



**US Army Corps  
of Engineers**

HUNTSVILLE DIVISION

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Defense Environmental Restoration Program  
for  
Formerly Used Defense Sites

Ordnance and Explosive Waste  
Chemical Warfare Materials

## **ARCHIVES SEARCH REPORT**

# **PASSAGE KEY AIR-TO-GROUND GUN**

Monroe County, Florida

Project Number -. I04FL040101

**FINAL – 19 AUGUST 2002**

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Prepared by

**US ARMY CORPS OF ENGINEERS**

**ST. LOUIS DISTRICT**



DEPARTMENT OF THE ARMY  
HUNTSVILLE CENTER, CORPS OF ENGINEERS  
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REPLY TO  
ATTENTION OF:

CEHNC-OE-CX (200-1C)

19 August 2002

MEMORANDUM FOR Commander, U.S. Army Engineer District, Saint Louis  
(CEMVS-PM-M/Mr. Mike Dace), 1222 Spruce Street, Saint Louis, MO 63103-2833

SUBJECT: Results of the Technical Advisory Group (TAG) Review of Archives Search  
Reports (ASR) and Fact Sheets for Defense Environmental Restoration Program-Formerly Used  
Defense Sites (DERP-FUDS)

1. The following ASRs and Fact Sheets have been finalized:

PROJECT NUMBER:

C03VA009800  
J09AZ002301  
J09AZ034501  
J09AZ073601  
J09AZ041001  
J09CA017101  
J09AZ071501  
J09CA055701  
B07KS022101  
B07KS022001  
B07KS021901  
B07KS021801  
B07KS021702  
C02NJ094501  
K06NM039601  
G05IN008506  
I04FL089901  
C03MD036303  
C02NY064503  
A04MS016901  
F10OR002903  
K06TX014401  
F10AK029102  
I04AL325503  
I04FL033701

SITE NAME:

Oyster Point Backup Ammunition Storage Depot  
Kingman Army Airfield  
Douglas Army Airfield  
Yucca Air to Air Gunnery Range  
Kingman Air to Air Gunnery Range  
Holtville Target (BT) No. 3  
Williams Field Bomb Target Range #14  
Point Sal Air to Ground Gunnery Range  
Great Bend Precision Bombing Range No. 3  
Great Bend Precision Bombing Range No. 2  
Great Bend Precision Bombing Range No. 1  
Great Bend Air-to-Ground Gunnery Range  
Great Bend Army Air Field  
Tuckahoe Rocket Range  
Deming Army Air Field, PBR No. 12  
Vigo Plant Chemical Warfare Vigo Ordnance Plant  
26-Mile Bend Bomb Target  
Fort Washington Military Reservation  
Mitchel Field  
Smith County Bombing and Gunnery Range  
Camp Adair  
Pyote Army Airfield Target Range No. 1  
Kodiak Naval Station, Burma Road  
Camp Sheridan Artillery Range  
Mill Cove Bombing Site

SUBJECT: Results of the Technical Advisory Group (TAG) Review of Archives Search Reports (ASR) and Fact Sheets for Defense Environmental Restoration Program-Formerly Used Defense Sites (DERP-FUDS)

<u>PROJECT NUMBER:</u>	<u>SITE NAME:</u>
K06NM034901	Carlsbad Practice Bombing Range No. 4
K06NM034801	Carlsbad Practice Bombing Range No. 3
K06NM034701	Carlsbad Practice Bombing Range No. 2
K06NM061101	Kirtland PBR No. 2 (N-5)
K06OK011001	Great Salt Plains Bombing Range
E05WI088301	Edithton Beach Anti-Aircraft Artillery (AAA) Training Center
J09CA018201	Salton Sea Bombing Target #52
J09CA018801	Salton Sea Bombing Target #58
K06NM050601	WAFB Roswell PBR #1
K06NM052801	WAFB Roswell PBR #34
K06NM052501	WAFB Roswell PBR #28
K06NM052201	WAFB Roswell PBR #22
K06OK001301	Cherokee National Wildlife Area (Camp Gruber Military Reservation)
I04FL112901	Lake Wilmington Bomb (Blue Cypress Lake) Target
I04FL040101	Passage Key Air-to-Ground Gunnery Range
J09CA706208	Hamilton Army Airfield
J09AZ045901	Luke Air Force Auxiliary Field No. 3
J09CA730701	Condor Field No. 4
E05WI506903	Camp Haven AAA Firing Range
I04FL034002	Bartow Municipal Airport
K06TX020701	McGee Bend Precision Bombing Range
K06TX101702	Jefferson County Airport
K06AR005001	Maumelle Ordnance Works
K06TX002709	Webb Air Force Base
K06TX012802	Stinson Field

2. Recommended strategy for future actions to be taken by the Project Manager is included in the enclosed fact sheets. Supporting data for TAG decisions are also included with the fact sheets.

3. Fact sheets, supporting data and corrected pages, due to prior reviews, are to be distributed with the subject ASRs.

4. Subject ASRs are recommended to be final when enclosed fact sheets, supporting data and corrected pages are included as a part of the project package.

CEHNC-OE-CX (200-1C)

19 August 2002

SUBJECT: Results of the Technical Advisory Group (TAG) Review of Archives Search Reports (ASR) and Fact Sheets for Defense Environmental Restoration Program-Formerly Used Defense Sites (DERP-FUDS)

5. If you have any questions concerning this action, please call me at 256-895-1797, DSN 760-1797, or facsimile 256-895-1798.

FOR THE DIRECTOR OF ORDNANCE AND EXPLOSIVES DIRECTORATE:



DANNY R. MARDIS

Archive Search Report Manager  
for Ordnance and Explosives Directorate

50 Encls  
as

## **DISCLAIMER**

The purpose of this archives search report is to present the findings of research undertaken for this specific Formerly Used Defense Site (FUDS) property. All of the factual information found during the research is included in this "Findings" volume. Reference may be made in this volume to a separate "Conclusions and Recommendations" volume. In some instances, the Conclusions and Recommendations (C&R) volume contained recommendations of individuals performing the analysis that may contain inferences or conjecture not supported in subsequent reviews. Because these statements are not always factual in nature, the U.S. Army Corps of Engineers has determined the Conclusions and Recommendations volumes, where they exist, do not necessarily represent the opinion of the USACE and are not available for public release.

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## 1.0 INTRODUCTION

### 1.1 AUTHORITY

In 1986, Congress established the Defense Environmental Restoration Program (DERP) at 10 U.S.C. 2701 et. seq. This program directed the Secretary of Defense to "carry out a program of environmental restoration at facilities under the jurisdiction of the Secretary."

In March, 1990, the EPA issued a revised National Contingency Plan. Under 40 C.F.R. 300.120, EPA designated DoD to be the removal response authority for incidents involving DoD military weapons and munitions under the jurisdiction, custody and control of DoD.

Since the beginning of this program, the U.S. Army Corps of Engineers has been the agency responsible for environmental restoration at Formerly Used Defense Sites (FUDS). Since 1990, the U.S. Army Engineering and Support Center, Huntsville, has been the Center of Expertise (CX) and Design Center for Ordnance and Explosives.

### 1.2 SUBJECT

The Passage Key Air-to-Ground Gunnery Range, DERP-FUDS OE Project No. I04FL040101, was a small island at the mouth of Tampa Bay, about ten miles northwest of the City of Bradenton, in Manatee County, Florida.

### 1.3 PURPOSE

This Archives Search Report (ASR) compiles information obtained through historical research at various archives and records holding facilities, interviews with individuals associated with the site or its operations, and personal visits to the site. All efforts were directed towards determining types of munitions used at the site, possible disposal areas, and any unknown training areas. Information obtained during this process was used in developing recommendations for further actions at the site.

### 1.4 SCOPE

This investigation concentrated on the potential that OE and/or CWM contamination could remain on the Passage Key Air-to-Ground Gunnery Range from the training activities occurring during World War II. This report presents the history of the site, description and characterization of the immediate surrounding areas, real estate ownership information, findings of a visual site survey, and OE site analysis, including an evaluation of potential ordnance contamination. A separate report supplements these **ASR FINDINGS** and furnishes the **CONCLUSIONS AND RECOMMENDATIONS**.

## **2.0 PREVIOUS SITE INVESTIGATIONS**

### **2.1 CORPS OF ENGINEERS DOCUMENTS**

#### *2.1.1 DERP-FUDS Inventory Project Report (INPR)*

Under the Defense Environmental Restoration Program (DERP), the Jacksonville District prepared an Inventory Project Report (INPR), which includes a Findings and Determination of Eligibility (FDE), for the Passage Key Air-to-Ground Gunnery Range, dated 17 September 1993. It was determined to have a Risk Assessment Code of 3.

A copy of this INPR is included as Appendix D-1.

### **2.2 OTHER REPORTS**

#### **2.2.1 U.S. Fish and Wildlife Service Incident Report**

U.S. Fish and Wildlife Service Incident Report, Control #98, dated 12-15-98, concerns bomb sightings on the North tip of Passage Key National Wildlife Refuge. A copy of this report is included as Appendix D-2.

#### **2.2.2 U.S. Navy, Explosive Ordnance Disposal Mobile Unit Six Detachment Mayport**

A memorandum and enclosures from K.T. Morford, Officer in Charge, Explosive Ordnance Disposal Mobile Unit Six Detachment Mayport, to Randy Frasier [sic], U.S. Army Corps of Engineers, St. Louis District, dated 8 May 01, subject: Request for Copies of Ordnance Incident Reports with Regards to Passage Key, FL and Tampa Bay, FL, is included as Appendix D-3.

### **3.0 SITE DESCRIPTION**

#### **3.1 LAND USE**

##### 3.1.1 Location

The Passage Key Air-to-Ground Gunnery Range, DERP-FUDS OE Project No. I04FL040101, is a small island located at the mouth of Tampa Bay, about ten miles northwest of the City of Bradenton, in Manatee County, Florida. The site location and vicinity are shown on Plate 1.

##### 3.1.2 Prior Site Use

Prior to military use the site was owned by the Department of Interior (DOI) and used as a bird wildlife refuge area. On 18 June 1943, the War Department (WD) requested a temporary use permit from the DOI, to use a 36.37 acre National Wildlife Refuge Site for a bombing range assigned to the Sarasota Army Air Field. DOI granted the temporary use permit to the WD on 31 August 1943.

##### 3.1.3 Current Site Use

Currently, the site is being used by the DOI as a National Wildlife Refuge for migratory birds, operated by the United States Fish and Wildlife Service.

#### **3.2 CLIMATIC DATA**

The nearest source of long-record climatological data for the Passage Key, Florida site is the National Oceanic Atmospheric Administration (NOAA) climatological station located at Tampa, Florida. Table 3.2.1 contains data from the Tampa, Florida station. Additional climatological data from the weather station at Bradenton, Florida is provided in Table 3.2.2. The Passage Key, Florida site is approximately 30 miles south of the Tampa, Florida station and approximately 10 miles northwest of the Bradenton, Florida station.

CLIMATOLOGICAL DATA FOR  
TAMPA, FLORIDA  
TABLE 3.2.1

Month	Temperature		Precipitation (Inches)	Wind	
	Average Minimum (°F)	Average Maximum (°F)		Average Speed Miles/Hour	Average Direction
January	50	70	2.2	7	NE
February	52	72	2.7	7	E
March	56	76	3.4	7	E
April	61	82	1.8	8	E
May	67	87	2.9	8	E
June	73	90	5.6	9	W
July	74	90	7.3	6	E
August	74	90	7.9	6	E
September	73	89	6.3	7	ENE
October	66	84	2.3	8	NE
November	57	78	1.8	7	NE
December	52	72	2.0	7	NE
Average	63	82	46.3	7	ENE

Source: International Station Meteorological Climate Summary, September 1996. Jointly produced by: Fleet Numerical Meteorology and Oceanography Detachment, National Climate Data Center, and USAFETAC OL-A.

**CLIMATOLOGICAL DATA FOR  
 BRADENTON AIRPORT, FLORIDA  
 TABLE 3.2.2**

Month	Temperature		Precipitation	Wind	
	Average Minimum (°F)	Average Maximum (°F)	Average (Inches)	Average Speed Miles/Hour	Average Direction
January	50	72	2.62	-	-
February	52	74	2.87	-	-
March	55	76	2.81	-	-
April	59	82	2.44	-	-
May	64	87	2.94	-	-
June	69	90	7.07	-	-
July	71	90	9.67	-	-
August	72	90	9.36	-	-
September	71	89	7.85	-	-
October	65	84	3.34	-	-
November	57	78	1.83	-	-
December	51	73	2.20	-	-
Average	61	82	55.0	-	-

Source: International Station Meteorological Climate Summary, September 1996. Jointly produced by: Fleet Numerical Meteorology and Oceanography Detachment, National Climate Data Center, and USAFETAC OLA.

Invasions of cold northern air produce an occasional cool winter morning. Freezing temperatures occur on one or two mornings per year during December, January and February. In some years no freezing temperatures occur. Temperatures rarely fail to recover to the 60's on the cooler winter days. Temperatures above the low 90's are uncommon because of the afternoon sea breezes and thunderstorms. An outstanding feature of the Tampa climate is the summer thunderstorm season. Most of the thunderstorms occur in the late afternoon hours from June through September. The resulting sudden drop in temperature from about 90 degrees to around 70 degrees makes for a pleasant change. Between a dry spring and a dry fall, some 30 inches of rain, about 60 percent of the annual total, falls during the summer months. Snowfall is very rare. Measurable snow under a half-inch has occurred only a few times in the last one hundred years. The maximum temperature at Tampa was recorded at 99 degrees during the month of June while the minimum temperature was 18 degrees in December. The maximum temperature at the Bradenton Airport was 100 degrees in June while the minimum was 19 degrees in December.

A large part of the generally flat sandy land near the coast has an elevation of 15 feet or less above sea level. This makes the area vulnerable to tidal surges. Tropical storms threaten the area on a few occasions most years. The greatest risk of hurricanes has been during the months of June and October. Many hurricanes, by replenishing the soil moisture and raising the water table, do far more good than harm. The heaviest rains in a 424-hour period, around 12 inches, have been associated with hurricanes.

Fittingly named the Suncoast, the sun shines more than 65 percent of the possible, with the sunniest months being April and May. Afternoon humidities are usually 60 percent or higher in the summer months, but range from 50 to 60 percent the remainder of the year.

Night ground fogs occur frequently during the cooler winter months. Prevailing winds are easterly, but westerly afternoon and early evening sea breezes occur most months of the year. Winds in excess of 25 mph are not uncommon and usually occur only with thunderstorms or tropical disturbances.

The average first occurrence of 32-degree Fahrenheit in the fall is late December and the average last occurrence in the spring is early February.

### **3.3 GEOLOGY AND SOILS**

#### **3.3.1 Geology and Physiology**

The Passage Key site is located in the Floridian Section of the Coastal Plain physiographic province. This peninsular area of Florida has been divided into three physiographic zones: the Southern or Distal Zone, the Central or Mid-peninsular Zone, and the Northern or Proximal Zone. The site area falls within the Central Zone. One dominant geologic feature, the Ocala Uplift, controls the subsurface bedrock topography in this area. It is a gentle anticlinal flexure about 230 miles long and 70 miles wide exposed near the surface in west-central Florida. The Ocala Uplift is not expressed at the surface as the bedrock surface is buried beneath several hundred feet of unconsolidated sand deposits. The area is located more descriptively in the Gulf Coastal Lowlands. This poorly drained area of low relief extends along the western coast of Florida in a north-south direction.

The surface drainage system in most of the area is poorly developed and instead runoff predominately drains directly into the Gulf of Mexico or to lesser extent, into sinks, closed depressions or marshes. Rainfall percolates through the unconsolidated sands to recharge the underlying Upper Floridan aquifer.

The west-central peninsula of Florida consists of igneous and metamorphic basement rocks overlain by 4,000 feet of sedimentary rocks, principally limestones. These geologic units, and descriptions of their general lithology are summarized in Table 3.3.1-1.

TABLE 3.3.1-1 GEOLOGIC STRATIGRAPHIC UNITS OF THE CENTRAL FLORIDA AREA		
AGE	STRATIGRAPHIC UNIT	LITHOLOGY
Pliocene and Pleistocene	Undifferentiated sand and clay	Interbedded sand and clay
Upper Miocene (possibly) Pliocene	Alachua Formation	Mix of sands, clayey sands and sandy clays
Miocene	Hawthorne Formation	Phosphatic sands, clay and dolostone.
Upper Eocene to Lower Oligocene	Ocala Group (Suwannee Limestone)	White, fossiliferous calcarenitic limestone to brown dolostone.
Mid-Eocene	Avon Park Formation	Hard to Soft, Brown to tan, Recrystallized dolostone, frequently containing blebs or stringers of peat.
Modified From: Johnson 1989		

### 3.3.2 Soils

The soils of the Passage Key site are composed mainly of sand and sandy material. The soils are of two basic types. The first type is beach sand. This soil is composed of slightly alkaline sand and shell fragments along the Gulf of Mexico shoreline. The majority of the beach deposits are under water during high tides.

The second soil type is very similar. It typically has a surface layer that is 7 inches thick. It is composed of fine sand and about 10 percent sand-sized shell fragments.

There is little or no potential for frost development in the soils of the Passage Key site.

### **3.4 HYDROLOGY**

#### **3.4.1 Surface Water**

The Passage Key site is located on Passage Key Island, Florida. The Island is at the western edge of Tampa Bay at the Gulf of Mexico. The Passage Key Island is about 10 miles north of Anna Maria Island in Manatee County, Florida. This area is within the Gulf-Atlantic Coastal Flats of the Atlantic Division of the Southeast United States. The site is part of the Humid Region of the United States, which is vulnerable chiefly to short droughts. Prolonged droughts occur rarely in humid regions, but they reduce the normal ground and surface-water supplies.

The soil at the Passage Key site is warm and wet with a soil temperature higher than about 47 degrees. Wet soils are seasonally or permanently saturated with water. The United States Geological Survey (USGS) estimates the average annual runoff for this region to be about 10 inches. The terrain of Passage Key Island is flat and marshy. The elevation is only at about 5 feet (above sea level) or under. There is no frost penetration of significance on Passage Key Island.

The shoreline along western Florida at the Tampa Bay region consists of sandy beaches. The depth of the sea at this area is about 20 fathoms, or about 120 feet. The western shoreline of Florida has a mixed tide, which consists of two unequal high waters and/or two unequal low waters each tidal day. In the Gulf of Mexico, the spring tide usually ranges between 1 and 2 feet.

The surface currents in the Gulf of Mexico at the Passage Key site flow in a northwestern direction with a mean speed of about 0.9 mph. The primary type of sediment along the western shoreline of Florida consists of sand. In shallow waters the dominant minerals are quartz and feldspar, concentrations of heavy minerals or shell sands. In deeper water are foraminiferal remains. The information for this data came from charts, maps and other data furnished by the U.S. Naval Oceanographic Office.

Flooding may result from localized heavy rainfall and from hurricane conditions that remain after its track across the width of Florida.

The National Ocean Service of the National Oceanic Atmospheric Administration maintains a tidal station in Tampa Bay, at Port Manatee. The following table of tidal datum elevations are from this station. The elevations of tidal datums referred to mean lower low water (MLLW) are as follows:

Highest Observed Water Level (01/03/1999)	=	1.322 Meters
Mean Higher High Water (MHHW)	=	0.658 Meters
Mean High Water (MHW)	=	0.575 Meters
North American Vertical Datum-1988 (NAVD)	=	0.530 Meters
Mean Sea Level (MSL)	=	0.350 Meters
Mean Tide Level (MTL)	=	0.341 Meters
Mean Low Water (MLW)	=	0.107 Meters
Mean Lower Low Water (MLLW)	=	0.000 Meters
Lowest Observed Water Level (01/19/1977)	=	-0.462 Meters

### 3.4.2 Ground Water

The Floridan aquifer occurs within the study area. The Floridan aquifer is the principal aquifer supplying most of the water used in the region. In the study area, it is represented by limestones and dolomites of the Upper Floridan aquifer which includes the Avon Park Limestone, Ocala Group limestones, (including the Suwannee Limestone).

The top of the Floridan aquifer is defined as the first consistent limestone below which no clay confining beds occur. The configuration of the top of the aquifer is highly variable due to erosion and dissolution in the limestones that form its upper surface. The elevation of the top of the aquifer within the site ranges from 300-450 feet below sea level.

The regional direction of ground-water movement in the Floridan Aquifer is from east to west. Recharge of the Floridan aquifer occurs from the overlying water-table aquifer in areas where it is in direct contact with the Floridan or through confining beds between the Floridan and the water-table aquifer. Recharge can occur where the limestone is exposed at the surface or overlain by a thin veneer of sand, and where there are lakes, sinks and rivers as in this location.

## 3.5 ECOLOGY

The information provided for this site has been compiled from the U.S. Fish and Wildlife Service, and the Florida Fish and Wildlife Conservation Commission.

The U.S. Fish and Wildlife Service have indicated that the following Federally listed threatened or endangered species, or those proposed to be listed as such may occur on or near Passage Key Air-to-Ground Range: West Indian (Florida) Manatee, (*Trichechus manatus latirostris*), endangered; Audubon's Crested Caracara, (*Polyborus plancu audubonii*), threatened; Bald Eagle, (*Haliaeetus leucocephalus*), threatened; Piping Plover, (*Charadrius melodus*), threatened; Florida Scrub-jay, (*Aphelocoma coerulescens*),

threatened; Wood Stork, (*Mycteria americana*), endangered; Red-cockaded Woodpecker, (*Picoides borealis*), endangered; Gulf Sturgeon, (*Acipenser oxyrinchus desotoi*), threatened; Eastern Indigo Snake, (*Dymarchon corais couperi*), threatened; Green Sea Turtle, (*Chelonia mydas*), endangered; Leatherback Sea Turtle, (*Dermochelys coriacea*), endangered; Loggerhead Sea Turtle, (*Caretta caretta*), threatened.

The Fish and Wildlife Service did not provide information on species proposed to be listed as endangered or threatened, or candidate species to be listed as such on this site.

The Florida Fish and Wildlife Conservation Commission did not submit any information on state endangered or threatened species for this site.

No additional information on the occurrence of rare or endangered species or natural communities is known at this time. This does not mean that other State or Federally listed species may not be present within the areas of interest. An on site inspection by appropriate state and federal personnel may be necessary to verify the presence, absence or location of listed species, or natural communities if remedial action is recommended as part of the final ASR.

### 3.6 DEMOGRAPHICS

#### 3.6.1 Centers of Activity

The Passage Key Air to-Ground Gunnery Range site is located near the city of Bradenton in Manatee County, Florida.

#### 3.6.2 Population Density

CITY/COUNTY	AREA (sq.mi)	POPULATION	POP.DENSITY
Manatee	741	211,707	285.7
Bradenton	11.4	43,779	3,840

#### 3.6.3 Business and Industry Profile

The number of business establishments in Manatee County can be broken down by type as follows: manufacturing 5.4%; trade 29.4%; services and financial 48.5%; and other 15.9%. Of the people in the county employed by businesses, approximately 0.8% are unclassified. Foregoing percentages are at mid-March 1997.

#### 3.6.4 Types of Housing

Housing in Bradenton is composed of both single family and multi-family dwellings. The median value of 6,485 specified owner-occupied housing units is \$71,700.

3.6.5 New Development in the Area

There is no new development on the island.

3.6.6 Typical Cross Section of the Population

The Bradenton population under the age of 18 is 20.1% and over the age of 65 is 28.5%.  
Passage Key island is uninhabited.

## 4.0 SITE HISTORY

### 4.1 HISTORICAL SITE SUMMARY

The citations marked in parenthesis in this Historical Site Summary refer to the source documents that were used. Copies of cited source documents and other reference documents are included in Appendix E. These are cross-referenced to the sources, which are listed in the Record Review Spreadsheet of this report (cited documents appear in bold), which are also included in Appendix E.

#### 4.1.1 General Site History

Passage Key Air-to-Ground Gunnery Range is a small island at the mouth of Tampa Bay, about 10 miles northwest of Bradenton, Manatee County, Florida. On 22 February 1943, Headquarters 3<sup>rd</sup> Fighter Command requested acquisition of the 36.37 acre sand bar in the bay for use as a ground strafing range for their Replacement Training Unit program (NPRC-012501-008; CP-21401-008). Prior to that the 337<sup>th</sup> Fighter Command had used it as a dive bombing range upon verbal instructions of the 3<sup>rd</sup> Fighter Command (NPRC-012501-006). Their use of the bombing range was discontinued on 18 February 1943, until official action could be taken to have Passage Key designated a bombing and gunnery range (NPRC-012501-007). On 31 August 1943, the land was acquired by permit from the Department of Interior. Sarasota Air Base was assigned the responsibility for constructing the bombing and strafing targets, maintenance, and operations (NPRC-012501-009; CP-021401-008).

In accordance with the Use Permit for Passage Key Bombing and Gunnery Range, use would be discontinued for three months each summer during the wild fowl nesting season (CP-021401-007).

The 3<sup>rd</sup> Air Force continued to use Passage Key as a bombing range for practice skip bombing, dive bombing and strafing until 15 October 1945. At that time they requested the Division Engineer, South Atlantic Division take action to relieve them of their responsibility for the site (CP-021401-008).

On 22 March 1946, the War Department relinquished the permit for Passage Key and the site returned to the Department of Interior. The entire island is managed by the U.S. Fish and Wildlife Service as a national wildlife refuge for migratory birds.

#### 4.1.2 Summary of Ordnance and Explosives Activities

##### 4.1.2.1 Ranges

Passage Key Air-to-Ground Gunnery Range was located at 82°44'50" longitude, 27°33'10" latitude on a sand bar in Tampa Bay. There were two banks of targets facing north and south, 500 feet apart, each having 6 targets (NPRC-040401-003).

During the site visit, Mr. Rees of the Fish and Wildlife Service pointed out a rectangular structure submerged in approximately six feet sea water (FSW). The structure appeared to have been a concrete foundation. Mr. Rees indicated that there were several other similar structures in this area, but because of littoral drift of the sand bottom they sometime are not visible. This structure is thought to possibly be the remains of one of the former gunnery targets from World War II. These are located several hundred feet west of the current island, which is explained as the island has shifted with the gulf currents.

#### 4.1.2.2 Ordnance Findings

Since 1998, there have been four ordnance items found on or near Passage Key. The first was on 5 October 1998, when an old style 100-pound General Purpose bomb was identified by the U.S. Navy EOD Unit, Mayport. This bomb was found in ten feet seawater (FSW) 150 yards west of the center of Passage Key. The Navy EOD Unit destroyed it in place by underwater detonation. A copy of this report is in Appendix D.

On 25 November 1998, a Tampa Bay Pilot observed an object resembling a bomb on the north tip of Passage Key Wildlife Refuge. The Hillsborough County Bomb Unit and the U.S. Air Force EOD Unit were called and responded. On the way to the scene, via helicopter, they spotted a third projectile in approximately three FSW about 30 yards west of the first sighting. They identified the ordnance as a military 100-pound photoflash bomb used in WWII era. The two units detonated the ordnance located on the refuge, but were unable to destroy the one located in the water. On 1 December 1998, the U.S. Navy EOD Unit, Mayport, destroyed the third projectile by underwater detonation. Upon completion of the demolition operations a cursory search of the surrounding area was made. The EOD team found a fuzed projectile in the same area and also destroyed it by detonation. A copy of this report is in Appendix D.

#### 4.1.3 Summary of Chemical Warfare Activities

A letter, dated 5 April 1945, from the Headquarters of Sarasota Army Air Base to Drew Field requests use of a range suitable for chemical spray missions since Passage Key was closed to activities between 15 April and July 1945 (NPRC-040401-001). The letter implies that Passage Key was used for chemical spray missions; however, no documentation obtained actually stated it was used as a chemical spray range.

#### 4.1.4 Summary of Radiological Activities

No documentation found during the archives research indicates any radiological activities occurred at Passage Key, but that it was used only as a bombing and gunnery range and possibly for chemical spray missions.

#### 4.1.5 Certificates Of Clearance

A certificate, dated 24 October 1945, from Headquarters, Sarasota AAF stated a thorough search has been made, all duds, unexploded projectiles and bombs have been disposed of and decontamination has been deemed unnecessary (NPRC-040401-002).

## 4.2 REVIEW OF HISTORICAL RECORDS

This Archives Search Report (ASR) compiles information obtained through historical research at various archives, records holding facilities, and offices; interviews with individuals associated with the site or its operations; and personal visits to the site. All efforts were directed towards determining types of munitions used at the site, possible disposal areas, and training areas. Information obtained during this process was used in developing recommendations for further actions at the site. Concentration in three areas directed the research for this report:

- Locating documentation concerning the military use of the site
- Compiling the types, quantities and probable locations of OE and/or CWM used by the military
- Collecting real estate information

The research team used finding aids and records managers to assist in locating documents relevant to the research topic.

Researchers visited or contacted the locations listed in the subparagraphs of this section for pertinent records. Appendix E contains a detailed listing of all record groups, accessions, entries, boxes, etc that were reviewed at each location. Appendix E also contains copies of all documents obtained during this research grouped by the location from which they were obtained. Documents that are cited in Section 4.0 General History as in-text references are marked in bold. An alphanumeric designator identifies each document copied to compile this report. The designator is composed of the abbreviation of the repository or office where document was found; the date the document was copied; and a number assigned to that document on that date.

Example CP-050601-001: CP is for College Park; 05 for the month (May), 06 the day, 01 the year 2001; and 001 is the document number for that date.

Several sites could be researched concurrently; so gaps can occur in the numbering sequence.

Abbreviations used in this report and their corresponding locations are listed below.

CP	National Archives College Park, Maryland
MAX	U.S. Air Force Historical Agency, Maxwell AFB, Alabama
NPRC	National Personnel Record Center, St. Louis Missouri

SAJ U.S. Army Corps of Engineers, Jacksonville, Florida  
MVR U.S. Army Corps of Engineers, Rock Island, Illinois

**4.2.1 NATIONAL ARCHIVES I – WASHINGTON DC**  
**700 PENNSYLVANIA AVE., NW**  
**WASHINGTON, D.C. 20408-0001**  
**(202) 501-5400**

This repository did not contain any useful information on the site.

**4.2.2 NATIONAL ARCHIVES II – COLLEGE PARK**  
**8601 ADELPHI ROAD**  
**COLLEGE PARK, MD 20740-6001**  
**(301) 713-6800**

The following record groups were reviewed at this repository.

RG 18 Records of the Army Air Force Army Air Force  
RG 71 Records of the Bureaus of Yards and Docks  
RG 72 Records of Bureau of Aeronautics  
RG 77 Records of the Office of the Chief of the of Engineers  
RG 92 Records of the Office of the Quartermaster General  
RG 159 Records of the Office of the Inspector General  
RG 165 Records of the War Department General and Special Staffs  
RG 175 Records of the Chemical Warfare Service  
RG 270 Records of the War Assets Administration  
RG 291 Records of the Property Management and Disposal Service (GSA)  
RG 319 Records of the Army Staff  
RG 337 Records of Headquarters Army Ground Forces  
RG 338 Records of U.S. Army Commands, 1942 –  
RG 341 Records of the Headquarters U.S. Air Force  
RG 342 Records of U.S. Air Force Commands, Activities, and Organizations

**4.2.3 WASHINGTON NATIONAL RECORD CENTER**  
**4205 SUTLAND ROAD**  
**SUTLAND, MD 20409-0002**  
**(301) 457-7000**

The archivist was consulted and it was discovered the applicable records had been shipped to the National Archives.

**4.2.4 U. S. ARMY CHEMICAL AND BIOLOGICAL DEFENSE AGENCY  
HISTORICAL DIVISION  
BUILDING E5183  
ABERDEEN PROVING GROUND, MD 21010-5423  
(410) 671-4430**

No pertinent information was found at this repository.

**4.2.5 NATIONAL PERSONNEL RECORD CENTER  
MILITARY PERSONNEL RECORDS  
9700 PAGE AVENUE  
ST. LOUIS, MO 63132-5100  
(314) 538-4085**

A list of all accessions reviewed and documents copied at this repository are included in Appendix E.

**4.2.6 U.S. AIR FORCE HISTORICAL RESEARCH AGENCY  
600 CHENNAULT CIRCLE  
MAXWELL AIR FORCE BASE  
MONTGOMERY, AL 36112-6424  
POC: MR. ARCHIE DEFANTE  
(334) 953-2302**

A list of all accessions reviewed at this repository are included in Appendix E.

**4.2.7 U.S. ARMY CENTER OF MILITARY HISTORY  
1099 14<sup>TH</sup> STREET, NW  
WASHINGTON, DC 2005-3402  
(202) 761-5416**

No documentation was retrieved from this repository concerning Passage Key activities.

**4.2.8 U.S. ARMY CORPS OF ENGINEERS  
OFFICE OF HISTORY  
7701 TELEGRAPH ROAD  
ALEXANDRIA, VA 22310-3865  
(202) 355-3558**

The archivists were consulted and no additional information was obtained.

**4.2.9 U.S. ARMY MILITARY HISTORY INSTITUTE  
CARLISLE BARRACKS  
CARLISLE, PA 17013-5008  
(717) 245-3601**

The finding aids and archivists for this repository were consulted and no useful information was obtained for our ASR.

**4.2.10 U.S. ARMY CHEMICAL AND BIOLOGICAL DEFENSE AGENCY  
HISTORICAL DIVISION  
BUILDING E5183  
ABERDEEN PROVING GROUND, MD 21010-5423  
(410) 671-4430**

No pertinent information was found at this repository.

**4.2.11 UNIVERSITY OF SOUTH FLORIDA  
TAMPA CAMPUS LIBRARY-SPECIAL COLLECTIONS  
4202 E. FOWLER AVENUE  
TAMPA, FLORIDA 33620-5400**

The university library had no information concerning Passage Key ATG Gunnery Range.

**4.2.12 MANATEE COUNTY PUBLIC LIBRARY LIBRARY  
1301 BARCARROTA BLVD.  
BRADENTON, FLORIDA  
(941) 748-5555**

The library had no pertinent information on Passage Key ATG Gunnery Range.

**4.2.13 SARASOTA COUNTY HISTORICAL RESOURCES CENTER  
1001 BLVD OF THE ARTS  
SARASOTA, FLORIDA 34236-4899**

The library had no pertinent information on Passage Key.

### **4.3 SUMMARY OF INTERVIEWS**

No interviews, telephonically or in person, were conducted on the Passage Key Air-to-Ground Gunnery Range Archives Search Report.

#### 4.4 AIR PHOTO INTERPRETATION AND MAP ANALYSIS

##### 4.4.1 Interpretation of Aerial Photography

Photo analysis and land use interpretation were done using the following listed photography:

<u>PHOTO DATE</u>	<u>SCALE (1:X)</u>	<u>SOURCE</u>	<u>RECORD GROUP</u>	<u>FLIGHT ID</u>
APR 1940	20K	ARCHIVES II	145	CDO
APR 1944	11K	ARCHIVES II	373	16PS4MA
MAR 1946	10K	ARCHIVES II	373	13
APR 1946	5.5K	ARCHIVES II	373	13
MAY 1951	20K	ARCHIVES II	145	CDO
DEC 1957	40K	ASCS		CDO
MAR 1962	24K	EROS		VAJE
NOV 1969	24K	EROS		VCGG
JAN 1980	40K	ASCS		12081
JAN 1995	40K	EROS		6992
JAN 1999	40K	EROS		11054

Photography listed above covering the Passage Key Air-to-Ground Gunnery Range site was examined. The study area is shown and described at Plates 6 and 7.

##### 1940 Photography – 5-34

An island is visible. 1/3 of island is vegetated, mostly near the center. Shallow water around island extends out into bay. No evidence of military use is visible on imagery.

##### 1944 Photography – Spot Shot #4 (mono)

Vegetation covers most of the island. Presence of craters cannot be determined without stereo imagery.

##### 1946 Photography – 2

The island is still mostly covered with vegetation. Thirteen possible craters are visible in a sandy area near the southwest end of the island. Possible craters appear to be 15-20' in diameter. No other cratered areas are visible.

##### 1946 Photography (5.5K) – 287

Vegetation still covers a majority of the island. A small, 8' square object is visible on the northeastern end of the island. Details concerning the object are not visible at the resolution of the imagery. The object appears to sit in one of the small pools formed on the island. A dark-toned "L-" shaped object on the northwestern end of the island appears to be man made. Use for this object cannot be determined from the imagery. Craters visible on earlier time stamp now appear to be roughly circular areas of vegetation.

1951 Photography – 3H-163

Vegetation covers roughly 2/3 of the island, which has changed shape again. None of the possibly man-made features discussed on earlier time stamps are visible on this imagery.

1957 Photography - 1V-70

An island composed of a light-toned sand is visible. Not many other features are visible. A small dark tone near the center of the island may be vegetation. No features related to military use are visible.

1962 Photography – 1-64

The water level is higher than during the 1957 time stamp. Much of the island is underwater, giving it a different shape than on earlier imagery. A small object, possibly a boat, is visible near the center of the island.

1969 Photography – 3-194

The island appears smaller than before. Vigorous vegetation is visible on the northern end of the island. Dark tones in the shallows northwest of the island may be vegetation.

1980 Photography – 178-36

The water level is lower than in the past. While the island has changed shape again, no features related to military use have been uncovered. The island shows less vegetation than before.

1995 Photography – 047

The increased vegetation stands out well on this color infrared (CIR) image. Shallows along the island are also well defined. Underwater dark tones to the east of the island are probably vegetation. Northwest vegetation, noted on the 1969 time stamp is still visible on it's own little island. The island is only 100' in length.

1999 Photography – 55

The island changes again. CIR imagery shows less vegetation than in 1995. The island also has less surface area than the 1995 time stamp, due to a higher water level. Vegetation now appears on the northern end of the exposed portion.

<u>Plate</u>	<u>Year of Photo</u>	<u>Title</u>
3	1943	1943 Aerial Photograph
4	1999	1999 CIR Photograph

The site is a small island off the coast of Florida, in between the Gulf of Mexico and Tampa Bay. Relief is low and this shallow tidal flat environment. Relief varies less than 10'. The site is located on the northern Florida Peninsula. Vegetation on the site is sparse. Access to the site is by boat. The Town of Bradenton is located approximately 10-miles southeast of the site, outside of photo coverage for this project.

#### 4.4.2 Map Analysis

The site was analyzed using the maps discussed in Appendix K, plus:

USGS 7.5-minute quadrangle map:

ANNA MARIA, FLA (1964); photorevised 1981

Review of the above-cited map sheet confirms general descriptions found in paragraph 4.4.1 above. The maps were also useful in locating boundaries and identifying features on the photography.

## **5.0 REAL ESTATE**

### **5.1 CONFIRMED DOD OWNERSHIP**

The U.S. Government obtained Passage Key by permit from the Department of Interior on 31 August 1943. The 36.37 acres sand bar was located in Tampa Bay, Florida at latitude 27°32' longitude 82°44'. Report Plate No. 3, shows a change in the island's location between 1981 and 2001. This phenomenon is due to littoral drifting of the sand bottom of the Gulf of Mexico. By being located at the mouth of Tampa Bay, shifting may be increased by the influx of the Hillsborough River into the Bay and causing additional pressures at the area of the gulf where Passage Key Island is situated. Hurricane and gulf winds to this unprotected area may also increase this shifting appearance.

Headquarters Third Air Force declared it excess to their needs as of 15 October 1945 and on 22 March 1946, the War Department relinquished the permit and returned the island to the Department of Interior (CP-010801-064).

### **5.2 POTENTIAL DOD OWNERSHIP**

No Information indicating DOD ownership of any lands other than those mentioned above was uncovered during the archive search.

### **5.3 SIGNIFICANT PAST OWNERSHIP OTHER THAN DOD**

There is nothing in the records to indicate that there were any historically significant past ownerships, other than DOD, with respect to possible OEW contamination.

### **5.2 CURRENT OWNERSHIP**

Currently the island is owned by the Department of Interior. The U.S. Fish and Wildlife Service maintain the site as a national wildlife refuge for migratory birds. To prevent disturbance of the birds nesting and roosting, public access is not allowed on the island.

## **6.0 SITE INSPECTION**

### **6.1 GENERAL PROCEDURES AND SCOPE**

#### 6.1.1 General Information

Personnel from the St. Louis District, Corps of Engineers, listed below, traveled to the Tampa, Florida area to inspect the subject site as part of the DERP-FUDS archives search report process.

Tom Freeman, Project Manager  
Randy Fraser, Site Safety Specialist  
Nancy Gerth, Historian

The site inspection team met with US Department of Interior (DOI) personnel, Mr. Ted Ondler (Deputy Project Leader-Chassahowitzka NWR Complex, 352/563-2088) and Mr. Steve Rees (Federal Officer-Chassahowitzka NWR, pager 800/730-1910). DOI personnel had discovered ordnance items earlier this year along the western shore of Passage Key. Passage Key is a small sand island at the mouth of Tampa Bay with no structures on it. The island is all sand with a small patch of grass near the center. The entire site is a bird sanctuary that is used as a hatchery and roost. Public access is not allowed on the island because of the birds. Historical documents revealed that during World War II the military set up a series of bombing and strafing targets on the island.

#### 6.1.2 Site Inspection

The purpose of the site inspection was to try to locate the former targets and observe the site where the ordnance was found this year. After the appropriate site safety briefing, the DOI personnel transported the inspection team to the island by boat. Mr. Rees, who has responsibility for overseeing security on the island, had discovered the first ordnance item this year. He indicated that military explosives ordnance disposal (EOD) personnel from MacDill AFB identified the item as a photoflash bomb. The item was removed and destroyed. Subsequently another photoflash bomb was found and Navy explosive ordnance disposal personnel from Mayport destroyed that one. Mr. Rees will provide copies of the EOD reports. There have been no reports of any other types of ordnance found on this island.

After arriving at the island, Mr. Freeman was put ashore to inspect the island and obtain GPS coordinates around the perimeter. The number of people on the island was kept at a minimum to avoid disturbing the birds. Mr. Freeman traversed the perimeter and made one incursion into the central portion avoiding the nest areas. No ordnance items of any kind were observed during this visit. After the on-site visit the entire group continue around the key via boat. At one point off the western shore Mr. Rees pointed out a rectangular (almost square) structure submerged in approximately six feet of water. The structure appeared to be a concrete foundation. Mr. Rees indicated there were several

other similar structures is this area, but because of the littoral drift of the sand bottom they can become obscured at times. This structure was possibly the remains of one of the former gunnery targets from World War II. These structures are located several hundred feet west of the current island. This phenomenon is consistent with conditions that have occurred at Egmont Key, located immediately to the north of Passage Key. Substantial concrete gun emplacements constructed on the western shore of Egmont Key for the protection of Tampa Bay are now located offshore.

The entire group left Passage Key and returned to the mainland. During the site inspection no ordnance items were observed.

Photographs taken during the site inspection are included in Appendix I. These photographs depict the current relatively barren condition of the island and proximity to Anna Maria Island to the south.

## 7.0 EVALUATION OF ORDNANCE POTENTIAL

### 7.1 CONVENTIONAL ORDNANCE CONTAMINATION

February 1943, Headquarters 3<sup>rd</sup> Fighter Command requested acquisition of the 36.37 acre sand bar in the bay for use as a ground strafing range for their Replacement Training Unit program. Prior to that the 337<sup>th</sup> Fighter Command had used it as a dive-bombing range. On 31 August 1943, the land was acquired by permit from the Department of Interior and Sarasota Air Base was assigned the responsibility for constructing the bombing and strafing targets, maintenance, and operations. There were two banks of targets facing north and south, 500 feet apart, each having 6 targets. The 3<sup>rd</sup> Air Force continued to use Passage Key as a bombing range for practice skip bombing, dive-bombing and strafing until 15 October 1945. On 22 March 1946, the War Department relinquished the permit for Passage Key and the site returned to the Department of Interior.

Historical documents locate Passage Key Air to Ground Gunnery Range on a sand bar (N 27° 33' 10", W 82° 44' 50") in Tampa Bay. Current location of the sand bar is N 27° 33' 15", W 82° 44' 28" approximately 1800 feet from the original position.

A letter dated 5 April 1945, from the Headquarters of Sarasota Army Air Base to Drew Field requests use of a range suitable for chemical spray missions since Passage Key was closed to activities between 15 April and July 1945. The letter implies that Passage Key was used for chemical spray missions; however, no documentation obtained actually stated it was used as a chemical spray range.

No ordnance or explosives were found during a site investigation conducted by personnel from the USACE, CEMVS-ED-P. During the visit the team was shown a rectangular (almost square) structure submerged in approximately six feet of water (N27° 33' 11.20", W82° 44' 38"). The structure appeared to be a concrete foundation. Mr. Rees (U.S. Fish & Wildlife Service-USFWS) indicated there were several other similar structures in this area, but because of the littoral drift of the sand bottom they can become obscured at times. This structure was thought to possibly be the remains of one of the former gunnery targets from World War II. These structures are located several hundred feet west of the current island. This phenomenon is consistent with conditions that have occurred at Egmont Key, located immediately to the north of Passage Key. Substantial concrete gun emplacements constructed on the western shore of Egmont Key for the protection of Tampa Bay are now located offshore.

A certificate dated 24 October 1945, from Headquarters Sarasota AAF stated a thorough search has been made, all duds, unexploded projectiles and bombs have been disposed of and decontamination has been deemed unnecessary.

On October 4, 1998, Navy Explosive Ordnance Disposal (EOD) personnel from Mayport, Florida destroyed a 100-pound old style (AN-M30) General Purpose Bomb, found in 10 feet of water, 150-yards west of the center of Passage Key.

Between November 25 and December 2, 1998 three bombs were found on or near the island. Explosive Ordnance Disposal (EOD) personnel from the Air Force destroyed a 100-pound (AN-M46) Photo Flash Bomb on the north tip of Passage Key. Further inspection conducted by the team resulted in locating a second munition submerged approximately 30 yards west of the island. Navy EOD personnel from Mayport were dispatched. Navy personnel destroyed this second bomb by detonation. An additional search resulted in a third bomb being located. This one also submerged and was destroyed in place by detonation. The first bomb was identified as a 100-pound Photoflash Bomb. The other two were identified as 100-pound General Purpose (GP) Bombs.

The team was shown a rectangular (almost square) structure submerged in approximately six feet of water (N27° 33' 11.20", W82° 44' 38"). The structure appeared to be a concrete foundation. Mr. Rees (U.S. Fish & Wildlife Service) indicated there were several other similar structures in this area, but because of the littoral drift of the sand bottom they can become obscured at times. This structure was thought to possibly be the remains of one of the former gunnery targets from World War II. These structures are located several hundred feet west of the current island. This phenomenon is consistent with conditions that have occurred at Egmont Key, located immediately to the north of Passage Key. Substantial concrete gun emplacements constructed on the western shore of Egmont Key for the protection of Tampa Bay are now located offshore.

## **7.2 CHEMICAL WARFARE MATERIAL CONTAMINATION**

Based upon the investigation of historical records reviewed and the results of the site survey, there is no evidence to the use of chemical warfare materials on this site.

## **8.0 TECHNICAL DATA OF ORDNANCE AND EXPLOSIVES**

### **8.1 DESCRIPTION OF ORDNANCE**

The following list includes bombs recently found on the site in addition to typical munitions used during the 1940s, and may not be all-inclusive. Appendix C-1 contains the technical details of munitions identified.

AN-M46, 100-pound Photoflash Bomb  
AN-M30, 100-pound, General Purpose Bomb  
M38A2, 100-pound Practice Bomb  
AN-Mk 5 Mod 1, AN-Mk 23, AN-Mk 43, Miniature Practice Bombs  
2.25" Sub Caliber Aircraft Rocket (SCAR)

### **8.2 REFERENCES**

OP 1280, *Aircraft Bombs*, February 1945  
TM 9-1325-200, *Bombs and Bomb Components*, April 1966  
NAVSEA OP 1664, Vol 1, *U.S. Explosives Ordnance*, May 1947  
NAVSEA OP 1664, Vol 2, *U.S. Explosives Ordnance*, February 1954  
TM 9-1904, *Ammunition Inspection Guide*, March 1944  
*Complete Round Chart #598I*, October 1944  
TM 9-1950, *Rockets*, July 1945  
NAVSEA OP 1415, *Rocket Assemblies*, May 1955

## **9.0 EVALUATION OF OTHER SITE INFORMATION**

No information regarding any areas of potential concern was found during the archives process.