

MC at MRSs – Where's the Beef?

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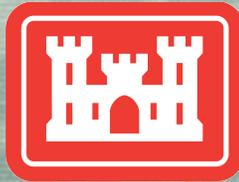
Risk Assessor

Baltimore District

April 24, 2014

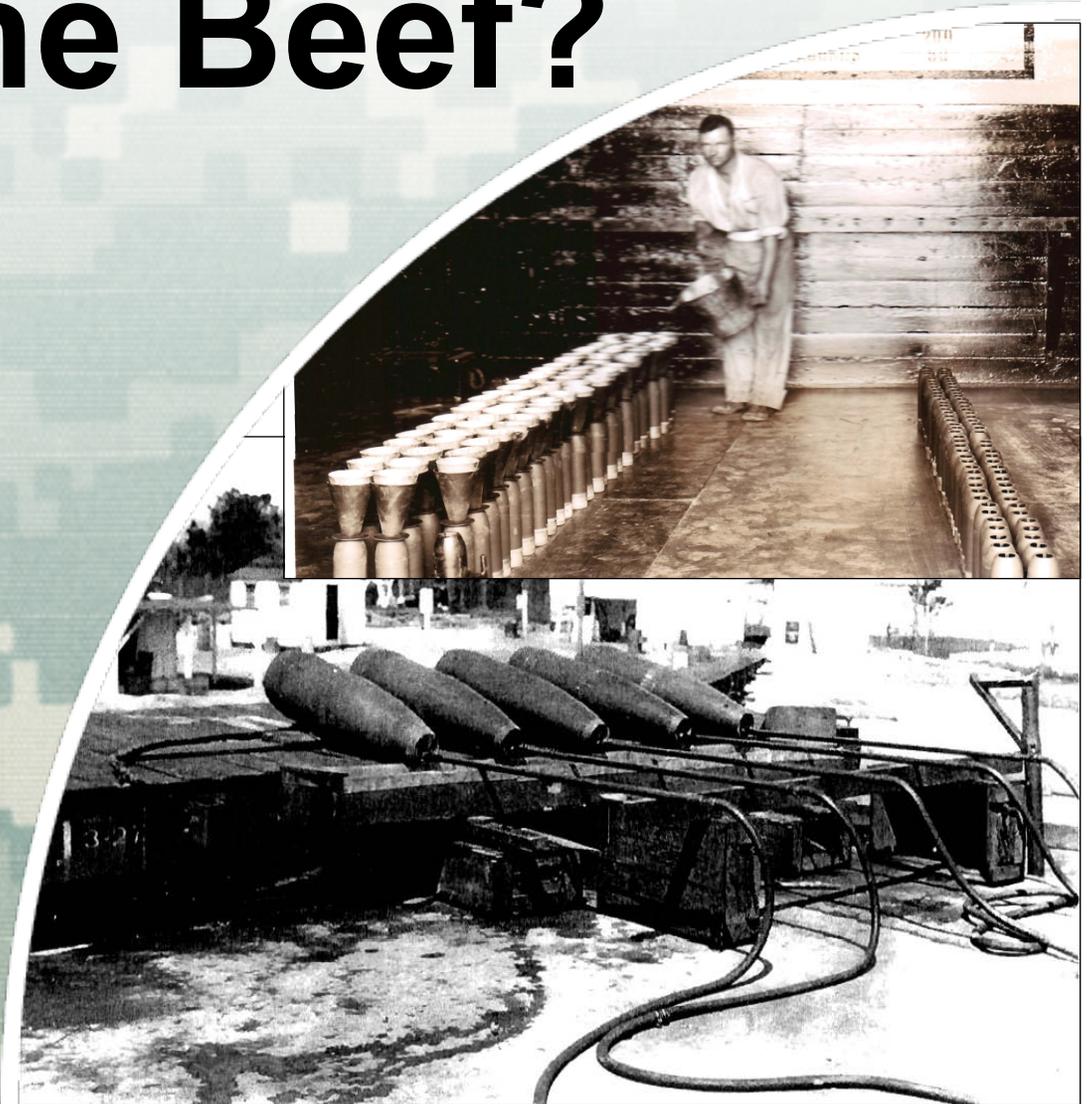


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MC in MRSs

- MC CSM
- Various MRS Examples
- Conclusions



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MC Conceptual Site Model

When do we have a complete exposure pathway?

If there is:

1. A source or chemical release from a source, and
2. An exposure point where contact can occur, and
3. An exposure route by which contact can occur.

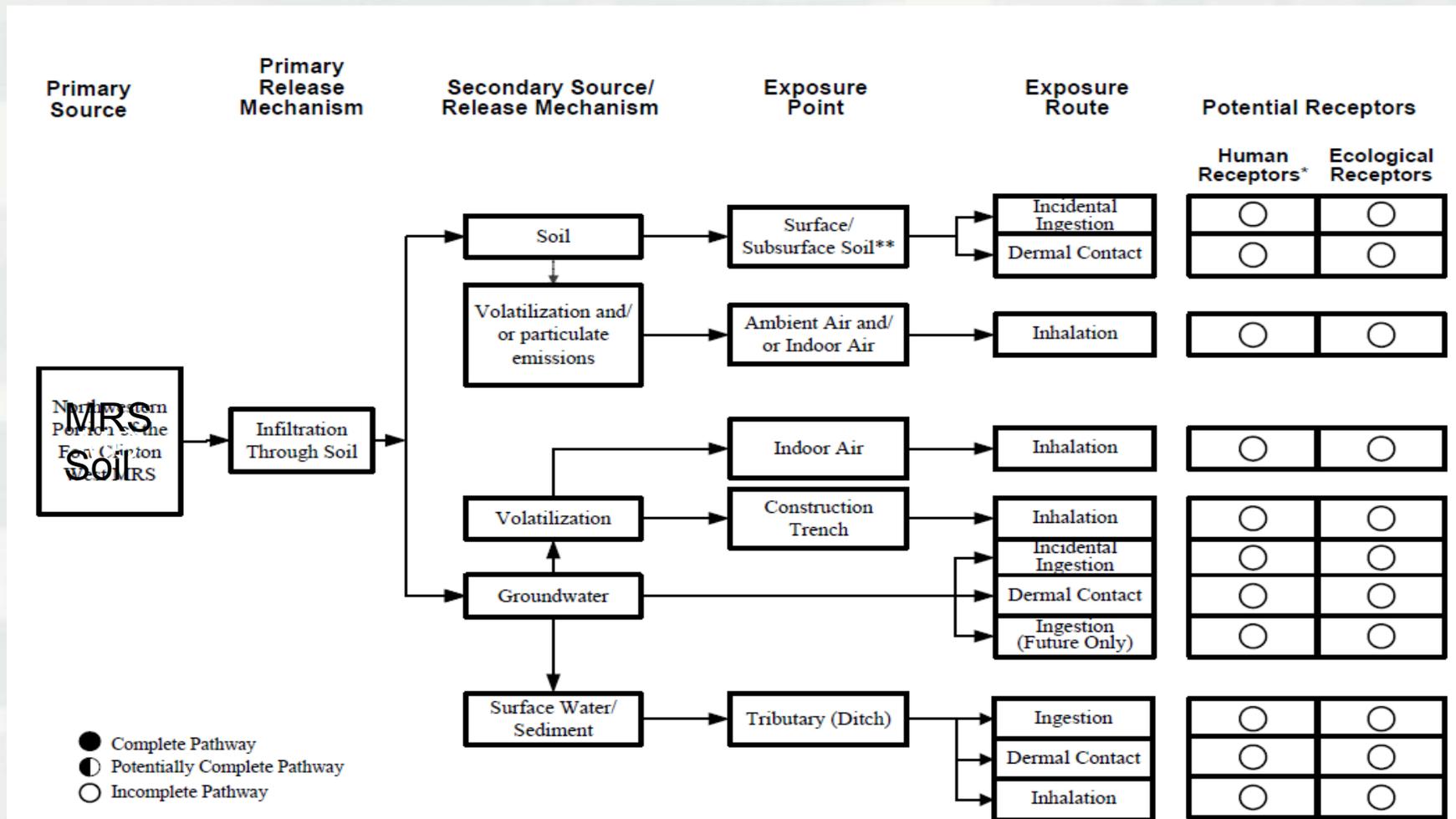
If one of these three things is absent, *then the pathway is incomplete!**

We often find there is no chemical release from MEC and therefore an incomplete pathway



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Conceptual Site Model



- Complete Pathway
- ◐ Potentially Complete Pathway
- Incomplete Pathway



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Previous Investigations Dictate RI Priorities

- During SI presence or absence of MC is determined through limited sampling
 - ▶ Above background and screening levels – RI for MC
 - ▶ Below background and screening levels – no RI for MC
- Occasionally enough historical information is available to the stakeholders that an RI for MC is decided upon before the SI during a TPP meeting



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MC during “MEC Only” Investigation

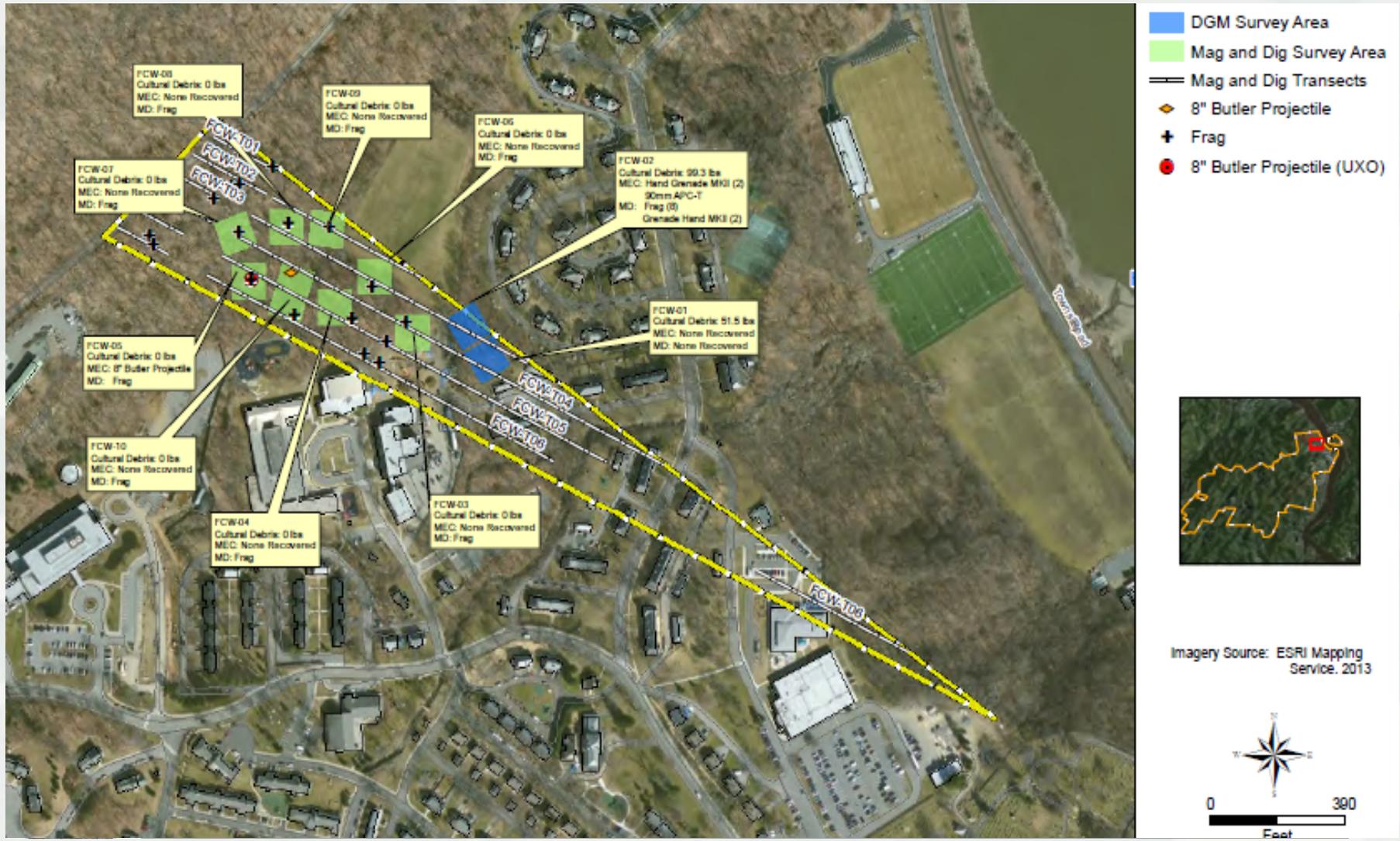
During a “MEC Only” investigation where no prior MC investigation was found to be warranted during the RI there are still two circumstances under which MC will be analyzed:

1. Further Investigation of MC at currently unknown but potential MEC releases identified during the geophysical surveys
2. MC sampling at individual MEC item locations where soil staining or visible evidence of a potential MC release is observed.



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Representative Artillery Range Investigation



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Was MC involved?

- This firing range was active from the mid 1800's to 1927 (mostly 75mm guns)
- The firing point was investigated using IS sampling over a quarter acre where the artillery was known to be placed – explosives were investigated, specifically TNT and its daughter products – none were found
- Two sampling locations were selected to assess potential MC contamination in soil where UXO was found (2 MKII hand grenades; 1 8" Butler projectile) and where significant densities of MD were found - in both cases IS sampling (50 increments) were collected within 0.8 acre sampling units
- Explosives and metals were sampled – only Pb and Hg found above screening levels – but these values were below background levels.



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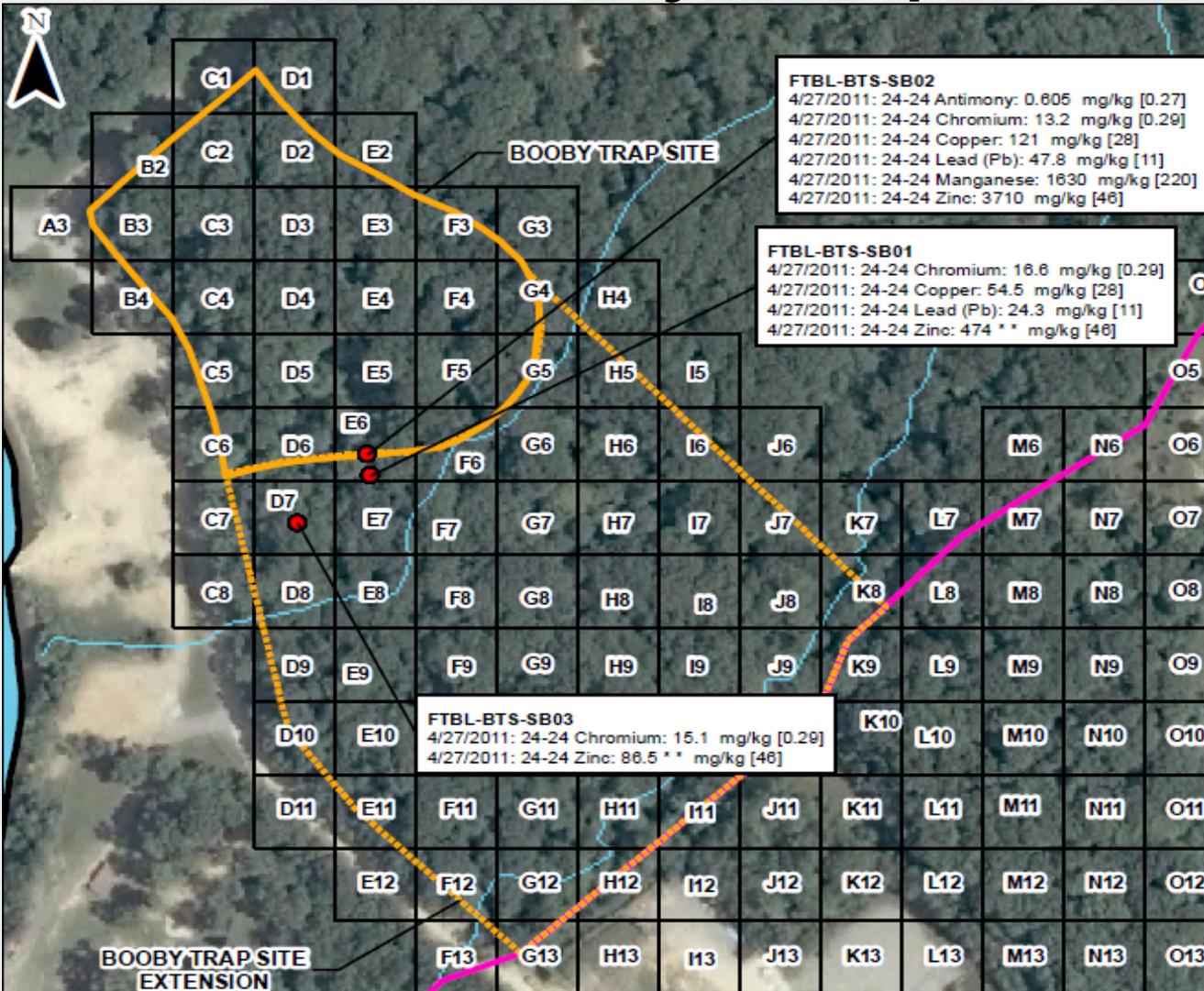
Was MC involved?

- This Grenade Court was operational for 8 years in the 1940's.
- Some landmines were removed that were probably placed after the grenade court use
- No MEC Identified, therefore no MC was sampled (except for during the SI)
- No source of MC identified (other than possible MEC), therefore, no MC was sampled



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Booby Trap MRS



- Subsurface Soil Sample Location (Exceedance)
 - Subsurface Soil Sample Location (Non-Exceedance)
 - Grid Clearance Finalized
 - Booby Trap Site Extension Boundary
 - RV Travel Camp Boundary
 - Booby Trap Site Boundary
- Projection : NAD



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Was MC involved?

- The Booby Trap Site was used during the 1980's for installation and removal of booby traps and landmines.
- Many practice mines were taken out of the area during a prior removal action, also, 3 pits were found containing firing devices, all of which were removed.
- No MEC was found in the original and subsequent enlarged area of investigation therefore no MC was sampled other than the pits
- Metals (Sb, An, Cr, Cu, Pb, Mn and Zn) were found at the base of the pits above SLs
- A human health risk assessment was performed and minimal risks found



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Shape Charge Testing MRS



RVAAP-033-R-01
Shape Charge Testing MRS
Firestone Test Facility



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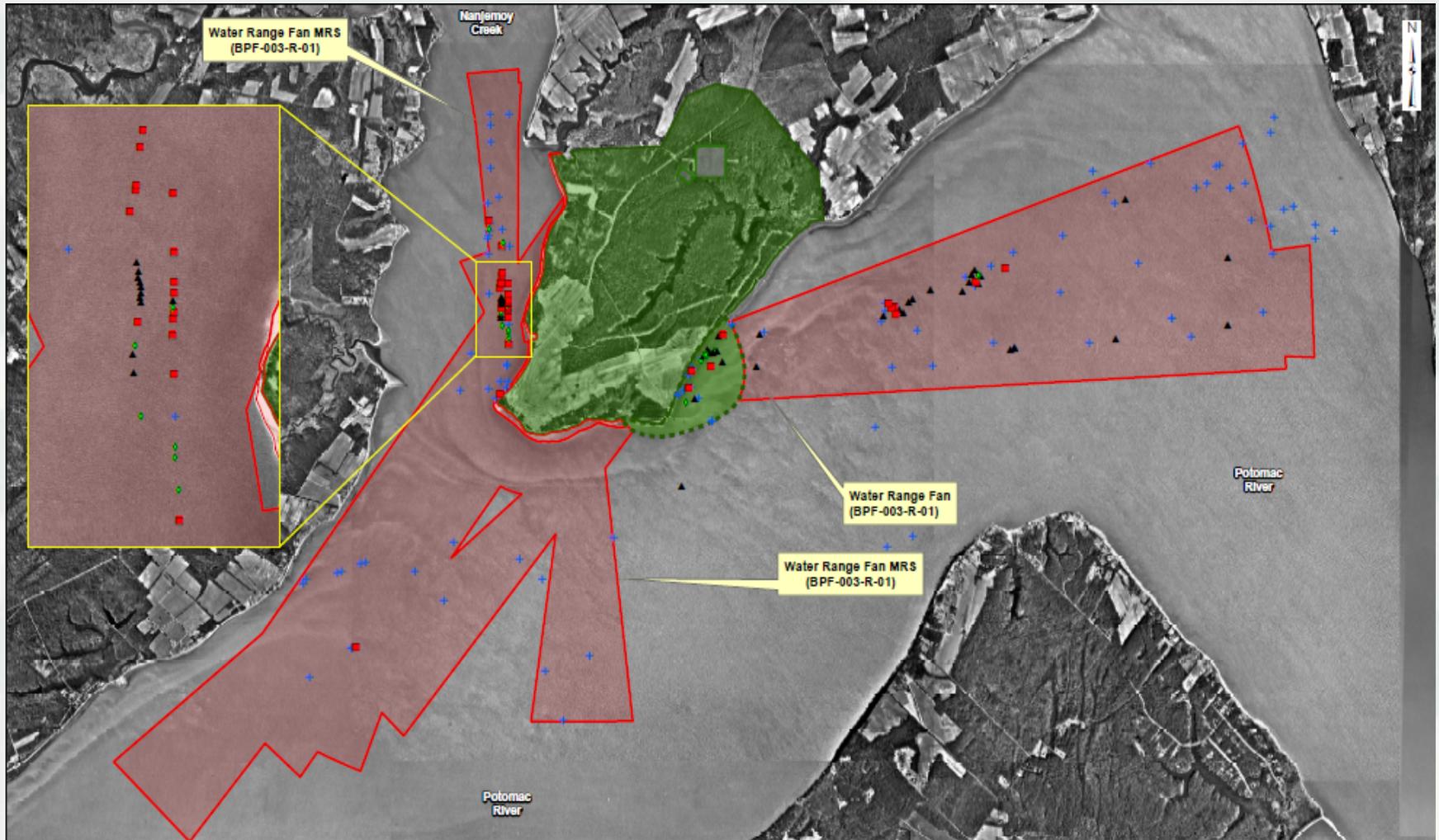
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Was MC involved?

- The Shaped-Charge Testing Site was first used during WWII for the testing of shaped-charges within a building test chamber and in the man-made pond.
- A geophysical investigation was performed to ascertain MEC/MD. Neither MEC nor MD was discovered.
- As pond sediment and surrounding soils were not tested in the SI, this data gap was filled during the RI with IS sampling of soils and discrete samples taken of sediment and surface water.
- Metals (Cu and Cd in soil; Al, Sb, Cd and Cu in sediment; and Cr, Pb and Sr in Surface water) were found in media sampled
- A human health and ecological risk assessment was performed and minimal risks found



Water Range MRSs



Was MC involved?

- The Water Range Fan MRS (totally within the water) was used for testing of fuses mortars, rockets and projectiles from WWII through the 1970's.
- Metals and explosives were analyzed in site sediments.
- No explosives were detected and the metals that were detected (many) were not above screening criteria.
- There was no need to perform a human health or ecological risk assessment



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Many MRSs are Co-located with HTRW Sites

- Sometimes an MRS is co-located with areas where prior investigations have taken place for overlapping HTRW constituents,
- In such cases the prior handling of overlapping constituents (e.g. – HHRA, SLERA) should be considered when making conclusions for the site.



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Conclusions

- Many of our sites are coming up with little to no MC contamination
- Even when MEC is discovered, very little to no MC is encountered in conjunction with those finds
- CSMs within MMRP RIs where there are no MC found above screening levels or background, turn up with fully incomplete pathways



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? Questions ?



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