440	14,800		
Dissolved Metals (UG/L)												
Antimony	6	1.5	3.5 J	1.7 B	2.4 J	3.7 J	2.6 U	4.9 U	4.9 R	3.1 U		
Arsenic	10	0.045	9.3 J	10 K	10.5	8.2 J	3.1 U	7.2 L	8.4 J	6.2 B		
Copper	1300	150	11.9 J	2 UL	5.8 U	20.9 J	10.5 U	9.1 B	6.6 J	10.2 B		
Iron		2600	641 J	127 B	228	171	4,440 J	47.5 J	25 J	35.4 B		
Lead	15		1 U	1 U	1.6 U	1.7 U	1.5 U	2.4 UL	2.4 U	1.3 U		
Nickel		73	174	103 K	100	128	10 U	104	130	186		
Zinc		1100	10,700	7,100	7,120	8,910	14.8 B	7,290	9,570	13,300		

Notes:

- U - Not detected
 - J - Result is estimated below the detection limit
 - B- Possible blank contamination
 - NA - Not analyzed
 - L - Reported result may be biased low
 - K - Reported result may be biased high
 - R - Result is considered unreliable, and therefore, not usable
- Collected as part of the Site 10 Remedial Investigation within the former Pistol Range boundary



Legend

-  Suspected Firing Line
-  Ground Elevation Contour (1 ft)
-  MMRP Site
-  Buildings



Figure 3-1
A-A Target Rifle Range/1944 Pistol Range Location Map
Site Screening Process Closeout Report
Naval Amphibious Base Little Creek
Joint Expeditionary Base Little Creek - Fort Story
Virginia Beach, Virginia

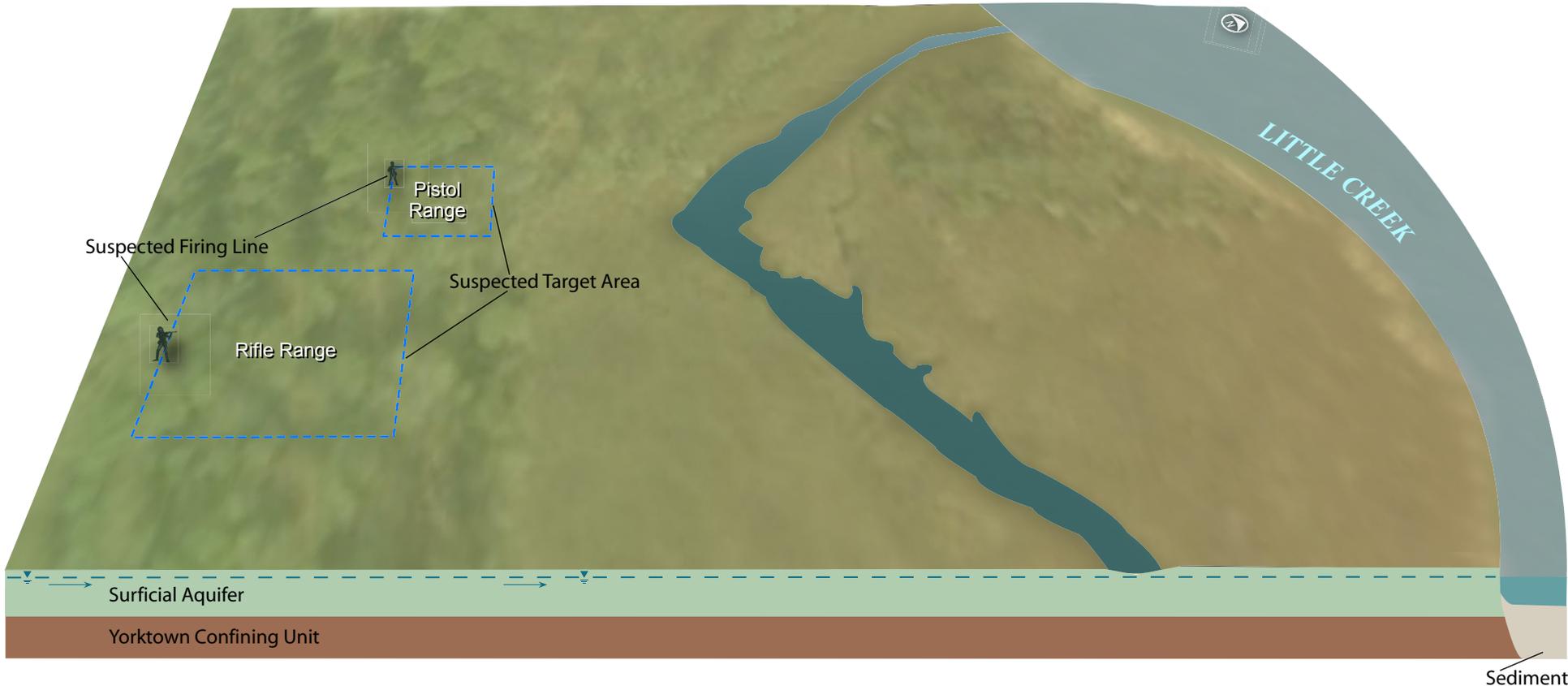
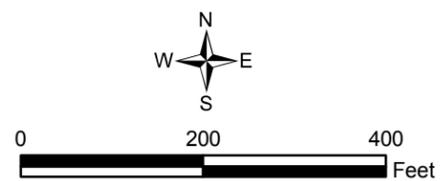


Figure 3-3
 A-A Target Rifle Range / 1944 Pistol Range Historical Conceptual Site Model
 Site Screening Process Closeout Report
 Naval Amphibious Base Little Creek
 Joint Expeditionary Base Little Creek - Fort Story
 Virginia Beach, Virginia

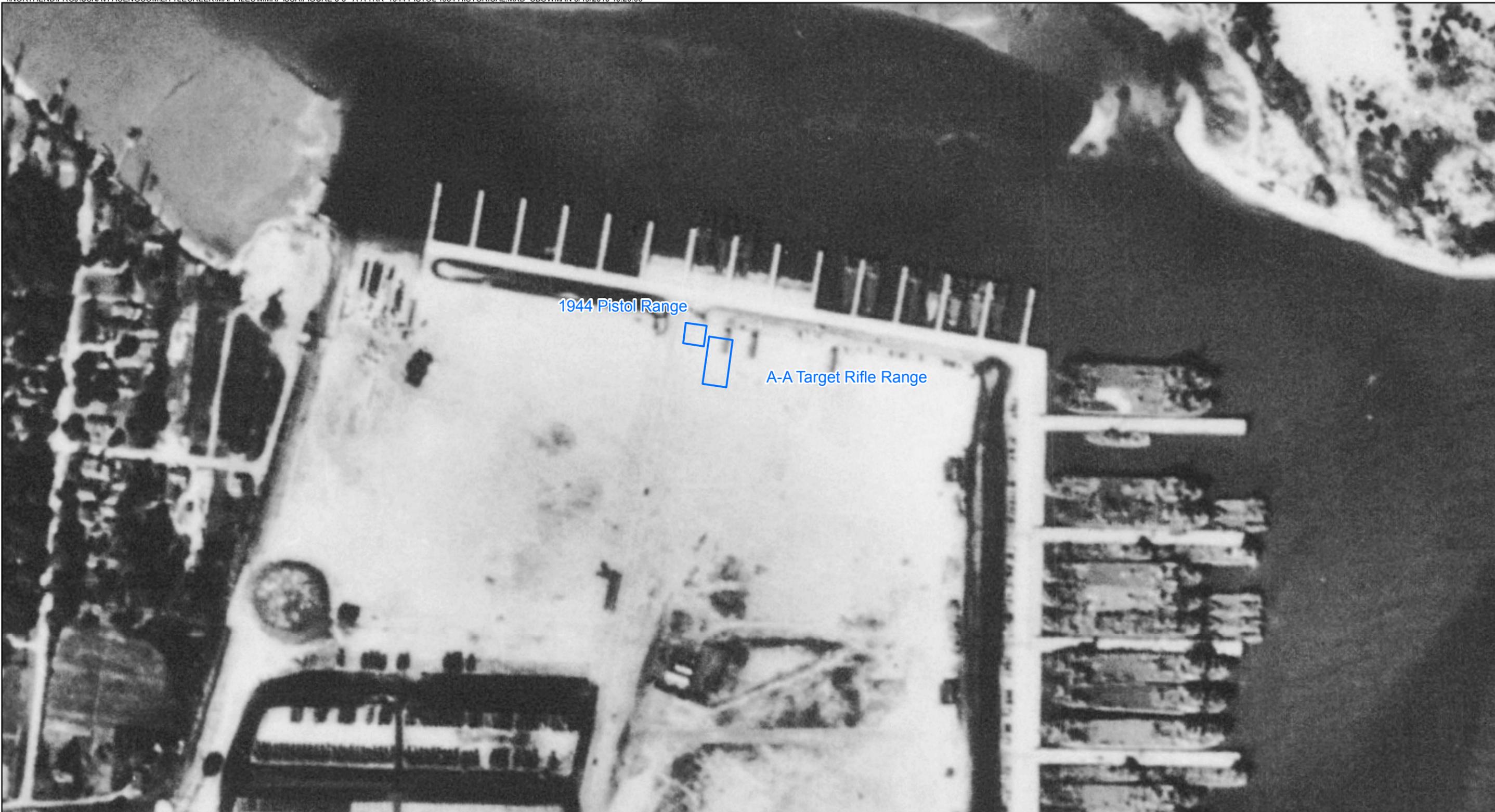


Legend
□ MMRP Site

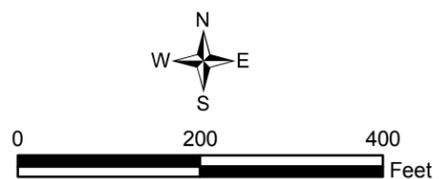


1949 Aerial Photograph

Figure 3-4
A-A Target Rifle Range/1944 Pistol Range Historical Aerial Photograph from 1949
Site Screening Process Closeout Report
Naval Amphibious Base Little Creek
Joint Expeditionary Base Little Creek - Fort Story
Virginia Beach, Virginia



Legend
□ MMRP Site



1954 Aerial Photograph

Figure 3-5
A-A Target Rifle Range/1944 Pistol Range Historical Aerial Photograph from 1954
Site Screening Process Closeout Report
Naval Amphibious Base Little Creek
Joint Expeditionary Base Little Creek - Fort Story
Virginia Beach, Virginia

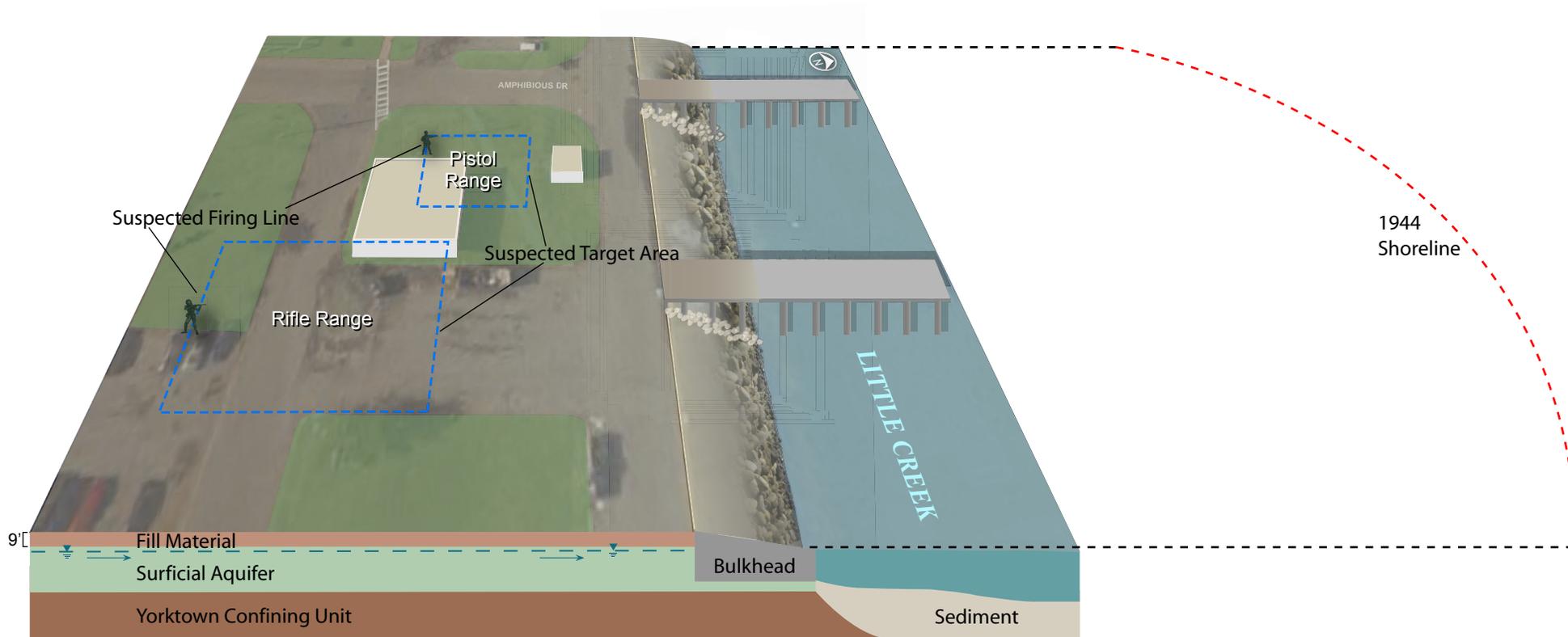
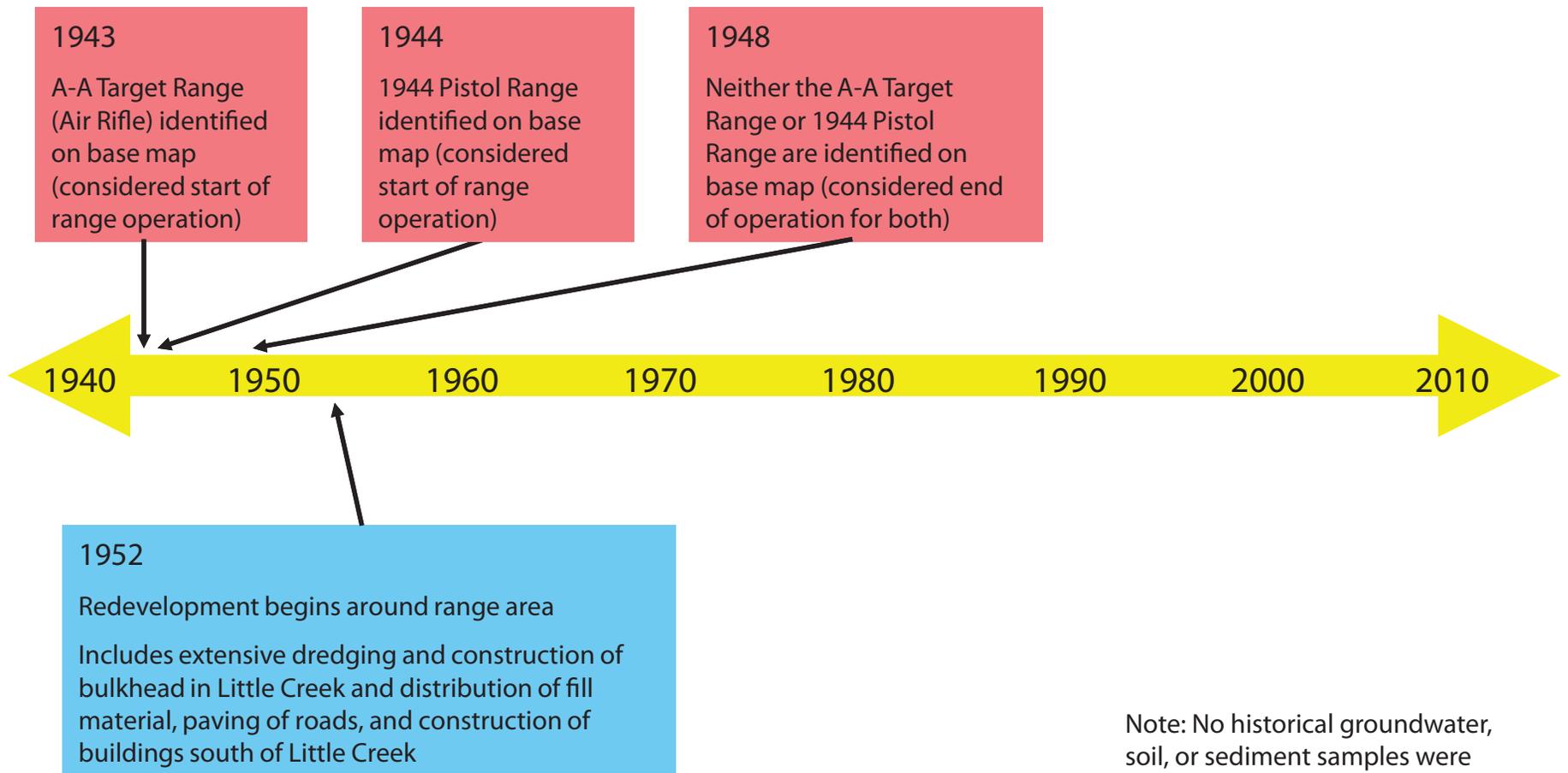


Figure 3-6
 A-A Target Rifle Range / 1944 Pistol Range Present Day Conceptual Site Model
 Site Screening Process Closeout Report
 Naval Amphibious Base Little Creek
 Joint Expeditionary Base Little Creek - Fort Story
 Virginia Beach, Virginia



Note: No historical groundwater, soil, or sediment samples were collected in the vicinity of the A-A Target Range / 1944 Range because of the extensive redevelopment

Figure 3-7
A-A Target Rifle Range/1944 Pistol Range Timeline
Site Screening Process Closeout Report
Naval Amphibious Base Little Creek
Joint Expeditionary Base Little Creek - Fort Story
Virginia Beach, Virginia



- Legend**
- Suspected Firing Line
 - Ground Elevation Contour (5 ft)
 - MMRP Site
 - Buildings

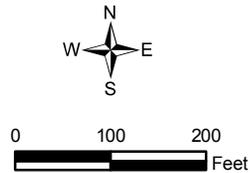


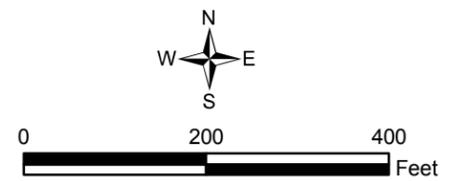
Figure 3-8
1953 Pistol Range Location Map
Site Screening Process Closeout Report
Naval Amphibious Base Little Creek
Joint Expeditionary Base Little Creek - Fort Story
Virginia Beach, Virginia



1953 Pistol Range

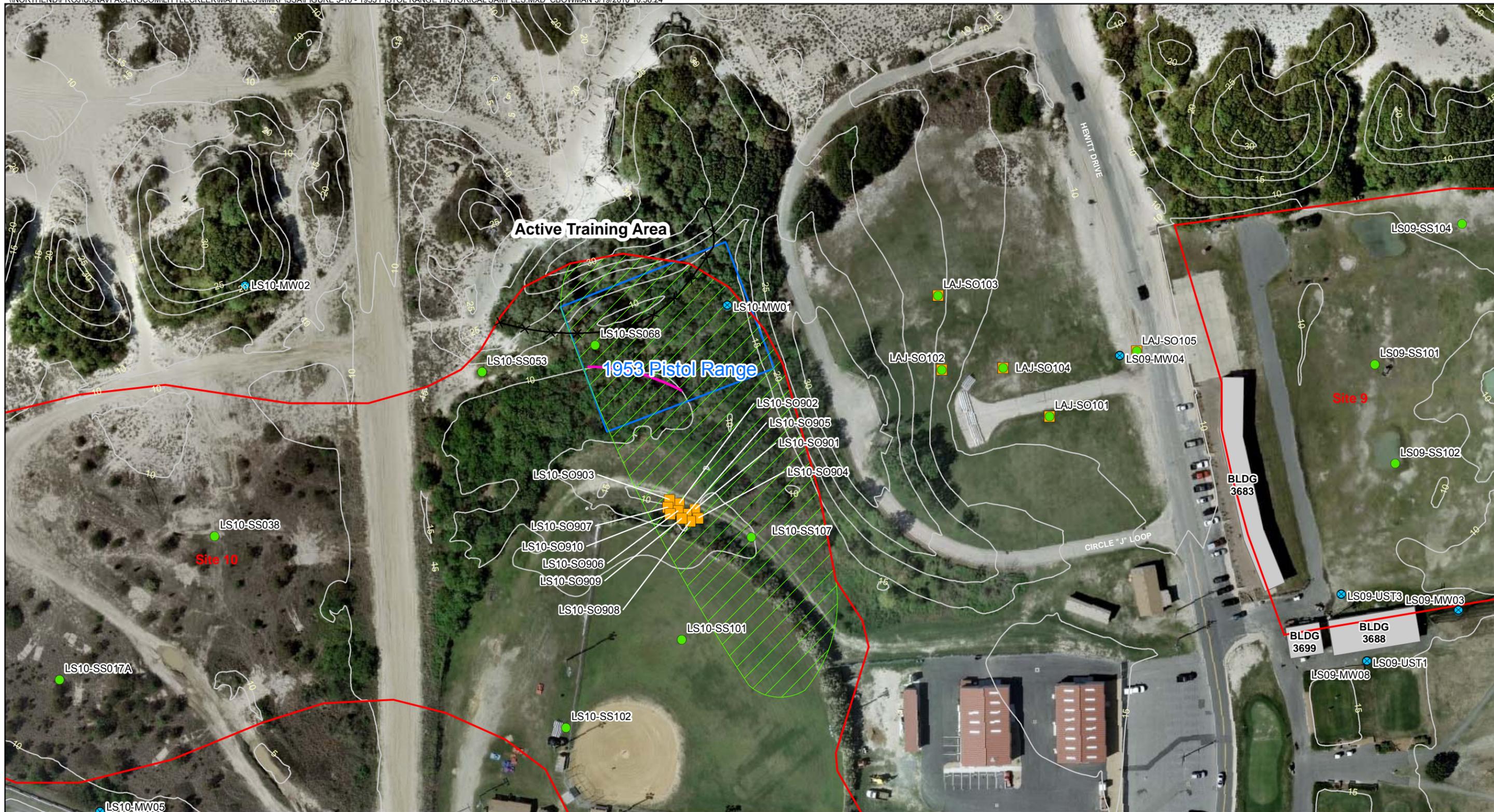
Desert Cove

Legend
□ MMRP Site



1954 Aerial Photograph

Figure 3-9
1953 Pistol Range Historical Aerial Photograph from 1954
Site Screening Process Closeout Report
Naval Amphibious Base Little Creek
Joint Expeditionary Base Little Creek - Fort Story
Virginia Beach, Virginia



- Legend**
- Groundwater Stations
 - Surface Soil Stations
 - Subsurface Soil Stations
 - Suspected Firing Line
 - Ground Elevation Contour (5 ft)
 - ✕ Fence Line
 - MMRP Site
 - ▨ Sludge Disposal
 - ▭ Site 10 Land Use Control Boundary
 - ▭ Buildings

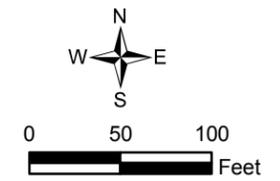


Figure 3-10
 1953 Pistol Range Historical Samples
 Site Screening Process Closeout Report
 Naval Amphibious Base Little Creek
 Joint Expeditionary Base Little Creek - Fort Story
 Virginia Beach, Virginia

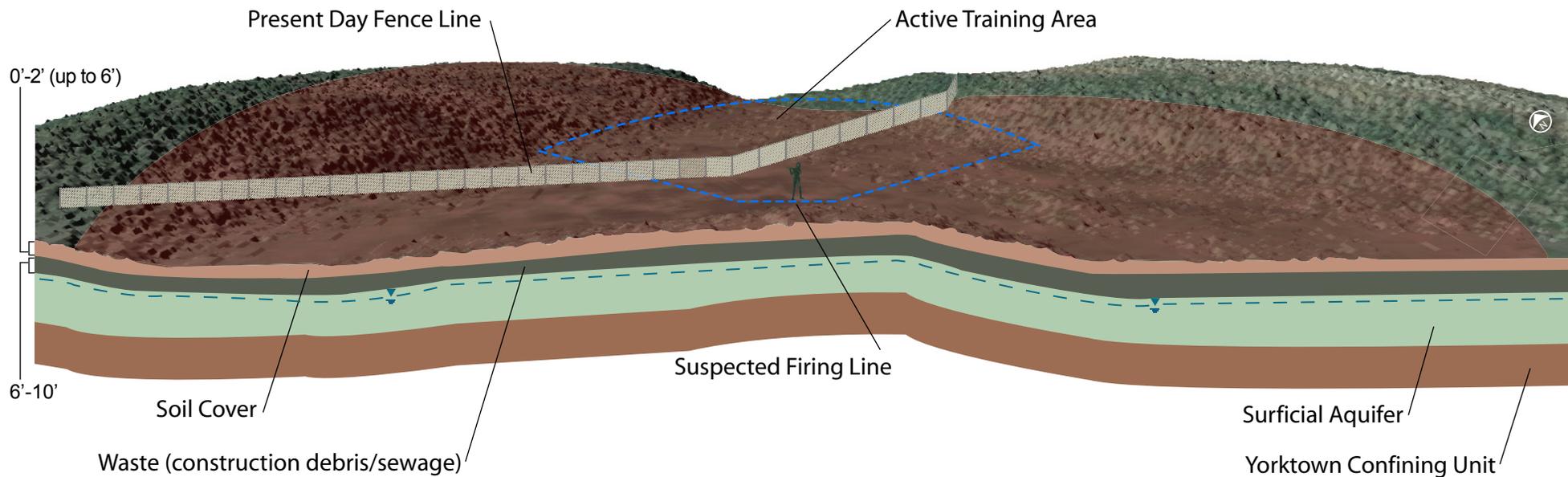


Figure 3-11
 1953 Pistol Range Conceptual Site Model
 Site Screening Process Closeout Report
 Naval Amphibious Base Little Creek
 Joint Expeditionary Base Little Creek - Fort Story
 Virginia Beach, Virginia

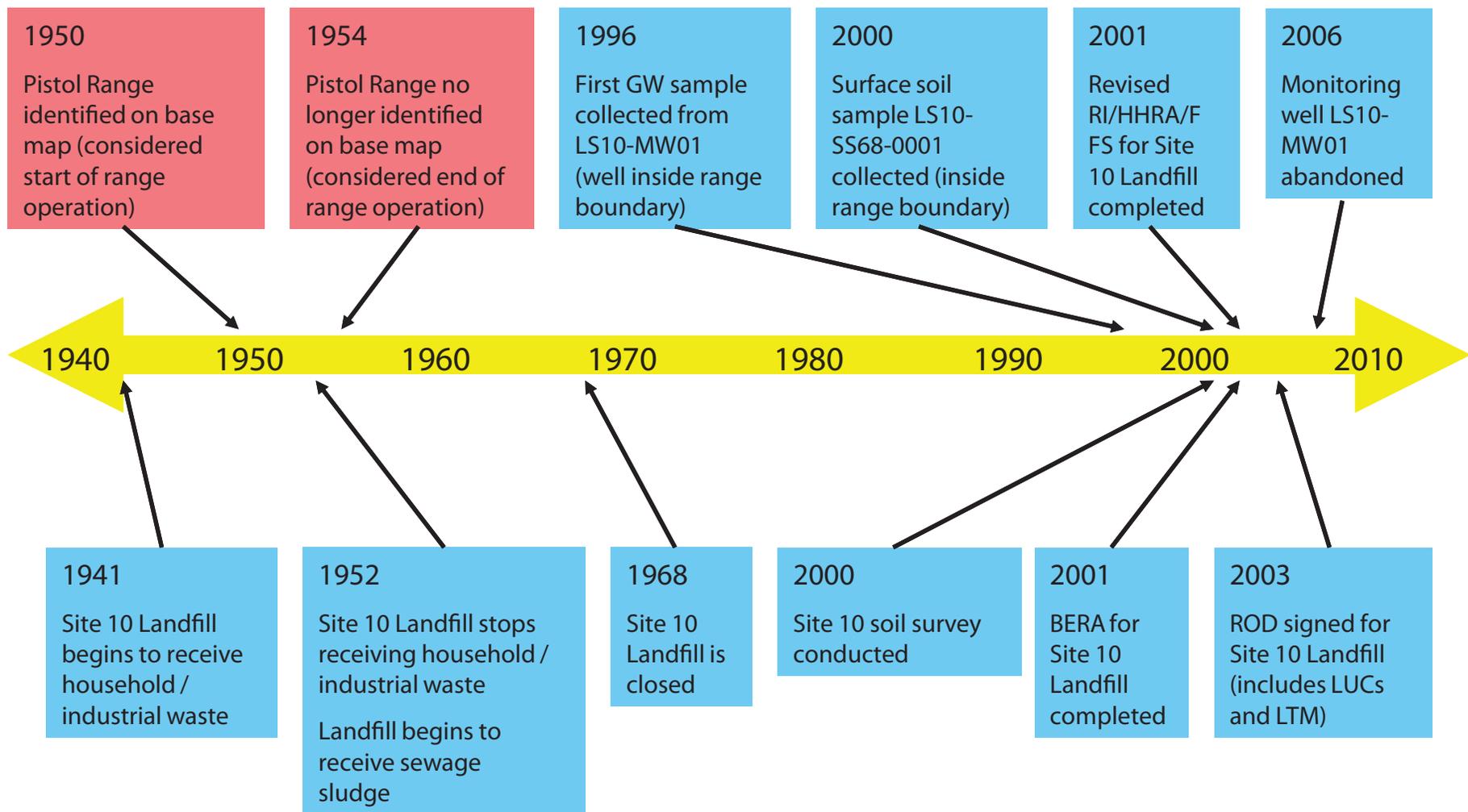


Figure 3-12
1953 Pistol Range Timeline
Site Screening Process Closeout Report
Naval Amphibious Base Little Creek
Joint Expeditionary Base Little Creek - Fort Story
Virginia Beach, Virginia

Conclusions and Recommendations

Based on the data and findings obtained for the A-A Target Rifle Range, the 1944 Pistol Range, and the 1953 Pistol Range, further investigation is not necessary for these SSAs. Each SSA should be closed out under CERCLA.

4.1 A-A Target Rifle Range/1944 Pistol Range

The 1942 pre-construction plan for the 1944 Pistol Range shows that the direction of fire was northwards towards a 4-foot berm and Little Creek. At the time of range operation, the Little Creek shoreline was approximately 750 and 630 feet north of the Rifle Range and Pistol Range, respectively. Since this time, the area including and surrounding the Rifle Range and Pistol Range was extensively redeveloped. Sediments from Little Creek were dredged and native soils were displaced and replaced with fill material for the construction of a bulkhead, buildings, and for the paving of roads.

Since the ammunition fired at these ranges has a penetration depth less than 1 foot bgs, and the base of the fill material from the redevelopment activities most likely ranges from 1 to 5 feet bgs, MC is not likely present. Therefore, based on the results of the desktop evaluation; SSA visits; Navy guidance; and professional judgments of USEPA Region 3, the VDEQ, and the Navy; the A-A Target Rifle Range and the 1944 Pistol Range SSAs do not pose a threat or potential threat to public health, welfare, or the environment, and should be removed from further study.

4.2 1953 Pistol Range

The former 1953 Pistol Range is now overlain by an active training area and the LUC boundary for ER Program Site 10, Sewage Treatment Plant Landfill. Although spent ammunition at the active training area is generally cleaned up after use, during a SSA visit spent ammunition likely related to active training was identified on the former Pistol Range. Landfill contents, including sewage sludge from the nearby sewage treatment plant was placed within the former Pistol Range SSA boundary.

The ER Program process for Site 10, including a RI, HHRA, and BERA, were completed and did not identify any human health or ecological risks associated with lead (primary potential MC) or secondary potential MC. An FFS and ROD were completed and a LTM program and LUCs (prohibitions on intrusive activities in soil cover, residential development, and shallow aquifer groundwater withdrawal) are maintained at Site 10. The LUCs boundary covers the majority of the former Pistol Range.

Therefore, based on the results of the desktop evaluation; SSA visits; Navy guidance; the presence of a soil cover; Site 10 LTM groundwater results; establishment of LUCs at Site 10; overlap with an active training range; and professional judgments of USEPA Region 3, the VDEQ, and the Navy; the 1953 Pistol Range SSA does not pose a threat or potential threat to public health, welfare, or the environment, and should be removed from further study.

SECTION 5

References

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