



# 2004 Navy and Marine Corps IR Conference



## *East and West Vieques Environmental and Munitions Response Program Update*

*Presented By:  
Vieques Project Coordinator and Remedial  
Project Manager  
Atlantic Division. NAVFAC*



# Presentation Outline



- ◆ Project Background
- ◆ Update of East Vieques IR and MEC Sites/Program
- ◆ Results of Preliminary Range Assessment
- ◆ Community Relations Programs
- ◆ Project Challenges
- ◆ Preliminary Strategies For Cleanup Program (East)
- ◆ Update of West Vieques IR and MEC Sites/Program



# Site Location Map





# Division of Former Navy Property (East and West Vieques)





# East Vieques Background

- ◆ **Former Naval Training Facilities (VNTR)** (also known as the Atlantic Fleet Weapons Training Facility)
- ◆ **Facility used for combat readiness training for 60 yrs**
- ◆ **VNTR Mission:**
  - 📄 Ground warfare and amphibious training for marines
  - 📄 Artillery Gunfire Training
  - 📄 Small Arms Training
  - 📄 Naval Gunfire Support Training,
  - 📄 Air to Ground training.
- ◆ **1999 Bombing accident** at Operations Tower killed civilian security guard led to negative press, local unrest/disobedience, political interest, adverse environmental and health claims and ultimately the closure of the facility



# IR Program Status – Eastern Vieques



- ◆ Vieques Naval Training Range (East Vieques) transferred to DoI May 2003 (Public Law 107-107)
  - ☐ Designated as U.S. National Wildlife Refuge System
  - ☐ Live Impact Area designated as Wilderness Area
- ◆ Regulatory Framework: EPA Region II RCRA Consent Order for 12 IR Sites and OB/OD pits (Jan 00&03)
  - ☐ Final RFI PHASE I Work Plans FY 03
  - ☐ Final Baseline Groundwater Plan FY 03
  - ☐ Community Relations Plan FY 03
  - ☐ Current Conditions Report FY 03



# IR Program Status – Eastern Vieques



- ◆ Memorandum of Agreement entered between Navy and DOI in Spring 2003, addresses
  - ☐ Security Provisions
  - ☐ Engineering Controls
  - ☐ Navy IR and MEC responsibilities
  - ☐ Temporary Land use restrictions
  - ☐ Establishment of Project Team
- ◆ EBS completed in Spring 03 prior to Transfer
- ◆ Governor of P.R. proposed NPL Listing of East and West Vieques and Underwater Areas in FY 03 (Includes Culebra FUDS Site)
- ◆ Federal Facility Agreement drafted in early FY 04



# IR Program Status – Eastern Vieques



## ◆ Current IR Investigations and Work Underway:

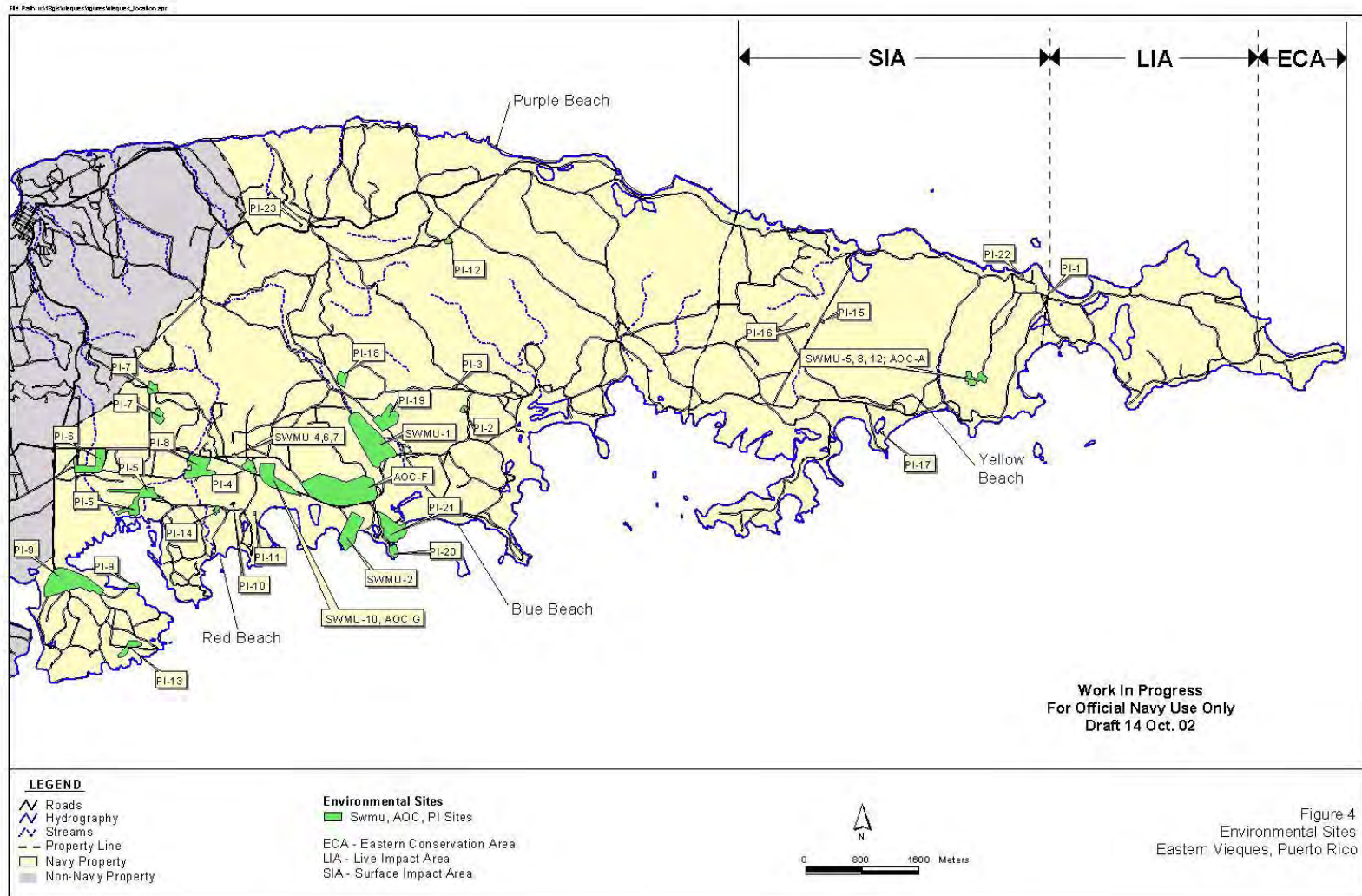
- ☞ Phase I RFI field investigations for 12 IR sites (Jan 04)
- ☞ Western Boundary Perimeter Groundwater Baseline Investigation (Jan 04)
- ☞ Soil and Groundwater Background Investigation Work Plan submitted to EPA Dec 03
- ☞ Work Plan for RCRA Phase II Investigations under development





# IR RCRA Sites, PI's, and PAOC's

## Eastern Vieques Sites





# East Vieques MEC Program

(Starting Point) –FY 03



# Eastern Vieques MEC Program Status



- ◆ Preliminary Range Assessment completed (Spring 03)
- ◆ Red and Blue Beach MEC Assessment of Amphibious Landings and Training (Spring 03)
- ◆ Engineering and Safety controls established (Spring 03)
- ◆ Established MOA Navy and DOI Project Team established and conducting business (June 03 to Current)
- ◆ OB/OD Investigation and Closure Plan submitted to EPA in Dec 03
- ◆ MEC Strategic Management and Prioritization Plan for EMA, SIA, and LIA under development (FY04)
- ◆ Expanded Range Assessment and Site Investigation Work Plan under development (FY04)



# East Vieques MEC Chronology



## ◆ 60 Years of Naval and Marine Training

- 📄 1943 US Acquired land in Vieques
- 📄 1947 Eastern Maneuver Area Established
  - ◆ *heaviest activity from mid 1950s- early 1960s*
  - ◆ *maneuvers reduced in 1974*
- 📄 1964 Gunnery Range established in LIA
- 📄 1973 U.S. Navy terminates use of Culebra which significantly increases use of Vieques
- 📄 1987 Peak use of Naval gunfire in LIA
- 📄 1999 Live Fire Ceases: Inert bombing is initiated
- 📄 2003 Navy Training terminates, facility closes and property transferred



# MEC Assessment at Blue and Red Beach (Geophysical Survey)



17. Geophysical survey along Red Beach with EM-61 magnetometer and DGPS.





# Recovery of Metallic Items (No Evidence of Live Fire Training)



15. Anomaly reacquisition with metal detector.

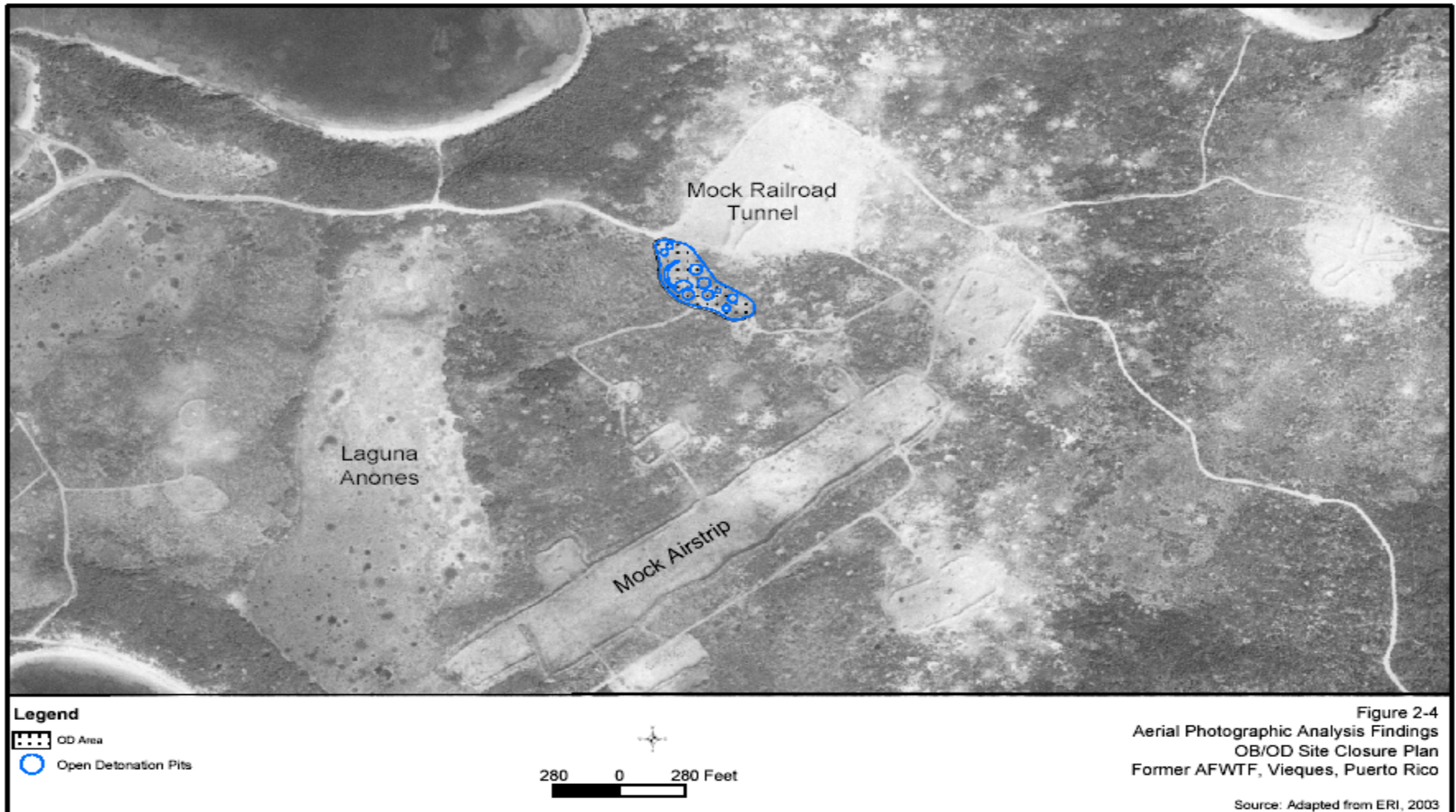


# **LIA Open Burn/Open Detonation**

RCRA Order and Interim Subpart X  
Closure Requirement



# Identification of OB/OD Pit Locations (LIA)



File Path: \\narsproj\project\Environmental\Navy CLEAN II\_Vieques\_PRRAP\WTG\OB\_OD\_Closure.mxd, Date: December 05, 2003, User: SHANEY





# Journey to OB/OD and LIA





# Detonation Of Munitions at the OB/OD Site (LIA)







# East Vieques OB/OD Pits







# OB/OD Pits and Surrounding Ordnance





# **FY 03 Preliminary Range Assessment of East Vieques**

Eastern Maneuvering Area (EMA)

Surface Impact Area (SIA)







Live Impact Area (LIA)

Eastern Conservation Area (ECA)



# **East Vieques Preliminary Range Assessment (PRA)- April 2003**



-  **Conducted PRA Historical Archive Record Search and Limited Field Reconnaissance**
-  **Provided information on training activities, types, quantities and locations (land-based) of munitions and explosives of concern (MEC) at VNTR**
-  **Provided for consolidated knowledge & information base of MEC Activities**
-  **Identified additional Gun Positions & Target Areas In EMA, SIA and LIA for further investigation**
-  **Provided data for preliminary assessment, initial explosives safety risk assessment & preliminary prioritization for future actions**
-  **Provided data and basis for preliminary budgetary funding estimate**





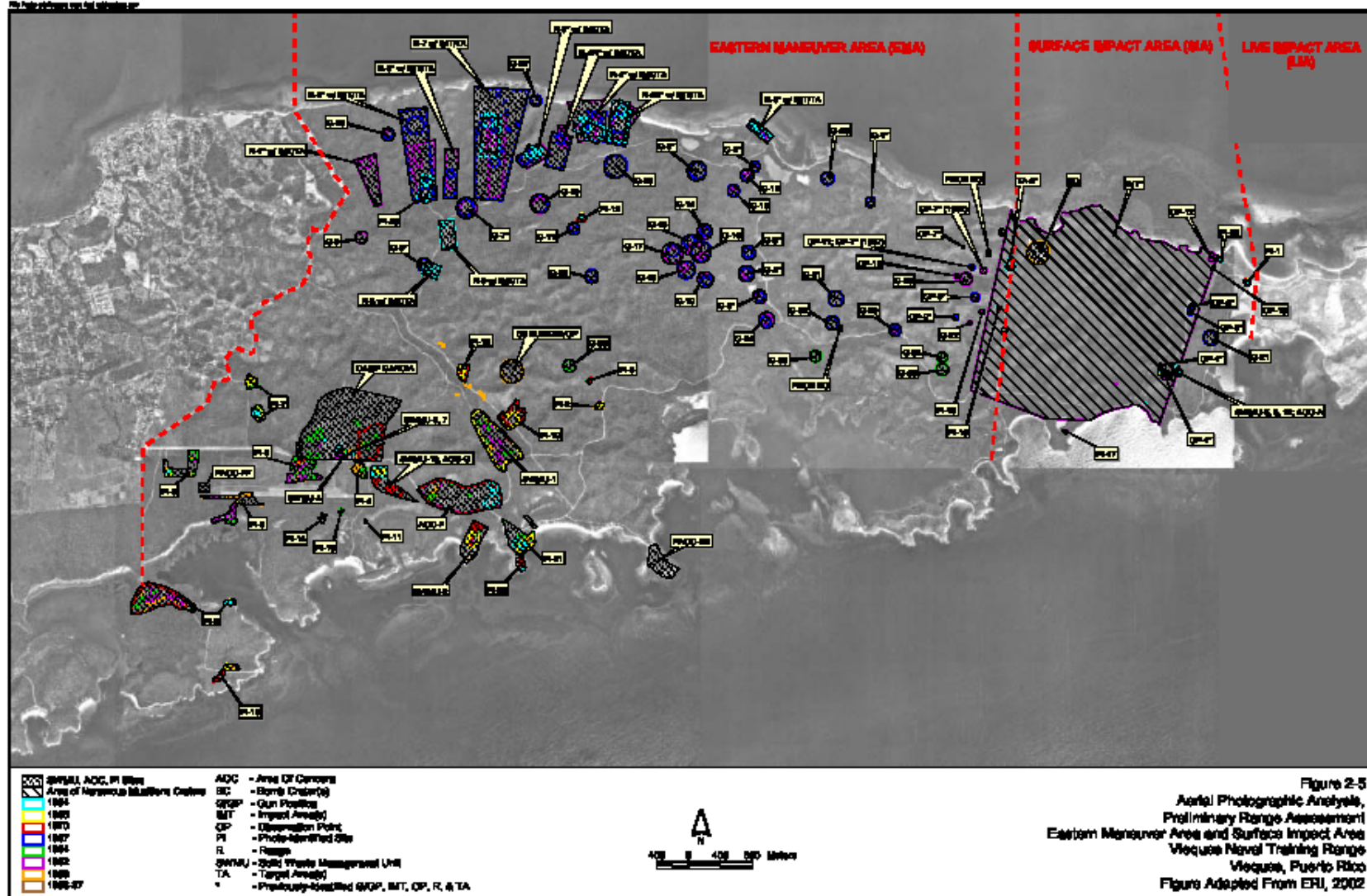
# East Vieques Munitions Sites/Areas



- ◆ Live Impact Area (LIA) & Surface Impact Area (SIA)
  - ☞ LIA = 900 acres
  - ☞ SIA = 2500 acres (Artillery Ranges, Air to Ground Targets)
  - ☞ ECA=200 Acres
  - ☞ Naval Gunfire (8 targets) and Air-to-Ground Impact Areas (13 targets)
  
- ◆ OB/OD Site (13 Pits) in LIA
  
- ◆ Eastern Maneuver Area (EMA)
  - ☞ EMA = 11,000 acres
  - ☞ Artillery Gun Positions (43)
  - ☞ Artillery Targets (9)
  - ☞ Small Arms Ranges (6)
  - ☞ Beach Amphibious Landing Areas



# Additional MEC Sites Identified From







# East Vieques MEC Areas (EMA)



## ◆ Eastern Maneuver Area (EMA)

- Estimated that 5,700 of 11,070 acres likely contaminated with MEC
- Up to 43 gun positions established for large-scale artillery firing into the LIA and SIA.
- Six ranges established since 1966 for practice with small arms fire, grenades, tank artillery, mortar fire, and rocket fire



# East Vieques MEC Areas (LIA & SIA)



## ◆ Live Impact Area (LIA) and Eastern Conservation Area (ECA)

- Entire 1100 acres likely MEC contaminated
- Target Area for air-ground bombing and naval gunfire 1964-1999
- MEC fired includes over **27,000 tons** of: bombs (up to 2000 lbs), cluster bombs, rockets, large projectiles (3"-5")

## ◆ Surface Impact Area (SIA)

- Adjacent to LIA
- Entire 2500 acres likely contaminated with MEC from Marine Artillery and Air to Ground Bombing
- Used as target area 1954-1999 for large-scale marine artillery fired from the EMA and air-to-ground bombing
- MEC present include projectiles (76-175mm, mortars, inert bombs)







# Live Impact Area







# Aerial Photo of Target Locations in Live Impact Area (LIA)



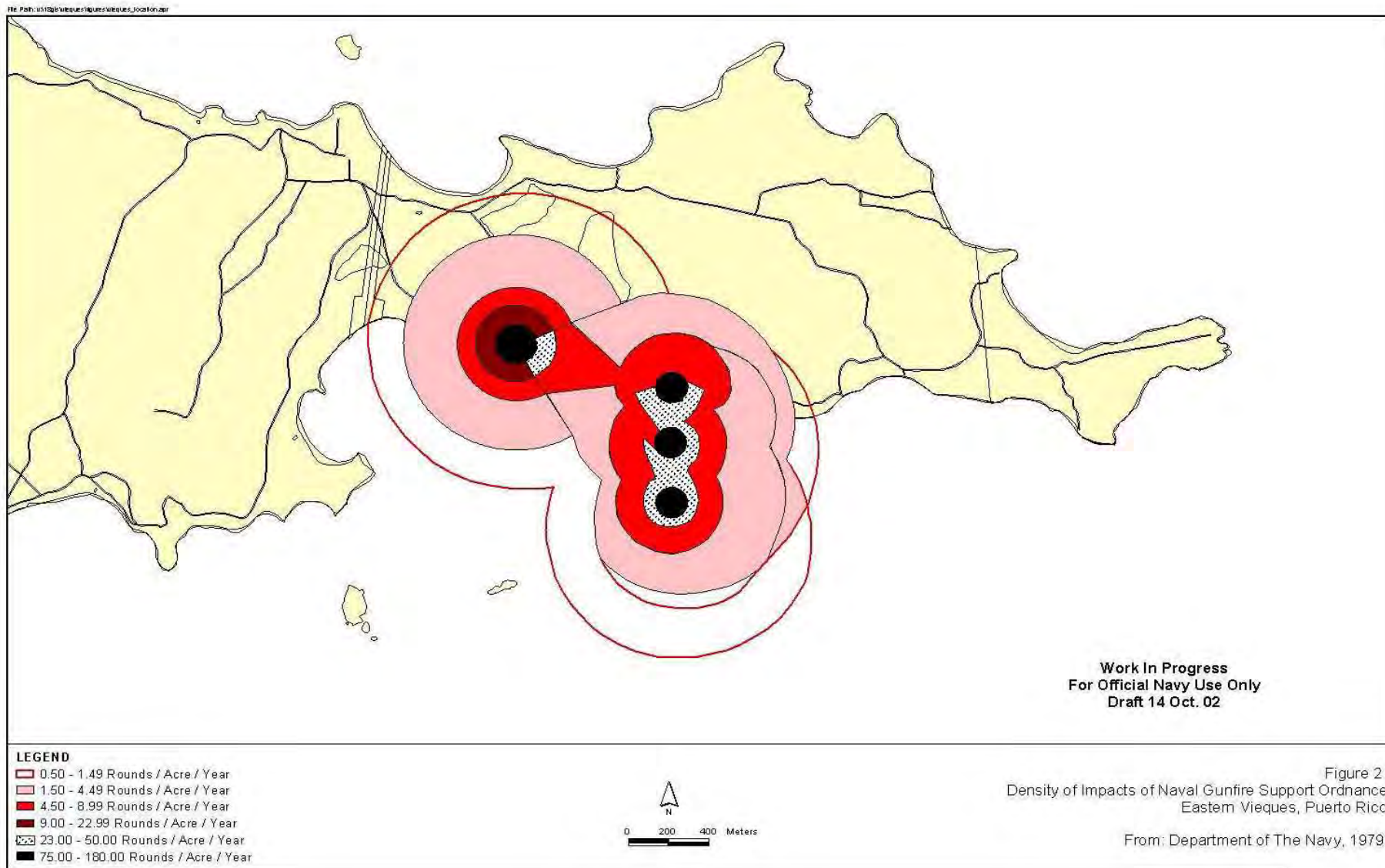
**VIEQUES RANGE LIVE IMPACT AREA**







# Impact Density Of Naval Gunfire Ordnance







# **Types of Ordnance Fired and Found in EMA, SIA, and LIA**





# MK 118 Submunition in LIA







# MK 82 (Practice)







# Projectiles Fired in EMA and SIA (HE 81 mm)



- ♦ *Mortar fired:*
- ♦ *60mm*
- ♦ *HE 81mm*





# Projectiles Fired in SIA & LIA



## ◆ Gun fired:

- ☞ 76mm
- ☞ 105 mm
- ☞ 4.5 inch
- ☞ 120 mm
- ☞ 5 inch/38
- ☞ 5 inch/53
- ☞ 155 mm
- ☞ 16 inch





# Projectiles Fired In LIA

## Launched 2.75 inch Rocket







# Mk 76 - 25 LB Practice Bomb





# MK 84 Bomb







# Surface MEC in Live Impact Area







# Trespasser showing missile in Live Impact Area





# BLU-77/B Body (Frag/HEAT) Submunitions







# BLU-77B FRAG/HEAT (Submunitions)







# Baseball Type Submunitions in LIA







# PRA Conclusions Recommendations



## ◆ Conclusions

- ☞ Over 40 areas potentially containing MEC were identified
- ☞ High explosive risk areas include the LIA, OB/OD areas
- ☞ Moderate explosive safety risk at artillery gun positions in SIA and EMA; rifle grenade range (Range 3), grenade-launcher range (Range 4) and hand grenade range (Range 5)
- ☞ Low explosive risk at small arms ranges, Red Beach, Blue Beach

## ◆ Recommendations

- ☞ Restrict access to moderate-high risk sites by installing fencing, gates and road barriers
- ☞ Conduct further investigations to characterize and delineate extent of MEC contamination
- ☞ Prioritize MEC sites based on explosive safety hazards





# Warning Sign at VNTR







# VNTR Road Barriers







# East Vieques MEC Program Strategy (FY 04 & FY 05)



- ◆ Develop Strategic Management Plan and Prioritization Plan
  - ☞ Perform Internal and External Assessment & Program/Project SWOT
  - ☞ Define Goals and Objectives (Short and Long Term)
  - ☞ Define and Develop Strategies in alignment with goals and objectives
    - ◆ Acquisition Strategies (Small Business, Multiple Contracts)
    - ◆ Technology and Logistical Strategies
    - ◆ MEC & IR Prioritization Strategies
    - ◆ Investigative and Remedial Action Strategies
    - ◆ Project Management and Risk Management Strategies
    - ◆ Stakeholder and Regulatory Program strategies
    - ◆ Integrate strategies in Project Clean Up Plan Development
    - ◆ Exit Strategies (LUC's, ROD's, Investigation and RA endpoints)
  - ☞ Define Performance Metrics
  - ☞ Develop Implementation, Monitoring, and Evaluation Plan
  - ☞ Develop corrective action plan



# East Vieques MEC Program Strategy (FY 04 & FY 05)



- ◆ Conduct Expanded Range Assessment and Site Investigations (PA/SI)
  - ☐ Close gaps in Archive Record Search
  - ☐ Characterize and redefine MEC areas
  - ☐ Expand Site Knowledge
  - ☐ Further define MEC Areas (Gun positions, Ranges, Targets ) in order to reduce footprint of Cleanup area
  - ☐ Refine and develop final cleanup cost estimate
  - ☐ Define Risks and explosive safety hazards per area
- ◆ Initiate IRA's in high risk areas (align with DOI Land Use Plans)
  - ☐ Beaches, roads, trails, natural resource areas (turtle nesting)
- ◆ Conduct OB/OD Investigation and Closure in LIA (per Order)



# Community Relations Program

Acts of Vandalism by Community (May 03)

UXO Awareness Poster & Video

Quarterly News Letter

TRC Community Meetings

Community Poster Sessions



# Community Relations Program



- ◆ East Vieques IR Community Relations Program regulated by EPA
  - ☞ CRP submitted to EPA in 2002 for East Vieques Plan; but not yet approved
- ◆ West Vieques and East Vieques MEC Community Relations Program Administered by Navy
  - ☞ Navy Community Relations Plan For West Vieques Implemented in Fy 2001
  - ☞ Navy conducted IR/MEC Public Poster Session FY 02
  - ☞ TRC meetings are held 3 to 4 times per year
  - ☞ Navy prepared UXO safety Awareness video, Fact Sheets, and UXO Safety Awareness Signs for DOI and Public
  - ☞ Navy Conducted UXO Awareness Training to DOI, MOV, EPA, and EQB in FY 03
  - ☞ Public notices, fact sheets, and Qtrly News Letters distributed to public for MEC Awareness/ Safety and IR/MEC Project Updates





# UXO Safety Awareness Sign



**DANGER**  
**DANGER**  
**DANGER**  
**DANGER**  
**DANGER**  
**DANGER**

**FOR YOUR SAFETY...**  
**POR SU SEGURIDAD...**

**PELIGRO**  
**PELIGRO**  
**PELIGRO**  
**PELIGRO**  
**PELIGRO**  
**PELIGRO**



## WHAT IS UNEXPLODED ORDNANCE (UXO)?

- Ammunition that was fired but didn't explode
- Ammunition that could explode
- It can be found in many shapes, sizes, types and colors

## ALL OF IT IS DANGEROUS!

### WHAT CAN YOU DO?

1. If you see an object you don't recognize, don't touch it
2. Don't go near anything that might be UXO
3. Report your findings immediately to:



Vieques National Wildlife Refuge Manager  
U.S. Fish & Wildlife Service  
Road 200, Km. 0.4, Vieques, PR 00765-1527  
Telephone: 787-741-2138



## ¿QUE ES UN EXPLOSIVO SIN DETONAR?

- Municiones que fueron disparadas pero no detonaron
- Municiones que pueden detonar
- Las municiones pueden ser de varias formas, tamaños, tipos y colores

## ¡TODO ESTO ES PELIGROSO!

### ¿QUE PUEDE HACER?

1. Si usted ve un objeto que no reconoce, no lo toque
2. No se acerque a ningún objeto que pueda ser una munición sin detonar
3. Informe lo que encontró inmediatamente a:

Refugio Nacional de Vida Silvestre de Vieques  
Servicio Federal de Pesca y Vida Silvestre de EEUU  
Carretera 200, Km. 0.4, Vieques, PR 00765-1527  
Teléfono: 787-741-2138





# Public Safety Notice For UXO



## IMPORTANT PUBLIC SAFETY NOTICE

### About Munitions and Explosives of Concern on Eastern Vieques Island, Puerto Rico

In accordance with Presidential directives and Congressional legislation (Public Law 107-117, Title X, Sec. 1049), on **May 1, 2003**, the Vieques Naval Training Range will be turned over to the U.S. Department of the Interior to establish a Wildlife Refuge and a Wilderness Area. The U.S. Navy is still responsible for investigating and responding to environmental contamination and munitions left behind on the former training range.

The former training range contains many munitions and explosives of concern (MEC), including unexploded ordnance (UXO), above or buried in the ground. **Munitions and explosives are extremely dangerous.** MEC investigations are just getting started, so there is a chance that MEC could be found almost anywhere on Eastern Vieques.

**Don't touch or go near anything that might be UXO!** Remember, military munitions were designed to be destructive weapons. Sailors and soldiers are only allowed to use munitions after intense and thorough training. People—often children—have been seriously hurt or killed by UXO or other munitions.

#### What is UXO?

- Ammunition that was fired but didn't explode
- Ammunition that could explode
- New or old...Shiny or rusty...clean or dirty...

**All of it is dangerous!**

#### UXO can be hard to identify...

- It can be found in many shapes, sizes, and types.
- Size doesn't matter. Small items can kill or injure.
- Age doesn't matter. Old rusty items can kill or injure.

To keep Vieques residents and visitors out of the most dangerous areas, 14 roads have been barricaded and warning signs have been posted.

**For your own safety, please stay out of these areas!**



#### Can the Public Visit Any Part of Eastern Vieques?

At first, for safety's sake, the public will be prohibited from entering any part of the former Vieques Naval Training Range. However, in the future the public may be allowed to visit some areas. Ongoing MEC investigations by the Navy, and the proposed land use plan of the Department of Interior, will determine which areas are safe and will be permitted for public use.

For example, up until 1999, the Navy had at times allowed the public to visit Blue Beach and Red Beach. Recent investigations of these beaches by the Navy have shown there are no UXO items at the beaches. However, the results of the investigation are still being reviewed by the regulators.

Based on the results of this review, the Department of the Interior may decide to re-open these two recreational beaches to the public.

**For information about areas open to the public, please contact the Vieques National Refuge Manager:**

Oscar Díaz, US Fish & Wildlife Service  
PO Box 1527, Vieques, PR 00765-1527  
Telephone: 787-741-2138 or 0659 Fax: 787-741-2158  
E-mail: [oscar\\_diaz@fws.gov](mailto:oscar_diaz@fws.gov)

#### Background

The former Vieques Naval Training Range is located on the eastern one-third of Vieques Island. Since the early 1950's, the Navy has used parts of the range to train military personnel. The range was divided into four operational areas, from east to west: the Eastern Conservation Area, the Live Impact Area (LIA), the Surface Impact Area (SIA) and the Eastern Maneuver Area (EMA).

The Navy began naval gunfire and aerial bombing in the LIA in 1965. However, ordnance was not used on a regular basis in this area until 1974. The LIA is established as a Wilderness Area where public access will be prohibited.

The map on the next page shows areas of the LIA, SIA and EMA that are the most likely to contain explosives (based on available information), so it is very important to stay away from these areas. Other places near the areas shown on the map also might contain munitions and explosives of concern. **However, right now there are no areas on eastern Vieques that have been approved as being free of munitions and explosives.**





# Community Celebration Beginning to Get Out of Control







# Community US Flag Burning





# Community Celebration Out of Control Destruction of Gov. Property (Main Guard House)







# Main Gate to Camp Garcia







# Community Burning of Gov Marine Vessel





# Aftermath of Community Party Community Vandalism







# Aftermath of Community Party







# Aftermath of Community Party





# Thank you.....any East Vieques Questions???







# Western Vieques IR Program Status



## ◆ 17 potentially contaminated sites

- 📄 14 sites on Municipality of Vieques property
- 📄 3 sites on DOI property
- 📄 490 of 8100 acres identified as potentially contaminated (450 ac DOI; 40 Acres MOV)
- 📄 Land use restrictions in place on MOV QuitClaim Deed and DOI Memorandum of Agreement
- 📄 “No further action” proposed for 9 sites
  - ◆ ***PR EQB Public Hearing held in January 04***
- 📄 Pre-Risk Assessment Data suggest 3 sites require remedial action





# West Vieques Background (Continued)

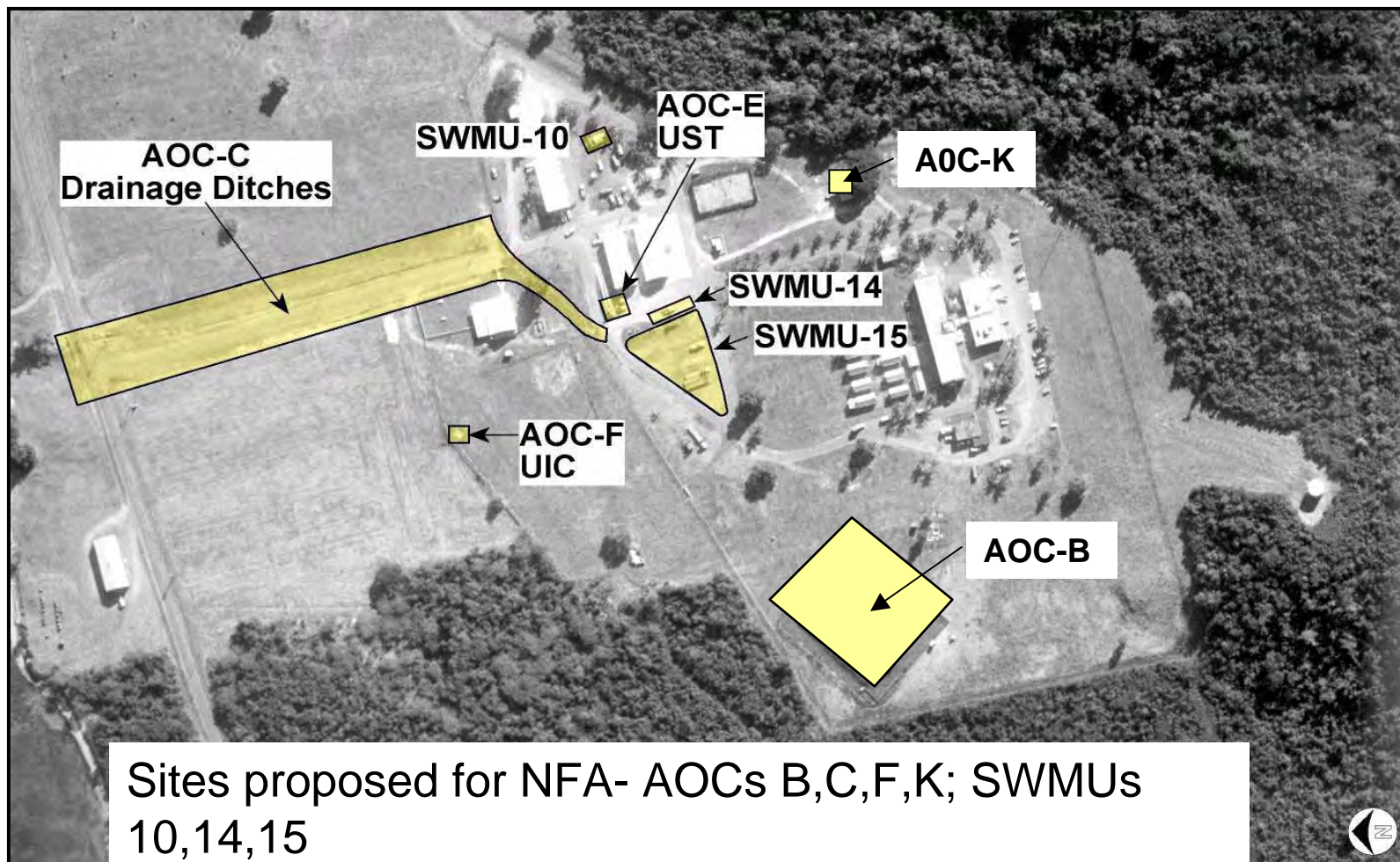


- ◆ Former Naval Ammunitions Supply Depot stored and supplied ordnance for Naval training at Vieques Naval Training Range.
- ◆ 8100 ac of West Vieques property transferred to multiple parties Vieques in April 2001 (Public Law 106–398).
  - 📄 4100 acres transferred to DOI;
  - 📄 3100 acres transferred to MOV;
  - 📄 800 acres transferred to PR Conservation Trust;
  - 📄 100 acres Retained by Navy.





# Western Vieques: NFA SWMUs & AOCs in Former Public Works Area







# Western Vieques: IR Program Status



- ◆ Work Plans and/or Remedial Investigations Studies underway for remaining 8 sites
  - 📄 Envr RI/FS of 5 MOV sites targeted for FY 04 Completion
  - 📄 Envr RI/FS for 3 DOI Sites targeted for FY 05 Completion
  - 📄 MRP Removal Actions on DOI property scheduled for completion by FY 07



# **Overview of OE Assessment Activities at West Vieques (NASD)**



# MEC Response Actions at Former NASD Vieques:



- ◆ **PA/SI completed in FY 2000 at SWMU 4 (61 MEC Items Retrieved)**
- ◆ **Engineering and Institutional Land Use Controls Implemented in 2000-2001**
  - 📄 **Site Security and Safety fence**
  - 📄 **Site Land use controls incorporated into MOA.**
- ◆ **Green Beach MEC Site Assessment completed Prior to Transfer (April 2001)**





# MEC Response Actions at Former NASD Vieques:



## ◆ OB/OD SWMU 4 MEC Investigations:

- ☞ Phase I (35 Acres) completed

  - ◆ *(Jan – April 02)*

- ☞ Phase II (20 Acres) completed

  - ◆ *(April-July 02)*

- ☞ Phase III (40 Acres) completed

  - ◆ *Feb –June 03)*

## ◆ Draft MEC RI completed Feb 04

## ◆ Planned Future Work:

- ☞ Conduct MEC Interim Removal Action FY 05

- ☞ Complete Envr RI/FS and MEC FS & ROD's FY05-06



# Green Beach Site Assessment



- ◆ Site is a 50 acre public beach area located in the northwest corner of DOI property
- ◆ Area was identified as a potential area of concern by NOSSA due to possible location within “Western Training area”
- ◆ Site is located 3000 feet north of OB/OD Site



# MEC RI Investigation Objectives for OB/OD Site

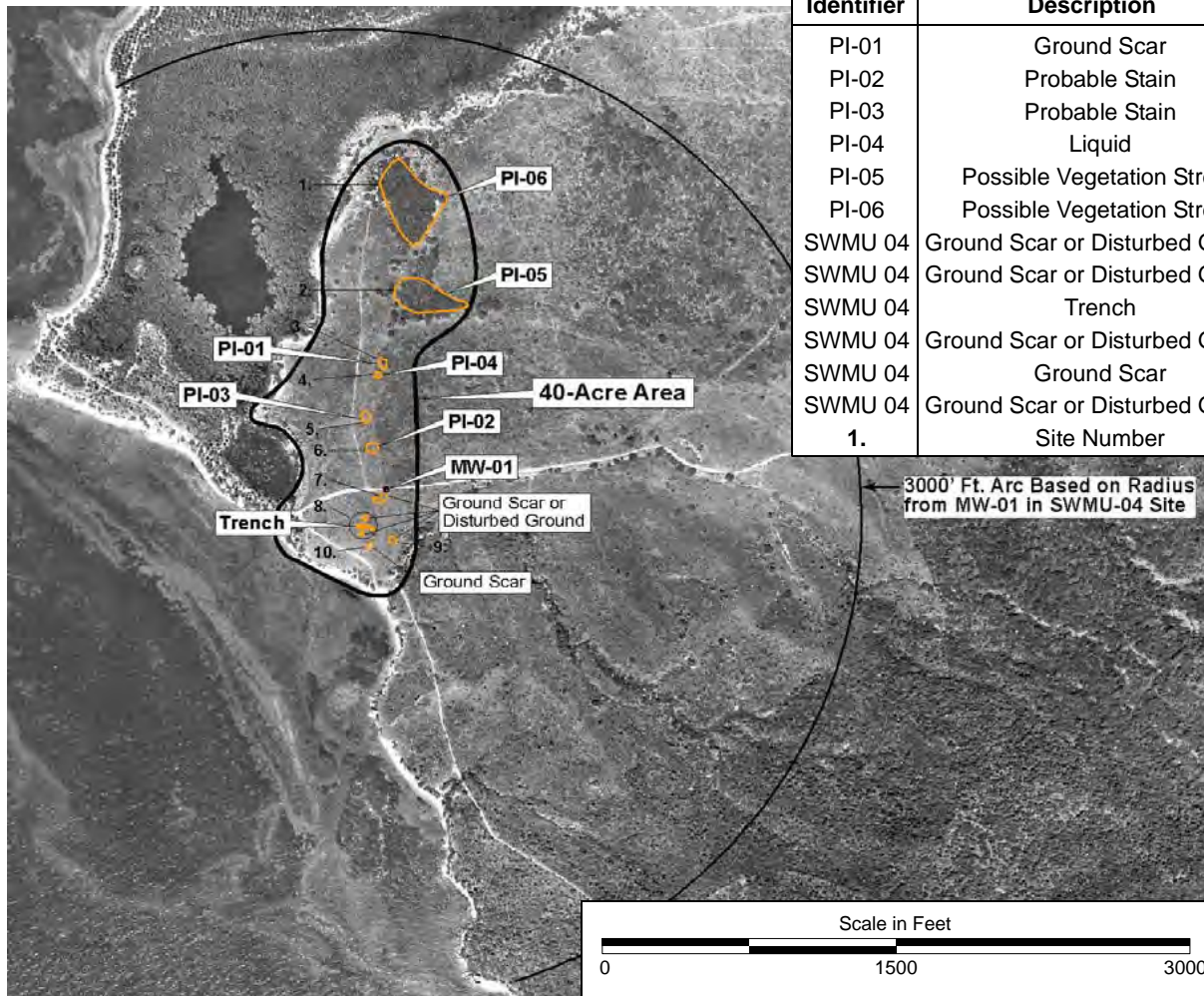


- ◆ Identify and Verify location Of OB/OD Pits
- ◆ Evaluate the extent of kick-outs from OB/OD Pits
- ◆ Characterize the type and condition of ordnance items present
- ◆ Assess the relative explosive safety hazards across the site
- ◆ Provide technical knowledge and Risk Reduction for Environmental RI/FS Sampling and Assessment of the site





# Photo-Identified Anomalies



Feature Identifier	Description	Observation Date	UTM Longitude	UTM Latitude
PI-01	Ground Scar	1970	227904	2003458
PI-02	Probable Stain	1970	227884	2003289
PI-03	Probable Stain	1970	227871	2003350
PI-04	Liquid	1970	227896	2003435
PI-05	Possible Vegetation Stress	1970	227998	2003595
PI-06	Possible Vegetation Stress	1970	227964	2003782
SWMU 04	Ground Scar or Disturbed Ground	1970	227900	2003191
SWMU 04	Ground Scar or Disturbed Ground	1970	227870	2003147
SWMU 04	Trench	1962, 1964	227872	2003129
SWMU 04	Ground Scar or Disturbed Ground	1970	227864	2003118
SWMU 04	Ground Scar	1964	227880	2003094
SWMU 04	Ground Scar or Disturbed Ground	1970	227924	2003105
1.	Site Number			



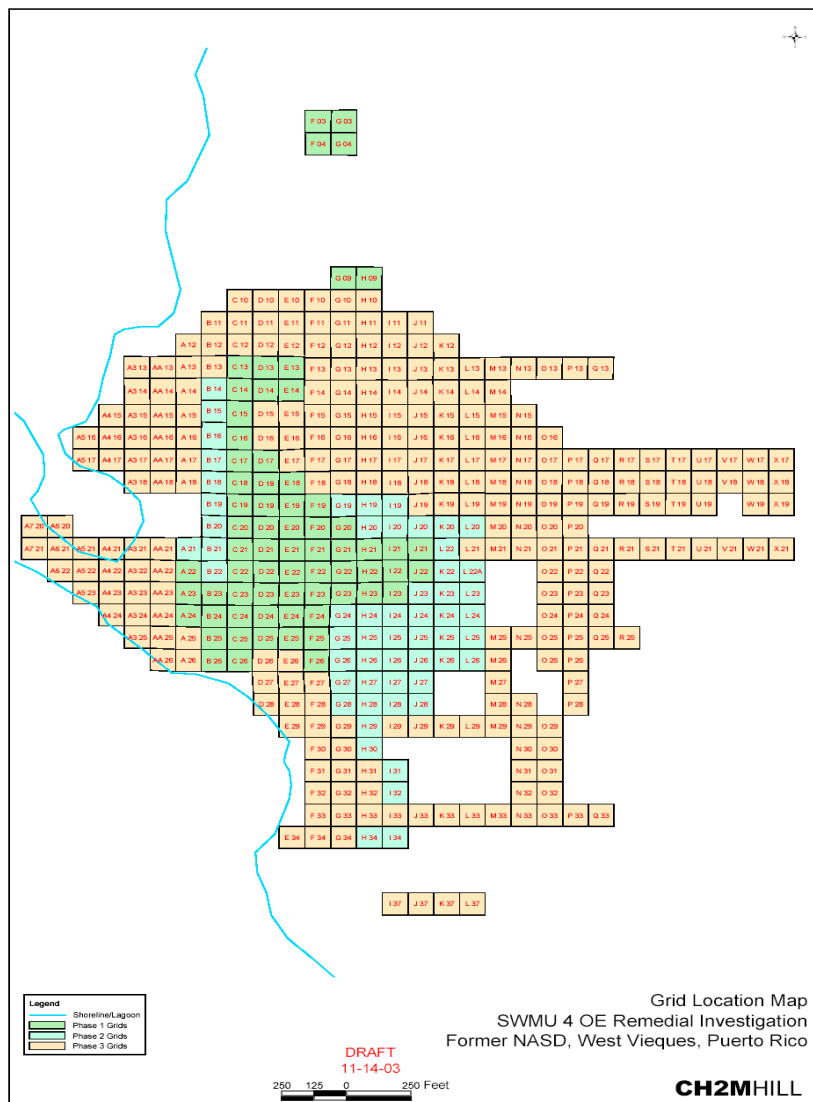


# SWMU-4, Vieques, PR





# Three Phases of MEC RI Investigation Conducted



- ◆ A Total of 90 Acres Investigated
- ◆ Phase I
  - 20 Acres completed
  - 1/2002- 3/2002
- ◆ Phase II
  - 15 Acres Completed
  - 4/2002 - 6/2002
- ◆ Phase III
  - 55 Acres Completed
  - 2/2003- 5/2003





# Most Common OE Items Removed From SWMU 4



- ◆ 20 mm projectiles and casings (1319)
- ◆ 7.62 cartridge blanks (184)
- ◆ M123 Photoflash cartridge (35)
- ◆ 3 inch photoflash signal cartridge (29)
- ◆ MK 230 (19)
- ◆ MK2 CAD, primer unfired (5)
- ◆ For all other OE Items types found, less than 5 of each item were identified

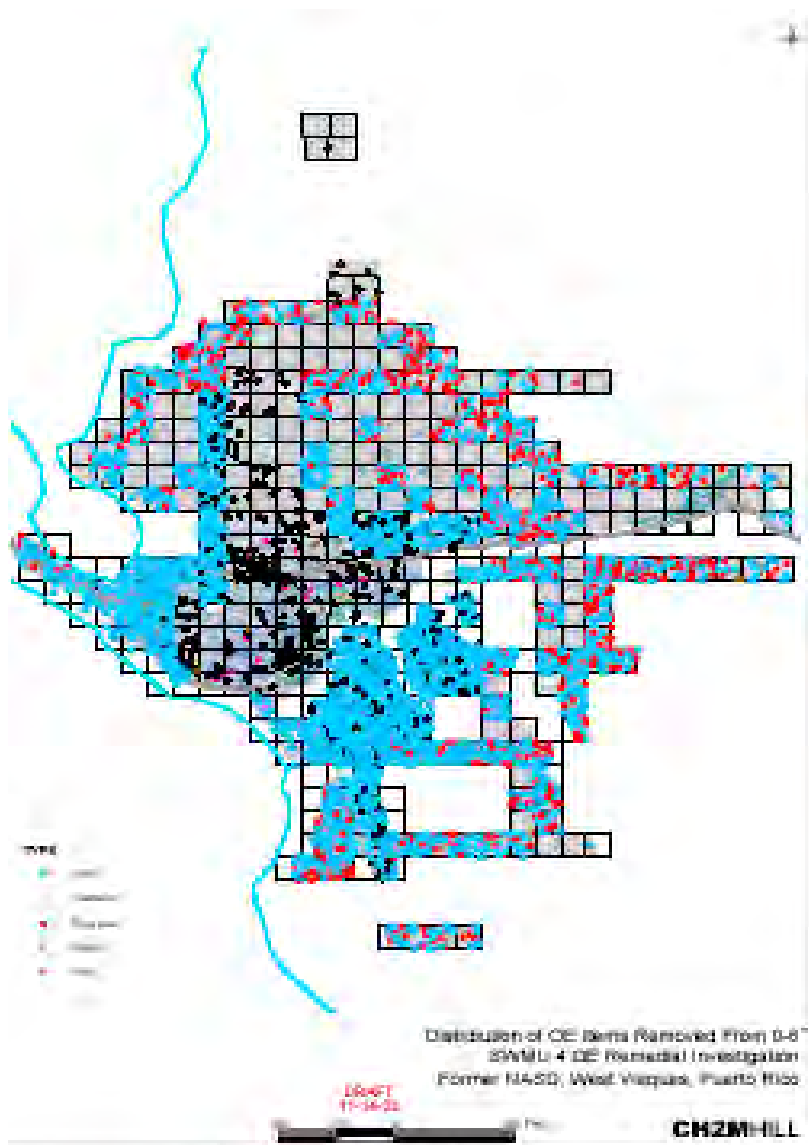


# Ordnance Items Removed From SWMU 4





# Distribution of Ordnance Items Removed From 0-6"

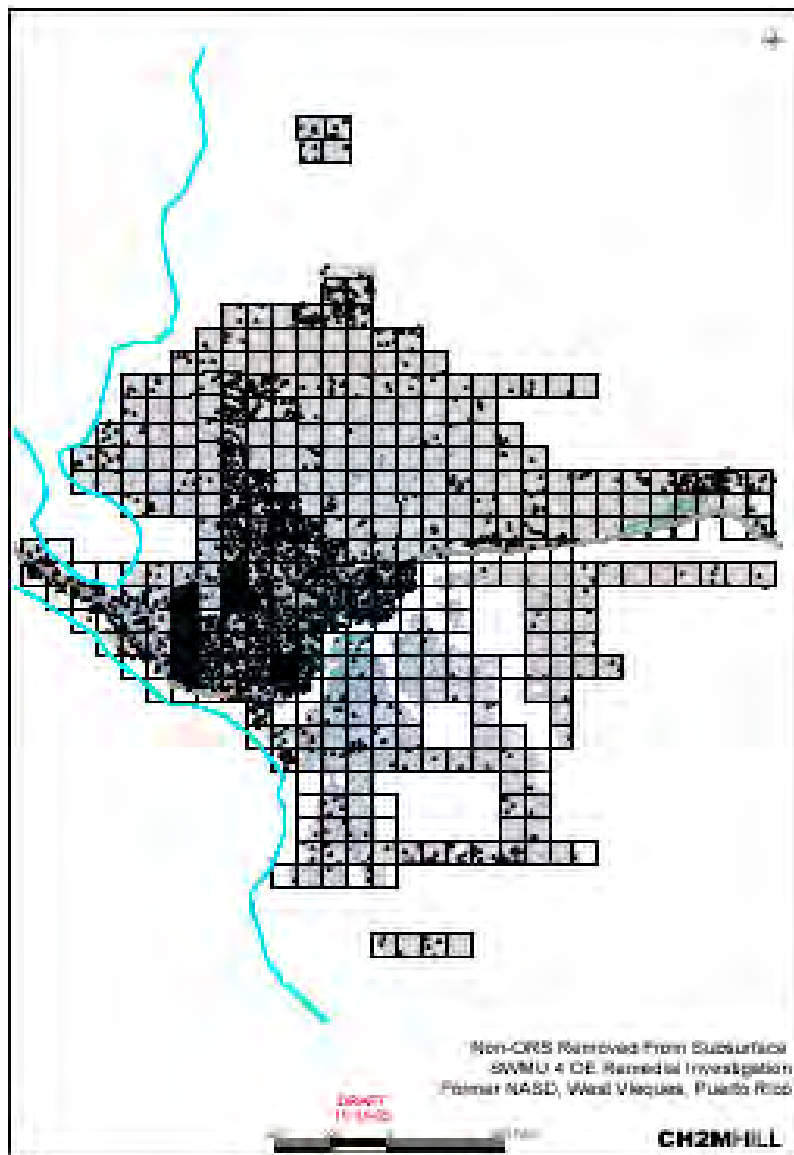


- ◆ A total of 7179 MEC items were investigated from a depth of 0-6"
- ◆ 95% of items removed from first 0-6" depth bgs were MEC items





# Distribution Of Non-Ordnance Items Removed



- ◆ Metallic items investigated at east and west ends of site were primarily non-ordnance related
- ◆ Only 7 of the 75 items (9%) investigated at the east end were MEC items (20 MM's)
- ◆ Non ordnance metallic items at the east end included railroad spikes and track