U.S. DEPARTMENT OF ENERGY

Oak Ridge Office
Environmental Management

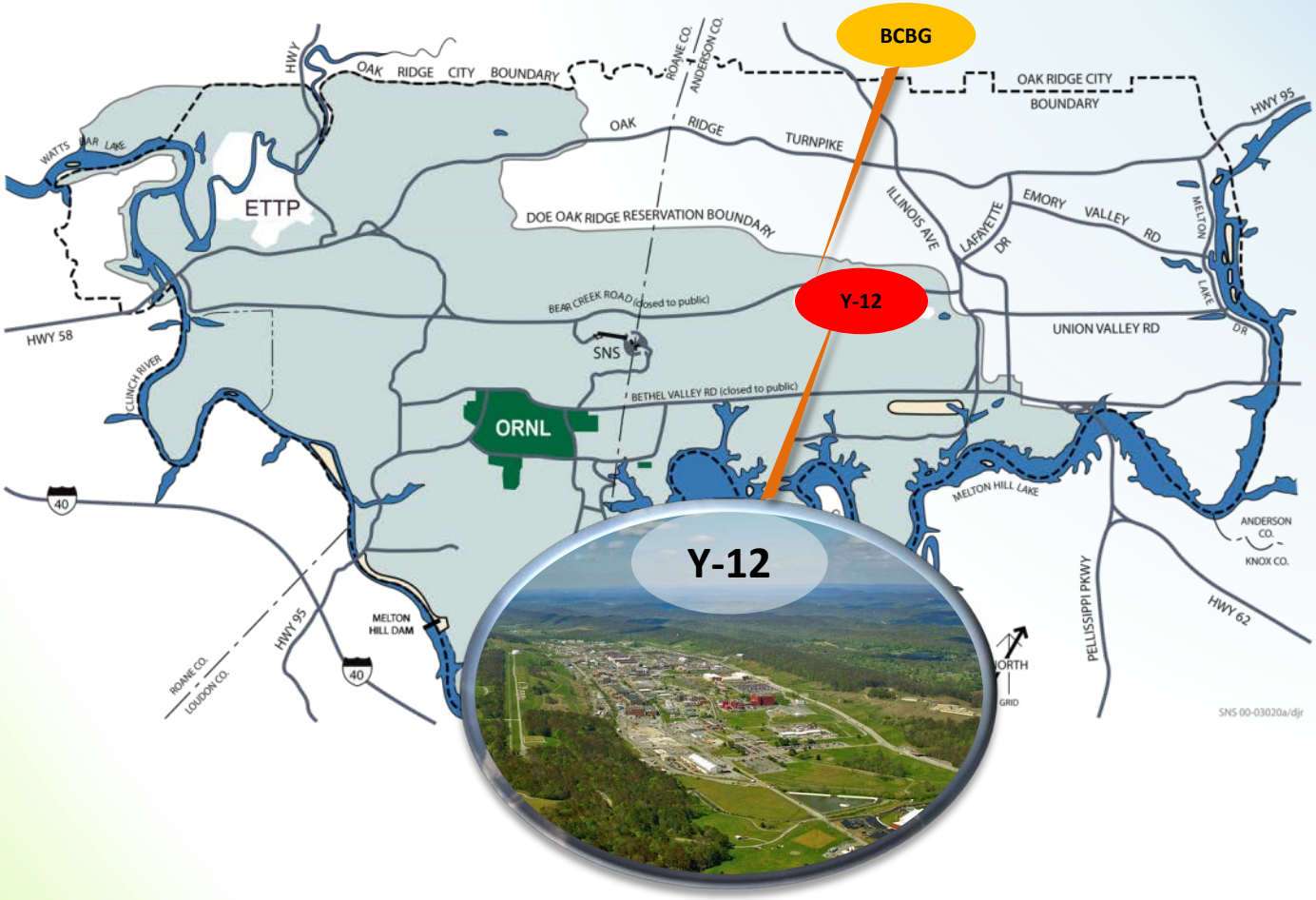
BEAR CREEK BURIAL GROUNDS INTERIM ACTION EVALUATION

SSAB BRIEFING

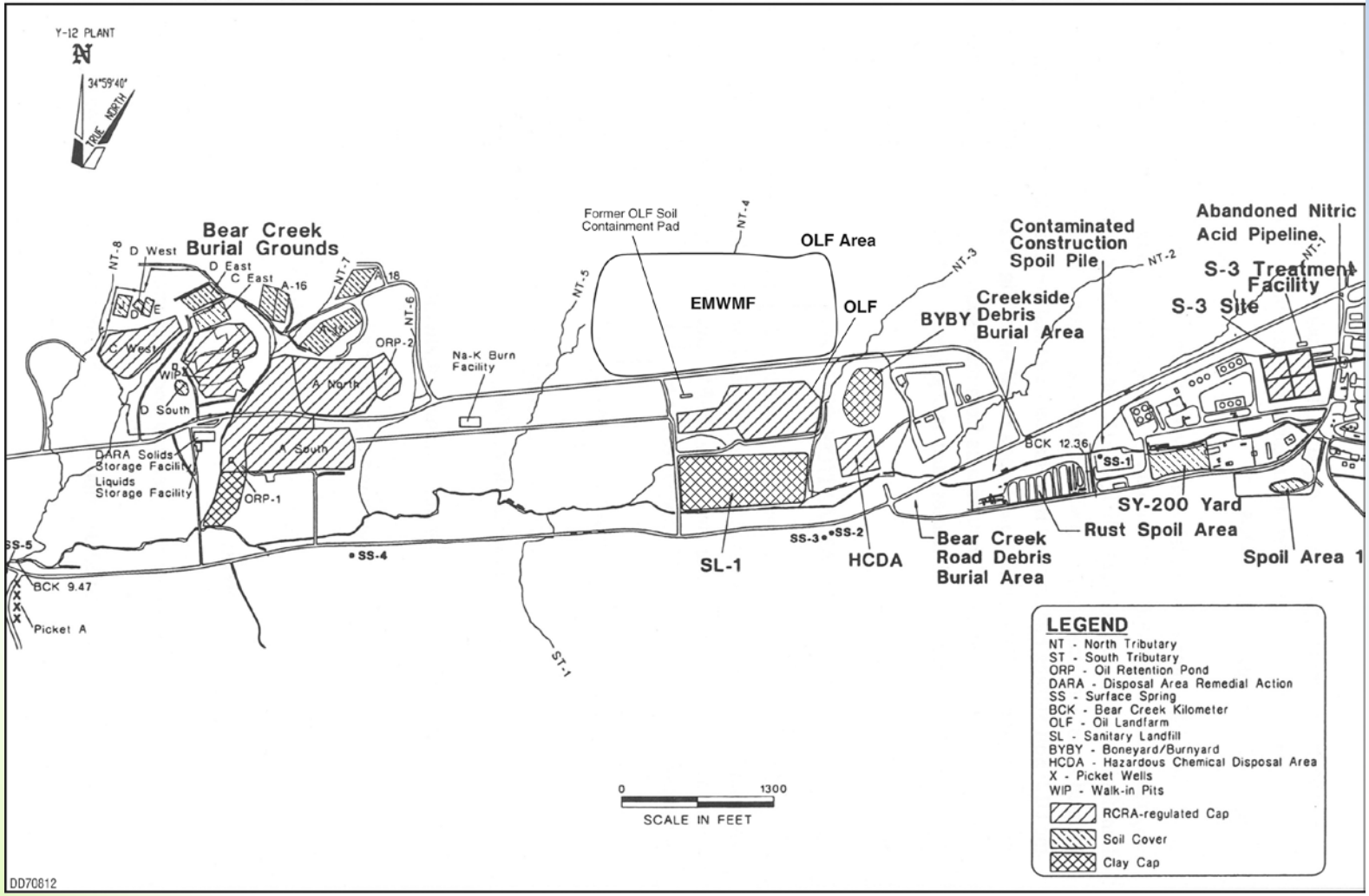
October 12, 2011

Dave Adler, FFA Manager

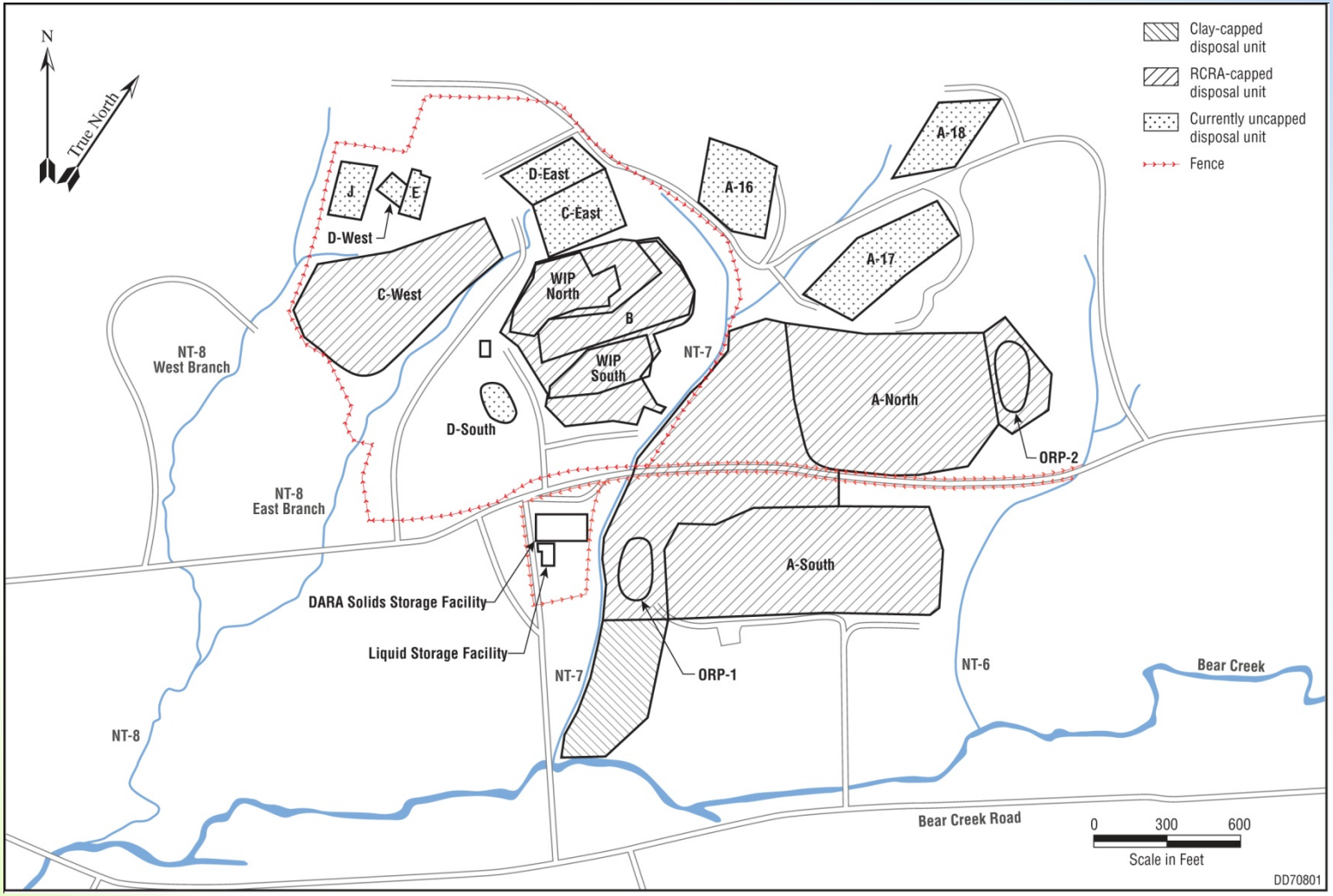
Bear Creek Burial Grounds Location



East Bear Creek Valley Facilities



BCBG Waste Units



BCBG Historical Waste Operations

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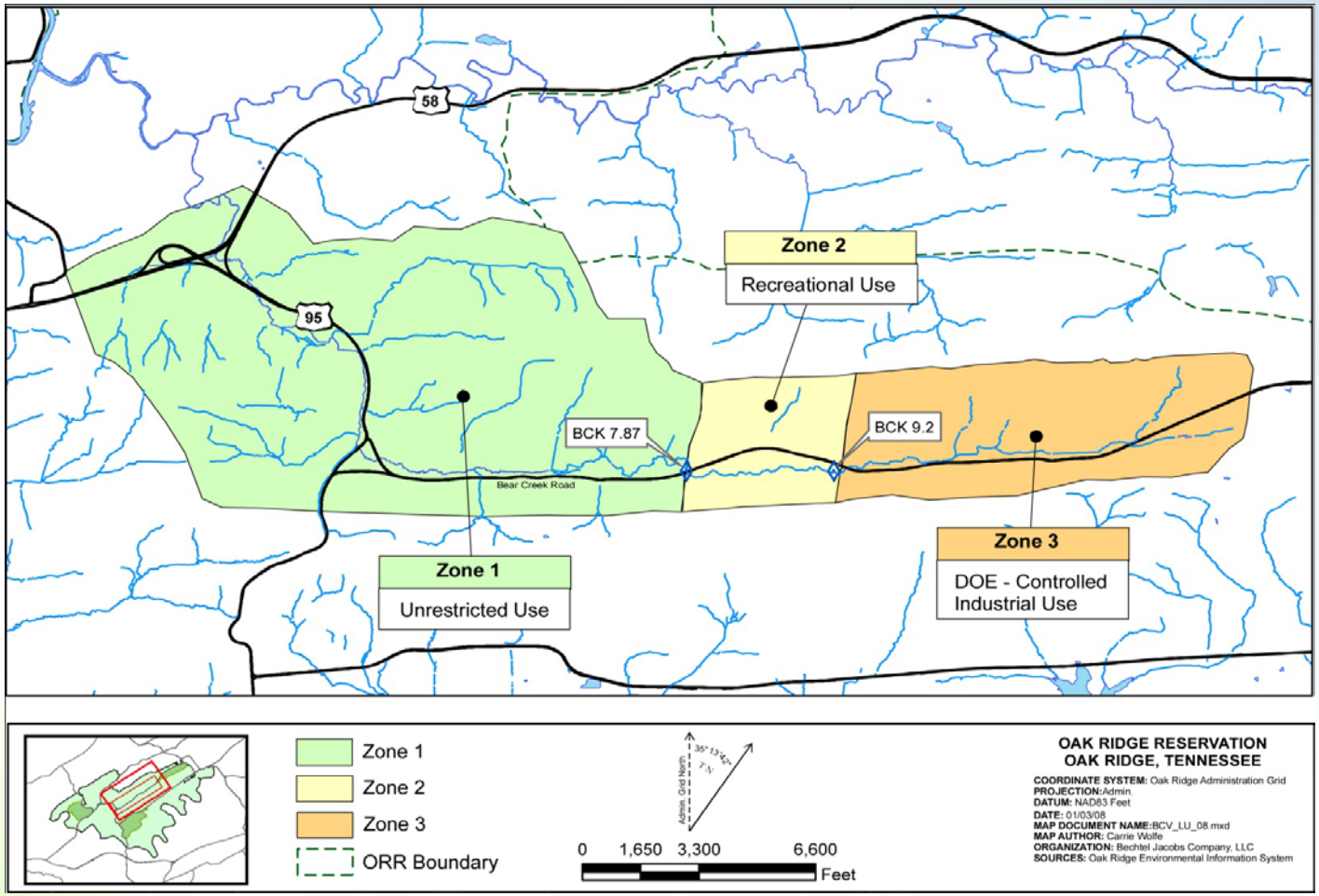
Some BCBG Units Closed Under RCRA

Special Challenges for BCBG Remediation

BCBG – CERCLA History

- 1997 - RI/FS for Bear Creek Valley approved
- 1998 - Decision to pursue phased approach for Bear Creek Valley
  - Regulator concerns about implementability and long-term effectiveness of some remedial technologies considered in the FS (e.g., in situ grouting/ vitrification) and financial assurance requirements for an onsite remedy.
- 2000 - Phase I ROD for Bear Creek Valley approved
  - Selected remedial actions for some BCV facilities (e.g., BYBY, S-3), but deferred remedial action decision for BCBG (for the reasons above)
- 2008 - Focused FS for BCBG - D1 draft issued
  - FFA parties subsequently postponed completion/approval due to regulator concerns over DOE schedule for implementation.
- EE/CA for Interim Actions at BCBG – planned 2012
  - Evaluate potential interim actions that could be implemented to reduce migration of contaminants from BCBG to NT-8

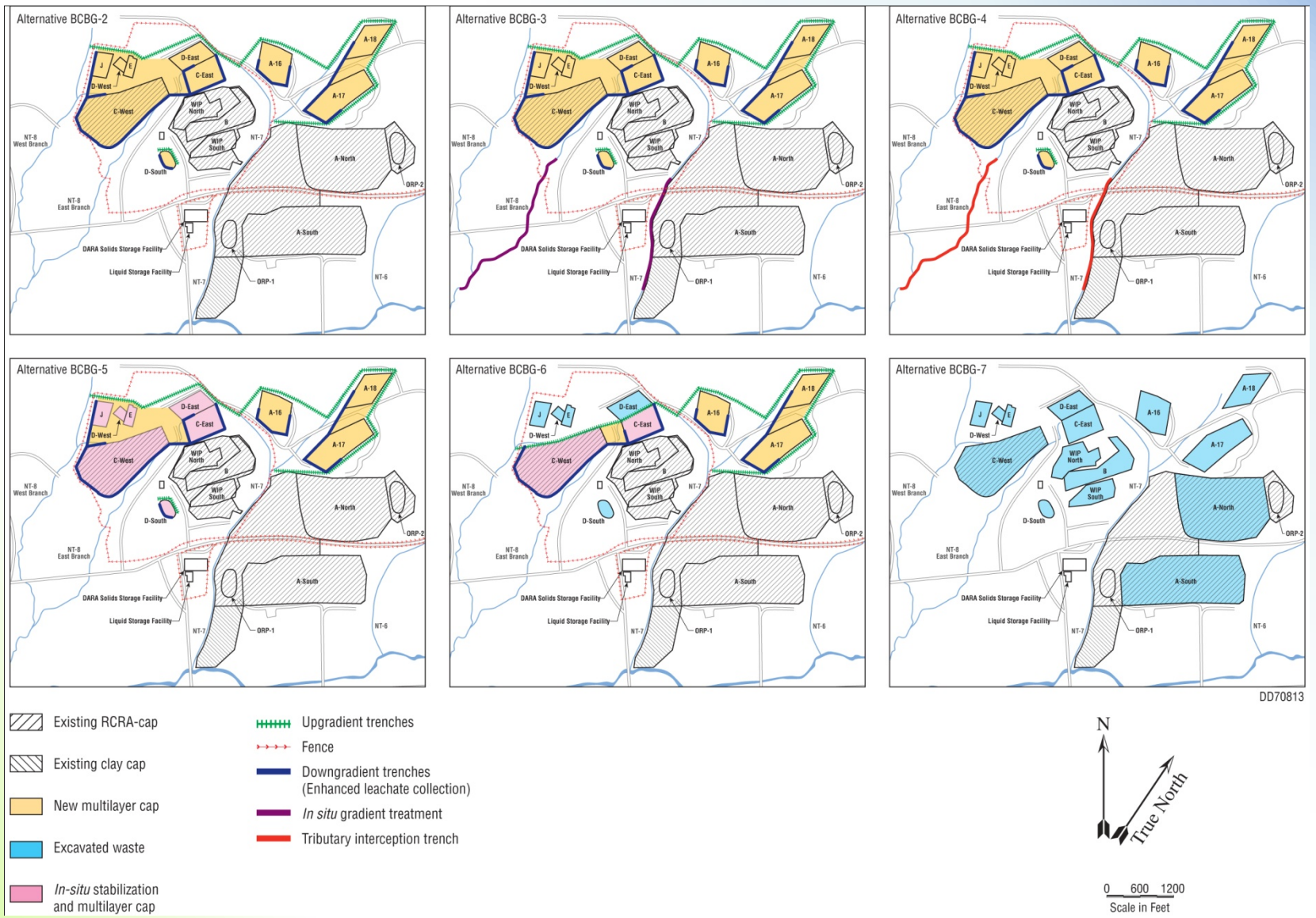
Bear Creek Valley Land Use Zones From Phase I ROD



BCBG Focused Feasibility Study

- Assume existing RI data are sufficient for remedial action decision at BCBG
- Assume land use zones and remedial action objectives from Phase I ROD remain appropriate
- Review and update technology screening from FS to focus only on potential actions at BCBG
- Evaluates 6 action alternatives ranging from onsite containment (hydrologic isolation) to complete excavation and offsite disposal.
- D1 Proposed Plan identifies hydrologic isolation as the preferred alternative.

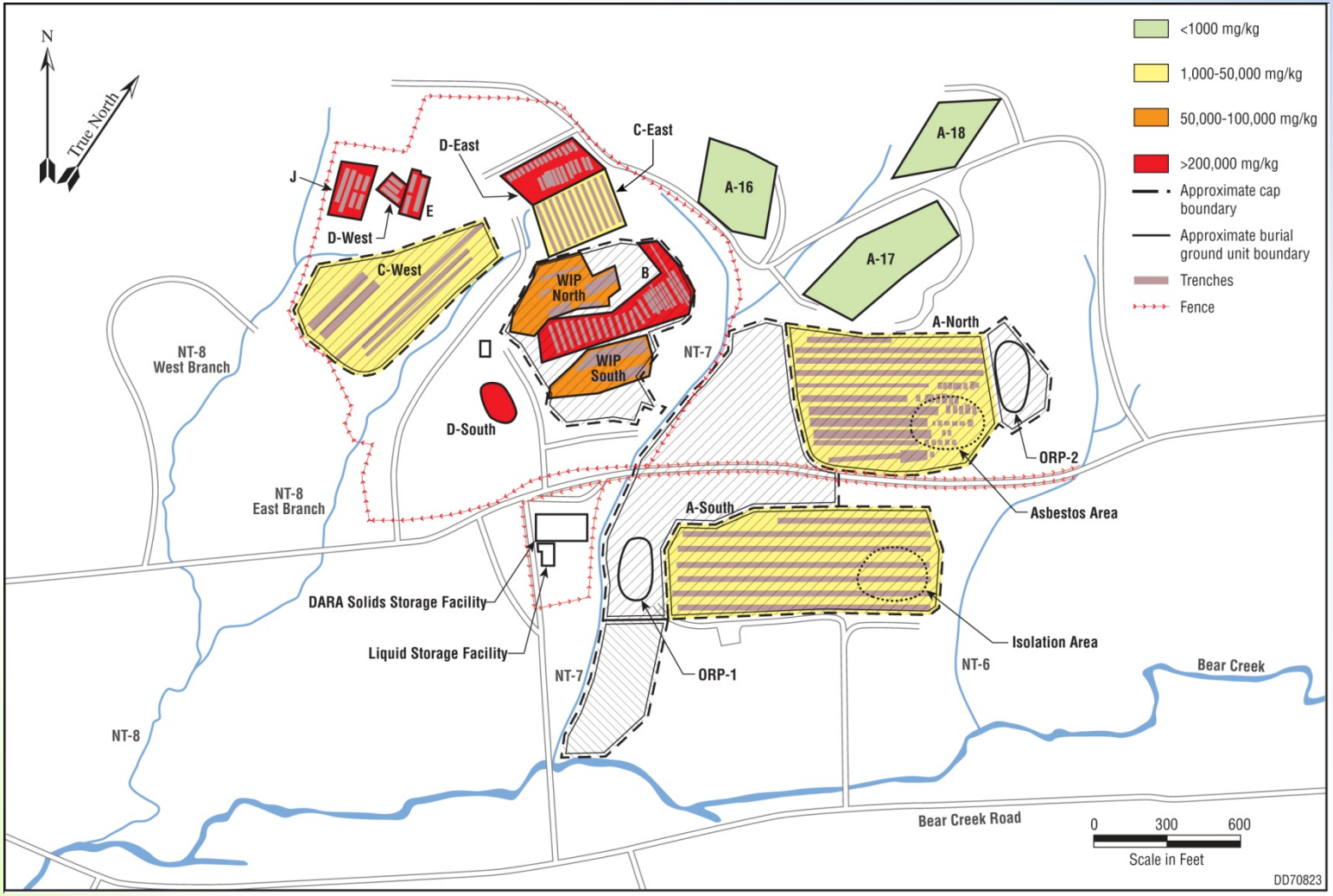
BCBG FFS Alternatives



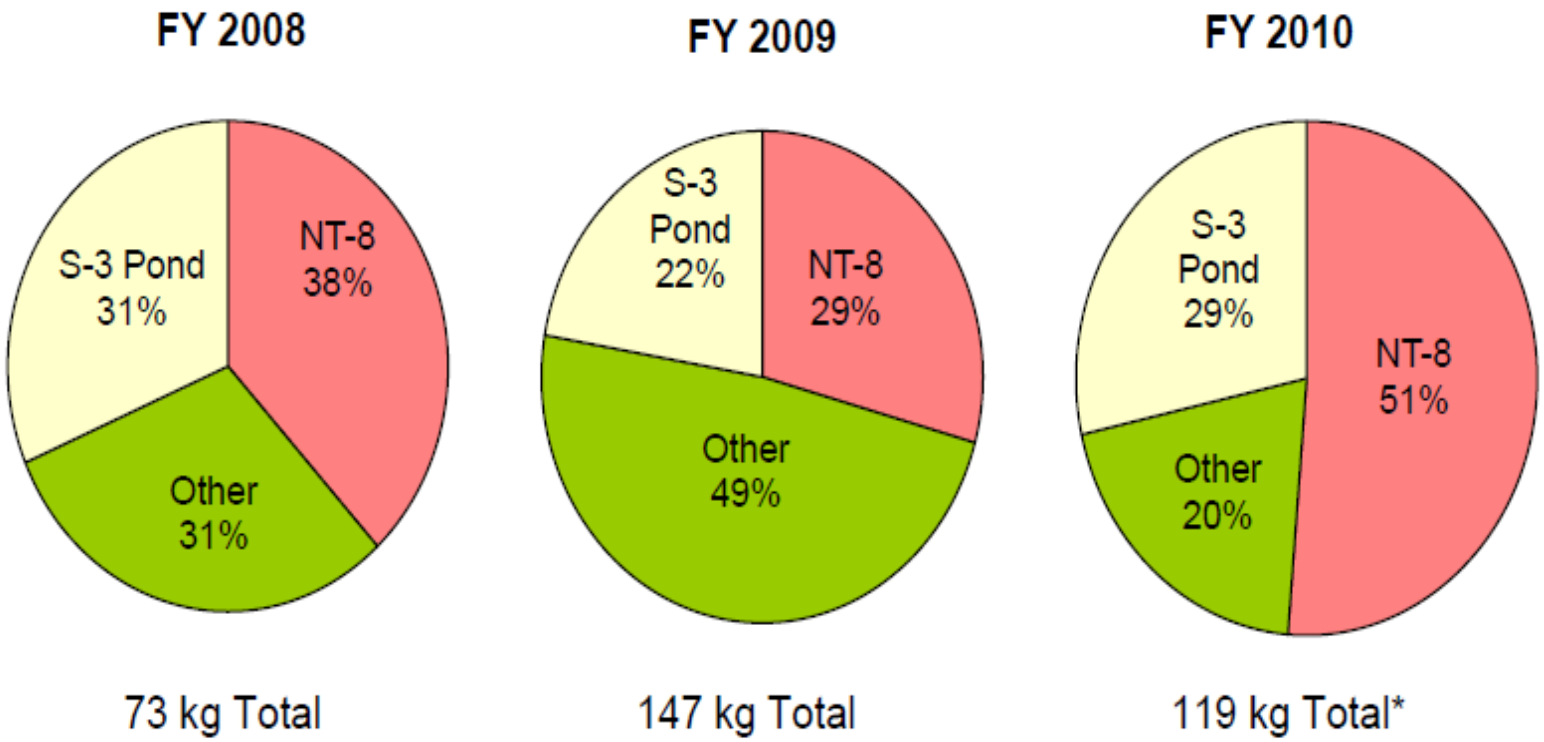
BCBG FFS Alternatives

- No Action
- Hydraulic Isolation (capping + upgradient surface water diversion and downgradient leachate collection) ($21M)
- Hydrologic Isolation with In-Situ GW Treatment ($32M)
- Hydrologic Isolation with Ex-Situ GW Treatment ($33M)
- In-Situ Waste Treatment & Hydrologic Isolation ($823M)
- Partial Excavation, In-Situ Waste Treatment & Hydrologic Isolation ($839M)
  - Excavation of high-activity uncapped waste units (D, E, J) only
- Complete Excavation ($3,300M)
  - Specialized equipment for excavation of potentially pyrophoric & shock-sensitive wastes; offsite disposal required.

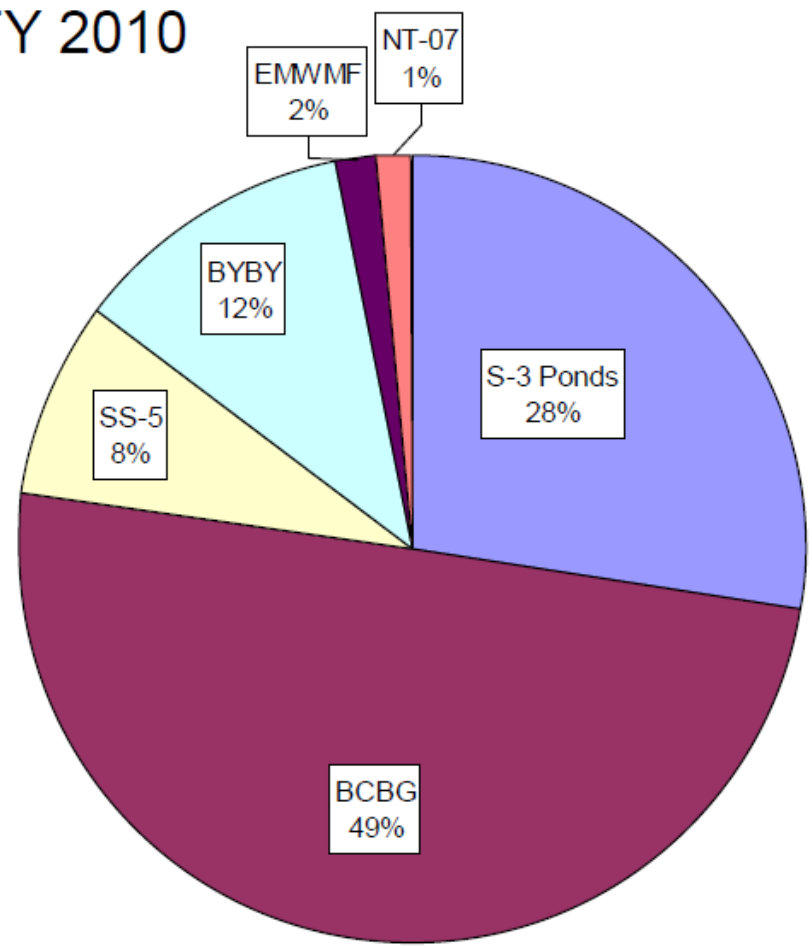
BCBG Estimated Uranium Concentrations



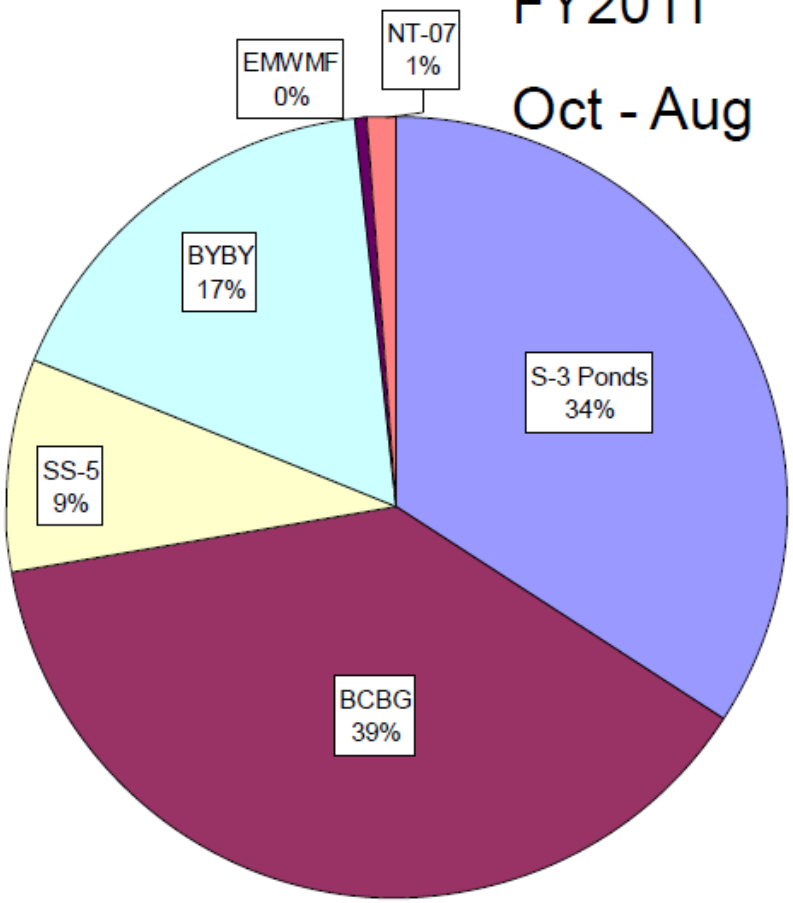
Contributions to the Annual Bear Creek Integration Point Uranium Discharge



Uranium Sources Comparison FY 2010 & 2011

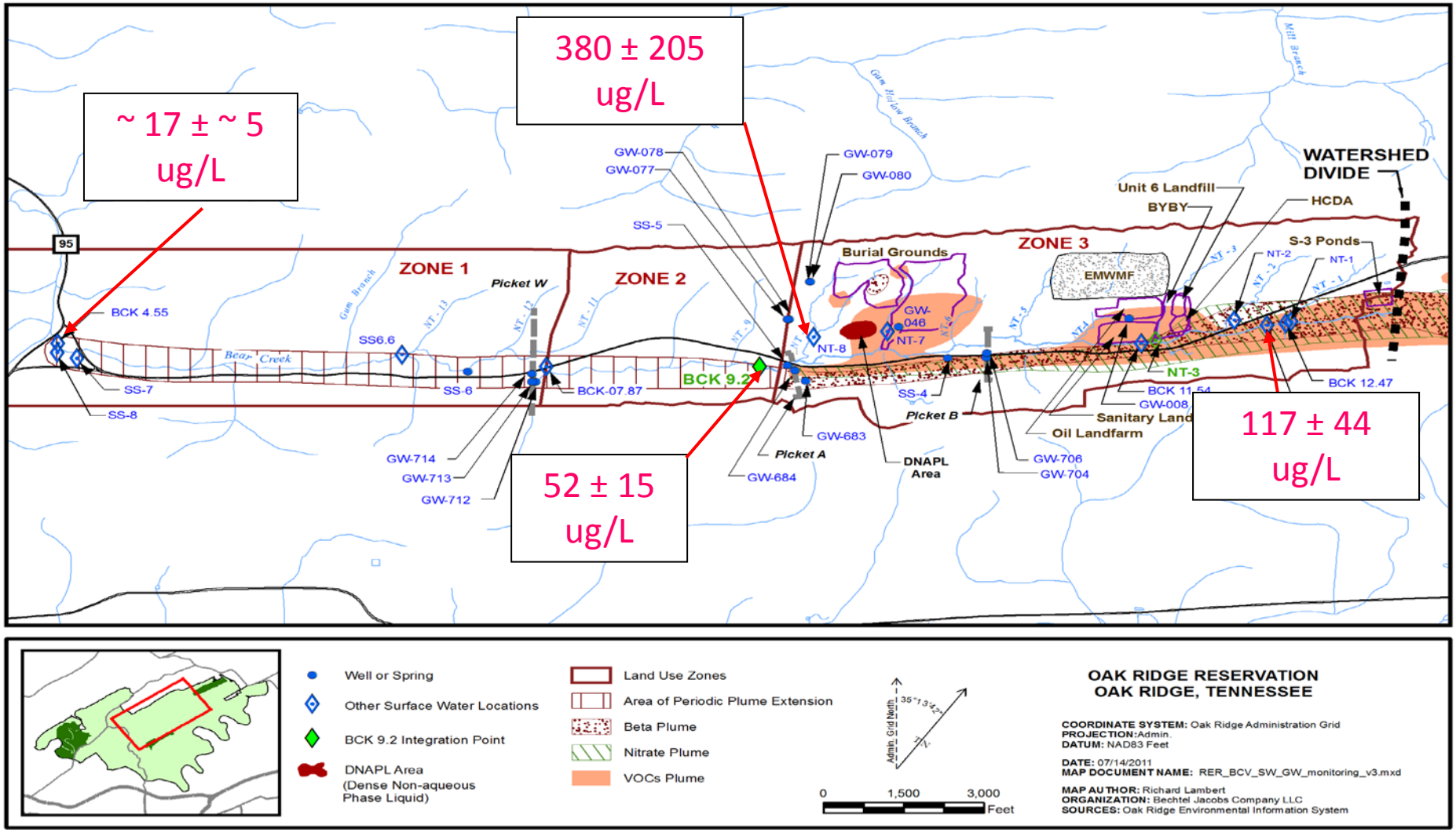


Total IP U Flux 119 kg



Total IP U Flux ~ 100 kg YTD

FY 2010 Average & Standard Deviation Uranium Concentrations



Potential Interim Remedial Measures

- Refurbish existing sump for improved collection of surface water and shallow groundwater (SW/GW)
  - Will help remove some contaminated water from the area, may have a limited treatability and unsure performance
- Collect SW/GW at NT-8 for treatment at existing facilities
  - Eliminates a large portion of contaminated water from going into NT-8, can be costly to implement and maintain
- Install temporary cap/cover over contributing source area
  - Eliminates surface water runoff and infiltration, provides a quick efficient solution, can be coupled with another solution (collect SW/GW or refurbish sump) to give higher treatability, may have a safety issue when covering some Burial Grounds.

Potential Interim Remedial Measures

- In-situ grouting of source trenches
  - This process fixes contaminates in place and hydrologically isolates the burial grounds, however it is very costly to implement and will require long term monitoring
- GW extraction wells to draw down upwelling GW
  - Will draw down GW from burial grounds, but will require several dozen wells to obtain desired effect, will have to treat all water extracted, very costly in implementation and maintenance as well as treatment of extracted water.
- Review/revisit remedial technology alternatives from previous analyses

Summary

- Currently no unacceptable risk to human health is estimated in BCV, including BCBG, under current land use controls; however, future risks could exceed acceptable levels under different land use scenarios and releases from BCBG appear to be increasing.
- Interim actions for BCBG may provide cost-effective and implementable options to reduce releases.
- Results from comparative analysis of restoration options available this Spring.
- Possible that comprehensive remedy is most cost-effective path forward.
- Difficult funding environment anticipated for near future with many competing budget priorities eg. Mercury releases to UEFPC