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Quality Assurance Surveillance Report Remedial Action at Former Lake Hancock Target Range

NAS Whidbey Island
Whidbey Island, Washington

Department of the Navy
Naval Facilities Engineering Command Northwest
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Contract No. N39430-16-D-1802, Task Order 022

INTERNAL DRAFT
QUALITY ASSURANCE SURVEILLANCE REPORT
REMEDIAL ACTION AT
FORMER LAKE HANCOCK TARGET RANGE
NAS WHIDBEY ISLAND
WHIDBEY ISLAND, WASHINGTON

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ACRONYMS AND ABBREVIATIONS

BSI	blind seed item
DFW/DFOW	definable feature of work
ESS	Explosive Safety Submission
ESTS	Environmental Security and Technology Services
FCR	field change request
FS	Feasibility Study
IVS	Instrument Verification Strip
LHTR	Lake Hancock Target Range
LUC	land use control
MC	munitions constituents
MD	munitions debris
MDAS	material documented as safe
MEC	munitions and explosives of concern
MPPEH	material potentially presenting an explosives hazard
NAS	Naval Air Station
NAVFAC NW	Naval Facilities Engineering Command Northwest
NCR	non-conformance report
NFA	no further action
PA	Preliminary Assessment
QA	quality assurance
QAPP	Quality Assurance Project Plan
QASP	Quality Assurance Surveillance Plan
QASR	Quality Assurance Surveillance Report
QC	quality control
RA	removal action
RAWP	Remedial Action Work Plan
ROD	Record of Decision
SHA	Site Hazard Assessment
SI	site inspection
SOP	Standard Operating Procedure
SUXOS	Senior UXO Supervisor
UXO	unexploded ordnance

1.0 INTRODUCTION

This Quality Assurance Surveillance Report (QASR) presents the actions and results of the quality assurance (QA) activities performed by Battelle Memorial Institute (Battelle) as the independent government QA contractor for the Removal Action (RA) at the Lake Hancock Target Range (LHTR), Naval Air Station (NAS) Whidbey Island, Whidbey Island, Washington for the Naval Facilities Engineering Command Northwest (NAVFAC NW) under the Navy Environmental Security and Technology Services (ESTS) Contract N39430-16-D-1802, Task Order 022.

1.1 Project Location and Background

The Former LHTR is located about 20 miles south of NAS Whidbey Island and 1 mile north of Greenbank, immediately west of State Route 525. The site encompasses approximately 423 acres and is located within a large and diverse coastal lagoon system that includes salt marsh, brackish marsh, freshwater marsh, and bog forest subsystems. The site also includes a saltwater lagoon, Lake Hancock (Figure 1-1). A 50-foot wide channel connects Lake Hancock to Admiralty Inlet, which extends tidal influence on Lake Hancock. The work area is approximately 28 acres comprising the main target area and an overrun section along the beach.

The NAS was commissioned on September 21, 1942, originally as a base for seaplane patrol operations, munitions training, torpedo overhaul, and personnel induction training. NAS Whidbey Island is divided into four distinct parcels: (1) Ault Field, the main airfield, (2) Seaplane Base located at Crescent Harbor, (3) the Lake Hancock property, and (4) Outlying Field Coupeville. The mission of NAS Whidbey Island is to provide home-basing support for tenant units, support personnel and accompanying family members.

LHTR was used for aerial bombing training from 1943 to 1971. Munitions used at this range included practice bombs and rockets equipped with spotting charges or filled with sand. A spotting charge is explosive filler designed to produce a flash and smoke when detonated. Aircraft would approach the site from the east, make a steep diving approach over the target located on the ground, release the practice bombs, and exit the area westward over Admiralty Inlet. The range included a triangular-shaped yellow target with a white bull's eye, a radar screen, two range and deflection observation shacks, a scoring house, and an observation post with a radio transmitter and receiver. All structures associated with the range have been removed from the site.

The site is no longer used for aerial bombing target practice. The area is still located within restricted air space (R-6701), and a portion of the property is currently being used by the military to monitor training exercises in Admiralty Bay and in the airspace overhead. The Navy uses the area just off shore of the Former LHTR, which is known as operating area Navy 7, for training. The Former LHTR is currently fenced on the northern and eastern sides and partially fenced on the southern side with locked gates. Access by the public from the west to the beach is restricted (via signage) by the Navy; however, there are no physical barriers to prevent access to the beach and the site. Figure 1-2 illustrates the bombing scenario and outlines the target area.

Figure 1-1_Lake_Hancock_location02.mxd Date: 5/22/2019

Drawn by: saylor NAD 1983 State Plane Washington North FIPS 4601 (Feet)

U.S. NAVY	Figure 1-1 Location of Former Lake Hancock Target Range	FORMER LAKE HANCOCK TARGET RANGE NAS WHIDBEY ISLAND

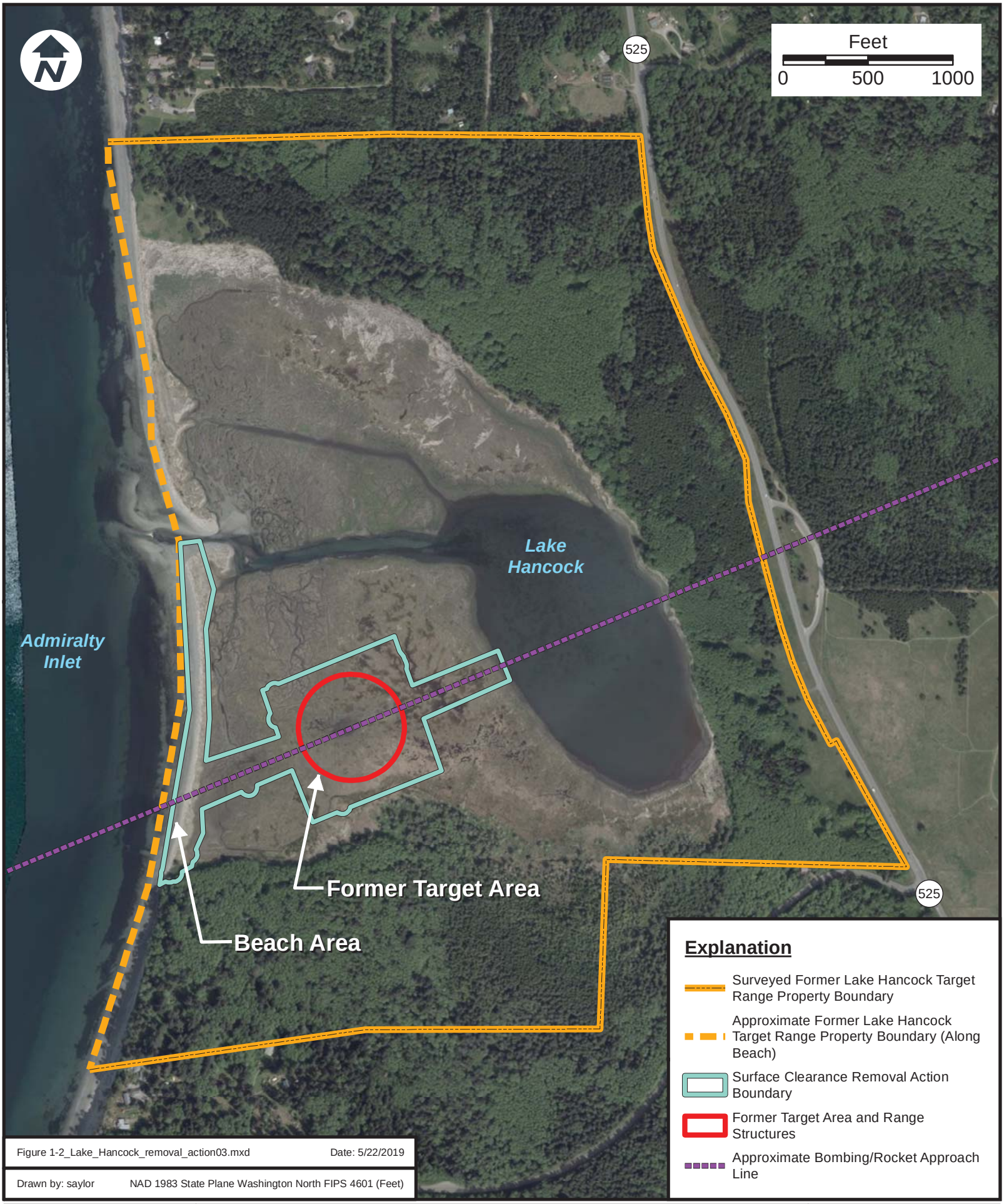

Figure 1-2_Lake_Hancock_removal_action03.mxd Date: 5/22/2019

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U.S. NAVY	Figure 1-2 Former Lake Hancock Target Range Removal Action Area	FORMER LAKE HANCOCK TARGET RANGE NAS WHIDBEY ISLAND

The source of potential MEC/MPPEH at LHTR is the munitions that were used during aerial bombing practice. Table 1-1 provides a summary of previous investigations. There have been no cited violations under federal or state environmental law or any past or pending enforcement actions pertaining to the cleanup of LHTR.

Table 1-1. Previous Investigations

Year	General Description of Activities
1970s	To support potential land transfer options, three munitions clearance actions were completed between 1972 and 1973. During the first clearance, debris was located primarily near the target area. Divers also cleared the intertidal area from the beach to 50 yards out into Admiralty Inlet. A large number of rocket motors were found in the waters off the beach. Divers also searched the lagoon and determined its depth to be about 2 feet. Approximately 14 tons of munitions debris (MD; consisting of bombs, rockets, and smoke/pyrotechnic devices) were removed during this clearance. All recovered MD was declared inert. A smaller amount of MD was removed during the second and third clearance events. In total, 15 tons of debris was removed. In addition to these three clearance events, a fourth clearance was conducted at an unknown date. The occurrence of the clearance was documented in a February 1982 memorandum from the Executive Officer of NAS Whidbey Island. The document states that several undetonated 25-pound bombs containing spotting charges had been recovered from the site.
1998	A Site Hazard Assessment (SHA) was conducted which included ecological, archaeological, and geophysical screening surveys, collection of sediment and surface water samples, and the removal of steel plates from the target area and contaminated sediments from the site. The Navy installed perimeter signs to discourage unauthorized entry into the site and to reduce potential damage to the natural resources in this area (URS Greiner, 1998; URS Consultants, 1996a, 1996b, and 2000; EOD Technology, Inc., 1996).
2007	The Preliminary Assessment (PA) summarized the history of munitions use at several former ranges at NAS Whidbey Island including the Former LHTR (Malcolm Pirnie, 2007). A visual survey of the Former LHTR was conducted, and MD was observed at the site, including along the beach. Previous sample results were summarized in this report and munitions constituents (MC) were not detected in samples collected from the target area.
2010	The Site Inspection (SI) included surface and subsurface soil, sediment, and surface water sampling for MC. No MC were detected at concentrations greater than screening values. The potential threat to human health from MC was evaluated and no risks to human health or the environment were identified. It was recommended that the Former LHTR be considered No Further Action (NFA) for MC (Tetra Tech EC, 2010).
2011	A Feasibility Study (FS) was completed to develop, evaluate, and compare several remedial alternatives to address potential explosives risks at the Former LHTR (Tetra Tech, 2011).
2013	A wetland impact study and delineation field efforts were conducted to evaluate potential impacts to the Former LHTR caused by implementation of the remedial alternatives described in the FS (Tetra Tech, 2013). The wetland impact study recommended Alternative 2, Surface Removal with land use controls (LUCs). The objective is to have the least environmental impact while still providing an increased level of safety.
2016	A Proposed Plan was prepared to provide the public information on the preferred remedial alternative for addressing munitions removal at LHTR (Tetra Tech, 2016).
2016	A Record of Decision (ROD) was prepared to recommend a remedial alternative for addressing munitions at LHTR (U.S. Navy, 2016).

1.2 Scope and Objective

The major components of the selected remedy for LHTR include the following:

- Surface removal of munitions items;
- Annual surface inspections and munitions removals in and around the target area;
- Surface inspections and munitions removals every five years within the removal action area boundary until no munitions and explosives of concern (MEC)/materials potentially presenting and explosive hazard (MPPEH) items and less than 10 material documented as safe (MDAS) items are identified during inspections; and
- LUCs.

The scope of the activities described in this report are the surface inspections and munitions removal portion of the remedy. Table 1-2 presents the proposed 2018 work at LHTR.

Table 1-2. Proposed 2018 Work at LHTR

Scheduled Activity	Acreage (Approximate)
• Conduct vegetation removal as required • Conduct a technology-aided surface removal which includes removal of all metallic items, 2 inches or larger in any dimension, within the designated clearance area; removal verification; and classification of each item as MEC/MDAS/MD, non-munitions metallic debris. The clearance area is primarily in the area near the former target, along the aircraft target approach line, and along the beach (see Figure 1-2) • Inspect, process, dispose of MEC/MPPEH • Inspect and process other munitions debris for certification as MDAS • Install LUCs	28 acres + step outs[(a)] (~35 200 × 200 ft grids)

(a) Step-outs will be required if MEC or MPPEH are identified on the surface within 50 ft of the edge of the removal action area. Step-outs will be conducted outward to ensure that a 50-ft buffer around the removal action area is clear of MEC/MPPEH.

The objective for the QA team was to monitor the full range of the production contractors' quality control (QC) activities as follows:

- Evaluate contractor work against the pre-work performance measures.
- Identify to the Government any contractor work that deviates from the approved project plans or is not completed, in whole or in part, as required by the approved project plans.
- Conduct QA audits and field surveillances of MEC removal activities including, but not limited to:
  - (1) audits of contractor QC inspections and documentation;
  - (2) field surveillances of the surface removal process;
  - (3) field surveillances of the MEC removal/disposal process; and

(4) implementation of a QA blind seeding program.

- Perform QA to confirm the completeness of surface clearance for MEC in accordance with the approved project plans.
- Prepare a QA report that includes, at a minimum, methodologies, findings, conclusions, and recommendations. The purpose of this report is to memorialize the independent government determination of whether the project met all the QC requirements specified in the approved project plans.

All QA objectives were met and are documented in this report. Figure 1-3 illustrates the final grid configuration including inaccessible areas and step-out areas at the conclusion of the 2018/2019 removal action.

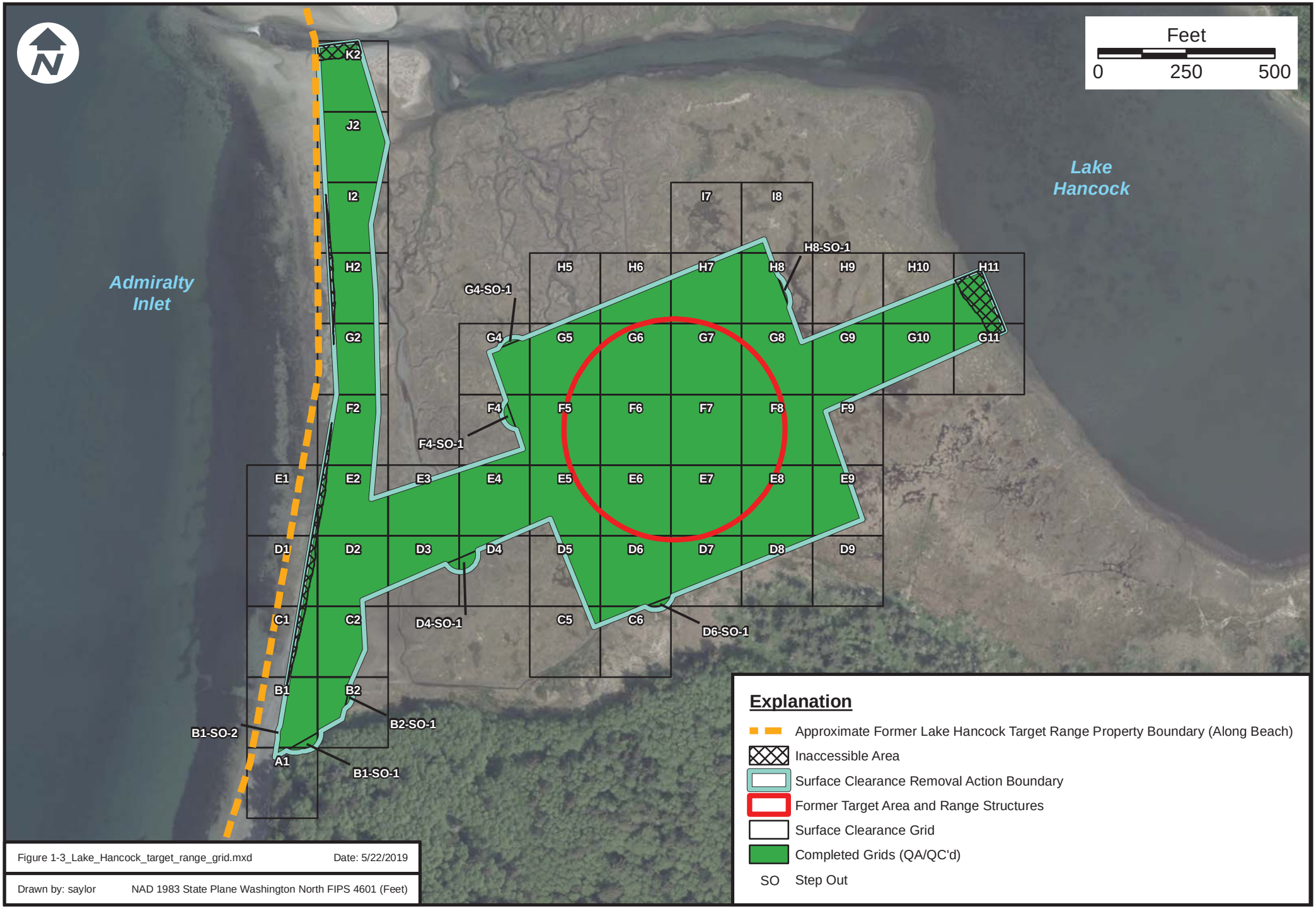

Figure 1-3_Lake_Hancock_target_range_grid.mxd Date: 5/22/2019

Drawn by: saylor NAD 1983 State Plane Washington North FIPS 4601 (Feet)

U.S. NAVY

Figure 1-3
Former Lake Hancock Target Range
Final Surface Clearance Grid Structure

FORMER LAKE HANCOCK
TARGET RANGE
NAS WHIDBEY ISLAND

1.3 Quality Assurance Team Organization

Figure 1-4 shows the QA team organization. Direct support was provided by one unexploded ordnance (UXO) QA Specialist who was on site for the duration of the munitions removal portion of the project. As needed, advisory support was provided by various off-site staff.

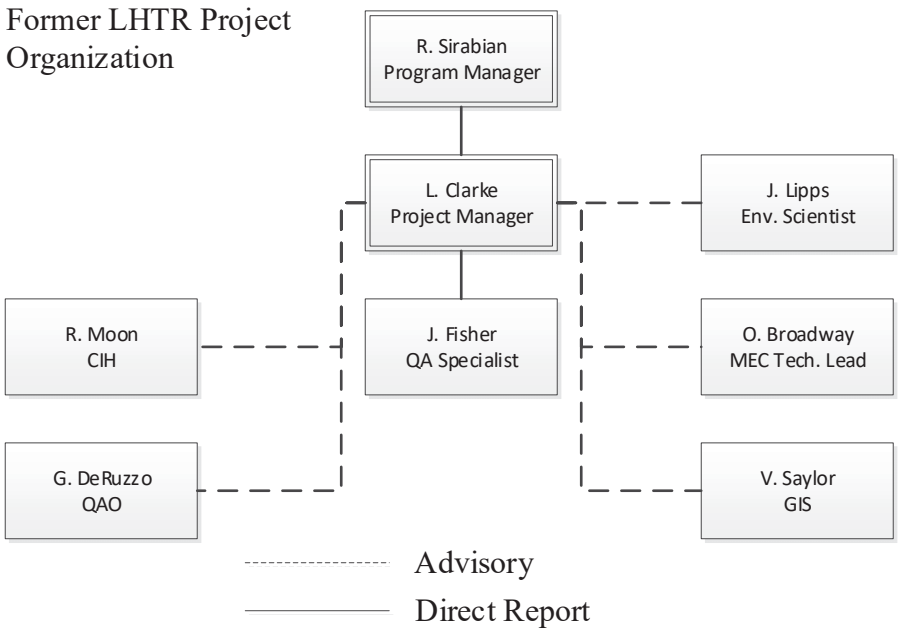

Figure 1-4. QA Organization

1.4 Quality Assurance Communication and Reporting

Battelle's QA Specialist used two primary communication tools during the field effort for problem resolution. The first tool was dialogue, which was utilized as an informal problem resolution tool involving consultation with the contractor QC and/or field management staff to discuss and resolve problems. The second tool was the non-conformance report (NCR) process, which is a formal problem resolution tool. NCRs were issued when a problem arose that required an examination of the underlying factors by the project team and the development of a remedy to address the root cause of the problem. The production contractor team was responsible for conducting the root-cause analysis and developing the proposed corrective action which was approved by QC and forwarded to the QA team. The QA team reviewed the analysis and provided input to the Navy. A weekly QC meeting was hosted by the production contractor. That forum was used by the QA team to provide an update on QA activities, including a review of NCRs that were in process and the status of the corrective actions.

The QA team submitted a daily report to the Navy that detailed the QA activities and any noted field observations. The daily QA report also detailed the daily and project cumulative hours worked.

2.0 QUALITY ASSURANCE ACTIONS

The QA actions taken in support of the LHTR RA included:

- Attendance and oversight of the preparatory phase QC inspections;
- QA of the contractor field activities, which included:
  - Daily QA surveillances of the field-work-related definable features of work (DFWs) according to the frequency approved in the Quality Assurance Surveillance Plan (QASP);
  - Inspection and verification of the grid layout;
  - Inspection and verification of the Instrument Verification Strip (IVS) installation in meeting the adequacy standards in the approved Quality Assurance Project Plan (QAPP) and standard operating procedures (SOP);
  - Inspection of a minimum of 5% of each grid and verification of completion of each grid by the QA team;
  - Implementation of a QA Blind Seed Items (BSI) program for surface sweep operations;
  - Inspection and certification of MDAS as the government representative for the turn in documents (1348-1a);
  - Review of the field work-related QC documentation to verify compliance with the frequency requirements and adequacy standards in the approved QAPP and SOPs;

Battelle provided oversight of NCRs to include reviewing root cause analysis and recommending acceptance of the proposed corrective actions or proposing an alternative, conducting follow-up inspections of the corrective action (e.g., re-work), to include verification of required re-inspections and documentation by QC, and ensuring timely close out of open NCRs.

2.1 Quality Assurance for Planning and Reporting

Battelle provided review and comment and back-check on comment responses on the following project planning documents:

- Internal Draft and Draft Remedial Action Work Plan (RAWP)
- Internal Draft and Draft Explosives Safety Submittal (ESS)
- Internal Draft and Draft MEC QAPP
- Internal Draft Remedial Action Clearance Report

2.2 Field Quality Assurance Activities

The responsibility for documenting that routine field work was performed according to established procedures rests with the production contractor. The production contractor followed the three phases of control inspection system by conducting preparatory, initial, and follow-up inspections of all DFWs and establishing procedures for handling non-conformities (e.g., deficiency notices and NCRs). QA personnel attended the preparatory meetings to ensure that there was a clear understanding of the DFW objectives, safety requirements, and work procedures.

The objective of QA field surveillances was to determine if routine QC inspections were occurring (e.g., by evaluating QC surveillance checklists and related documentation), determine whether non-conforming conditions were being identified by QC, and determine how the non-conformities were handled. When non-conforming conditions were reported, the production contractor QC personnel conducted root-cause analysis for all NCRs that were issued and determined the need for re-work based on the analysis. The QA team then reviewed the proposed corrective action and either recommended acceptance of the proposed corrective action or presented an alternative corrective action to the Navy Remedial Project Manager. Table 2-1 identifies the required QC inspections, the frequency for those inspections, and the QC documentation for those inspections. The QA team performed a check of routine QC inspections and documented the DFW, team, grid, and inspection results by reviewing the QC documentation identified in Table 2-1.

Table 2-1. QC Inspection Requirements Table

Definable Feature of Work (DFW)	QC Surveillance Frequency	Contractor Documents to Review
Mobilize and Prepare the Site	Once	Administrative Documents and SOPs, Preparatory Phase Inspection Checklists, NCR
Install the Functional Check Area	Once, upon installation	N/A
Remove Vegetation	Daily	Preparatory, Initial, and Follow-up QC Checklist, QC Surveillance Form, NCR
Conduct Technology-Aided Surface Removal	Daily	Preparatory, Initial, and Follow-up QC Checklist, QC Surveillance Form, NCR
Install the Functional Check Area	Once, upon installation	N/A
Manage and Dispose of MEC	Per event	Preparatory, Initial, and Follow-up QC Checklist, QC Surveillance Form, NCR
Manage and Dispose of MPPEH/MDAS	Daily, per event	Preparatory, Initial, and Follow-up QC Checklist, QC Surveillance Form, NCR
Conduct Site Restoration	Daily	QC Surveillance Form, NCR
Demobilize (Administrative)	Per event	QC Surveillance Form, NCR

2.2.1 Surveillances of Field Operations

The QA team provided periodic spot checks using audits and surveillances of all DFWs throughout the field season to provide additional assurance to the Navy that work was being performed according to project plans. Spot checks and audits were based on the QC planned project assessments addressed in Worksheet #14 of the MEC QAPP. Table 2-2 provides a summary of the QA surveillances that were conducted. Appendix A provides the backup documentation for the QA surveillances.

Table 2-2. Table of QA Surveillances

Work Element	# Surveillances
Grid Stakeout	3
Surface Clearance	32

2.2.2 Summary of Field QA Activities

The project site comprised a total of 54 grids. QA personnel conducted a final grid check on all 54 grids (100%). Nine of the grids contained inaccessible areas. Appendix B provides a detailed grid status form showing the dates of grid completion, QC check and QA check along with any notes relevant to the grid inspections. All of the grids passed QA inspection.

3.0 DEFICIENCIES AND NON-CONFORMANCES

QA personnel issued two NCRs during the field implementation portion of the project. Table 3-1 provides the details. QC personnel did not issue any non-conformance reports.

Table 3-1. Deficiencies and Non-Conformances

NCR	Date Approved/Submitted	Grid	Description	Root Cause Analysis	QA Status
001	1/11/19 by QA on 12/6/18	F5	MPPEH found during QA	Early morning ice and frost obscured the item from visual search	Closed 1/11/19
002	1/11/19 by QA on 12/7/18	D4	MPPEH found during QA	Early morning ice and frost obscured the item from visual search	Closed 1/11/19

4.0 FIELD CHANGE REQUESTS

Five Field Change Requests (FCRs) were issued during the field phase of the work. Details of the FCRs are provided in Table 4-1.

Table 4-1. Field Change Requests

FCR	Description	Date Implemented
001	Addresses the location for the weekly QC meetings, eliminating temporary construction facilities because the site cannot support them, changes to safety and security because no site offices/facilities are available, location of the Inadvertent Discovery Plan on site and adjustments to Figure 2 – Administrative Layout.	Nov 27, 2018
002	Revised the location for the explosives storage magazine and made revisions to Figure 3 in the final work plan and figures C1, C2 and C3 in the ESS.	Dec 3, 2018
003	Changed ESS and QAPP to reflect that grid layout to be done by UXO personnel with handheld GPS vice the licensed surveyor specified in the work documents.	Dec 18, 2018
004	Addressed transit of munitions debris across the site due to the inlet between Lake Hancock and Admiralty Bay separating one side from another.	Dec 18, 2018
005	Assigned an alternate Senior UXO Supervisor (SUXOS) and UXO Safety Officer to the site.	Dec 18, 2018