

# 28th Bomb Wing

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## Public Meeting Restoration Advisory Board



5 December 2013  
Ellsworth Air Force Base

UNCLASSIFIED



# Presentation Outline

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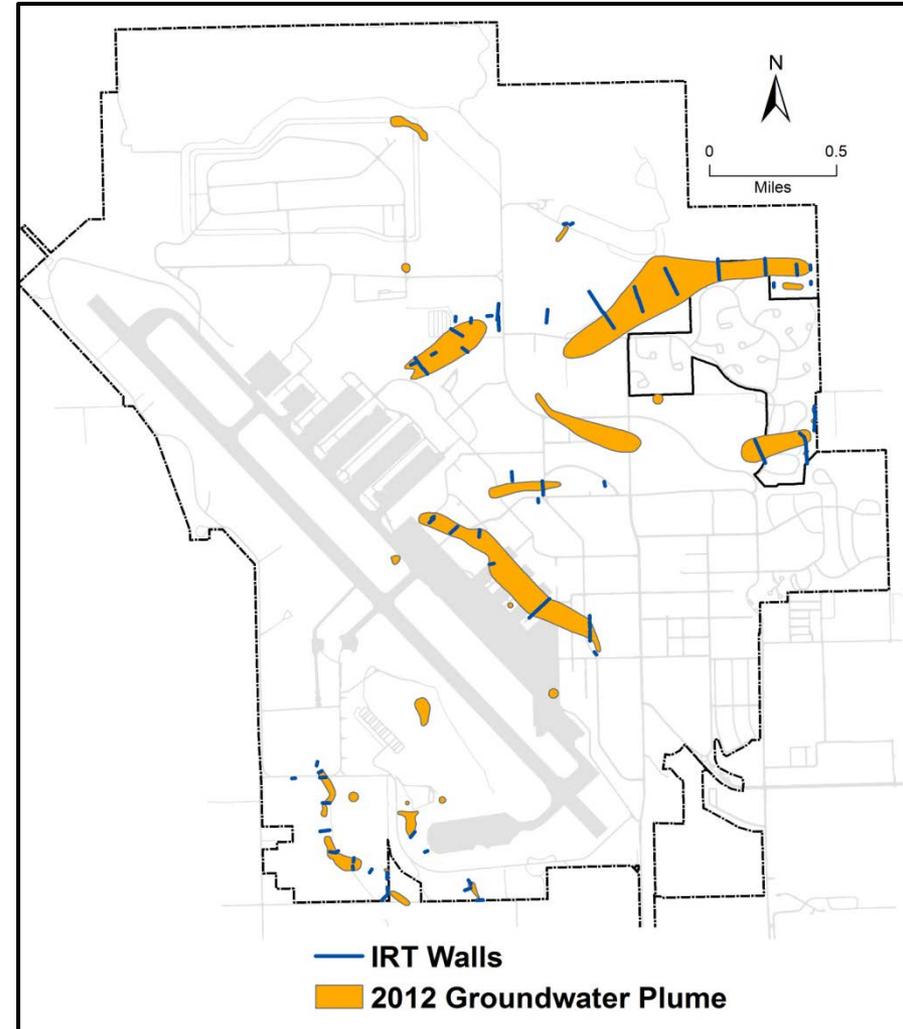
- **Operable Unit 11 (OU-11) Basewide Groundwater**
- **East Off-base Plume Sample Results and Exit Strategy**
- **Operable Unit 2 (OU-2) Low Level Radioactive Waste (LLRW) Burial Site RW028**
- **Military Munitions Response Program (MMRP) Overview**
- **Emerging Contaminants Perfluorinated Compounds (PFCs)**
- **Future plans**



# OU-11 Basewide Groundwater



- **Record of Decision (ROD) Amendment signed in February 2012, allowed shut down of pump and treat systems**
- **Current remedy for OU-11 is In-Situ Reductive Treatment (IRT) and monitored natural attenuation (MNA)**
  - Several IRT zones re-injected in 2012
  - Underperforming IRT zones will be re-injected in 2014 and in the following years as needed
  - Maintain pump and treat systems as a backup option if needed





# East Off-Base Plume Exit Strategy



- Exit Strategy plan finalized in October 2010 and implemented in 2011
- 30 wells are sampled on a yearly basis
- A minimum 4 samples must be collected from each well
- TCE concentrations must be stable or declining
- Concentrations must be below the Maximum Contaminant Level (MCL) for 3 consecutive years
- Wells meeting the above criteria are then sampled every 5 years until all 30 wells have 3 consecutive years of concentrations below the MCL
- Once all 30 wells have attained the above milestones, all 30 wells will be sampled simultaneously for verification
- If verification results are below the MCL, the site can be deleted from National Priorities List (NPL) and monitoring wells abandoned



# East Off-Base Plume Exit Strategy



- **Once exit strategy milestones have been attained and the site is deleted from the NPL, groundwater use restrictions can be removed**
  - The earliest this could happen is the end of 2015
  - Once groundwater restrictions are removed, new wells can be drilled and existing wells can be used without modifying the Memorandum of Agreement
  - After groundwater use restrictions are lifted, all landowners remaining on City of Box Elder water will be responsible for paying their own bill



# East Off-Base Plume Exit Strategy



- **In 2011 an Explanation of Significant Differences (ESD) was completed**
  - The ESD allows landowners to use existing wells or to drill new wells for non-potable use of groundwater (irrigation, watering livestock, swimming)
  - Landowners must work with Ellsworth AFB to modify their Memorandum of Agreement to allow for non-potable use of groundwater



# East Off-Base Plume 2010 – 2013 Sample Results



Well ID	Trend	<MCL for three Consecutive Years?	Spring 2010 TCE Result (µg/L)	Spring 2011 TCE Result (µg/L)	Spring 2012 TCE Result (µg/L)	Spring 2013 TCE Result (µg/L)	Consecutive Years <MCL
MW96BG0408	S	Yes	2.1	1.6	1	2.3	4
MW96BG0422	NT	Yes	0.44F	0.78F	1.2	0.90 J	4
MW96BG0425	S	Yes	2.7	2	1.6	2.1	4
MW972406	NT	Yes	2.4	2.4	3	2.6	4
MW972408	S	Yes	3	3.1	2.4	2.6	4
MW972410	S	Yes	<b>5.3</b>	4.2	3.3	3.3	3
MW982415	NT	Yes	0.32F	0.31F	0.36F	0.44 J	4
MW982416	D	Yes	<b>5.6</b>	4.6	4.1	3.4	3
MW982422	S	Yes	3.8	3	2.4	2.4	4
MW002422	D	Yes	3.9	3	2.7	2.4	4
MW002423	ND	Yes	<1	<1	<1	<0.25	4
MW09OB01	D	Yes	3.6	3	2.7	2.4	4
MW09OB02	D	Yes	3.9	3.2	2.9	2.6	4
MW09OB03	S	Yes	4.9	3.6	3.6	3.2	4
MW09OB04	D	No	<b>6</b>	<b>5.3</b>	4.5	3.8	2
MW09OB05	D	Yes	<b>5.3</b>	4.4	3.9	3.5	3
MW09OB06	D	Yes	<b>5.5</b>	4.4	4.3	3.5	3
MW09OB07	D	No	<b>6</b>	<b>5.1</b>	4.4	4.1	2
MW09OB08	D	Yes	4.9	4.6	4.4	3.8	4
MW09OB09	ND	Yes	<1	<1	<1	<0.25	4
MW10OB01	S	Yes	3.6	2.5	2.5	2.1	4
MW10OB02	D	Yes	4.8	3.6	2.6	2.5	4
MW10OB03	I	Yes	2.4	2.6	3.7	4.2	4
MW10OB04	S	Yes	2.8	2.4	2	4.2	4
MW10OB05	D	Yes	3.8	3.4	2.8	2.7	4
MW10OB06	S	Yes	<b>5</b>	4.3	3.5	3.6	3
MW10OB07	D	No	<b>5.9</b>	<b>5</b>	4.3	3.7	2
MW10OB08	NT	Yes	3.2	3.5	3.1	3.6	4
MW10OB09	S	Yes	4.5	3.7	2.8	2.8	4
MW10OB010	NT	Yes	1.2	1.5	1	1.6	4

## Notes:

**Bold** = Detected at or above the Maximum Contaminant Level (MCL) of 5 µg/L.

F or J = Result between method detection limit and reporting limit.

<1 = Below reporting limit.

D = Decreasing

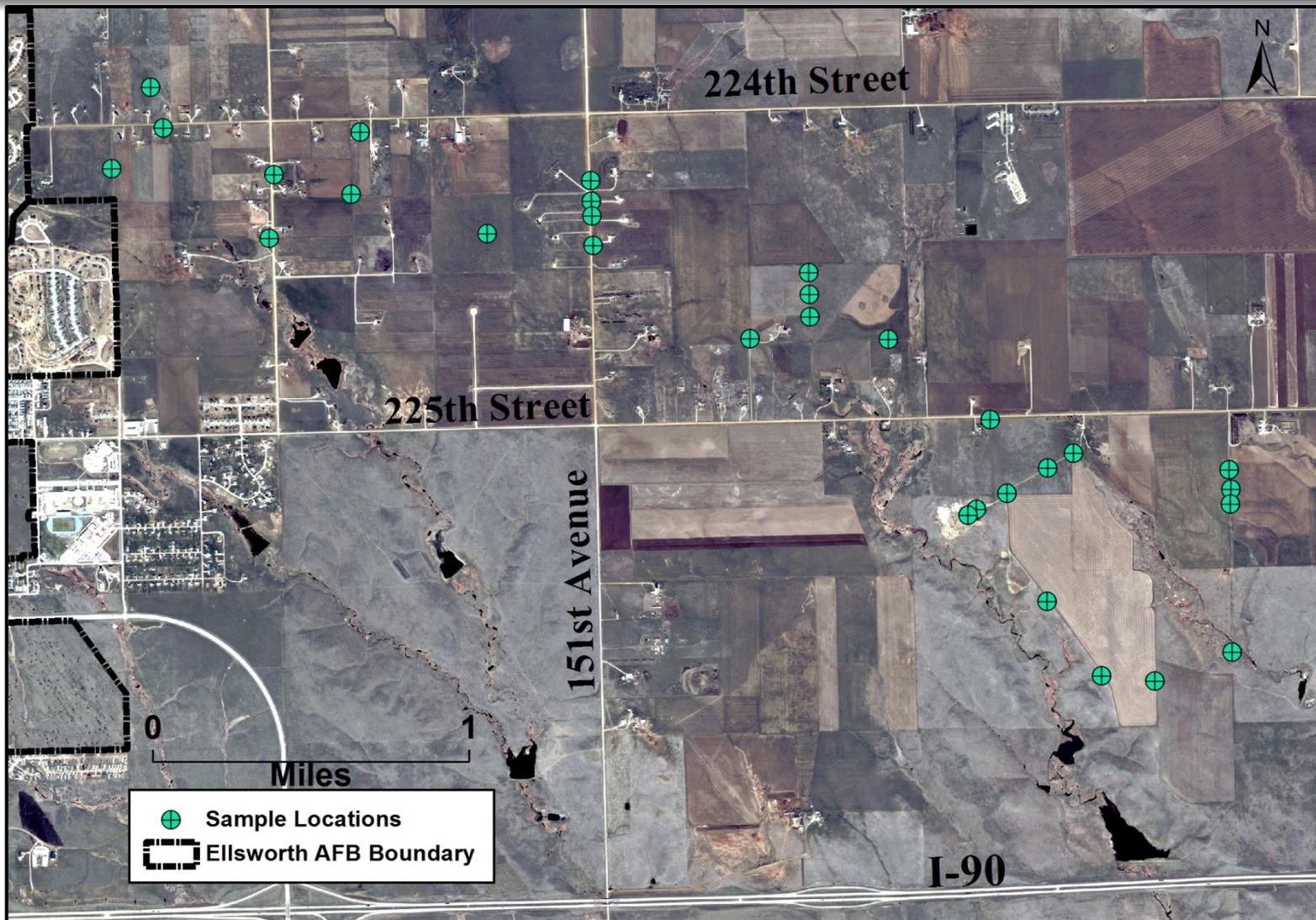
I = Increasing

ND = All values non-detect

NT = No Trend

S = Stable

# East Off-Base Plume Over Time 2012 – 2013



World Class Airmen ... Expeditionary Combat Power



# Status of the East Off-Base Plume Exit Strategy

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- **The status of the Exit strategy includes:**
  - All wells were below MCL in 2012-2013
  - 22 wells have Stable or Decreasing trends
  - 5 wells have No Trend
  - 2 wells have been Non Detect all 4 years of sampling
  - 1 well is Increasing



# OU-2 LLRW Burial Site (RW028)



## ➤ 1997 Removal Action

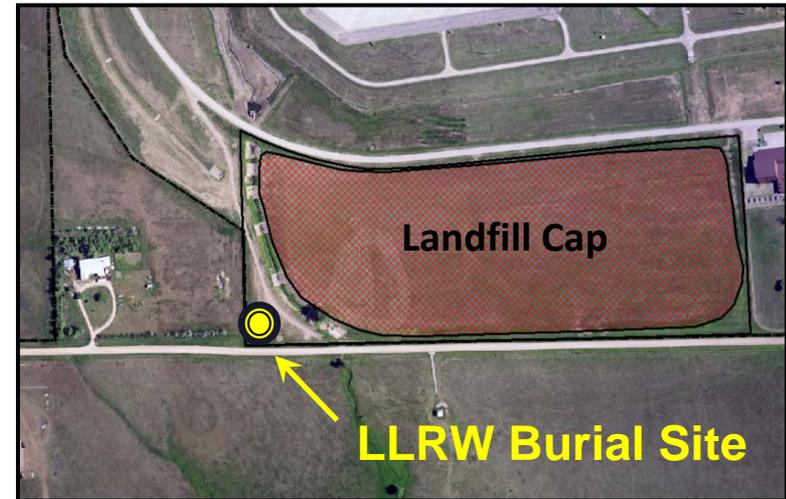
- Two concrete burial monoliths presumed to contain LLRW
- Chemical Agent Identification Sets (training aids)
- No soil contamination

## ➤ 2011 Geophysical Investigation

- Identified two potential concrete burial monoliths

## ➤ Interim Removal Action late 2014

- Excavate potential LLRW concrete burial monoliths
- Chemical Agents not anticipated but will have safety plans
- Soil sampling of excavations
- Investigate other anomalies over 0.75 acre area





# Military Munitions Response Program (MMRP)

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## ➤ **Historical Records Review (HRR)**

- April 2011 records search identified locations on EAFB where historical use of munitions occurred
- 10 sites to be evaluated as potential Munitions Response Areas (MRAs)

## ➤ **Comprehensive Site Evaluation Phase I/II**

- Visual inspection of 10 sites 5-16 November 2012
- Soil sampling of 3 sites - former pistol range, former skeet range, and "kick out" arc around former EOD disposal area
- No UXO found during visual inspection
- Draft report in review, additional "data gap" work in spring 2014
- If validated, MRAs would be addressed similar to ERP sites



# Emerging Contaminants

## Perfluorinated Compounds (PFCs)

- **Man-made compounds present in commonly used products**
  - Non-stick coatings (Teflon)
  - Food packaging
  - Stain repellants (Scotchgard)
  - Fire fighting foam





# Emerging Contaminants

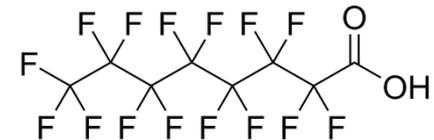
## Perfluorinated Compounds (PFCs)

- There are many PFCs
- Two have EPA provisional health advisory levels
  - Perfluorooctane sulfonate (PFOS)
  - Perfluorooctanoate (PFOA)

Perfluorooctane sulfonate  
(PFOS)



Perfluorooctanoate or  
Perfluorooctanoic acid (PFOA)

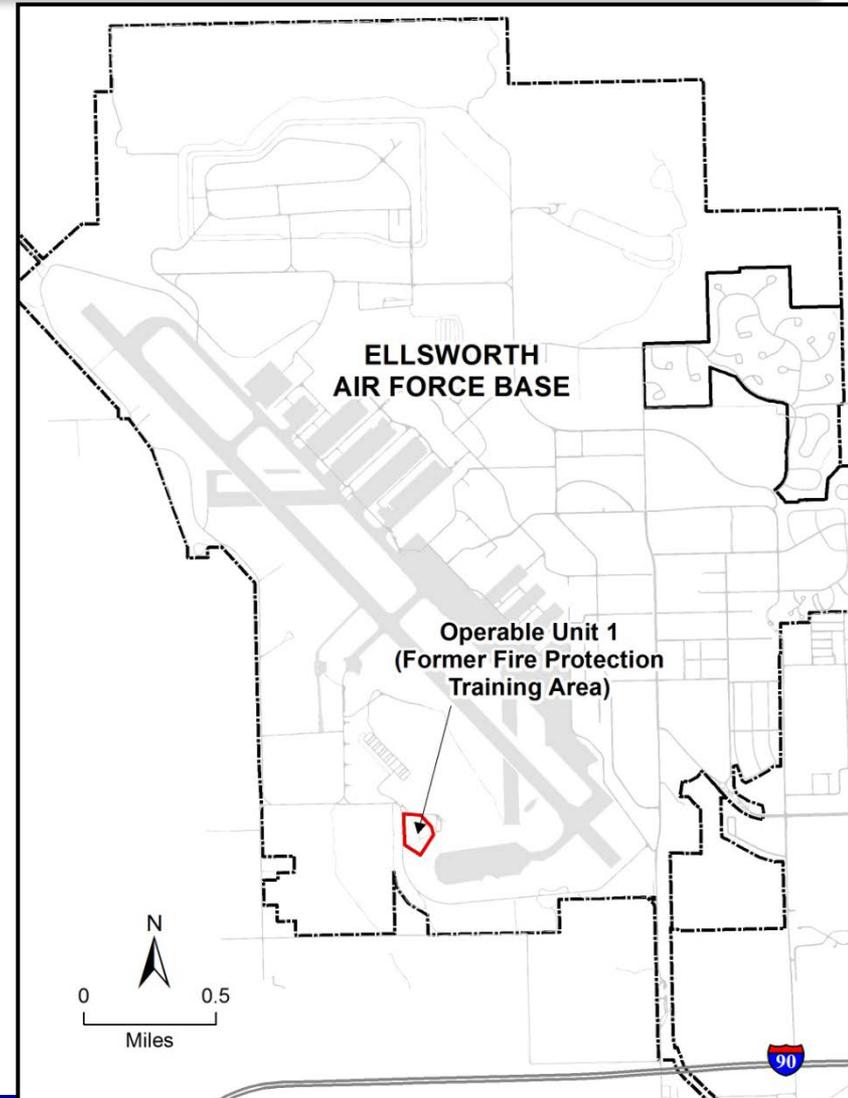




# Emerging Contaminants

## Perfluorinated Compounds (PFCs)

- PFOS and PFOA were detected in soil and groundwater at Operable Unit 1 (OU-1) above provisional health advisory levels during a research project
- A new treatment technology for PFOS and PFOA is being tested at OU-1
- A new project is underway to investigate PFOS and PFOA in soil and groundwater at OU-1, including:
  - Delineate the extent of the plumes
  - Determine if there are off-base impacts to the south
  - Locate off-base private wells to the south





# Future Plans

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- **Continue with basewide monitoring program and continue with IRT reinjection as needed**
- **Complete OU-2 LLRW interim removal action and investigation in 2014**
- **Implement MMRP actions**
- **Conduct OU-1 PFC investigation field work beginning Spring 2014**
- **Continue to update MOAs when requested by landowners in the east off base plume**



# Future Plans - continued

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- **Follow the Exit Strategy and continue to monitor the east off-base plume**
- **Report sample results and Exit Strategy status at future public meetings**
- **Continue to send out semi-annual newsletters**



# Questions?

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