Appendix D

Technical Memorandum (Records Review January 2016)

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US Army Corps of Engineers®

APPENDIX D

TECHNICAL MEMORANDUM

FINAL

Remedial Investigation, Feasibility Study, Proposed Plan and Decision Document at the Former Camp Hero, Montauk, New York

Prepared for:

U.S. Army Corps of Engineers, New York District
26 Federal Plaza
New York, New York, 10278

and

U.S. Army Corps of Engineers, New England District
626 Virginia Road
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AECOM Project No: 60443903

January 2016

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FINAL TECHNICAL MEMORANDUM

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Former Camp Hero, Montauk, New York**

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Prepared under:

Contract Number: W912DR-13-D-0016-BD01

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ACRONYMS AND ABBREVIATIONS

ACWS	Aircraft Control and Warning Squadron
AOC	Areas of Concern
AST	Aboveground Storage Tank
bgs	Below Ground Surface
CAMP	Community Air Monitoring Plan
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CWS	Community Water Supplies
DER	Division of Environmental Remediation
DD	Decision Document
DoD	Department of Defense
DPT	Direct Push Technology
FUDS	Formerly Used Defense Site
FS	Feasibility Study
µg/kg	Micrograms per Kilogram
mg/kg	Milligrams per Kilogram
MCL	Maximum Contaminant Levels
NCWS	Non-Community Water Supplies
NY	New York
NYCRR	New York Codes, Rules and Regulation
NYSDEC	New York State Department of Environmental Conservation
NYSDRHP	New York State Department of Recreational and Historic Preservation
OPC	Office of Pollution Control
PCB	Polychlorinated Biphenyls
POC	Point of Contact
PP	Proposed Plan
ppm	Parts Per Million
PSL	Project Screening Levels
PWS	Performance Work Statement
QAPP	Quality and Assurance Project Plan
RI	Remedial Investigation
RSL	Regional Screening Levels
SAP	Sampling and Analysis Plan
STARS	Spills, Technology and Remediation Services
SVOC	Semi-Volatile Organic Compound
TSCA	Toxic Substances Control Act

USACE	U.S. Army Corps of Engineers
UST	Underground Storage Tank
VOC	Volatile Organic Compound
WP	Work Plan

1.0 INTRODUCTION

1.1 Purpose of Technical Memorandum

United States Army Corps of Engineers (USACE) issued Contract No. W912DR-13-D-0016 to complete a Remedial Investigation (RI), Feasibility Study (FS), Proposed Plan (PP) and Decision Document (DD), at Camp Hero, a Formerly Used Defense Site (FUDS); the scope of the project was described in the Final Performance Work Statement (PWS) dated 18 August 2015.

The purpose of this Technical Memorandum is to present the findings of the records review task and outline the proposed RI sampling approach at each of the areas of concern (AOCs). Following acceptance of this Technical Memorandum by the project stakeholders, a RI Work Plan (WP) will be prepared to present a detailed RI approach at the AOCs. The RI WP will include a Sampling and Analysis Plan (SAP) with a Quality Assurance Project Plan (QAPP) and a Community Air Monitoring Plan (CAMP).

The areas of concern in the PWS were initially identified as areas that required further investigation in the Camp Hero Feasibility Study, Hazardous Materials Survey prepared by New York State Parks contractor, Cashin Associates (hereinafter, "Cashin Report") in 1996. These sites included former waste disposal areas, former coal storage areas, abandoned drum locations, and former storage tanks. Some of these items or structures have been removed or addressed during previous decommissioning or park development activities.

Additional sites were added to the Cashin Report list of sites as a result of the records review at Camp Hero. The records review identified any site that resulted from the Department of Defense (DoD) use of Camp Hero not identified in previous investigation.

The RI phase of the project is limited to the investigation of these sites (i.e. no remediation); however, the exception will include proposed disposal of empty containers at the Camp Hero State Park bluffs.

1.2 Site History

The former Camp Hero, consisting of approximately 469 acres, is located on the extreme eastern tip of the south fork of Long Island, New York, approximately 5 miles east of the Village of Montauk (Figure A-1 in Appendix A). The Camp is bounded by Montauk Highway (Route 27) to the north, the Atlantic Ocean to the south, Montauk Point State Park to the east, and an undeveloped nature preserve owned by the state to the west. The Camp is located in Suffolk County, NY.

The former Camp Hero, named in honor of Major General Andrew Hero, was established in early 1942 as a Coastal Defense Installation to defend the approach to New York Harbor. Three self-sufficient batteries (Battery 112, 113, and 216) and supporting facilities (which included barracks, mess halls, hospital facilities, a motor repair shop, a recreation facility, sentry boxes, and water supply and sewage facilities) were constructed between 1942 and 1946. A total of 600 enlisted men and 37 officers were stationed at Camp Hero during World War II, it's most active period.

Battery 216 (identified as Bunker 216 on maps) contained two 6-inch shielded guns that were delivered to the battery in January 1943. Battery 113 (identified as Bunker 113 on maps) consisted of two Navy 16-inch casemated guns that were completed on 5 June 1943. In addition to the two Batteries, 37mm weapons and 90mm and .50-caliber antiaircraft weapon platoons were located at the southern bluff of Camp Hero to protect the Camp from air attack. The Camp's weaponry was periodically fired to practice over water but was never fired as a result of an act of hostility.

The Camp was placed on inactive status on 31 July 1947 and ultimately declared surplus by the Department of the Army on 31 December 1949. Simultaneously a portion of the former Camp Hero lands was also transferred to the Department of the Air Force for an aircraft control and warning station. On 24 January 1951, the former Camp Hero was withdrawn from surplus and designated for use as a firing range and field exercise area for antiaircraft artillery from Fort Totten, NY. Arrangements were made for the permanent Army cadre at the Camp and 90mm and quad .50-caliber antiaircraft artillery began firing exercises from firing positions established in the southern bluff overlooking the Atlantic Ocean.

In 1952 the Air Force property was renamed the Montauk Air Force Station and was occupied by the Aircraft Control and Warning Squadron (ACWS). Training continued using 90mm and 120 mm guns, 3.5-inch rockets, and .50 caliber guns occurred until 1957. The facility was inactive until October 1958 when the ACWS was re-designated as the Radar Squadron with a new mission to provide surveillance data of air traffic in the area. In order to accomplish this mission, an advanced Specific Frequency Diversity Search Radar was built in late 1960.

The facility was closed in 1982. Between 1974 and 1984 all site lands were transferred to State, Local, and other Federal agencies. The current Camp Hero State Park consists of approximately 415 acres and is owned by the State of New York (NY), New York State Parks Commission. The remaining acres were transferred to the Town of East Hampton and the Montauk Historical Society Lighthouse Commission and are not addressed as part of this project. The future land use is anticipated to remain the same as the current state park use (USACE, 2003).

2.0 SITE TOPOGRAPHY, SURFACE WATER, GEOLOGY AND HYDROGEOLOGY

2.1 Topography and Surface Water Drainage

Montauk Point is at the eastern extremity of the Ronkonkoma moraine. The moraine forms a ridge of coalescing hills traversing Long Island from west to east and marks the maximum advance of an ice sheet during late Pleistocene time. The land surface, characterized by knob-and-kettle topography, ranges in altitude from sea level to about 100 feet above sea level. Steep wave-cut bluffs rise abruptly from 30 to 80 feet above narrow rock strewn beaches along the south shore.

More than 50 kettle holes of various sizes and depth are occupied by swamps and ponds. Most of these are readily discernible in the field and on aerial photographs. The kettle holes were occupied by detached masses of ice, which were partly or entirely covered by glacial deposits. Melting of the ice blocks and collapse of surrounding material left depressions, or kettle holes in the surface.

Most of the surface runoff is through four small un-named streams. Three of the streams flow northwestward to Oyster Pond; the fourth flows southward to the Atlantic Ocean. Much of the area precipitation runs off in temporary channels and in gullies to the Atlantic Ocean, to Block Island Sound, or into kettle holes.

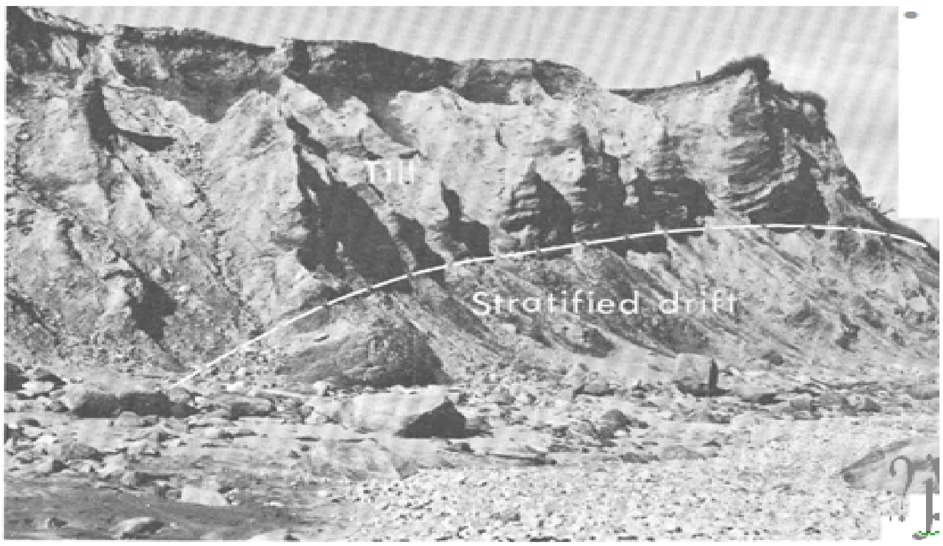
2.2 Geology

The Montauk Point area is underlain by crystalline bedrock of Pre-cambrian age upon which rest, in succession, un-consolidated deposits of Cretaceous, Pleistocene, and Recent age. The bedrock probably consists of gneiss and schist. Its surface is about 1,000 to 1,300 feet below sea level and slopes southeastward about 80 feet per mile.

The Pleistocene deposits of Long Island are end products of the advance and melting of several ice sheets during the Pleistocene Epoch. Because of the complex geologic history of these deposits, ·which are important sources of groundwater, a summary of the general character of glacial deposits and of the sequence of glacial units in Long Island is given below, followed by a description of the strata in the area.

Glacial deposits may be divided into two principal types: (1) till and (2) stratified drift. Till is predominantly composed of unsorted or poorly sorted deposits of boulders, gravel, sand, silt and clay, dropped directly from melting ice. Till deposited as an irregular surficial mantle is called ground moraine.

A ridge composed chiefly of till and marking the former front of an ice sheet is called an end moraine. Stratified drift is deposited by meltwater streams as out- wash deposits, in lakes as glaciolacustrine deposits, and in the sea as glaciomarine deposits. Stratified drift is generally distinctly bedded and well graded, owing to the sorting action of the water from which it is deposited. The beds may range in texture from gravel to clay size, depending on the velocity of the water and the size of the source material (USGS, 1960).



Out-crop at Camp Hero showing till composed of interbedded silt and clay above stratified drift (USGS, 1960).

2.3 Hydrogeology

Groundwater is the only source of water supply at Camp Hero. The groundwater is contained in the upper 200 feet of deposits of late Pleistocene age, which are broadly divided into an upper unit of undifferentiated till and stratified drift and a lower unit of stratified drift.

Fresh water in the principal aquifer, which is in the lower unit, is a lens- shaped body, which lies above salty water containing as much as 11,300 parts per million (ppm) of chloride. The fresh water is under artesian pressure and has a head ranging from about sea level to 3.5 feet above sea level.

After seeping through the soil zone the water percolates downward through the pore spaces in the sand, gravel, silt, and clay to the main zone of saturation in the lower part of the undifferentiated deposits of till and stratified drift. The upper surface of the zone of saturation is called the water table. Scattered perched water bodies are found above the main water table, owing to lenses and beds of silt and clay, which retard downward movement of water.

Perched water bodies are generally small isolated bodies of water temporarily stored above the main water table in scattered lenses of permeable material underlain by clay and silt. During the drilling of previous monitoring and observation wells at Camp Hero, water was reported at depths ranging from about 5 to 25 feet below ground surface (bgs) or about 35 to 100 feet above sea level.

These altitudes, which are as much as 40 to 95 feet above the water level in the principal aquifer, are a strong indication of the existence of perched water bodies (USGS, 1960).

3.0 RECORDS REVIEW SUMMARY

The following sections summarize the results of the records reviewed including the agencies visited, personnel interview, and the documents reviewed. The archive research for this technical memorandum has been completed; however, if any additional information or documentation is located, it will be used to further refine the investigation and will be included in the Remedial Investigation Report.

The Division of Environmental Remediation (DER), NY State Department of Environmental Conservation (NYSDEC) – A site visit to the NYSDEC DER office in Stony Brook, New York was conducted on 17 November 2015 to inspect and obtain copies of storage tank closure documentation, spill reports and assessments, and spill report closure documentation. The Spill Reports and associated documentation listed in **Table 3-1** were obtained and reviewed.

Table 3-1: NYSDEC DER Spill Report Cases for Camp Hero

Spill Report Case Number	Date	Description of Location
94-06313	08/09/1994	Drum Storage/Staging Area
94-06038	08/03/1994	Battery 112, UST #36, 37
94-03067	06/01/1994	Former Building 203
94-03066	06/01/1994	Drum Storage/Staging Area
93-11848	01/06/1994	Camp Hero
93-12037	11/18/1993	Battery 113, UST #9
93-12038	11/18/1993	Building 201, UST #20
93-09575	11/08/1993	Former Building 203
93-11689	11/08/1993	Building 3001, UST #26
93-11688	11/03/1993	Building 20, UST #21
93-11690	11/03/1993	Camp Ground, UST #39
93-09098	10/25/1993	Former Building 36, UST #24A, 24B, 25
93-11687	10/25/1993	Battery 113, UST #8
90-10990	01/13/1991	Montauk Point Camp Hero State Park

All the spill cases listed in **Table 3-1** at Camp Hero have been closed by the NYSDEC DER. It was noted by Mr. Acampora in a meeting in November 2015 that the tank construction may have reduced the potential of a release from the UST to the environment. In some cases, localized impacted soil was removed from the underground storage tank (UST) excavation and then closed as witnessed by DER personnel.

Mr. Acampora indicated that spill report number 93-09575, at the Camp Hero Power Plant (Building 203), was a significant incidents which included two 25,000 gallon fuel tanks. A 1,000 gallon spill resulting from trespassers opening a valve on a former 200,000 gallon #2 Diesel Range Oil tank was also noted in this area. The release traveled via surface water to a sensitive environment at off-site Oyster Bay which resulted in a remedial action at Camp Hero.

All USTs and aboveground storage tanks (ASTs) identified in the records search of NYSDEC DER and a description of the storage tank locations is provided on **Table 3-2**. A figure showing the location of all USTs and ASTs is provided as **Attachment 1** of this Technical Memorandum. All records collected in the records search will be incorporated into the RI WP.

Suffolk County Bureau of Hazardous Materials Storage, Office of Pollution Control (OPC) – The Suffolk County OPC has conducted storage tank inspections at Camp Hero since the early 1980s. Mr. Walter Petrule, Suffolk County OPC, was interviewed over the phone regarding available storage tank files available for review. Mr. Petrule was knowledgeable of the history of storage tanks at Camp Hero and had spent some effort correlating former tank numbers with locations at Camp Hero. A site visit to the OPC office in Farmingville, NY was conducted on December 1, 2015 to inspect and obtain copies of storage tank documentation. Records of storage tanks were obtained from the OPC and reviewed. All USTs and ASTs identified in the records search at the Suffolk County OPC and a description of the location is provided on **Table 3-2**. A figure showing the location of all USTs and ASTs is provided as **Attachment 1** of this Technical Memorandum.

As shown on **Table 3-2**, there were 49 USTs and ASTs removed at Camp Hero plus 5 that are currently in use. There are six suspected USTs at Camp Hero without documentation or information (Tanks A through F), identified through a review of archive drawings of Camp Hero and previous environmental assessment. The locations of the former USTs and suspected USTs are shown on a map in **Attachment 1**. The proposed RI sampling activities are discussed in Section 4.

Table 3-2: Summary of Hazardous Material Storage Tanks

Tank #	Tank Type	Location	Tank Status	CERCLA Status	Removal Documentation
1	UST	Battery 113, Battery Dunn	Removed	Closed	NYSDEC-Region 1 Tank Removal Report
2	UST	Battery 113, Battery Dunn	Removed	Closed	NYSDEC-Region 1 Tank Removal Report
3	AST	Battery 113, Battery Dunn	Removed	No Release	OCP Tank Compliance Inspection Data Sheet

Table 3-2: Summary of Hazardous Material Storage Tanks

Tank #	Tank Type	Location	Tank Status	CERCLA Status	Removal Documentation
4	AST	Battery 113, Battery Dunn	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
5	AST	Battery 113, Battery Dunn	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
6	AST	Battery 113, Battery Dunn	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
7	AST	Battery 113, Battery Dunn	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
8*	UST	Battery 113, Battery Dunn	Removed	Closed	NYSDEC-Region 1 Tank Removal Report
9*	UST	Battery 113, Battery Dunn	Removed	Closed	NYSDEC-Region 1 Tank Removal Report
10	UST	Building #104T - Transmitter	Removed	Closed	NYSDEC-Region 1 Tank Removal Report
11	AST	Building #104T - Transmitter	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
12	AST	Former Building #203	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
13	AST	Former Building #203	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
14	AST	Former Building #203	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
15	AST	Former Building #203	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
16*	UST	Former Building #203	Removed	Closed	NYSDEC-Region 1 Tank Removal Report
17*	UST	Former Building #203	Removed	Closed	NYSDEC-Region 1 Tank Removal Report
18*	UST	Former Building #203	Removed	Closed	NYSDEC-Region 1 Tank Removal Report
19	UST	Former Building #203	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
20*	UST	Building # 201 and Former Building #203	Removed	Closed	NYSDEC-Region 1 Tank Removal Report
21*	UST	Building #20	Removed	Closed	NYSDEC-Region 1 Tank Removal Report
22	AST	Building #20	Removed	No Release	OCP Tank Compliance Inspection Data Sheet

Table 3-2: Summary of Hazardous Material Storage Tanks

Tank #	Tank Type	Location	Tank Status	CERCLA Status	Removal Documentation
23	AST	Former Building #203	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
24A*	UST	Former Building #36 (Former Fueling Station)	Removed	Closed	NYSDEC-Region 1 Tank Removal Report
24B*	UST	Former Building #36 (Former Fueling Station)	Removed	Closed	NYSDEC-Region 1 Tank Removal Report
25*	UST	Former Building #36 (Former Fueling Station)	Removed	Closed	NYSDEC-Region 1 Tank Removal Report
26*	UST	Building 3001 - AT&T	Removed	Closed	NYSDEC-Region 1 Tank Removal Report
27	AST	Building #9	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
28	AST	Building 105	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
29	AST	Building 105	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
30	UST	Building 2010	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
31	AST	Building #33 - Motor Pool	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
32	UST	HILL 72	Removed	Closed	NYSDEC-Region 1 Tank Removal Report
33	UST	HILL 72	Removed	Closed	NYSDEC-Region 1 Tank Removal Report
34	UST	Building F100C	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
35	AST	N/A	Removed	Unknown	OCP Tank Compliance Inspection Data Sheet
36*	UST	Battery 112	Removed	Closed	NYSDEC-Region 1 Tank Removal Report
37*	UST	Battery 112	Removed	Closed	NYSDEC-Region 1 Tank Removal Report
38	UST	Plotting-Switchboard Room for Battery 113 & 112	Removed	Closed	NYSDEC-Region 1 Tank Removal Report
39*	UST	Trailer Park	Removed	Closed	NYSDEC-Region 1 Tank Removal Report
40	UST	HILL 83	Removed	No Release	OCP Tank Compliance Inspection Data Sheet

Table 3-2: Summary of Hazardous Material Storage Tanks

Tank #	Tank Type	Location	Tank Status	CERCLA Status	Removal Documentation
41	UST	HILL 83	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
42	UST	HILL 83	Removed	Closed	NYSDEC-Region 1 Tank Removal Report
43	UST	HILL 83	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
44	UST	Plotting Room for Battery 113	Removed	Closed	NYSDEC-Region 1 Tank Removal Report
45	UST	Battery 216	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
46	UST	Battery 216	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
47	UST	Location has not been confirmed through the record review.	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
48	UST	Location has not been confirmed through the record review.	Removed	No Release	OCP Tank Compliance Inspection Data Sheet
49	UST	Building #3001 - AT&T building	In use	N/A	NYS State Park Use
50	UST	Building #33 - Motor Pool	In use	N/A	NYS State Park Use
51	AST	Location has not been confirmed through the record review.	Removed	Closed	OCP Tank Compliance Inspection Data Sheet
52	drum storage	Building #33 - Motor Pool	In use	N/A	NYS State Park Use
53	AST	Building #33 - Motor Pool	In use	N/A	NYS State Park Use
54	AST	Building #33 - Motor Pool	In use	N/A	NYS State Park Use
A**	Unknown	Building #20 (Cashin #14)	Unknown	Unknown	These tanks were noted in the Cashin Report; however, the existence of the tanks or locations has not been confirmed through the Records Review. See Section 4.4 for additional information.
B**	Unknown	Building #22 (Cashin #22)	Unknown	Unknown	
C**	Unknown	Building # 2 (Cashin #24)	Unknown	Unknown	
D**	Unknown	Building #104R (Cashin #33)	Unknown	Unknown	
E**	Unknown	Building 3001 – AT&T	Unknown	Unknown	
F**	Unknown	Pump House, near Battery 216	Unknown	Unknown	

*- Tanks associated with reported spills
**- Additional suspected former tank locations

Camp Hero Archive Drawings, NY State Office of Parks, Recreation and Historic Preservation, Long Island Region, West Babylon, NY- Mr. August Muff, R.A., provided an electronic version of approximately 700 historic drawings of various electrical, mechanical, structural, architectural, utilities layout, and site plans for Camp Hero. These drawings were reviewed for evidence of undocumented petroleum or hazardous materials and storage tanks that may still exist at Camp Hero. All USTs and ASTs identified in the records search at the NYSDEC DER and a description of the storage tank location were included on **Table 3-2**. A figure showing the location of all USTs and ASTs is provided as **Attachment 1** of this Technical Memorandum.

Suffolk County Department of Health Services, Office of Water Resources-The Office of Water Resources is empowered by the Federal Safe Drinking Water Act, and the New York State and Suffolk County Sanitary Codes to enforce regulations controlling 39 Community Water Supplies (CWS) and 254 Non-Community Water Supplies (NCWS) in Suffolk County. The Office of Water Resources obtains a water sample from these supplies yearly and analyzes for a comprehensive suite of analysis. This drinking water analysis was requested for the two former CWS wells that existed at Camp Hero and the NCWS at the Montauk Light house. Copies of laboratory analysis available from the early 1980’s (when military activities formerly ceased) and recent analysis conducted in 2010 were requested for review. The Office of Water Resources does not have comprehensive analytical results for these wells prior to the 1980s.

A telephone interview was conducted with Ms. Susan Riley of the Office of Water Resources regarding her knowledge of the water quality at these wells. Ms. Riley indicated that from her review of the database records, one of the CWS wells that existed at Camp Hero had exceeded the drinking water maximum contaminant levels (MCLs) for arsenic recently before being abandoned and both supply wells were relatively high in content for secondary drinking water MCLs manganese and iron. The two CWS wells that had existed at Camp Hero have been disconnected and the community has been connected to the Suffolk County Water Authority municipal water.

The chemical analysis documentation for these wells and the supply well at the Montauk Light house has been obtained from Suffolk County by AECOM staff on Long Island. Review of the data confirms the information provided on the phone by Ms. Riley.

4.0 TECHNICAL APPROACH

4.1 Regulatory Framework

All RI work will be conducted in accordance with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the FUDS ER-200-3-1 and consistent with Chapter 6, NY Codes, Rules and Regulations (NYCRR) Part 375-1, General Remedial Program Requirements. For those areas of this project strictly addressing releases of fuels from used storage tanks or storage tanks removed by USACE, the following NY State Regulation and guidance will be applied: 6 NYCRR 613.9 (b), Closure of Tanks Permanently Out of Service and NYSDEC DER-10, Technical Guidance for Site Investigation and Remediation. All the AOCs are regulated by the NYSDEC DER since this RI is conducted under CERCLA.

Suspected UST sites were identified in the Cashin Report and as part of the records review and have been included as AOCs as part of this Remedial Investigation. These suspected USTs have not been previously investigated; therefore, if a petroleum release is confirmed through this investigation, the NYSDEC DER Oil Spill Response Program must be notified and spill number will be assigned. The regulatory status of these sites will be summarized in the RI documents and additional technical documents (i.e. Site Investigation, Corrective Action Plan) under a different regulatory program.

All soil samples at petroleum storage tank AOCs are proposed for analysis of NYSDEC Spills, Technology, and Remediation Services (STARS) list for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals in accordance with DEC policy CP-51. Groundwater samples at petroleum tank AOCs are proposed analysis of VOCs, SVOCs, and metals. Soil and groundwater analysis at non-petroleum AOCs are proposed for analysis of the more comprehensive SW-846 analytical lists and will be detailed for each AOC in the RI WP, SAP, and QAPP.

The project screening levels (PSLs) for soil will be based on the more stringent of the following criteria: New York State Department of Environmental Conservation (NYSDEC), 6 NYCRR Part 375, 14 December 2006, NYSDEC, Commissioner Policy (CP-51) / Soil Cleanup Guidance, 21 October 2010, and/or USEPA Regional Screening Levels (RSL) for Residential Soil (2015).

The PSLs for groundwater will be based on the more stringent of the following criteria: USEPA MCLs, and either NYSDEC Technical & Operational Guidance Series, 1.1.1 Ambient Water Quality Standards and Guidance Values, June 1998, April 2000 Addendum, June 2004 Addendum, or USEPA Regional Screening Level for Tap water (November 2015). All PSLs will be reviewed and detailed in the RI WP QAPP.

4.2 Phased Approach

The RI technical approach will consist primarily of two phases of investigation, a Phase 1 and a Phase 2, which are detailed in Sections 4.2.1 and 4.2.2, respectively. The Phase 1 investigation is intended to either confirm the presence, or confirm the absence, of suspected CERCLA DOD waste at an AOC. Based on Phase 1 findings confirming a CERCLA DOD waste at an AOC, a Phase 2 investigation will be conducted to define the nature and extent of CERCLA DOD waste at an AOC.

Based on prior investigation results, Building 2010 and Building F100C have been identified with lead in soil samples exceeding regulatory levels. These two AOCs will move immediately to the proposed Phase 2 investigation activities.

Sampling details in this Final Technical Memorandum are a preliminary estimate. The specific sampling frequency, quantity, and locations will be finalized in the RI WP. For permanent monitoring wells proposed and installed in Phase 2 activities, two rounds of groundwater samples will be collected and analyzed for contaminants of concern. The contaminants of concern will be identified in the Phase 1 investigation and analytical results. Soil samples collected as part of Phase 2 will also be analyzed for contaminates of concern identified in the Phase 1 analytical results.

Work will be conducted in accordance with CERCLA and the FUDS ER and, to the extent practicable, be consistent with Chapter 6 NYCRR.

4.2.1 Phase 1

The Phase 1 investigation is intended to either confirm the presence, or confirm the absence, of suspected CERCLA DOD waste at an AOC. The specific sampling frequency, quantity, and locations in the Phase 1 will be finalized in the RI WP. The sample collection methodology proposed in Phase 1 for subsurface soil and groundwater sampling from temporary wells is discussed in Section 4.3 below. All the sampling methodologies will be finalized in the RI WP.

4.2.2 Phase 2

The Phase 2 sampling requirements to define the extent of contamination at an AOC will be evaluated and proposed to the project team prior to Phase 2 activities. The Phase 2 data requirements may include concrete chip samples, liquid samples from containers, surface soil, surface water or sediment samples, soil boreholes, permanent monitoring wells in the perched aquifer, and/or permanent monitoring wells constructed into the deeper drinking water aquifer.

The sample collection methodologies proposed in Phase 2 for subsurface soil and groundwater sampling from permanent monitoring wells is discussed in Section 4.3 below. All the potential sampling methodologies for each media in the Phase 2 will be presented for approval in the RI WP.

4.3 Sample Collection Methodology

The following methodology is proposed for this investigation. Additional details and specifics will be provided in the RI WP.

Subsurface Soil: Subsurface soil samples will be collected using direct push technology (DPT). A GeoProbe® dual-tube sampling system (or equivalent) will be used to collect continuous soil cores to the target depth. The continuous soil sampling will be accomplished by advancing a 5-foot (60-inch) coring barrel fitted with the dedicated, disposable PVC liners. The soil core will be screened for VOCs immediately upon opening the sleeve with a volatile organic detector. Two subsurface soil samples will generally be collected from each DPT location unless otherwise specified in the RI WP. Samples will be collected from depth intervals where field screening or observations (i.e., highest volatile organic compounds [VOC] concentration measured with the photo-ionization detector, odor, staining) indicate the potential presence of contaminants, the depth of the structure being evaluated, or at the depth of groundwater.

Groundwater Sample Collection from Temporary Wells (Grab Sample): Groundwater samples will be collected using DPT methodology through a GeoProbe® discrete interval, screen point sampler (or equivalent) or installation of a temporary well. The GeoProbe® discrete interval, screen point sampler consists of a 1.625-inch outer diameter, 51.5-inch long steel sheath equipped with an expendable steel drive point, which contains a retractable 41-inch long stainless-steel screen. The DPT sampler and tool string is driven to the desired depth interval, retracted approximately 44-inches to release the expendable drive point, and the screen is deployed into the groundwater using an internal push rod.

If groundwater is not observed during boring activities, a temporary well will be installed. Boreholes for temporary wells will be created using a GeoProbe® DT325 dual-tube sampling system (or equivalent). Once the borehole has been advanced to the specified depth, the temporary well will be constructed of a 5-foot section of 1-inch Schedule 40 PVC screen with sufficient casing to reach ground surface. The well will be allowed to recharge and limited purging will be conducted as allowed by the recharge to the well to reduce turbidity in the groundwater prior to sampling.

Grab groundwater samples will be collected via low-flow sampling methods using bladder pumps or peristaltic pumps with disposable tubing as specified in the QAPP. Groundwater samplers will be decontaminated between boring locations. Water quality parameters (e.g., temperature, specific conductance, pH, dissolved oxygen, oxidation–reduction potential) will be measured and recorded on the field sampling form after the grab sample has been collected.

Borehole Abandonment: All DPT borings will be abandoned at completion of sampling activities. Borings in grass or sand will be abandoned by backfilling with bentonite chips. Borings in asphalt or concrete shall be abandoned by backfilling with bentonite chips to approximately 6 inches bgs, and the remainder of the borehole will be patched with asphalt cold patch or hydraulic concrete. The surface will be restored at each location to match the surrounding area.

Permanent Monitoring Well Construction: As explained above, permanent wells will be installed at locations where Phase 1 results indicated a data requirement for further groundwater evaluation. Installation and construction details of the permanent wells will be included in the RI WP for the project. Permanent wells will be sampled twice during the investigation and the groundwater will be analyzed for the contaminants of concern identified as a result of the Phase 1 investigation.

AECOM will coordinate with the New England District Corps of Engineers in order to gain access to available infrastructure and utilities as required for execution of this RI. All utilities at each proposed borehole will be marked out through Dig Safe. A Community Air Monitoring Plan will be developed as detailed in the project health and safety plans and will comply with New York Department of Health requirements.

4.4 Background Soil Sampling

Up to 20 background soil samples (10 surface and 10 subsurface soils) are proposed from six locations. The proposed locations for background soil sampling are shown on the site map provided in **Attachment 1**. Background samples are recommended for analysis of metals.

5.0 AREAS OF CONCERN SUMMARIES

The AOCs proposed for inclusion in the RI are a combination of sites identified in the PWS and those identified through records review. A summary of these AOCs and the proposed RI approach can be found in the Areas of Concern Summary Table provided as **Attachment 2**. The locations of the AOCs and proposed sampling are shown on the Site Map in **Attachment 1**.

5.1 Battery 113

Battery 113 is also identified as Bunker-1 and Battery Dunn. The Camp Hero Feasibility Study (Cashin, 1998) noted a cluster of tanks of various sizes and shapes, the prior purpose of which is unknown. These included two cylindrical red-painted tanks suspended from the wall; three vertical tanks standing on the floor, which have heavily rusted exteriors; and what was suspected to be one or more tanks in a wooden enclosure on the floor. These tanks were thought to be part of a single system, or multiple systems, possibly including fire suppression, emergency water supply, or emergency fuel supply. Waste drums were also noted.

During the records review of archived NY State Park Service drawings of Battery 113, the two cylindrical red-painted tanks suspended from the wall are identified as 150 gallon diesel fuel tanks.

Additionally, the Cashin Report notes Battery 113 to have had oil staining under electrical equipment in the old electrical room. This location was sampled for PCBs, and results showed a PCB level of 24,200 ppb (Cashin, 1998).

Phase 1 – Access to Battery 113 will be assessed in Phase 1. If safe access is available, a site survey is proposed to identify the use of the remaining tanks and waste drums. If liquid is present, up to four characterization samples are proposed within the tanks and drums. Standing water in the pits would also be sampled for disposal purposes. Information on proposed sampling related to polychlorinated biphenyls (PCBs) can be reviewed in Section 4.5.2 of this Technical Memorandum.

The site survey is also proposed to confirm visual evidence of PCB contaminated stained concrete. Up to 3 concrete chip samples are proposed for analysis of PCB content.

Phase 2 – Liquids in the tanks and waste drums, if present, are proposed to be evacuated and properly disposed. Standing water in the Battery pits will be removed. The PWS indicates potential removal and proper disposal of up to 1,000 gallons of water. Up to 1,000 gallons of water is proposed to be removed from the Battery pits.

5.2 Building 203

In 1994, UST 16 (25,000 gallon #2 fuel oil), UST 18 (25,000 gallon #2 fuel oil), and UST 17 (1000 gallon lube oil) were removed from the perimeter of former Building 203. USTs 16 and 18 were located on the south side of the building and UST 17 was located on the southeast side of the building. Upon removal of USTs 16 and 18, a green liquid that appeared to be ethylene glycol was observed on the sidewalls of the excavation and on water standing in the bottom of the excavation at 17 feet bgs. A solvent odor was present and it was suspected that solvents had been dumped around the building based on visual evidence of surface soil staining and elevated volatile and semi-volatile laboratory results of soil. A French drain was also observed during excavation activities to surround the Building 203 foundation. The French drain was suspected of acting as a conduit to allow hazardous liquids to migrate around the foundation of the building and into the subsurface soil (NYSDEC Spill Report 93-09575, 1993).

There were several drums of glycol at the site during the UST removal action and several hundred feet of piping containing 150 gallons of glycol in the former generator building, presumably used for cooling the generators(NYSDEC Spill Report 93-09575, 1993).

The single excavation pit for USTs 16 and 18 was over-excavated. The NYSDEC spill report indicates 2,500 yards of soil were removed. A Site Assessment Report was submitted for the site to NYSDEC in June 1995. Nine GeoProbe® borings were conducted surrounding the USTs excavation and two GeoProbe® locations were conducted near the center of the excavation. The GeoProbe® location near the center of the excavation was advanced to 53 feet bgs in an attempt to reach groundwater, however, no groundwater was intercepted to this depth. Dense clay was found at depth and surrounding the UST excavation. A soil sample was taken at 53 feet bgs with analysis results below screening criteria. A temporary well was installed to 21 feet below grade which slowly recharged with groundwater overnight. The result of all the soil samples and the groundwater sample taken from the GeoProbe® boreholes were below screening criteria. The Spill Report Case was closed by the NYSDEC in July 1995.

In 2000, during additional site-wide environmental assessment at Camp Hero by the USACE, a surface water sample was obtained from a drainage area below Building 203 near where a small ditch leading from Building 203 was observed to outfall (Weston, 2000). The sample was analyzed for PCBs, SVOCs, and metals. No PCBs or SVOCs were detected in the surface water sample. Two metals, zinc and arsenic, were detected in the sample but were below screening criteria.

Phase 1 – The USTs at former Building 203 (USTs 16, 17, and 18) have been previously closed in accordance with 6 NYCRR 613.99(b); however, use of solvents and ethylene glycol in the area of the tanks and Building is suspected based on NYSDEC closure reports. To investigate the presence of solvents and ethylene glycol, five DPT borings are proposed, in the area of the former Building 203 and UST excavation. Building 203 and USTs have been excavated and replaced with clean fill. The boring will be located just beyond the excavation and fill zones to the extent possible.

A soil sample would be obtained from the upper portion of each boring and at the perched groundwater and soil interface. Contamination was not detected in samples collected from the previous UST site assessment which targeted the depth of the former UST excavation (at 17-19 feet bgs).

The proposed RI soil sampling would focus on the perched groundwater soil interface and soil at 17-19 feet and above as a potential contaminant transport zone from former Building 203 and the USTs.

A groundwater grab sample would be obtained from each of the soil borings. Based on the slow recharge rate to temporary monitoring wells noted in previous assessment, a temporary well may be proposed at each borehole in order to collect a sufficient groundwater sample. The depth of the recommended temporary wells is anticipated to be approximately 20 feet bgs.

Because of the suspected presence of solvents and ethylene glycol, all soil and groundwater samples at petroleum storage tank sites are proposed for the full SW-846 suite of analysis (for VOCs, SVOCs, PCBs, and metals) and ethylene glycol.

Additionally, two piezometers are proposed be installed upgradient and downgradient of the Building 203 UST 16 and 18 excavation. Additional piezometers are proposed in to be installed adjacent former diesel storage tank/sewage disposal area (H-13) of the direction of groundwater flow. An additional piezometer is proposed in a location determined by the initial review of groundwater flow. Piezometers will be used for groundwater flow and direction information; no analytical samples will be collected from piezometers.

Phase 2 – Based on the laboratory results of Phase 1, up to five permanent monitoring wells may be proposed and sampled twice to demonstrate repeatable data for analysis. The soil and groundwater samples would be analyzed for COPCs identified in the Phase 1 sampling analytical results.

5.3 Building 2010 (UST 30)

UST #30 is associated with Building 2010, which has been referred to as “Building 39” in the Cashin Report archives drawings. A 100 gallon gasoline UST was removed in October 1993 from the southeast corner of Building 2010. The excavation was 4.5 feet by 7 feet by 4.5 feet deep. Low levels of petroleum were detected in soil samples from the excavation; however, lead was reported to be as high as 600 ppm (NYSDEC Tank Removal Report, December, 1994).

Based on prior investigation results, the Building 2010 AOC is recommended to move immediately to the proposed Phase 2 investigation activities.

Phase 2 – Two GeoProbe® borings are proposed immediately adjacent to the former UST excavation at the southeast corner of Building 2010. A soil sample would be obtained from the upper portion of each boring and at the depth of the former UST at 5 feet bgs. A groundwater grab sample will be obtained from each of the soil borings from the perched water table, if perched water is present. The soil and groundwater samples would be collected and analyzed for lead. Based on the laboratory results of the soil and groundwater samples, the installation of up to two monitoring wells may be proposed. If monitoring wells are installed, it is proposed that each well would be sampled twice to develop time repeatable data analysis. The groundwater samples will be analyzed by the laboratory for VOCs, SVOCs, and metals.

5.4 Building F100C (UST 34)

Building F100C has previously been referred to in the Cashin Report as Building 40 and formerly operated as a well house. UST #34 was a 275 gallon gasoline tank removed in October 1993 from the south side of Building F100C. Ten yards of petroleum impacted soil was removed from around the UST. Low levels of petroleum were detected in soil samples from the excavation; however, lead was reported to be as high as 549 ppm (NYSDEC Tank Removal Report, December, 1994).

Based on prior investigation results, the Building F100C AOC is recommended to move immediately to the proposed Phase 2 investigation activities. .

Phase 2 – Two GeoProbe® borings are proposed immediately adjacent to the former UST excavation south of Building F100C. A soil sample would be obtained from the upper portion of each boring and at the depth of the former UST. A groundwater grab sample would be collected from each of the soil borings from the perched water table, if perched water is present. The soil and groundwater samples would be analyzed for lead. Based on the laboratory results of the soil and groundwater samples, the installation of up to two monitoring wells may be proposed. If monitoring wells are installed, it is proposed that each well would be sampled twice to develop time repeatable data analysis. The groundwater samples will be analyzed for VOCs, SVOCs, and metals.

5.5 Former and Suspected Tanks

One AST at Camp Hero (AST-35, also identified as H-13 in the Cashin Report) does not have complete closure documentation. As such, additional investigation is proposed at this AOC. Additionally, six suspected tanks are located at Camp Hero; there is no closure documentation for these tanks, but archive drawings indicate possible tank storage locations.

The location suspected USTs will begin with a geophysical survey to confirm the absence or presence of the UST and help locate subsurface utilities. The geophysical survey will include a magnetometer and/or ground penetrating radar geophysical methods. DPT will then be utilized for soil logging and sampling. Four borings will be conducted in each direction around the UST. If no UST is found during the geophysical survey, an additional boring will be conducted from the center, where the UST was suspected. One soil sample will be collected from each soil boring from the most impacted interval as identified by visual or olfactory evidence of contaminants, or elevated photoionization detector readings. A second soil sample will be collected from the interval immediately above the groundwater and soil interface.

A summary of tank numbers, locations, and removals were compiled through the records review task. This information can be reviewed in Section 3.1 of this Technical Memorandum.

5.5.1 AST-35/H-13

Table 3-1 of the PWS refers to the H-13 location as a sewage holding tank. However, it also appears from the Cashin Report (Cashin, 1998) and archive drawings that a 200,000 gallon diesel fuel storage tank was also located at this site. The archive research indicated that there was a 1,000 gal release from this tank which reached off-site to Oyster Bay; however, the available documentation is incomplete at this time. Therefore, additional investigation is recommended. If any additional information or documentation is located, it will be used to further refine the investigation approach and will be included in the RI WP.

Phase 1 – Four GeoProbe® soil borings to the perched water table are proposed around the former storage tank. Boring locations would be determined in compliance with 6 NYCRR 613.9(b). Two soil samples and a groundwater sample are proposed at each boring. Soil samples would be analyzed for the NYSDEC STARS list for VOCs, SVOCs, and metals. Groundwater samples would be analyzed for VOCs, SVOCs, and metals.

Phase 2 – Based on the laboratory results of Phase 1, the installation of up to four monitoring wells may be proposed. If monitoring wells are installed, it is proposed that each well would be sampled twice to develop time-repeatable data analysis. The groundwater samples analytes would be based on the results of Phase 1.

5.5.2 Distribution Line for AST-35

Archive drawings indicate that a fuel pump house and a fuel line extended from the former AST-35 location to the former generators at Building 203. No additional information about the fuel line is available.

Phase 1 – Six GeoProbe® soil borings to the perched water table are proposed long the fuel line to Building 203. Boring locations will be determined in compliance with 6 NYCRR 613.9(b). Two soil samples and a groundwater sample are proposed at each boring. Soil samples would be analyzed for the NYSDEC STARS list for VOCs, SVOCs, and metals. Groundwater samples would be analyzed for VOCs, SVOCs, and metals.

Phase 2 – Based on the laboratory results of Phase 1, the installation of up to four monitoring wells may be proposed. If monitoring wells are installed, it is proposed that each well would be sampled twice to develop time repeatable data analysis. The groundwater samples analytes would be based on the results of Phase 1.

5.5.3 Suspected Tanks A, B, C, D

Table 3-1 of the PWS refers to USTs 40, 41, 43, 45, 46, 14, 22, 24, and 33 as USTs that potentially need verification of removal by geophysical survey. Five of these tanks (40, 41, 43, 45, and 46) were suspected by Cashin Associates to need further investigation. The OCP Tank Compliance Inspection Data Sheet, from August 1st, 2012, lists UST 40, 41, 43, 45, and 46 as being removed. These USTs have no reported spills associated with them, and no further investigation is planned for these locations in the RI sampling approach. The Cashin Report noted four buildings (14, 22, 24, and 33), under their own numbering scheme, that contain features indicating possible tanks. Archive drawings indicated that USTs were installed at one time at Cashin Report building numbers 14 (Building 20), 22 (Building 22), 24 (Building 2), and 33 (Building 104R).

Phase 1 – A geophysical survey is proposed at Buildings 20, 22, 2, and 104R to verify if the suspected USTs exists. If a UST is located at these buildings, up to five GeoProbe® borings are proposed at each AOC. The determination for the number and placement of the borings will be in compliance with 6 NYCRR 613.9(b). A soil sample is proposed at the upper portion of each boring and at the depth of the suspected UST. A groundwater sample is proposed from each of the soil borings from the perched water table at each AOC. As per the PWS, test pitting would be proposed to verify the existence of such tanks at each AOC. Soil samples would be analyzed for the NYSDEC STARS list for VOCs, SVOCs, and metals. Groundwater samples would be analyzed for VOCs, SVOCs, and metals.

Phase 2 – Based on the laboratory results of Phase 1, the installation of up to five monitoring wells may be proposed at each location. If monitoring wells are installed, it is proposed that each well would be sampled twice to develop time repeatable data analysis. The groundwater samples analytes would be based on the results of Phase 1.

5.5.4 Suspected Tank E

Suspected Tank E is located near Building 3001, which has also been known as Cashin Report Building 47, State Park Police, Lilco Building, and AT&T Building. UST 26 has been removed from the AOC, although, UST 49 remains in use. Archive drawings suggest a third UST in the vicinity of the former UST 26 location. One existing wel is located on the Southwest side of Building 3001.

Phase 1- Geophysical survey is proposed at Building 3001 to verify if the suspected UST exists. If a UST is located at these buildings, up to five GeoProbe® soil borings are proposed at the AOC to obtain soil and groundwater samples. One groundwater sample is proposed from the existing well on the southwest side of Building 3001 from an available untreated tap. Determination of boring placement will be in compliance with 6 NYCRR 613.9(b). One soil sample is proposed from the upper portion of each boring and one at the depth of the suspected UST. A groundwater sample is proposed from each of the soil borings from the perched water table. As per the PWS, test pitting is proposed to verify the existence of such tanks at each AOC. Soil samples would be analyzed for the NYSDEC STARS list for VOCs, SVOCs, and metals. Groundwater samples would be analyzed for VOCs, SVOCs, and metals.

Phase 2- Based on the laboratory results of Phase 1, the installation of up to five monitoring wells may be proposed. If monitoring wells are installed, it is proposed that each well would be sampled twice to develop time repeatable data analysis. The groundwater samples analytes would be based on the results of Phase 1.

5.5.5 Suspected Tank F

Archive figures indicate that suspected Tank F could be located at the pump house near Battery 216 (also known as Bunker-4). This groundwater pump house is suspected to have a UST in proximity to the building. A similar pump house on Camp Hero had a 100 gallon gasoline UST removed.

Phase 1 – Geophysical survey is proposed to locate the potential UST at the pump house. If the UST is located, five GeoProbe® borings are proposed immediately adjacent to the tank, in compliance with 6 NYCRR 613.9(b). A soil sample will be collected from the upper portion of each boring and at the depth of the suspected UST. A groundwater sample will be collected from each of the soil borings from the perched water table. As per the PWS, test pitting is proposed to verify the existence of such tanks at each AOC. Soil samples would be analyzed for the NYSDEC STARS list for VOCs, SVOCs, and metals. Groundwater samples would be analyzed for VOCs, SVOCs, and metals.

Phase 2 – Based on the laboratory results of Phase 1, the installation of up to five monitoring wells may be proposed. If monitoring wells are installed, it is proposed that each well would be sampled twice to develop time repeatable data analysis. The groundwater samples analytes would be based on the results of Phase 1.

5.6 Polychlorinated Biphenyls

5.6.1 Battery 112

Battery 112, also known as Bunker-3, is associated with UST 36 and UST 37. Access to Battery 112 will be assessed during the Phase 1. It was noted in the Project Kick-Off Meeting in October

2015 that Battery 112 is sealed and access inside the building may not be feasible. The Cashin Report noted that the "as-built" plans for Battery 112 show that the floor plan for Battery 113 and Battery 112 (Bunker 3) are identical; however, no tanks and waste drums were observed in Battery 112, as noted in the Cashin Report (Cashin, 1998).

Phase 1 – Access to Battery 112 will be assessed in Phase 1. If safe access is available, a site survey is proposed to confirm no tanks are present and visual evidence of PCB contaminated stained concrete. Up to 3 concrete chip samples are proposed for analysis of PCB content.

5.6.2 Building 107

Building 107 has also been known as the Electrical Substation and Cashin Report Building 5. The Cashin Report noted that transformers were in the basement of the building and may have contained or contain PCBs.

In an August 2000 environmental assessment, a stained area was noted in the northeast comer of the basement of Building 5, which was three feet by five feet in area. At that time, there was an opening to the outside approximately three to four feet above the floor. No floor drains were observed in the basement where the four transformers are still mounted on the wall. A concrete chip sample was collected from the stained area (Weston, 2000).

Analytical results indicate that PCBs are present within the observed oil stain at a level above the Toxic Substances Control Act (TSCA) unrestricted use limit of 1 milligram per kilogram (mg/kg) in Building 5. Based on the depth of the PCBs in the concrete, it appeared that the oil had not migrated outside the building. The findings indicated that no significant ecological or human health threats existed via migration.

Phase 1 – Access to the basement of Building 5 will be assessed in Phase 1. If safe access to the wall mounted transformers exists, an attempt to verify fluids are present in the transformers is proposed. One fluids sample is proposed, if possible, for analysis of PCB content.

5.6.3 Building 201

Building 201 is also known as the Radar Tower, Cashin Report Building 1, and Army-Navy (AN)/Fixed-Pulse Radar-Surveillance (FPS)-35. Building 201 is associated with UST 20, which was removed and included in NYSDEC Spill Report #93-12038.

The Cashin Report recommended further investigation to investigate associated oil leaks, and any spills containing PCBs to prevent a possible release to the environment.

In an August 2000 Data collection Report (Weston, 2000), the first floor of the Radar Tower contained a stained area, which was approximately four feet by six feet in area. The stained area was present below several pipes extending from the ceiling labeled "refrigerated water return." The stained area is not darkly stained, and is adjacent to a six-inch diameter floor drain. The concrete was not stained below 0.5 inches. Sample C-2 was collected from the stained area (Weston, 2000).

One chip sample, four surficial soil and 1 subsurface soil sample was obtained at the Radar Tower for PCB analysis. PCBs were detected in the surface soil only at sample location SS-14 near the radar tower. Aroclor 1254 was detected at 1.4 micrograms per kilogram (µg/kg), which is just above the regulatory criteria of 1 µg/kg. The area of contamination appears to be minimal, as no PCBs were detected above the regulatory criteria in adjacent samples collected within 50 feet of that location.

Analytical results indicate that PCBs are present within the observed oil stain at a level above the TSCA unrestricted use limit of 1 mg/kg in the Radar tower. Based on the depth of the PCBs in the concrete, it appears that the oil has not migrated outside the building. The findings indicated that no significant ecological or human health threats existed via migration. The stains could be addressed by concrete removal, painting over the stains, or, if necessary, controlling building access (Weston, 2000).

In 2002, this Radar Tower was listed on the National Register of Historic Places through the Department of the Interior. Prior to moving forward with proposed RI work at Building 201, New York State Office of Parks, Recreation, and Historic Preservation and the Department of Interior will be contacted for detailed information on regulations and procedures to begin work at this AOC. Proposed PCB sampling at this location will include a minimally invasive Phase 1 to ensure the preservation and conservation of the Radar Tower and Antenna.

Phase 1 – If safe access is available, a site survey is proposed to verify that there is no other staining at the Radar Tower. If additional staining is observed, a wipe sample is proposed for the stained area.

Soil and groundwater sampling is proposed at the former Radar Tower cesspool as part of the site-wide abandoned sanitary sewer line inspection. These samples are proposed for analysis of PCB content and evaluated as evidence of a release from the Radar Tower.

5.7 Abandoned Waste Disposal System (Site-Wide)

The Abandoned Waste Disposal Systems (site-wide) have been suspected former areas of hazardous waste dumping. This system has been abandoned and has not been used by the NY State Parks. The site-wide abandoned sanitary sewer was located from archive drawings of Camp Hero provided by the NY State Parks. It appears from archive drawings that septic fields and cesspools were also utilized at Camp Hero prior to construction of the site-wide abandoned sanitary sewer system. The site-wide abandoned sanitary sewer system eventually led to a chlorine chamber (chlorine house) for treatment prior to discharging into the Atlantic Ocean at a headwall outfall. The location of the site-wide abandoned sanitary sewer line and former septic fields and cesspools are shown on the Site Map in **Attachment 1**.

Phase 1 – The proposed soil and groundwater sampling would be focused at former leachfields and cesspools downgradient from buildings which may have utilized hazardous materials. The sample locations would be biased to potential weak sites or collection areas along the sewer line such as locations of 90-degree turns, where the sanitary line is joined by a secondary sanitary line from former operations buildings, collection tanks, and the chlorination building prior to being discharged into the ocean.

The locations of former sanitary leachfields, septic tanks, and cesspools utilized before connection to the sanitary line are also proposed for soil and groundwater sampling.

Up to 27 GeoProbe® borings are proposed to obtain soil samples at the depth of the site-wide abandoned sanitary sewer line or bottom of the leachfield, septic tank, or cesspool structure. The sewer line profiles have been supplied in archive drawings by NY State Parks and will be utilized to plan depths of samples. Grab groundwater samples will be obtained at each sampling location along the systems.

Proposed soil and groundwater samples would be recommended for analysis of the SW-846 list of analytes for VOCs, SVOCs, PCBs, herbicides, pesticides, and metals.

Phase 2 – Based on the result and review of Phase 1 analysis, the installation of 27 monitoring wells may be proposed to provide groundwater monitoring data. All permanent monitoring wells installed at Camp Hero under this contract are proposed to be sampled twice. Groundwater samples would be analyzed for contaminants of concern identified in the Phase 1 analytical results.

5.8 Motor Pool

The Motor Pool building contained a hydraulic lift for vehicle maintenance. According to the State Park Super Intendent (Tom Dess) in a phone interview, the concrete floor over the hydraulic lift was capped at the time the State Park took over the Facility. A 1940 site map identifies the Motor Pool was an Ordinance Repair Shop. A floor drain was likely present in the building.

Additionally, a cesspool was also located on the east side of the motor pool, downgradient from the building. There is potential that petroleum, munitions constituents, and/or hazardous materials may have drained through the floor drain, which may have led to the cesspool.

One existing well is located on the west side of the building.

Phase 1- At the location of the former hydraulic lift, concrete coring would be conducted prior to boring. One soil boring is proposed through the concrete slab adjacent to the former hydraulic lift. Two soil samples and one groundwater would be collected. Soil samples would be analyzed for the NYSDEC STARS list for VOCs, SVOCs, and metals. Groundwater samples would be analyzed for VOCs, SVOCs, and metals.

One geoprobe boring would be advanced to 2 ft bgs outside the building at the location of the floor drain (approximately 2 ft from the outfall). One soil samples and one groundwater sample would be collected and analyzed for energetics.

At the location of the cesspool, one soil boring is proposed. Two soil samples and one groundwater sample would be collected and analyzed for the SW-846 list of analytes for VOCs, SVOCs, PCBs, herbicides, pesticides, and metals. One groundwater sample would be collected from the existing well from an available untreated tap. The groundwater sample would be analyzed for the SW-846 list of analytes for VOCs, SVOCs, PCBs, herbicides, pesticides, energetics, and metals.

Phase 2 – Based on the result and review of Phase 1 analysis, the installation of monitoring wells may be proposed to provide groundwater monitoring data. All permanent monitoring wells installed at Camp Hero under this contract are proposed to be sampled twice. Groundwater samples would be analyzed for contaminants of concern identified in the Phase 1 analytical results.

5.9 Engineering Field Office

An engineering field office is located adjacent to the Motor Pool. Work related to ordinance repair may have occurred in the shop.

Phase 1 – One soil boring is proposed through the concrete slab of the engineering field office. Coring would be conducted prior to boring. Two soil samples and one groundwater would be collected and analyzed for energetics.

Phase 2 – Based on the result and review of Phase 1 analysis, the installation of monitoring wells may be proposed to provide groundwater monitoring data. All permanent monitoring wells installed at Camp Hero under this contract are proposed to be sampled twice. Groundwater samples would be analyzed for contaminants of concern identified in the Phase 1 analytical results.

5.10 Areas of Possible DoD Related Disposal

The Feasibility Study identified several AOCs related to possible DoD disposal. These areas include drums, pits, boilers, building debris, and buildings. These AOC locations are provided on the Site Map in **Attachment 1**.

5.10.1 Drum Locations (H-1, H-2, H-3, H-18, H-20, and H-22)

During the Camp Hero Feasibility Study (Cashin, 1998) these six locations were observed with one one or two 55-gallon drums or drum remnants.

Phase 1 – A site survey is proposed to verify the number of drums present at each location, record any labeling or identification on the drums, and sample liquid if present in the drums. The liquid in the drums, if present, is proposed to be analyzed for hazardous waste characteristics prior to removal or disposal.

Two surface soil samples and two subsurface soil samples are recommended from underneath each drum location. The soil samples obtained underneath the drums or drum remnants would be analyzed for the SW-846 list of analytes for VOCs, SVOCs, PCBs, herbicides, pesticides, and metals.

Phase 2 – Based on the laboratory results of Phase 1 soil sampling, soil borings would be proposed to the depth of the perched groundwater table at each AOC. A groundwater sample is proposed from each boring. The soil samples taken from beneath the drums or drum remnants would be analyzed for the contaminants of concern identified in Phase 1.

5.10.2 Construction Debris (H-4 and H-6)

The Cashin Report noted AOCs H-4 and H-6 contained construction debris. It appears from aerial photography that amount of construction debris may have been significant at AOC H-4 based on the cleared area and a concrete pad at the site.

Phase 1 – A site survey is proposed to identify the amount and location of construction debris at both H-4 and H-6. Three GeoProbe® borings are proposed to be taken under the debris (at each AOC) or on the down gradient edge of the debris. Two soil samples and one groundwater sample are proposed to be taken from each boring and analyzed for SW-846 list of analytes for VOCs, SVOCs, PCBs, herbicides, pesticides, and metals. Groundwater samples would be collected from the perched aquifer at each boring.

Phase 2 – Based on the laboratory results of Phase 1 soil sampling, the installation of up to three monitoring wells may be proposed into the perched groundwater table at each site. The monitoring wells would be sampled twice and the groundwater would be analyzed for the contaminants of concern identified in Phase 1.

5.10.3 Drum Location with Construction Debris (H-5)

There are 5 drums pictured in the 1998 Cashin Report picture of H-5. Three of the drums are identified with contents unknown.

Phase 1 - A site survey is proposed to verify the number of drums and record any labeling or identification on the drums. Up to 16 soil samples proposed underneath the drum locations and construction debris at H-5

If liquid is present in the drums, up to 3 samples for hazardous waste characterization is proposed prior to removal or disposal. Liquid would be evacuated from the drums and disposed according to NY state waste handling regulations.

Phase 2 – Based on the laboratory results of Phase 1 soil sampling, soil borings would be proposed to the depth of the perched groundwater table at H-5. A groundwater sample is proposed from each boring. The soil samples taken from beneath the drums or drum remnants would be analyzed for the contaminants of concern identified in Phase 1.

5.10.4 Possible Boilers (H-7, H-8 and H-9)

The Cashin Report noted that these locations at Camp Hero contained what appeared to be old boilers (Cashin, 1998).

Phase 1 – A site survey is proposed to identify if these boilers still exist at these sites. One surface soil sample would be taken from under each boiler. The soil samples would be analyzed for the SW-846 methods analyte list for VOCs, SVOCs, and metals.

Phase 2 – Based on the laboratory results of Phase 1 surface soil sampling, GeoProbe® borings may be proposed to the perched water table to collect soil and groundwater samples at depth. The soil samples and groundwater samples would be analyzed for contaminants of concern identified in Phase 1.

5.10.5 Former Power Plant (H-11)

As noted in the Cashin Report, further investigation was recommended to investigate potential petroleum, metals, and PCBs in soil and groundwater associated with the former power plant. In an August 2000 environmental assessment, five groundwater, two surficial soil, two subsurface soil, and two sediment samples were collected and analyzed for PCBs, SVOCs, and metals (Weston, 2000).

At that time, the former Power Plant location contained three to five feet of fill material, consisting mostly of charcoal. No PCBs were detected in soils or groundwater from the area. Beryllium was detected above the regulatory criteria in one subsurface soil (SS-1) and chromium and lead were detected at concentrations that slightly exceeded screening criteria in one of five groundwater sample locations (GW-2). The levels of chromium and lead were somewhat elevated in relation to the reference well located up-gradient of the former Power Plant location.

Results from surface water and sediment samples indicated no evidence of contaminant transport pathways from the buildings to adjacent sensitive environmental areas, such as forested wetlands and streams (Weston, 2000).

Phase 1 – The previous assessment and sampling locations would be reviewed in detail for the RI WP. Two GeoProbe® borings are proposed within the footprint of the former Power Plant Building to confirm previous data results reported in 2000. Two soil samples and one groundwater sample would be collected from each boring and analyzed for the SW-846 methods analyte list for VOCs, SVOCs, PCBs, and metals.

Note that two GeoProbe® borings are proposed in the tile drain field associated with the former Power Plant Building as part of the site-wide abandoned sanitary sewer investigation and would be addressed as part of that AOC.

Phase 2 – Based on the laboratory results of Phase 1 soil sampling, soil borings would be proposed to the depth of the perched groundwater table. A groundwater sample is proposed from each boring. The soil and groundwater samples would be sampled for the contaminants of concern identified in Phase 1.

5.10.6 Sewage Ejector Station (H-12)

The sewage ejector station, located near the former heating plant, was noted in the Cashin Report as a potential AOC due to waste handling.

Phase 1 – One GeoProbe® soil boring to the perched water table and at least as deep as the bottom of the former ejector station is proposed. Two soil samples and one groundwater sample would be collected. Groundwater and soil samples would be analyzed for VOCs, SVOCs, PCBs, herbicides, pesticides, and metals using SW-846. The results from this location would also be included in the overall assessment of the site-wide abandoned sanitary sewer system.

Phase 2 – Based on the laboratory results of Phase 1 soil sampling, up to one monitoring well may be installed into the perched groundwater table. The monitoring wells would be sampled twice and the groundwater would be analyzed for the contaminants of concern identified in Phase 1.

5.10.7 Former Coal Storage (H-14 and H-15)

Two former coal storage areas were identified in the Cashin Report and on archive drawings.

Phase 1 – Three GeoProbe® borings to the perched water table are proposed within the perimeter of each coal storage area (six total soil borings). Two soil samples and a groundwater sample are proposed at each boring. The soil and groundwater samples would be analyzed for SW-846 methods analyte list for VOCs, SVOCs, and metals.

Phase 2 – Based on the laboratory results of Phase 1 soil and groundwater sampling, the installation of up to three monitoring wells may be proposed to the perched groundwater table at each location. The monitoring wells would be sampled twice and the groundwater would be analyzed for the contaminants of concern identified in Phase 1.

5.10.8 Former Sewage Treatment Area (H-16)

The Cashin Report reported a sewage treatment area just east of the current Camp Hero motor pool. Historic site drawings indicate a proposed sewage treatment plant in this area; however, the available documentation is incomplete. Therefore, additional investigation is recommended. If any additional information or documentation is located, it will be used to further refine the investigation and will be included in the RI Report.

Phase 1 – A site survey is proposed to identify the status and size of former sewage treatment area at this location. Three GeoProbe® borings are proposed to the perched groundwater table in and around the former sewage treatment area.

Two soil samples and one groundwater sample are proposed from each boring. The groundwater sample would be collected from the perched aquifer at each boring. The soil and groundwater samples would be analyzed for VOCs, SVOCs, PCBs, herbicides, pesticides, and metals.

Phase 2 – Based on the laboratory results of Phase 1 soil and groundwater sampling, up to three monitoring wells may be proposed to the perched groundwater table. The monitoring wells would be sampled twice and the groundwater would be analyzed for the contaminants of concern identified in Phase 1.

5.10.9 Open Pits (H-17 and H-21)

The Cashin Report noted these two locations at Camp Hero contained an open pit. (Cashin, 1998)

Phase 1 – A site survey is proposed to identify the status, size, and topography of both open pits. One GeoProbe® boring is proposed topographically upgradient and two GeoProbe® borings are proposed topographically down gradient of each pit (for a total of 3 borings at each pit).

Two soil samples and one groundwater sample (from the perched aquifer) are proposed at each boring. The soil and groundwater samples would be analyzed for the SW-846 methods analyte list for VOCs, SVOCs, PCBs, herbicides, pesticides, and metals.

Phase 2 – Based on the laboratory results of Phase 1 soil sampling, the installation of up to three monitoring wells may be proposed at the perched groundwater table at each location. The monitoring wells would be sampled twice for the analytes identified in Phase 1.

5.10.10 AST 550-Gallon (H-19)

The Cashin Report noted one discarded 550-gallon above ground storage tank was located in the area of Camp Hero between hill 72 and 83, in the northern section of the site. The location is shown in the Site Map in **Attachment 1**.

Phase 1 – A site survey is proposed to identify if the 550-gallon AST still exists at Camp Hero. Two surface soil samples are proposed under or adjacent to the tank. If liquid is present, one sample is proposed from the tank and analyzed for hazardous waste characteristics. The soil samples would be analyzed for the SW-846 methods analyte list for VOCs, SVOCs, and metals.

Phase 2 – Based on the laboratory results of Phase 1 surface soil sampling, GeoProbe® borings may be proposed to collect soil and groundwater samples at depth.

5.10.11 Camp Hero State Park Bluffs

A boiler or small tank and metal debris was observed at the bottom of the steep slope along the southern bluffs of Camp Hero during Site Walk conducted in October 2015.

Phase 1 – A visual survey of the metals debris is proposed. The small water tank and miscellaneous metal debris are proposed to be removed from the base of the slope and slope side and properly disposed.

6.0 REFERENCES

Note: Numerous files from the NYS DEC DER were used to document UST removal actions and closures. These files have been referenced by their Spill Number in the Technical Memorandum and are not listed below.

Cashin Associates, 1998. New York State Office of Parks, Recreation and Historic Preservation. Amended *Final, Camp Hero Feasibility Study, Hazardous Materials Survey, Preliminary Report, Montauk, New York.* June.

United States Army Corps of Engineers, 2003 Explosives Safety Submission, Ordnance and Explosives Removal Action, Former Camp Hero, Montauk, New York. May.

United States Geological Survey, Geologic Survey Water-Supply Paper 1613-B, 1960.

Weston, Inc. 2000. *Final Data Collection Report for Defense Environmental Restoration Program Formerly Used Defense Sites (DERP-FUDS), Camp Hero -Montauk, New York.* August.

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ATTACHMENT 1

Areas of Concern Site Map

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Area of Concern	Description
H-1	Drums
H-2	Drums
H-3	Drums
H-4	Construction Debris
H-5	Drums, Construction Debris
H-6	Dump
H-7	Boilers
H-8	Boilers
H-9	Boilers
H-10	Artillery Shell Fragments
H-11	Former Power Plant
H-12	Sewage Ejector Station
H-13	Diesel Storage Tank
H-14	Coal Storage Area
H-15	Coal Storage Area
H-16	Sewage Treatment Area
H-17	Open Pits
H-18	Drums
H-19	550 gallon Storage Tank
H-20	Drums
H-21	Open Pits
H-22	Drums

Buildings
- Intact
- Bunker or Battery
- Former Building
- Geophysics Area
- Water Well
- Proposed Direct Push Location
- Proposed Background Soil Samples
- Historic Sample Location

Storage Tanks
- AST
- UST
- UST to be remediated and included in Spill Report

Sewer System
- Box (cleanout or other)
- Cesspool
- Manhole

Primary Sanitary Sewer Lines
- other
- A
- B
- C
- D
- E
- F
- G
- H
- J
- Force Main
- Secondary Sewer Line
- Septic Lines
- Drain Tilefields
- Septic Tank
- Other

MAP LOCATION

Surface water features obtained from National Hydrography Dataset (NHD) Dates of publication vary.

2013 NAIP Aerial Imagery obtained from the USDA Geospatial Data Gateway, a service of the US Department of Agriculture.

(If present, hillshade vertical exaggeration = 3x)

Coordinate System: NAD 1983 StatePlane New York Long Island FIPS 3104 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983

0 40 80 160 Feet
1 inch = 88.5 feet

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Site Map

Camp Hero Remedial Investigation Work Plan

PROJECT NO.	PREPARED BY:	DATE:	
60443903	DDS	December 2015	Figure 4-1

1/15/2016 1:2,000 L:\GIS_AECOM\CAMP HERO\Maps\Figure 4-1.mxd

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ATTACHMENT 2

Areas of Concern Summary Table

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Attachment 2 – Areas of Concern Summary Table

Area of Concern	Additional Site Names	Reason for Concern	Potential Impact	Phase 1	Phase 2
Battery 113	Bunker-B1, Battery Dunn	Oil Staining	PCBs	3 Concrete chip samples to be analyzed for PCBs	
		Tanks, Drums, Pits	Hazardous Materials	Site survey to identify use of tanks and waste drums, 4 liquid samples for hazardous material characterization (if applicable) from tanks and drums, water samples taken from pits (if applicable)	Disposal of up to 1,000 gallons of water, Disposal of drums and tanks (if applicable)
Former Building 203	N/A	Possible Ethylene Glycol Release	Solvent(s), including ethylene glycol	5 Geoprobe borings, 5 groundwater samples, 10 soil samples (5 shallow and 5 deep). Up to 5 piezometers to determine groundwater flow.	Install monitoring wells, gauge wells, collect 2 rounds of groundwater samples
Building 2010	Cashin #39, Water Meter	Lead in Background	Lead	N/A – move directly to Phase 2	2 Geoprobe borings, 2 groundwater samples, 4 soil samples (2 shallow and 2 deep). Install monitoring wells, gauge wells, collect 2 rounds of groundwater samples
Building F100C	Cashin #40, Well House	Lead in Background	Lead	N/A – move directly to Phase 2	2 Geoprobe borings, 2 groundwater samples, 4 soil samples (2 shallow and 2 deep). Install monitoring wells, gauge wells, collect 2 rounds of groundwater samples
AST-35	H-13	Tank #35, 200,000 gallon tank associated with reported spill	PAH	4 Geoprobe borings to perched water table, 8 soil samples (4 deep and 4 shallow), 4 groundwater samples	Install monitoring wells, gauge wells, collect 2 rounds of groundwater samples
Distribution Line for AST-35	N/A	Distribution line connected to AST-35	PAH	6 Geoprobe borings to perched water table, 12 soil samples (6 deep and 6 shallow), 6 groundwater samples	Install monitoring wells, gauge wells, collect 2 rounds of groundwater samples
Building 20 (Tank-A)	Cashin #14, Fire Department	Suspected former tank location	N/A	Verify Tank-A removal via magnetometer, Test Pitting, up to 5 Geoprobe borings, 5 groundwater samples, 10 soil samples (5 shallow and 5 deep)	Install monitoring wells, gauge wells, collect 2 rounds of groundwater samples

Attachment 2 – Areas of Concern Summary Table

Area of Concern	Additional Site Names	Reason for Concern	Potential Impact	Phase 1	Phase 2
Building 22 (Tank-B)	Cashin #22, Kitchen/Office	Suspected former tank location	N/A	Verify tank removal via magnetometer, Test Pitting, up to 5 Geoprobe borings, 5 groundwater samples, 10 soil samples (5 shallow and 5 deep)	Install monitoring wells, gauge wells, collect 2 rounds of groundwater samples
Building 2 (Tank-C)	Cashin #24, Barracks	Suspected former tank location	N/A	Verify tank removal via magnetometer, Test Pitting, up to 5 Geoprobe borings, 5 groundwater samples, 10 soil samples (5 shallow and 5 deep)	Install monitoring wells, gauge wells, collect 2 rounds of groundwater samples
Building 104R (Tank-D)	Cashin #33, Commissary,	Suspected former tank location	N/A	Verify tank removal via magnetometer, Test Pitting, up to 5 Geoprobe borings, 5 groundwater samples, 10 soil samples (5 shallow and 5 deep)	Install monitoring wells, gauge wells, collect 2 rounds of groundwater samples
Building 3001 (Tank-E)	Cashin #47, AT&T Building, Lilco Building, State Park Police Residence	Suspected former tank location	N/A	Magnetometer survey to verify UST. If UST location is confirmed: 5 Geoprobe borings, 5 groundwater samples, 10 soil samples (5 shallow and 5 deep). One additional groundwater sample from existing MW.	Install monitoring wells, gauge wells, collect 2 rounds of groundwater samples
Pump House (Tank F)	Near Battery 216/Bunker 4	Suspected former tank location, Hazardous Materials	Petroleum	Magnetometer survey to verify UST. If UST location is confirmed: 5 Geoprobe borings, 5 groundwater samples, 10 soil samples (5 shallow and 5 deep)	Install monitoring wells, gauge wells, collect 2 rounds of groundwater samples
Battery 112	Bunker-3	Oil Staining	PCBs	Assessment for access to Battery, site survey to identify any tanks or staining, 3 Concrete chip samples	
Building 107	Cashin #5, Electrical Sub-station	Electrical	PCBs	Access Basement, verify liquids in transformers, sample transformer fluids (if applicable) and sample for PCBs	
Building 201	Cashin #1, Main Radar Tower	Electrical	PCBs	Site Survey to identify staining, 3 PCB wipe samples	

Attachment 2 – Areas of Concern Summary Table

Area of Concern	Additional Site Names	Reason for Concern	Potential Impact	Phase 1	Phase 2
SS-1 through SS-27	Abandoned Waste Disposal Systems (Site-wide)	Hazardous Material Disposal	Hazardous Materials	27 Geoprobe borings, 27 soil samples (specific depths), and 27 groundwater samples at each location	Install monitoring wells, gauge wells, 2 rounds of groundwater sampling at each well
Motor Pool		Hydraulic lift, Cesspool, Ordinance Repair	Petroleum, Hazardous Materials, Munitions	3 Geoprobe borings, 3 groundwater samples and 5 soil samples (3 shallow and 2 deep), one additional GW sample from existing NPSW	Install monitoring wells, gauge wells, collect 2 rounds of groundwater samples
Engineering Field Office	Adjacent to Motor Pool	Ordinance Repair	Munitions	1 Geoprobe boring, 1 groundwater sample, 2 soil samples (1 shallow and 1 deep)	Install monitoring wells, gauge wells, collect 2 rounds of groundwater samples
H-1, H-2, H-3, H-18, H-20, H-22	Area of Possible DoD Related Disposal	Drums	Hazardous Materials	Site survey to identify drums, 12 surface and 12 subsurface soil samples (2 surface and subsurface at each H-location). If applicable, sample liquid in drums	Geoprobe boring, groundwater sample, and soil sample depending on the Phase 1 results
H-4	Area of Possible DoD Related Disposal	Construction Debris	Hazardous Materials	Site survey to identify debris, 3 Geoprobe borings, 3 groundwater samples, 6 soil samples	Install monitoring wells, gauge wells, collect 2 rounds of groundwater samples
H-5	Area of Possible DoD Related Disposal	Drums, Construction Debris	Hazardous Materials	2 surface and 2 subsurface soil samples, if applicable: sample liquid in drums, 16 soil samples under debris location	Geoprobe boring, groundwater sample, and soil sample depending on the Phase 1 results
H-7, H-8, H-9	Area of Possible DoD Related Disposal	Boilers	Petroleum	Site Survey to identify boilers, 3 surface soil samples (1 under each)	Geoprobe boring, groundwater sample, and soil sample depending on the Phase 1 results
H-11	Former Power Plant	Suspected Contamination	Petroleum, Metals, PCBs	2 Geoprobe borings, 2 groundwater samples, 4 soil samples (2 shallow and 2 deep)	Geoprobe to perched groundwater table, soil and groundwater sampling
H-12	Sewage Ejector Station	Suspected Contamination	Hazardous Materials	1 Geoprobe boring, 1 groundwater sample, and 2 soil samples (1 shallow and 1 deep)	Install monitoring wells, gauge wells, 2 rounds of groundwater sampling

Attachment 2 – Areas of Concern Summary Table

Area of Concern	Additional Site Names	Reason for Concern	Potential Impact	Phase 1	Phase 2
H-14, H-15	Coal Storage Area	Suspected Contamination	PAH	6 Geoprobe borings (3 borings at each location), 6 groundwater samples and 12 soil samples (6 shallow and 6 deep)	Install monitoring wells, gauge wells, collect 2 rounds of groundwater samples
H-16	Sewage Treatment Area	Suspected Contamination	Hazardous Materials	Site Survey, 3 Geoprobe borings, 3 groundwater samples and 6 soil samples (3 shallow and 3 deep)	Install monitoring wells, gauge wells, collect 2 rounds of groundwater samples
H-17, H-21	Area of Possible DoD Related Disposal	Open Pits	Potential Release	Site Survey to identify pits, 6 geoprobe borings (3 at each location), 6 groundwater samples and 12 soil samples (6 shallow and 6 deep)	
H-19	Area of Possible DoD Related Disposal	550 gallon Storage Tank	Potential Release	Site Survey to identify tank, 2 surface soil samples, liquid characterization if applicable	Geoprobe borings with soil and groundwater sampling, based on Phase 1 results
Camp Hero State Park Bluffs	N/A	N/A	N/A	Visual Survey, remove metal debris	
Background Samples	N/A	N/A	N/A	6 Geoprobe borings (3 borings at 2 locations), 6 groundwater samples and 20 soil samples (10 shallow and 10 deep)	

Notes:

All sampling details in the Final Technical Memorandum are a preliminary estimate. Specific sampling frequency, quantity, and locations will be finalized in Remedial Investigation Work Plan.

AST Aboveground Storage Tank
DoD Department of Defense
N/A Not Applicable
PAH Polyromantic Hydrocarbons
PCB Polychlorinated Biphenyls
UST Underground Storage Tank