



NORTHERN ADAK ISLAND – ALASKA AREA 1, OPERABLE UNIT B-2 HISTORICAL PHOTOGRAPHIC ANALYSIS



Photograph Source: National Archives at College Park.

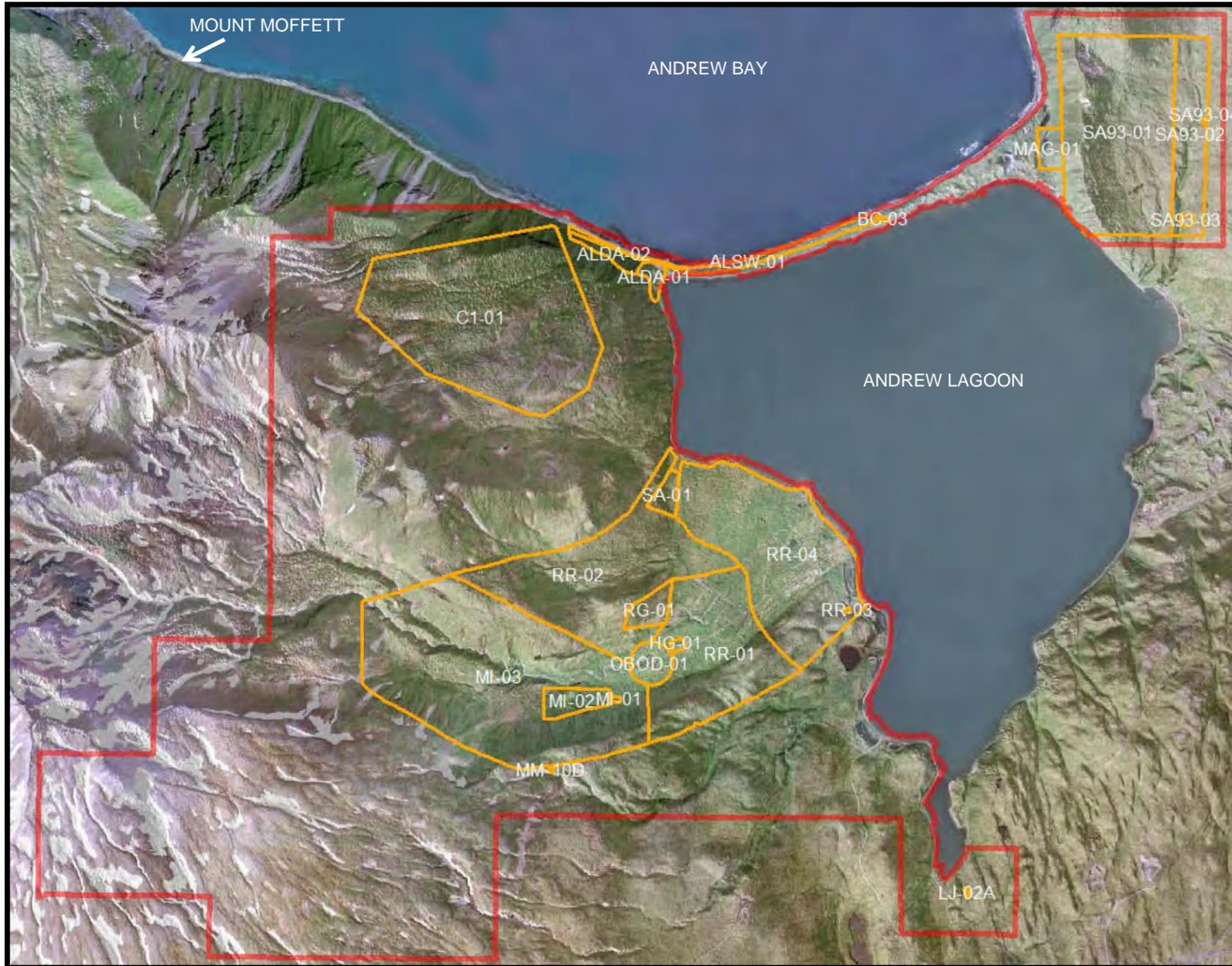
U.S. Army Geospatial Center (AGC)
Warfighter Geospatial Production & Support Directorate
Hydrologic & Environmental Analysis Branch
Environmental Analysis Team
7701 Telegraph Road
Alexandria, Virginia 22315-3864

FINAL REPORT
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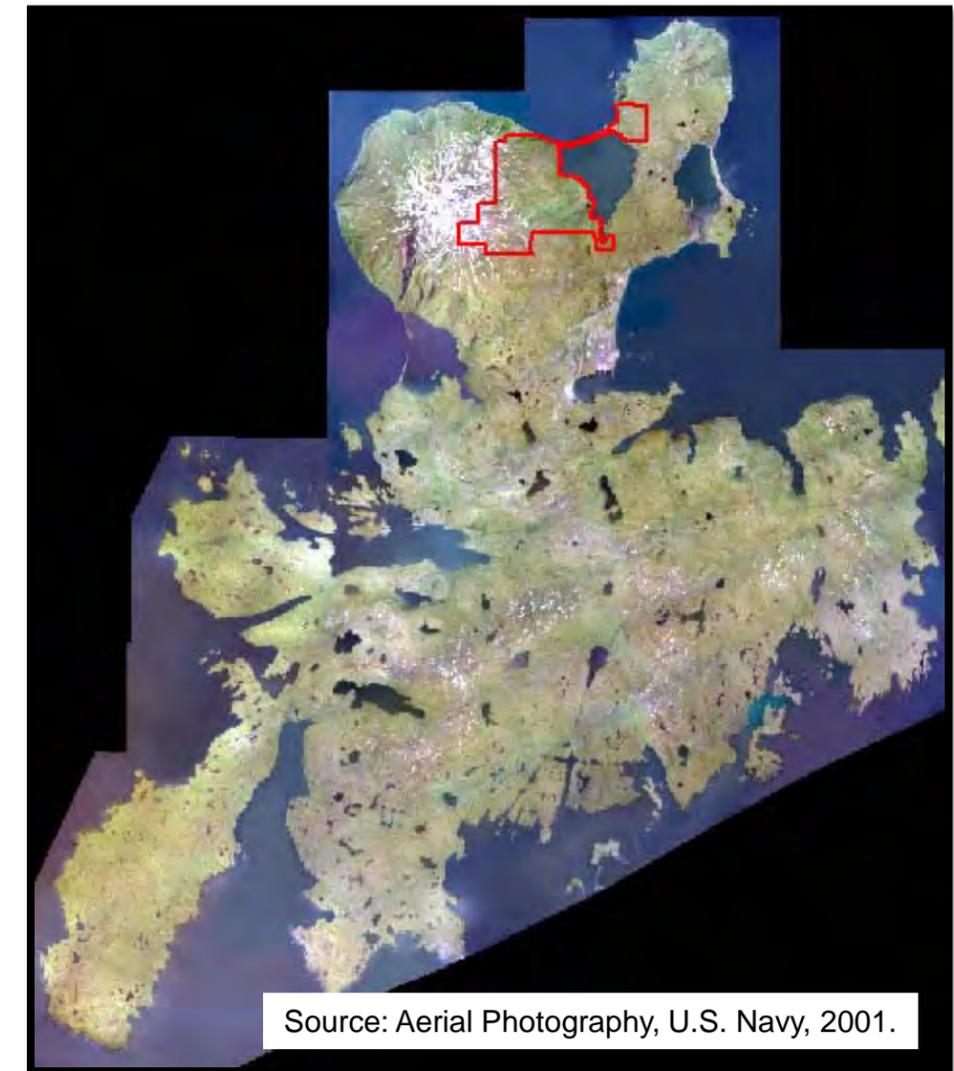


PROJECT AREA LOCATION



Source: Aerial Photograph, underlying digital elevation model and boundary shapefiles, U.S. Navy, 2000.

ADAK ISLAND
in the Aleutian
Island Chain



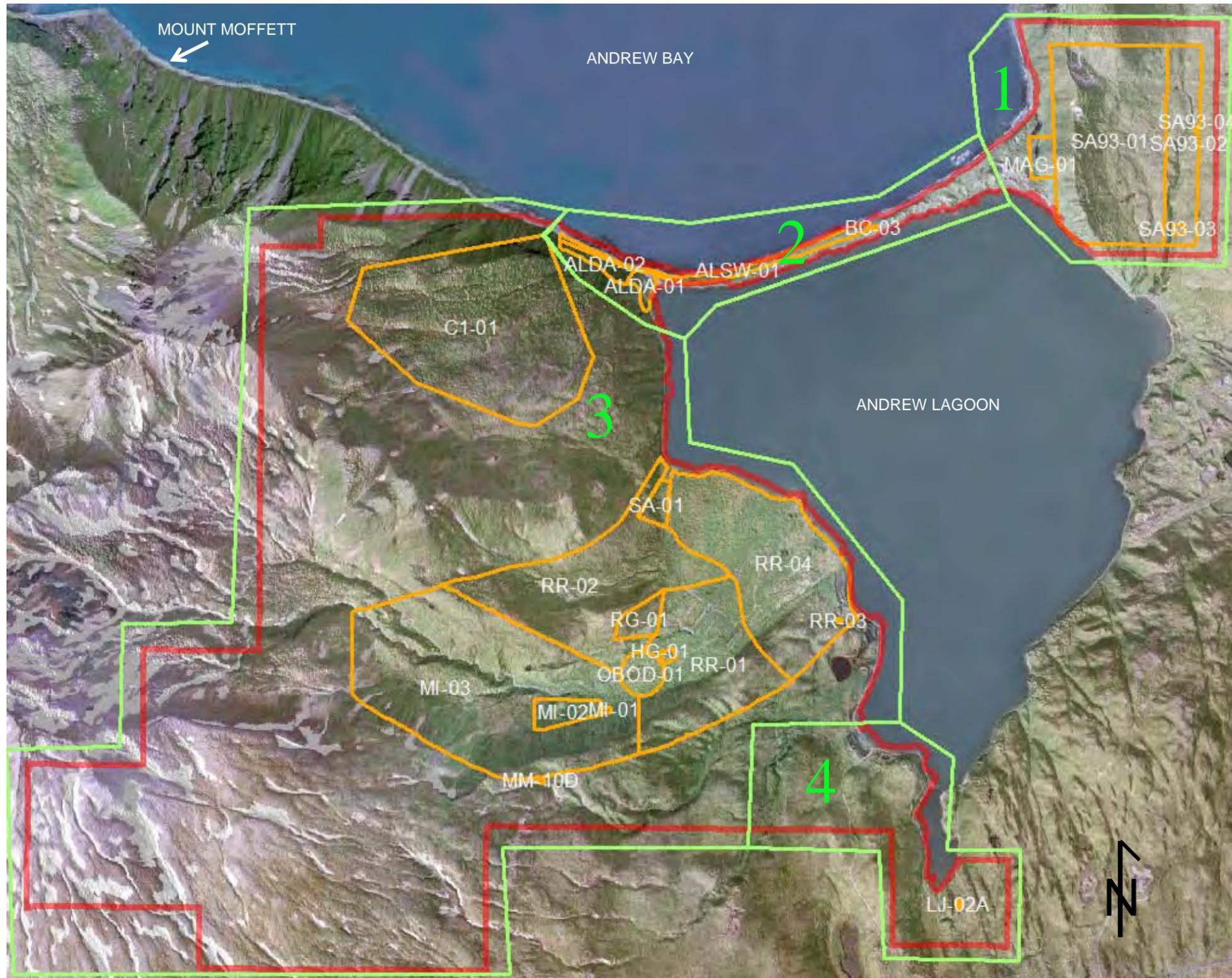
Source: Aerial Photograph, U.S. Navy, 2001.



= Area of Interest - Historical Photographic Analysis



PROJECT AREA ANALYSIS



Source: Aerial Photography, U.S. Navy, 2000.

For ease of use and continuity of this presentation, the Northern Adak, Area 1 (OU B-2) is divided into four sections, as denoted on this page.

Four sections (Northeast Lagoon - 1, Seawall - 2, West Lagoon - 3, and Lake Jean - 4) were created for use in this report only and have no relevance outside of this report.

1 – NORTHEAST LAGOON

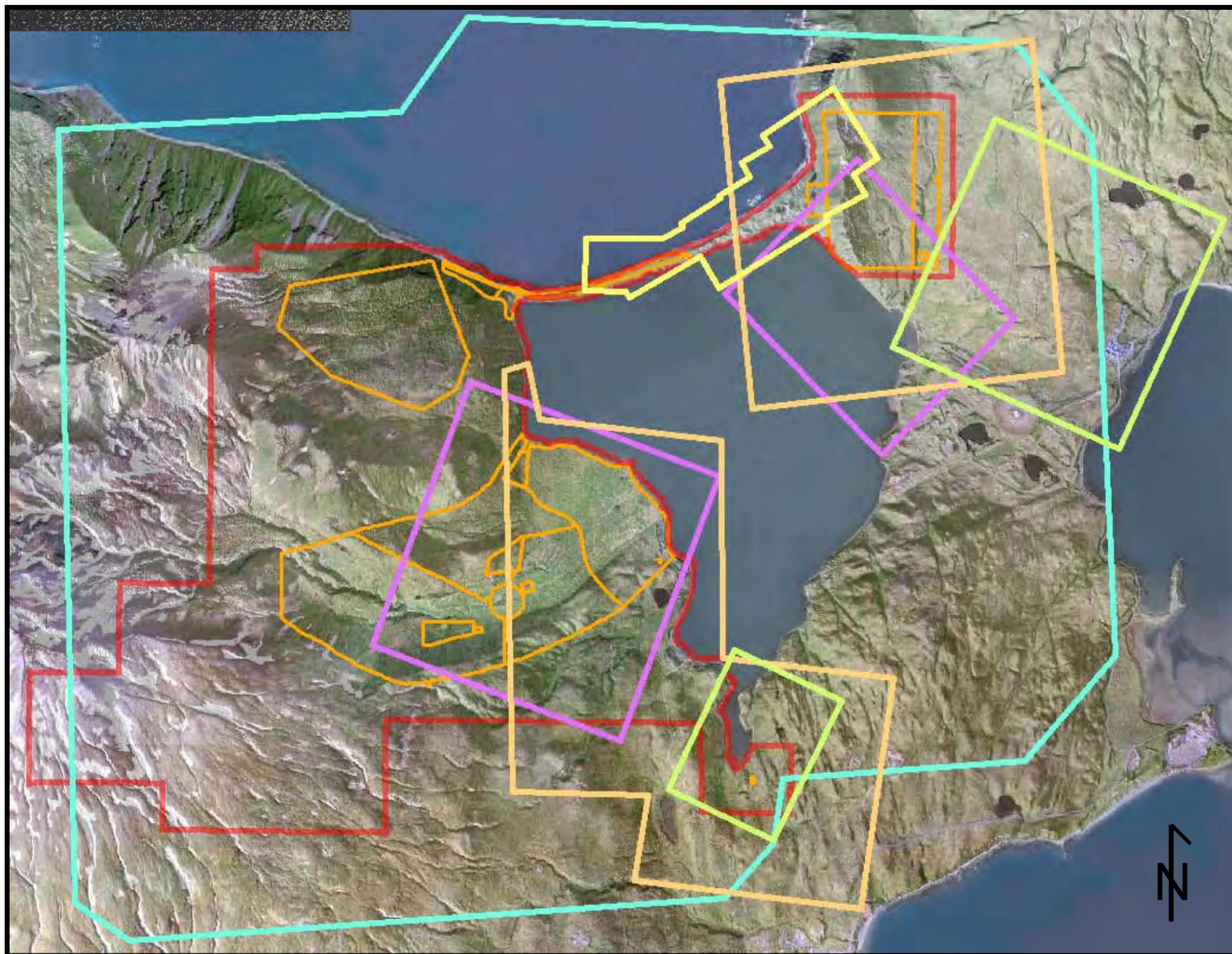
2 – SEAWALL

3 – WEST LAGOON

4 – LAKE JEAN



PROJECT AREA AERIAL COVERAGE



Aerial Photograph Coverage

-  1943
-  1944
-  1946
-  1947
-  1948

Source: Aerial Photograph and underlying Shaded Relief Model, U.S. Navy, 2000.

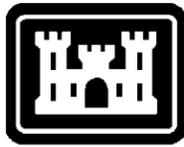


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Looking west of Andrew Lagoon. Smoke screen test at supply depot and range area.

Photography Source: National Archives at College Park.



NOTICE AND INTRODUCTION



**Northern Adak, Area 1 (OU B-2)
Adak Island, Aleutian Island Chain, Alaska
Historical Environmental Photographic Analysis**

By
U.S. Army Geospatial Center (AGC)
Warfighter Geospatial Production & Support Directorate
Hydrologic and Environmental Analysis Branch
Environmental Analysis Team
7701 Telegraph Road
Alexandria, Virginia 22315-3864

December 2011 Final Report

Prepared for the U.S. Navy
Naval Facilities Engineering Command Northwest
Silverdale, Washington

NOTICE

The views, opinions, and conclusions in this report are those of the author and should not be construed as official Department of Army positions or policy unless so designated by other documentation.

Photographic items contained in this report may be restricted for use other than research. It is the responsibility of the party using photographs from this study to contact the U.S. Army Geospatial Center, Warfighter Geospatial Production & Support Directorate in order to ascertain clearance for use.

INTRODUCTION

This report of findings presents the results of a historical photographic analysis (HPA) of the Operable Unit B-2 (OU B-2) area on the northern portion of Adak Island (state of Alaska). The Hydrologic and Environmental Analysis Branch of the Warfighter Geospatial Production & Support Directorate was tasked to search, collect, and analyze historical photographic records and historic map data relative to the project area.

This report contains most findings derived from the historical photographic analysis to date. This report showcases select findings from features identified within the project area.



METHODOLOGY



METHODOLOGY

The analysis presented in this report is primarily based upon interpretation of panchromatic photography over the project area spanning 1943 to 1948. Stereo viewing was employed where overlapping photographs permitted its use. Significant features, derived through photo analysis, are displayed on select photos in this study.

Range and other site names and numbers are derived from historical maps, still photographs, and other documents.

Images and vector files contained in the GIS package are displayed in State Plane, FIPS Zone 5010, NAD83 datum, GRS1980 spheroid, units in feet. Georectification and stereo viewing of photography was completed using ERDAS Imagine. Vectors were created using ArcGIS.

East Andrew Lagoon to the left. West Clam Lagoon to the right.

Photograph Source: National Archives at College Park.

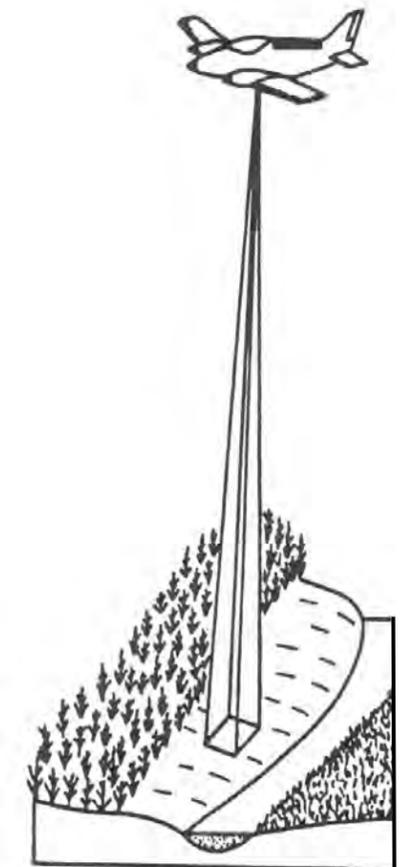
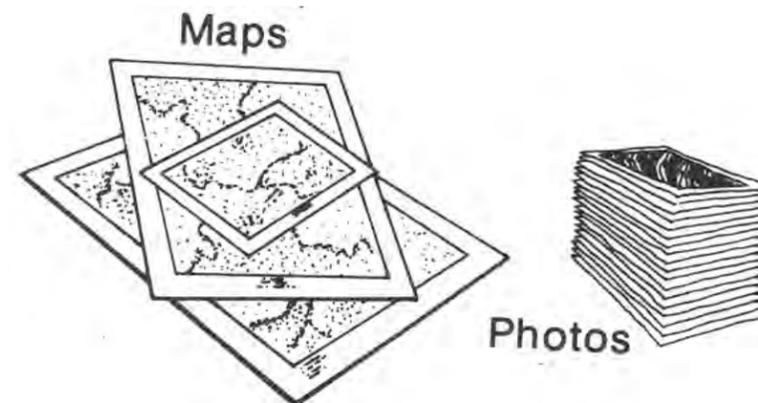


INTERPRETATION OF HISTORICAL AERIAL PHOTOGRAPHY

The Warfighter Geospatial Production & Support Directorate of the U.S. Army Geospatial Center (AGC) was tasked to conduct photo interpretation of historical aerial photography over select areas-of-interest on Northern Adak Island, Alaska in support of the Formerly Utilized Defense Site (FUDS) Program.

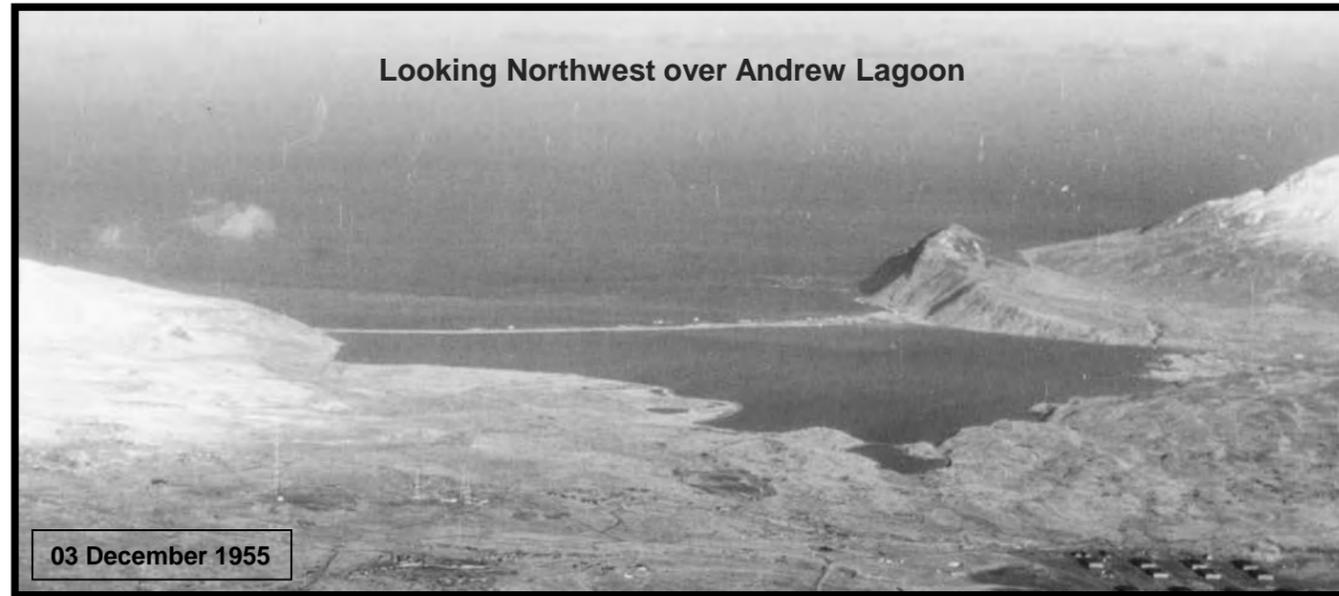
Historical Aerial Photographic Study

- ⊕ IDENTIFICATION OF FEATURES BY SCALE, SHAPE, TONE, PATTERN, ORIENTATION, SHADOW, AND TEXTURE
- ⊕ CHANGE DETECTION OF MAN-MADE OR NATURALLY-OCCURRING FEATURES
- ⊕ PLACING LOCATIONS OF HISTORICAL FEATURES ON THE CURRENT LANDSCAPE





HISTORICAL REVIEW



Photography Source: National Archives at College Park.

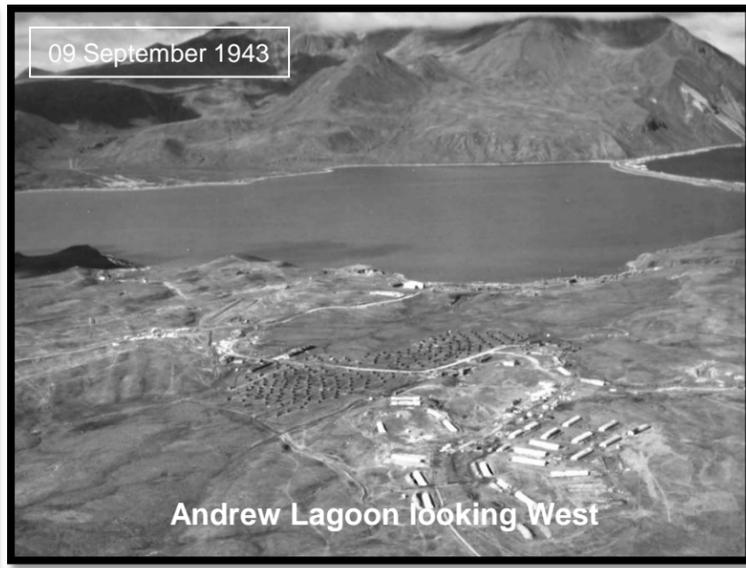
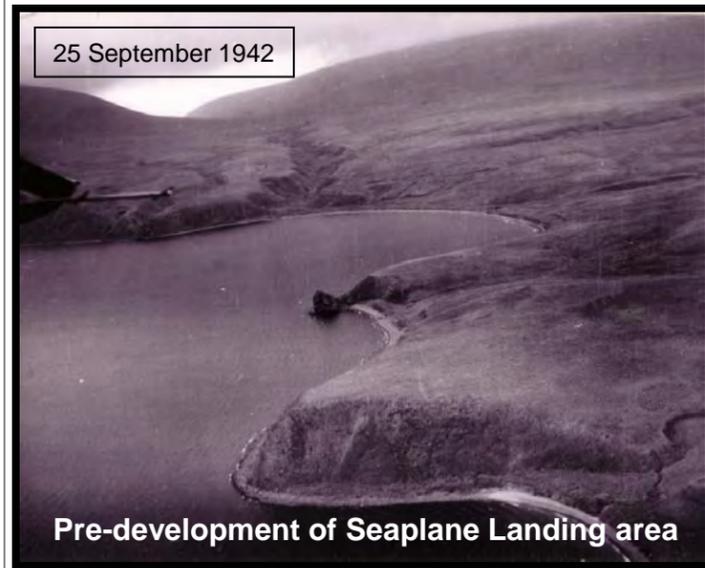
Historical Summary of Northern Adak

Situated near the center of the Aleutian chain, Adak Island is the largest of the Andreanof Islands and comprises approximately 180,000 acres. The Naval Air Facility (NAF) Adak occupies the northern portion of the island and about 76,800 acres.

Since the early 1940s, the northern half of Adak Island has been used for military operations. In June 1942, the Japanese attacked and occupied Attu and Kiska Islands. To mount operations against the Japanese, the U.S. forces established a base as a staging area near Attu and Kiska. The Joint Chiefs of Staff chose Adak for its harbor in the Western Aleutians. On August 30, 1942, the U.S. forces landed on Adak and construction began immediately to build the airfield and installation. Beginning September 14, 1942, U.S. forces departed Adak and bombed the Japanese whenever weather permitted. One year later, the military population at Adak grew to 90,000. During 1944, Adak grew in size and importance, although most of the combat troops had been transferred to Attu. Adak became the headquarters of the 17th Naval District in 1944 when it was created. After the war, the Navy maintained Adak and assumed all facilities when the U.S. Air Force withdrew in 1950. The Naval Air Facility (NAF) Adak was closed on March 31, 1997. The project area, Operable Unit (OU) B-2, is approximately 1,925 acres, and covers the area surrounding Andrew Lagoon.



HISTORICAL REVIEW



Zoom Chronology of Aleutian Island Buildup

Photography Source: National Archives at College Park.

1940 - Anchorage is still a small, sleepy town but its strategic position attracts military interest. The first soldiers arrive to build an army base and airfield, which become Fort Richardson and Elmendorf Air Force Base, bringing rapid growth to Anchorage.

1942

June 7, 1942 - Japanese invade Attu and Kiska, Alaska's Aleutian Islands. As part of the defense of the West Coast, the Alaska Highway is built in eight months and 12 days, linking Anchorage with the rest of the nation. Anchorage enters the war years with a population of 7,724 and emerges with 43,314 residents.

August 1942 - U.S. Forces occupy Adak Island. Adak Island becomes a military installation for defensive action against Japanese forces on Attu and Kiska Islands.

1943

January, 1943 - U.S. convoy of 70 ships moves to the Aleutian theater.

January 12, 1943 - Army forces occupy Amchitka, Aleutian Islands.

January 30, 1943 - Naval Station, Akutan Harbor, Fox Island, Alaska, is established.

February 18, 1943 - Two cruisers and four destroyers bombard Japanese installations at Holtz Bay, and Chichagof Harbor, Attu, Aleutian Islands.

February 24, 1943 - Naval Air Facility, Amchitka, Alaska, is established.

March 1, 1943 - Naval Auxiliary Air Facility, Annette Island, Alaska, is established.

March 26, 1943 - Battle of the Komandorski Islands

March 27, 1943 - Japanese convoy to reinforce Aleutian; encountered enemy fleet and turned back.

April 26, 1943 - Task group of 3 cruisers and 6 destroyers bombard Japanese installations at Attu, Aleutian Islands.

May 10, 1943 - U.S. troops invade Attu in the Aleutian Islands.

May 15, 1943 - Naval Air Station, Adak, Aleutian Islands, is established.

1943 Continued

May 31, 1943 - Japanese end their occupation of the Aleutian Islands as the U.S. complete the capture of Attu.

June 8, 1943 - Naval Air Facility, Attu, Aleutian Islands, is established.

June 29, 1943 - Naval Auxiliary Air Facility, Shemya, Alaska, is established.

July 14, 1943 - Destroyers bombard Kiska, Aleutian Islands. Naval Operating Base, Adak, Aleutian Islands, is established.

July 22, 1943 - Naval task force consisting of 2 battleships, 5 cruisers, and 9 destroyers bombard Kiska, Aleutian Islands.

July 28, 1943 - Japanese evacuate Kiska undetected by Allies.

August 1, 1943 - Army aircraft initiate daily bombings on Kiska, Aleutian Islands.

August 2, 1943 - Naval task groups consisting of 2 battleships, 5 cruisers, and 9 destroyers bombard Kiska, Aleutian Islands. Kiska is bombarded ten times between this date and 15 August.

August 15, 1943 - Naval task force under command of the North Pacific Force land U.S. Army and Canadian troops on Kiska, Aleutian Islands. Kiska is found to have been evacuated by the Japanese.

August 22, 1943 - Allied forces declare Kiska deserted by Japanese forces.

September 28, 1943 - Construction begins on Naval Auxiliary Air Facility, Tanaga, Aleutian Islands.

December 21, 1943 - Naval aircraft from Attu, Aleutian Islands, bomb Paramushiro- Shimushu area, Kurile Islands.

1944

1944 - Alaska-Juneau Gold Mine shuts down. Oil and Gas Exploration begins.

January 1944 - Naval Auxiliary Air Facility Tanaga has a 5,000 ft runway, tent barracks, and temporary gun emplacements.



PHOTOGRAPHIC INTERPRETATION OF AERIAL PHOTOGRAPHY NORTHEAST LAGOON

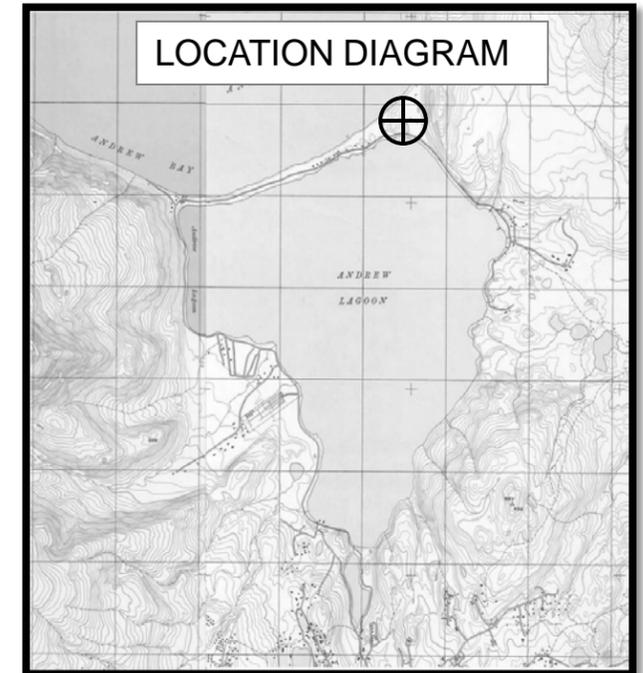
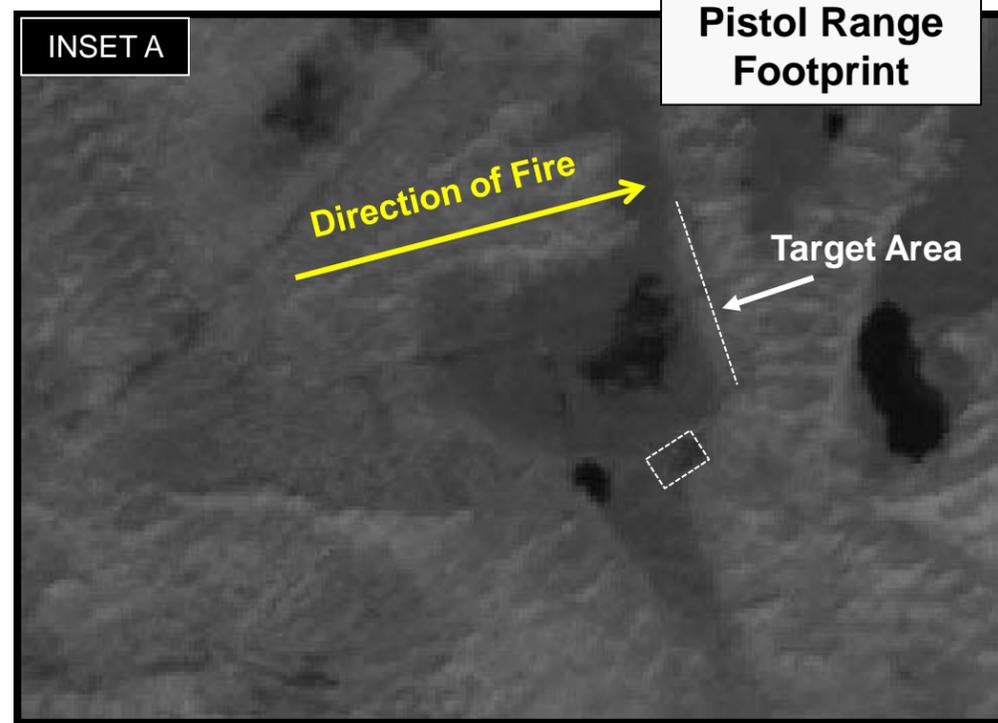
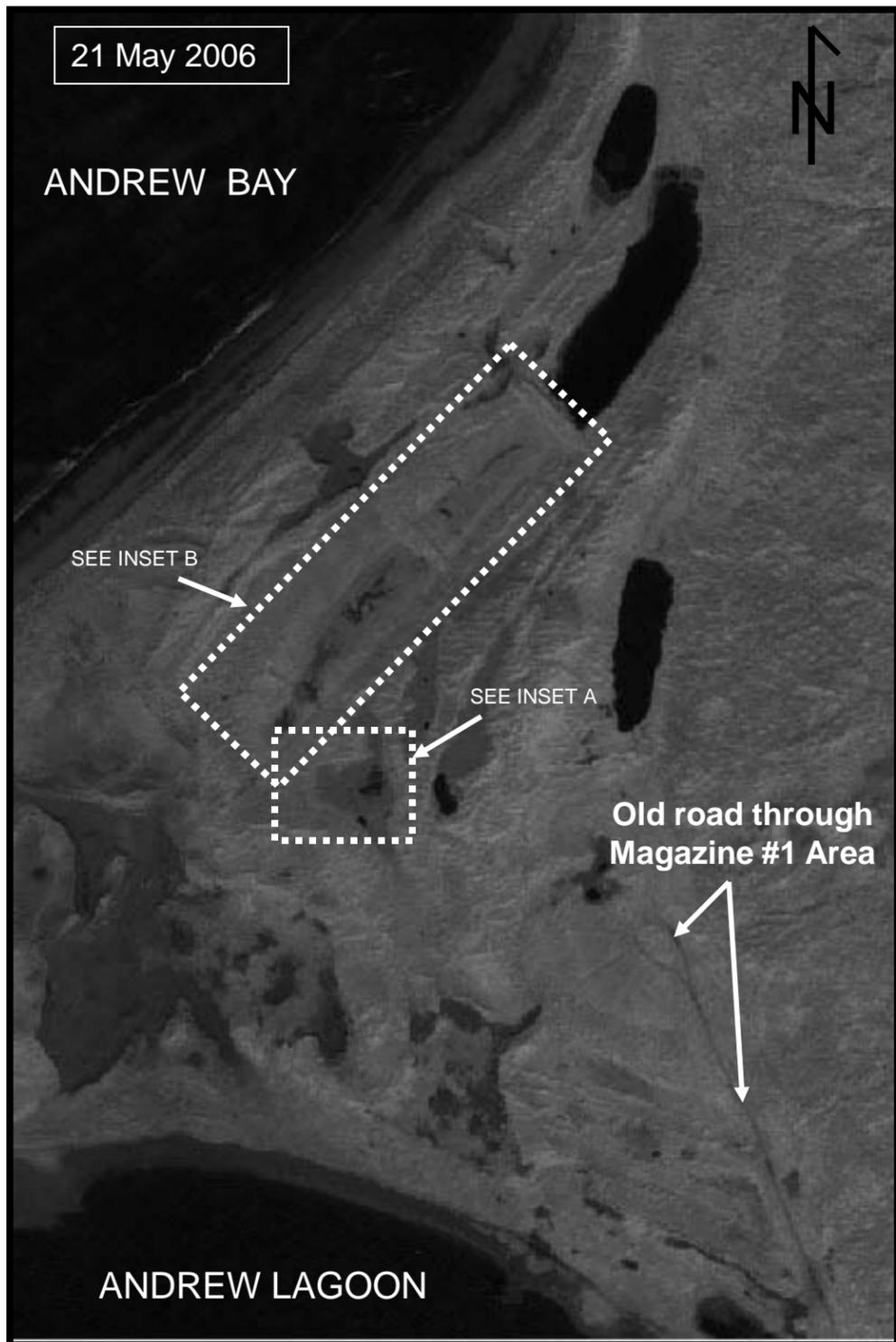




PHOTOGRAPHIC ANALYSIS – NORTHEAST LAGOON



NORTHEAST LAGOON - PISTOL AND RIFLE RANGES 2006 SATELLITE IMAGE



⊕ - FINDINGS

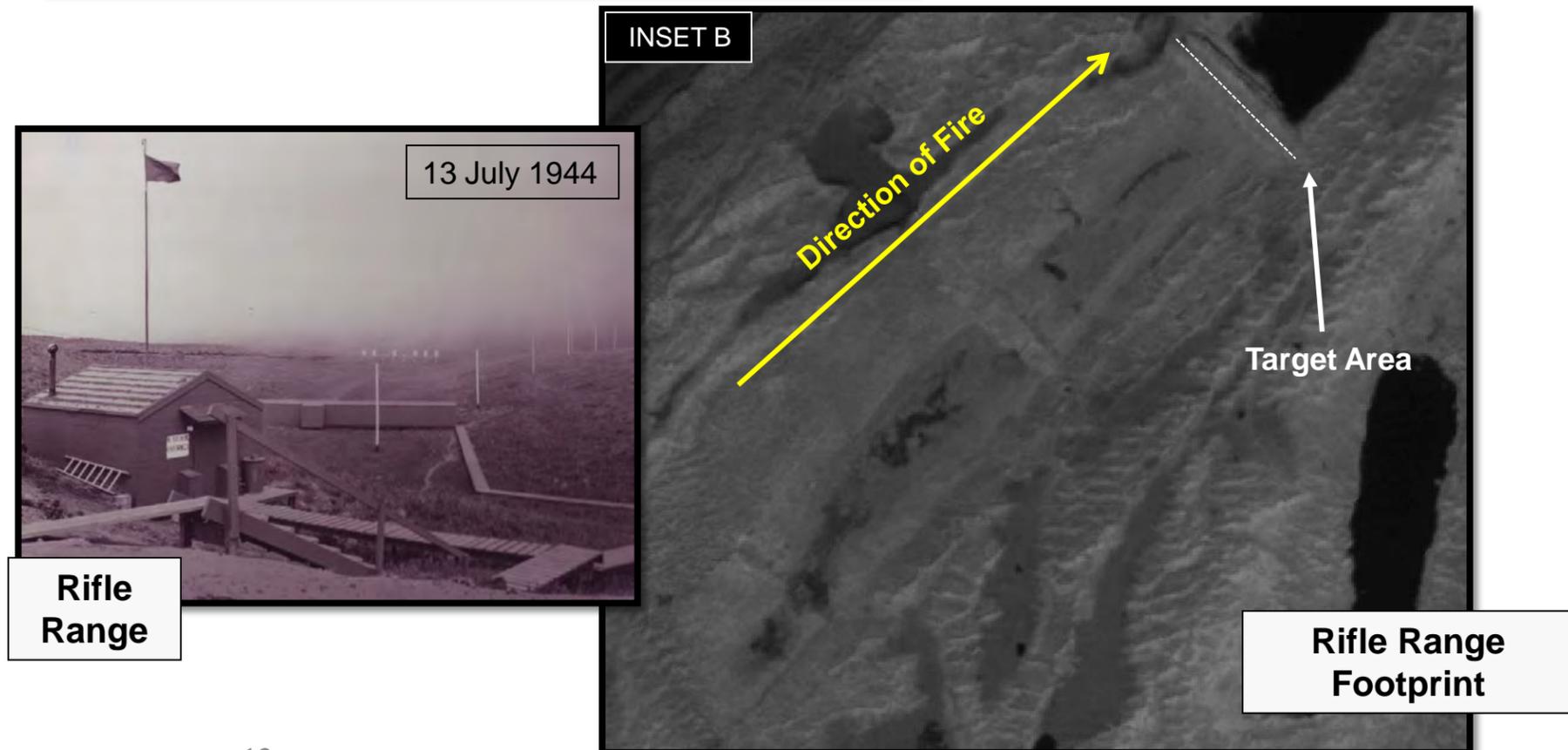


Image Source: National Geospatial-Intelligence Agency.



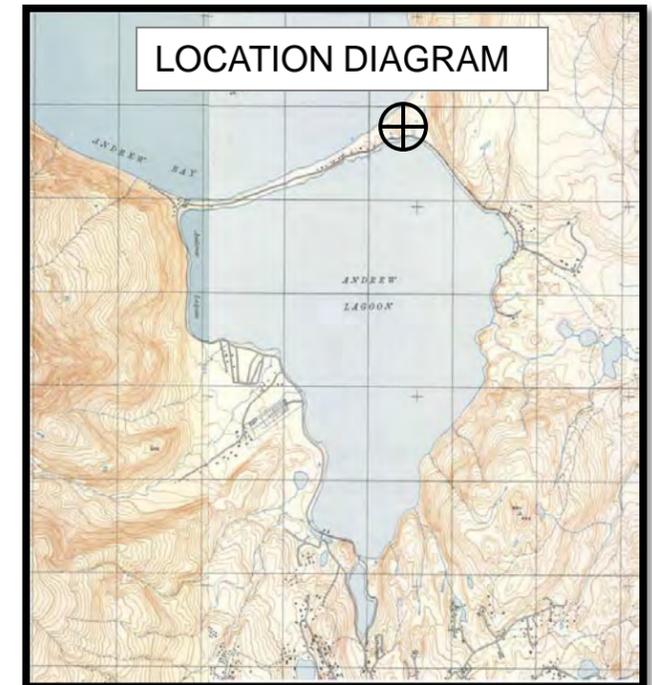
PHOTOGRAPHIC ANALYSIS – NORTHEAST LAGOON



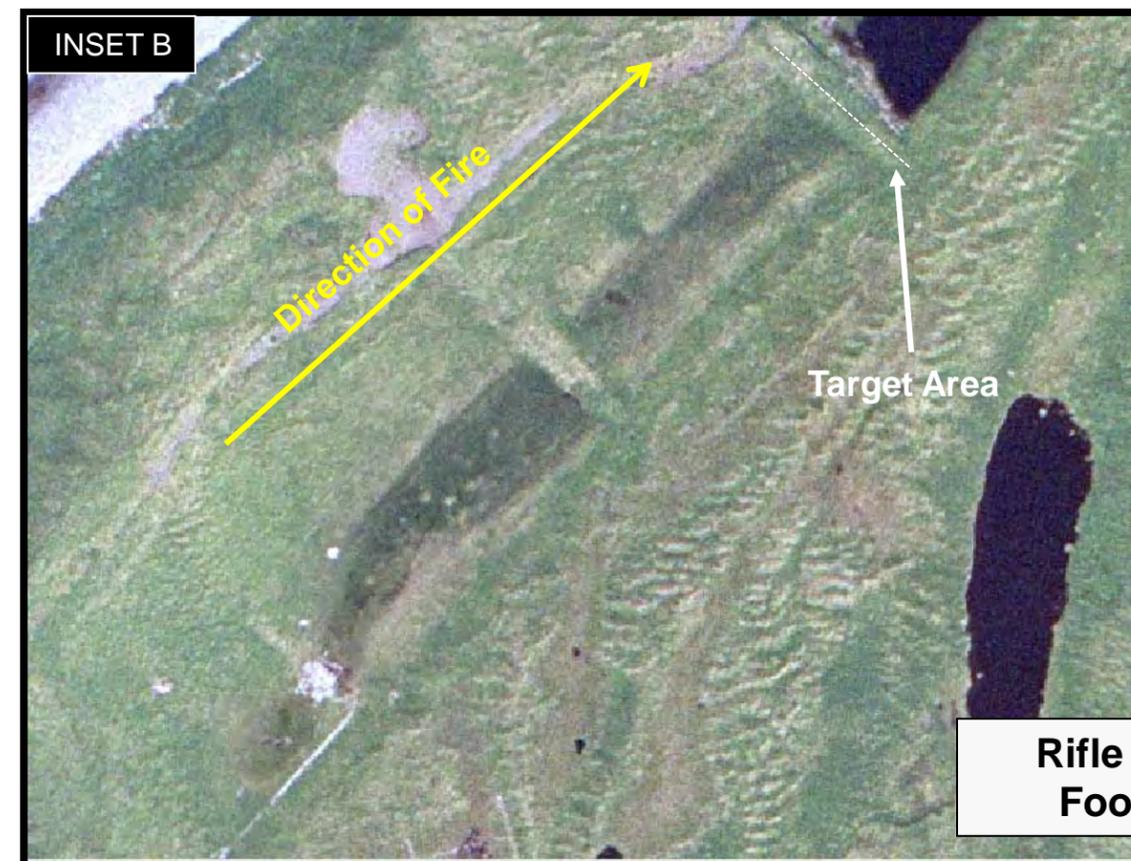
NORTHEAST LAGOON - PISTOL AND RIFLE RANGES 2000 AERIAL PHOTOGRAPHY



Photograph Source: U.S. Navy.



⊕ - FINDINGS

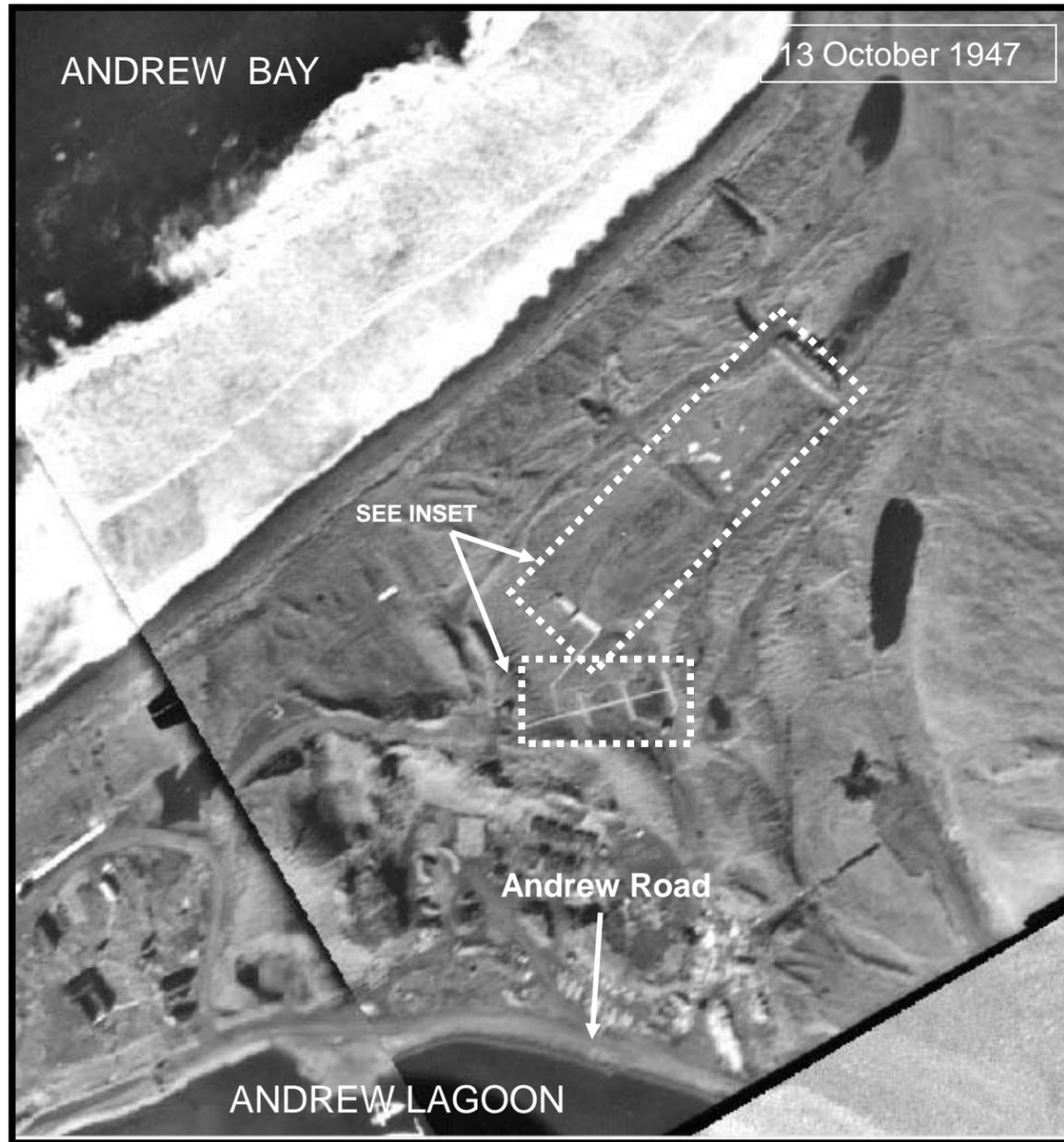




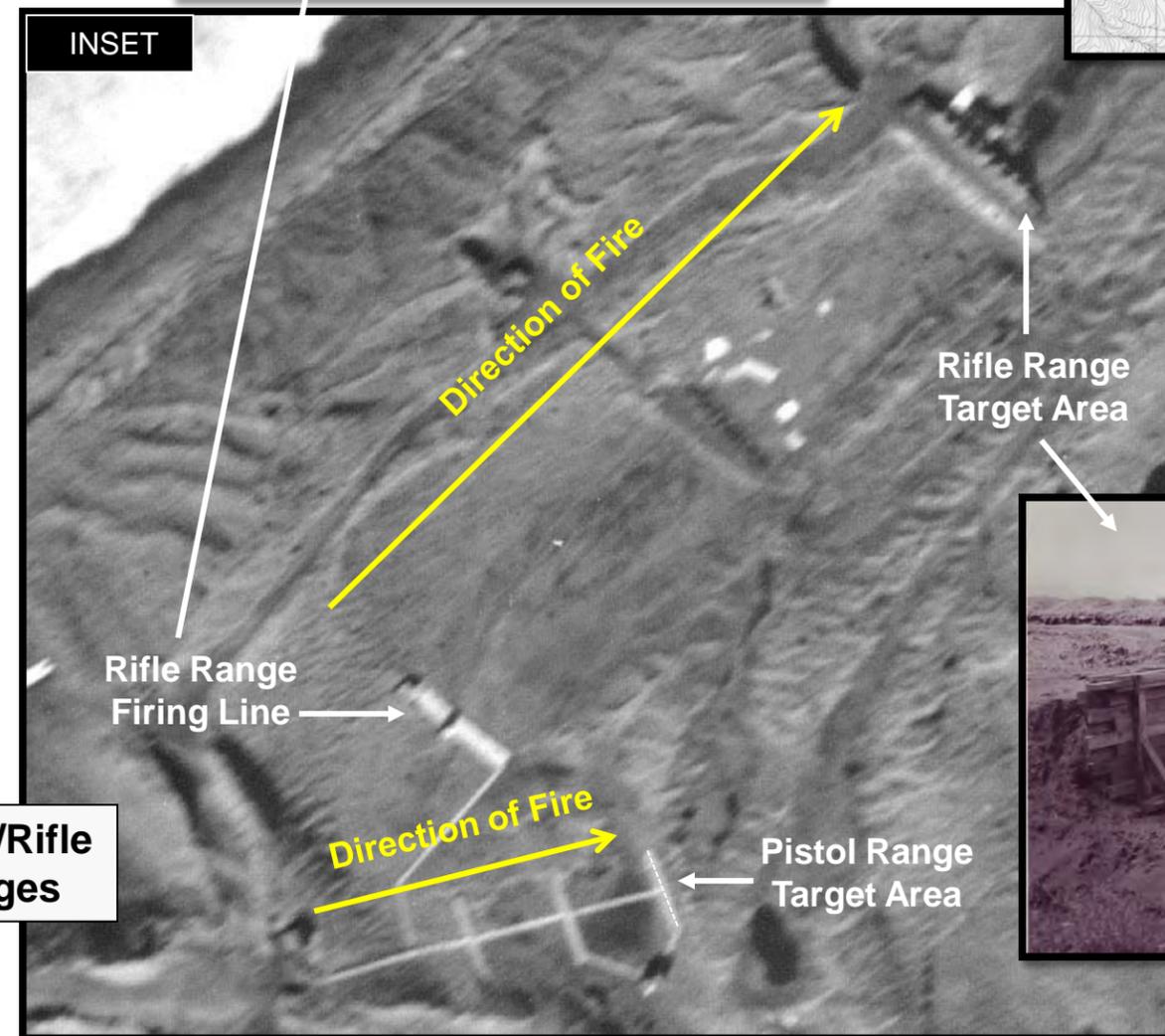
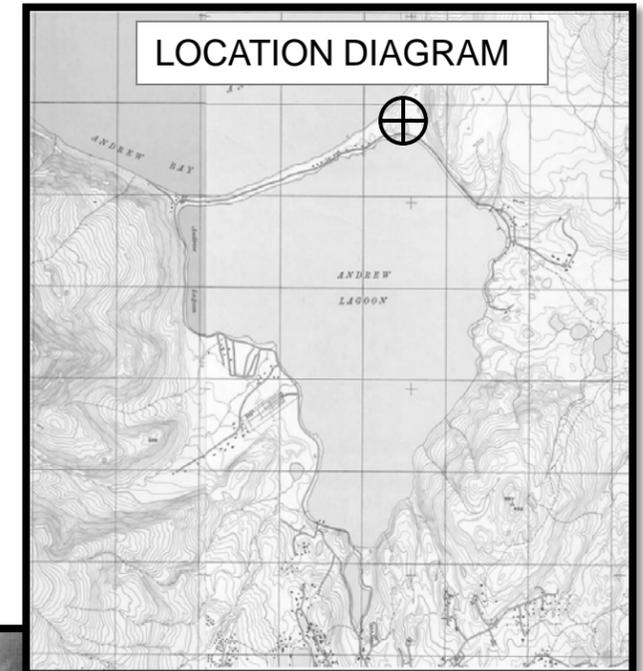
PHOTOGRAPHIC ANALYSIS – NORTHEAST LAGOON



NORTHEAST LAGOON - PISTOL AND RIFLE RANGES 1947 AERIAL PHOTOGRAPH, 1944 STILL PHOTOGRAPHS



Photograph Source: National Oceanographic Atmospheric Administration.



Pistol/Rifle Ranges

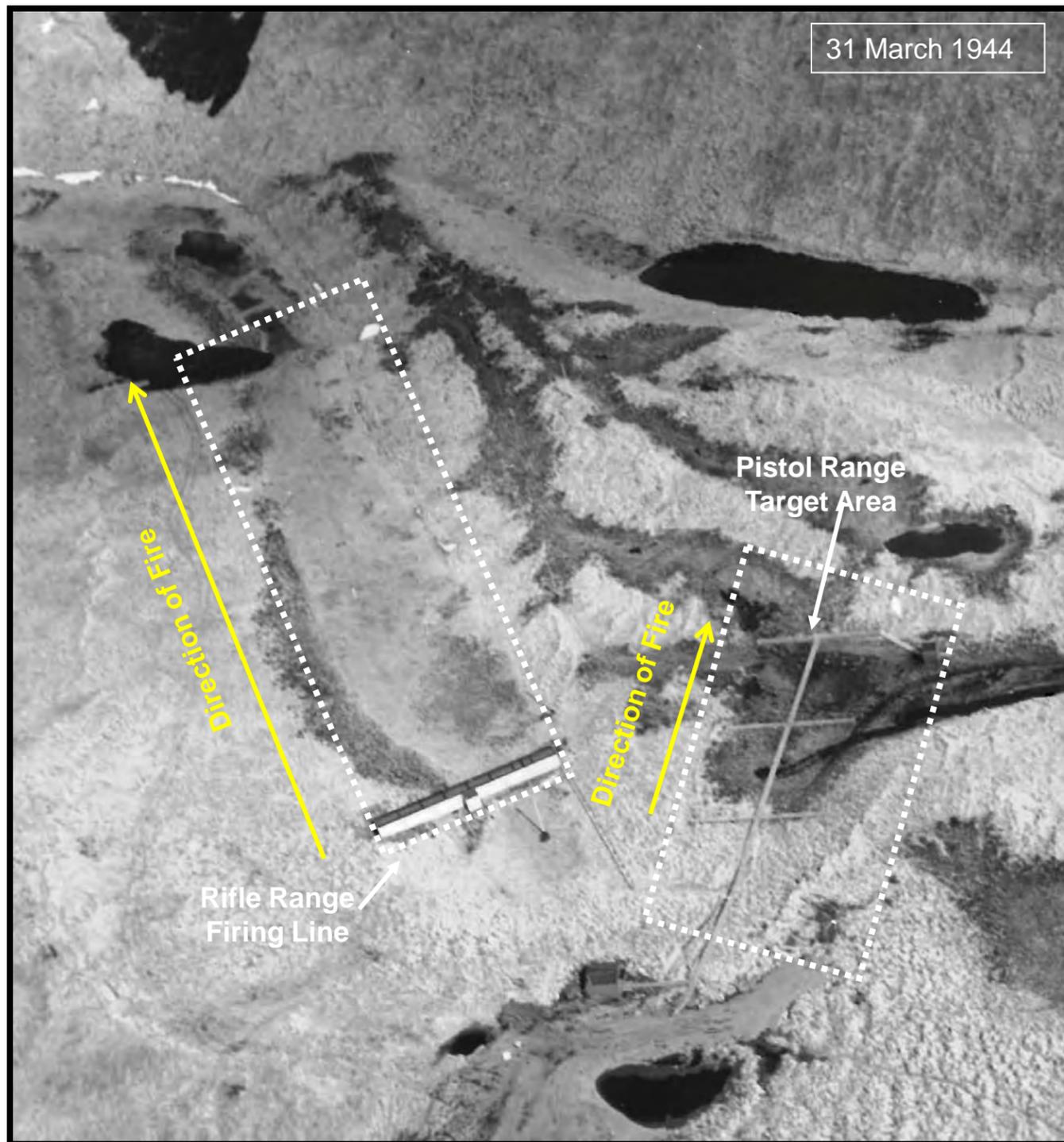




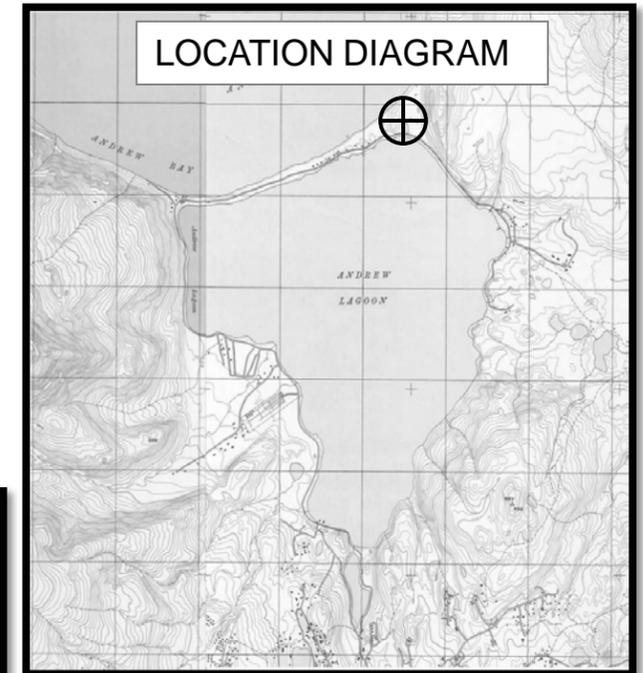
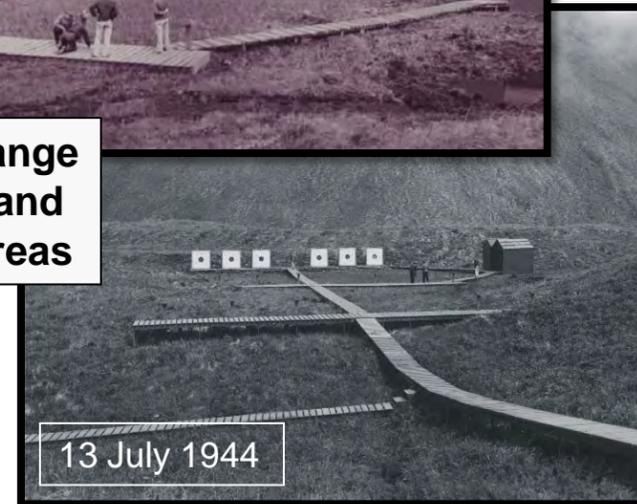
PHOTOGRAPHIC ANALYSIS – NORTHEAST LAGOON



NORTHEAST LAGOON – PISTOL AND RIFLE RANGES 1944 VERTICAL/OBLIQUE AERIAL AND STILL PHOTOGRAPHS



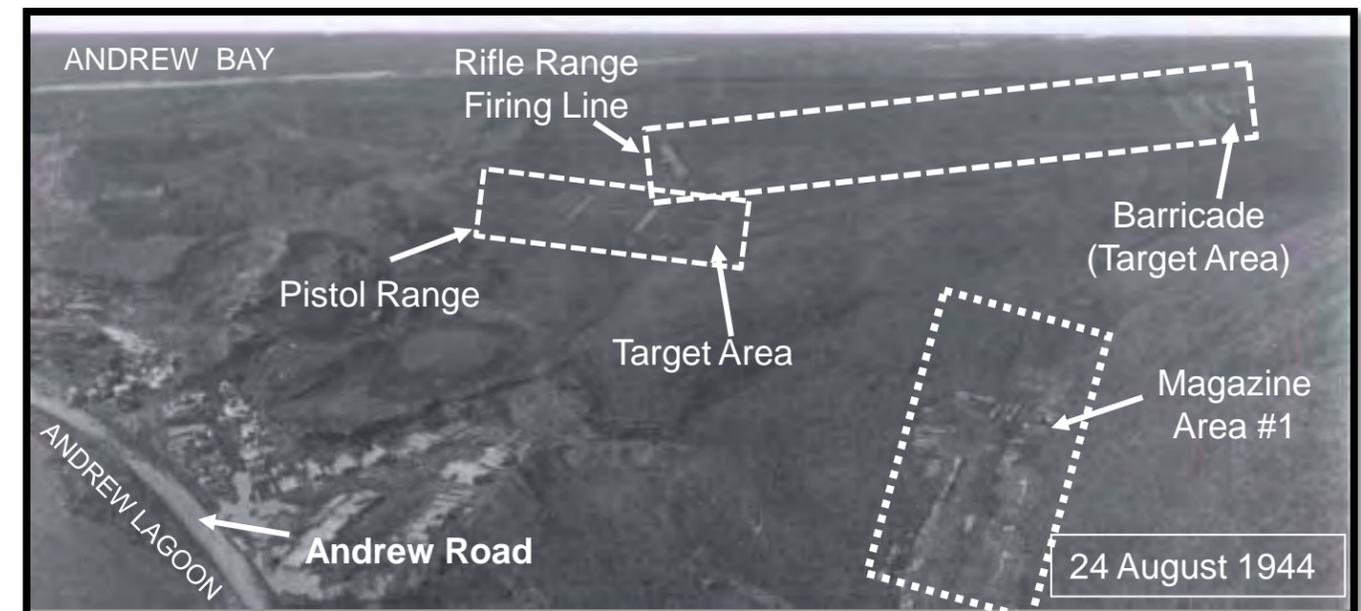
**Pistol Range
Target and
Firing Areas**



LOCATION DIAGRAM

⊕ - FINDINGS

Photography Source:
National Archives at College Park.

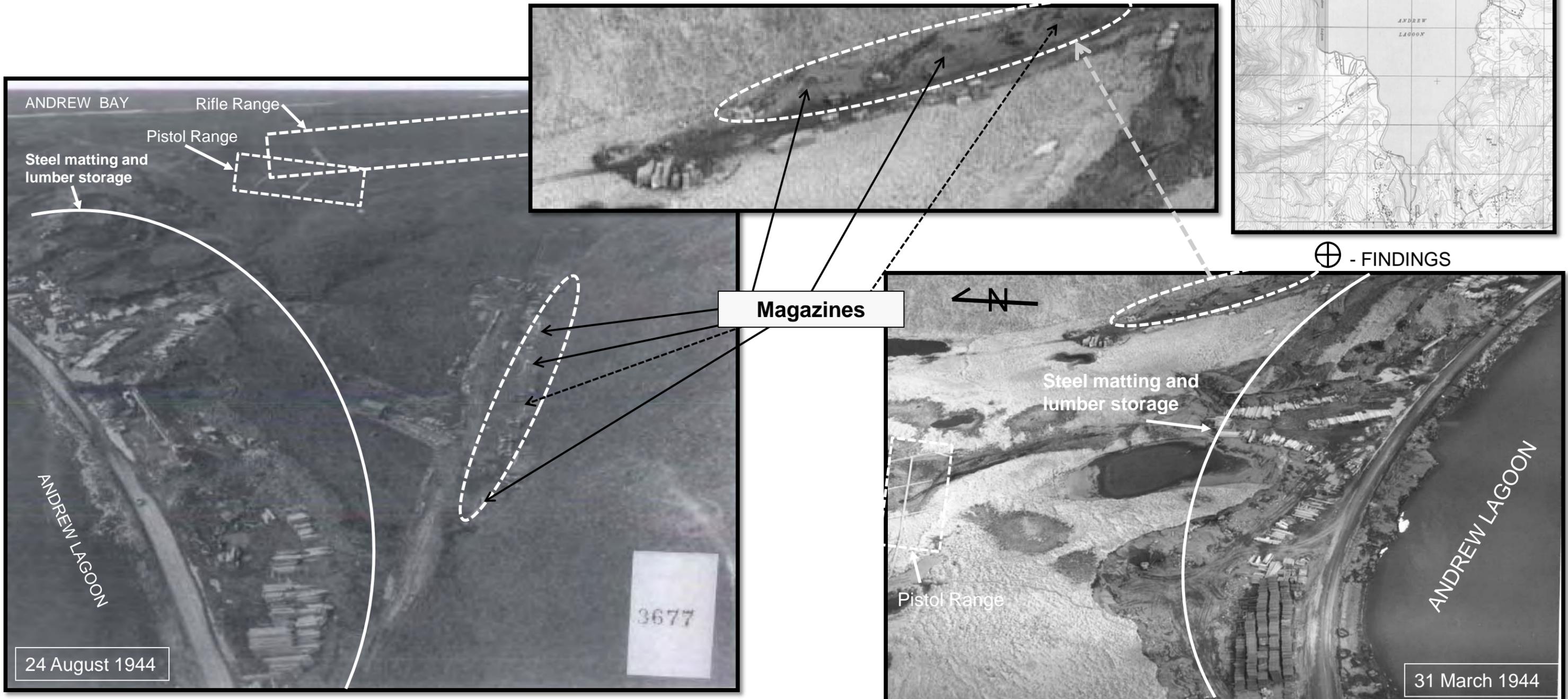
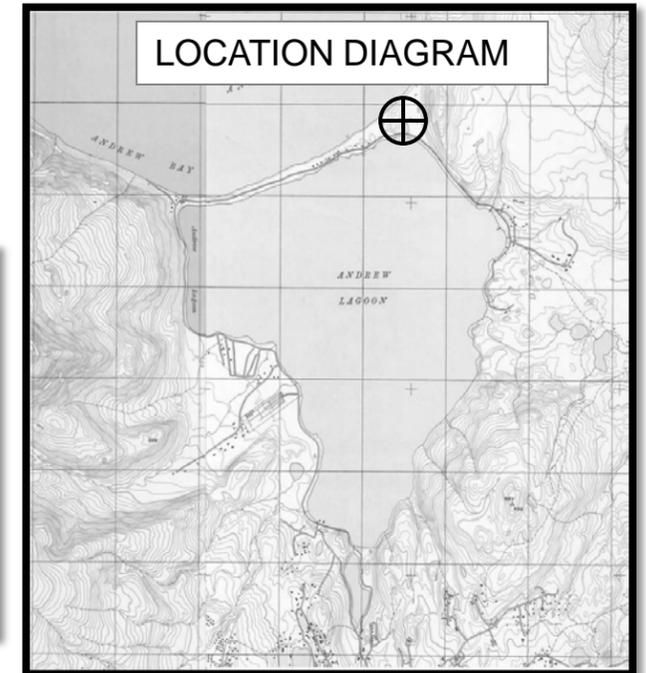




PHOTOGRAPHIC ANALYSIS – NORTHEAST LAGOON



NORTHEAST LAGOON – MAGAZINE #1 1944 OBLIQUE AERIAL AND STILL PHOTOGRAPHS



Photography Source: National Archives at College Park.

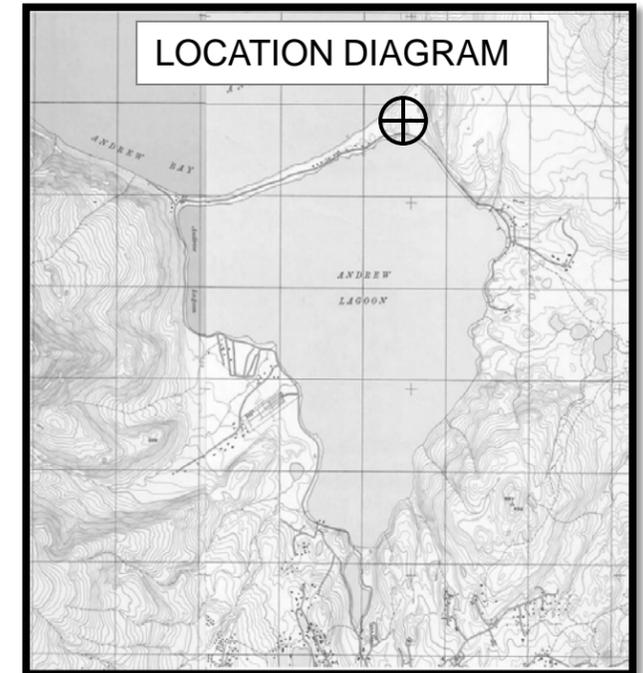
= Magazine Area



PHOTOGRAPHIC ANALYSIS – NORTHEAST LAGOON

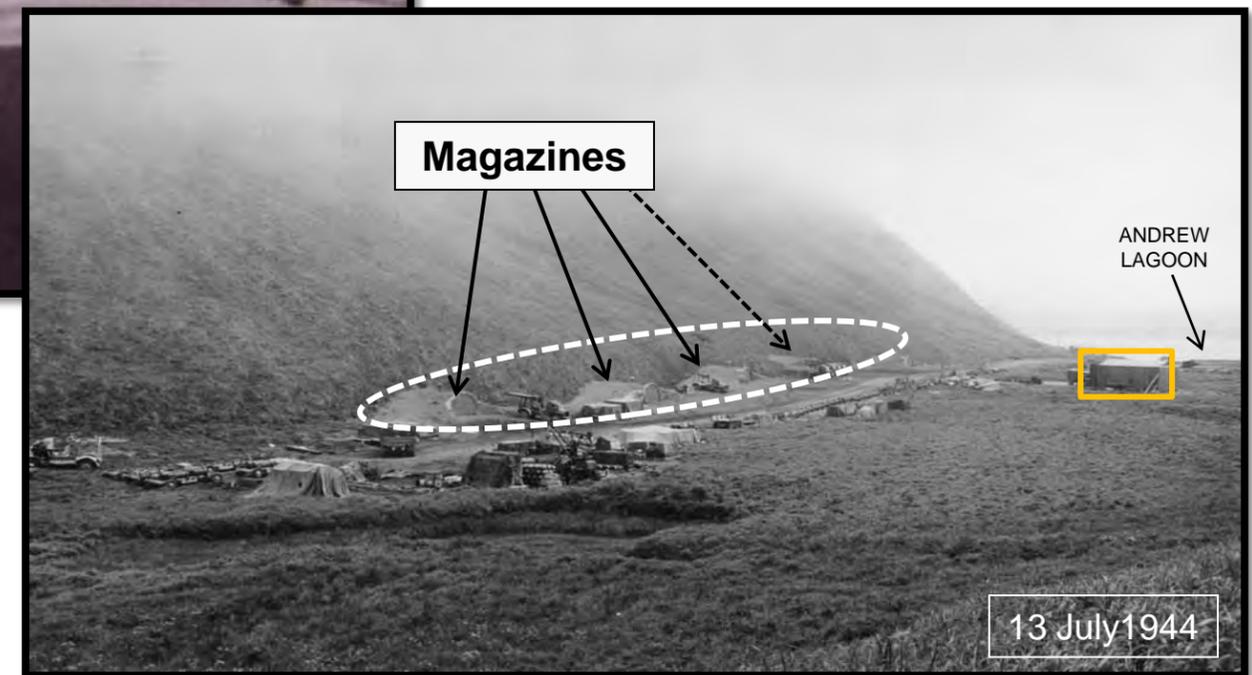


NORTHEAST LAGOON – MAGAZINE #1 1944 OBLIQUE, VERTICAL AERIAL AND STILL PHOTOGRAPHS



⊕ - FINDINGS

Photography Source: National Archives at College Park.



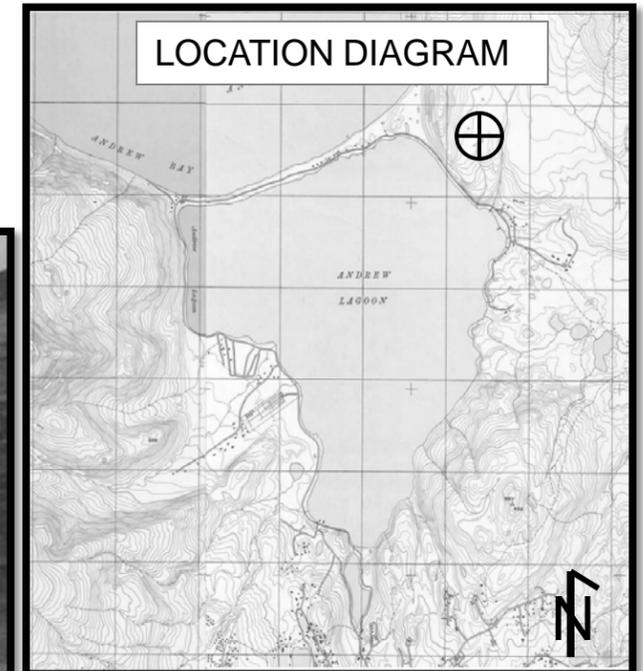
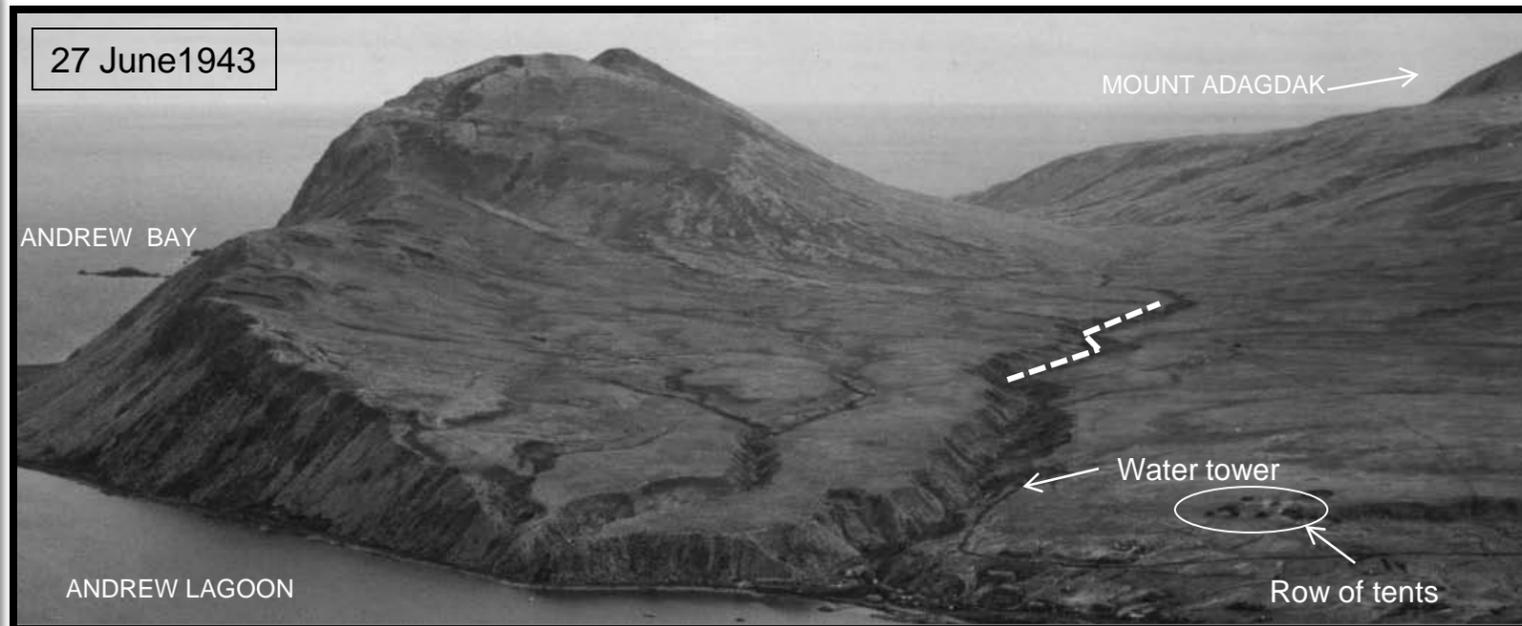
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PHOTOGRAPHIC ANALYSIS – NORTHEAST LAGOON

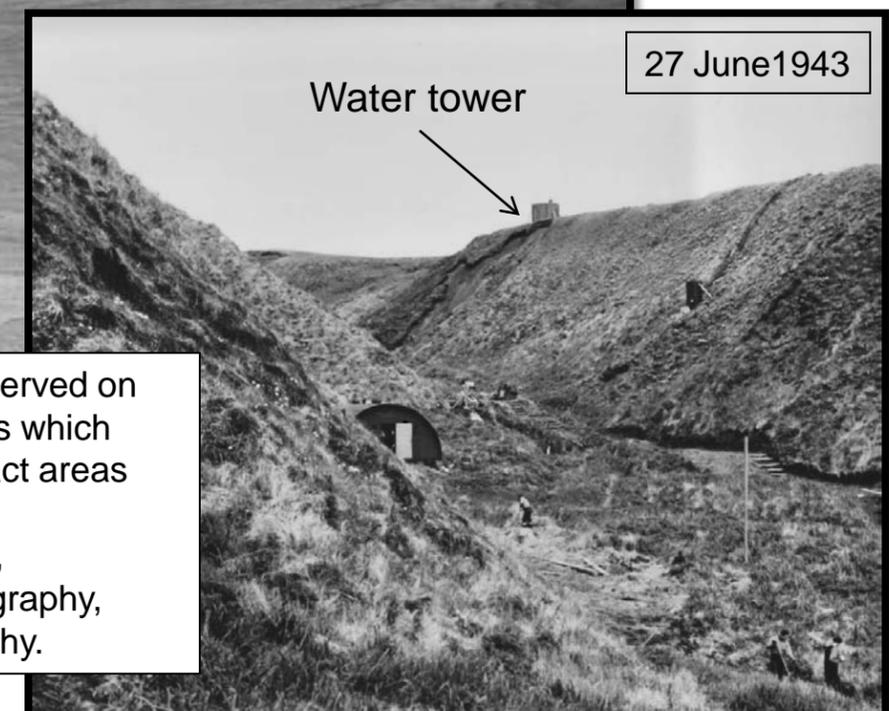
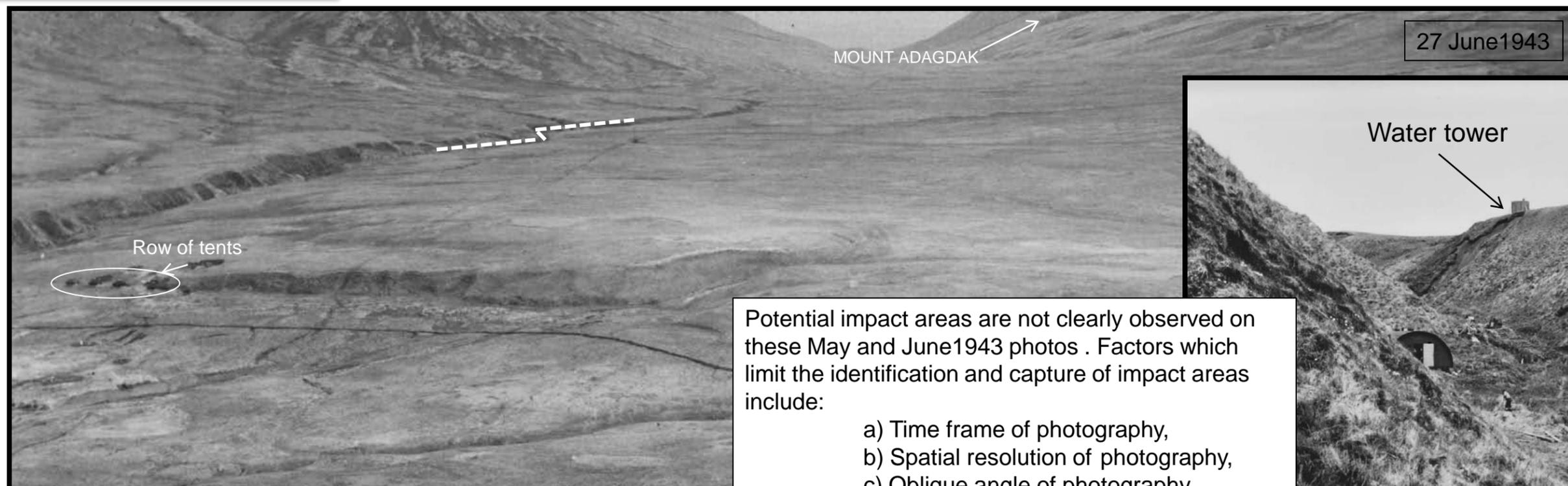


NORTHEAST LAGOON – POTENTIAL IMPACT AREA INVESTIGATION 1943 OBLIQUE, VERTICAL AERIAL AND STILL PHOTOGRAPHS



⊕ - FINDINGS

Photography Source:
National Archives at College Park.



Potential impact areas are not clearly observed on these May and June 1943 photos. Factors which limit the identification and capture of impact areas include:

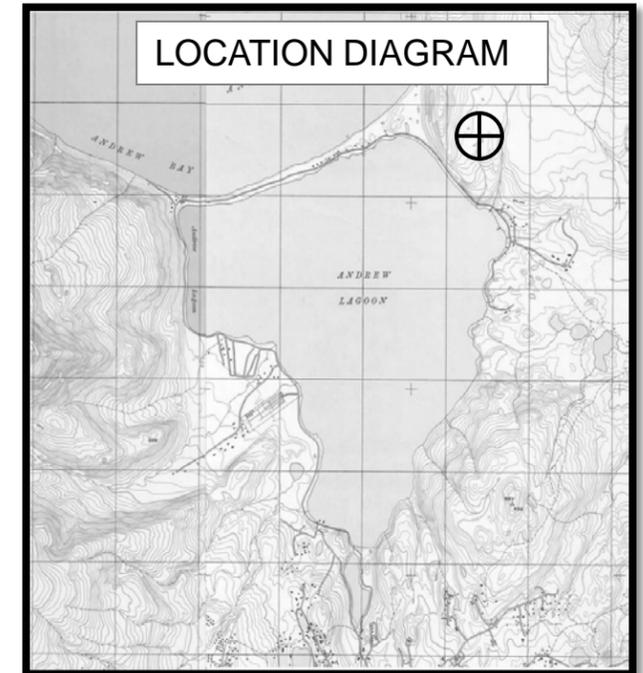
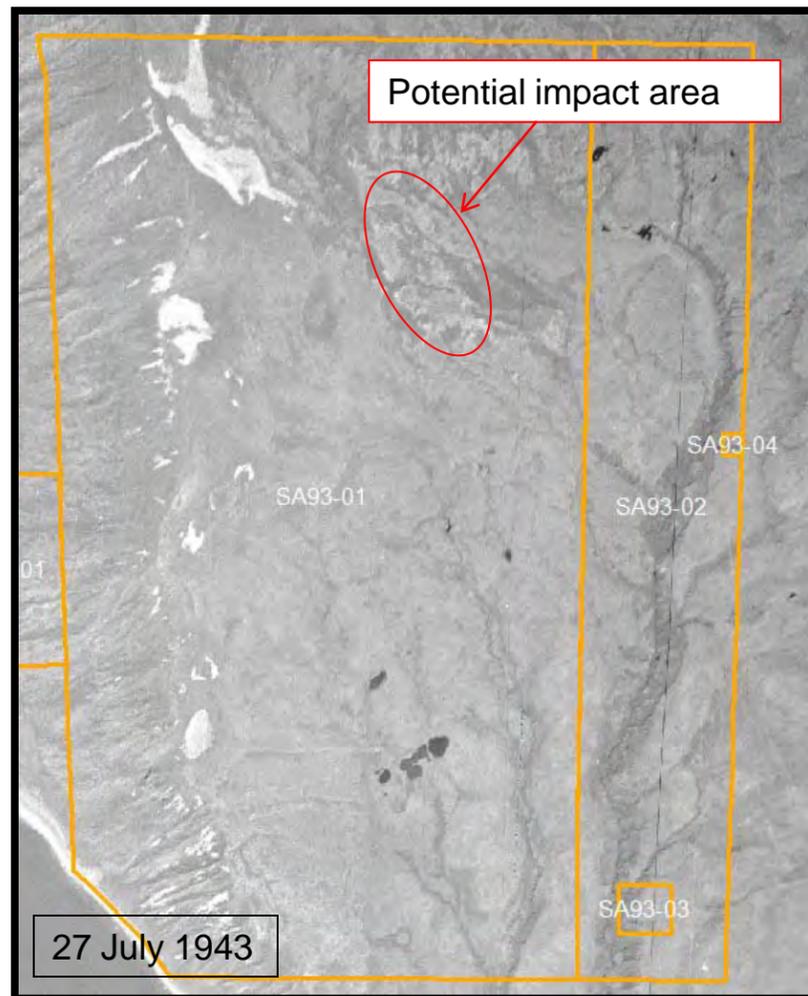
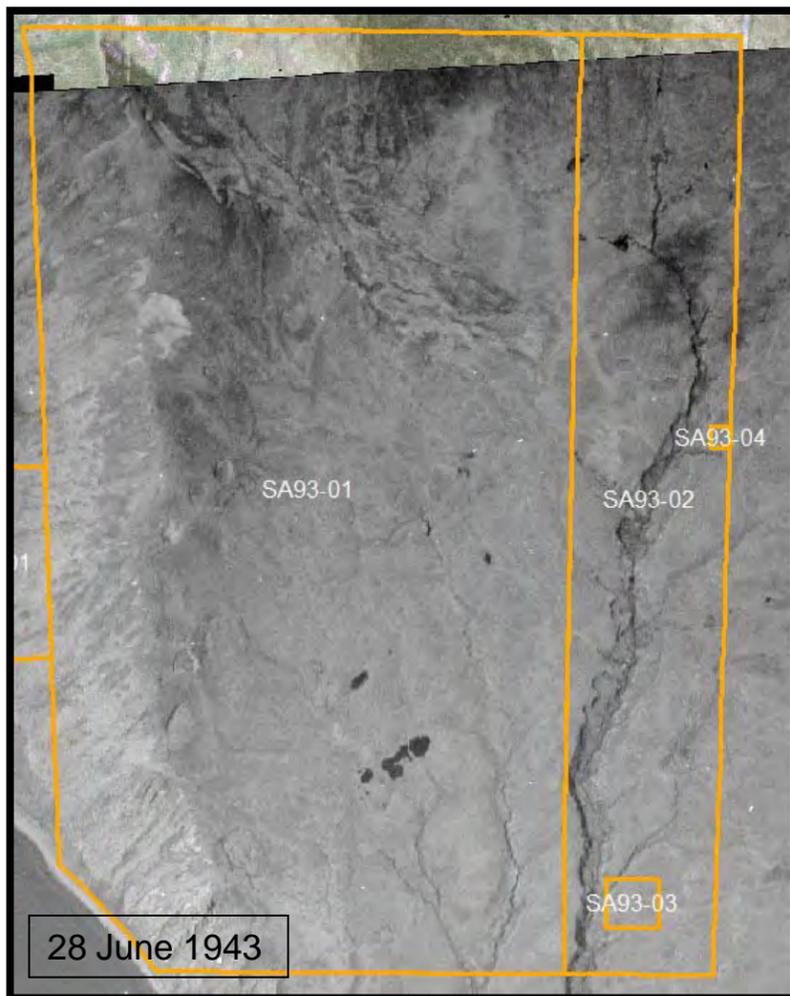
- a) Time frame of photography,
- b) Spatial resolution of photography,
- c) Oblique angle of photography.



PHOTOGRAPHIC ANALYSIS – NORTHEAST LAGOON



NORTHEAST LAGOON – POTENTIAL IMPACT AREA INVESTIGATION 1943 OBLIQUE AND VERTICAL AERIAL PHOTOGRAPHS



⊕ - FINDINGS



Photography Source:
National Archives at College Park.

Potential impact areas are observed on these July 1943 photos. Factors which limit the identification and capture of impact areas include:

- a) Spatial resolution of photography,
- b) Oblique angle of photography.

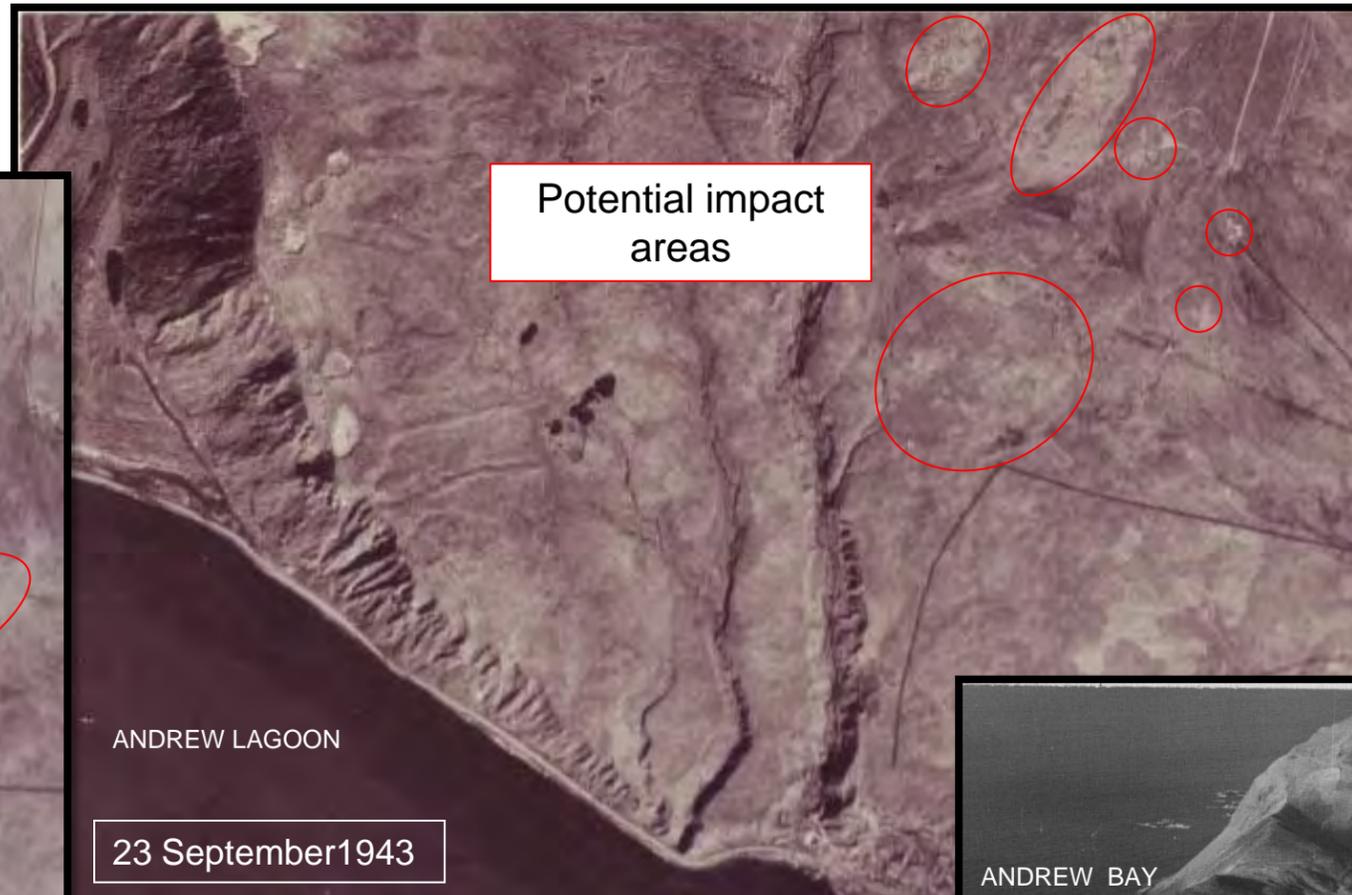
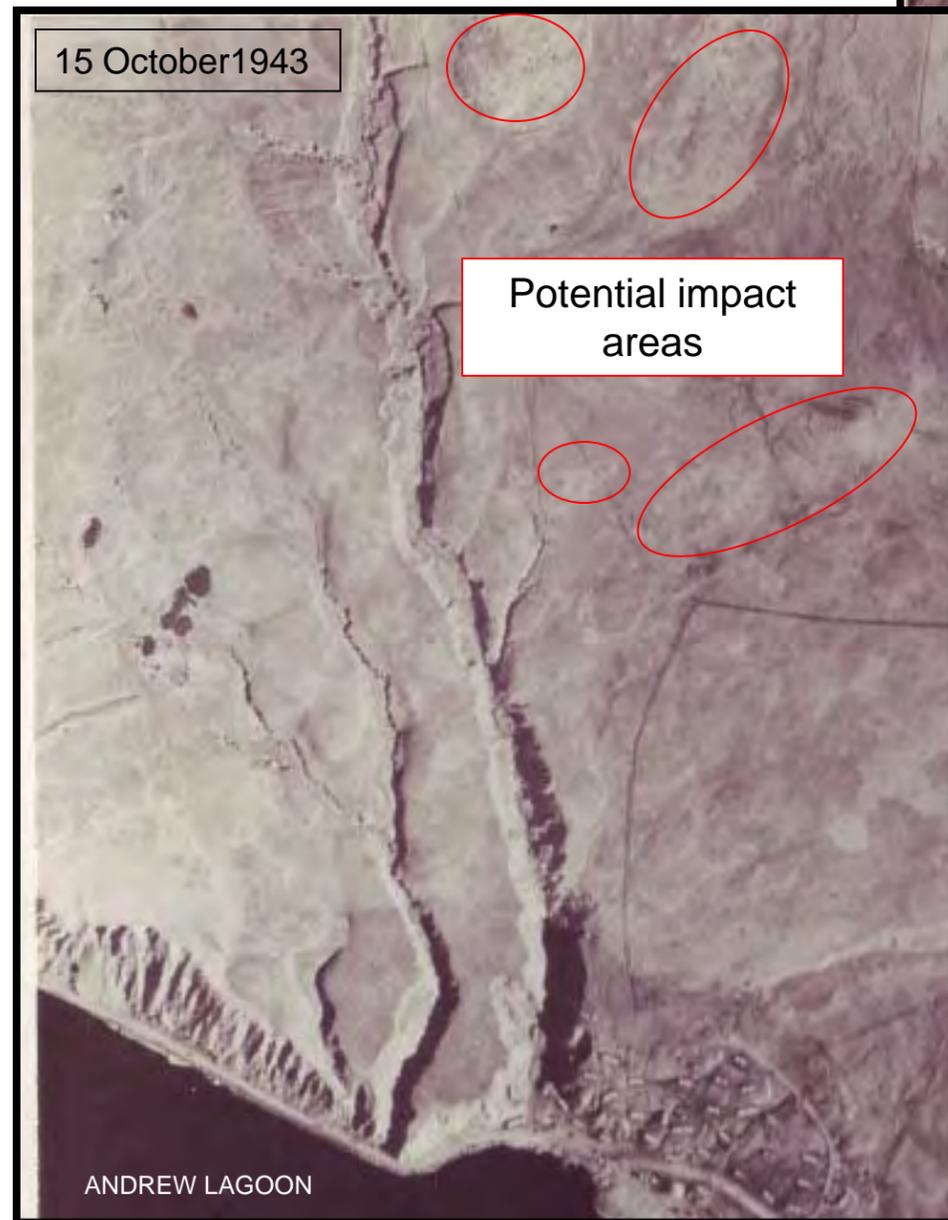




PHOTOGRAPHIC ANALYSIS – NORTHEAST LAGOON

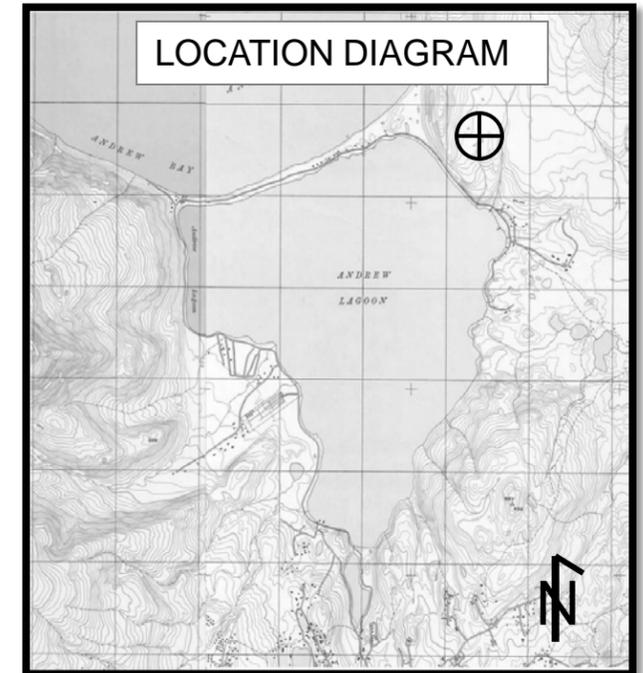


EAST OF SA-93 – POTENTIAL IMPACT AREA INVESTIGATION 1943 OBLIQUE, VERTICAL AERIAL AND STILL PHOTOGRAPHS



Potential impact areas are observed on the September and October 1943 photos . Factors which limit the identification and capture of impact areas include:

- a) Spatial resolution of photography,
- b) Oblique angle of photography.



⊕ - FINDINGS

Photography Source:
National Archives at College Park.

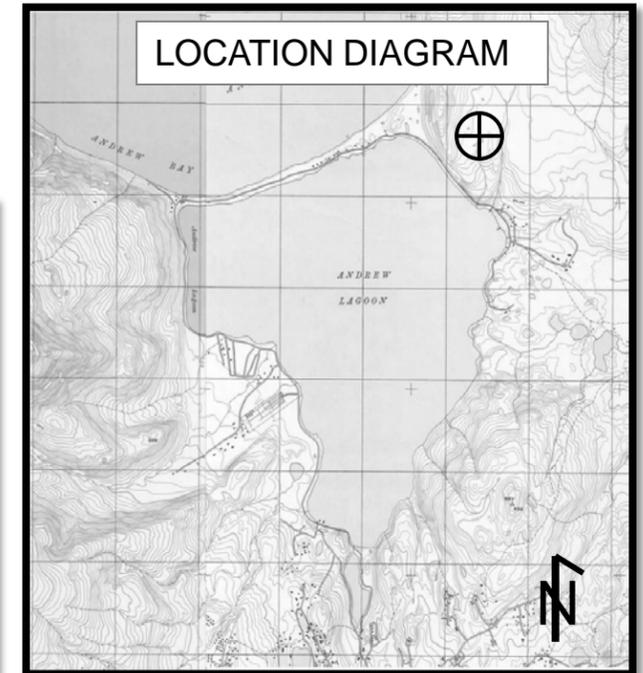
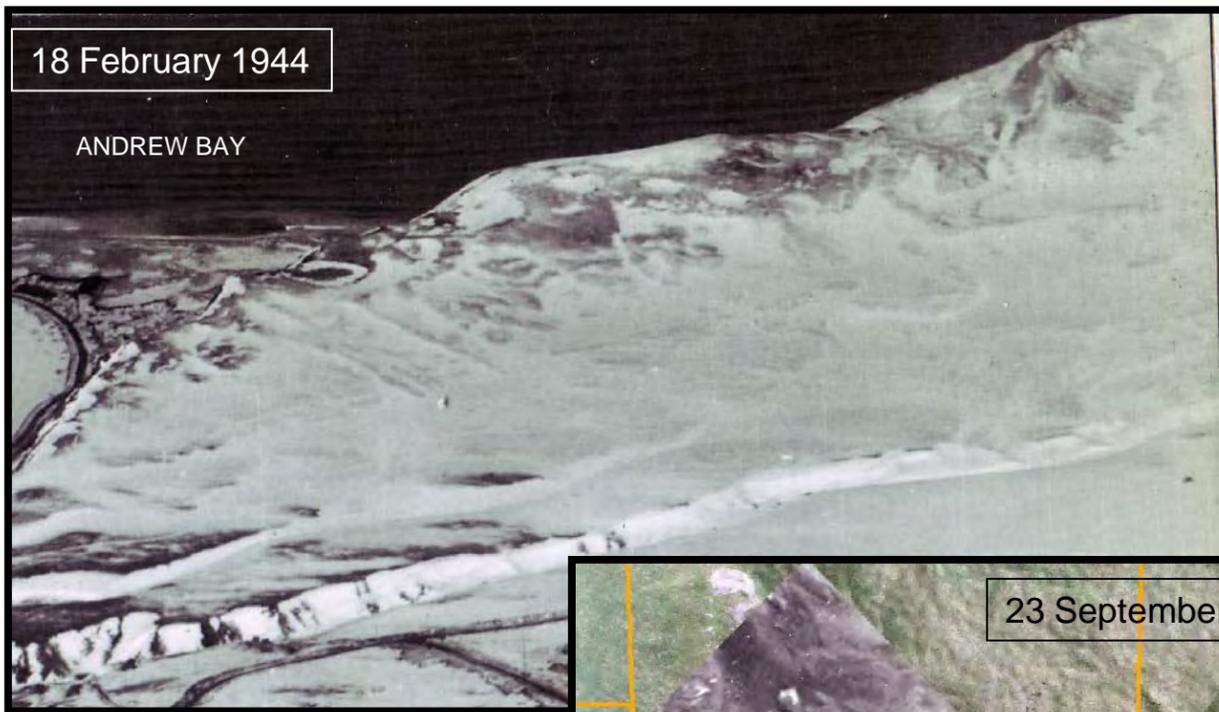




PHOTOGRAPHIC ANALYSIS – NORTHEAST LAGOON



NORTHEAST LAGOON – POTENTIAL IMPACT AREA INVESTIGATION 1944 OBLIQUE, VERTICAL AERIAL AND STILL PHOTOGRAPHS



⊕ - FINDINGS

Photography Source:
National Archives at College Park.

Potential impact areas are not clearly observed on these 1944 photos due to snow coverage, poor resolution and oblique angle of photography.



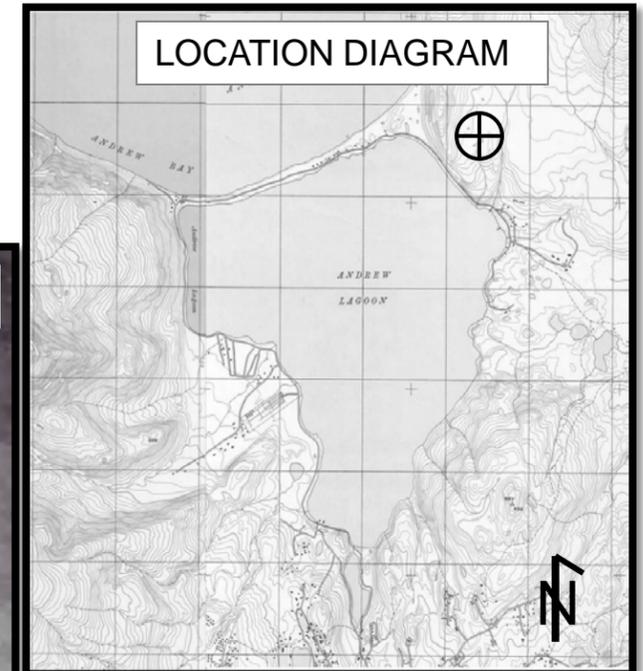
PHOTOGRAPHIC ANALYSIS – NORTHEAST LAGOON



NORTHEAST LAGOON – POTENTIAL IMPACT AREA INVESTIGATION 1945 -1946 OBLIQUE, VERTICAL AERIAL AND STILL PHOTOGRAPHS

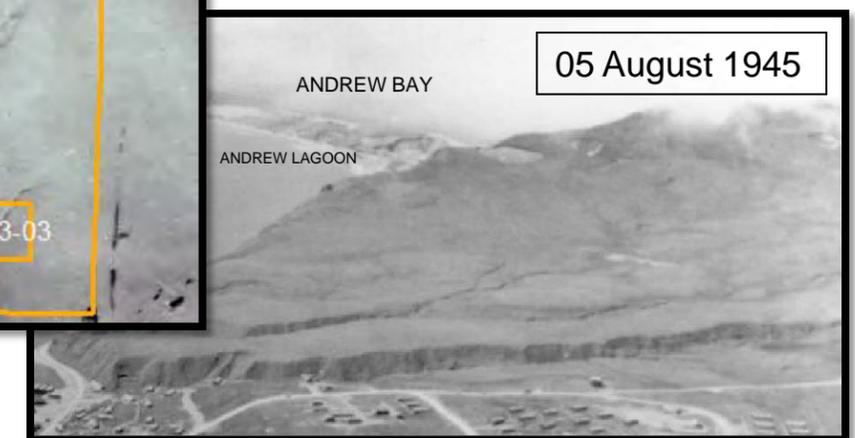
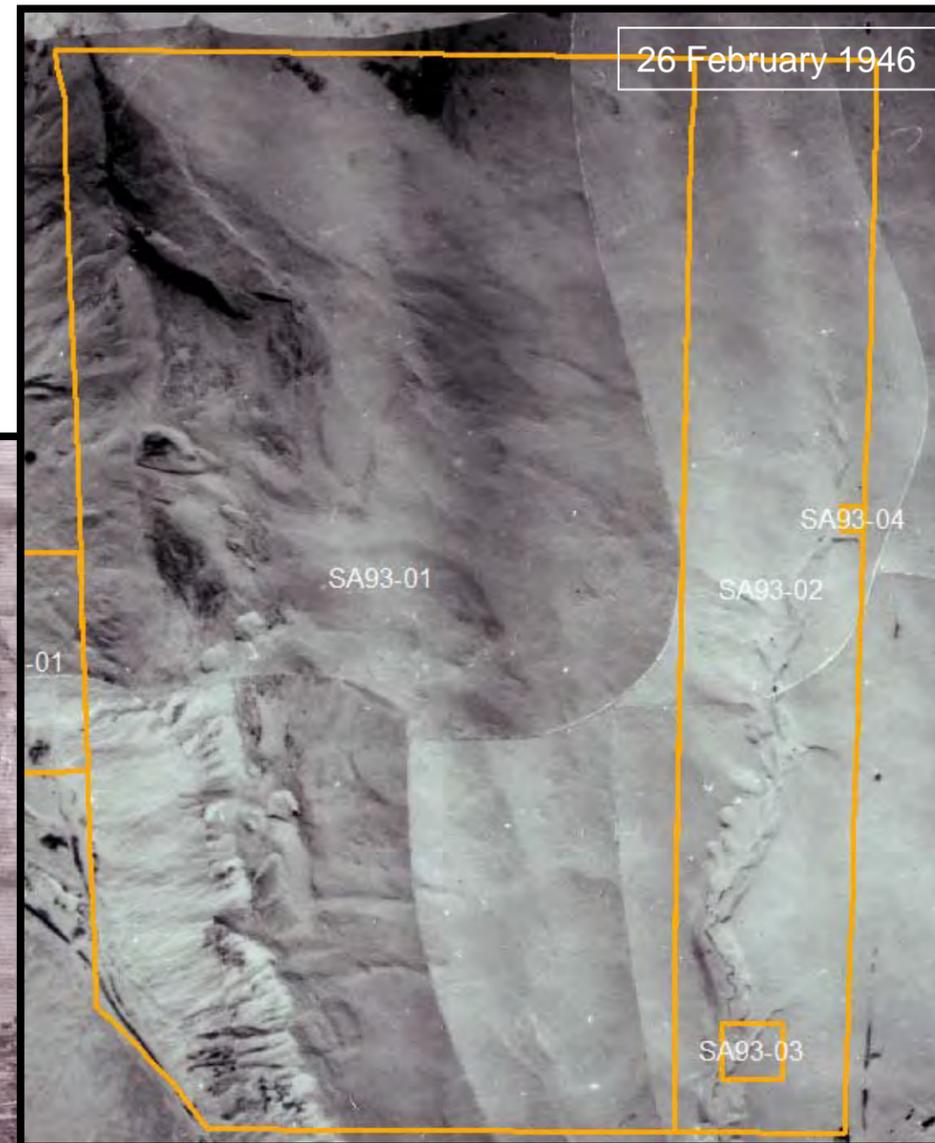
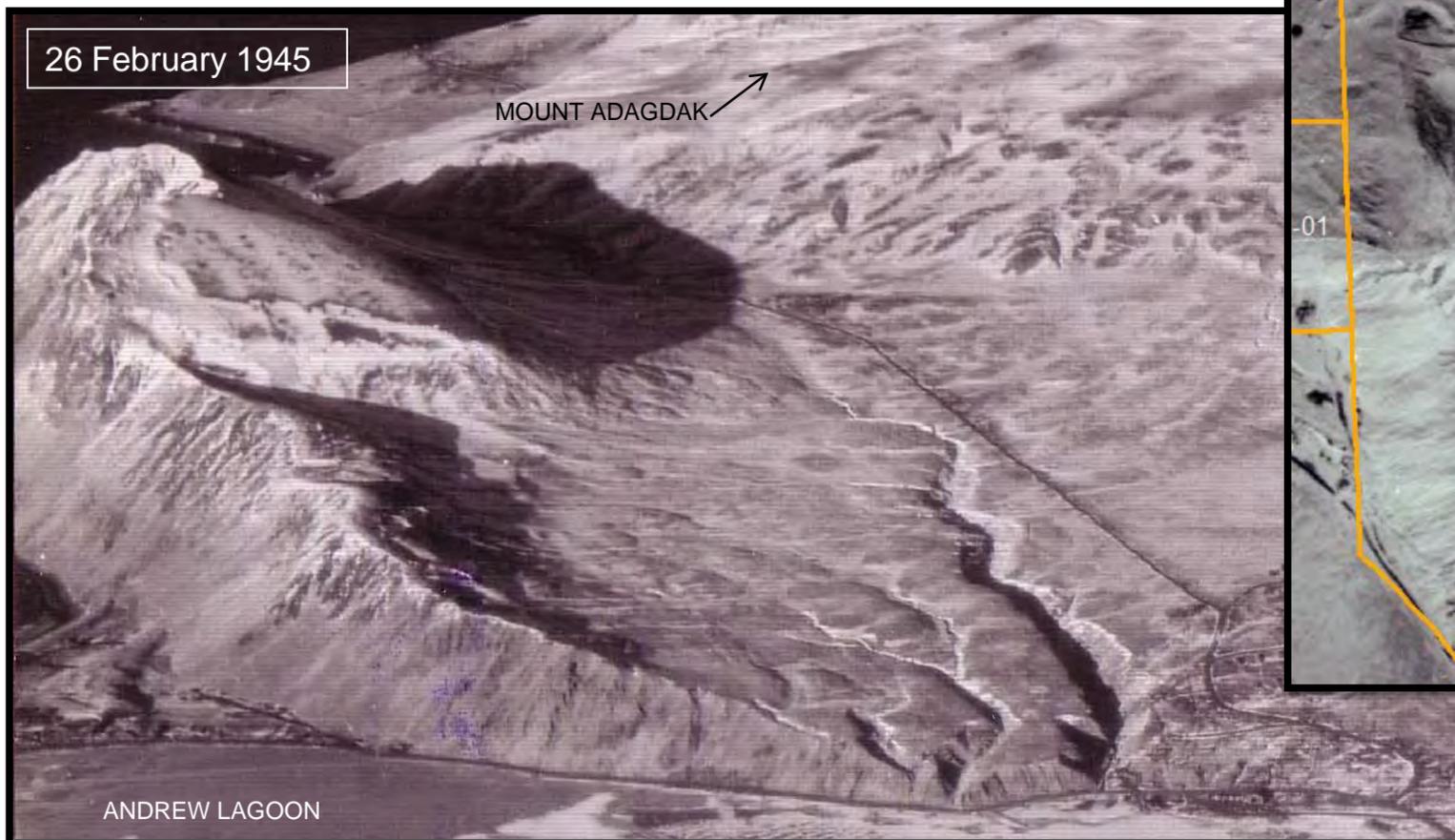
Potential impact areas are not clearly observed on these 1945-1946 photos. Factors which limit the identification and capture of impact areas include:

- a) Spatial resolution of photography,
- b) Oblique angle of photography,
- c) Snow coverage.



⊕ - FINDINGS

Photography Sources:
National Archives at College Park
National Oceanic and Atmospheric Administration

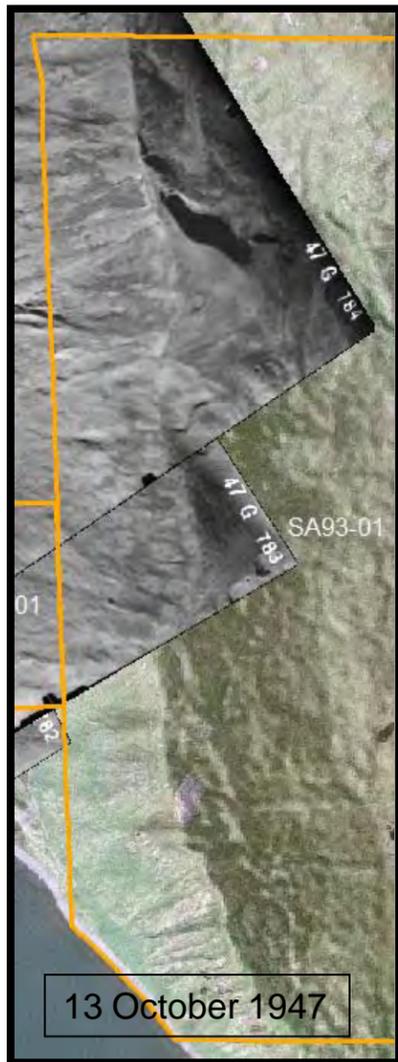




PHOTOGRAPHIC ANALYSIS – NORTHEAST LAGOON

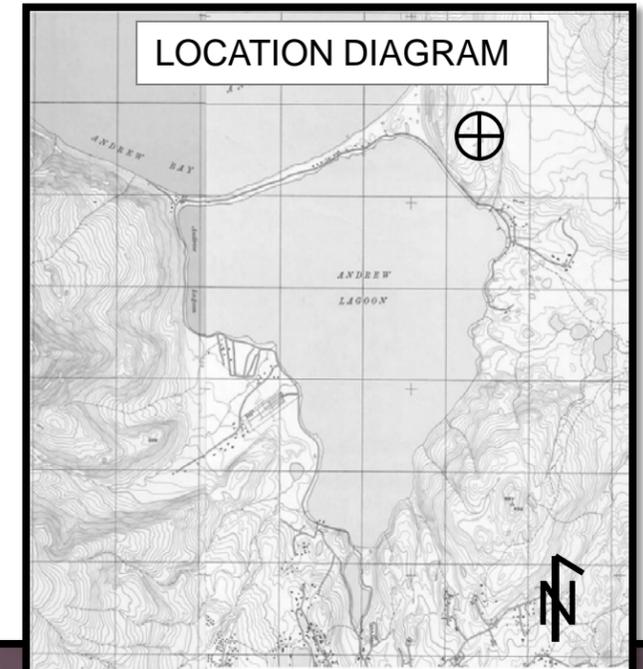


NORTHEAST LAGOON – POTENTIAL IMPACT AREA INVESTIGATION 1947-1948 OBLIQUE, VERTICAL AERIAL AND STILL PHOTOGRAPHS



Potential impact areas are not clearly observed on these 1947-1948 photos . Factors which limit the identification and capture of impact areas include:

- a) Spatial resolution of photography,
- b) Oblique angle of photography,
- c) Snow coverage,
- d) Lack of aerial coverage.



29 March 1948



⊕ - FINDINGS

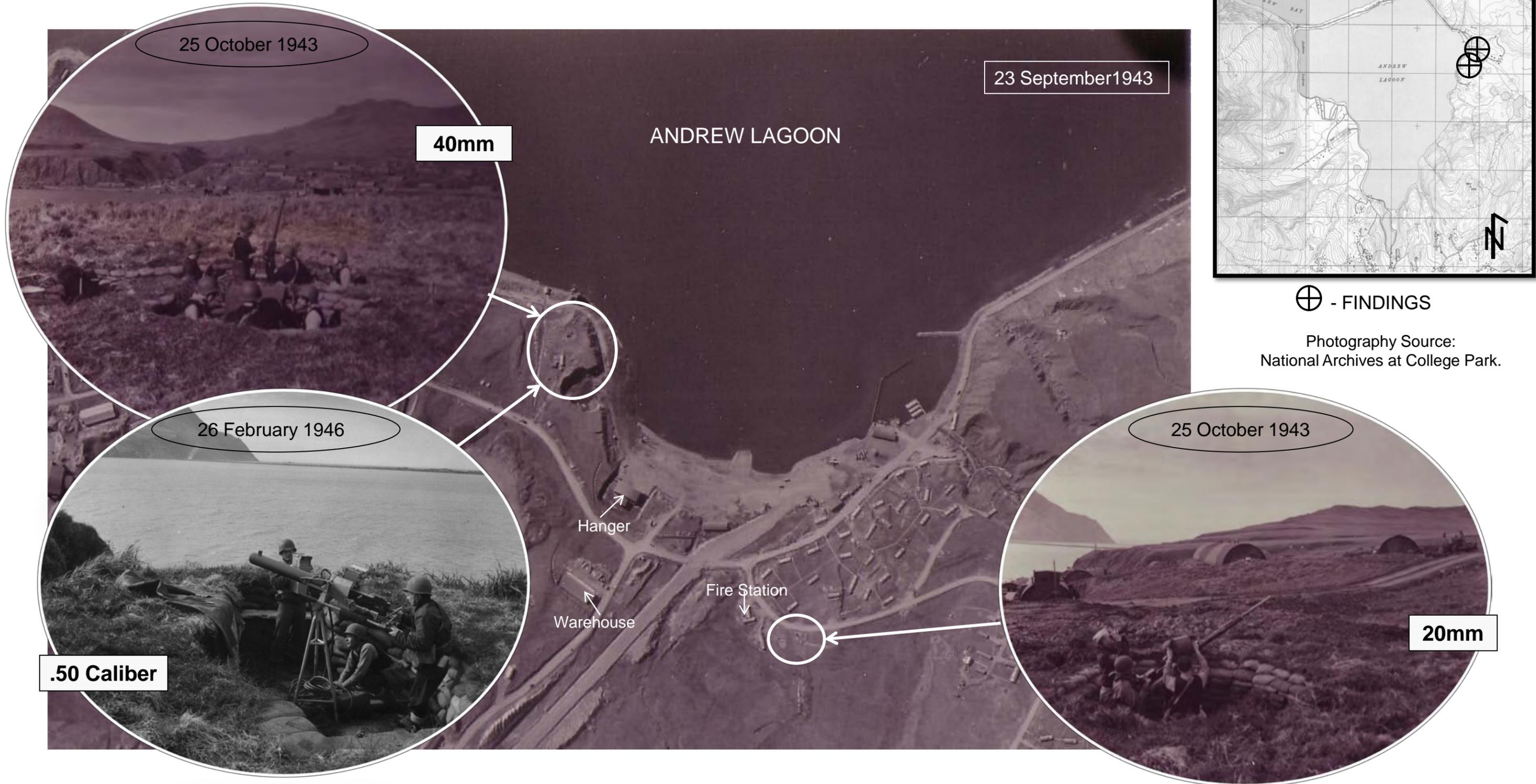
Photography Sources:
National Archives at
College Park
National Oceanic and
Atmospheric
Administration



PHOTOGRAPHIC ANALYSIS – NORTHEAST LAGOON



SEAPLANE LANDING – GUN EMPLACEMENTS (in proximity to SA-93) 1943-1946 OBLIQUE AERIAL AND STILL PHOTOGRAPHS

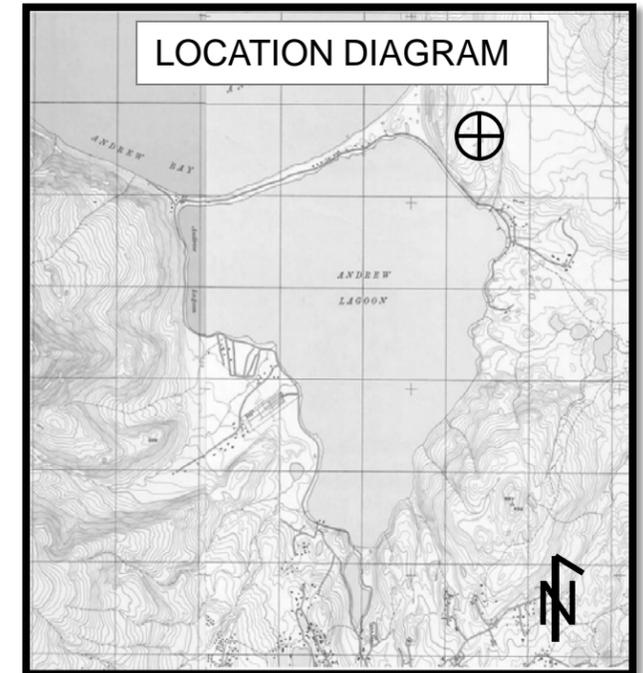




PHOTOGRAPHIC ANALYSIS – NORTHEAST LAGOON



SEAPLANE LANDING – ALTERNATE VIEW OF GUN EMPLACEMENTS 1943 AND 1944 OBLIQUE AERIAL AND STILL PHOTOGRAPHS

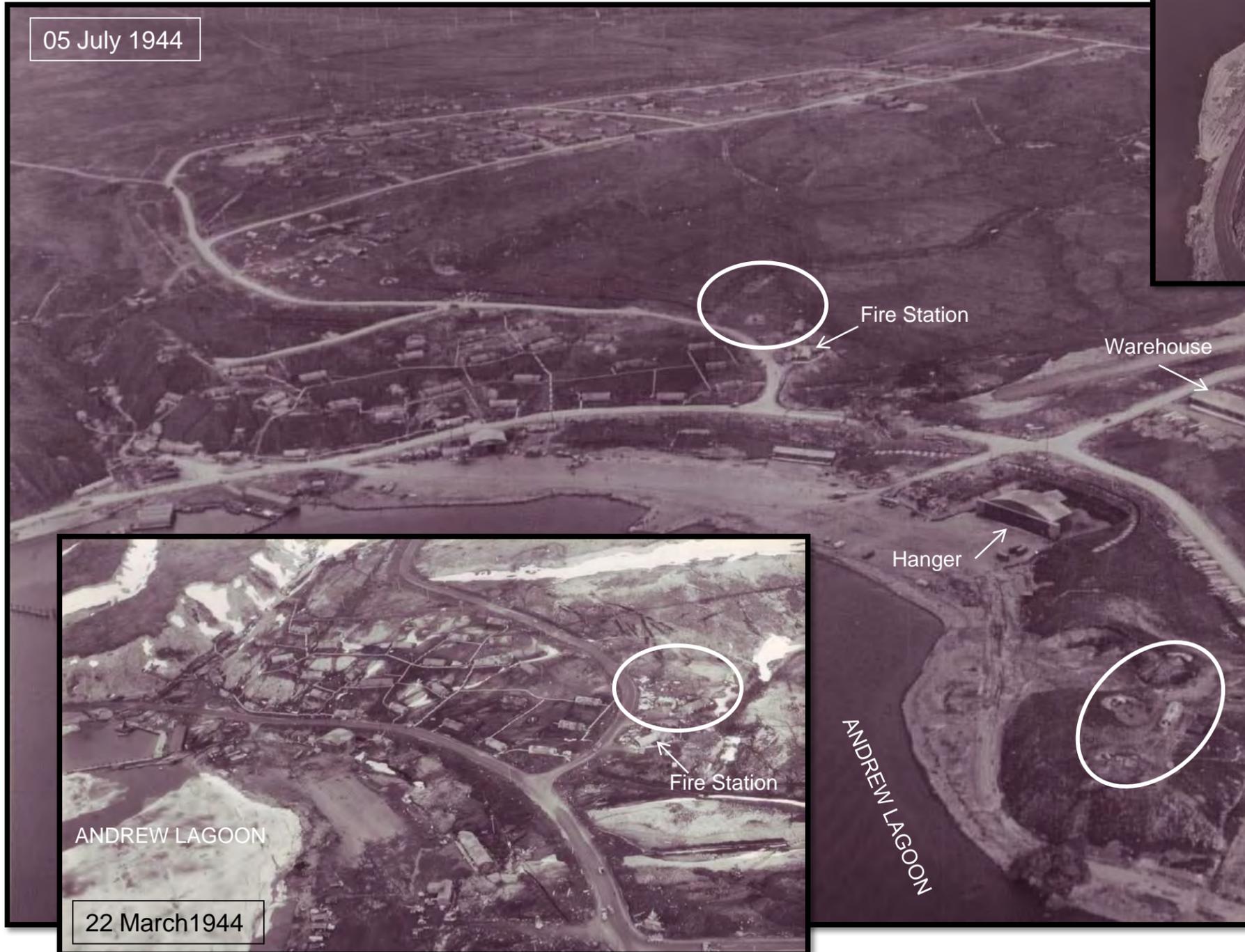


⊕ - FINDINGS

Photography Source:
National Archives at College Park.



15 August 1943



05 July 1944

Fire Station
Warehouse

Hanger

ANDREW LAGOON

ANDREW LAGOON

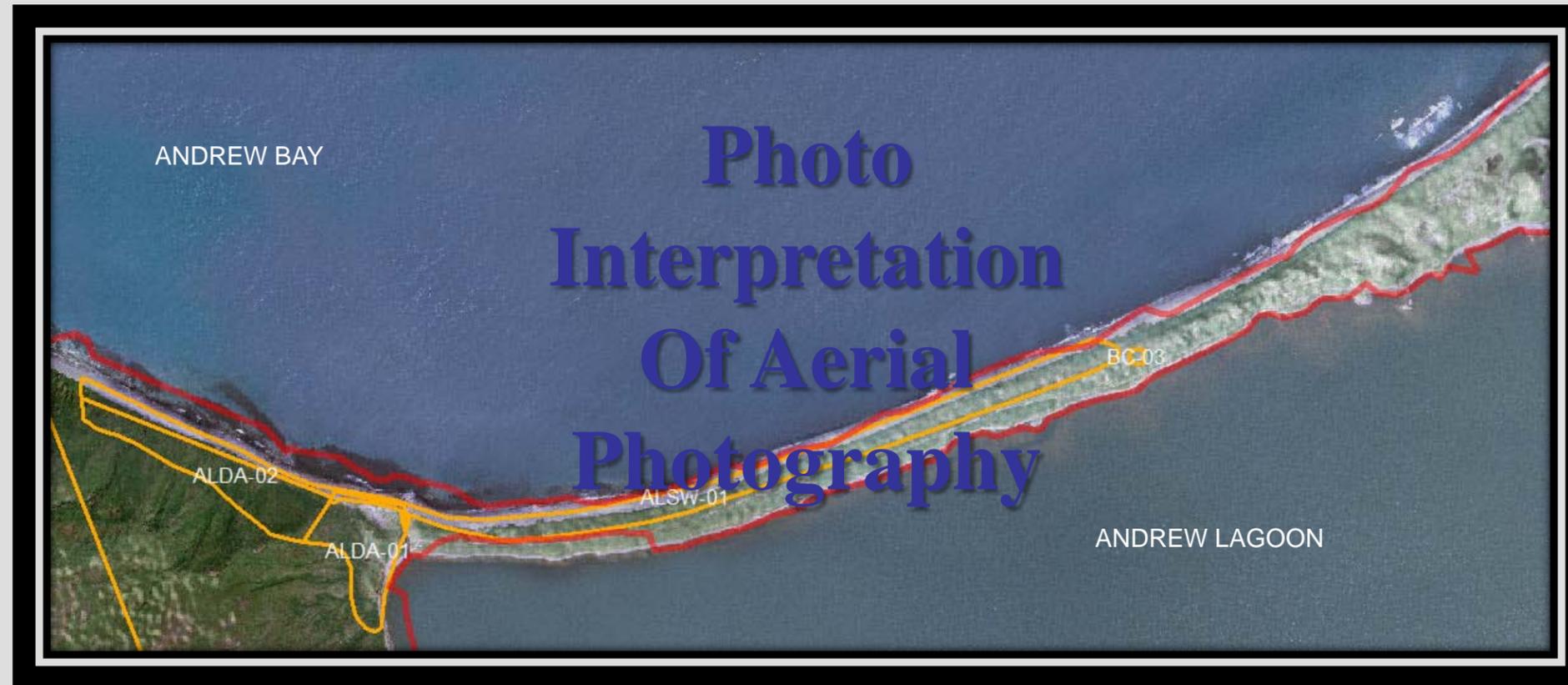
22 March 1944



25 February 1944



PHOTOGRAPHIC INTERPRETATION OF AERIAL PHOTOGRAPHY SEAWALL

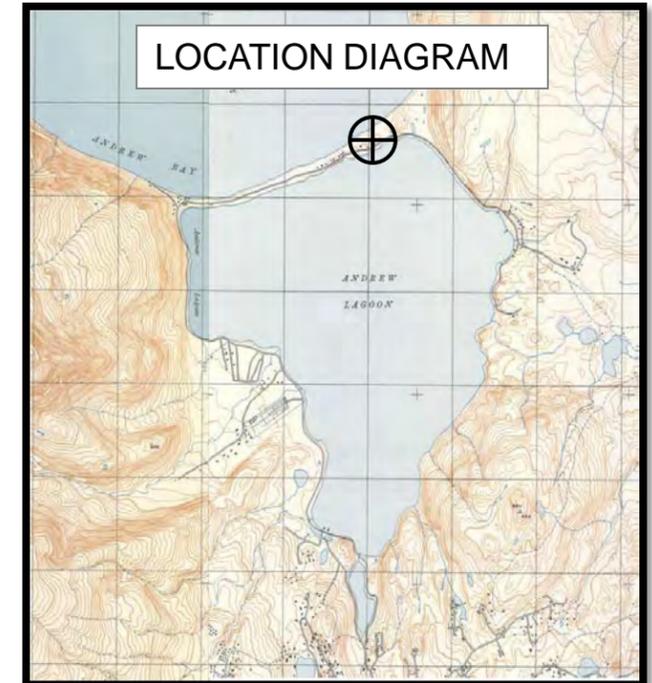
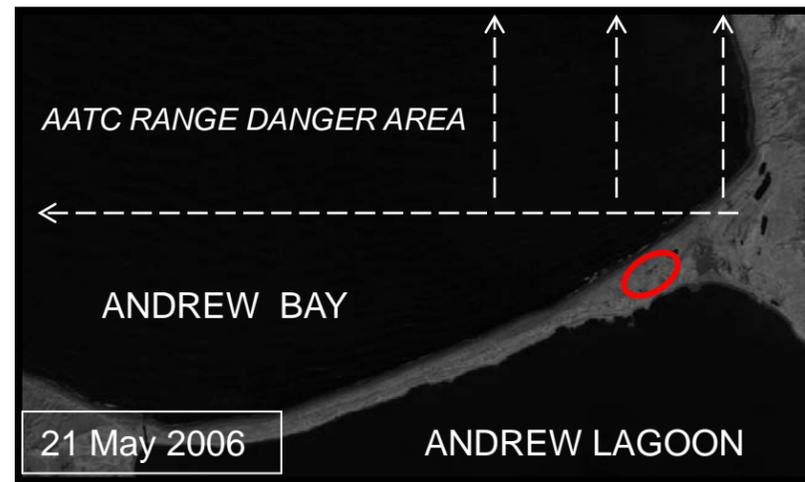
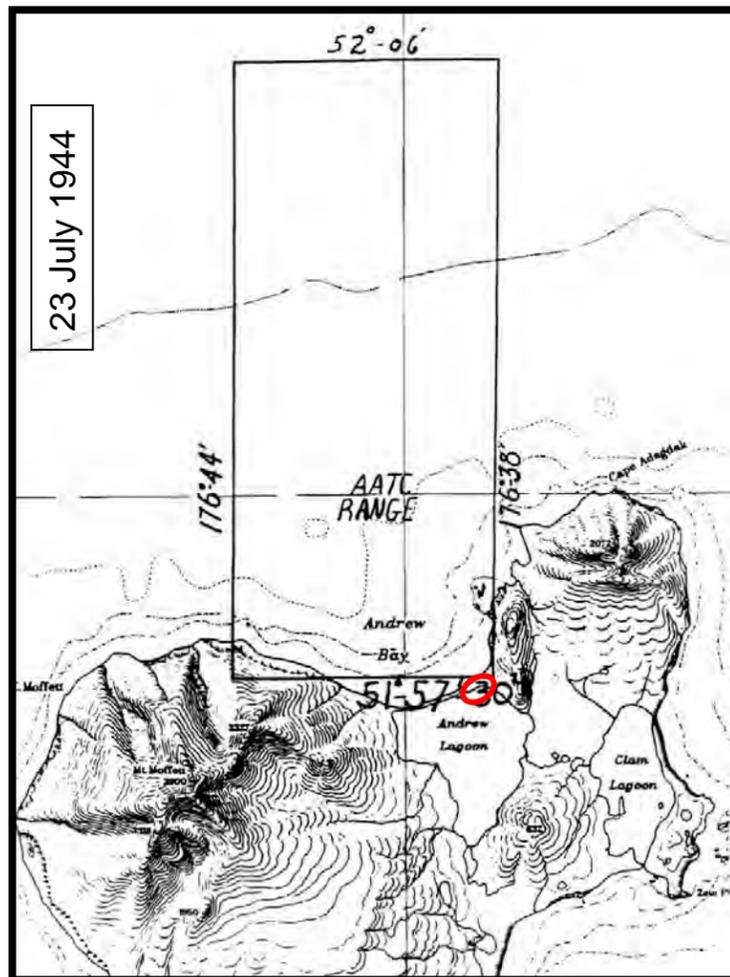




PHOTOGRAPHIC ANALYSIS – SEAWALL

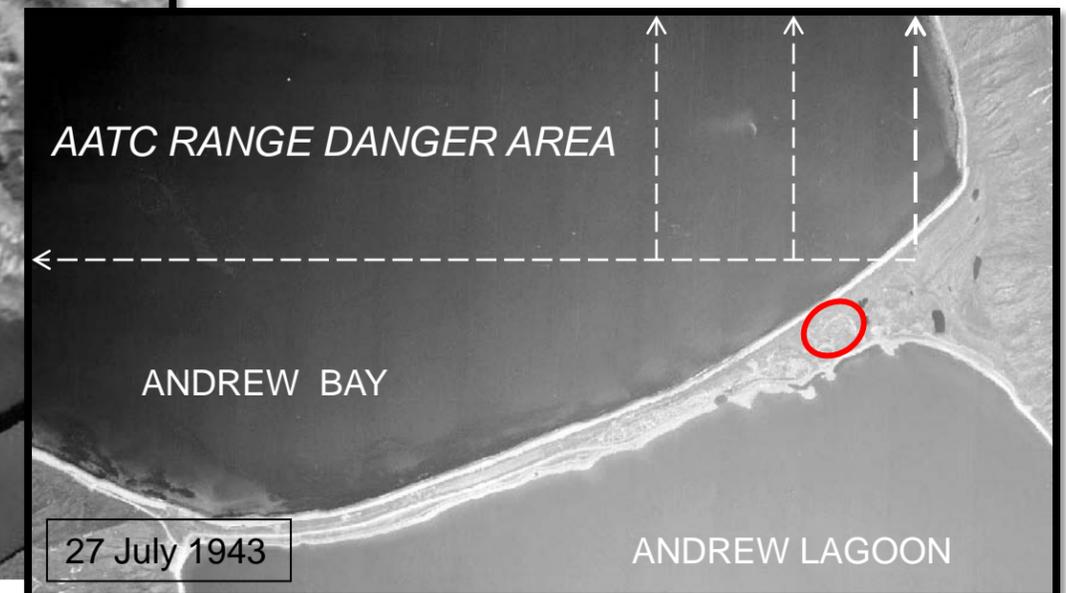


EAST SEAWALL – ANTI-AIRCRAFT TRAINING CENTER (AATC) RANGE 1944 MAP, 1943-1947 AERIAL PHOTOGRAPHS, 2006 SATELLITE IMAGE



⊕ - FINDINGS

Data Sources:
 National Oceanographic Atmospheric Administration (1947)
 National Archives at College Park (1943, 1944)
 National Geospatial-Intelligence Agency (2006)

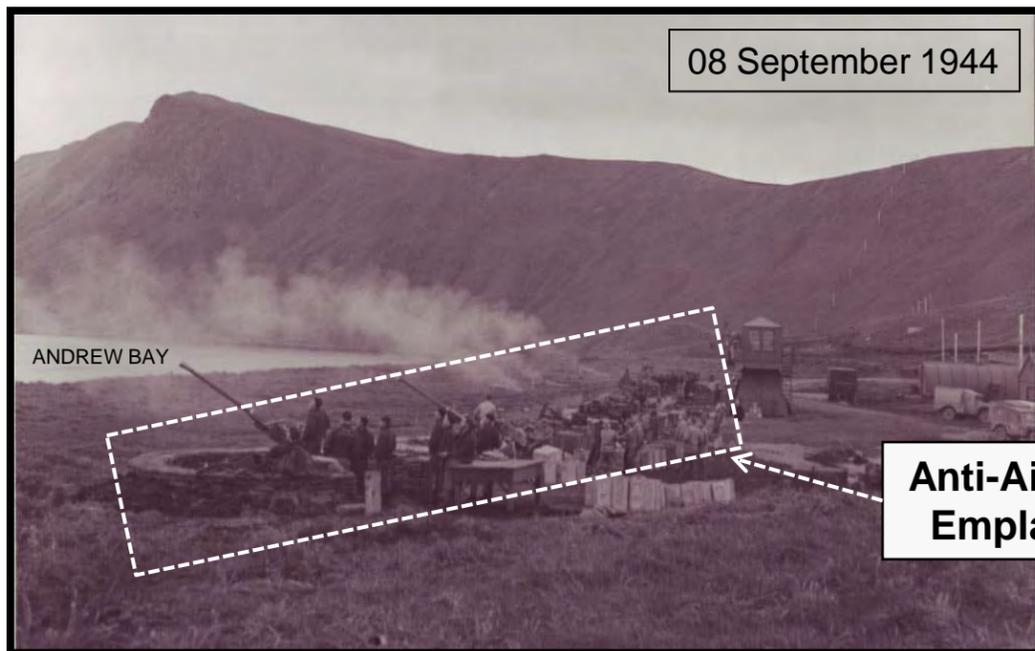




PHOTOGRAPHIC ANALYSIS – SEAWALL



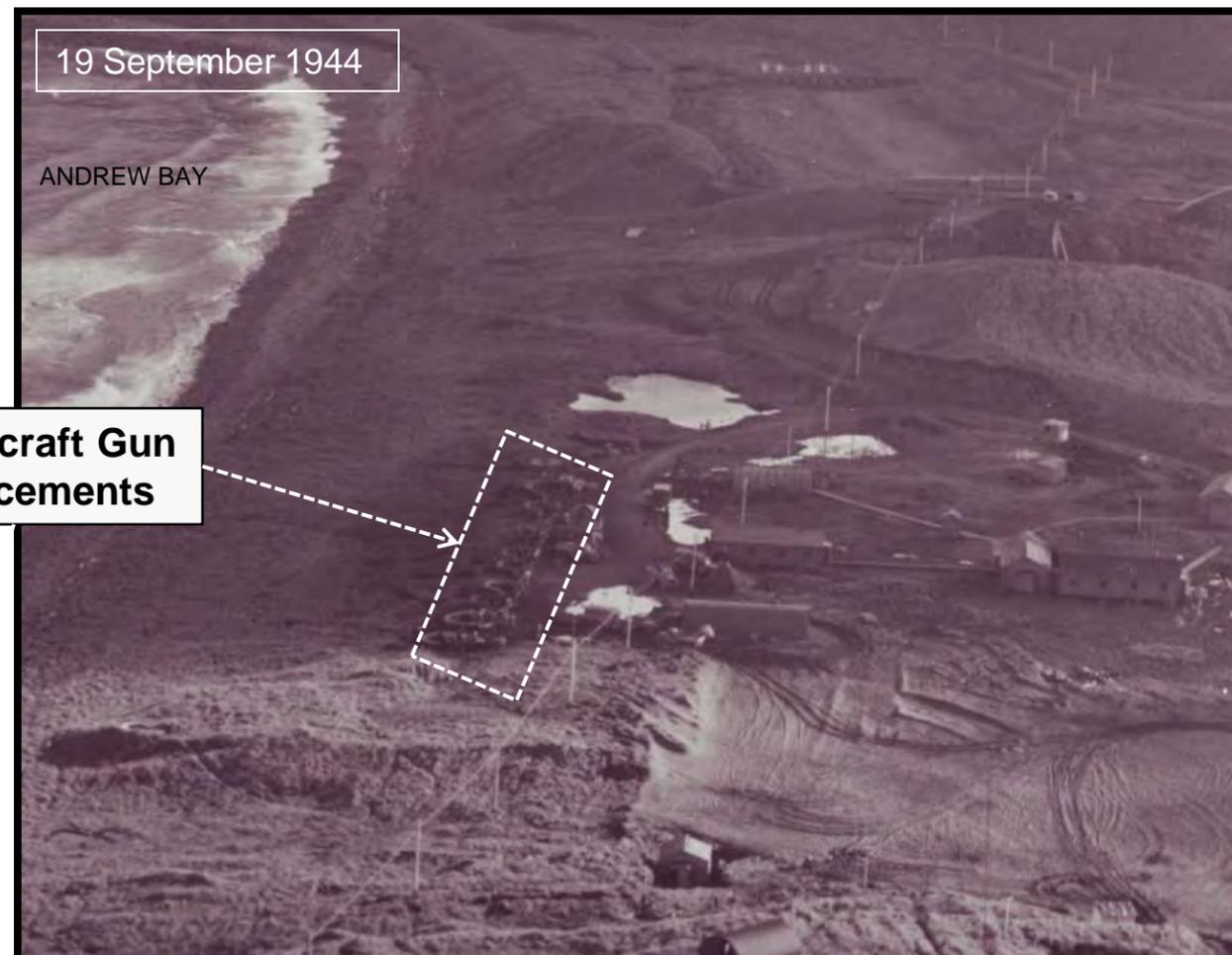
EAST SEAWALL – ANTI-AIRCRAFT TRAINING CENTER (AATC) RANGE 1944 AERIAL OBLIQUE AND GROUND STILL PHOTOGRAPHS



08 September 1944

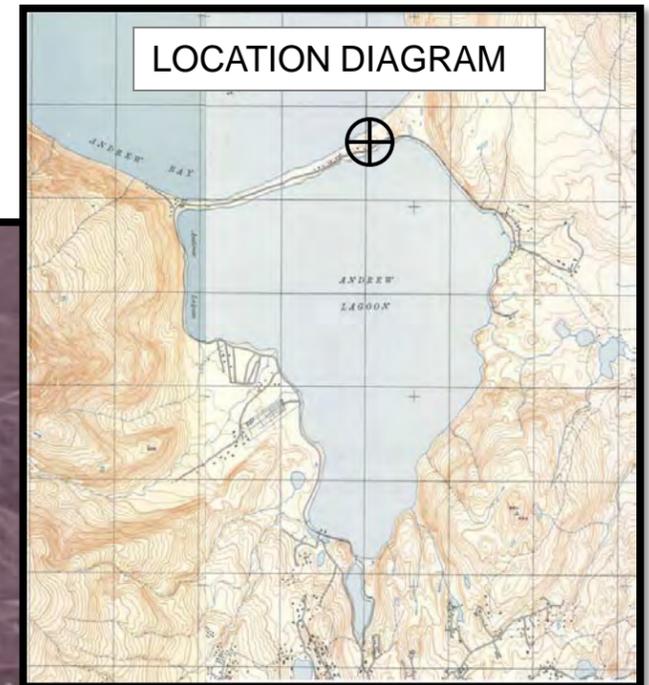
ANDREW BAY

Anti-Aircraft Gun Emplacements



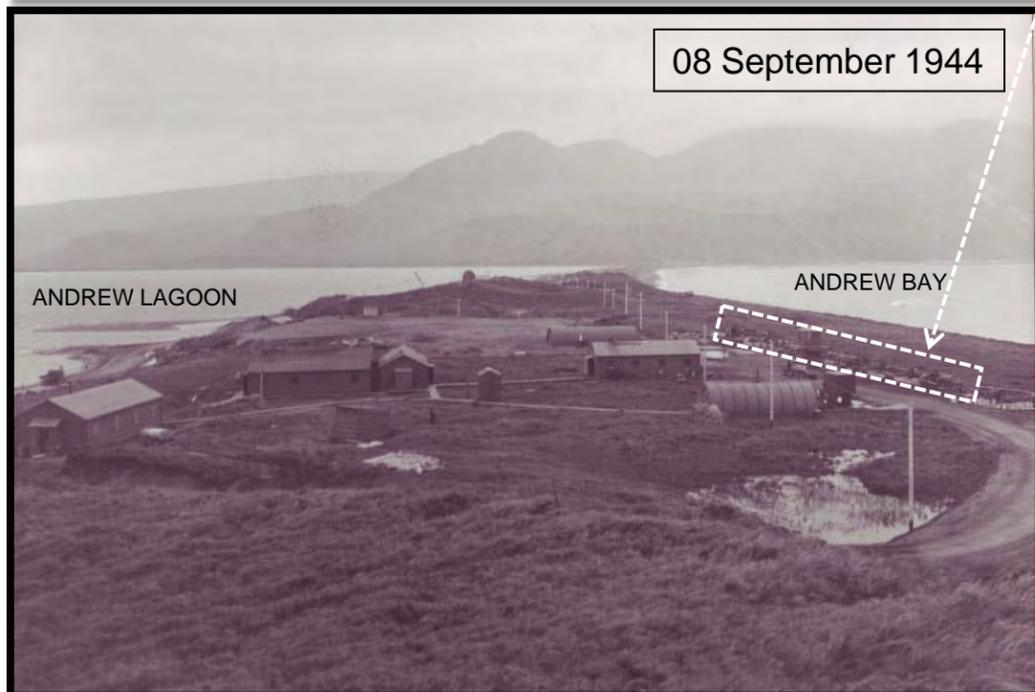
19 September 1944

ANDREW BAY



LOCATION DIAGRAM

⊕ - FINDINGS



08 September 1944

ANDREW LAGOON

ANDREW BAY



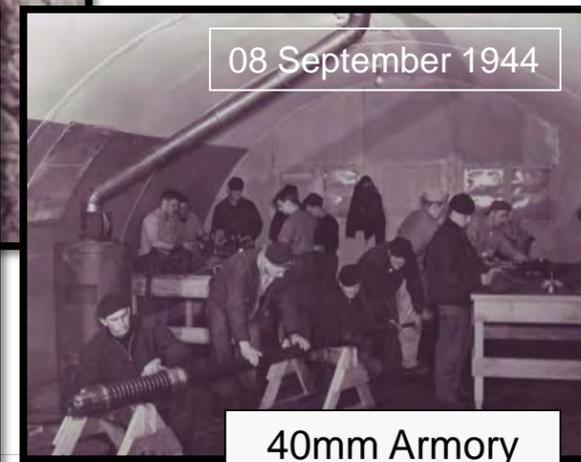
08 September 1944

Gunnery Class



08 September 1944

20mm Armory Gunnery Class



08 September 1944

40mm Armory Gunnery Class

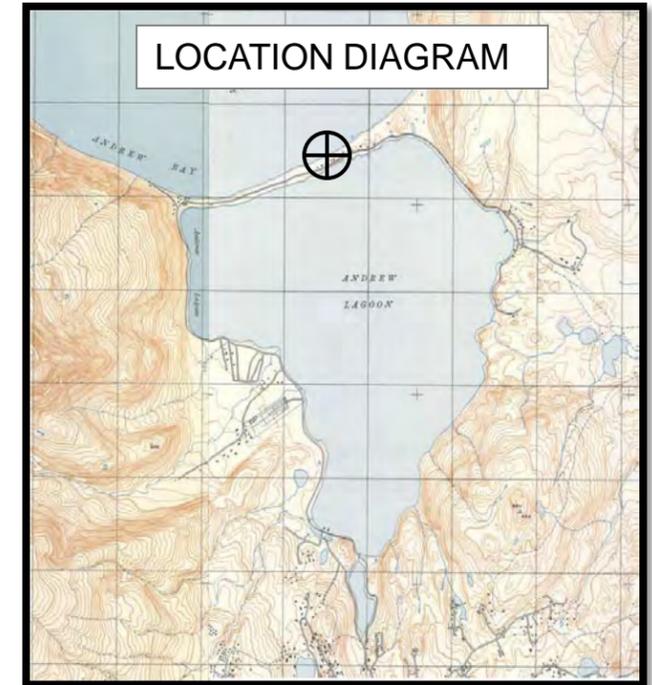
Photography Source: National Archives at College Park



PHOTOGRAPHIC ANALYSIS – SEAWALL

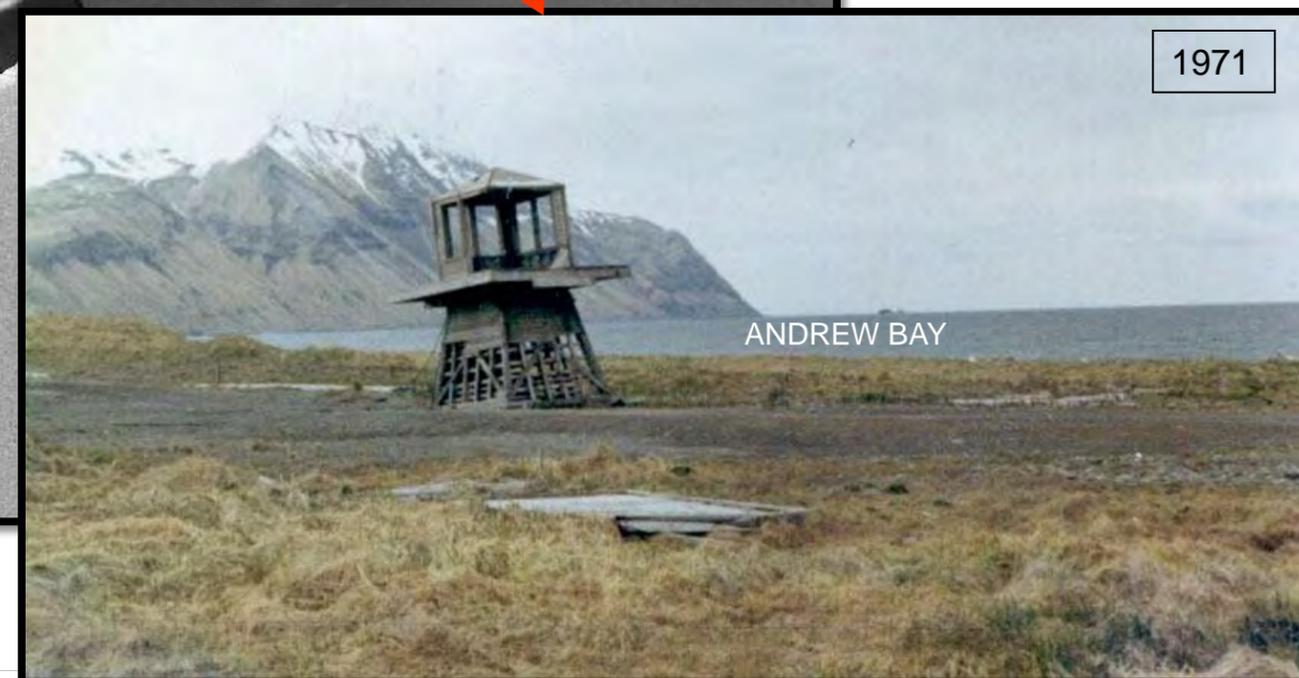
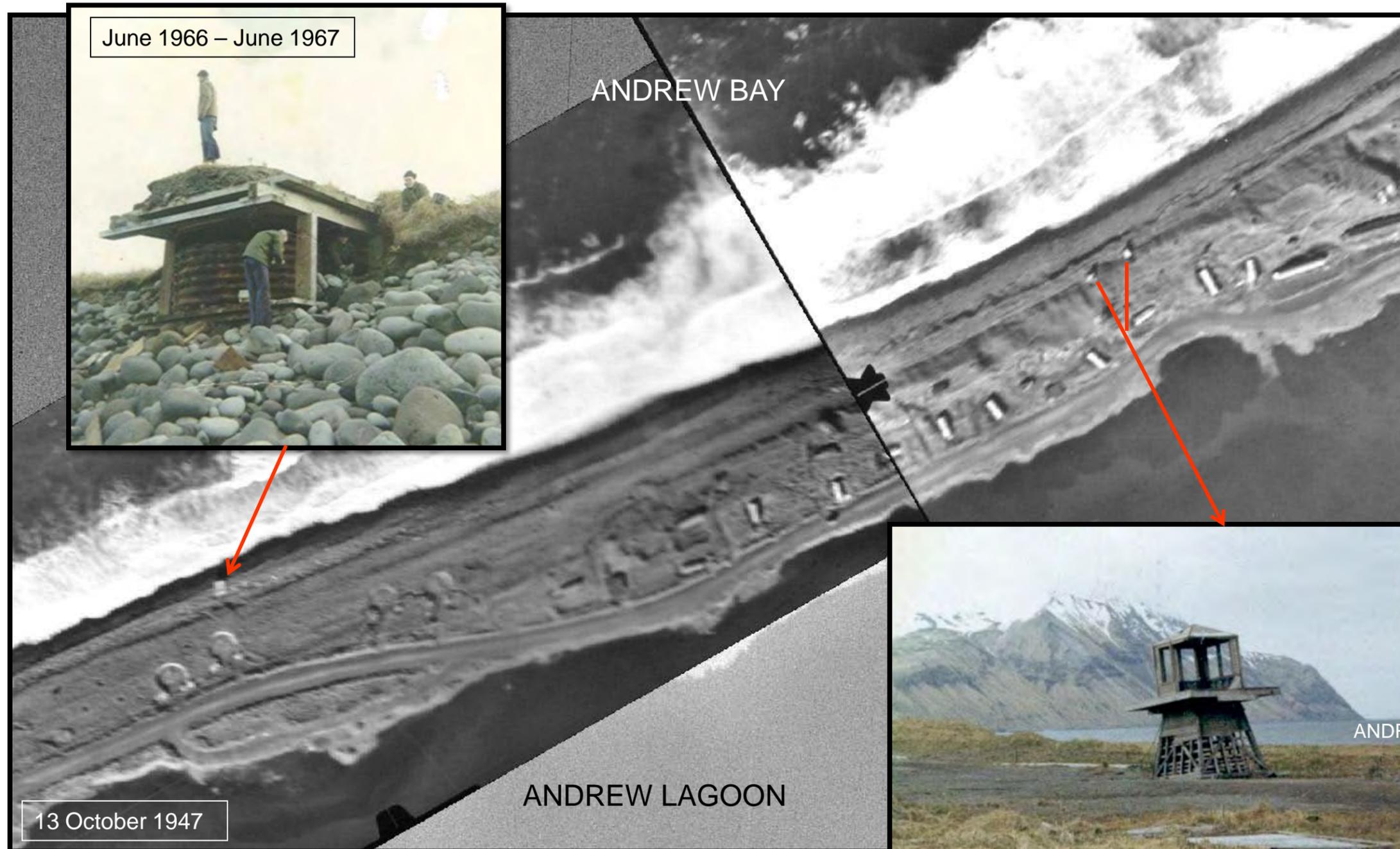


SEAWALL – LOOKOUT POSTS AND BUNKERS ALONG SEAWALL 1947 AERIAL AND 1966-1967, 1971 GROUND PHOTOGRAPHS



⊕ - FINDINGS

The 1971 feature locations are subjective.
The features pointed out in the 1947
photograph are examples of the same
features and are likely locations.



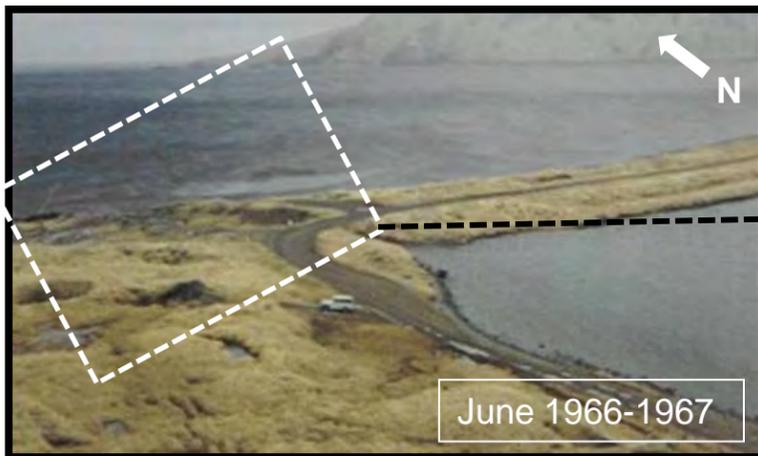
Data Sources:
National Oceanographic Atmospheric Administration (1947)
Navycthistory.com AND Orneveien.org (posted by Adak veterans based at Adak) (June 1966-June 1967, 1971)



PHOTOGRAPHIC ANALYSIS – SEAWALL

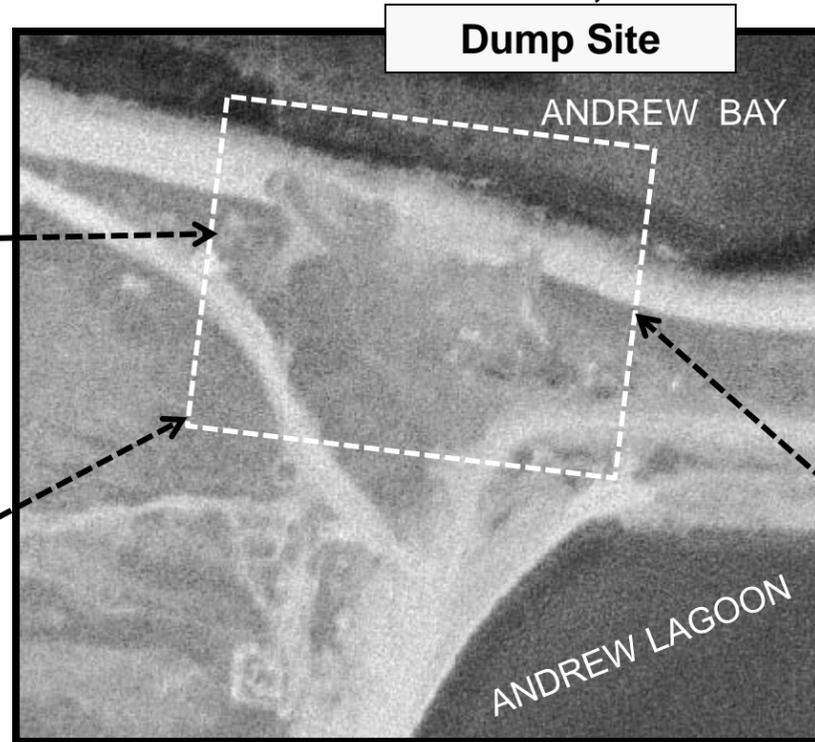


WEST SEAWALL – PROBABLE DUMP SITE 1943 AERIAL AND 1966-1967 STILL PHOTOGRAPHS, 1944 AND 1945 MAPS



June 1966-1967

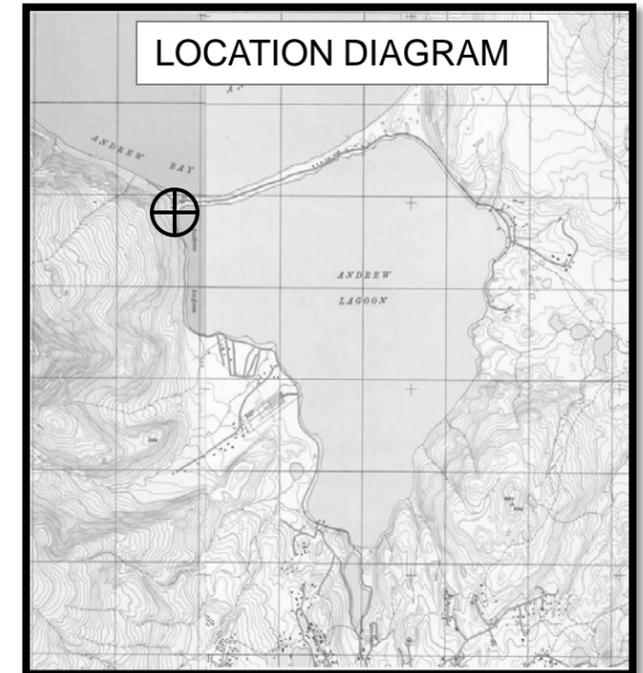
Image and Map Sources:
National Archives at College Park (1943, 1944, 1945)
Navycthistory.com (posted by Adak veteran based at
Adak in June 1966-June 1967.



Dump Site

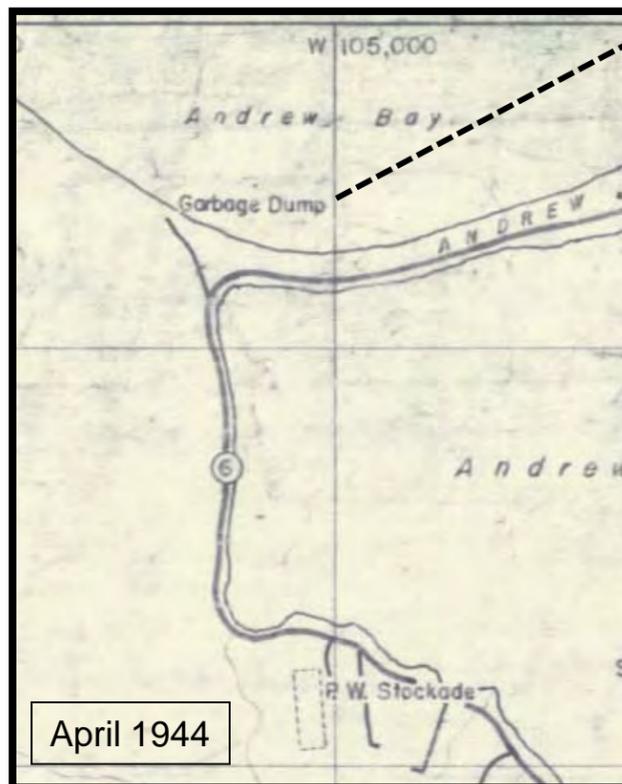
ANDREW BAY

ANDREW LAGOON



LOCATION DIAGRAM

⊕ - FINDINGS

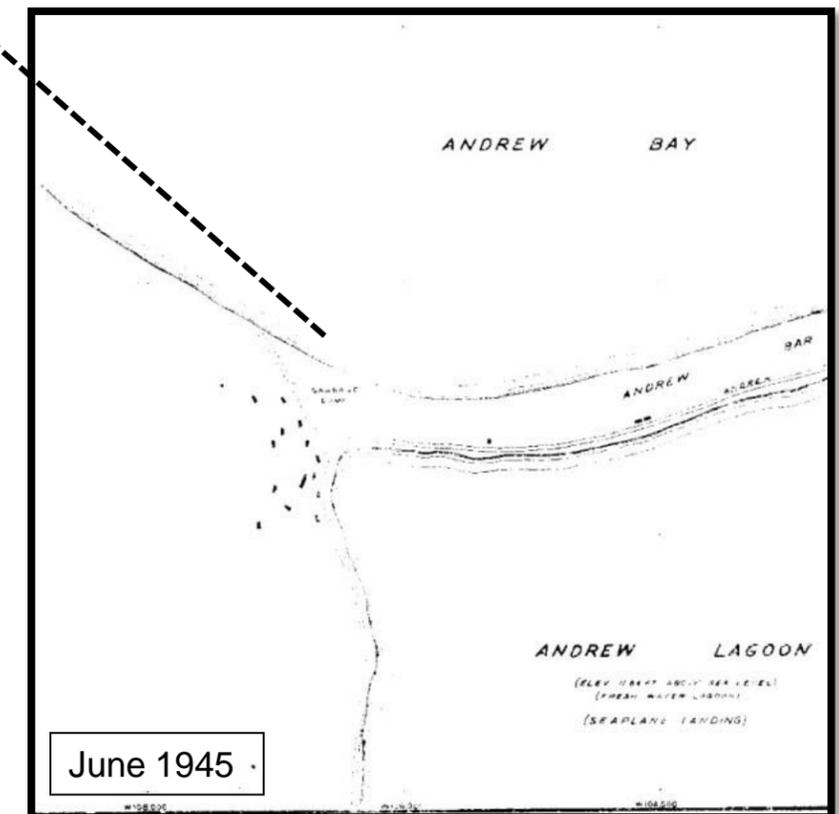


April 1944

The dashed box signifies the approximate vicinity of the dumping grounds based on the disturbed area found in the above 1943 photograph. April 1944 and June 1945 maps declare the area, but not the boundary of the garbage dump.

The 1998 Foster Wheeler ASR (Vol I) contains a 1998 site investigation referring to areas 100 feet to the East and West of the spillway (which is currently located at the elbow of the lagoon or start of the seawall) as the ammo/ordnance dumping area. This report also details a 1963 site investigation referring to a larger area 1 mile to the West and 500 yards East of the spillway.

See Appendix A for more information regarding the probable dump site.



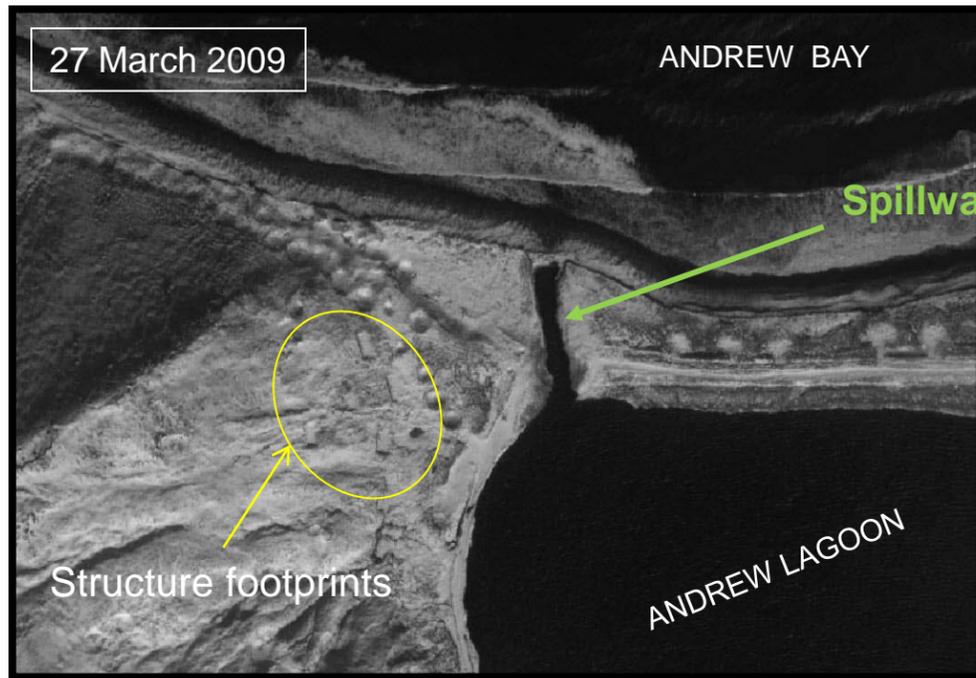
June 1945



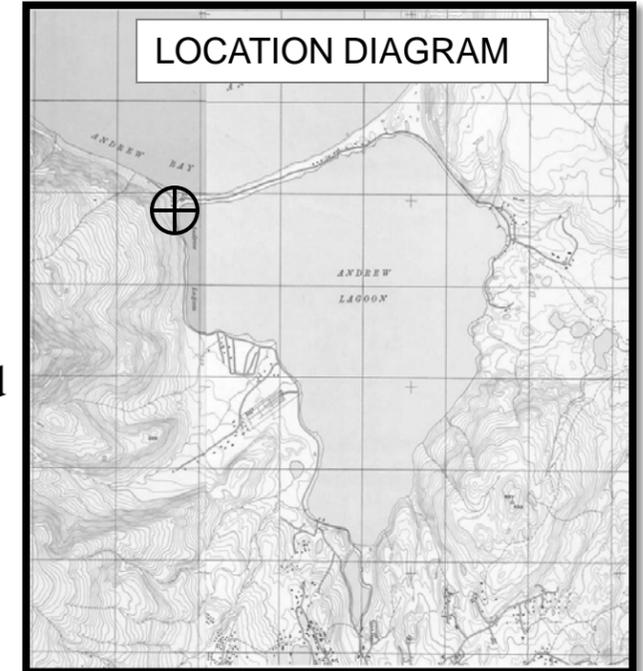
PHOTOGRAPHIC ANALYSIS – SEAWALL



WEST SEAWALL – LAGOON AND SPILLWAY HISTORY 1942 AND 1944 AERIAL PHOTOGRAPHS AND 2009 SATELLITE IMAGE



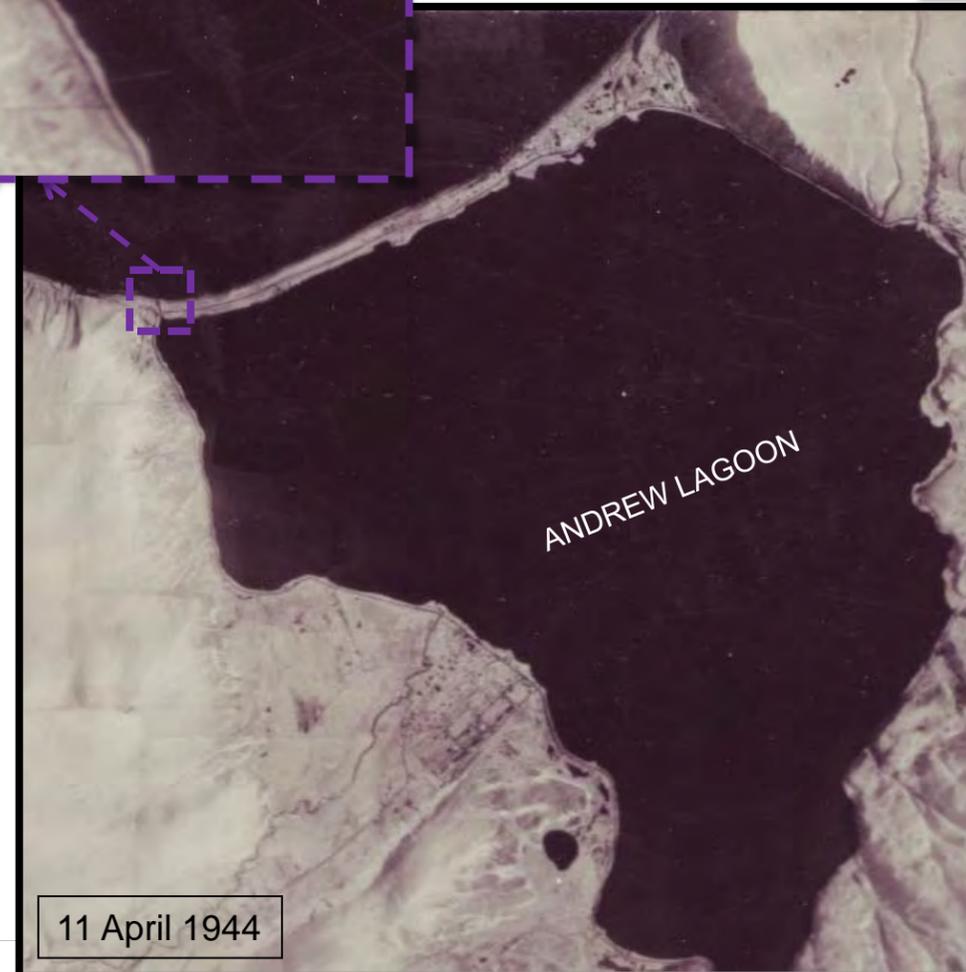
Earliest visual documentation of the spillway. The below and inset aerial photo show the existence of the spillway as of 11 April 1944.



⊕ - FINDINGS



Andrew Lagoon is a fresh water lake and was formed from a shallow glacial trough formed during the Pleistocene glaciation of Adak Island (Waythomas 1995, USGS).



The Andrew Lagoon Seawall is a natural feature closing in the lagoon (see far left 1942 pre-spillway photo). A spillway in the western seawall appeared after July 1943 (see above in April 1944 photo). This spillway is believed to be man-made.

Data Sources:
National Archives at College Park (1943, 1944)
National Geospatial-Intelligence Agency (2006)



PHOTOGRAPHIC INTERPRETATION OF AERIAL PHOTOGRAPHY WEST LAGOON

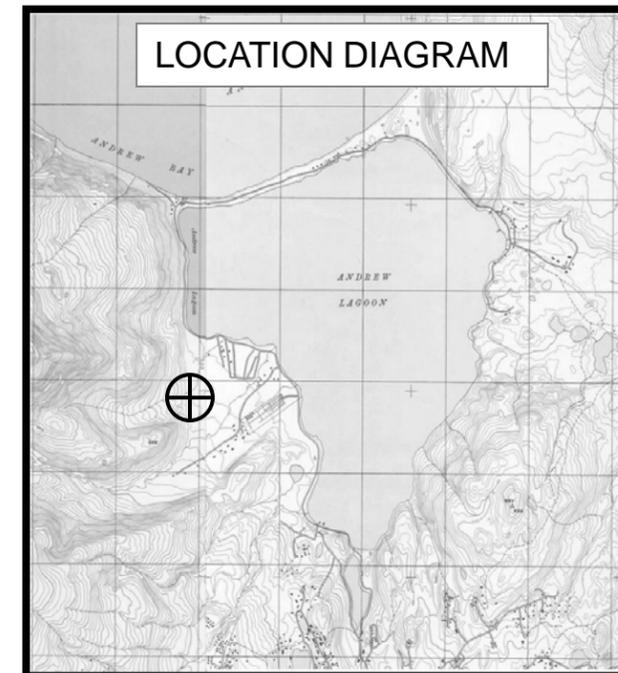
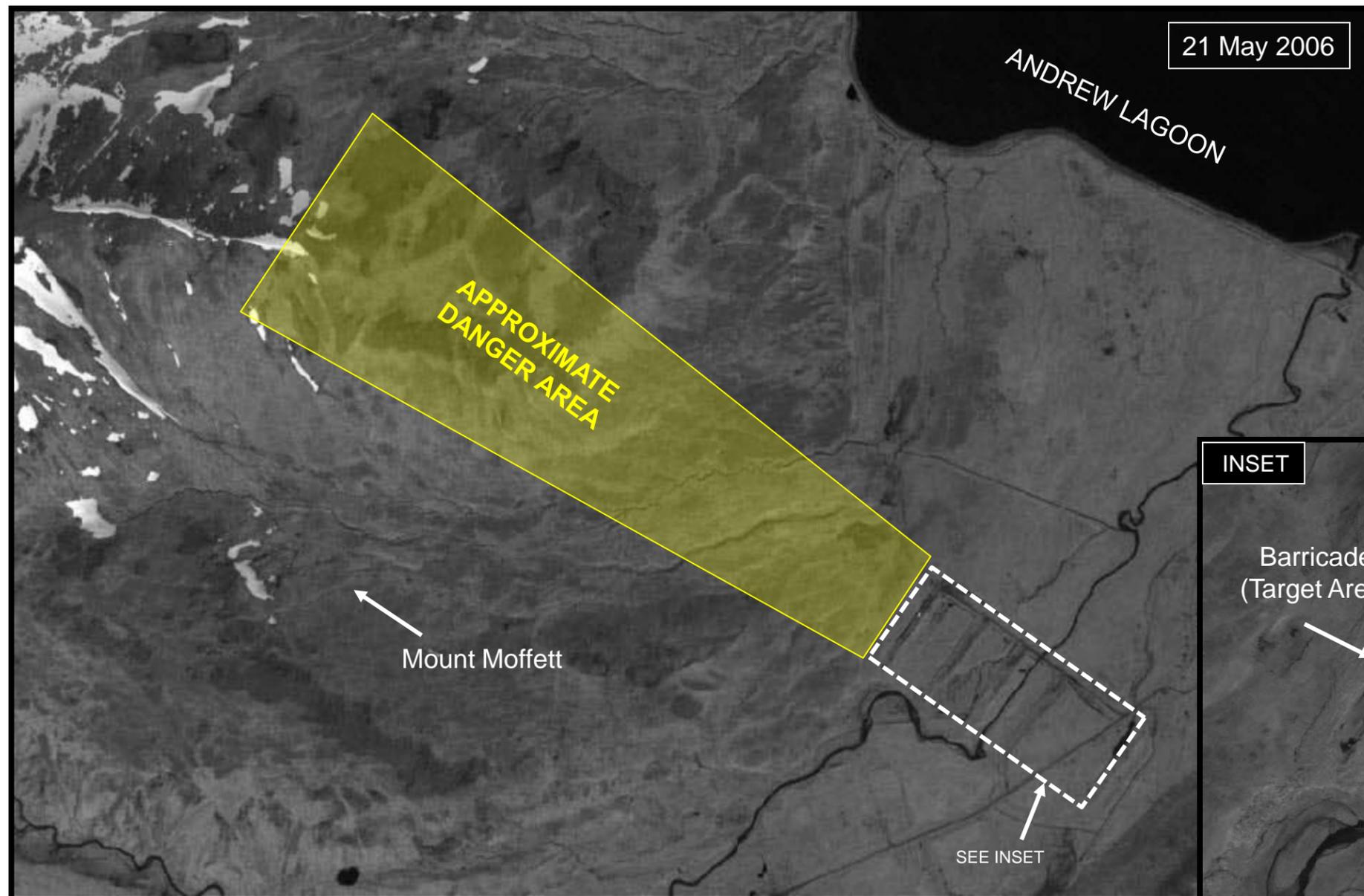




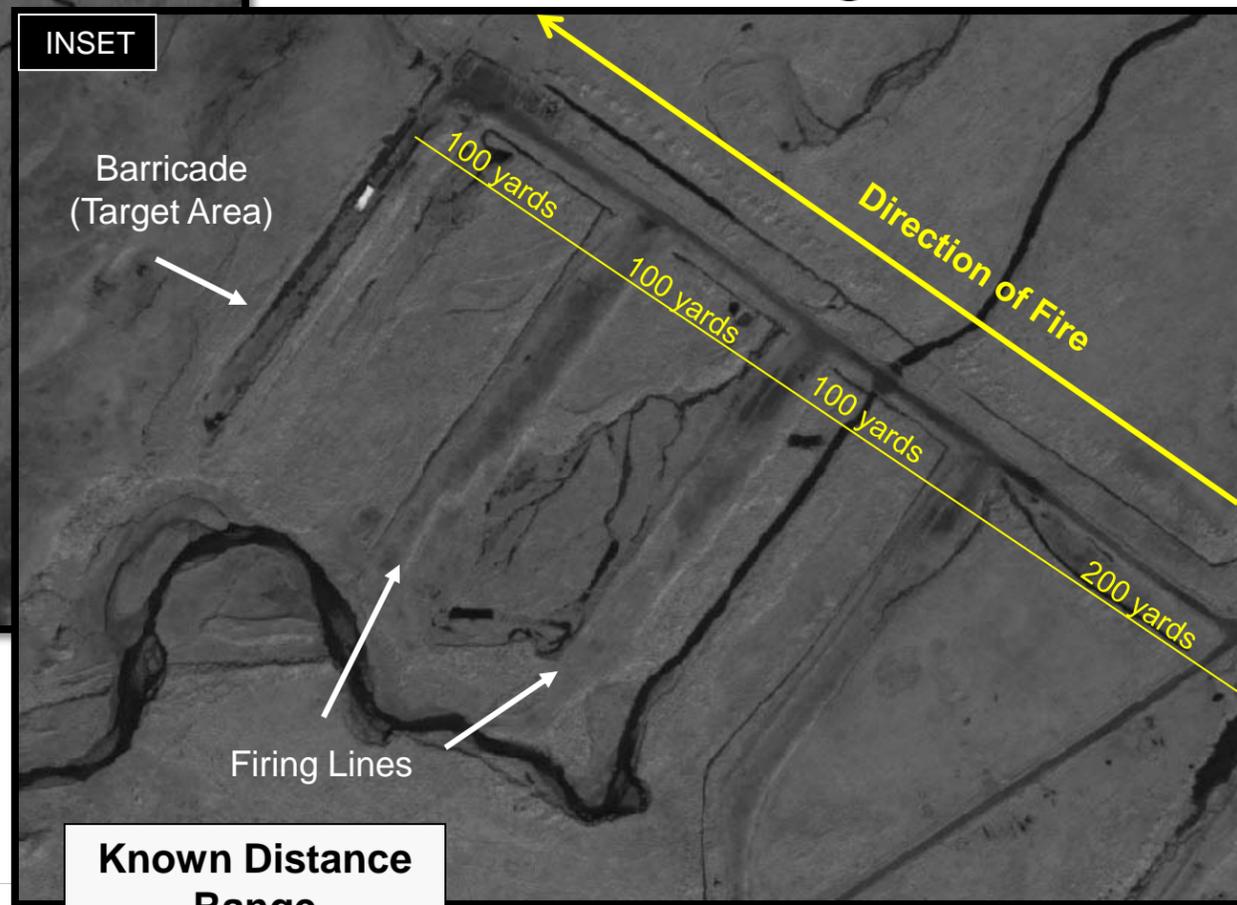
PHOTOGRAPHIC ANALYSIS – WEST LAGOON



WEST LAGOON – KNOWN DISTANCE RANGE 2006 SATELLITE IMAGE



⊕ - FINDINGS



Known Distance Range

Note: 1944 map of Danger Zones and locations of Lagoon ranges are in Appendix A.

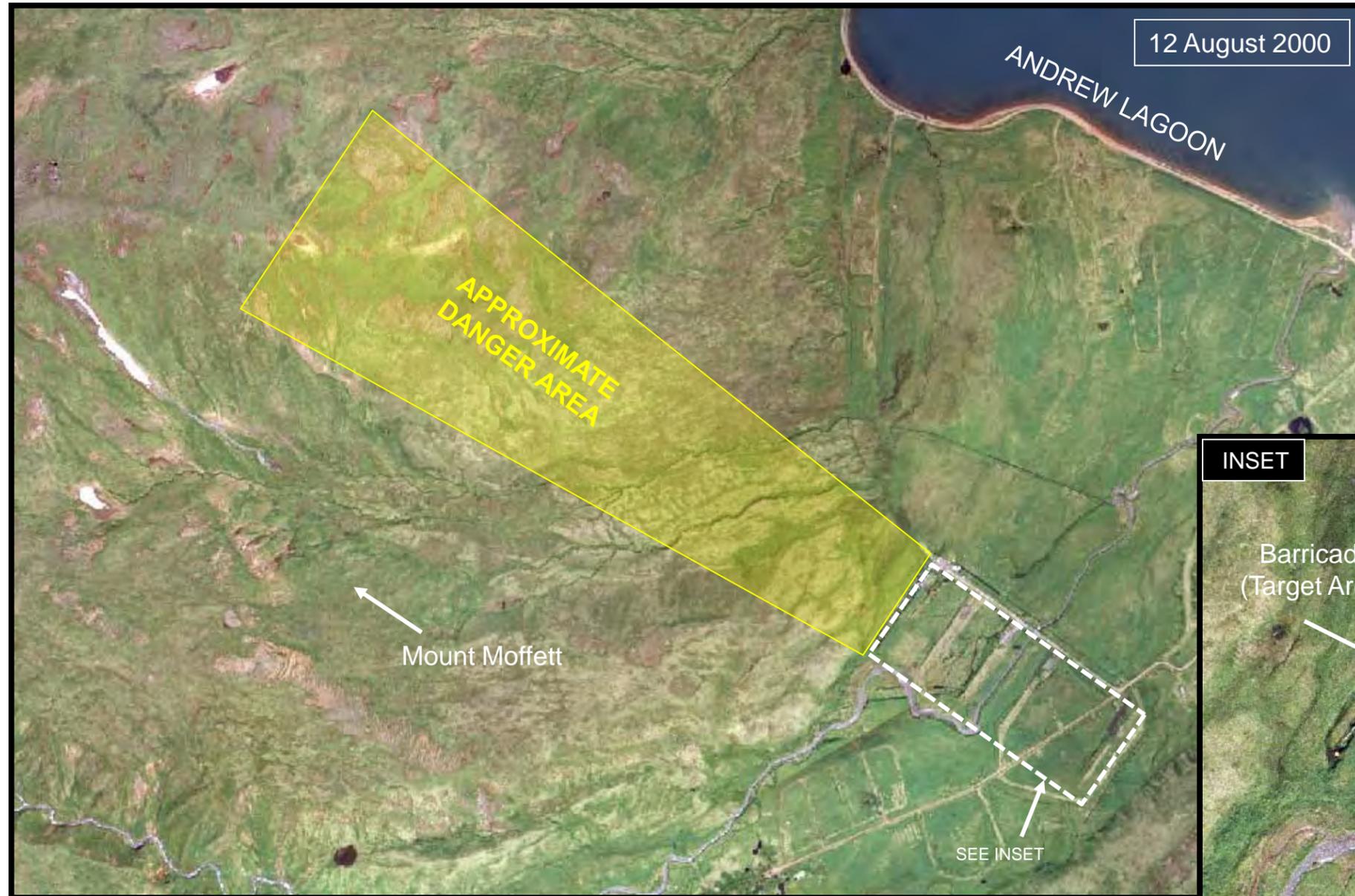
Image Source: National Geospatial-Intelligence Agency.



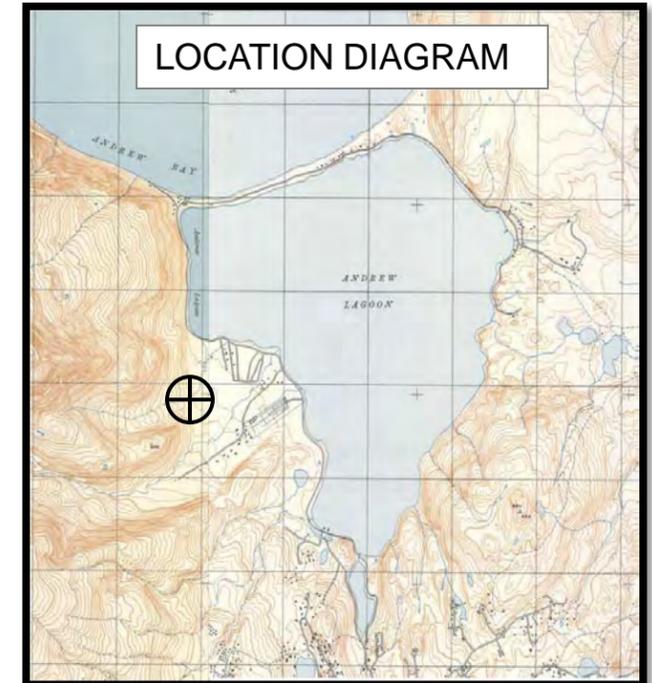
PHOTOGRAPHIC ANALYSIS – WEST LAGOON



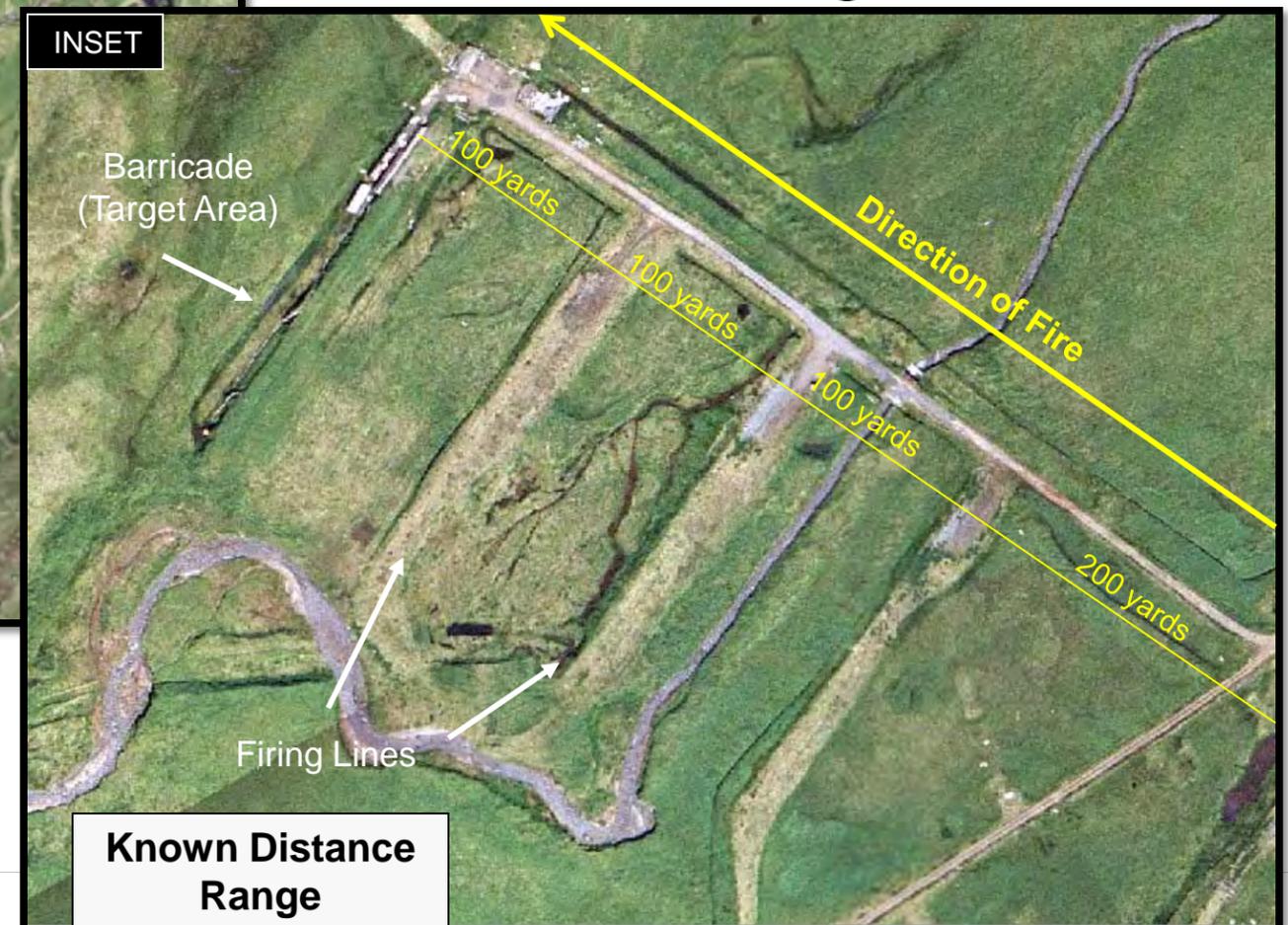
WEST LAGOON – KNOWN DISTANCE RANGE 2000 AERIAL PHOTOGRAPH



Photograph Source:
U.S. Navy.



⊕ - FINDINGS



Note: 1944 map of Danger Zones and locations of Lagoon ranges are in Appendix A.



PHOTOGRAPHIC ANALYSIS – WEST LAGOON



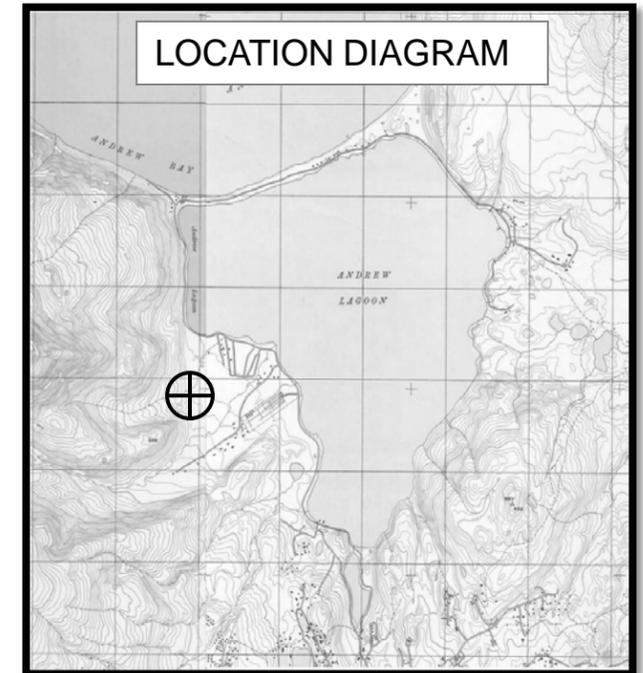
WEST LAGOON – KNOWN DISTANCE RANGE 1946 VERTICAL AERIAL PHOTOGRAPH



Note: An additional 300 yards was added between September 1944 and December 1946 when comparing the below with photography on the next slide.



Photo Source:
National Archives at College Park.



⊕ - FINDINGS





PHOTOGRAPHIC ANALYSIS – WEST LAGOON



WEST LAGOON – KNOWN DISTANCE RANGE 1944 VERTICAL AERIAL PHOTOGRAPH

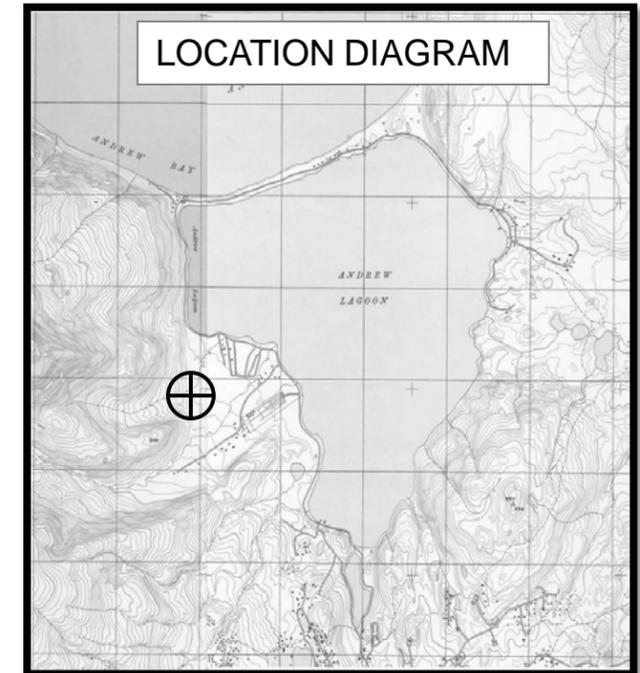
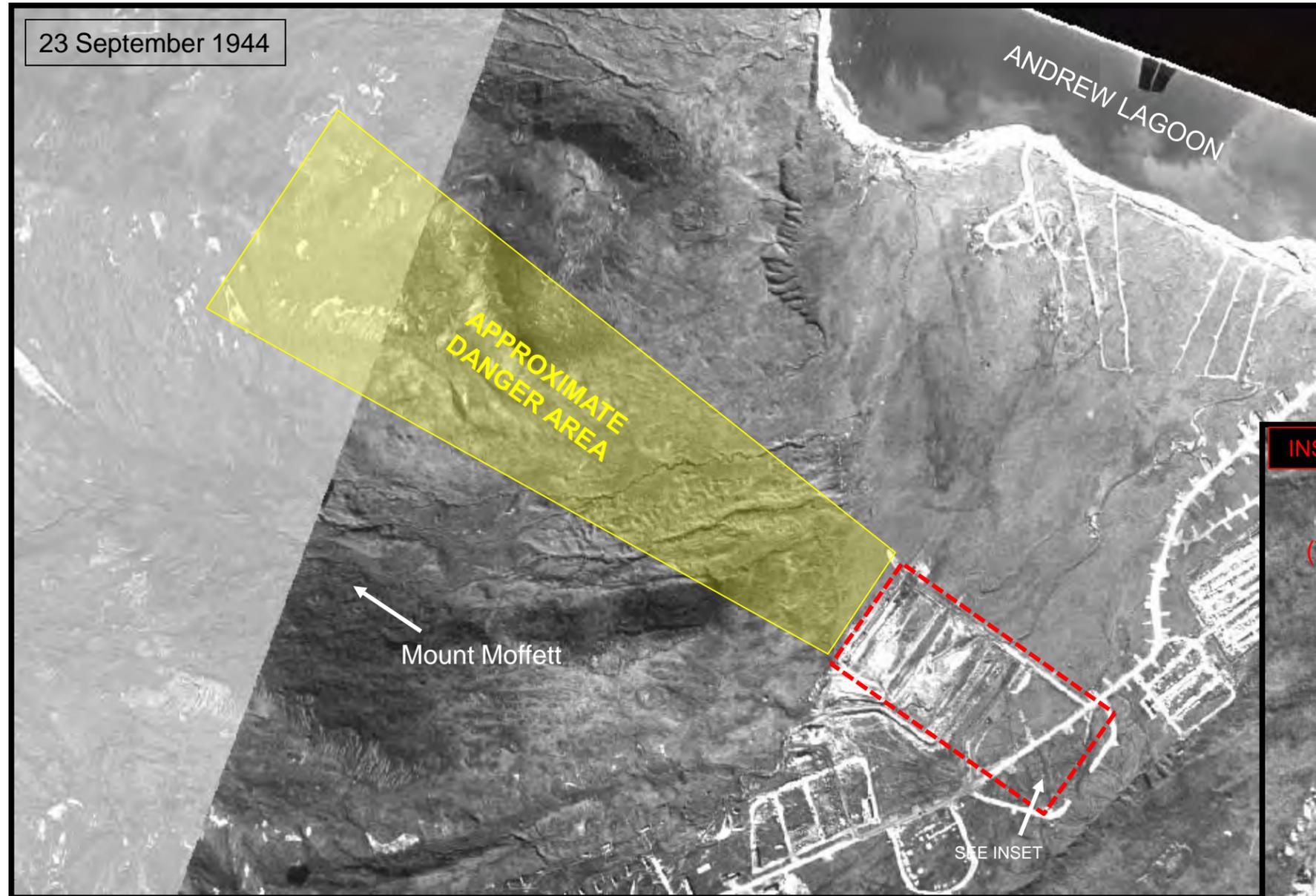
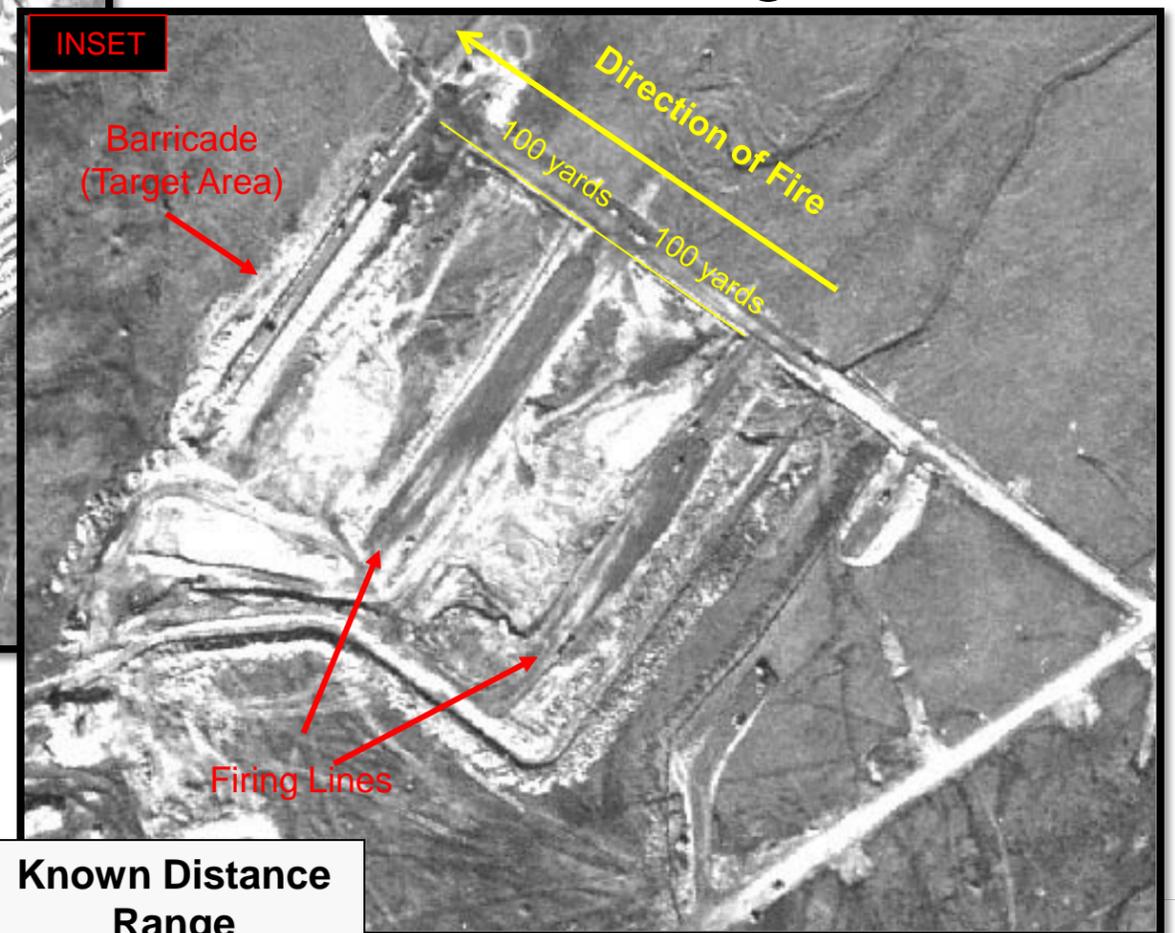


Photo Source:
National Archives at College Park.



Known Distance
Range

Note: 1944 map of Danger Zones and locations of Lagoon ranges are in Appendix A.

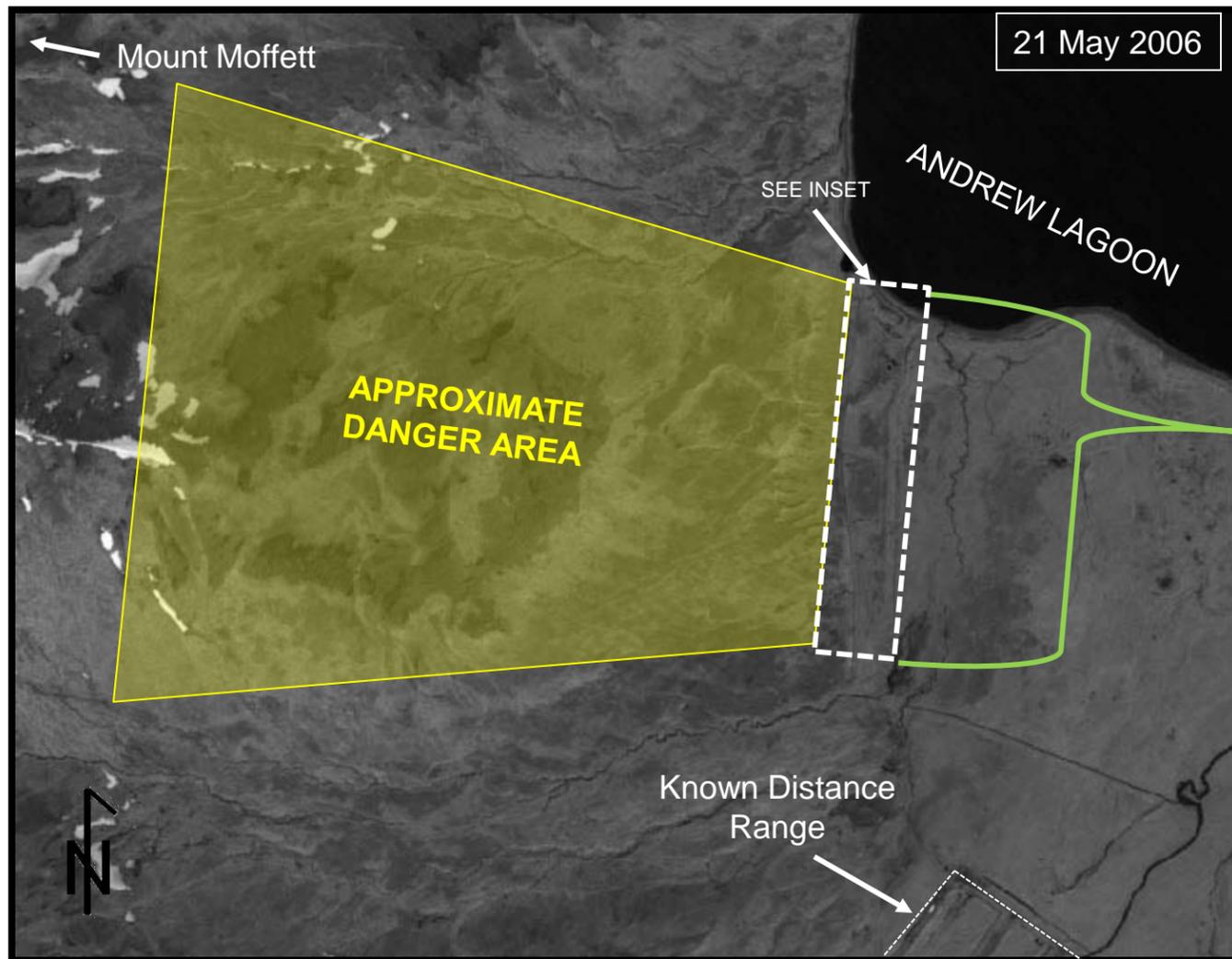


PHOTOGRAPHIC ANALYSIS – WEST LAGOON

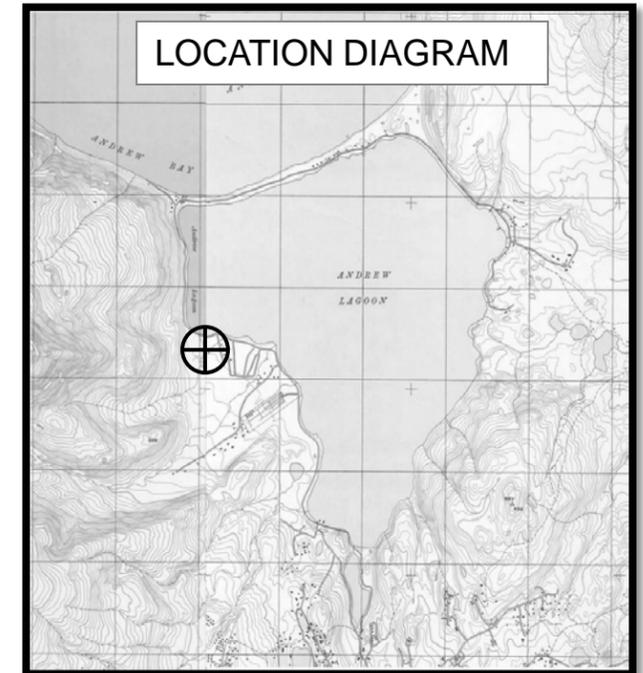


WEST LAGOON – SIX RANGES

2006 SATELLITE IMAGE AND 1946 VERTICAL AERIAL PHOTOGRAPH



1. Pistol Range
2. 1000" Machine Gun Range
3. 1000" Landscape and Small Bore Range
4. 1000" Anti-Tank Range, Cal. 22
5. 1000" Anti-Aircraft Range, Cal. 22
6. Sub-Machine Gun Range



⊕ - FINDINGS

Data Sources:
National Archives at College Park (1944, 1946)
National Geospatial-Intelligence Agency (2006).



The range list and titles above are from a 28 September 1944 memo.

Note: Memo and accompanying map are in Appendix A.

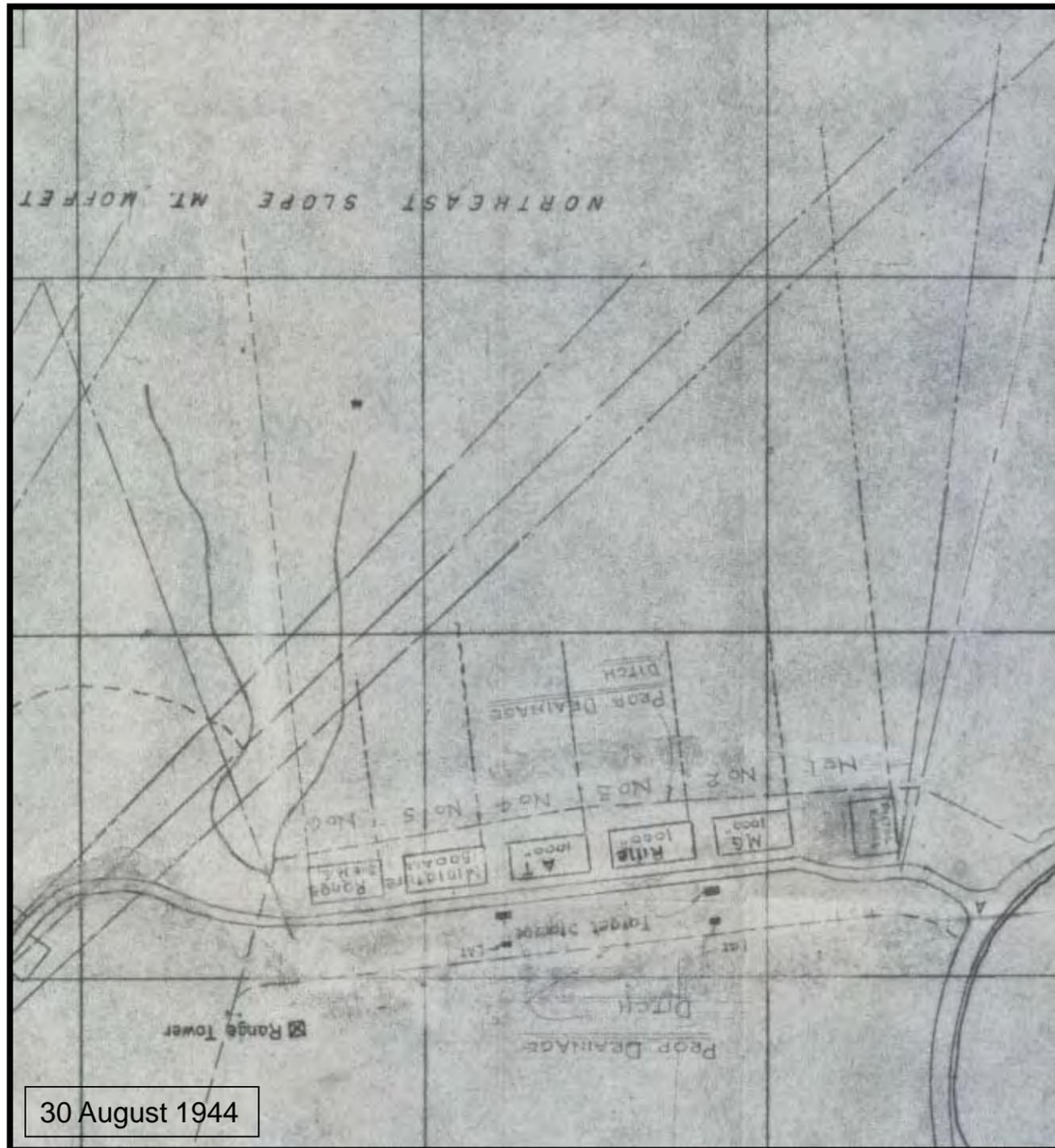


PHOTOGRAPHIC ANALYSIS – WEST LAGOON



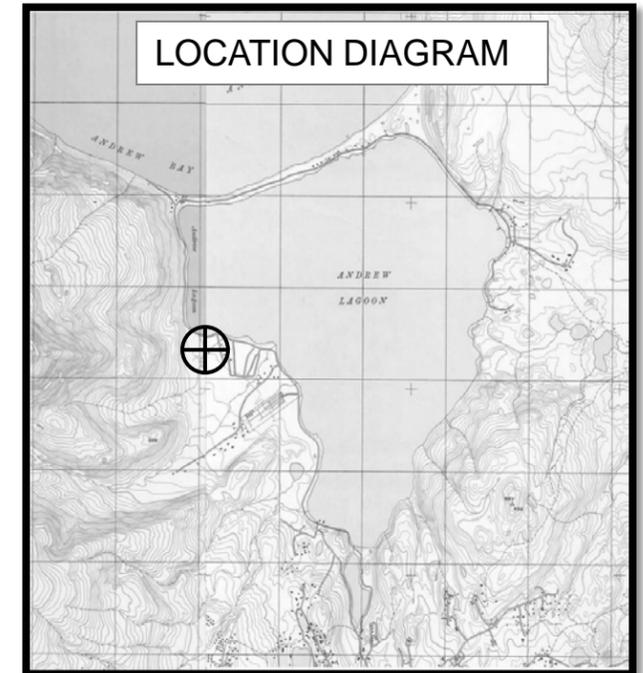
WEST LAGOON – SIX RANGES

1944 MAP AND 1946 VERTICAL AERIAL PHOTOGRAPH

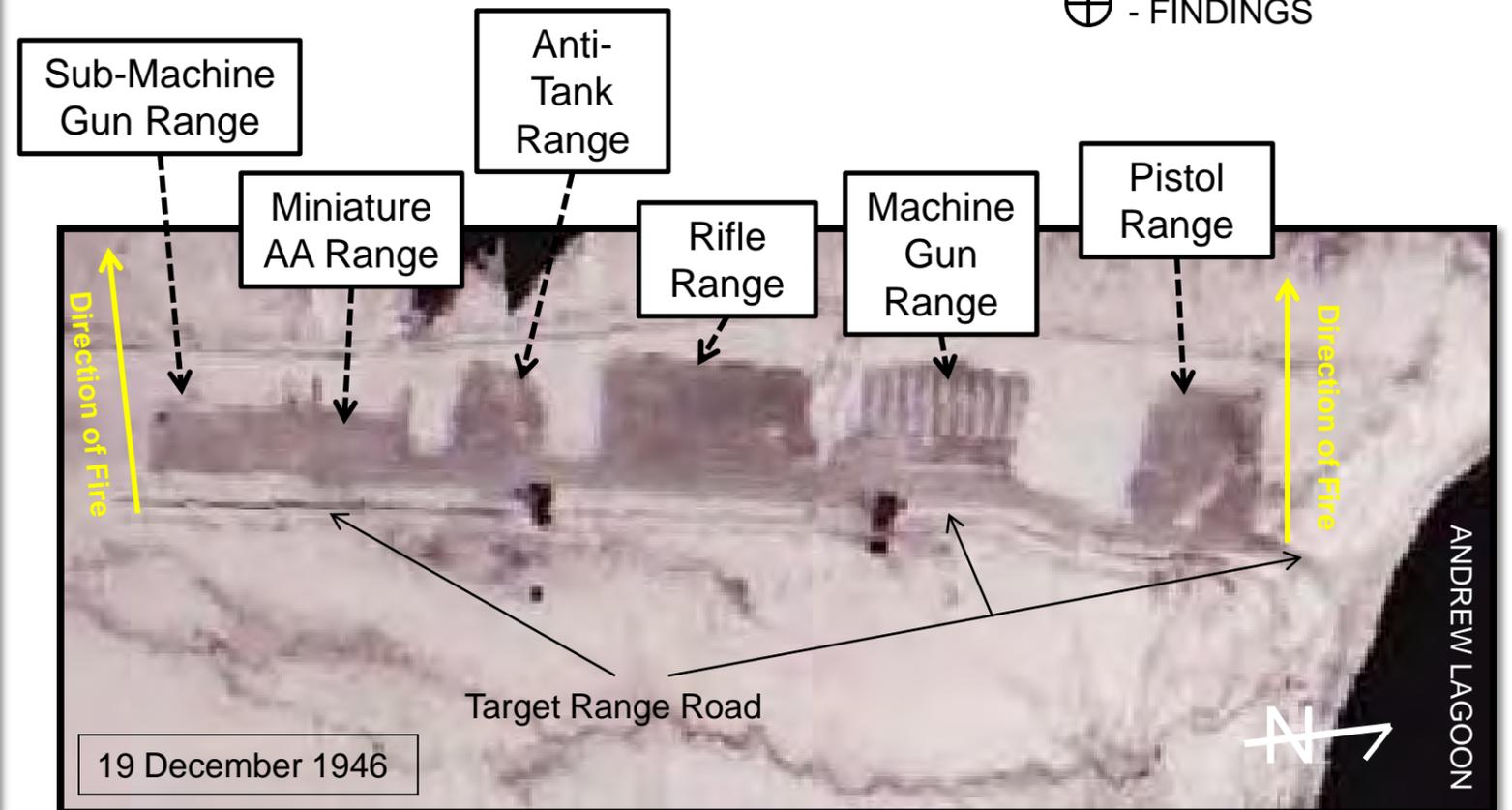


The below six ranges were started early in the war, but were not completed until a February 1945 request was submitted stating the six ranges were required for Infantry School.

Note: Memo and full map are in App. A



⊕ - FINDINGS



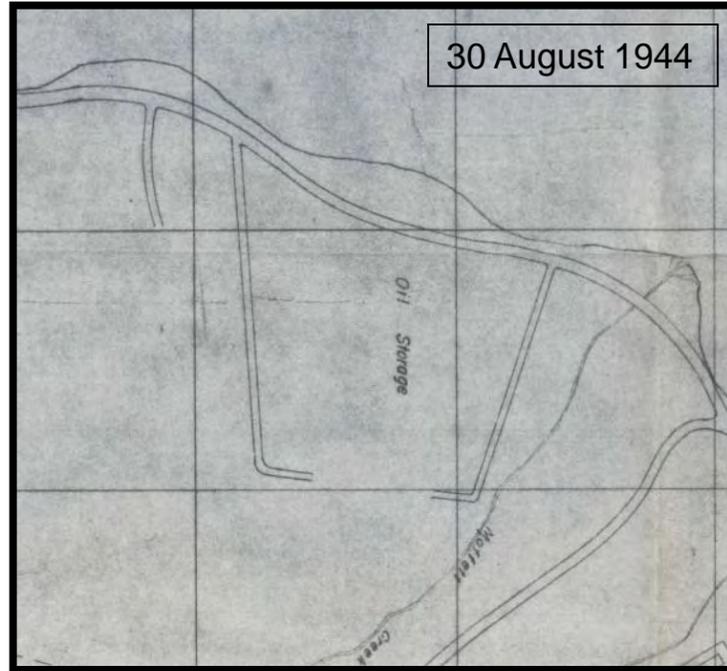
Data Source: National Archives at College Park (1944, 1946)



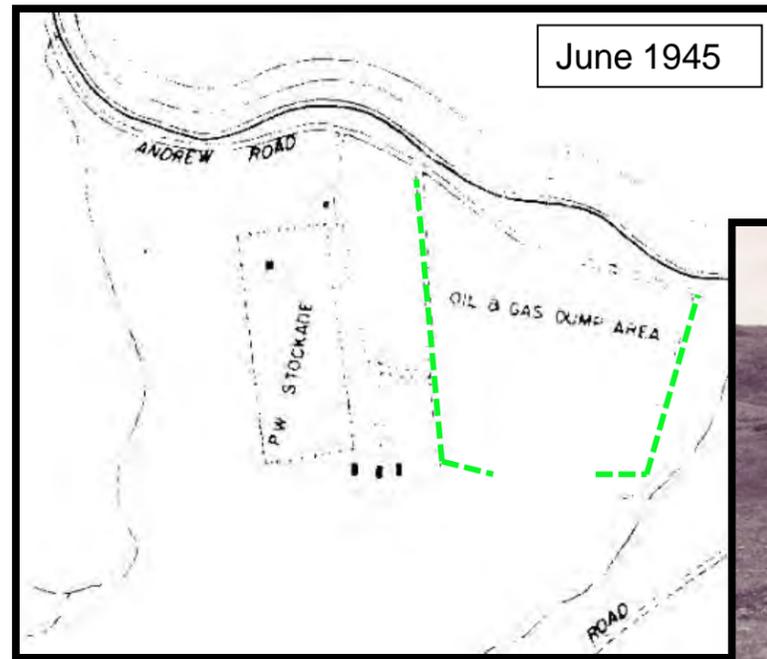
PHOTOGRAPHIC ANALYSIS – WEST LAGOON



WEST LAGOON – OIL STORAGE AND DUMP SITE 1944-1945 MAPS, 1944 OBLIQUE AERIAL AND 1943 GROUND PHOTOGRAPHS



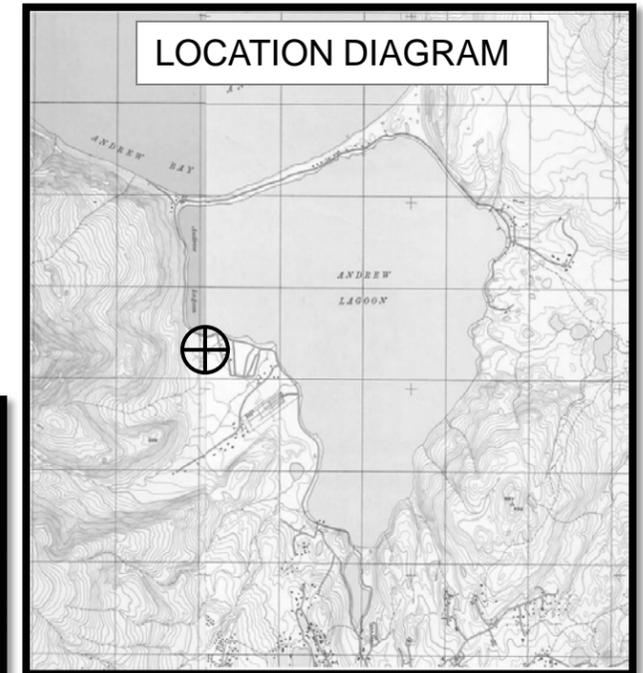
30 August 1944



June 1945



02 July 1943

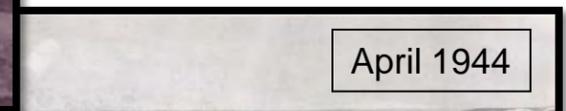


LOCATION DIAGRAM

⊕ - FINDINGS

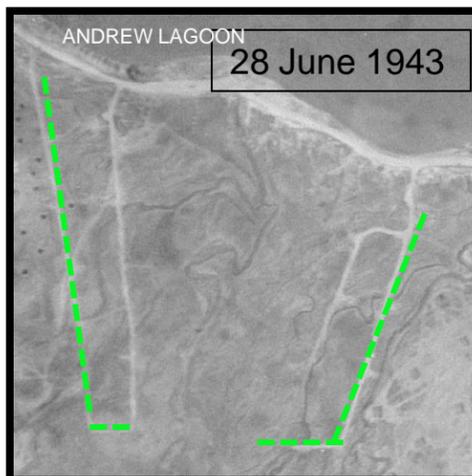
Note: Full maps are in Appendix A

--- = Oil & Gas Dump/Storage Boundaries



April 1944

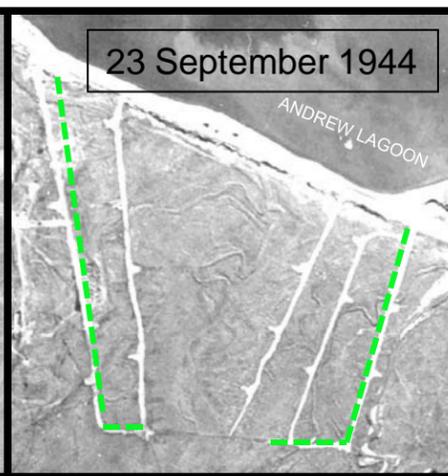
MOUNT MOFFETT →



28 June 1943



27 July 1943



23 September 1944



19 December 1946

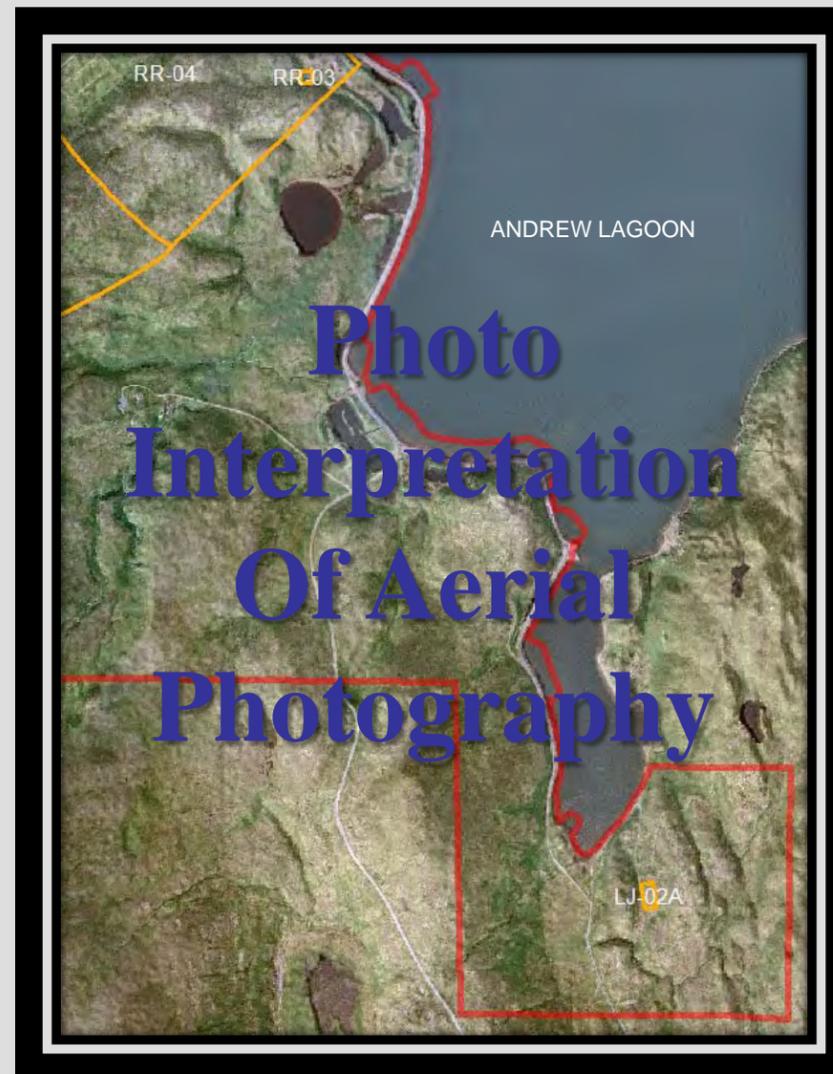


ANDREW LAGOON

Data Source: National Archives at College Park (1943-1945)



PHOTOGRAPHIC INTERPRETATION OF AERIAL PHOTOGRAPHY LAKE JEAN

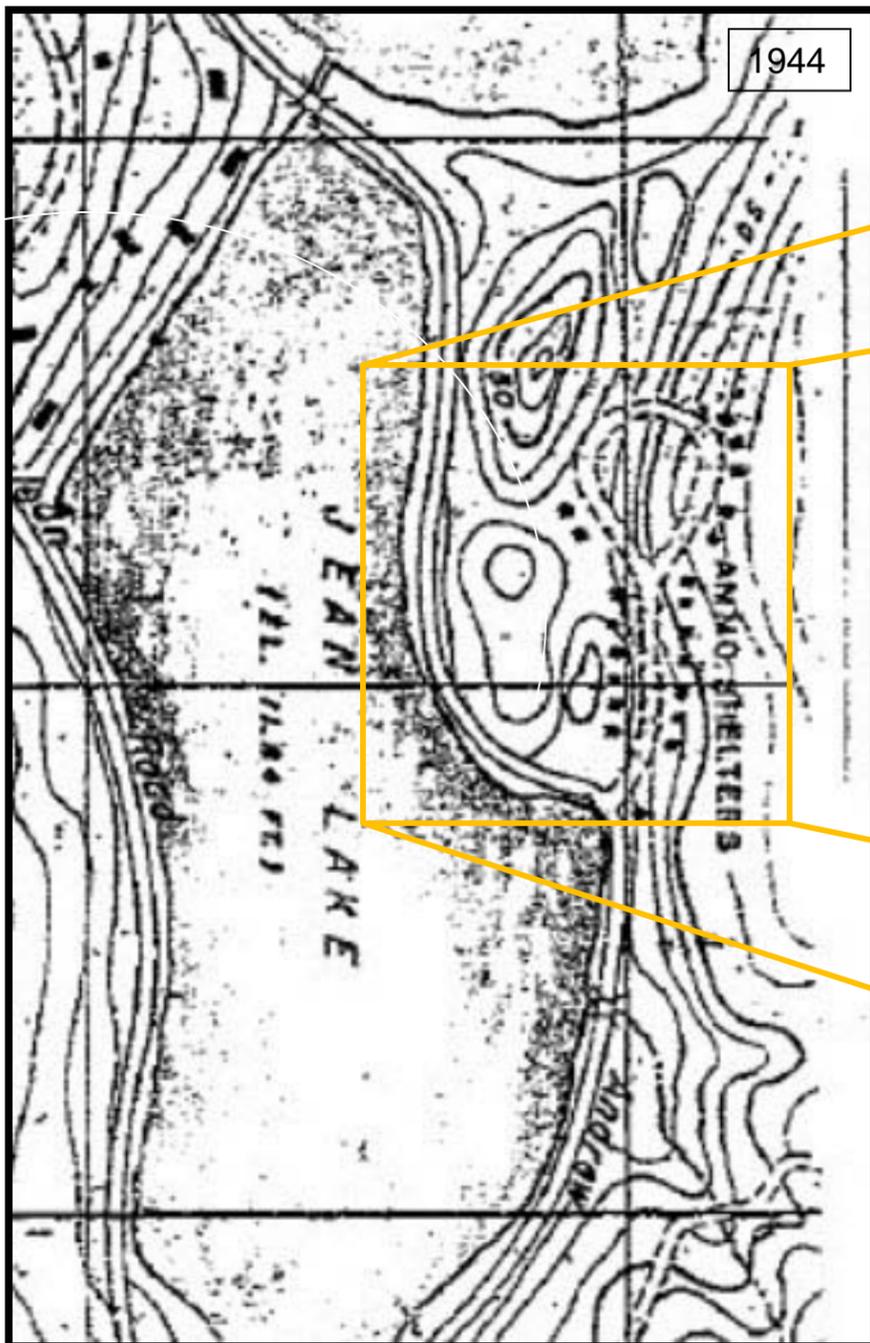




PHOTOGRAPHIC ANALYSIS – LAKE JEAN

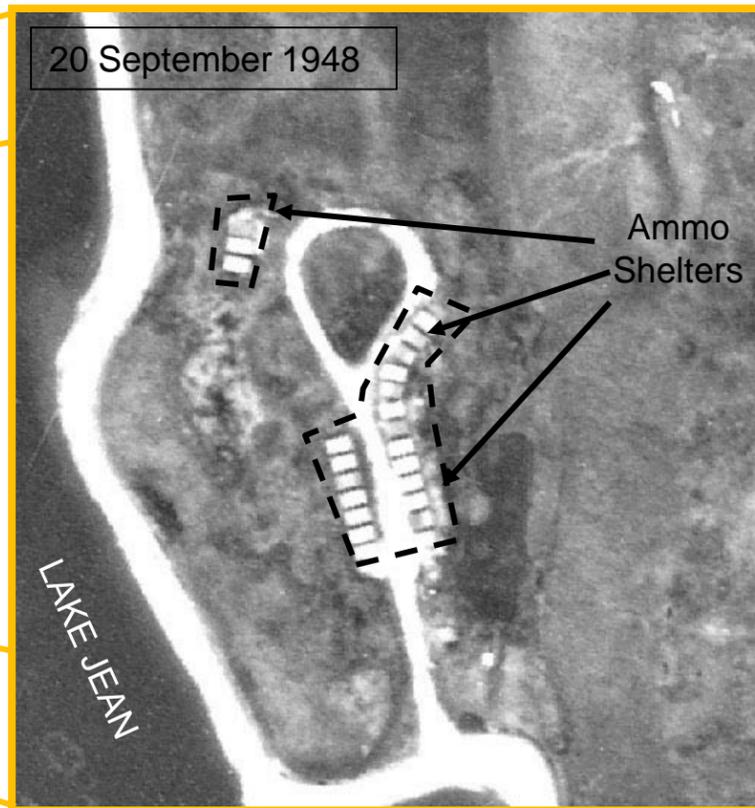


LAKE JEAN – AMMUNITION STORAGE 1944 MAP, 1948 AND 2000 AERIAL PHOTOGRAPHS



1944

Data Sources:
National Oceanographic Atmospheric Administration (1948)
National Archives at College Park (1944), U.S. Navy (2000).



20 September 1948

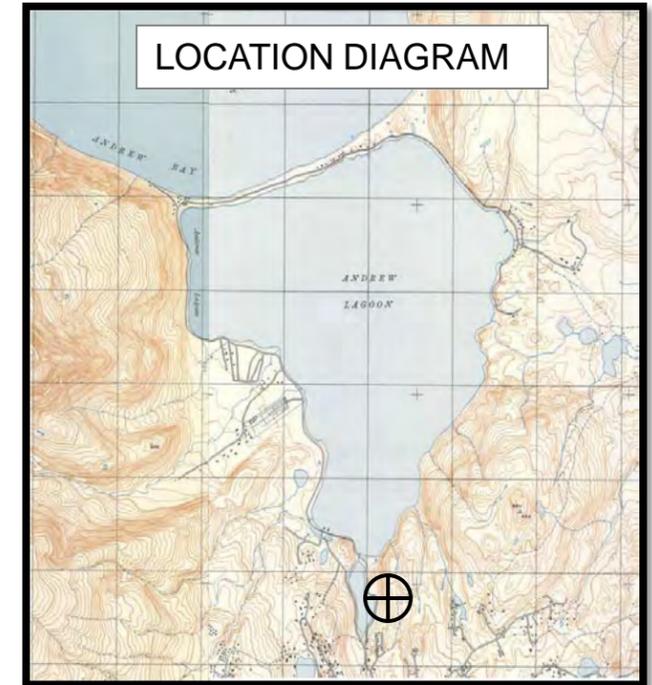
Ammo Shelters

LAKE JEAN



12 August 2000

Same area present day



LOCATION DIAGRAM

⊕ - FINDINGS

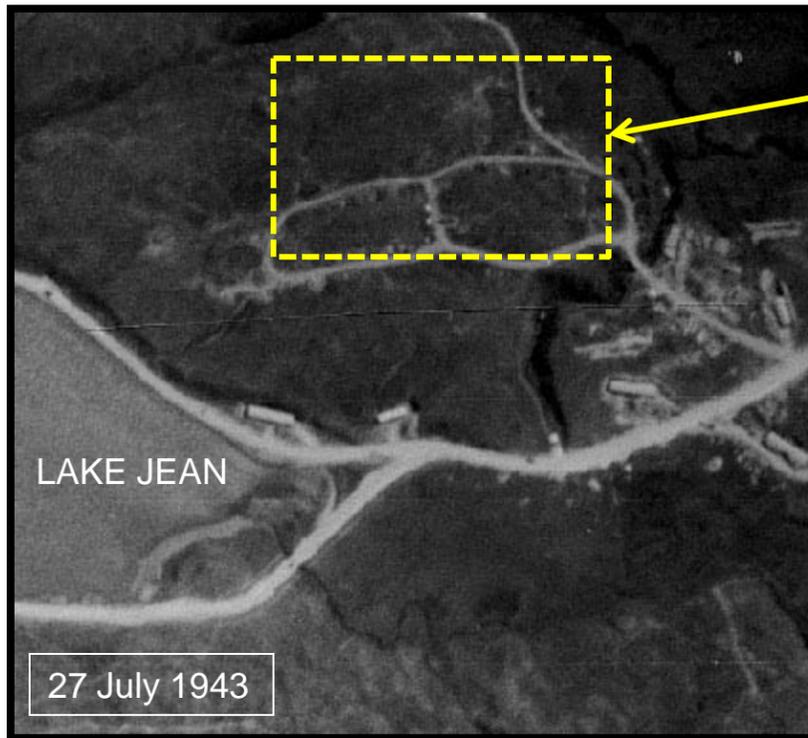




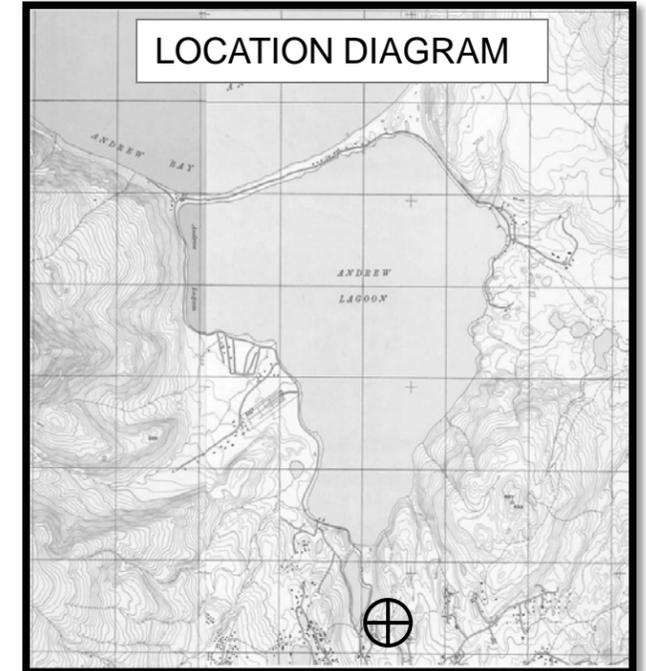
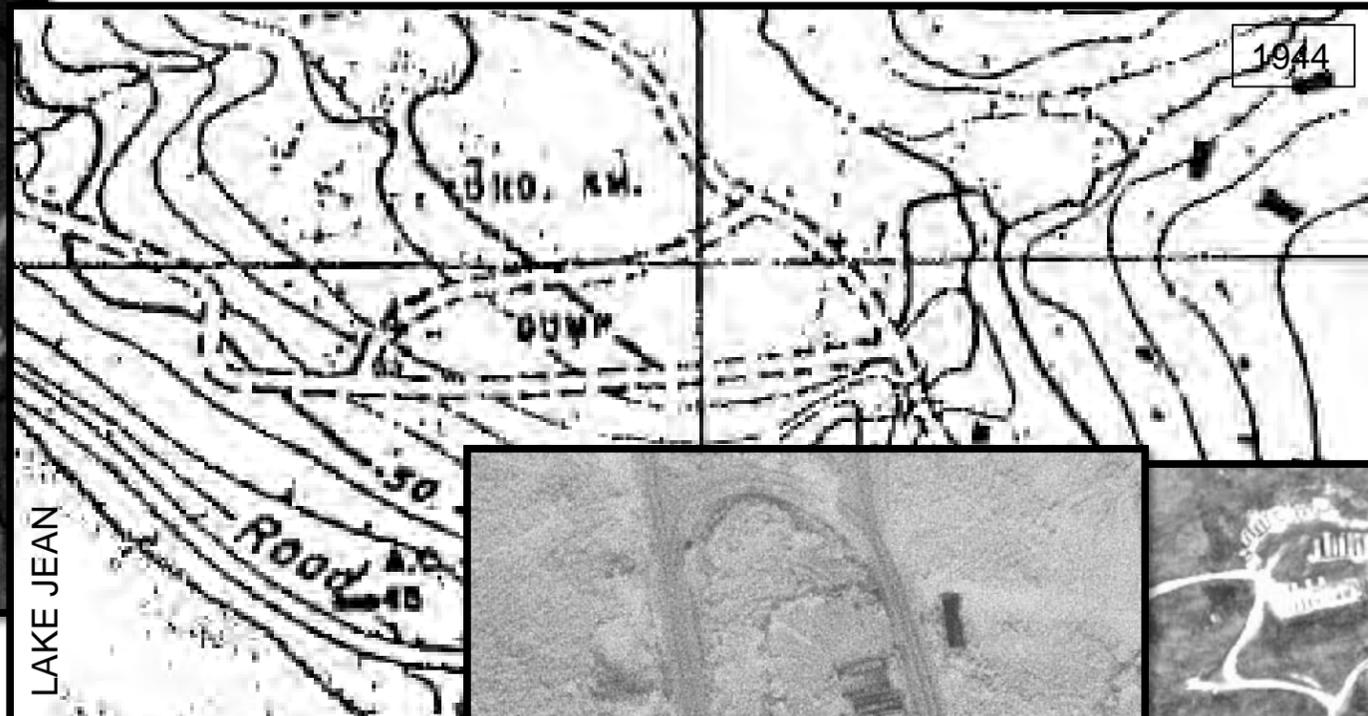
PHOTOGRAPHIC ANALYSIS – LAKE JEAN



LAKE JEAN – PROBABLE AMMO DUMP (DEPOT) SITE 1944 MAP, 1943, 1945 AND 1948 VERTICAL/OBLIQUE AERIAL PHOTOGRAPHS

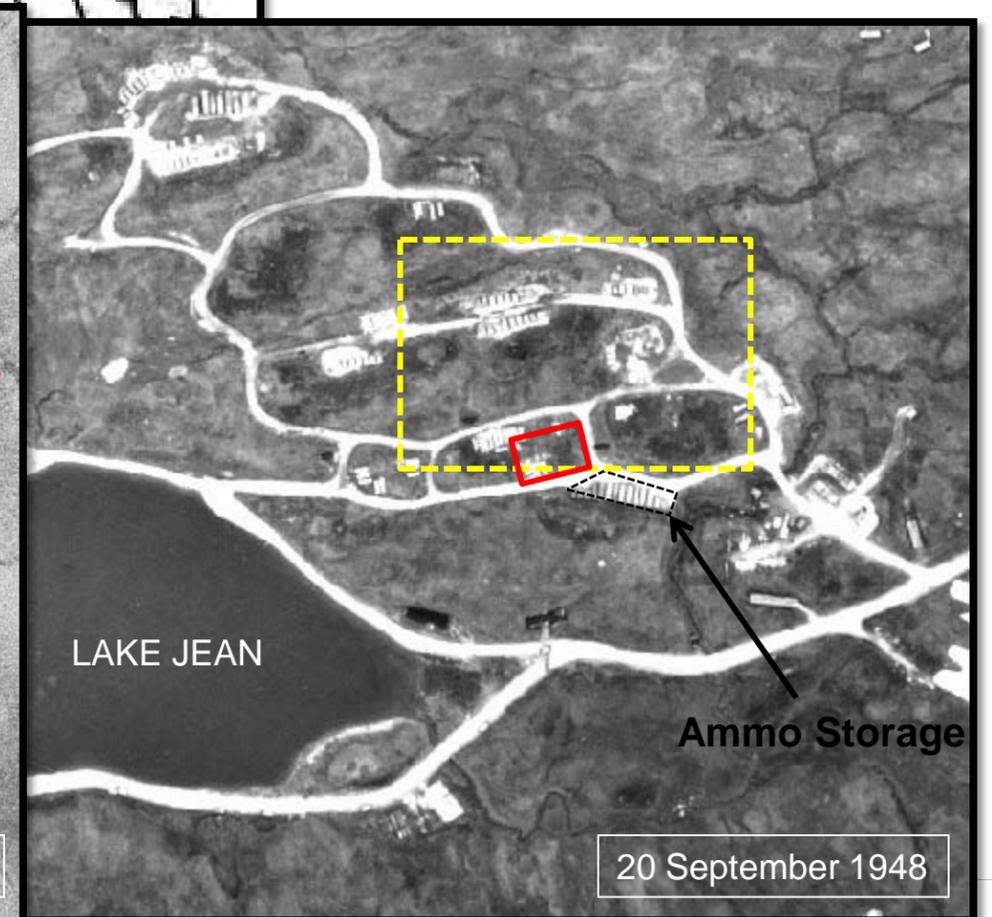
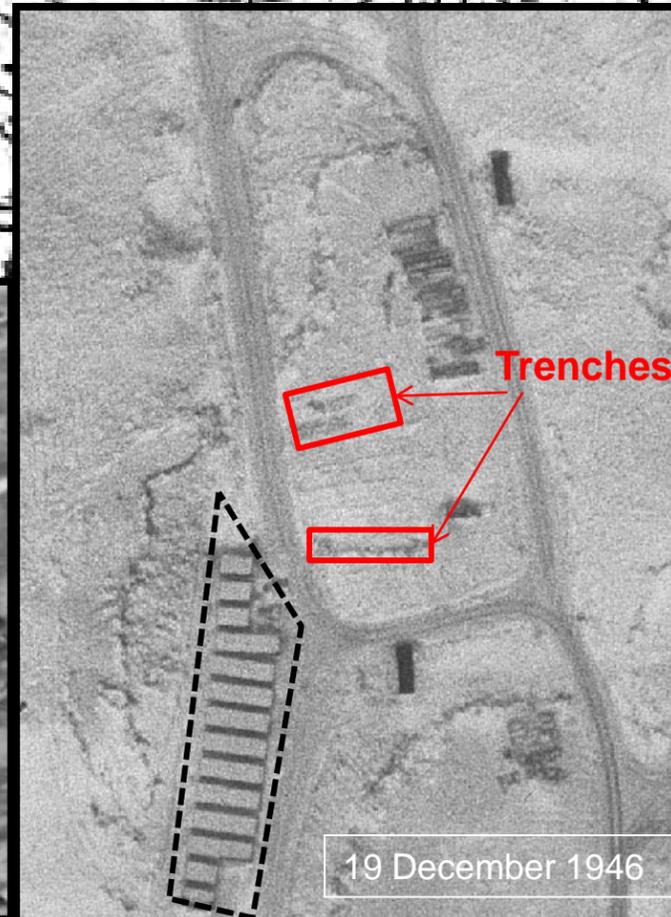
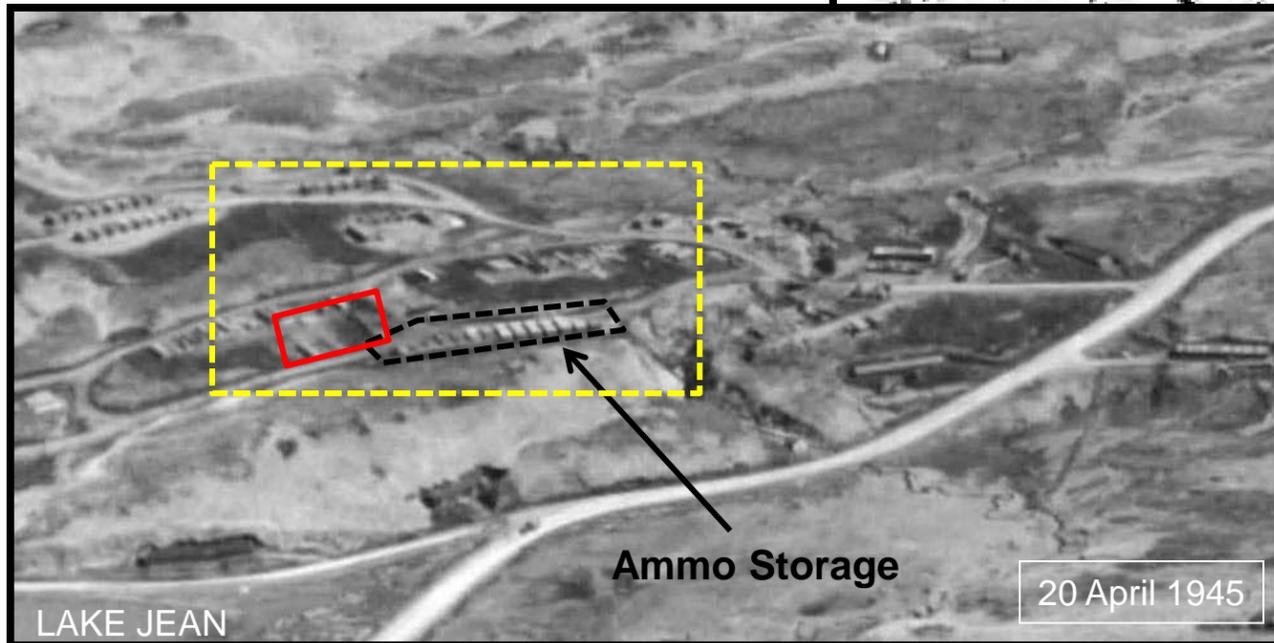


Prior to Ammo Dump declaration (see 1944 map below).



⊕ - FINDINGS

☐ = Ordnance Ammo Dump Area from map.



Data Sources: National Oceanographic Atmospheric Administration (1948), National Archives at College Park (1943, 1944, 1945, 1946).



APPENDIX A



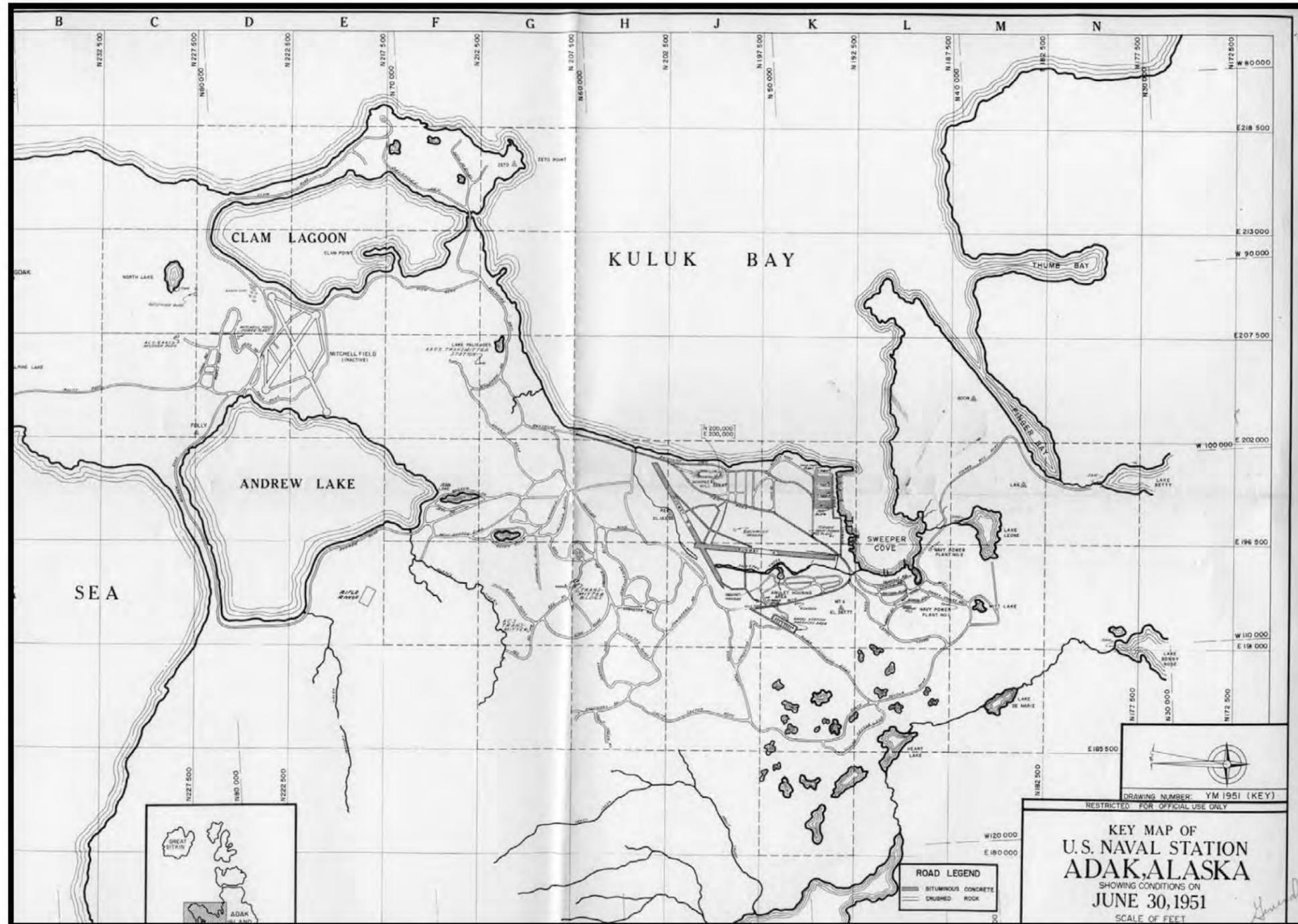
**Supporting Map
and Textual Data
for Preceding
Findings**



APPENDIX A



Rifle Range in West Section – 30 June 1951



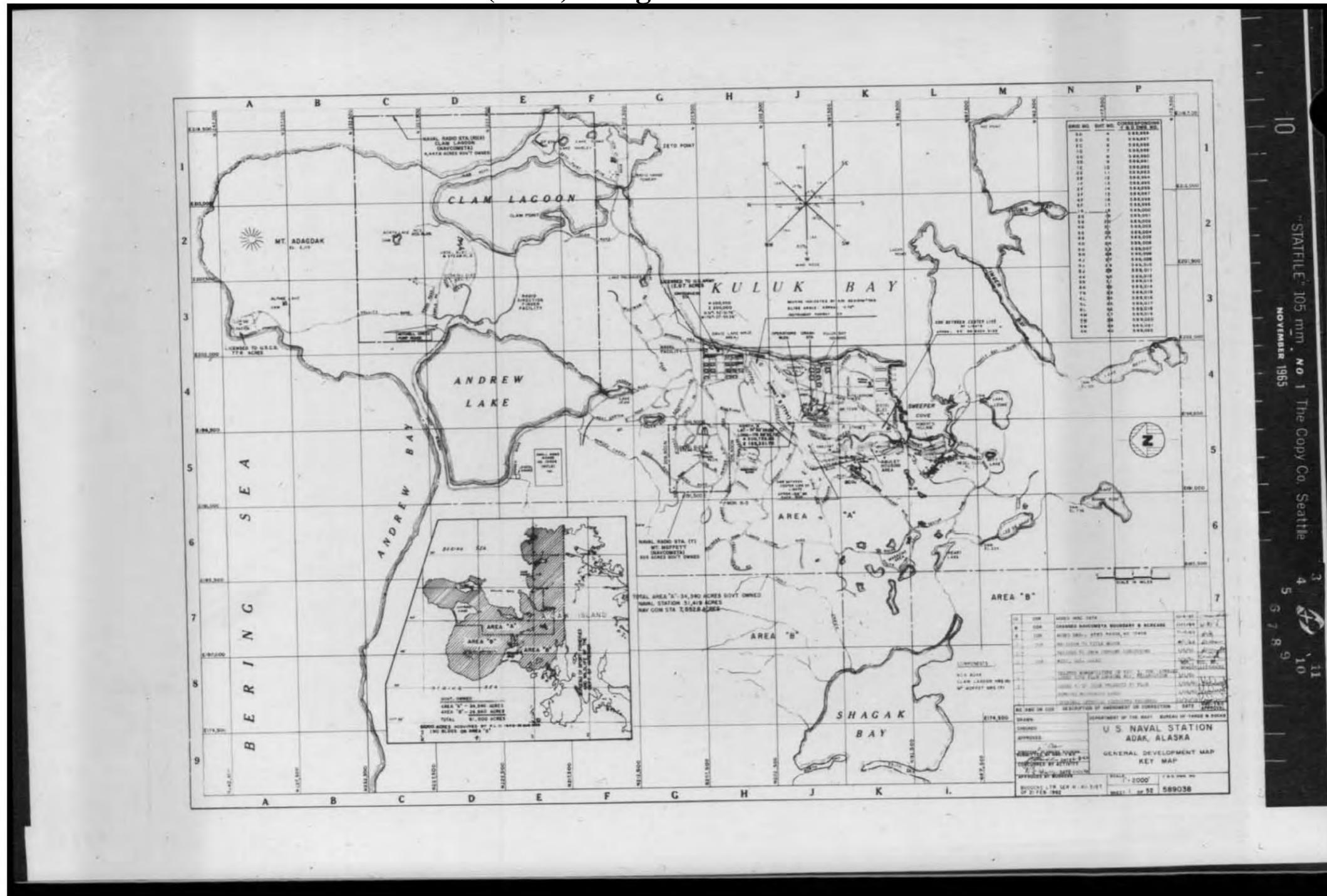
Map Source: U.S. Navy Seabee Museum, Port Hueneme, CA



APPENDIX A



Pistol and Small Arms (Rifle) Ranges in West Section – 08 October 1965





APPENDIX A



Range Details – 28 September 1944

TRAINING MEMORANDUM
NUMBER.....38

HEADQUARTERS, U.S. TROOPS
AFC 980, c/o Postmaster
Seattle, Washington
28 September 1944

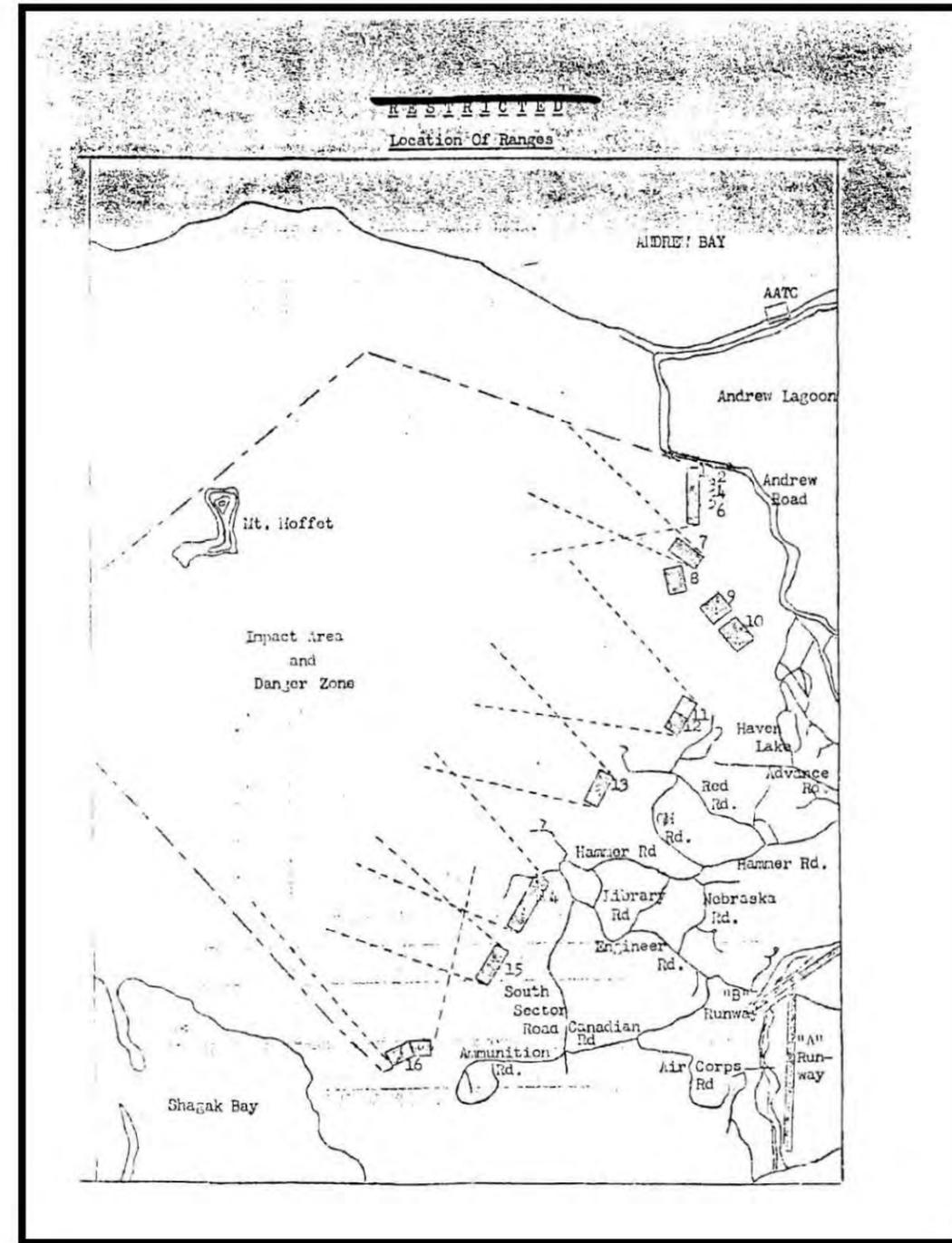
LAYOUT AND LOCATION OF RANGES

1. The Post ranges designated as shown with description thereof follows:

Number	Description
Range AATC	Anti-Aircraft Training Center. (HO3 Gunnery)
No. 1	Pistol Range (UC)*
No. 2	1000" Machine Gun Range (UC)*
No. 3	1000" Landscape and Small Bore Range (UC)*
No. 4	1000" Anti-Tank Range, Cal. 22 (UC)*
No. 5	1000" Anti-Aircraft Range, Cal. 22 (UC)*
No. 6	Sub-machine Gun Range (UC)*
No. 7	Known Distance Range, 50 targets, 100 - 500 yds incl (UC)*
No. 8	Radio Controlled Airplane Target Range.
No. 9	Hand Grenade Range. (Proposed)
No. 10	Anti-Tank Grenade Range. (Proposed).
No. 11	Transition Range, 100 to 500 yards, incl. (Proposed)
No. 12	Overhead, (Infiltration) Range. (Proposed)
No. 13	Mortar Range.
No. 14	Field Firing Range, Artillery.
No. 15	Rifle Field Firing Range. (Proposed)
No. 16	Machine Gun Field Firing Range. (Proposed)

NOTE: * Indicates Under Construction.

2. For location of ranges see other side.



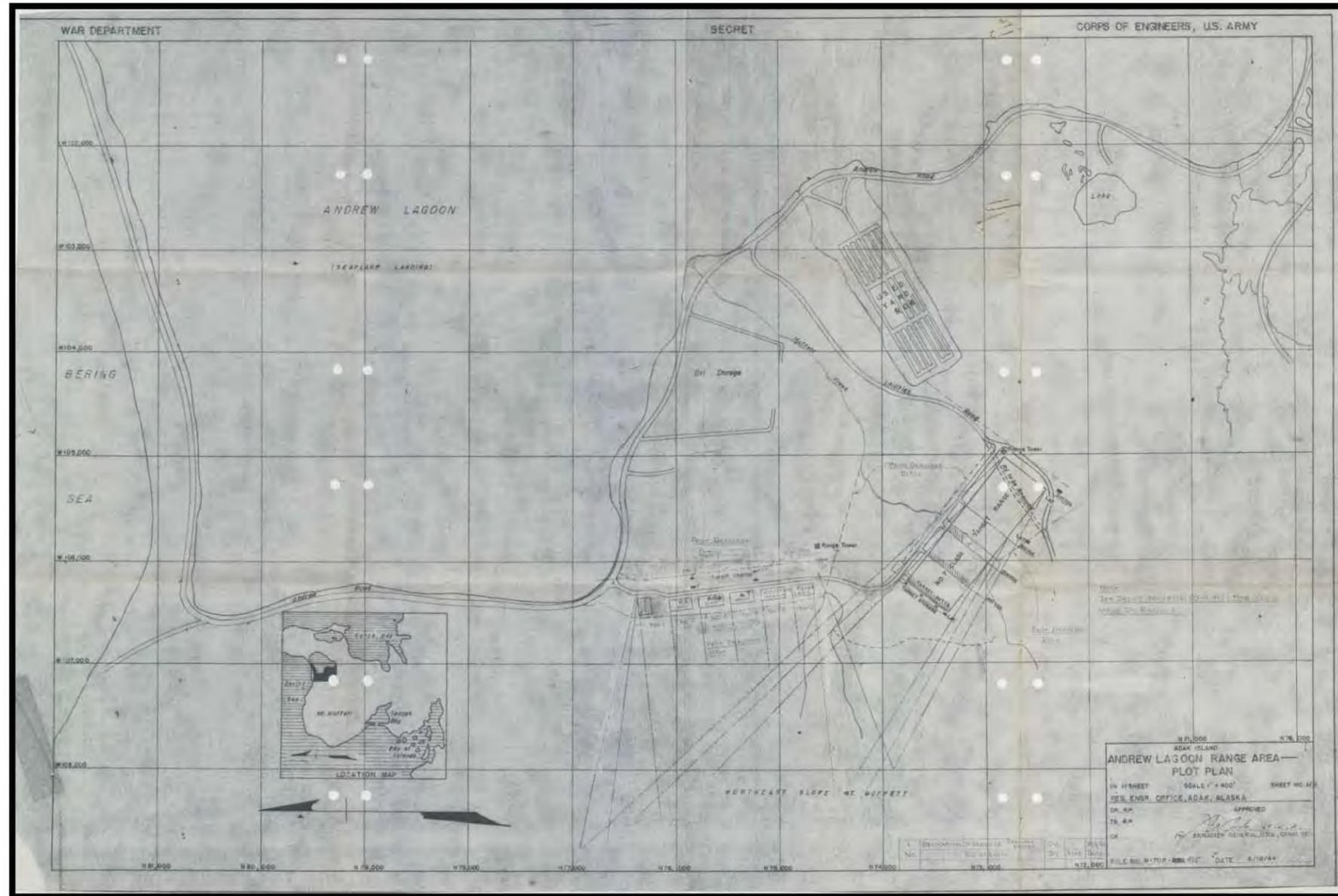
Textual/Map Source : National Archives at College Park



APPENDIX A



Range Completion Details – Map, 30 August 1944 and Memo, 16 February 1945



INDIVIDUAL PROJECT ESTIMATE
CONSTRUCTION AND MAINTENANCE

STATION: A.P.C. 980 STATION REQUEST NBR: 108
DATE: 2-16-45 ALS DEPT SERIAL NBR: 251-45

NEW CONSTRUCTION ALTERATIONS & ADDITIONS MAINT. & REPAIR
RELOCATION BETTERMENTS

I. DESCRIPTION OF PROJECT (ATTACH PLANS, MAPS AND OTHER PERTINENT DATA):
Completion of construction on Post Firing Ranges No. 1,2,3,4,5 & 6 as shown on attached plot plan N 170P-415.

II. JUSTIFICATION:
Construction of this range was started some time ago but not completed. The range is now required for Infantry School.
Reference is made to authority given in radiogram ENO2160 (170433) Feb.

III. DATA ON THE BUILDING, STRUCTURE OR FACILITY:
(a) FACILITY OR AREA DESIGNATION Andrew Lagoon
(b) DATE OF INSTALLATION _____ (c) PRESENT EST. VALUE \$ _____
(d) PRESENT USE _____ (e) COST IMPROVEMENTS TO DATE \$ _____

IV. LABOR:
(a) CONTRACTOR (b) CIVILIAN (c) TROOP (d) LIST SPECIAL SKILLS NEEDED NOT AVAILABLE ON POST: None

V. ESTIMATED COST:
(a) MATERIALS \$ 200.00 (b) LABOR \$ 1,060.00 (c) TOTAL \$ 2260.00

VI. ESTIMATED TIME REQUIRED FOR COMPLETION: 15 men x 15 days

SUBMITTED BY: L.H. Foote, Col. C. Engineer DATE: _____
APPROVED BY: H.P. Det. Iler, Col, CAC, Post Governor DATE: _____
H.P. DET. ILER, Col, CAC, Post Governor
Executive
APPROVED BY: _____ DATE: _____
For CG Als. Dept.

Als Dept Eng Form 105 (Dec 44) CONFIDENTIAL
DECLASSIFIED
Authority: 100-53301
By: NARA Date 11-17-01

Textual/Map Source : National Archives at College Park



APPENDIX A



Seawall Garbage/Ammunition Dump References – September 1944, September 1993

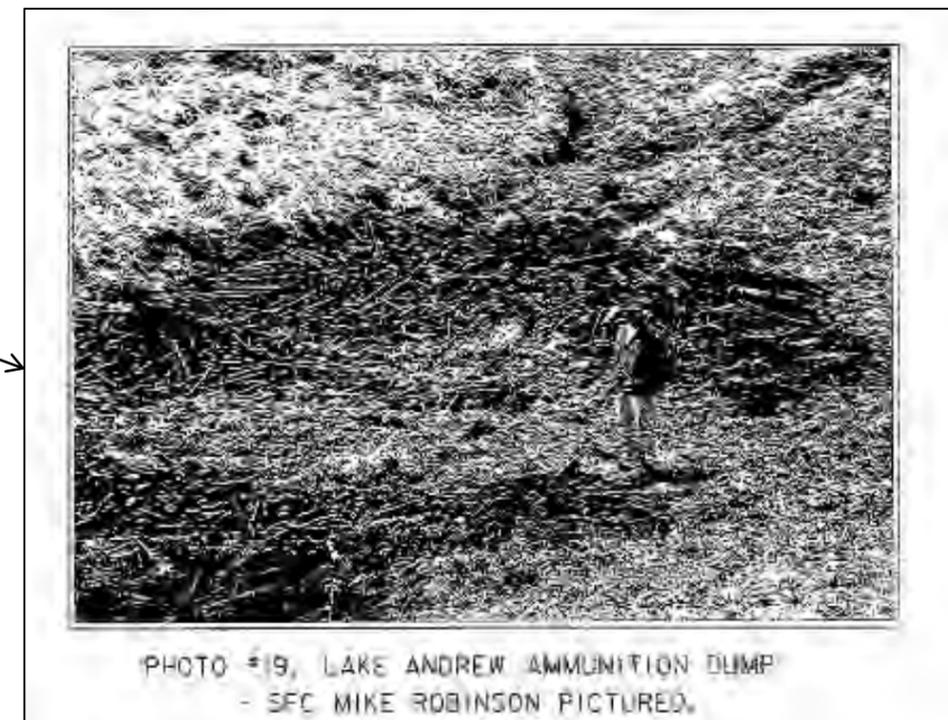
USACE Archives Search Report, ADAK NAVAL AIR STATION, September 1993

20 September 1944 Alaska Transportation Command Station Survey (page 93)
Report subset showing sanitary disposal at Seawall

(e) **SANITARY FACILITIES** (sewage, rubbish and garbage disposal equipment; capacities)
Sewage disposition varies throughout the Air Base. In the housing area immediately adjacent to Base Headquarters a sanitary sewer has been installed that will handle a living area of about 2000 people. In other areas pit latrines or septic tanks are used. Rubbish is dumped into the bay near Andrew Lagoon. Burnable rubbish is disposed of in the unit areas.
Garbage is hauled to the Post garbage dump where it is pushed into the Bering Sea.

Present Site Photographs, 1993 (pages 234 and 237)
Titled and showing Lake Andrew Ammunition Dump (possibly in the seawall area)

Photo #19. Lake Andrew Ammunition Dump - SFC Mike Robinson pictured.
Sheet G-4.
Photo #20. Lake Andrew Ammunition Dump. Shell casing - shown for later identification.



Textual Source : National Archives C/O USACE and USN



APPENDIX A



Seawall Garbage/Ammunition Dump References –April/May 1963, October 1979, October 1998

Foster Wheeler Archive Search Summary Report, Naval Air Facility, Adak, Alaska, Volume I, October 2, 1998

October 1998 Report description of Seawall/Spillway area (page 40)

SWMU 8 is a natural causeway/seawall which separates Andrew Lake from Andrew Bay on the north. The UXO sweep conducted in this area uncovered evidence of two ordnance dumping areas located within 100 feet of the spillway at the west end of the causeway. One dump site is reported to have contained scrap metal and empty ordnance casing. The other was a waste ordnance disposal site and contained 82 UXO items which were destroyed by detonation. An additional 54 UXO items were unearthed during the first detonation and were disposed of with a second detonation. Clearance of this area was not considered feasible due to the heavy tundra, rocky terrain, and potential presence of holes and craters from historical gun emplacements known to exist in this area.

October 1979 Report showing buried ammunition at Seawall (page 409)

17 October 1979

From: Officer in Charge Explosive Ordnance Disposal Group One Det Adak
 To: Commanding Officer Naval Station Adak, Ak
 Subj: Monthly Ordnance Sweep of Lake Andrews Seawall; report of

1. On 16 October, EODGRUONE Det Adak conducted the monthly sweep of the lake Andrews seawall, in search of unexploded ordnance. The following ordnance items were recovered and disposed of:

- a. 1 60MM mortar
- b. 2 81MM mortar
- c. 2 A/N M52A1 thermitic bomblets
- d. 3 40MM powdr casings
- e. 2 5 inch bombardment rocket heads
- f. 2 bomb fuzes
- g. 200 rounds of miscellaneous small arms ammunition

2. The area where the 200 rounds of ammunition was located, appears to have been freshly dug at by some Adak Artificat collectors.

3. An underground bunker of WWII vintage, in extremely poor/run-down condition was discovered. It is evident that someone has made an attempt to restore its serviceability by wedging new timbers in for support. This particular bunker is dangerous and should be completely demolished before it caves in with some week-end occupants.

W. A. Wright
W. A. Wright

April/May 1963 EOD Report (pages 75-78): Report subsets showing observation of ammunition Disposal method and location of ordnance found and disposed of (implication of ammunition dump at Seawall)

1. Background. The bulk of the unexploded ordnance (UXO) on Adak is presumed to be abandoned U. S. Army owned ammunition dating back to 1943-1945. From observations it appears that the ammunition was dumped within the five fathom curve or left on the beaches to be disposed of by the elements. The area used as heavy weapons firing range shows indiscriminate use in that firing was not localized and no real effort put forth on range clearance of duds. In general this ammunition is becoming more hazardous with age (i.e. rounds being pounded on rocks in beach areas and chemical rounds rusting through and igniting spontaneously).

1. a. April 1 Andrew Bay, beach area, 500 yds. west of Andrew Lake spillway. (Enclosure (2) a. and b.)
 - b. Items recovered: 1 - 1000 lb. G.P. Bomb M-65 Unfused
1 - 750 lb. SAP Bomb M-58 Unfused
 - c. Disposition: Detonated in place.
2. a. April 3, 4, 5 Andrew Bay, beach area, extending 1/2 mile west of Andrew Lake spillway. (Enclosure (2) c. thru h.)
 - b. Items recovered: 36 - 81mm Mortar Rounds (heavy) H.E. or W.P. Fused
92 - 81mm Mortar Rounds (light) H.E. Fused
14 - 2.36" Rockets HEAT, Fused
3 - Grenades, rifle, HEAT, Fused
12 - 40mm cigs, complete, Fused
19 - 40mm projectiles, Fused
20 - 61mm Mortar Rounds H.E. Fused
10 - M-100 bomb tail fuses
12 - M-103 bomb nose fuses
6 - M4 A/G Floet lights
1 - M22 Hand grenade, Fused (dud fired)
 - c. Disposition: All above items collected at one point and mass detonated. When investigating demolition shot it was discovered that more UXO was uncovered by the blast in quantity and type not included in shot. Excavation of area planned.
3. a. April 17 Andrew Bay, beach area east of Andrew Lake spillway. (Enclosure (2) i. thru k.)
 - b. Items recovered: 3 - 500 lb. Incendiary Bombs M-76
PT-1 Loaded (Magnesium, gasoline, and thickener). Due to similarity in cases (500 lb. chemical gas M-78) war gas precautions were taken.
 - c. Disposition: Cases punctured with explosives and filler burned. (Wind conditions satisfactory.)
4. April 18, 19, 22. Area referenced in 2.c. Access and recovery operations. Numerous amounts of bomb fuses and smoke floets M4, some mortar ammunition. All collected for future demolition or burning.

KNOWN UXO LOCATIONS, RECOMMENDATIONS AND SAFETY PRECAUTIONS

i. Adak.

a. Andrew Bay, area extending west of Lake Andrew spillway approximately one mile, east approximately 500 yards. This area is cordoned by barbed wire and marked by metal and wooden signs. It is impossible to state amounts and types of UXO in this area, but should range upward into tons. An underwater search extending to the 10 fathom curve in this area will be conducted as time and weather permit. For the beach area it is recommended that an EOD man be trained as a bulldozer operator to remove large quantities of metal scrap which are hampering operations and to move heavy rocks for a more thorough search.

Textual Source : U.S. Navy Reports



APPENDIX A



Seawall Garbage/Ammunition Dump References – October 1996

Foster Wheeler Archive Search Summary Report, Naval Air Facility, Adak, Alaska, Volume II, October 2, 1998

October 1996 EOD Site Survey description of Seawall/Spillway area dump sites (page 91-93, part of document beginning page 58)

SWMU #8 - Andrew Lake Seawall

1. DESCRIPTION.

a. SWMU #8 is a strip of land which separates Andrew Lake from Andrew Bay, and extends to the west approximately 500 yards from the spillway. A road runs through the middle of the strip of land from the spillway to the NSGA boathouse on the eastern shore of Andrew Lake. GPS coordinates of the area are provided in TAB-A.

b. Historical records indicate there were coastal artillery and anti-aircraft batteries located within this site. Further, the area west of the spillway was used as an ordnance disposal area and landfill until the early 1960's.

c. EOD records show significant amounts of ordnance which have been recovered from the seaward side of the area. Believe this ordnance is a result of ordnance which was blown into Andrew Bay during disposal operations at the west side of the spillway.

d. The area is predominantly rock of varying sizes, which are deposited during the winter storms which come from the northwest and pound this area every winter and spring.

2. SURVEY. The survey was conducted in three areas, SWMU #8A the area west of the spillway, SWMU #8B the area east of the spillway, and area SWMU #8C the Andrew Lake beach area east of the spillway. The ordnance locators were ineffective in these areas due to the rock and heavy contamination of metal throughout the area.

a. Technique. The general technique utilized was to determine the perimeter of the area using the GPS. Initial intentions were to conduct this site as the others by utilizing the ordnance locators and conducting a test lane to determine presence of ordnance and manhour information for excavation. Due to the rock and heavy metal contamination this was not possible. Majority of information attained at this site was from surface sweeping and limited use of the ordnance locators.

b. Specific Site Information.

(i) SWMU #8A - Area west of the spillway. GPS coordinates provided per TAB-A. 120.5 manhours were expended to determine GPS coordinates, conduct a surface sweep of the area, and dispose of located ordnance. Discovered evidence of two dump sites. The first was a metals dump site located within 100 feet of the spillway. The majority of materials encountered were either scrap or empty ordnance casings. The second was located approximately 400 yards to the west and was used as an ordnance

disposal area. Initial sweep revealed 82 ordnance items, which were disposed by detonation on site. Investigation after the detonation revealed an additional 54 items which were unearthed from the detonation. These items were subsequently disposed by detonation. Ordnance contact sheets are provided per TAB-B. Ordnance locators were utilized to determine the western boundary of the disposal site.

(2) SWMU #8B - Area east of the spillway. GPS coordinates are provided per TAB-A. 40 manhours were expended to determine GPS coordinates and to conduct a surface sweep of the area. 16 scrap ordnance casings were discovered while sweeping the beach area to the high water mark. A test lane was conducted on the road which runs the length of the land spit between Andrew Lake and Andrew Bay. No ordnance items were recovered from the road, but scrap metal, cable and drainage pipe were discovered. The areas between the road and the beaches contained deep holes from old fighting positions that were overgrown with tundra, making it extremely hazardous for personnel to conduct an effective test lane.

(3) SWMU #8C Area east of the spillway from the road to the waters edge of Andrew Lake. 24 manhours were expended to determine GPS coordinates and to conduct a surface sweep of the Andrew Lake beach area. No ordnance contacts were discovered during the beach survey.

3. CLEARANCE OPTIONS.

a. Surface Clearance. Feasible - but difficult. A surface clearance is possible of the exposed beach areas, but the areas covered with vegetation are not acceptable for visual sweeping and would require burn-off for an adequate surface clearance. Hidden holes in the tundra from World War II fighting positions and gun emplacements are hazardous to personnel.

b. Clearance depth of 1 foot. Not feasible. Due to presence of various size rocks, excavation by hand would not be practical. The majority of terrain in this area is small to medium size rocks built-up over the years from winter storms pounding the area. The high areas are rock, covered by tall vegetation/tundra.

c. Clearance depth of 4 feet. Not feasible. Same as above.

d. Clearance depth of 10 feet. Not feasible. Same as above.

e. Underwater clearance of Andrew Bay. An assumption that UXO is present in Andrew Bay is based on evidence from past EOD

reports and the presence of UXO at the Andrew Bay seawall. Believe this ordnance to be the result of disposal operations at site SWMU #8A. Assuming the UXO is scattered throughout the Bay and at various depths under the same type rocks washed up on the shoreline, a considerable underwater effort would be required to locate and dispose of the ordnance. This detachment was not tasked to investigate the underwater aspects of SWMU #8, but from available data and past experience, believe clearance of this area is beyond the capabilities of this detachment.

4. RECOMMENDATIONS.

a. Do not authorize SWMU #8 for reuse.

b. Place institutional controls on the entire site.

(1) Install adequate fencing along the perimeter identified in TAB-A to preclude any unauthorized access into the site.

(2) Install warning signs in accordance with reference (c).

(3) Provide for yearly inspection and repair of fencing and signs.

c. Conduct review every 5 years to ascertain when technology will allow clearance to an acceptable depth.

Textual Source : U.S. Navy Reports



Anaglyphs

- Anaglyphs are 3-Dimensional (3-D) images created from select historical aerial photographs.
- To view the 3-D effect, images must be viewed with red/blue lens stereo glasses included with the hardcopy report.



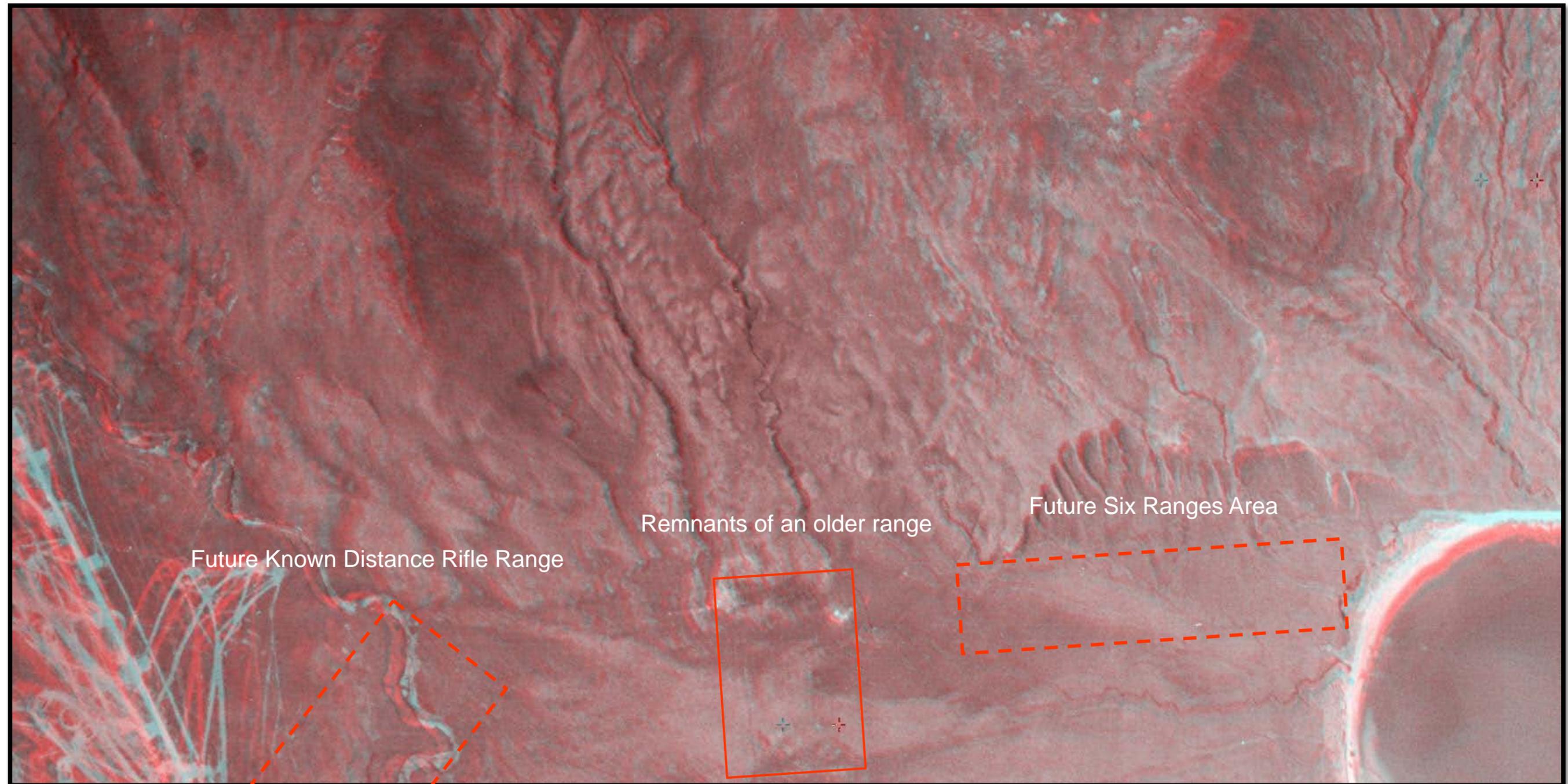
APPENDIX B



19 December 1946 anaglyph showing probably trenches documented in an earlier 2002 study in the Lake Jean Ammo Storage/Dump area



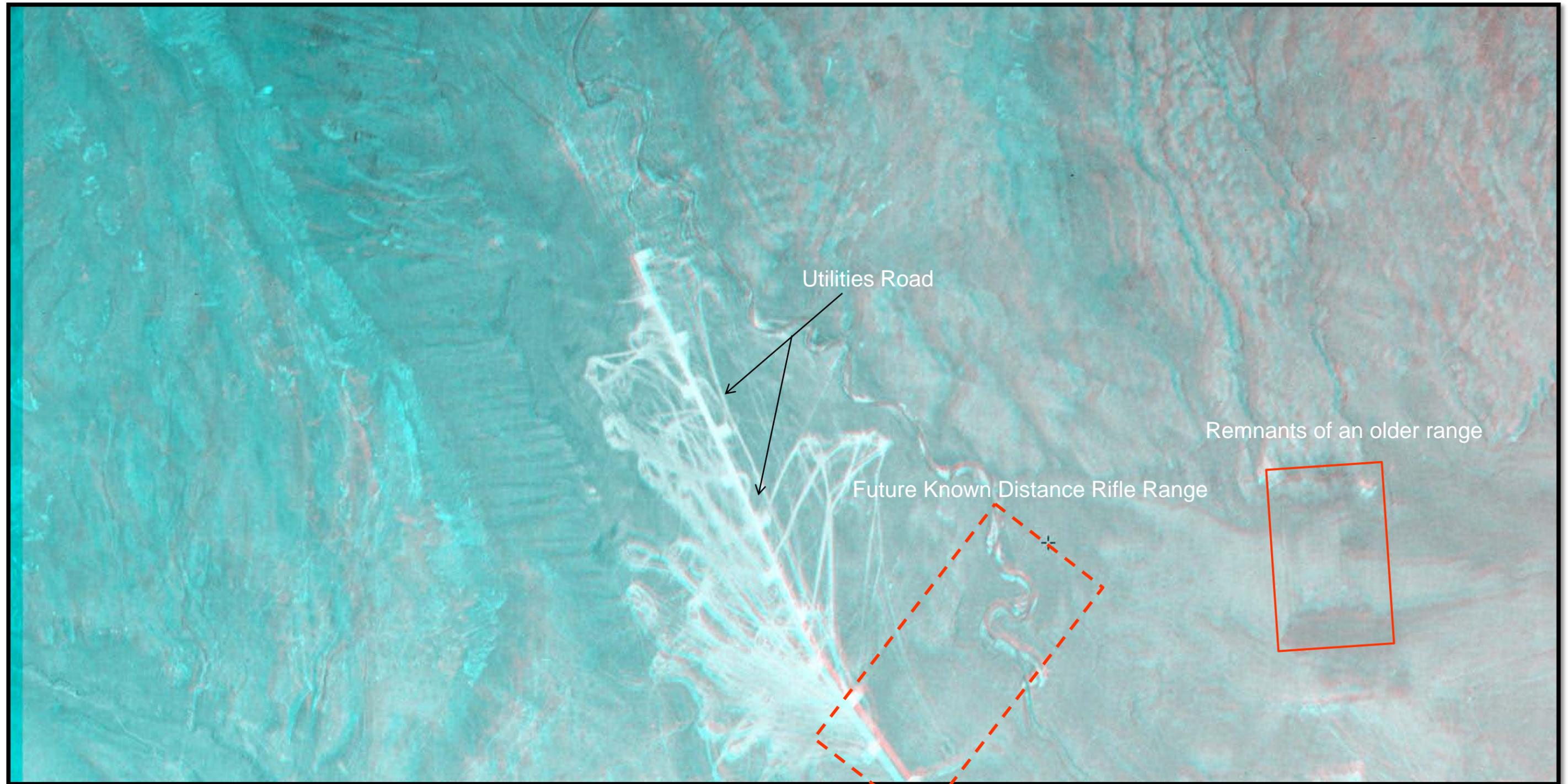
APPENDIX B



27 July 1943 anaglyph showing relief north of ranges built (or later built) in the Army Supply Depot and Range area



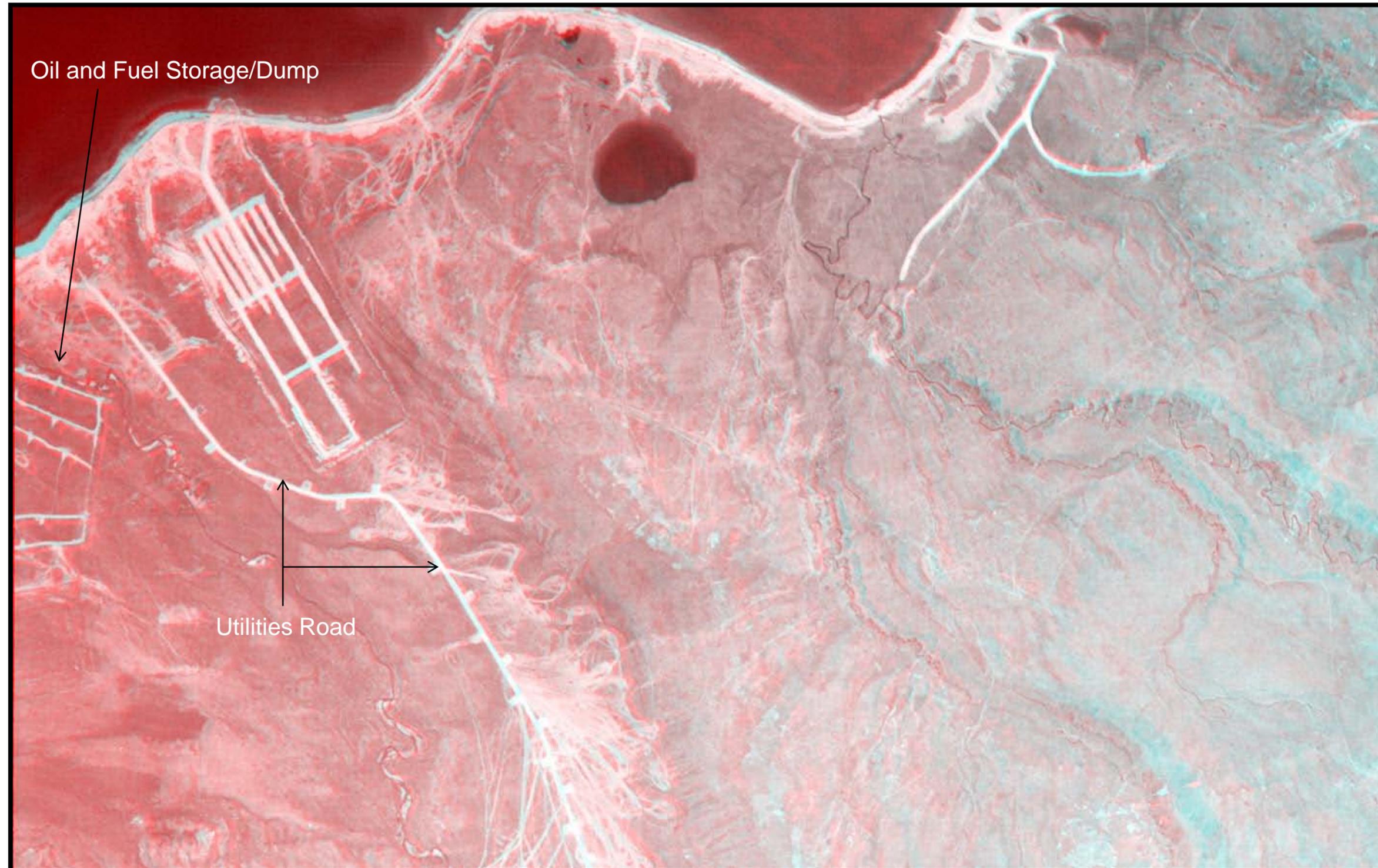
APPENDIX B



27 July 1943 anaglyph showing relief in the RR-01, OBOD-01 and HG-01 areas in the Army Supply Depot and Range area



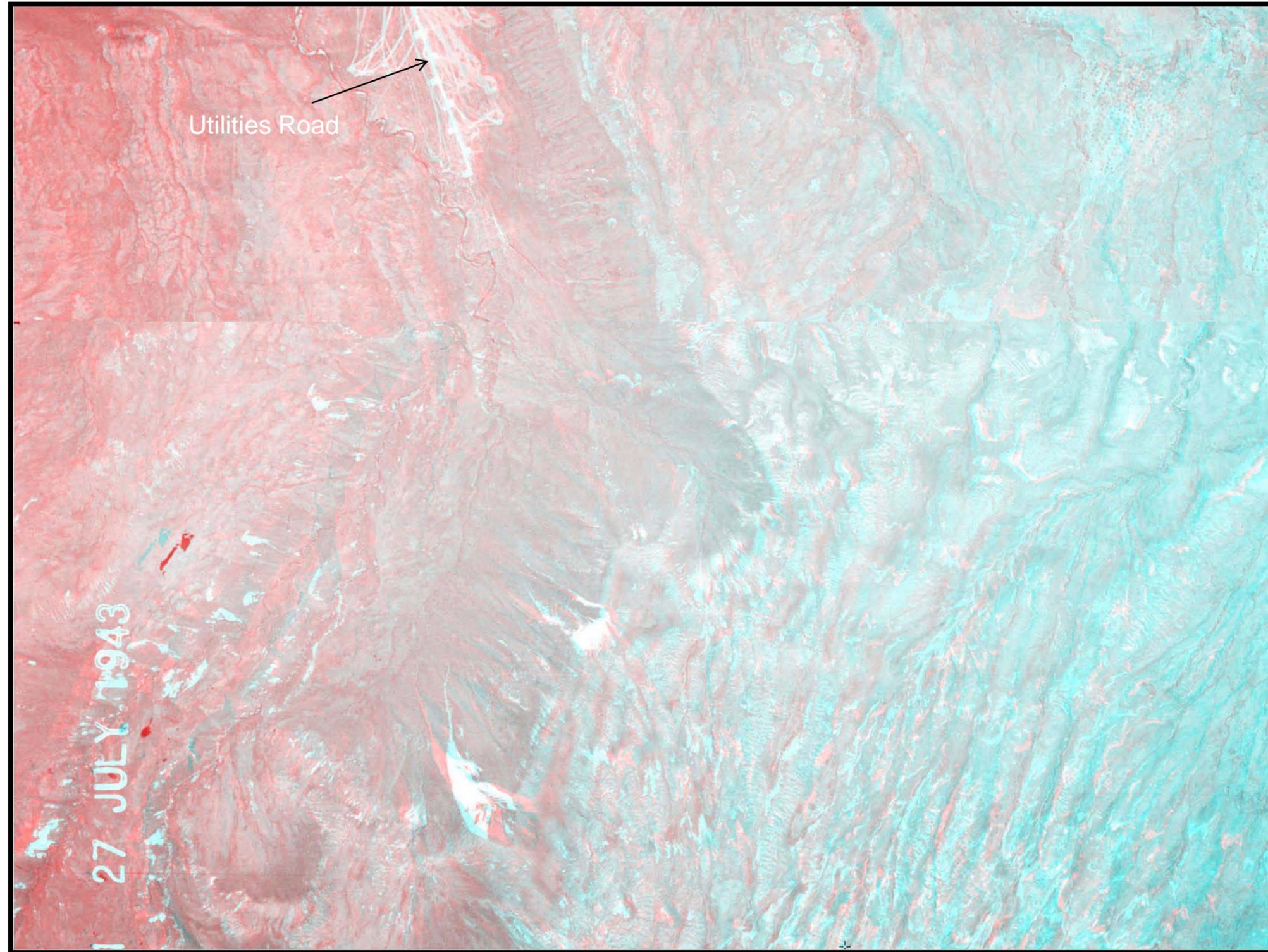
APPENDIX B



27 July 1943 anaglyph showing relief in Area 3 of the Project area



APPENDIX B



27 July 1943 anaglyph showing relief in Area MI-03 and beyond in Area 3 of the Project area



SOURCES OF SPATIAL DATA

AERIAL PHOTOGRAPHY & SATELLITE IMAGERY

SOURCE	DATE	REMARKS	SOURCE	DATE	REMARKS
NARA	1942, 25 September	PAN oblique aerial photograph	NARA	1944, 08 September	PAN still photography
NARA	1943, 29 May	PAN vertical aerial photograph	NARA	1944, 19 September	PAN oblique aerial photograph
NARA	1943, 27 June	PAN vertical, oblique aerial and still photography	NARA	1944, 23 September	PAN vertical aerial photograph
NARA	1943, 11 July	PAN oblique aerial photograph	NARA	1945, 26 February	PAN oblique aerial photograph
NARA	1943, 27 July	PAN vertical aerial photography	NARA	1945, 20 April	PAN oblique aerial photograph
NARA	1943, 23 September	PAN vertical aerial photograph	NARA	1945, 05 August	PAN oblique aerial photograph
NARA	1943, 15 October	PAN vertical aerial photograph	NARA	1946, 26 February	PAN vertical aerial photograph
NARA	1943, 25 October	PAN still photography	NARA	1946, 19 December	PAN vertical and oblique aerial photography
NARA	1943, 13 November	PAN oblique aerial photograph	NOAA	1947, 13 October	PAN vertical aerial photography
NARA	1944, 18 February	PAN oblique aerial photograph	NARA	1948, 29 March	PAN oblique aerial photograph
NARA	1944, 25 February	PAN oblique aerial photograph	NOAA	1948, 20 September	PAN vertical aerial photograph
NARA	1944, 03 March	PAN oblique aerial photograph	INTERNET ²	1966-1967, June	MS ground photography
NARA	1944, 22 March	PAN oblique aerial photograph	INTERNET ²	1971, Unknown	MS ground photograph
NARA	1944, 31 March	PAN oblique aerial photograph	USN	2001, 12 August	MS vertical aerial photography (1.5 meter spatial resolution)
NARA	1944, 11 April	PAN vertical aerial photograph	NGA	2006, 21 May	Digital Globe // Quickbird PAN satellite image (0.4 meter spatial resolution)
NARA	1944, 05 July	PAN oblique aerial photograph			
NARA	1944, 13 July	PAN ground still photography			
NARA ¹	1944, 24 August	PAN oblique aerial photograph			
NARA	1944, 28 August	PAN oblique aerial photograph			

NARA = National Archives & Records Administration NGA = National Geospatial-Intelligence Agency USN = U.S. Navy
 NOAA= National Oceanographic Atmospheric Administration PAN = panchromatic (black & white) MS = multispectral (color)

¹ 24 August 1944 aerial photograph provided to AGC courtesy of the U.S. Navy Contract Number Report N44255-93-D-4050 (N60462_000728). Original Source is National Archives at College Park.

²Internet sources are not approved for release to the public and are used in this report for research purposes only.



GLOSSARY



Commonly Used HPA Feature Definitions*

Access Road A paved or unpaved route of vehicular access.

Bare Area An unvegetated ground surface; may be areas which have not revegetated at a normal rate.

Berm/Dike A man-made ridge or embankment, constructed of natural or man-made materials, often used to prevent movement of materials, usually liquids.

Building Relatively permanent, usually box-like and roofed, man-made structure.

Cleared Area An area from which man has removed the trees, shrubs or other natural vegetative cover.

Container Something such as a can, box, bucket or barrel; which is used to hold, store and/or transport materials. Drums and tanks are subclasses of container.

Containment Area/Structure An area designed to restrain the movement of, or impound liquid, semi-liquid or dry unconsolidated material. Impoundments are a subclass of containment areas.

Debris The scattered remains of anything broken or destroyed.

Depression A sunken surface area.

Disturbed Area A rough ground surface which has been cleared, overturned, dug up, filled and/or changed from the immediate environs in some manner for an unknown purpose.

Drainage, Surface The routes by which liquid flows. Surface drainage includes perennial, intermittent, channelized and suspected pathways.

Drums Cylindrical, plastic, metal, or fiber container for storing and/or transporting materials; typically of a 55 gallon capacity, but ranging widely to suit industrial applications. Drums smaller than 55 gallons can be difficult to identify on aerial photography and may be placed in the more general category of container.

Dump A site used to dispose of solid wastes without environmental controls; i.e., not directly associated with a waste generating facility where disposal of waste is regulated.

Edge of Slope A topographic contour which simulates a relatively sharp and distinct downward inclination of the ground surface.

Effluent Substance which flows out of a containing space. Outflow or discharge. Generally refers to water and/or wastes, treated or untreated, flowing out of a treatment plant, impoundment, sewer, storm drain or industrial outfall onto the ground or into surface waters.

Excavation A cavity in the earth formed by digging or scooping out materials.

Extraction An area where earthen materials, such as minerals, sand and gravel or metals, have been removed for use elsewhere. Examples are quarries, borrow pits, pit and strip mines.

Fence A structure serving as an enclosure, barrier or boundary, usually made of posts, boards, wire and/or rails.

*Features mentioned above may or may not have been used in the GIS package submitted with this report. The usage of certain features in a package is subjective. Please read remarks found in metadata of GIS features for more detailed definitions and references used by the author.



GLOSSARY (continued)



Commonly Used HPA Feature Definitions

Fill Area Area where material, either earthen and/or non-earthen, has been deposited either for disposal, to level the ground surface, or to eliminate a wet area.

Fill Material Material, earthen and/or non-earthen, that has been deposited in a fill area.

Graded Area Area where the ground surface has been shaped; usually leveled to a smooth horizontal or sloping surface.

Ground Scar A ground surface, vegetated or unvegetated, where marks from a previous activity or feature or from a subterranean feature are visible. Ground scars can result from many things and therefore vary greatly in appearance (e.g. septic drain fields, archaeological features, buried waste disposal pits, trench scars, etc.)

Historical Boundary A line on a map or an overlay which delineates the area where a facility or activity was previously located or conducted.

Impoundment/Lagoon/Pit A containment area, man-made or naturally occurring, that appears to be used for waste and/or water storage, disposal, or treatment.

Impact Crater A crater formed on a surface by the impact of an unspecified projectile.

Landfill A land disposal site, usually for solid waste which intermittently employs a cover material. At a regulated sanitary landfill, waste is spread in layers, compacted to the smallest practical volume, with cover material applied at the end of each operating day.

Material A substance (usually a non-liquid, if that distinction can be made) placed, bulldozed, graded, mixed, spread, etc., over an area. Generally refers to raw or waste materials on or in the vicinity of the site.

Mounded Material Material which has been placed in piles or mounds. Frequently extraction materials, construction materials, or industrial raw materials are stored in large mounds in the open. At fill areas and landfills uniformly dump truck size mounds of material are often present.

Open Storage An open-air, outdoor area for storage of materials, supplies, vehicles and/or equipment; may or may not be enclosed by a fence.

Outfall The place where effluent is discharged.

Pit A relatively deep, steep sided hold in the ground surface.

Scrap Discarded materials that may be suitable for reprocessing.

Sediment Material that settles to the bottom of a liquid. Material suspended in water or in the air.

Site Boundary A line on a map or an overlay which delineates the area where any facility or activity is located or conducted. This area is determined from the aerial photography supplemented with information provided by the client, and does not necessarily denote legal property lines.

Sludge A semi-solid residue from any number of air or water treatment processes.

Stain An area that is soiled or discolored and distinct from the surrounding area.



GLOSSARY (continued)



Commonly Used HPA Feature Definitions

Standing Liquid A temporary collection of liquid on a surface.

Structure A man-made feature which cannot be classified as a building or a shed. Something made up of a number of parts that are held or put together in a particular way.

Tones, Light/Medium/Dark A general, and somewhat subjective, classification of the wide range of tones/shades visible on panchromatic photography/imagery.

Trailer A transport vehicle designed to hauled; a van drawn by a truck or automobile and used as a house or an office. Both semi and house trailers are often used for storage or office space on a site. Specific trailer types are annotated if the spatial resolution permits and if the feature is deemed significant.

Treatment/Storage/Disposal Facility Site where a hazardous substance is treated, stored and/or disposed of.

Trench A long, narrow excavation.

Vat A large vessel, such as a tub, cistern or barrel, used to store or hold liquids.

Vegetation Stress A condition wherein vegetation has been weakened and exhibits physiologic stress due to any number of changes in the environment; such as, exposure to toxic substances or weather extremes, lack of nourishment, inundation, parasites, or disease.

Vehicle A device for carrying passengers, goods or equipment, such as a car or a truck. Specific types of motor vehicles are annotated as such if the imagery permits their positive identification and if they are deemed significant.

Vertical Tank A usually metallic receptacle, container, or structure for holding liquid, gaseous, or granular materials that has a greater vertical extent than horizontal.

Waste Disposal Area An area directly associated with a waste generating facility (as opposed to a dump site), where waste materials are discarded.

Well Head That portion of a well that is visible above the ground surface of which opens at ground level.

Wet Area Saturated ground which may or may not be an established wetland.

Wetland Areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.



SOURCES OF INFORMATION AND DATA



Official sources:

Department of the Navy, Navy Historical Center, Washington Navy Yard, Washington, D.C.

Department of the Navy, U.S. Navy Seabee Museum, Port Hueneme, CA.

Department of the Navy, Naval Facilities Engineering Command (NAVFAC).

National Archives and Records Administration (NARA), Cartographic, Still Pictures and Textual Records, College Park, MD.

National Geospatial-Intelligence Agency (NGA).

National Oceanic and Atmospheric Administration (NOAA), National Geodetic Survey (NGS), Silver Spring, MD.

U.S. Army Corps of Engineers, Saint Louis District, St. Louis, MO.

U.S. Army Geospatial Agency (AGC), Geospatial Information Library and AGC Imagery Office (AIO), Alexandria, VA.

U.S. Geological Survey, Reston, VA.

Internet sources:

NavyCTHistory.com (hosted by Joseph A. Glockner, CTTCS, USN Retired), “NSGDept/NSGA Adak, Alaska”,
<http://www.navycthistory.com/adak_intro.html>

Orneveien.org (hosted by Michael Gordon), “A Pictorial and Anecdotal History of Adak, Alaska, U.S.A.”,
<<http://www.orneveien.org/adak/index.htm>>

12 April 1944

Source: Washington Navy Yard

ADAK 4652 4-12-44 Mosaic of NAS, and surrounding area, Adak, Alaska. FL. 8 1/4",
Alt. 8200'