

Appendix B

Former Duck Target Facility Munitions Response Site

FUDS Remedial Investigation

Technical Project Planning Meeting 1

March, 12 2015

Prepared by:

U.S. Army Corps of Engineers

Former Duck Target Facility Munitions Response Site (MRS)

FUDS Remedial Investigation (RI)

FUDS Property Number: I04NC098401

Technical Project Planning Meeting 1

12 March 2015



Agenda

- Introductions
- Important Terminology
- Military Munitions Response Program (MMRP)
- Technical Project Planning (TPP) Process
- Review of Site History and Previous Investigations
- Remedial Investigation (RI) Goals
- Conceptual Site Models (CSM)
- Technical Approach
- Schedule



Introductions

ERDC

- Jeff Waters.....Chief Coastal Observations & Analysis Branch
- Brian Scarborough.....Civil Engineering Tech
- Jason Pipes.....Civil Engineering Tech

Town of Duck

- Don Kingston.....Mayor
- Chris Layton.....Town Manager
- Monica Thibodeau.....Town Council
- Jon Britt.....Town Council
- Donna Black.....Chief, Fire Department

Dare County

- Warren Judge.....Chairman



Introductions (continued)

State of North Carolina

- Doug Rumford.....Hydrogeologist, NCDENR

USACE Wilmington District (PM District)

- Ray Livermore.....Project Manager
- Mitch Hall.....Geotechnical and Dam Safety Supervisor

USACE Savannah District

- Julie Hiscox.....FUDS Program Manager



Introductions (continued)

USACE Baltimore District (MMDC)

- Sal Van Wert.....Technical Lead
- Paul Greene.....Chief, Explosive Safety
- Travis McCounMMDC Program Manager
- Chuck Lechner.....Environmental Engineer
- Deborah McKinley.....Environmental Engineer



Important Terminology

- **MILITARY MUNITIONS RESPONSE PROGRAM (MMRP)**
- **TECHNICAL PROJECT PLANNING (TPP)**
- **COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA)**
 - ▶ Passed in 1980, CERCLA imposes strict joint and several liability for cleaning up environmentally contaminated land
- **NATIONAL CONTINGENCY PLAN (NCP)**
 - ▶ Federal government's framework for responding to both oil spills and hazardous waste releases
- **REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS)**
 - ▶ RI - Mechanism for collecting data to characterize site conditions, determine nature of waste, assess potential risk to human health and the environment, and conduct treatability testing to evaluate the potential performance and cost of the treatment technologies that are being considered
 - ▶ FS - Mechanism for development, screening, and detailed evaluation of alternative remedial actions



Important Terminology (continued)

- **MUNITIONS AND EXPLOSIVES OF CONCERN (MEC)**

- ▶ Unexploded Ordnance (UXO) –Military munitions that were
 - a) primed, fused, armed, or otherwise prepared for action;
 - b) fired, dropped, launched, projected, or placed; and
 - c) remain unexploded whether by malfunction, design, or any other cause
- ▶ Discarded Military Munitions (DMM) –Military munitions that were abandoned without proper disposal
- ▶ Explosive compounds in high enough concentrations to pose an explosive hazard

- **MUNITIONS DEBRIS (MD)**

- ▶ Remnants of munitions (e.g., fragments, penetrators, projectiles, shell casings, links, fins, etc.) remaining after munitions use, demilitarization, or disposal

- **MUNITIONS CONSTITUENTS (MC)**

- ▶ Explosives and non-explosive materials originating from military munitions
- ▶ Explosive compounds
- ▶ Metals



Important Terminology (continued)

- **MATERIAL POTENTIALLY PRESENTING AN EXPLOSIVE HAZARD (MPPEH)**
 - ▶ Material that prior to determination of its explosive safety status, potentially contains explosives or munitions or potentially contains a high enough concentration of explosives that the material presents an explosive hazard
- **MEC Hazard Assessment (MEC HA)**
 - ▶ A multiagency (EPA, OSD, Army, Navy, states, DOI, and Tribes) tool for assessing the MEC explosive hazards (USEPA, 2008).
- **Probability Assessment (PA) –**
 - ▶ The Probability Assessment is developed to consider past and/or current use of the property where military/munitions related activities occurred to include any MEC investigative/removal actions conducted on the property. Per these considerations a determination will be made to the probability of encountering MEC. This determination will be used to plan the type and level of support which may be necessary for the affected footprint(s) on the property.



What is FUDS?

- Formerly Used Defense Sites (FUDS) is defined as real property that was owned by, leased to, or otherwise possessed by the United States and under the jurisdiction of DoD that were transferred from DoD control prior to 17 October 1986.
 - ▶ Property not currently under DoD control
 - ▶ The release occurred prior to 17 OCT 1986
 - ▶ The property was transferred prior to 17 OCT 1986
 - ▶ The property meets other FUDs eligibility criteria as defined in (ER) 200-3-1.



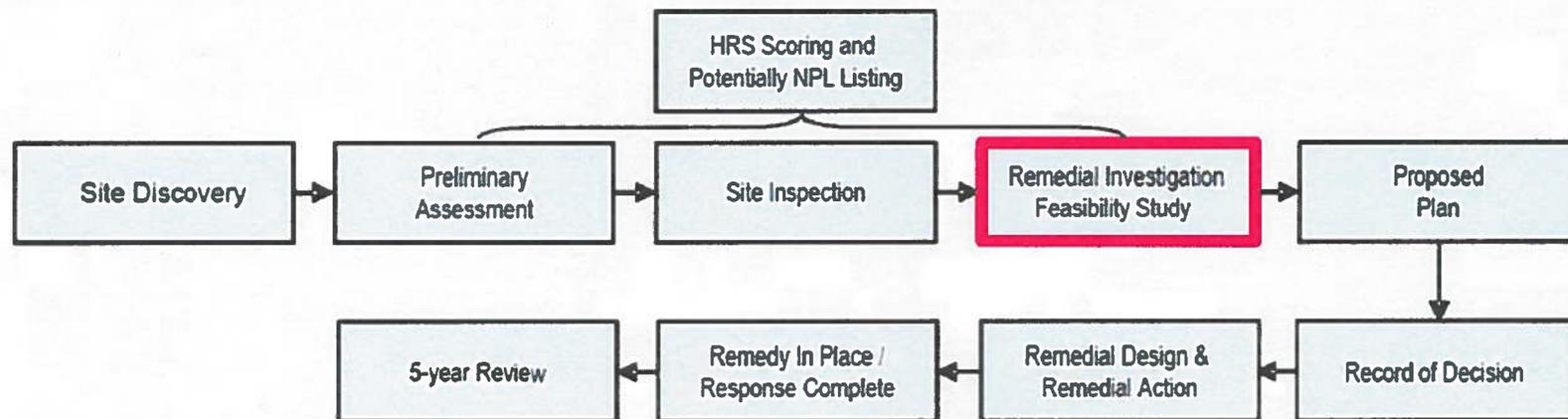
What is the MMRP?

- The Department of Defense (DoD) established the MMRP in September 2001 under the Defense Environmental Restoration Program (DERP) to address defense sites with MEC.
- Within the MMRP, DoD established a requirement to identify, through an inventory, all locations other than operational ranges requiring a military munitions response.



What is the MMRP?

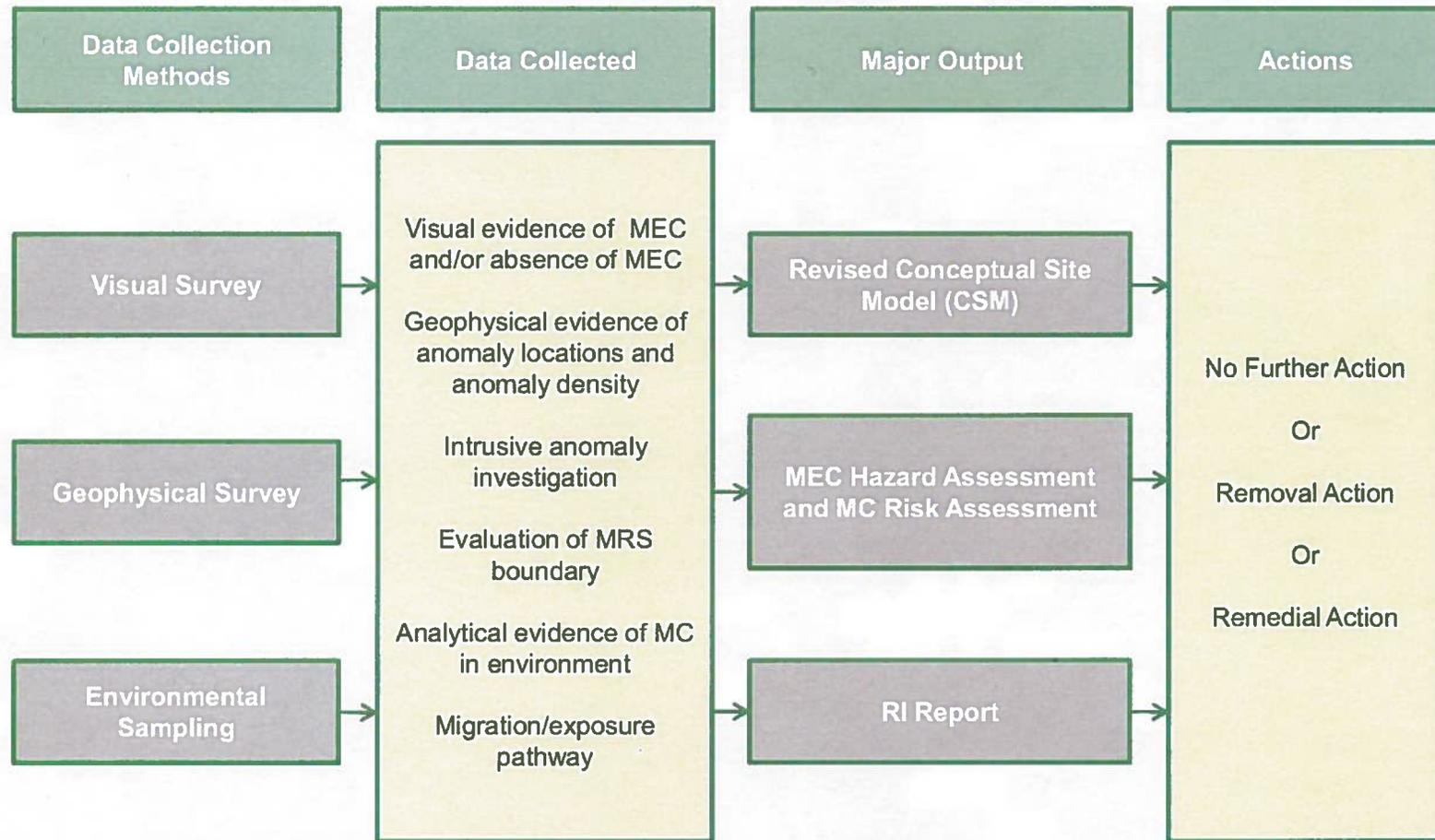
The MMRP follows the process outlined in CERCLA and the NCP. Typical major phases of the CERCLA process are illustrated below.



HRS = Hazard Ranking System
NPL = National Priorities List



Typical RI Decision Model



What is Technical Project Planning?

■ **TPP Objectives**

- ▶ Identify current project
- ▶ Determine data needs
- ▶ Determine data quality objectives
- ▶ Develop data collection options
- ▶ Finalize data collection program

■ **TPP Meetings (Desktop RI/FS)**

- ▶ Meeting 1 held prior to development of the Draft RI Report
- ▶ Meeting 2 held to finalize the RI Report
- ▶ Meeting 3 held prior to development of FS (if needed)
- ▶ Meeting 4 held to finalize FS and develop input parameters for Proposed Plan and Decision Document.



Data Quality Objectives (DQO)

- **Seven Steps to Develop DQO**
 - ▶ State the Problem
 - ▶ Identify the Decision
 - ▶ Identify Inputs to the Decision
 - ▶ Define the Study Boundaries
 - ▶ Develop a Decision Rule
 - ▶ Specify Limits on Decision Errors
 - ▶ Optimize the Design for Obtaining Data

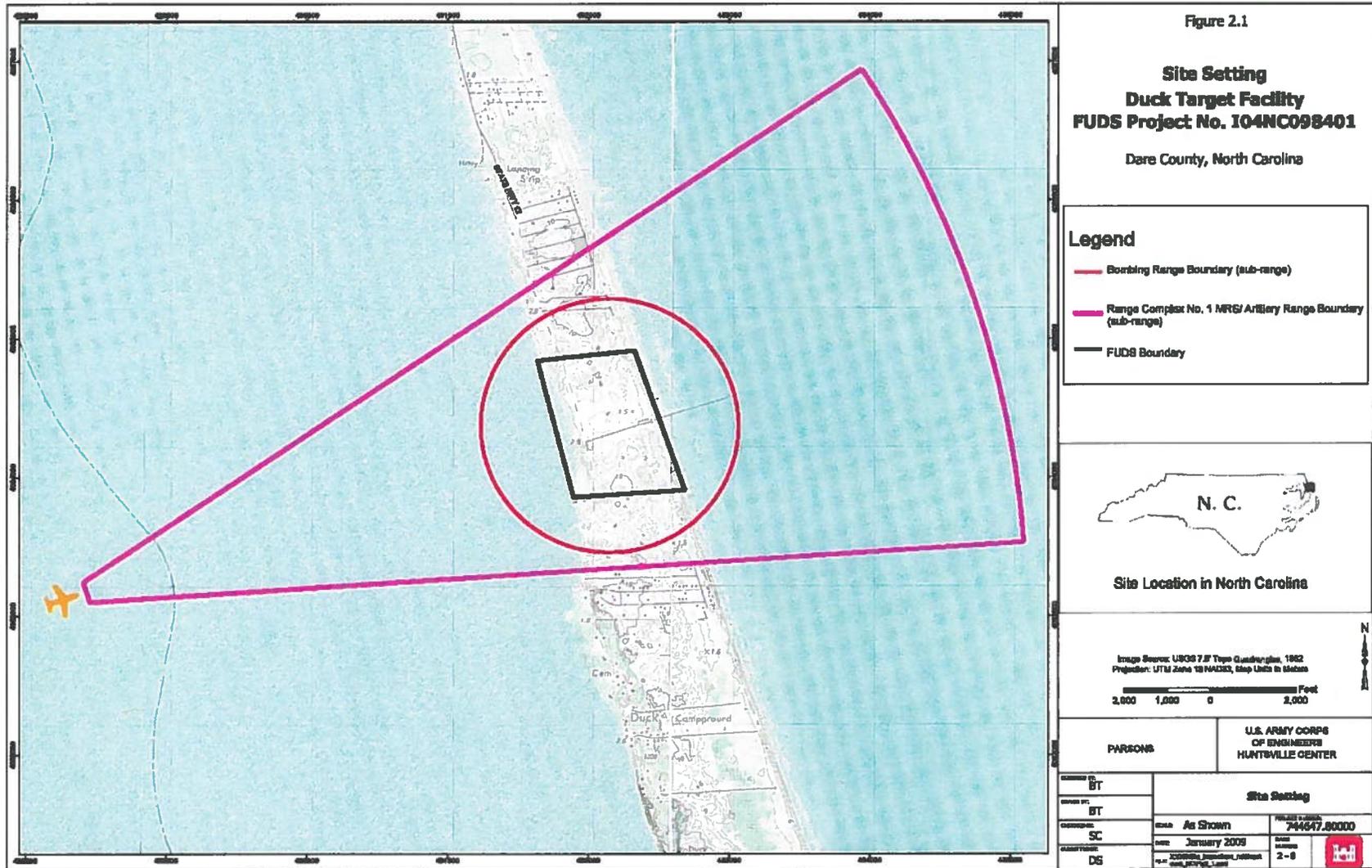


Data Quality Objectives (DQO) (continued)

- What is the question we are trying to answer?
- What is the data needed to answer the question?
- Does the data collected meet quality objectives?
- For the Duck Target Facility Munitions Response Site (MRS):
 - A large amount of data already exists
 - USACE is proposing a “Desktop” RI (no additional field data needed)
 - **Primary question for PDT: Is the past data sufficient to meet or data requirements?**



Duck Target Facility MRS - Site Map



Site History

- The Duck Target Facility MRS is located in the outer banks, Dare County, North Carolina.
- MRS acreage is 3,115 acres
 - 418 land acres
 - 176 acres owned by USACE
 - 242 acres privately owned
 - 2,697 water acres
- 176 land acres were transferred in 1973 to the Army. The property has since operated as a research facility for the USACE Engineer Research and Development Center (ERDC).



Site History (continued)

- The site was used as a Rocket and Bombing Range to train Navy pilots between 1941 and 1965
- Only practice munitions were used at the site.
- Numerous removal actions have occurred within the MRS.
- Over 1,000 tons of MPPEH has been removed/inspected and confirmed to be MDAS..
- Recoveries of “MEC” on the site have never been verified.



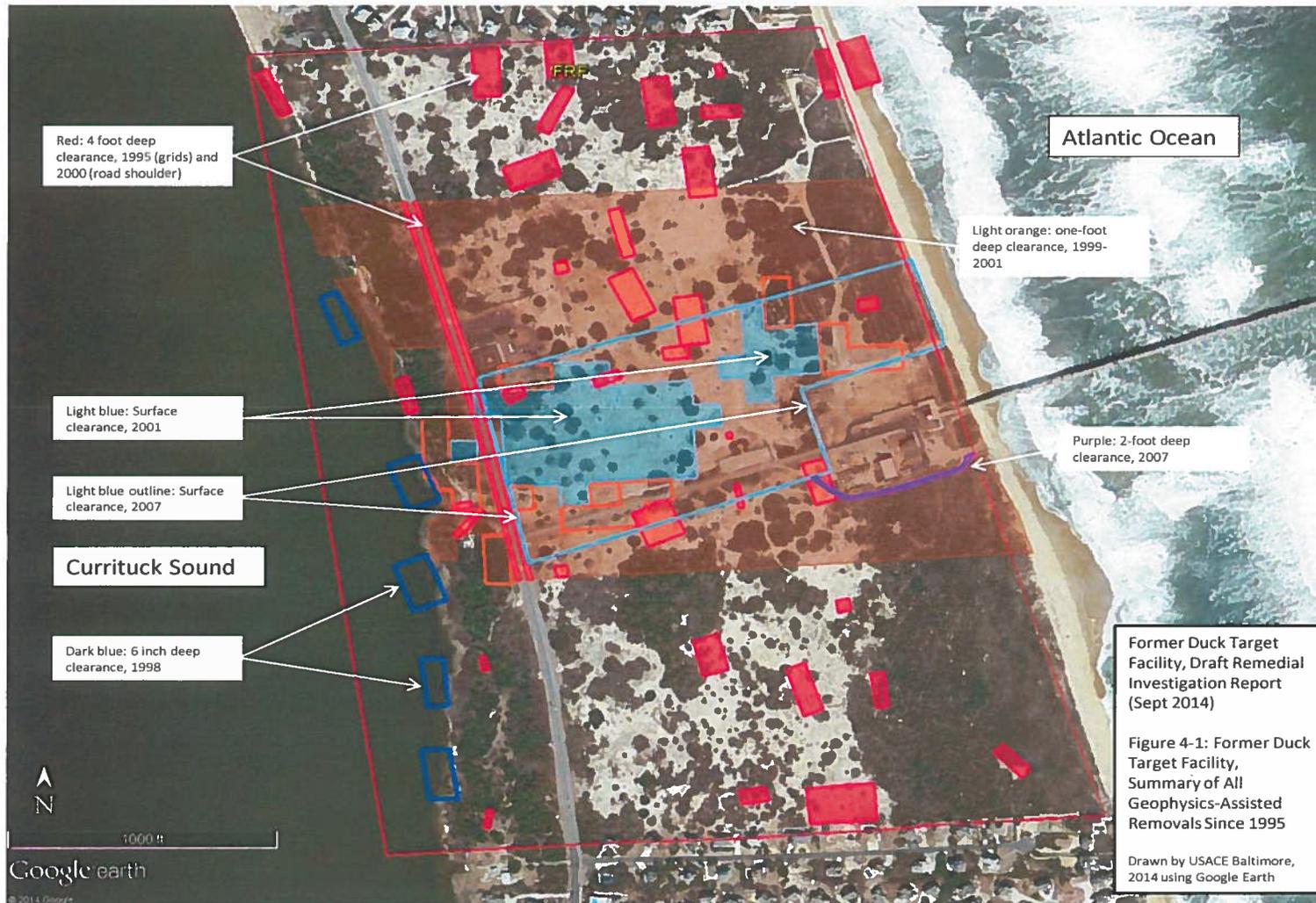
Previous Investigations

- Numerous investigations and removal actions have been conducted within the Duck Target MRS between 1971 and 2008

Event	Year
U. S. Navy Clearance	1971
USMC Response and Preliminary Assessment	1992
Interim Removal Action-Time Critical Removal Action/Construction Support	1993
USMC Removal Action for Construction Support	1994
Archive Search Report	1994
Engineering Evaluation/Cost Analysis (EE/CA) Investigation	1996
OE Removal Action HFA (NTCRA)	2000
OE Removal Actions EHSI (NTCRA)	2000
ASR Supplement	2004
ESTCP Demonstration of Underwater Equipment	2005
USACE Huntsville Five Year Reviews	2006
Removal Action (NTCRA)	2007
Site Inspection	2008



Previous Investigations at ERDC Field Research Facility



Previous Investigations (continued)

- **No confirmed MEC – all practice munitions**
- All MPPEH, munitions debris and scrap metal.
- Several 2.75” practice warheads discovered in late 1992 (destroyed)
- Early 1993 TCRA removed 821 MPPEH Items
- Construction in 1994 resulted in removal of 20 Tons of MPPEH
- 1996 – 2000 NTCRA removed over 3,500 MPPEH items
- EOD and fire department responses to local finds



Summary of MPPEH

ITEM	MODEL/TYPE	BODY	PROPELLANT	WARHEAD/FILL
2.25" Rocket (SCAR)	MK16 Mod 4, 5, 6	Steel	Ballistite (NC and NG)	No fill -Hollow or solid steel
Miniature Practice Bomb	MK5	Zinc	NA	No HE – Spotting charge
	MK23	Iron		
	MK43	Lead		
5 lb Practice Bomb	MK106	Steel	NA	No HE – Spotting charge
25 lb Practice Bomb	MK76	Iron	NA	No HE – Spotting charge
100 lb Practice Bomb	MK15, Mod 2	Steel	NA	Water or sand Spotting charge
50 lb Practice Bomb	MK89	Iron	NA	No HE – Spotting charge
250 lb Practice Bomb	MK86	Steel	NA	No HE – Spotting charge
2.75" Practice Rocket	MK2, MK3, MK4, MK5, MK6, MK7	Steel	Ballistite	No fill-hollow
3.5" Practice Aircraft Rocket	MK3	steel	Ballistite	Solid steel
5" Practice Rocket	MK28, MK32, MK34, MK35	Steel	Ballistite	No fill-hollow
11.75" Practice Rocket	MK4	Steel	Ballistite	No fill-hollow



Site Inspection

- SI was conducted in 2008 to evaluate the Duck Target Facility MRS for potential release of MEC and MC
- 5.5 Miles of Qualitative Reconnaissance
 - ▶ No MEC Found
 - ▶ Numerous MD found:
 - Spent Small Arms
 - Practice Rocket Pieces
 - Inert Practice Bombs (no spotting charges)
- 14 surface soil samples analyzed for MC



Site Inspection Results

- **MEC**
 - ▶ No release of MEC
 - ▶ Potential for training munitions (spotting charges)
- **MPPEH**
 - ▶ MD present, potential for unspent spotting charges.
 - ▶ Potentially complete human and ecological receptor pathways in surface and subsurface soils
- **Munitions Constituents (MC)**
 - ▶ Incomplete pathways where SI activities were performed
 - ▶ Soil samples indicate that explosives were not present above screening criteria
 - ▶ No further action for MC



Previous Investigations

The Bottom Line

- We have a lot of existing information!
- MEC has never been confirmed at the site.
- MPPEH / MD is present.
- High energy environment, constantly changing.
- The potential for unspent spotting charges to exist, however **extremely** unlikely.
- Collection of additional field data is not necessary to characterize the site. An RI Report can be completed using existing field data.

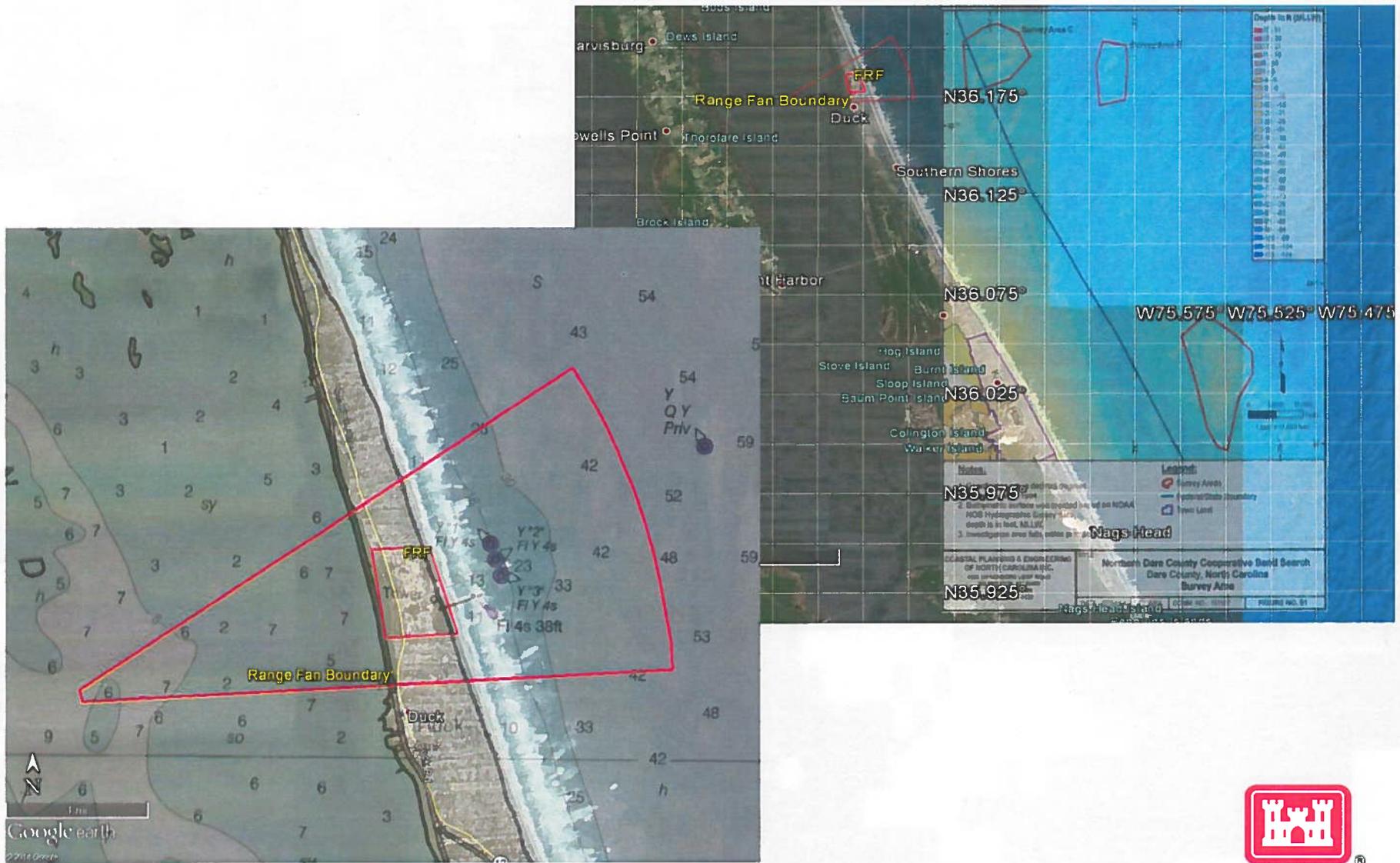


Goals of the Remedial Investigation

- Determine nature and extent of MPPEH at the site to support risk management decisions regarding whether or not there is a need for further action
- Refine Conceptual Site Model (CSM)
- Refine the MRS Boundary



Duck Target Facility MRS - Site Map



Conceptual Site Model

- Former Bombing and Rocket Range
- Navy pilots entered from the west and fired eastward at land-based stationary targets between 1941 and 1965.
- Objective was accuracy/precision training. Spotting charges were used to for observation.
- Practice Munitions Historically Used (HRR)
 - Practice Rockets – 2.25 – 11.75 Inches
 - Practice Bombs – Miniature – 250 pounds
 - Most Probable MMPEH – Mk4 Spotting Charge
- Potential for short and long rounds, deposition through waves, current, and erosion



Conceptual Site Model (continued)

- Troop barracks and spotting towers were located near the target areas
- Live munitions would not have been used due to proximity to facility personnel.
- MPPEH is present.
- No MEC has been confirmed at the site

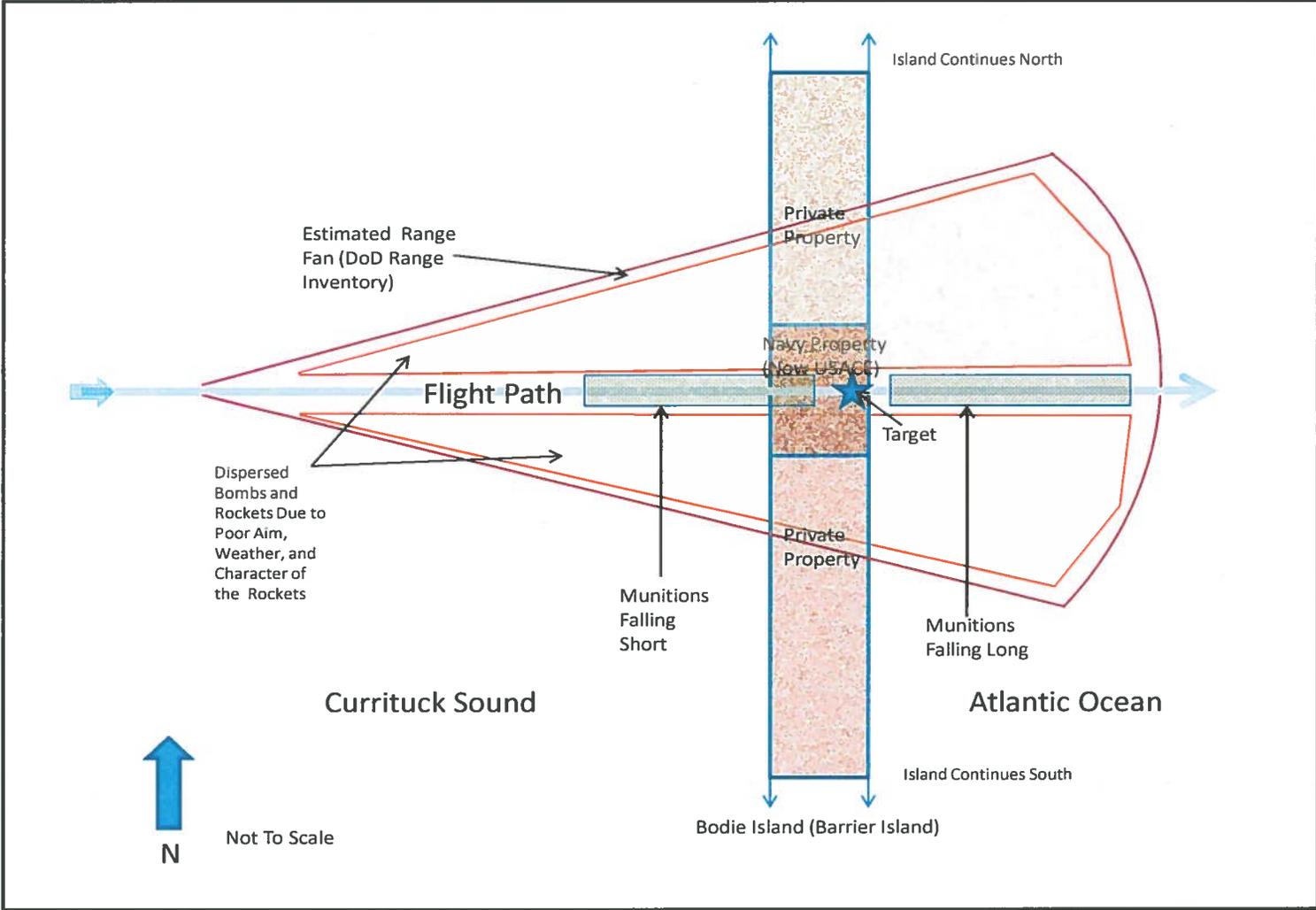


Conceptual Site Model (continued)

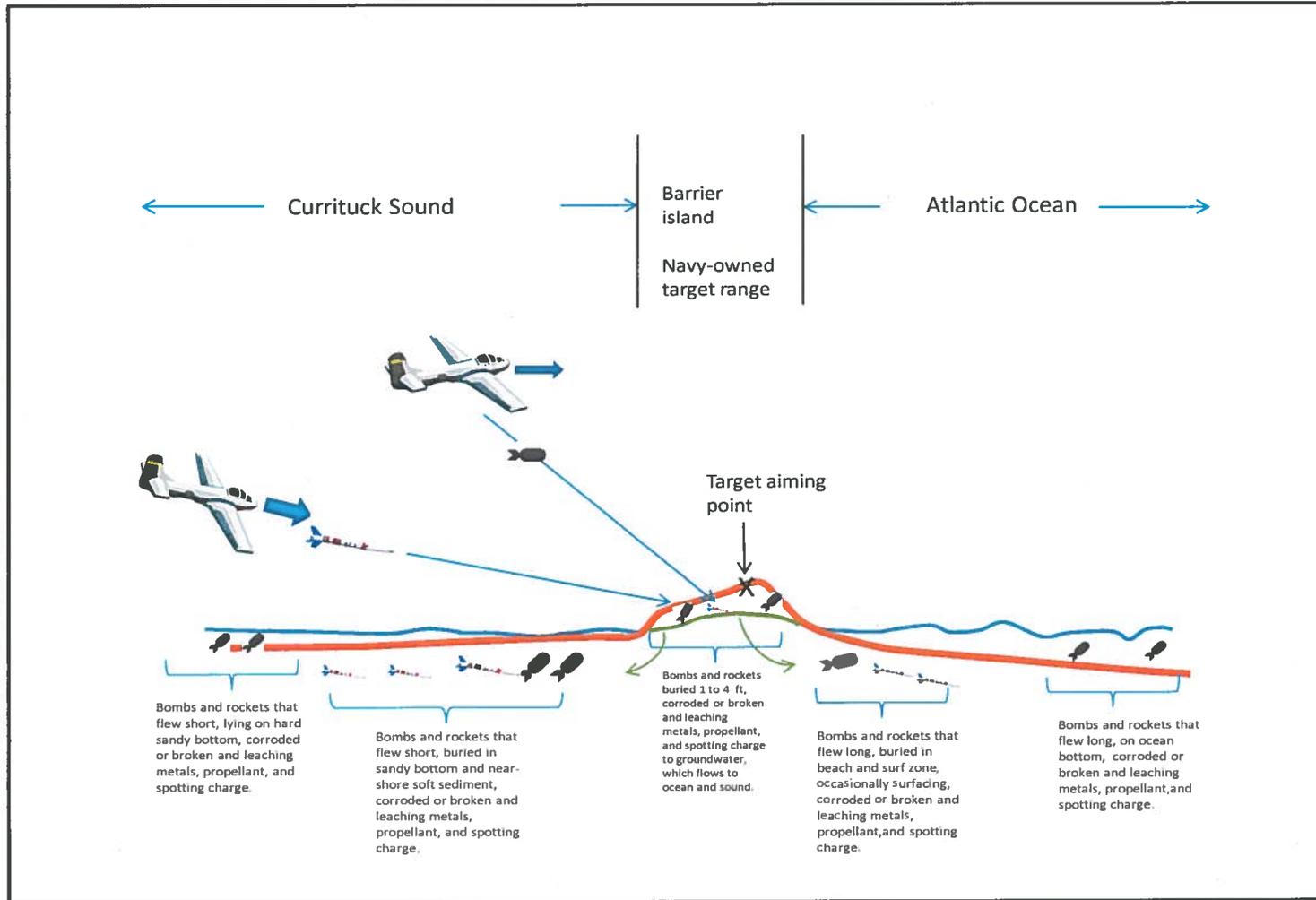
- Current Land Use – ERDC/Residential
- Future land Use – ERDC/Residential
- Land Use Controls (**LUCs**) – currently there is signage and minimal fencing in place on ERDC property.
- No other LUCs are in place within the MRS.
- Beach Replenishment activities planned in the future.



Conceptual Site Model (continued)



Conceptual Site Model (continued)



Conceptual Site Model (continued)

- Source – Spotting charges for practice bombs and rockets
- Access – Uninhibited access outside of the FRF
- Distribution – Mostly on ERDC Field Research Facility, surface and subsurface
- Potential Receptors – Residents, construction and utility workers, ERDC personnel, trespassers, recreationists, commercial fishermen.
- MRS boundary includes Atlantic, Currituck Sound, NC Highway 12, and residential areas.



Technical Approach

- Solicit stakeholder input and concurrence on approach
- Complete Remedial Investigation Report
 - ▶ Use existing data to complete “Desktop” RI Report.
 - ▶ Additional field work unnecessary.
- Determine if Feasibility Study is necessary to address potential hazards from MPPEH
 - ▶ Land-use controls (LUCs) as a remedial alternative?
 - ▶ No Further Action (NFA)?
 - ▶ Other alternatives?



Next Steps

- Prepare RI Report
 - ▶ Conduct Probability Assessment (PA)
 - ▶ Develop Institutional Analysis (IA)
 - ▶ Research and consolidate data collected to date
 - ▶ Present Findings
 - ▶ TPP2 – RI Report
 - ▶ Update the Munitions Response Site Prioritization Protocol (MRSPP)
- Prepare resultant documents:
 - ▶ Focused Feasibility Study (FFS) or possibly No Further Action (NFA)
 - ▶ Proposed Plan / Decision Document



Schedule

- 12 MAR 2015 –TPP Meeting - RI
- April 2015 – Submittal of Draft RI to Project Team;
- June 2015 – Review of RI (60 days) by Project Team;
- July 2015 – Submittal of RTCs;
- August 2015 – Submittal of Final RI;
- September 2015 – Begin next steps.

