

Former Nebraska Ordnance Plant Operable Unit 3 Remedial Investigation Update

**Kirk Boese – United States
Army Corps of Engineers**

January 18, 2012



Former Nebraska Ordnance Plant Operable Unit 3 Remedial Investigation Focus Areas

- Heavy metal sampling in the Potential Landfill Area and North Burning Ground soils to identify extent of “Burn Layer”
 - ▶ Additional soil samples collected
 - ▶ Risk Assessment
 - ▶ Spatial Analysis and Decision Assistance™ software

- Surface Water sampling (update risk assessment with additional data)
 - ▶ Johnson Creek
 - ▶ Clear Creek
 - ▶ Silver Creek

- Vapor Intrusion sampling at four buildings located above or near the Load Line 1 TCE plume
 - ▶ Air/soil gas samples collected
 - ▶ Risk Assessment
 - ▶ Johnson-Ettinger model



Sampling Locations for Metals in the North Burning Ground and Potential Landfill Area



- 2010 Supplemental Remedial Investigation sample locations
- Previous soil sample locations
- Soil excavated in previous Removal Action (approximate location)

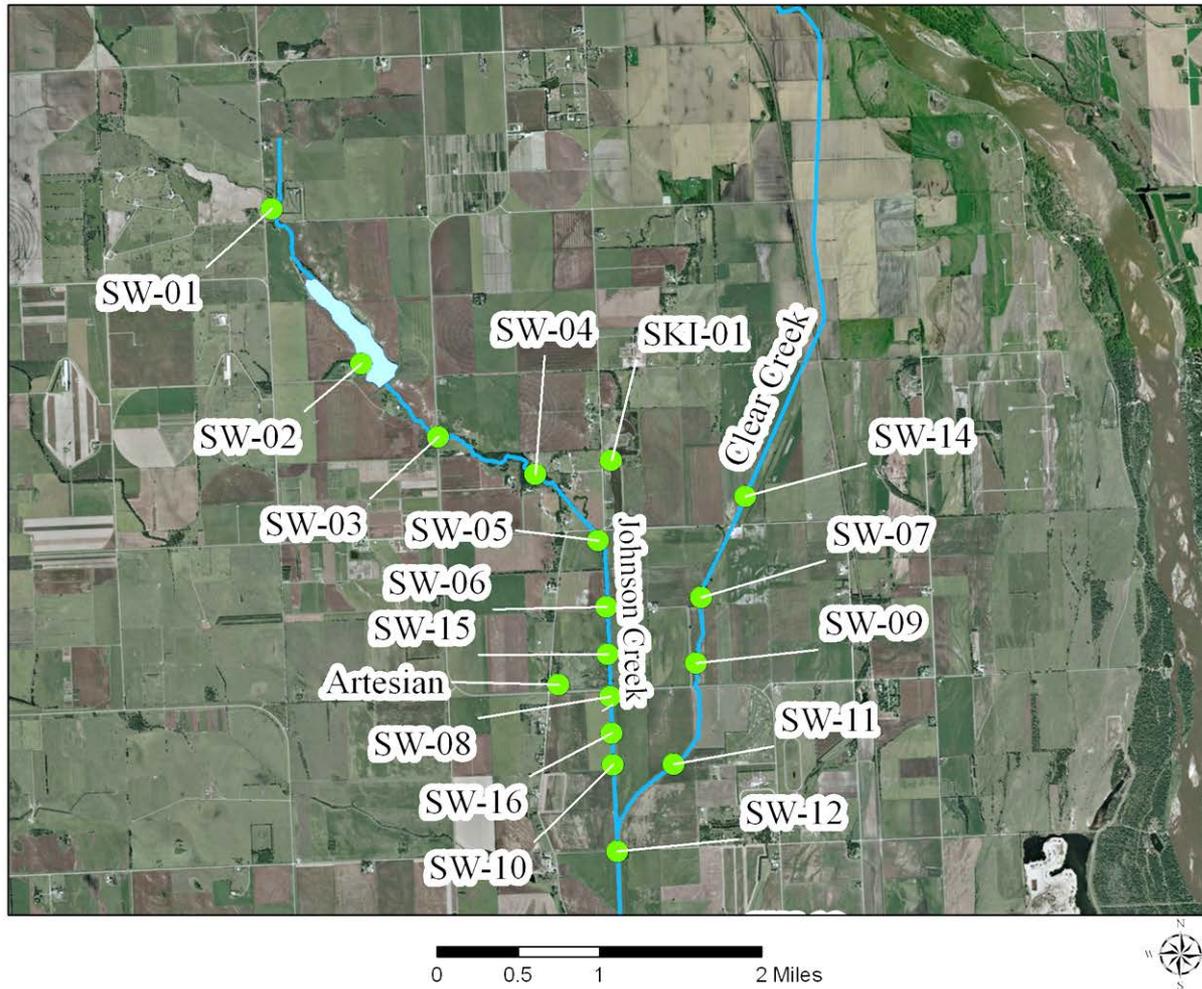


Surface and Subsurface Soil Sampling

- Direct push drill rig collected 1.25 inch diameter cores in 5 foot intervals up to 10 feet deep from:
 - ▶ Potential Landfill Area
 - ▶ North Burning Ground
- Logged for lithology
- Photographed, inspected for evidence of a burn layer
- Samples were collected and analyzed for metals
- All data to be analyzed in the Baseline Risk Assessment for inhalation, ingestion, and dermal contact.



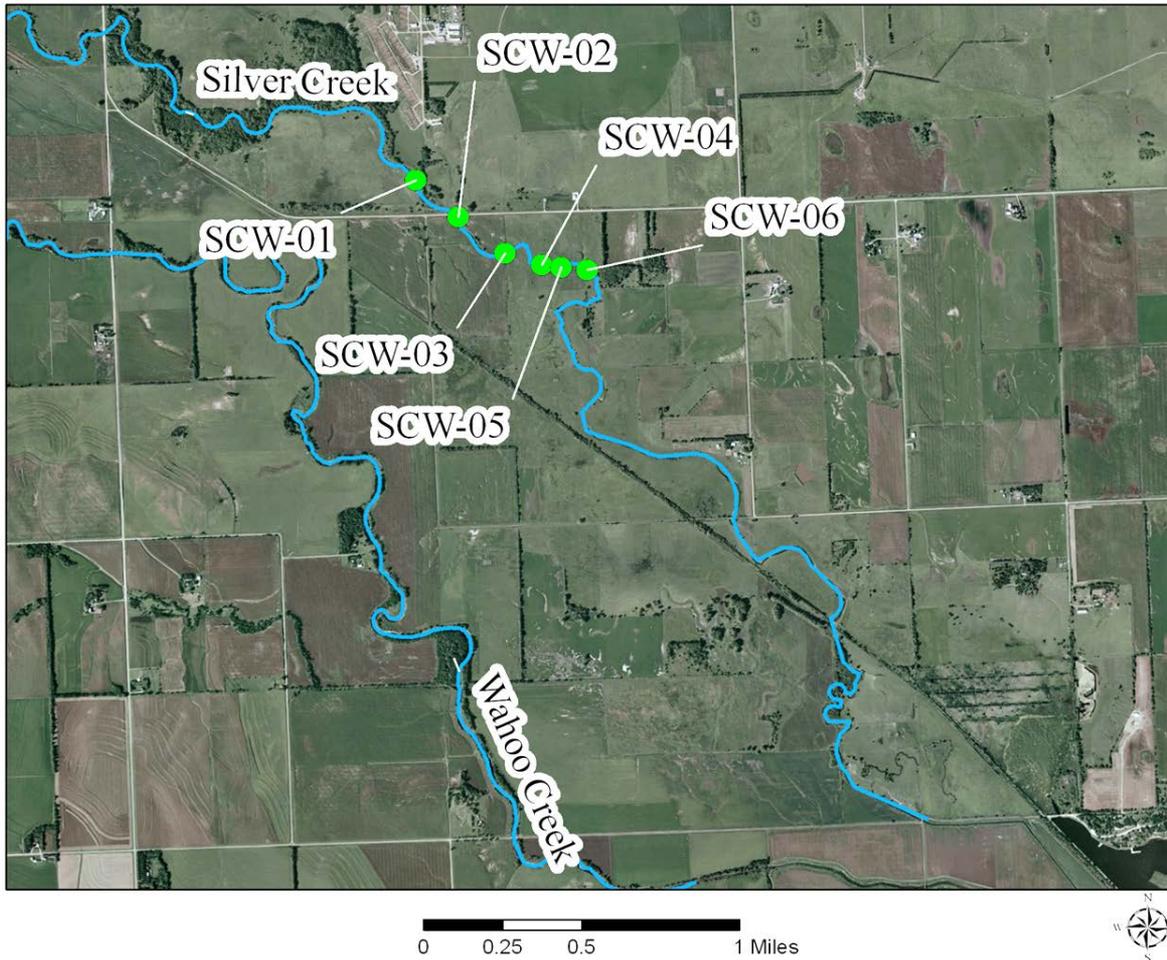
Johnson Creek and Clear Creek Sampling Locations



- Surface Water Sampling Locations



Silver Creek Sampling Locations



- Surface Water Sampling Locations (March 2005 to Present)

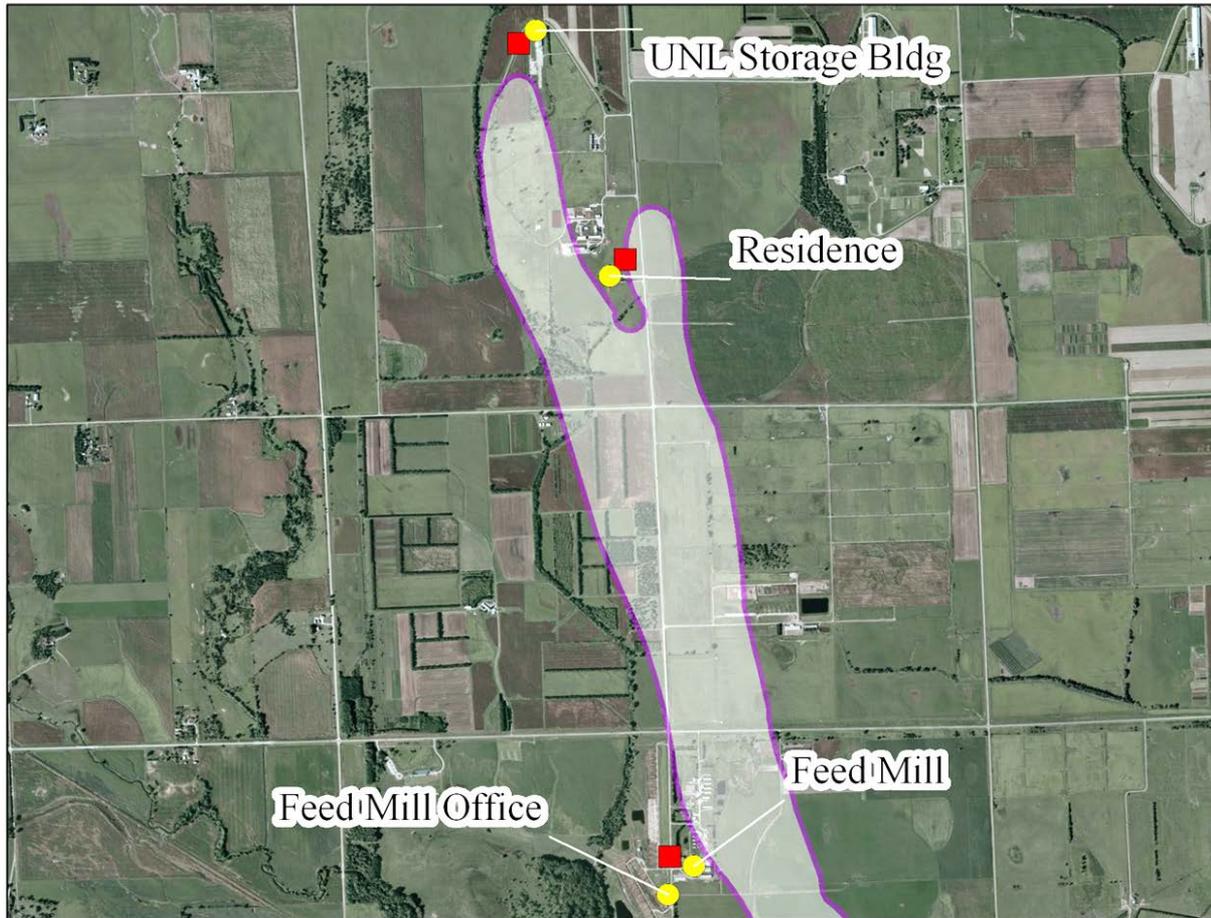


Surface Water Baseline Risk Assessment Johnson Creek, Clear Creek, and Silver Creek

- Data from Quarterly Surface Water sampling since 2000 will be analyzed to update the previous Baseline Risk Assessment
- Exposure Scenarios will be analyzed for a Recreational Adult and Child Fisherman: ingestion of water, ingestion of fish, and dermal contact
- Baseline Risk Assessment will include VOC and explosives Compounds of Potential Concern listed in the Operable Unit 2 Record of Decision



Load Line 1 Vapor Intrusion Sampling



- Outdoor sampling locations
- Load Line 1 Buildings of Potential Concern
- TCE Plume (greater than 5 $\mu\text{g/L}$, 2010)



Vapor Intrusion Sampling

- Samples were analyzed for:
 - ▶ Cis-1,2-dichloroethene (cis-1,2-DCE)
 - ▶ Trans-1,2-dichloroethene (trans-1,2-DCE)
 - ▶ Trichloroethene (TCE)
 - ▶ Vinyl Chloride (VC)
- Sample types include:
 - ▶ Ambient (Outdoor)
 - ▶ Indoor air
 - ▶ Sub-slab soil gas
- Data will be used in an inhalation Baseline Risk Assessment



Indoor air



Ambient



Sub-slab soil gas



Johnson-Ettinger (J&E) Model

- The J&E Model will be utilized to evaluate the potential vapor intrusion risks for residential structures built on areas overlying the TCE plumes.
- The model will generate a range of groundwater screening criteria to account for a variety of soil properties.
- Wells where TCE values are below the screening level will be considered to have minimal vapor intrusion risk.



What's Next for Operable Unit 3?

- Finalization of the Supplemental Remedial Investigation (Spring 2012)



Questions

WE THE PEOPLE
insure domestic Tranquillity, provide for the common
and our Posterity, do ordain
and establish this Con

