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NAS KEY WEST, FL  
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**FINAL SUMMARY FROM THE 25 JULY 2018 RESTORATION ADVISORY  
BOARD MEETING NAS KEY WEST FL**

07/25/2018  
NAS KEY WEST

Approved for public release: distribution unlimited.

# NAS KEY WEST RESTORATION ADVISORY BOARD

## 25 JULY 2018 MEETING SUMMARY

**LOCATION:** Florida Keys Eco-Discovery Center, Key West, Florida

### RESTORATION ADVISORY BOARD MEMBERS

Ron Demes	ATMO/NAS Key West, Navy Co-Chair	305-293-2886 <a href="mailto:Ron.Demes@navy.mil">Ron.Demes@navy.mil</a>
Mimi Stafford	RAB Community Member, Community Co-Chair, Citizen	305-296-5947 <a href="mailto:mlbstafford@gmail.com">mlbstafford@gmail.com</a>
Margaret Romero	RAB Community Member, City Commissioner District 5	305-809-3844 <a href="mailto:keywestquestions@yahoo.com">keywestquestions@yahoo.com</a>
Mike Petro	RAB Community Member, Citizen	305-896-7300 <a href="mailto:mike@mikepetrorealestate.com">mike@mikepetrorealestate.com</a>
Mark Songer	RAB Community Member, Citizen	305-394-3807 <a href="mailto:MarkSonger72@gmail.com">MarkSonger72@gmail.com</a>
Tracie Vaught	FDEP	850-245-8998 <a href="mailto:Tracie.Vaught@dep.state.fl.us">Tracie.Vaught@dep.state.fl.us</a>
Ed Russell	NAS Key West Installation Restoration Manager	305-797-4461 <a href="mailto:Edward.O.Russell@navy.mil">Edward.O.Russell@navy.mil</a>
*John Dolan-Heitlinger	RAB Community Member, Citizen	305-292-1208 <a href="mailto:john@dolan-heitlinger.com">john@dolan-heitlinger.com</a>
*Bob Eadie	RAB Community Member, Monroe County Health Department	305-809-5610 <a href="mailto:Bob.Eadie@flhealth.gov">Bob.Eadie@flhealth.gov</a>
*John Jones	RAB Community Member, Citizen	305-797-0484 <a href="mailto:John.Jones0815@yahoo.com">John.Jones0815@yahoo.com</a>

\* Absent

### OTHER PARTICIPANTS/COMMUNITY ATTENDEES

Donald Hardison	NAVFAC SE	904-542-6169 <a href="mailto:Donald.Hardison1@navy.mil">Donald.Hardison1@navy.mil</a>
Tread Kissam	NAVFAC SE	904-542-6151 <a href="mailto:Benjamin.Kissam@navy.mil">Benjamin.Kissam@navy.mil</a>
Todd Haverkost	Resolution Consultants	901-372-7962 <a href="mailto:THaverkost@ensafe.com">THaverkost@ensafe.com</a>
Chad Tripp	Resolution Consultants	904-367-4324 <a href="mailto:CTripp@ensafe.com">CTripp@ensafe.com</a>
Linda Klink	Tetra Tech, Inc.	412-921-8650 <a href="mailto:Linda.Klink@tetratech.com">Linda.Klink@tetratech.com</a>
Libby Claggett	Tetra Tech, Inc.	904-596-2327 <a href="mailto:Libby.Claggett@tetratech.com">Libby.Claggett@tetratech.com</a>
CDR Thomas Lowry	U.S. Coast Guard, Key West Resident	<a href="mailto:Tomas.S.Lowry@uscg.mil">Tomas.S.Lowry@uscg.mil</a>
Trice Denny	NAS Key West PAO	305-293-2027 <a href="mailto:Andrea.Denny@navy.mil">Andrea.Denny@navy.mil</a>
Jim Bouquet	Key West City Engineer	305-809-3962 <a href="mailto:jbouquet@cityofkeywest-fl.gov">jbouquet@cityofkeywest-fl.gov</a>
Jim Scholl	Key West City Manager	<a href="mailto:jscholl@cityofkeywest-FL.gov">jscholl@cityofkeywest-FL.gov</a>
Lucy Gage	Key West Resident	305-304-8421 <a href="mailto:Lucygage@att.net">Lucygage@att.net</a>
Ashley Monnier	NAS Key West	305-293-2633 <a href="mailto:Ashley.Monnier@navy.mil">Ashley.Monnier@navy.mil</a>
Allison Higgins	City of Key West Sustainability Coordinator	305-809-3726 <a href="mailto:ahiggins@cityofkeywest-fl.gov">ahiggins@cityofkeywest-fl.gov</a>
Kiera O'Donnell	Northeastern	<a href="mailto:Odonnell.ki@huskey.nev.org">Odonnell.ki@huskey.nev.org</a>

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CDR Demetries Grimes	US Navy, Retired	<a href="mailto:commander@grimesforcongress.com">commander@grimesforcongress.com</a>
Elizabeth Ignoffo	City of Key West Key West Citizen	305-809-3966 <a href="mailto:eignoffo@cityofkeywest-fl.gov">eignoffo@cityofkeywest-fl.gov</a>
Bobby Baker	NAS Key West	305-293-2107
Randy Althouse	Key West Resident	
Giarcarlo Espinosa	Key West Resident	305-600-7836

### WELCOME AND INTRODUCTIONS

Ron Demes brought the meeting to order at 6:00 PM with the Pledge of Allegiance. Ron explained the purpose of the RAB meetings and asked how many attendees did not receive a letter about the meeting, and only one attendee did not, and that attendee was brought as a guest.

The Restoration Advisory Board (RAB) members introduced themselves. Ron asked that the presenters be allowed to give their presentation without interruption. After which, the RAB members will be invited to ask their questions about the presentation followed by questions about the presentation from the general audience.

An informal question and answer period will be conducted after the conclusion of the RAB meeting.

A map of all the Installation Restoration sites was available for meeting attendees.

An agenda discussion item of sunseting the RAB was added the end of the meeting.

### REVIEW OF LAST MEETING

Ron asked if there were any corrections to the minutes. There was a motion to approve the 2017 RAB meeting minutes, and the motion carried.

### INSTALLATION UPDATE, ED RUSSELL, NAS KEY WEST

Activities since the July 2017 RAB meeting include the following:

- Three wells were Installed at the Trumbo Point Tank Farm (TPTF) in July 2017.
- UXO work included advanced geophysical in July 2017, surface clearing in November 2017, and geophysical in May 2018.
- Numerous and ongoing sampling events occurred across several sites.
- Well repairs (cosmetic) included several concrete pads and covers, locks and J-plugs, and other well components.
- A Historic Radiological Assessment (HRA) kickoff meeting was in August 2017 followed by a site visit and document collection in March 2018. Future activities include a public outreach later in 2018 around September and the Project Completion Report anticipated for 2020. The HRA contains historical use and disposal of general radioactive materials (G-RAM) and is a multi-installation project for the Department of the Navy.

During Hurricane Irma on September 10, 2017, installation personnel were ordered to evacuate on September 6, 2017, and allowed to return on September 25, 2017.

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NOAA conducted aerial flights over Key West, Boca Chica, and other Lower Keys starting September 11, 2017. The installation areas shown in the presentation are from the September 11, 2017, flight. <https://storms.ngs.noaa.gov/storms/irma/index.html>

Hurricane Irma damages to the base include the following:

- Estimated base damages greater than \$101 million
  - 192 of 355 NAS facilities with identified damage
  - Airfield Control Tower
  - Fly Navy Building > \$11 million
  - Hangar A-936 (c 1954) structural damage
  - Approximately 10 base housing units were impacted (wind and/or flooding)
- Vessel Cleanup – October 2017
  - 80 vessels on Navy Property (28 claimed by owners)
- Storm surge:
  - Appears less than that of 2005 Hurricane Wilma's effect on the base (2017: <https://stn.wim.usgs.gov/FEV/#IrmaSeptember2017>)
- IR 1 (Truman Annex)
  - Some settling near utility pole
  - Small section of road asphalt lifted
  - No other visual issues with soil cap
- IR 8 (Fleming Key)
  - Trees laid over (Australian Pines)
  - Sailboat washed ashore
  - Undermining of small area of concrete armor matting
- Trumbo Point Tank Farm (TPTF) North
  - Area within the Key West Pipe Line perimeter
  - No reported issues with wells in this area
- TPTF South
  - One well was potentially affected due to a melaleuca tree falling
- UXO 3 – Trumbo Point Staging Area
  - Downed trees along perimeter
- SWMU 1 (Boca Chica)
  - Some signage damaged
  - Wells intact
  - Well outside fencing still present
  - No weed line on fencing
  - Debris clean-up damage: well protective cover and bollards were damaged during cleanup efforts
- Site 31 – Boca Chica Truck Fill Stand
  - No issues
  - Good indicator of storm surge on perimeter fence

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- UST 9 – Boca Chica Flying Club
  - Loss of outer waste storage building
  - Roof damage on adjacent building
- UXO 6 – Boca Chica Skeet and Pistol Ranges:
  - Some seaweed/debris - confirmed visually
  - No other issues noted

### **Questions, Answers, and Comments:**

**Q: Mark Songer, RAB Member.** What was the source of the radiological concerns?

**A: Ed Russell, NAS Key West.** The G-RAM, was contained in dial markers off ships and aircraft. Records of past base usages are being reviewed to see if any of those or similar items were used at NAS Key West, and if they would result in any impact, which would be very low expose. The program is being handled out of a different portion of the Navy, not locally.

**A: Ron Demes, RAB Co-chair.** The instrumentation associated with the submarines that were here at Truman that used that material for illumination at night on the dials are examples. Depleted uranium used for counterbalances within an aircraft are other potential sources. Old aircraft were stored at Boca Chica.

**Q: Mimi Stafford, RAB Community Member – Co-Chair.** There is an expanded boundary at SWMU 1 (shown in the RAB Fact Sheet handout), is that because of the storm?

**A: Ed Russell, NAS Key West.** After Hurricane Wilma (2005), there was additional sampling conducted, and contamination was found outside the original site boundary. There was no previous data outside the original area to confirm it was storm related. The recommendation of that report was to expand the boundary, which was approved by FDEP.

**Q: Mimi Stafford, RAB Community Member – Co-Chair.** Are the additional (expanded) areas of SWMU 1 being monitored?

**A: Ed Russell, NAS Key West.** No, the monitoring locations have not changed as a result of the expanded boundary.

**Q: CDR Demetris Grimes, US Navy Retired.** The plan for restoration on the base, is there any plan on hardening hangars and such to make the buildings more accessible for shelters?

**A: Ron Demes, RAB Navy Co-chair.** That is outside the scope of this meeting, and Ron encouraged him to speak to the Commanding Officer of the base. The Commanding Officer was present at the meeting and was pointed out to CDR Grimes.

**Q: Luci Gage, Key West Citizen.** (General Comment) She saw in an email or publication that there is a new concrete or cement that can be used where the rain can seep down through it and wanted others to know about it. Regarding IR-8, Fleming Key, were the Australian Pine trees laid down or what? Luci stated she heard Australian pines were brought to the area, like Ft. Zach, because they had deep roots and would not be destroy during a storm.

**A: Ed Russell, NAS Key West.** Most of the trees that were laid over were already dead but not all of them.

### **INSTALLATION RESTORATION PROGRAM UPDATES, TREAD KISSAM, NAS KEY WEST**

#### Boca Chica Flying Club – UST 9

The Boca Chica Flying Club (BCFC) is located along the northwestern boundary of Taxiway "H", south of Building A-133 at Boca Chica Field. The BCFC was in operation until the late 1960s. The BCFC is the

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former site of four aboveground storage tanks (ASTs) and associated dispensers and piping, which were removed in 1992. In 1998, 983 cubic yards of soil removed from the site. Overfilling is the suspected cause of petroleum contamination at the site.

The site was originally anticipated to close under Risk Management Option (RMO) II at the end of calendar year 2017 (first quarter fiscal year 2018). Delays resulted from contract changes and Hurricane Irma. The site is anticipated to close with controls sometime late calendar year 2018 or early 2019.

The final document needs to be produced incorporating groundwater data from the April 2016/ December 2017 sampling event along with the 2016 soil sample data.

### **Questions, Answers, and Comments:**

There were no questions regarding the Boca Chica Flying Club – UST 9.

#### Geiger Key Hawk Missile Site – Site 22

The former Geiger Key Hawk Missile Site is approximately 12 acres. Work on the facility began in 1965 in support of the Cuban Missile Crisis and continued for several years thereafter. It was used for coastal defense until 1979, at which time the Army units demobilized from all the Hawk Missile batteries in the Florida Keys. This site is contaminated with petroleum and had a 2,000-gallon and a 300-gallon fuel tank closed in 1996.

Groundwater sampling events were conducted in August 2016 and December 2017 and showed no significant changes in area of contamination, which is estimated at less than ¼ acre.

The final document needs to be produced incorporating data from the groundwater sampling events and submitted to the Florida Department of Environmental Protection (FDEP) for approval.

The site was originally expected to close calendar year 2018 using RMO II with controls, but now is anticipated to close late calendar year 2018 or early 2019.

### **Questions, Answers, and Comments:**

**Q: Mimi Stafford, RAB Community Member – Co-Chair.** What are the future plans for the site? Will there be any restoration or preservation? It would be best to do it sooner than later with regards to site deterioration.

**A: Ed Russell, NAS Key West.** Options are currently being evaluated and our Environmental Director and Cultural Resource personnel have been discussing the site within Public Works. Ed stated he could have one of these people discuss the site with Mimi.

**A: Ron Demes, RAB Navy Co-chair:** This site has been designated as a historical site for preservation.

**Q: Mark Songer, RAB Member.** Are the proposed controls not to disturb soil or would it prohibit residential access to the site?

**A: Tread Kissam, NAVFAC SE RPM.** There would be no residential use, and groundwater cannot be used.

[Clarification: The land use control will be for groundwater. Navy has no plans for residential use of the property as it is within the Air Installation Compatible Use Zone and as part of the Base's training assets.]

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### Boca Chica Hawk Missile Site – Site 25

The site historical use is similar to the Geiger Key Hawk Missile Site – Site 22. Two ASTs were removed in 1996, and one was a 2,000-gallons AST.

Groundwater sampling in the vicinity showed signs of petroleum contamination. In January 2017, a deep well was installed and sampled to determine vertical delineation. Two semiannual groundwater sampling events were conducted in June and December 2017. The vertical delineation was confirmed with the new deep well and existing well network. The contamination was delineated and appears to be confined to less than ¼ acre.

The final document needs to be produced incorporating the June and December 2017 groundwater sampling events and submitted to the FDEP for approval. The site is anticipated to close in late calendar year 2018 or early 2019 using RMO II with controls.

### **Questions, Answers, and Comments:**

**Q: Mike Petro, RAB Member.** RMO II states the contamination must be less than ¼ acre. Is there still contamination within the ¼ acre?

**A: Ed Russell, NAS Key West.** Yes. The remaining contamination area is localized and very small [the area was pointed out on the site diagram being presented].

**A: Ron Demes, RAB Navy Co-chair:** (General comment related to the Hawk Missile sites) There is an excellent website called the Missiles of Key West (<http://www.missileskeywest.com/>) which contains many photographs and a lot of history about the Hawk Missile Sites.

### Boca Chica Tank Farm – Site 28

The Boca Chica Tank Farm has been used to store jet fuel, aviation gasoline, waste/used oil, diesel fuel, and unleaded gasoline for various activities since 1942. The earliest documentation that could be located on releases at the site was from 1975. In 1999, the 1999 FDEP approved a No Further Action (NFA) status based on a 1996 contamination assessment.

A site assessment was conducted in 2000 based on discharges discovered during the removal of a pipeline and tank. A period of Monitored Natural Attenuation (MNA) was implemented in 2001. In 2012, a Long-term Monitoring (LTM) Report recommended a Site Rehabilitation Completion Report (SRCR) be submitted for closure using RMO II with controls.

From 2006 to 2012, semiannual groundwater sampling was conducted, and the SRCR was put on hold as the vertical delineation was not complete. In January 2017, a new deep well was installed and sampled for the vertical delineation.

In June and December 2017, groundwater was sampled for the semiannual requirement in moving toward site closure. Preliminary results appear to demonstrate vertical and horizontal delineation and contamination has been confirmed to less than ¼ acre.

The final document needs to be produced incorporating the June and December 2017 groundwater sampling events and submitted to the FDEP for approval.

The site is anticipated to close in late calendar year 2018 or early 2019 using RMO II with controls.



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### **Questions, Answers, and Comments:**

There were no questions regarding the Boca Chica Tank Farm – Site 28.

#### Trumbo Annex BOQ – Site 29

In 1998, an underground free-phase petroleum plume was discovered. Approximately 55 cubic yards of contaminated soil and approximately 10 gallons of free product were removed. Due to the proximity of the building and an active propane gas supply line, excavation of the entire extent of impacted soils was not possible.

In 1999, a site assessment concluded that diesel fuel free product probably remains, and dissolved phase groundwater petroleum hydrocarbon concentrations exceeded the FDEP's Groundwater Cleanup Target Levels (GCTLs).

In 2002, a multi-phase extraction event was planned, but proved ineffective. Groundwater sampling was conducted in 2003, 2006, and 2008. Treatability studies were performed in 2007 to 2008, 2008 to 2009, 2009 to 2010, 2010 to 2011, 2011 to 2012, and 2016. Free product collected during these events have significantly decreased to where it is no longer feasible or cost effective to recover it. The last 6-month round of treatability resulted in approximately 1.3 gallons of free produce from three wells.

Groundwater was sampled again in January 2008. Historic and current groundwater data indicate that contamination has been vertically delineated. Horizontal delineation was not completed along the north-northeastern portion around well 15.

This site is planned for closure under RMO II(a) under the following conditions:

- Free product is not present, and no fire or explosive hazard exists resulting from a release of non-aqueous phase liquids, or
- Free product removal is not technologically feasible or cost-effective; and,
- Free product is not migrating and does not pose a risk to human health, public safety or the environment.

The next steps are the installation of an additional well east of the building during calendar year 2018 and conducting four quarterly groundwater sampling events (from 2018 to 2019). Site closure is anticipated for early in calendar year 2020.

### **Questions, Answers, and Comments:**

**Q: Margaret Romero, RAB Member.** Where will the well be installed?

**A: Tread, NAVFAC SE.** On the eastern site of the building. [The general area of the proposed well location was pointed out on the site diagram being presented]

**Q: Mark Songer, RAB Member.** It looks like most of the area is asphalt or closed off. Without any contacts except for the wells, there would not be not a way to discern that there is product there.

**A: Tread Kissam, NAVFAC SE RPM.** That is accurate.

#### Boca Chica Truck Fill Stand – Site 31

A 1,000-gallon tank was removed in 1995 and soil impacts were discovered. In 2000, soil with strong petroleum odor and discoloration was found in the trenches being excavated as part of a building



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construction project. In 2009/2010, 298 direct push technology (DPT) borings were installed, and quarterly monitoring was held from 2012 to 2013.

From 2015 to 2017, the Navy and FDEP completed plans for expanded site assessment with an Ecological Risk Assessment (ERA) for the site and adjacent wetlands.

Quarterly groundwater sampling began in 2018, and the January, April, and July sampling events have been completed. Sampling of the wetland was delayed to the lack of water in the wetlands in both April and July.

Groundwater results are similar to historical data with analytes exceeding GCTLs on the western portion of the site adjacent to the wetland and surface water body.

The path forward is to install a new shallow well to the northwest of MW13 to laterally delineate polycyclic aromatic hydrocarbons (PAHs) exceeding Cleanup Target Levels (CTLs). Co-located surface water, pore water, and sediment samples in the west wetland will continue to be collected. The wetland will be sampled as soon as it is "wet" again along with the new well during the 4<sup>th</sup> quarter event.

### **Questions, Answers, and Comments:**

**Q: Mimi Stafford, RAB Community Member – Co-Chair.** Regarding the wetlands that couldn't be sampled, do you think this area has been impacted by the other environmental operations at the base?

**A: Ron Demes, RAB Navy Co-chair.** The answer is yes. The station spent about 45 to 50 million dollars on several projects including stormwater drainage improvements to improve airfield drainage and the removal of vegetation to clear airfield hazards; about half of that was environmental mitigation. The airfield that used to flood now drains and the project is a success.

**Q: Ron Demes, RAB Navy Co-chair.** Last year on 18 July 2017, a community member, Bob Eadie, asked is there a way to know how deep the contamination goes relative to this site. Ron read the response from the 2017 minutes and asked if that question could be further answered.

**A: Tread Kissam, NAVFAC SE RPM.** The contamination is just at the surface at the top of water table and goes down to approximately 5 feet.

### Boca Chica Jet Engine Test Cell – SWMU 9

From 1969 to 1995, the Jet Engine Test Cell, associated with building A-969, was used for the testing of repaired jet engines.

The Contamination Assessment Report (CAR) identified dichloroethene (DCE) and benzene plumes in the eastern part of the site.

In 2013, contamination was confined to less than ¼ acre (horizontally) and natural breakdown was still occurring at the site.

In 2016, two deep wells were installed for vertical delineation. In 2017, two semiannual sampling events were conducted January and December (hurricane delayed). The horizontal and vertical delineation were confirmed, and the contamination was confined to ¼ acre.

A Statement of Basis with a Corrective Measures Implementation Plan (CMIP) is the path forward because it is a more appropriate mechanism for closure. A CMIP will be prepared incorporating the 2018 groundwater data. The CMIP will be submitted for public comment and then finalized and submitted for regulatory review and concurrence.

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[Clarification: The site's current Statement of Basis will be modified, which will require public comment. The CMIP with groundwater controls will follow afterwards to bring the site to closure]

Site closure with groundwater controls is anticipated in late calendar year 2019.

### **Questions, Answers, and Comments:**

There were no questions regarding Boca Chica Jet Engine Test Cell – SWMU 9.

Ron had a comment that he noticed in the minutes of the last meeting, that NFA with institutional controls and/or engineering controls was used. Is there ever an engineering control that does not have an institutional control and if so, why use the term "and/or". Tread said that usually is the case and the "and/or" is the Navy language, but Tracie confirmed that is not always the case. The engineering control can be the Base Master Plan.

[Clarification: Engineering controls would require an institutional control(s) (e.g., a paved asphalt engineered control would be incorporated into a site's institutional controls); however, an institutional control (e.g., groundwater controls) may not have associated engineering controls and would only be captured in the final approval documents (e.g., Site Rehabilitation Closure Order) as well as any associated Base site control documents.]

### **A-508 UST (NEW PETROLEUM SITE – UST 10), LINDA KLINK, TETRA TECH**

The site was first identified in October 2015 when a contractor for a utility trench excavation project (near former Building A-508) encountered a strong petroleum-like odor when starting excavation activities.

#### **FIELD WORK**

- A geophysical survey was conducted to search for and locate possible underground storage tanks (USTs) in the suspect area and focused on nearby hatches as potential UST access ports. EM61-MK2 (EM61) and ground penetrating radar (GPR) was used, and two UST were identified. The USTs were estimated to be 1000 gallons each.
- Four soil borings in the suspect area and surface and subsurface soil samples were collected from each boring. During drilling, the groundwater was very shallow and was encountered at 1.75 feet below ground surface. Strong petroleum odors were noted.
- Workers tried to determine if any material remained in the USTs (if located) and the depth of any such material. Under the hatches of the USTs, dirt and corrosion were encountered. The two USTs appear to have been abandoned in place using grout.
- Field work was conducted from November 2017 to January 2018.

#### **SOIL SAMPLING ANALYTICAL RESULTS**

Surface and subsurface soil samples were analyzed for a full suite of chemicals\*

- No PCB detections.
- SCTL Residential and/or Industrial soil exceedances for Benzo(a)pyrene [BAP]; BAP Equivalents > 1, TRPH, and arsenic.
- SCTL Leachability Exceedances for many chemicals.
- Contamination is petroleum related.

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\*Volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polynuclear aromatic hydrocarbons (PAHs), pesticides, polychlorinated biphenyls (PCBs), total recoverable petroleum hydrocarbons (TRPH), and metals including mercury.

### NEXT STEPS

- Formally identified the site as a Petroleum Site (UST 10).
- Conduct additional investigation for both soil and groundwater.
- Navy will investigate the best options to handle the USTs.
- Submit a Site Assessment Report (SAR) in accordance with FDEP's contaminated site cleanup criteria once site investigation is complete.

### ***Questions, Answers, and Comments***

**There were no questions.**

### **MUNITIONS RESPONSE PROGRAM (MRP) UPDATES, TODD HAVERKOST AND CHAD TRIPP, RESOLUTION CONSULTANTS**

#### UXO 1 – Fleming Key Dredge Spoils Area

The following activities have been performed to date:

- Preliminary Assessment Completed in 2010
- Limited Site Inspection Performed in 2012
- Expanded Site Inspection Completed in 2013
- Confirmatory Sampling/Excavation Performed in 2016
  - More than 1,900 anomalies were detected, and 562 were further assessed using Advanced Geophysical Classification (AGC).

Findings to date include the following:

- No munitions and explosives of concern (MEC) were found.
- Confirmatory sampling found cultural debris such as pipes, fittings, cables, anchors, etc.
- The next step is to determine what, if anything, needs to be done to complete the characterization of the remaining anomalies.

### ***Questions, Answers, and Comments:***

There were no questions related to UXO 1 – Fleming Key Dredge Spoils Area.

#### UXO 3 – Trumbo Point Temporary Staging Area

UXO 3 is the former Location of storage tank D-3, which was a 563,000 gallon “cut and cover” tank constructed in 1942 and abandoned in the mid-1990s.

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The following investigation activities have been performed to date:

- Preliminary Assessment completed in 2010
- Limited Site Inspection performed in 2012
- Digital Geophysical Mapping (DGM) and AGC Surveys completed in 2017
  - Less than 1,000 metallic anomalies detected
  - AGC used to further characterize 507 of the anomalies
  - 127 identified as “Targets of Interest” for confirmatory sampling

The next step will be to perform a Non-Time Critical Removal Action scoped to perform the confirmatory sampling.

### **Questions, Answers, and Comments:**

There were no questions related to UXO 3 – Trumbo Point Temporary Staging Area.

### UXO 4 –Dead 8 Spoils Piles and Vegetation Conversion Area (VCA) 8 and VCA 22

The scope of work was expanded to include maintenance and survey activities at the Dead 8 Spoils Piles and VCAs 8 and 22. These activities included the following:

- Remove and limit future vegetative growth on the Dead 8 piles that could impair airfield visibility
- Install warning signs at the Dead 8 piles
- Perform instrument aided surface sweeps to remove any exposed MEC/material potentially presenting an explosive hazard (MPPEH) and metallic debris within VCAs 8 and 22
- Perform DGM surveys within VCAs 8 and 22

### **Questions, Answers, and Comments:**

**Q: Mimi Stafford, RAB Community Member – Co-Chair.** Regarding the airfield: Is the restoration completed and will the (Dead 8) spoils piles be reused?

**A: Ed Russell, NAS Key West.** The restoration is complete, and the dredge material needs to be treated as possibly containing UXO. The Dead 8 area is on hold pending funding. In order to maintain airfield clearance requirements, the vegetation on these spoils piles will need to be removed. The area will be marked with warning signs that it has suspect UXO.

**Q: Mimi Stafford, RAB Community Member – Co-Chair.** Is there any constraint for erosion if the vegetation is removed?

**A: Ed Russell, NAS Key West.** The roadways and old taxiways around the piles confines them within the airfield, and any potential erosion will be contained.

**A: Ron Demes, RAB Navy Co-chair.** The base is under a multi-sector stormwater permit. Any time vegetation is stripped from the soil, there is an erosion problem. The fill is a non-structural fill and does not have value as such. The plan was never to have the piles left, but potential munitions issues required it to be left in place until those concerns were addressed.

**A: Ed Russell, NAS Key West.** The reason that VCA 8 and 22 was included in UXO 4 was due to that possibility that some of the ½ foot of top soil material placed in these two areas originated from the Dead 8 Spoils Piles.

# NAS KEY WEST RESTORATION ADVISORY BOARD

## 25 JULY 2018 MEETING SUMMARY

**LOCATION:** Florida Keys Eco-Discovery Center, Key West, Florida

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### UXO 6 – North Boca Chica Skeet Range and Pistol Range

Previous assessments include the following:

- Preliminary Assessment Completed in 2010 – Archival research and limited visual inspection
- Limited Site Inspection Performed in 2012 – X-ray Fluorescence field screening for lead – Soil and sediment sampling/analysis
- 2018 Remedial Investigation Field Activities completed in January
  - Expanded soil and sediment sampling based on 2012 findings
  - Ecological checklist to support ecological risk assessment
  - GPS survey of site features

Soil and sediment sampling to date includes the following:

- Soil Exceedances
  - Arsenic
  - PAHs
  - Nitroglycerin
- Sediment Exceedances
  - Arsenic
  - Tin

The next steps are to evaluate the soil data, collect additional soil step-out samples and install monitoring wells if necessary, and prepare a Remedial Investigation Report.

### **Questions, Answers, and Comments:**

**Q: Ron Demes, RAB Navy Co-chair.** Having grown up near a Superfund site, the projectiles from the expended ordnance and the leaching of lead would be minimal. Do you see a lot of projectiles in the pistol range that could be eroded?

**A: Chad Tripp, Resolution Consultants.** There were no pellets observed at the Skeet Range, and slugs were found at the Pistol Range.

### **SUNSETTING THE RAB, RON DEMES, RAB NAVY CO-CHAIR**

The RAB can be adjourned where there is no longer sustained community concern/involvement. Ron asked the audience how many people were in attendance from the general public. There were 5 attendees of the general public, and 4 were local to the community.

Mark Songer said he put the question of sunsetting the RAB out before he heard about UST 10. He asked if there could be any other new sites being worked on that we may be discussing next year that weren't mentioned at this meeting. Ron stated the Navy does not expect to find any additional sites. Ron also noted that when the Navy stated investigating potential environmental issues that they conducted interviews with people that had historical knowledge of operations and researched other documentation to see if unknown sites could be out there.

If something is discovered, Ed Russell (i.e., the Installation Restoration Manager) will have the site listed as an Area of Concern until it is determined if it is an actual site. Ron said there are no new Areas of Concern identified at this time.

# NAS KEY WEST RESTORATION ADVISORY BOARD

## 25 JULY 2018 MEETING SUMMARY

**LOCATION:** Florida Keys Eco-Discovery Center, Key West, Florida

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Ed Russell said when the site (UST 10) was identified as a suspect site, the FDEP was immediately notified, and the state's requirement for cleanup is currently being followed.

Mark asked if there are any other active shooting ranges to be concerned with. Ron said there is only one. It is a small arms range on Boca Chica that has been in place for quite some time and is an active range. There are controls in place to measure the amount of lead that goes into the berm. Ron also noted that there is not much leaching of lead in limestone soils.

Ron asked the RAB members what they would like to do – either continue the RAB or move to disband the RAB. Ed Russell commented that 3 years ago, there were approximately 15 public members (not counting military and City of Key West officials), two years ago the number was 8, and last year it was 4.

Ron also noted that Environmental reviews will continue from the State and stakeholders impacted. Any environmental issues will be handled through the regulatory process.

Mark Songer said he would like to go for one more year, and if there are no significant developments on UST 10, then steps to disband should be made.

Mark made the motion and Mike seconded it. No RAB members disagreed with the motion, and the motion was carried.

### **POTENTIAL TOPICS FOR NEXT MEETING (JULY 2019), RON DEMES**

The potential topics requested by the public and RAB members for the next meeting included the following:

- Installation Restorations Program Updates
- MRP Updates
- UST 10
- Sunsetting the RAB

The next RAB meeting is potentially scheduled for July 2019.

### **MEETING ADJOURNMENT**

Ron reminded the attendees that contact information is included in the minutes, and the community can contact RAB members if they have questions that pertain to the topics in this meeting and for other questions feel free to contact the NAS Key West Public Affairs Officer, Ms. Trice Denny.

If a community member would like to see a site, they can contact Ed Russell at NAS Key West.

Information about the cleanup and other activities can be found at the following websites: [http://cnic.navy.mil/regions/cnrse/installations/nas\\_key\\_west.html](http://cnic.navy.mil/regions/cnrse/installations/nas_key_west.html) or <http://go.usa.gov/KSDJ>.

Ron Demes thanked everyone for coming to the meeting. The meeting was adjourned at 7:46 PM.

An informal question and answer period was conducted after the meeting concluded.



# 2018 Restoration Advisory Board Installation Updates

## Installation Restoration / Munition Response Programs

Information provided by:  
Edward Russell, NAVFAC SE NASKW  
Edward.O.Russell@navy.mil  
305-797-4461





## 2018 RAB Installation Updates



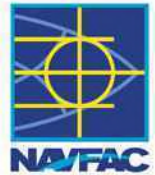
### • Activities since RAB July 2017

- Install 3 wells at TPTF – July 2017
- UXO Work: July 2017 advanced geophysical, Nov 2017 surface clearance, May 2018 geophysical
- Numerous and ongoing sampling events across several sites
- Well repairs (cosmetic): several concrete pads and covers, locks and J-plugs and other well components
- Historic Radiological Assessment (HRA): Aug 2017 kickoff, March 2018 site visit and document collection, public outreach later 2018 (Sept?), project completion report 2020
  - Historical use and disposal of general radioactive materials (G-RAM)
  - Dept. of Navy multi-installation project

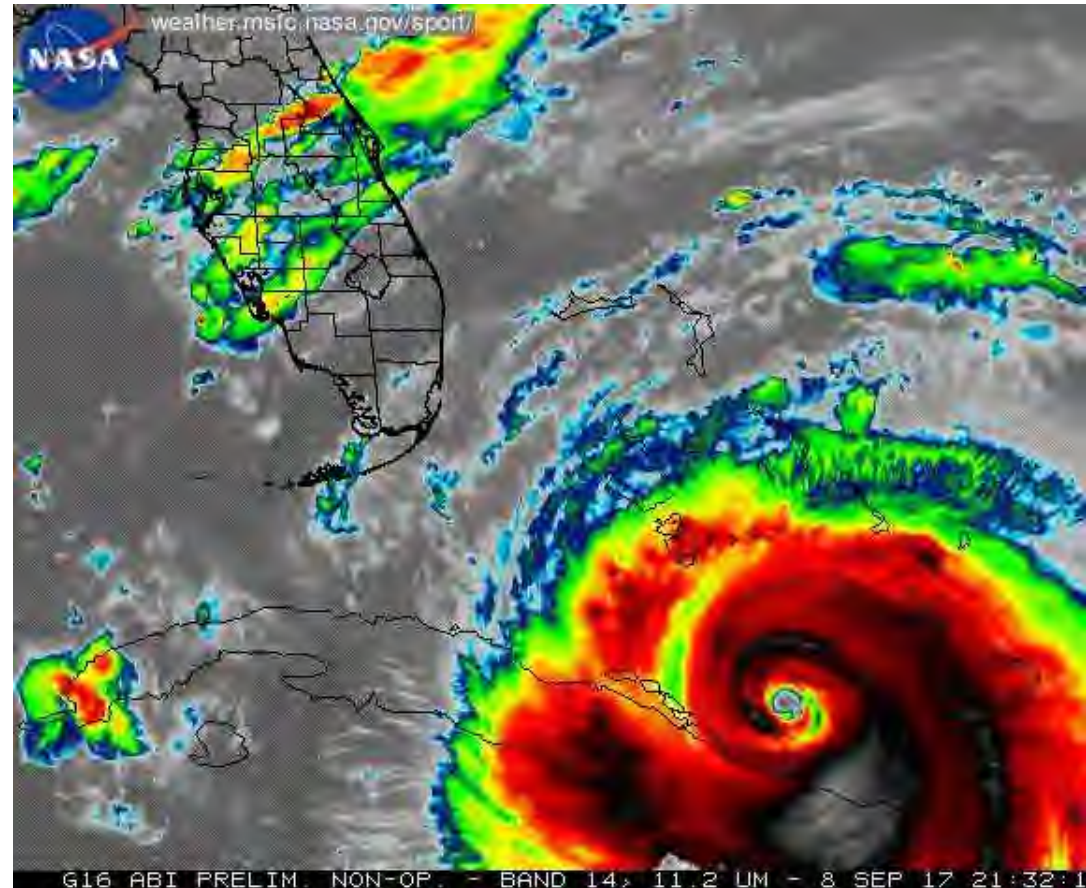




## 2018 RAB Installation Updates



- **Hurricane Irma:**  
**Sept 10, 2017**
- **Installation personnel orders:**
  - evacuation Sept 6, 2017.
  - return Sept 25, 2017.
- **NOAA Aerial Flights**
  - Key West, Boca Chica and other Lower Keys areas starting 09-11-17.
  - Installation aerials shown are from 09-11-17 flight.
    - <https://storms.ngs.noaa.gov/storms/irma/index.html>



[https://twitter.com/NASA\\_SPoRT?ref\\_src=twsrc%5Etfw&ref\\_url=https%3A%2F%2Fwww.space.com%2F38058-hurricane-irma-nasa-noaa-satellite-gifs.html](https://twitter.com/NASA_SPoRT?ref_src=twsrc%5Etfw&ref_url=https%3A%2F%2Fwww.space.com%2F38058-hurricane-irma-nasa-noaa-satellite-gifs.html)



## 2018 RAB Installation Updates



- **Estimated base damages greater than \$101 million.**
  - **192 of 355 NAS facilities with identified damage**
    - Airfield Control Tower
    - Fly Navy building >\$11 million
    - Hangar A-936 (c1954) structural damage
    - Approximately 10 base housing units were impacted (wind and/or flooding).
- **Vessel Cleanup – October 2017**
  - **80 on Navy Property (28 claimed by owners)**
- **Storm surge:**
  - **Appears less than that of 2005 Hurricane Wilma's effect on the base. (2017: <https://stn.wim.usgs.gov/FEV/#IrmaSeptember2017>)**





## 2018 RAB Installation Updates



- **Facility Building Damage - examples**

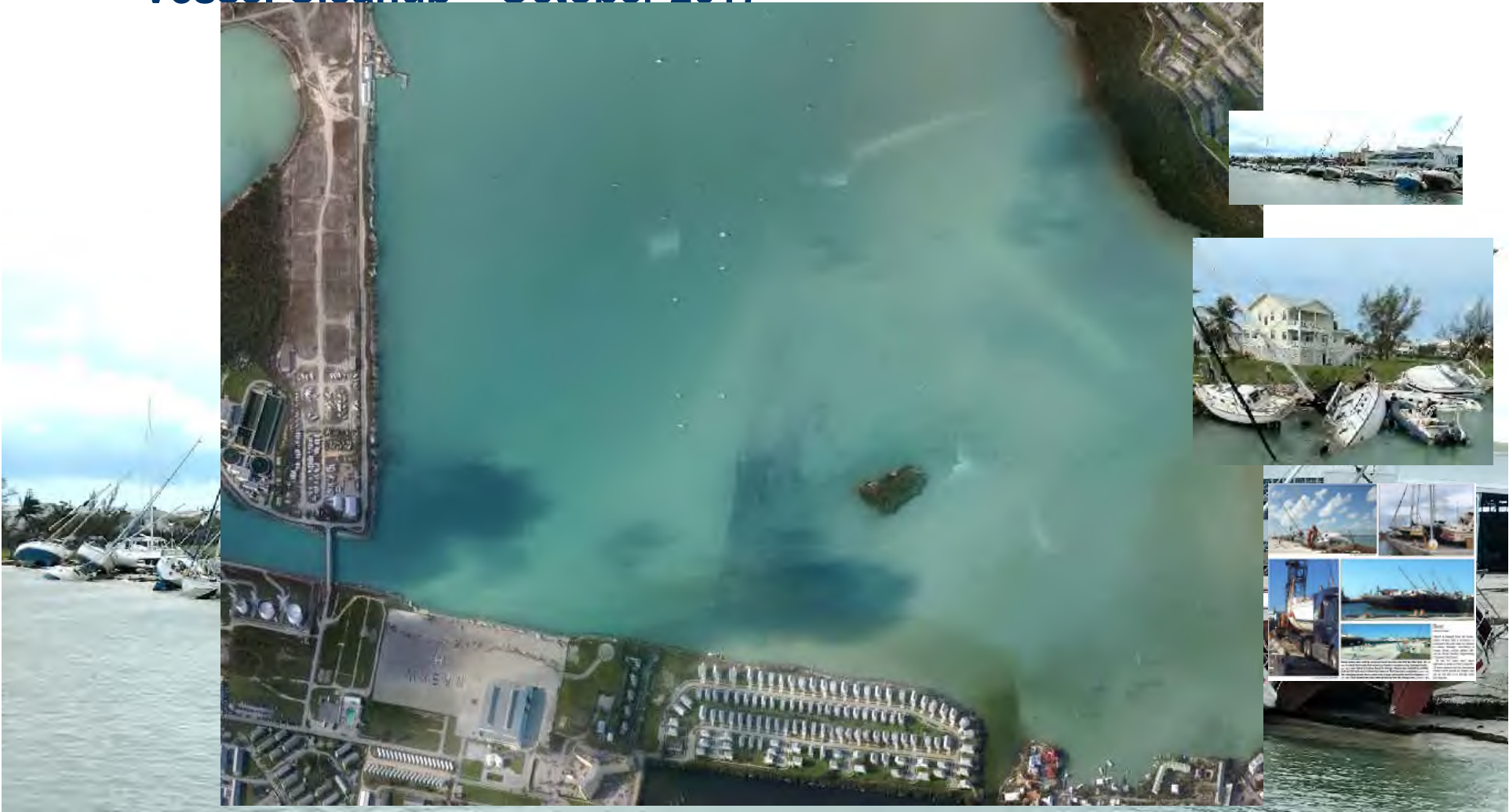




# 2018 RAB Installation Updates



- Vessel Cleanup – October 2017







## 2018 RAB Installation Updates



- Storm surge – weed line: (Runway 26 South side)





## 2018 RAB Installation Updates



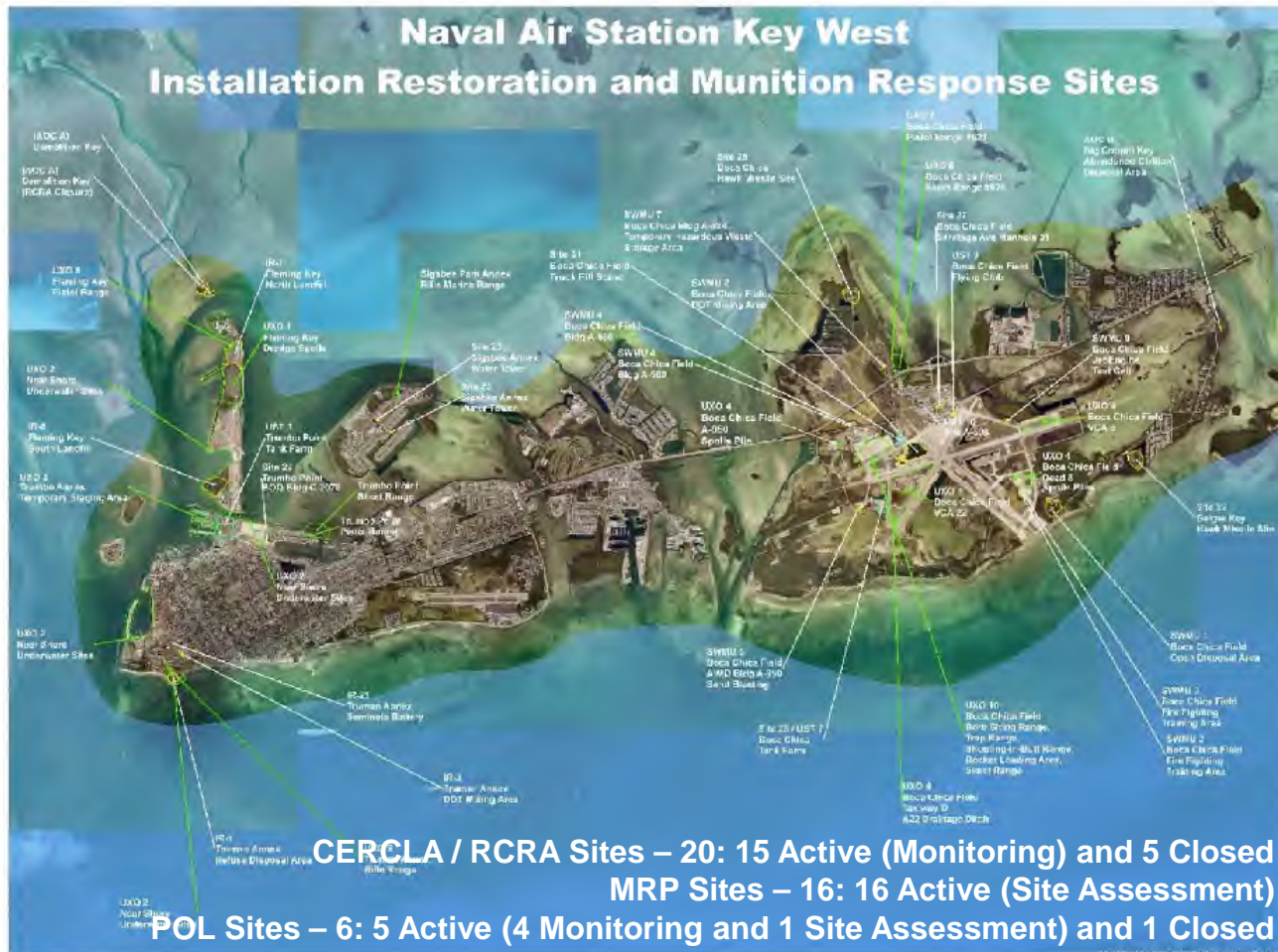
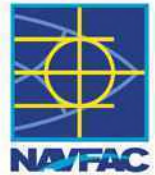
- Storm surge – weed line: (Runway 26 North side)







# 2018 RAB Installation Updates (IRP/MRP Sites Map)



RCRA: Resource Conservation and Recovery Act  
 CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act  
 POL: Petroleum, Oil and Lubricants



# Hurricane IRMA Impacts on IRP/MRP Sites



## 2018 RAB Installation Updates – IR 1 (Truman Annex)



Weed Line  
Settling around utility pole  
Asphalt lifting





## 2018 RAB Installation Updates – IR 1 (Truman Annex)



- IR 1

- Some settling near utility pole
- Small section of road asphalt lifted
- No other visual issues with soil cap

Area of Asphalt that washed out due to Hurricane Irma





## 2018 RAB Installation Updates – IR 8 (Fleming Key)



### •IR 8

- Trees laid over (Australian Pines)
- Sailboat washed ashore
- Undermining of small area of concrete armor matting







## 2018 RAB Installation Updates – IR 8 (Fleming Key)



### •IR 8: Typical shoreline after Hurricane Irma







## 2018 RAB Installation Updates – IR 8 (Fleming Key)



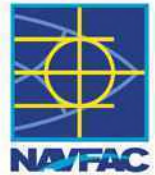
- IR 8: undermining of small section of concrete armor riprap







## 2018 RAB Installation Updates – TPTF North/South (Trumbo Point)



- **Trumbo Point Tank Farm (TPTF) North**
  - Area within the Key West Pipe Line perimeter
  - No reported issues with wells in this area.
- **Trumbo Point Tank Farm (TPTF) South**
  - One well was potentially affected due to a melaleuca tree falling.





# 2018 RAB Installation Updates – UXO 3 (Trumbo Point)



## •UXO 3 – Trumbo Point Staging Area (vegetation cleared July 2017)







## 2018 RAB Installation Updates – UXO 3 (Trumbo Point)



- UXO 3 – Trumbo Point Staging Area  
– Downed trees along perimeter





## 2018 RAB Installation Updates – UXO 3 (Trumbo Point)



### •UXO 3 – Trumbo Point Staging Area







## 2018 RAB Installation Updates – SWMU 1 (Boca Chica)



### • SWMU 1



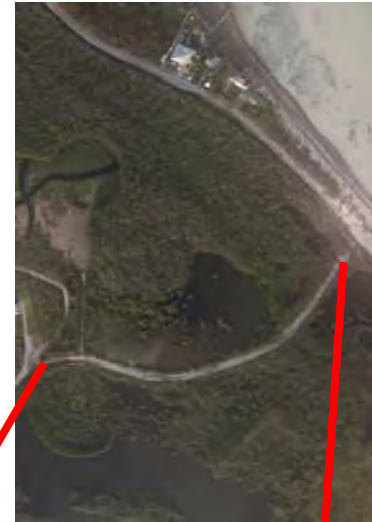


## 2018 RAB Installation Updates – SWMU 1 (Boca Chica)



- **SWMU 1**

- Some signage damaged
- Wells ok







## 2018 RAB Installation Updates – SWMU 1 (Boca Chica)



- **SWMU 1**

- Well outside fencing still present
- No weed line on fencing







## 2018 RAB Installation Updates – SWMU 1 (Boca Chica)



- **SWMU 1**

- No Hurricane damage

- Debris Clean-up damage: well protective cover and bollards







## 2018 RAB Installation Updates – BCTFS Site 31 (Boca Chica)



- **Site 31 – Boca Chica Truck Fill Stand (BCTFS)**

- No issues
- Good indicator of storm surge on perimeter fence





## 2018 RAB Installation Updates – BCTFS Site 31 (Boca Chica)



- Site 31 – Boca Chica Truck Fill Stand (BCTFS)
- Approximate Debris / Weed Line in red







## 2018 RAB Installation Updates – UST 9 BCFC (Boca Chica)



- **UST 9 – Boca Chica Flying Club (BCFC)**  
– Photo from July 2017 RAB meeting presentation – Pre-Irma





## 2018 RAB Installation Updates – UST 9 BCFC (Boca Chica)



### • UST 9 – BCFC

- loss of outer waste storage building
- Roof damage on adjacent building





## 2018 RAB Installation Updates – UXO 6 (Boca Chica)



- **UXO 6 – Boca Chica Skeet and Pistol Ranges:**
  - Aerial shows some seaweed/debris - confirmed visually
  - No other issues noted







# Questions & Comments





# Installation Restoration Program Updates

Presented by:  
Tread Kissam, NAVFACSE  
[benjamin.kissam@navy.mil](mailto:benjamin.kissam@navy.mil)



## Installation Restoration Program Updates



- **RAB 2017 – presented four sites anticipated to close in calendar year 2018 using Risk Management Option II (RMO-II)**
  - Geiger Key Hawk Missile Site – Site 22
  - Boca Chica Flying Club – UST 9
  - Trumbo Annex BOQ – Site 29
  - SWMU 9 – Jet Engine Test Cell
- **Provide update on status of above four sites**
- **Provide status of three additional sites working towards closure in calendar 2018/2019**
  - Boca Chica Hawk Missile Site – Site 25
  - Boca Chica Tank Farm – Site 28
  - Boca Chica Truck Fill Stand – Site 31

Florida Administrative Code Rule 62-780.680 closure options - Risk Management Option II (RMO-II), No Further Action with institutional controls and/or engineering controls.



## Boca Chica Flying Club (BCFC) – UST 9



- The Boca Chica Flying Club is located along the northwest boundary of Taxiway "H", south of Building A-133 at Boca Chica Field.
- The BCFC was in operation until the late 1960s.
- The BCFC is the former site of four ASTs and associated dispensers and piping – removed in 1992.
- 983 cubic yards of soil removed from the site in 1998
- Overfilling is the suspected cause of petroleum contamination at the site.



3-18-2017 Google Earth Image

AST: Aboveground storage tank.





# Boca Chica Flying Club – UST 9



- Soil sampling in April 2016 (upper 3 feet)
- ~24 monitoring wells on site
  - Groundwater (GW) sampled April 2016 & Dec 2017
- Results appear to demonstrate contamination is confined and less than ¼ acre within site



Figure from 2016 Sampling and Analysis Plan

Figure from Battelle's July 2016 Draft report



## Boca Chica Flying Club – UST 9



- **Originally anticipated to close under RMO-II at the end of Calendar year 2017 (first quarter fiscal year 2018)**
  - Delays resulted from contract changes and Hurricane Irma
- **Site is anticipated to close with controls sometime late calendar year 2018 or early 2019**
  - Final document needs to be produced incorporating GW data from April 2016 / December 2017 sampling along with 2016 soil samples.







## Geiger Key Hawk Missile Site – Site 22



- **The former Geiger Key Army Hawk Missile Site (AHMS) is approximately 12 acres**
  - Work on the facility began in 1965 in support of the Cuban Missile Crisis, and continued for several years thereafter
  - It was used for coastal defense until 1979, at which time the Army units demobilized from all of the Hawk Missile batteries in the Florida Keys
- **Petroleum contaminated site**
  - 2000 and 300 gallon fuel tanks closed in 1996.



3-18-2017 Google Earth Image

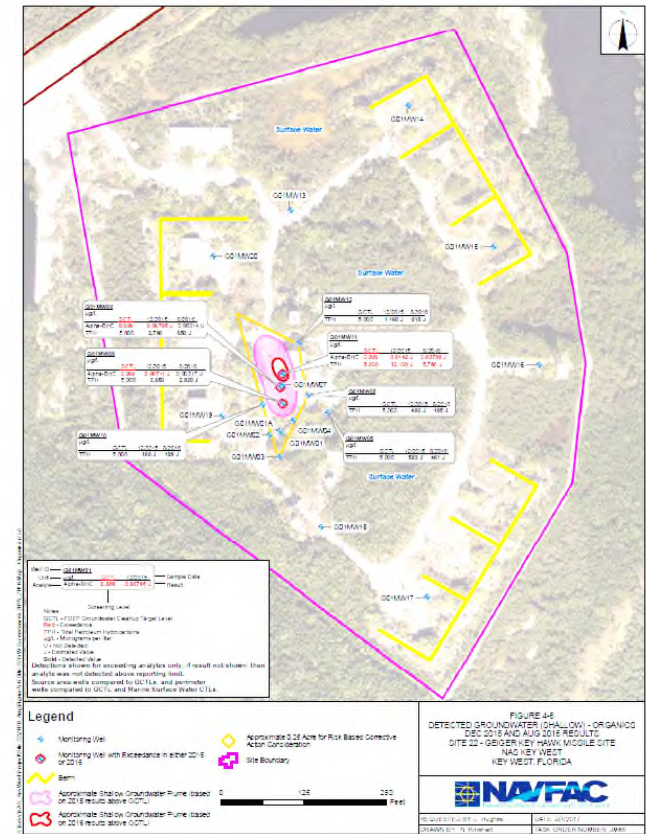




# Geiger Key Hawk Missile Site – Site 22



- **Groundwater sampling events**
  - August 2016 and December 2017
  - No significant changes in area of contamination
- **Next events: final document needs to be produced incorporating GW sampling events**
  - Submit to FDEP
- **Site was originally expected to close calendar year 2018 using RMO II with controls**
  - Site anticipated to close late calendar year 2018 or early 2019



Draft Expanded Site Inspection Report Site 22 — Geiger Key Hawk Missile Site February 2017



## Boca Chica Hawk Missile Site – Site 25



- Site historical use is similar to that of Geiger Key Hawk Missile Site – Site 22
- Two aboveground storage tanks removed in 1996, one being 2,000 gallons
  - GW sampling in vicinity showed signs of petroleum contamination - levels were within GCTL
  - 1,1-dichloroethene (1,1-DCE) and vinyl chloride (VC) detected above GCTLs



GCTLs: Groundwater Cleanup Target Levels  
SRCR: Site Rehabilitation Completion Report



## Boca Chica Hawk Missile Site – Site 25



- **January 2017 installed and sampled deep well for vertical delineation**
- **Two semi-annual GW sampling events conducted**
  - June 2017 and Dec 2017
- **Vertical delineation confirmed with new deep well and existing well network**
- **Contamination delineated and appears confined to less than 1/4 acre**







## Boca Chica Hawk Missile Site – Site 25



- **Next events: final document needs to be produced incorporating June/Dec 2017 GW sampling events**
  - Submit to FDEP
- **Site anticipated to close late calendar year 2018 or early 2019 using RMO II with controls**





## Boca Chica Tank Farm – Site 28



- Boca Chica Tank Farm has been used to store jet fuel, aviation gasoline, waste/used oil, diesel fuel, and unleaded gasoline for various activities since 1942
- 1975 was the earliest documentation that could be located on releases at the site
- 1999 FDEP approved a No Further Action based on a 1996 contamination assessment
- Discharge discovered during removal of a pipeline and tank  
–Site Assessment conducted 2000





## Boca Chica Tank Farm – Site 28



- **Period of Monitored Natural Attenuation implemented in 2001**
- **In 2012, a Long Term Monitoring report recommended an SRCR be submitted for closure using RMO-II with controls**
- **2006-2012, semi-annual groundwater sampling conducted**
- **SRCR put on hold as vertical delineation not complete**
- **Jan 2017: installed new deep well for vertical delineation**
  - GW wells sampled



SRCR: Site Rehabilitation Completion Report





## Boca Chica Tank Farm – Site 28



- **June and Dec 2017 groundwater sampled for semi-annual requirement in moving towards closure**
  - Preliminary results appear to demonstrate vertical and horizontal delineation and contamination confirmed to less than ¼ acre
- **Next events: final document needs to be produced incorporating June/Dec 2017 GW sampling events**
  - Submit to FDEP
- **Site anticipated to close late calendar year 2018 or early 2019 using RMO II with controls**





## Trumbo Annex BOQ (TPBOQ) – Site 29



- **1998 - An underground free-phase petroleum plume was first discovered. Approximately 55 cubic yards of contaminated soil and approximately 10 gallons of free product were removed. Due to the proximity of the building and an active propane gas supply line, excavation of the entire extent of impacted soils was not possible**
- **1999 - Site assessment concluded that diesel fuel free product probably remains, dissolved phase groundwater petroleum hydrocarbon concentrations exceeded the GCTLs**



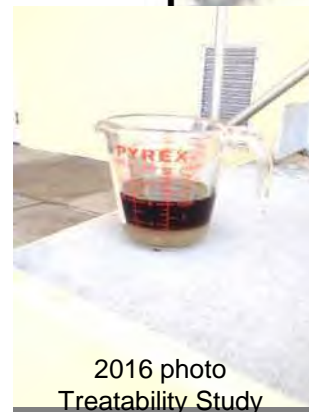
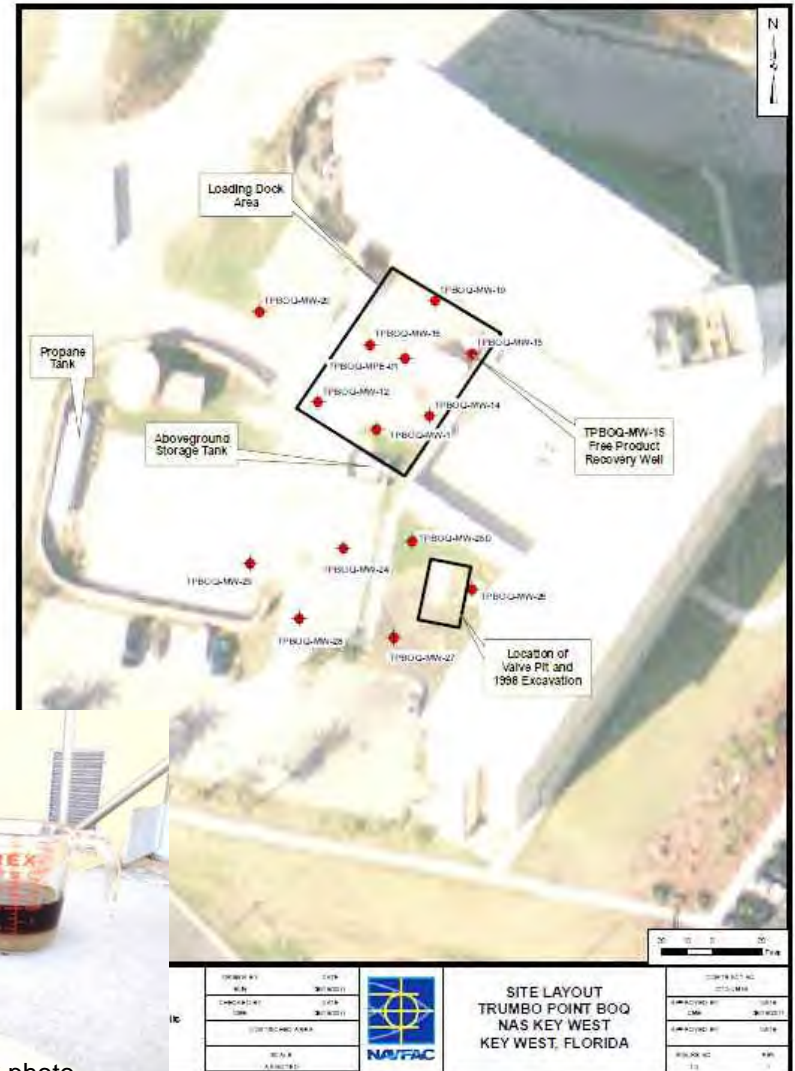
3-18-2017 Google Earth Image



# Trumbo Annex BOQ – Site 29



- **2002: multi-phase extraction event planned but proved ineffective**
- **GW Sampling 2003, 2006 and 2008**
- **Treatability studies performed**
  - **Product in 3 wells**
  - **2007-2008: 35 gallons product**
  - **2008-2009: 3.1 gallons**
  - **2009-2010: <2 gallons**
  - **2010-2011: <1 gallon**
  - **2011-2012: 0.2 gallons**
  - **2016 (6 months): 1.3 gallons**



GCTL: Groundwater Cleanup Target Level

NIRIS Doc # 001498

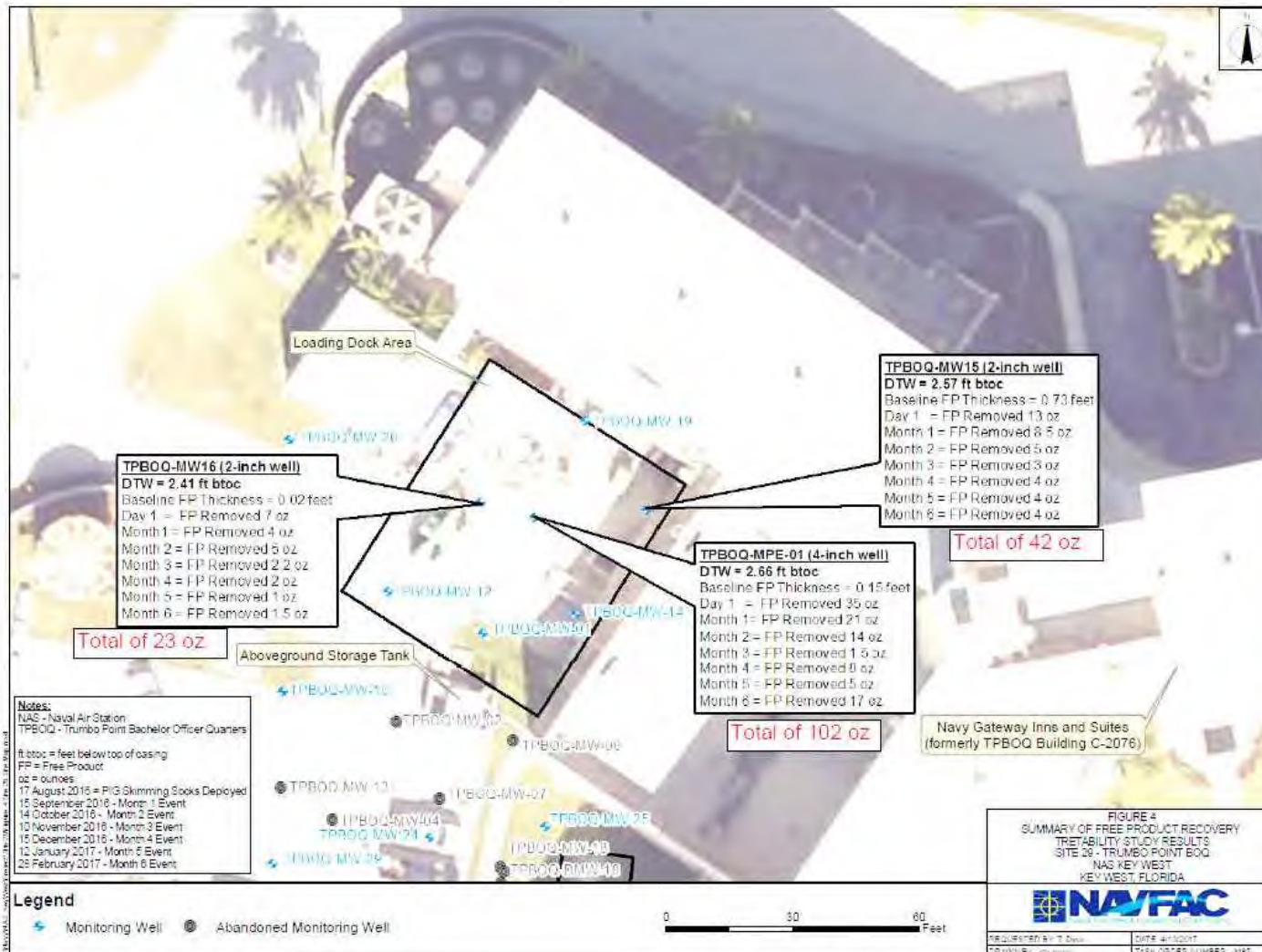




# Trumbo Annex BOQ – Site 29



2016 / 2017  
Treatability  
Study  
Preliminary  
Data





## Trumbo Annex BOQ – Site 29



- **Groundwater sampled Jan 2018**
  - Historic and current GW data indicated contamination vertically delineated
  - Horizontal delineation not complete along north-northeast portion around well 15
- **This site is being evaluated for closure under RMO II(a)**
  - (1) Free product is not present and no fire or explosive hazard exists as a result of a release of non-aqueous phase liquids, or
  - (2) Free product removal is not technologically feasible or cost-effective; and,
  - (3) Free product is not migrating and does not pose a risk to human health, public safety or the environment





## Trumbo Annex BOQ – Site 29



- **Next events:**

- Installation of additional well east of building – calendar year 2018
- Collection of four quarterly groundwater sampling events (2018-2019)
- Closure anticipated early calendar year 2020







## Site 31 – Boca Chica Truck Fill Stand



- A 1,000-gallon removed in 1995 - soil impacts
- In 2000 soil with strong petroleum odor / discoloration in trenches being excavated
- In 2009/2010 installation of 298 Direct Push Technology (DPT) borings
- 2012/2013: quarterly monitoring
- 2015-2017: Navy/FDEP completed plans for expanded site assessment with ERA for site and adjacent wetlands



ERA: Ecological Risk Assessment



## Site 31 – Boca Chica Truck Fill Stand



- **2018: Began quarterly sampling**
  - January / April / July completed
  - Samples of wetland delayed due to lack of wet wetlands (both April and July)







## Site 31 – Boca Chica Truck Fill Stand



- **Current findings**

- Groundwater results similar to historical data with analytes above CTLs on the western portion of the site adjacent to the wetland and surface water body

- **Path forward**

- Install new shallow well to the northwest of MW13 to laterally delineate PAHs above CTLs

- Continue to collect co-located surface water, pore water, and sediment samples in the west wetland

- Sample wetland as soon as “Wet”

- Sample new well after install and again 4<sup>th</sup> quarter with other wells







## SWMU 9 – Jet Engine Test Cell



- **1969 - 1995: Jet Engine Test Cell, associated with building A-969, used for the testing of repaired jet engines**
- **Contamination Assessment Report (CAR) identifying Dichloroethene (DCE) and benzene plumes in the eastern part of the site**
- **2013: contamination confined to less than ¼ acre (Horizontally). Natural breakdown still occurring.**



March 2017 Google Image





## SWMU 9 – Jet Engine Test Cell



- **2016:** Installed two deep wells for vertical delineation.
- **2017:** Two semi-annual samples conducted January and December (hurricane delayed). Horizontal/Vertical delineation confirmed, contamination confined to ¼ acre.
  - Ready to move towards closure
  - Previous planned path RMO-II in 2018.
- **Site is a SWMU and part of RCRA/HSWA permit**
  - 62-780/RMO-II not correct closure option
  - Corrective Measures Implementation Plan (CMIP) more appropriate RCRA/HSWA mechanism for closure
  - Requires public comment period



Figure from 2016  
Sampling and Analysis Plan

SWMU: Solid Waste Management Unit

HSWA: Hazardous and Solid Waste Amendment



## SWMU 9 – Jet Engine Test Cell



- **What's next:**
  - Prepare CMIP – incorporating 2018 groundwater data
  - Submit CMIP for public comment
  - Finalize comments and CMIP
  - Submit for regulatory review and concurrence
- **Closure anticipated calendar late year 2019**
  - Closure with groundwater controls







# Comments & Discussion



# Underground Storage Tank (UST) 10

## USTs Near Former Building A-508 at Boca Chica Field

2018 Restoration Advisory Board Public Meeting

Presenter: Linda Klink, Tetra Tech

7/25/2018



# UST 10 Update







# UST 10 Update

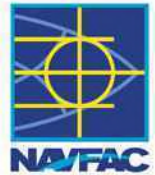


## HISTORY

Site first identified in October 2015 when a contractor for a utility trench excavation project in the area of Former Building A-508 encountered a strong petroleum-like odor when starting excavation activities.



# UST 10 Update



## **THE NAVY'S FIELD WORK SCOPE INCLUDED:**

- **GEOPHYSICAL SURVEY** – Search for and locate possible USTs in the suspect area, focused on nearby hatches as potential UST access ports.
- **SOIL SAMPLE COLLECTION** – Install 4 soil borings in the suspect area and collect surface and subsurface soil samples from each boring.
- **UST CONTENTS** – Determine if any material remains in USTs (if located) and depth of materials.

**Phase field work conducted from November 2017 to January 2018.**



# UST 10 Update



## GEOPHYSICAL SURVEYING DETAILS

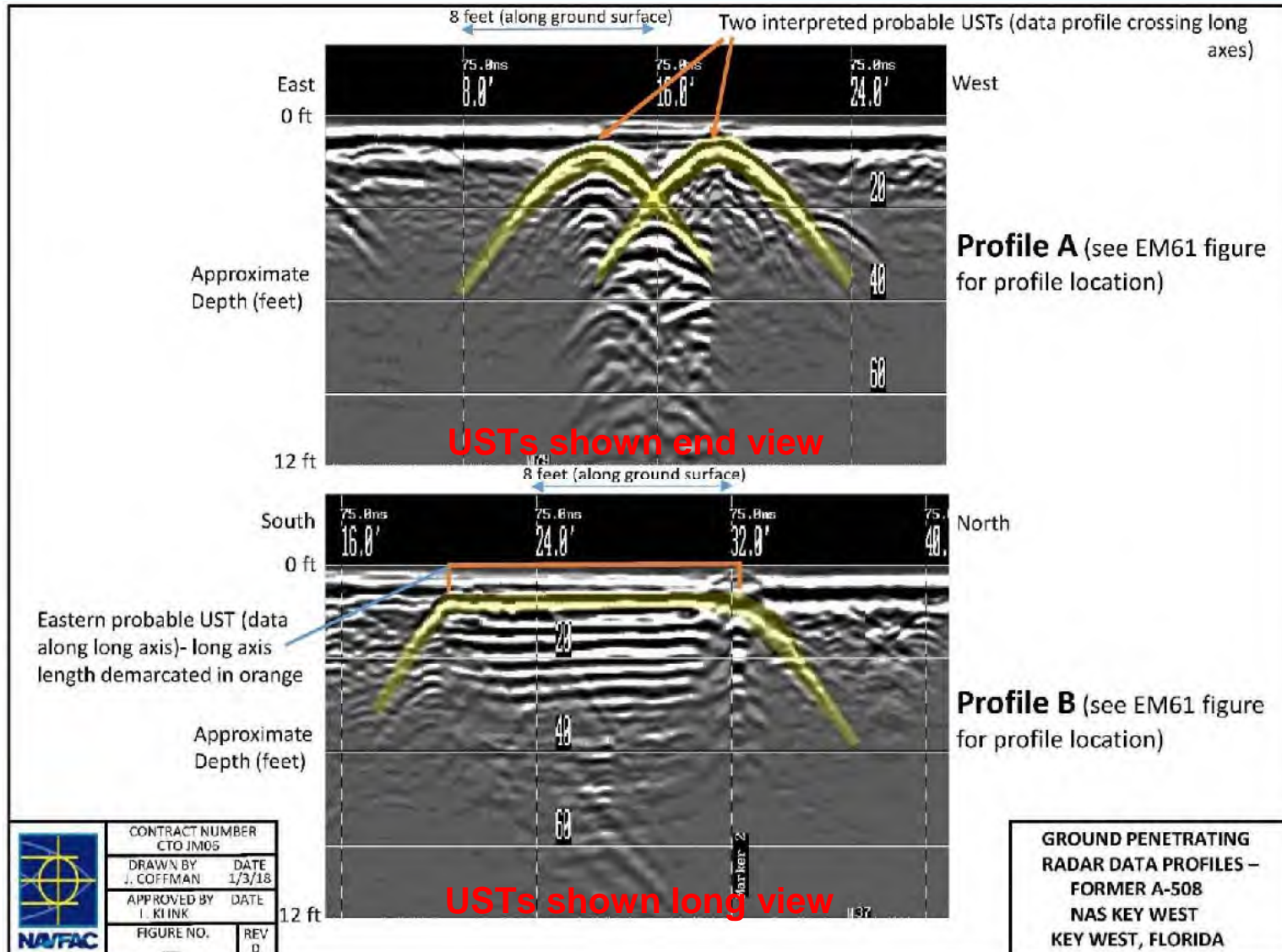
- EM61-MK2 (EM61) and ground penetrating radar (GPR) used to detect buried metal.
- Performed across the accessible portions of area surrounding hatches.
- 2 USTs identified, estimated 1000 gallons each





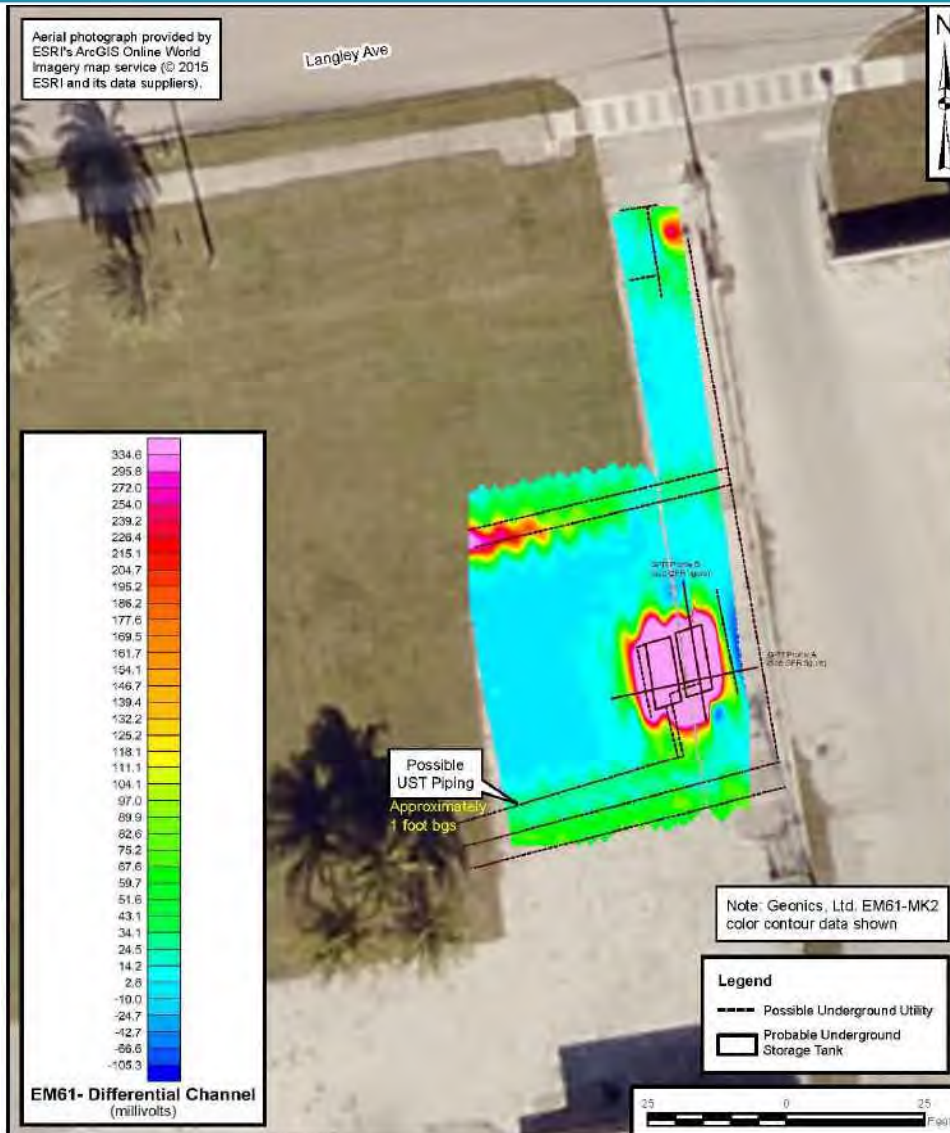


# UST 10 Update





# UST 10 Update



## EM61 GEOPHYSICAL SURVEY RESULTS

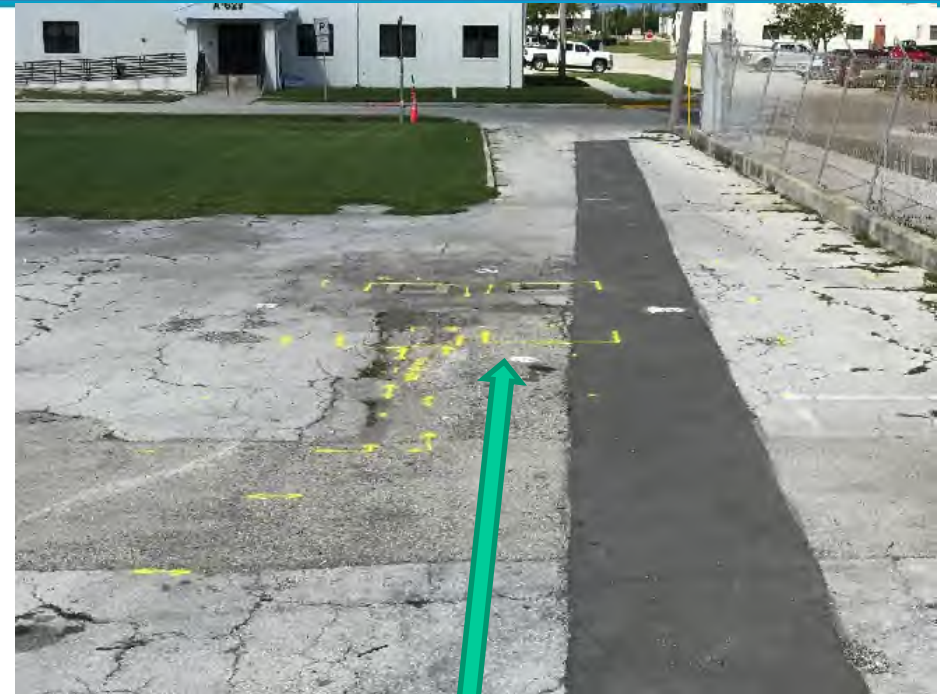
Color contouring  
performed

USTs are indicated by  
the elevated, color-  
contoured response  
values  
(shown in pink)





# UST 10 Update



**UST location outlines (shown in yellow) from geophysical survey.  
Zoom out photo on left and zoom in photo on right.**





# UST 10 Update



**VIDEO: Drilling soil borings for soil sampling and analysis**

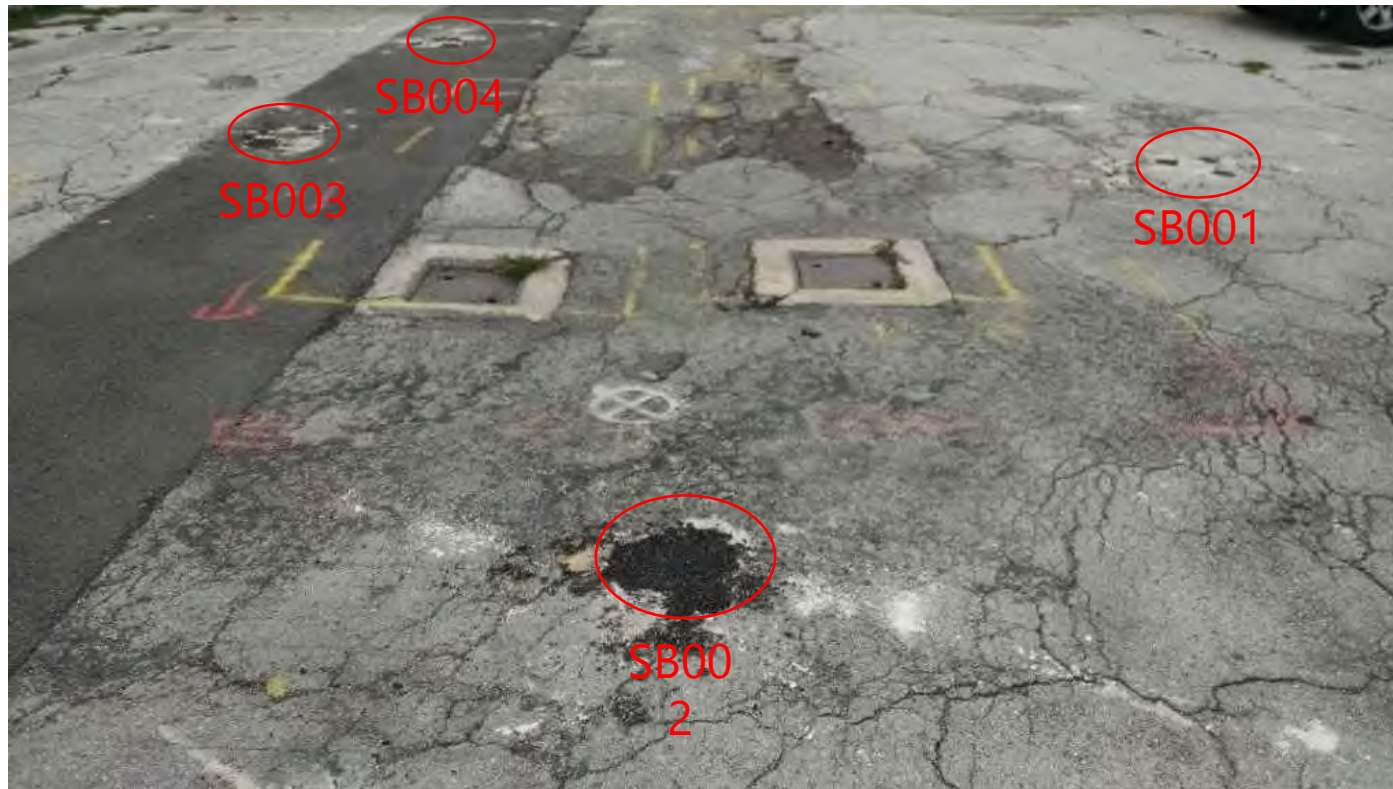




# UST 10 Update



Soil Boring Locations – 4 soil borings depicted by red circles



## Findings During Drilling

- Groundwater very shallow, encountered at 1.75 feet below ground surface.
- Strong petroleum odors noted.





# UST 10 Update



## TANK PHYSICAL INVESTIGATION

- Under hatch, dirt and corrosion were encountered. Scraped off dirt carefully at both hatch locations (red oval).
- Then chipped around each apparent port and encountered grout.



## UST CONTENTS

- 2 USTs likely were historically abandoned via grout in place.





# UST 10 Update



## SOIL SAMPLING ANALYTICAL RESULTS

Surface and subsurface soil samples analyzed for a full suite of chemicals\*

- No PCB detections.
- SCTL Residential and/or Industrial soil exceedances for Benzo(a)pyrene [BAP]; BAP Equivalents > 1, TRPH, and arsenic.
- SCTL Leachability Exceedances for many chemicals.
- Contamination is petroleum related.

\*Volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polynuclear aromatic hydrocarbons (PAHs), pesticides, polychlorinated biphenyls (PCBs), total recoverable petroleum hydrocarbons (TRPH), and metals including mercury.



# UST 10 Update



## Next Steps

- **Formally identify site as a Petroleum Site.**
- **Conduct additional investigation for both soil and groundwater.**
- **Navy will investigate the best options to handle the USTs.**
- **Submit a Site Assessment Report (SAR) in accordance with FDEP's contaminated site cleanup criteria once site investigation is complete.**



# Questions?





# Munitions Response Program (MRP) Update

2018 Restoration Advisory Board Public Meeting

Presenters:

Todd Haverkost and Chad Tripp

Resolution Consultants

7/25/2018



## MRP Sites



- **UXO 1 Fleming Key Dredge Spoil Area**
- **UXO 3 Trumbo Point Temporary Staging Area**
- **UXO 4 A950 Spoils Pile, A22 Drainage Ditch, Dead 8 Spoils Pile, and Vegetation Conversion Areas (VCA) 8 and 22**
- **UXO 6 North Boca Chica Pistol and Skeet Ranges**



# UXO 1

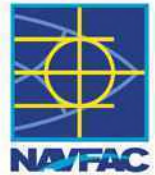
## Fleming Key Dredge Spoils Area







# Investigation Activities to Date



- Preliminary Assessment Completed in 2010
- Limited Site Inspection Performed in 2012
- Expanded Site Inspection Completed in 2013
  - More than 1900 anomalies detected using Digital Geophysical Mapping (DGM) and 562 were further assessed using advanced classification geophysics (AGC)
- Confirmatory Sampling/Excavation Performed in 2016



# Digital Geophysical Mapping







# Advanced Classification Geophysics







# Confirmatory Sampling Field Work









# Confirmatory Sampling Field Work



Source: Google Earth 2017





# Key Findings and Path Forward



- No munitions and explosives (MEC) of concern found
- Confirmatory sampling found cultural debris such as pipes, fittings, cables, anchors, etc.
- Next step is to determine what, if anything, needs to be done to complete the characterization of the remaining anomalies.



# UXO 3

## Trumbo Point Temporary Staging Area





# Historical Site Features







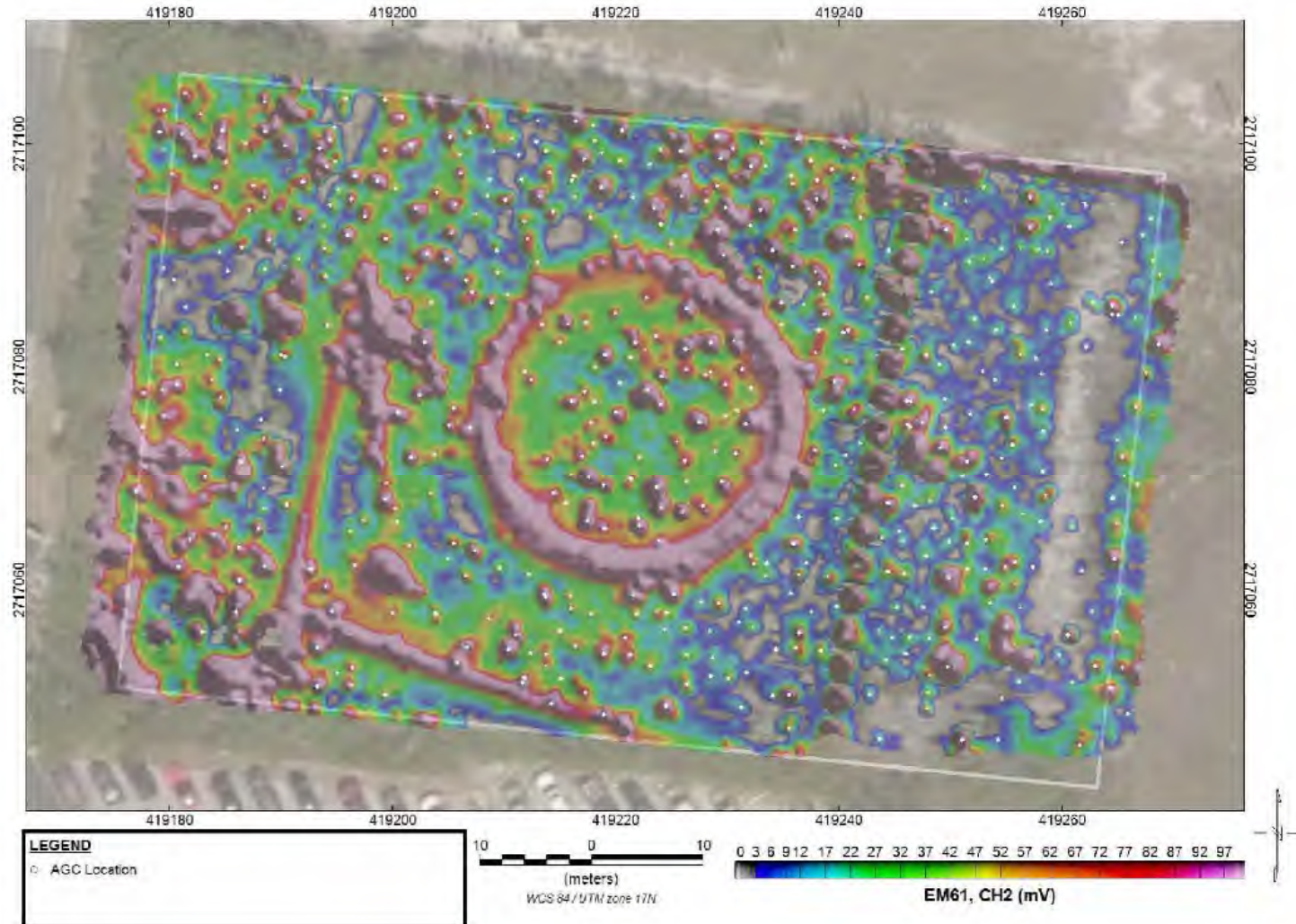
# Investigation Activities to Date



- Preliminary Assessment Completed in 2010
- Limited Site Inspection Performed in 2012
- Digital Geophysical Mapping and Advanced Geophysical Classification Surveys Completed in 2017

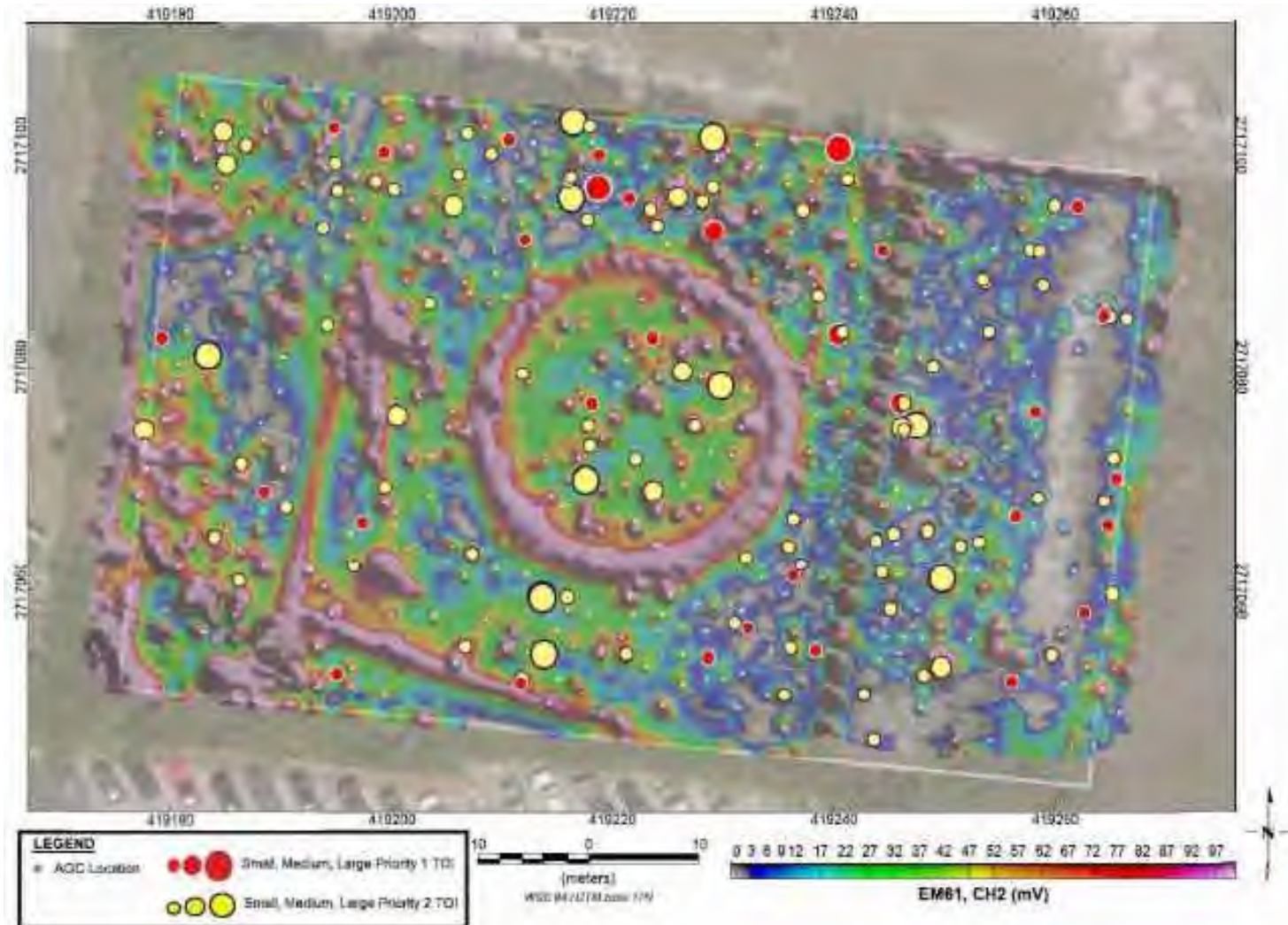


# Digital Geophysical Mapping Results





# Advanced Classification Geophysics Results







# Summary of Findings/Next Step



- Geophysical Survey Results:
  - More than 1,000 metallic anomalies detected
  - Advanced classification used to further characterize 507 anomalies, 127 identified as “Targets of Interest” for confirmatory sampling
- Non-Time Critical Removal Action Scoped to Perform the Confirmatory Sampling



# UXO 4: A950 Spoils Pile, A22 Drainage Ditch, Dead 8 Spoils Piles, VCA 8 & 22





## VCA 8/22 and Dead 8 Activities



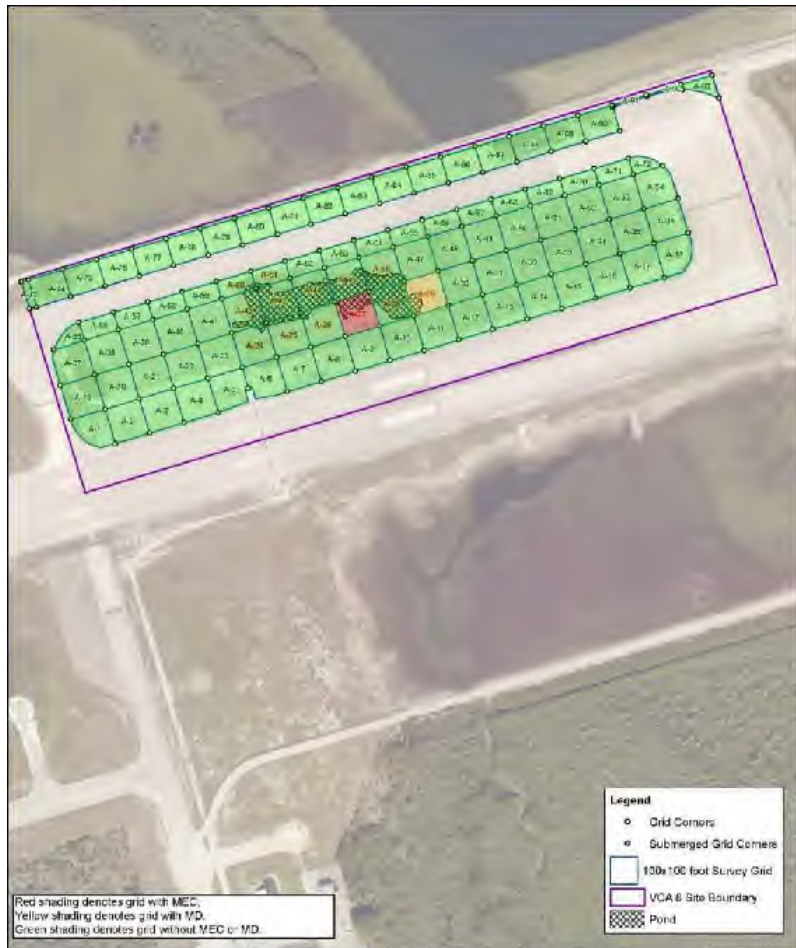
Scope expanded to include maintenance and survey activities at the Dead 8 Spoils Piles and VCA 8/22

- Perform instrument aided surface sweeps to remove any exposed MEC, materially potentially presenting an explosive hazard (MPPEH), and metallic debris within VCA 8/22
- Perform DGM surveys within VCA 8/22
- Remove and limit future vegetative growth on the Dead 8 piles that could impair airfield visibility
- Install warning signs at the Dead 8 piles

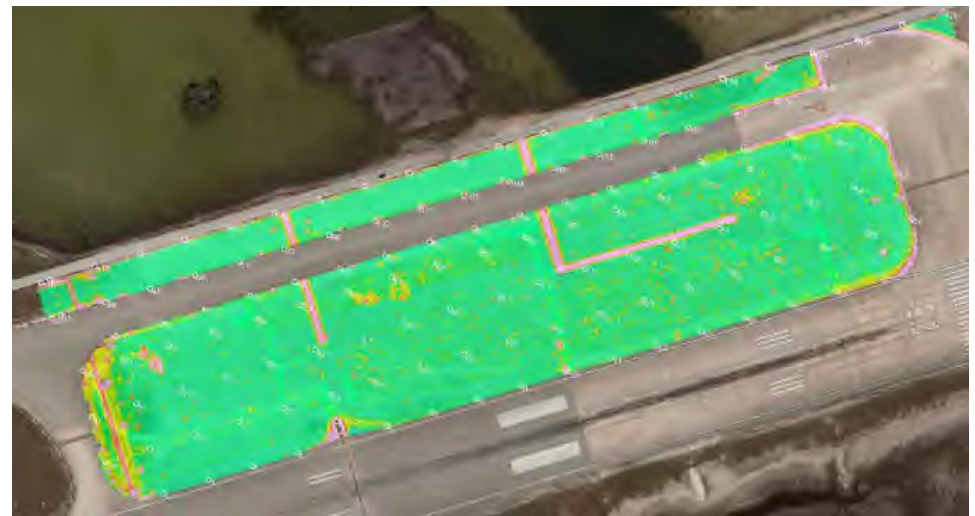




# Vegetation Conversion Area 8



## Surface Clearance



## Geophysical Survey



# Vegetation Conversion Area 22



## Surface Clearance



## Geophysical Survey





# Dead 8 Spoils Piles







# Dead 8 Spoils Piles





# UXO 6

## North Boca Chica Pistol and Skeet Ranges



# UXO 6

## North Boca Chica Pistol and Skeet Ranges







# Historical and Current Site Aerial





## Investigation Activities to Date

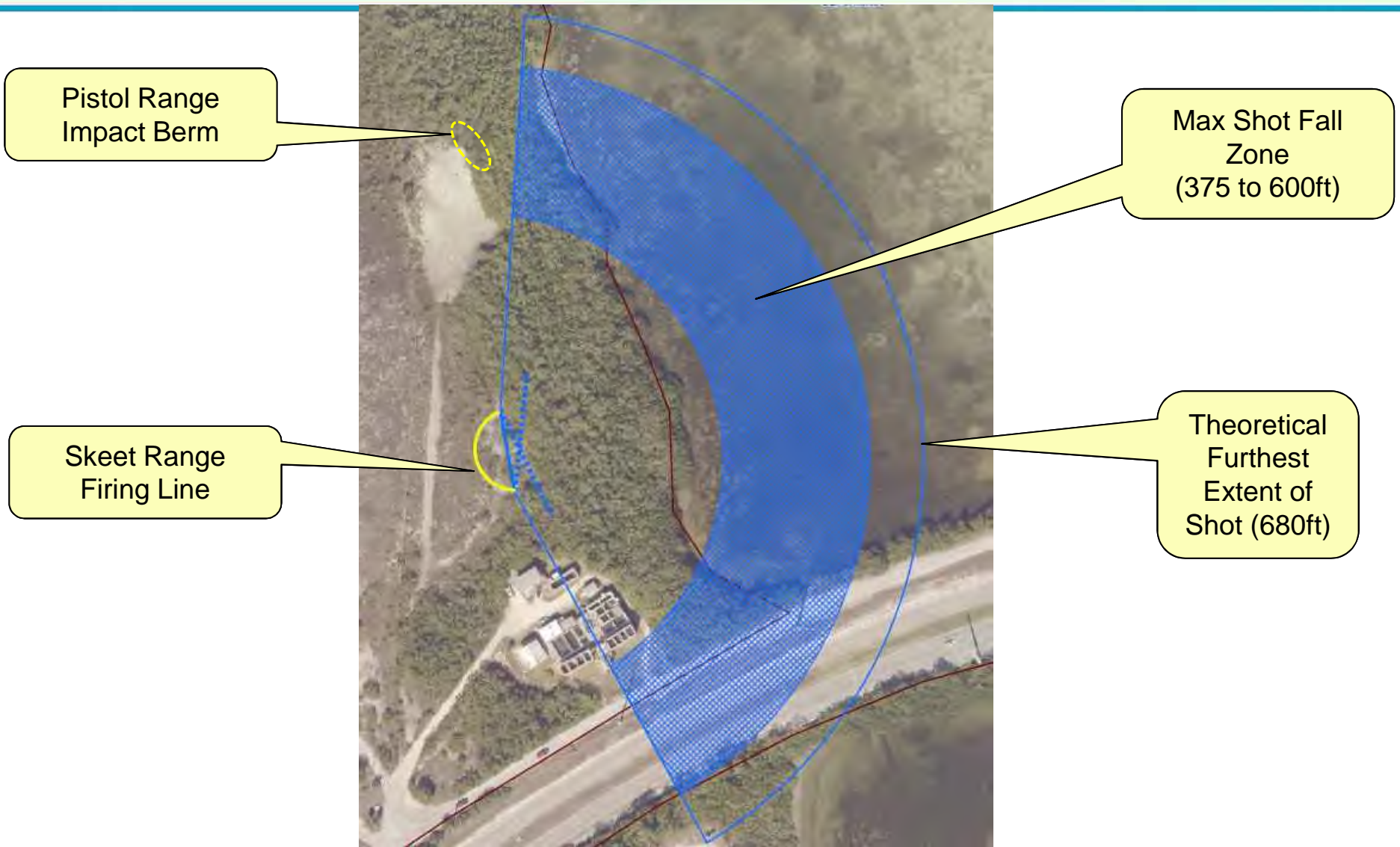


- 2010 Preliminary Assessment
  - Archival research and limited visual inspection
- 2012 Limited Site Investigation
  - X-Ray Fluorescence field screening for lead
  - Soil and sediment sampling/analysis
- 2018 Remedial Investigation Field Activities completed in January
  - Expanded soil and sediment sampling based on 2012 findings
  - Ecological Checklist to support ecological risk assessment
  - GPS survey of site features, e.g. impact berm etc





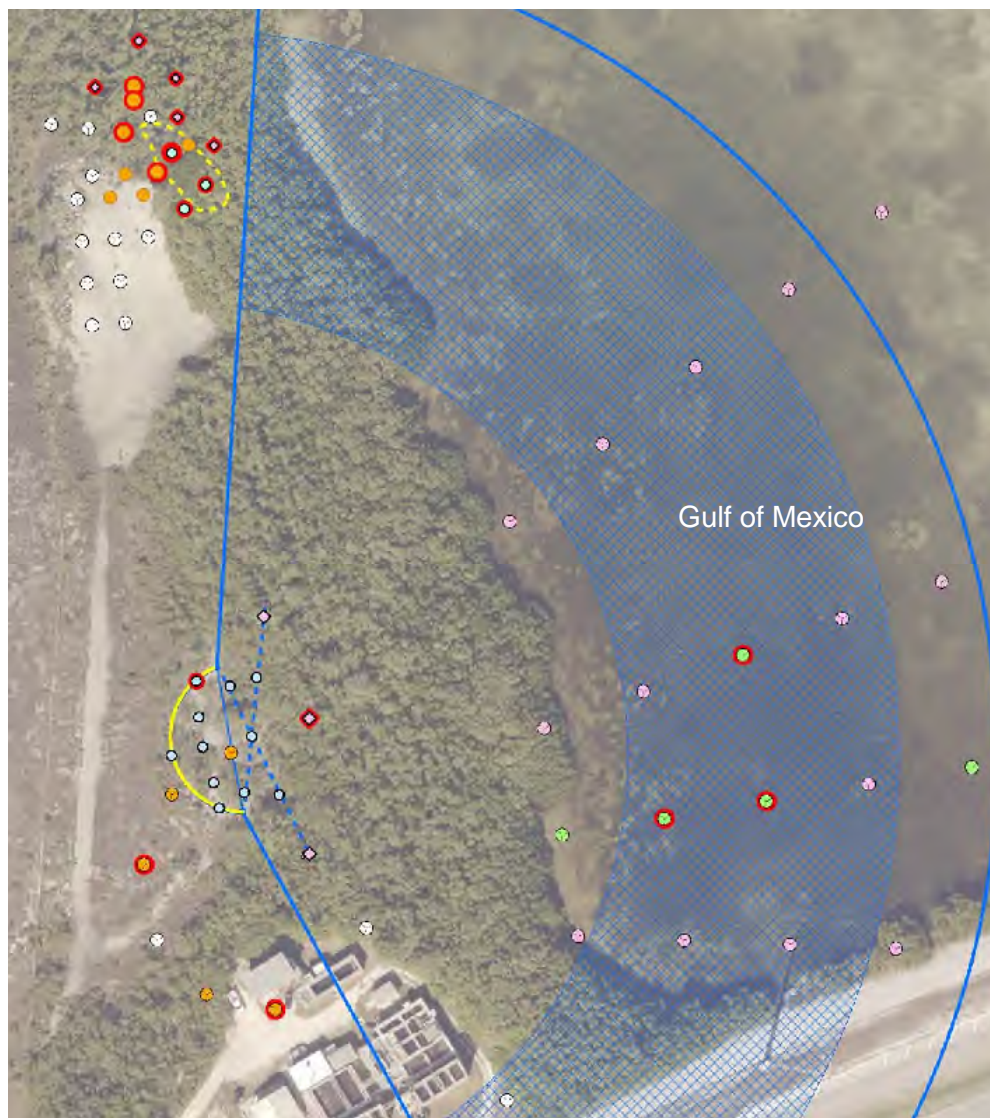
# Expected Historical Shot Fall Zone







## Soil and Sediment Sampling to Date



- Soil exceeding FL cleanup target levels (CTLs):
  - Metals: antimony, arsenic, copper, and lead
  - Polycyclic aromatic hydrocarbons (PAHs)
  - Nitroglycerin
- Submerged Sediment exceeding FL CTLs:
  - Arsenic
  - Tin





# Site Photos- Skeet Range



**Slide 29**

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**CT2**

insert video???

Chad Tripp, 7/19/2018





## Site Photos-Pistol Range







## Site Photos- Pistol Range







# Site Photos- Pistol Range







## Next Steps



- Collect additional step-out soil samples to fully delineate impacts
- Evaluate data and install monitoring wells if necessary
- Prepare Remedial Investigation report



**Questions?**