Central Plateau Inner Area Cleanup Principles
What are Cleanup Principles?

- Cleanup Principles are the initial conditions and approaches to developing cleanup decisions in the Inner Area.
- These Principles will guide the development of the Remedial Investigations and Feasibility Studies (RI/FS).
- These Principles will help DOE produce RI/FS documents to better meet regulator expectations.
- Formal agreement on cleanup, as influenced by these Principles, does not happen until the Record of Decision.
Why Cleanup Principles?

• The Inner Area is large and very complex
  o Historic plutonium extraction
  o Cribs, trenches, and ponds were used for liquid waste disposal
  o Areas where unplanned releases occurred
  o Many miles of pipelines
  o Solid waste disposal areas
  o Contaminated soil and groundwater
  o Environmental Restoration Disposal Facility (ERDF)
  o New waste treatment facilities such as 200 West pump and treat and the Waste Treatment Plant
  o Naval reactor trench

• Waste sites were organized into Operable Units
• Decisions will be organized by Operable Unit
Central Plateau Inner Area OUs

Inner Area OUs in Remedial Investigation/Feasibility Study Phase

**Source Area OUs**
- 200-WA-1/200-BC-1 – 200 West Area waste sites and BC Cribs and Trenches
- 200-EA-1 – 200 East Area waste sites
- 200-DV-1 – Deep vadose zone waste sites
- 200-IS-1 – Pipelines systems waste sites
- 200-SW-2 – Radioactive waste landfills

**Canyon Area OUs**
- 200-CB-1 – B Plant canyon and associated waste sites
- 200-CP-1 – PUREX canyon and associated waste sites
- 200-CR-1 – REDOX canyon and associated waste sites

**Groundwater OUs**
- 200-BP-5/200-PO-1 – 200 East groundwater
Why Cleanup Principles?

• Some waste sites that are very similar in waste received and type of waste site are now in different operable units

• Agencies would like consistent decisions where technically reasonable

• DOE wants to produce RI/FS and Proposed Plans that meet regulator expectations
  o Reduce document production time and resources
  o Reduce rework of documents
  o Reduce resolution of regulator comments
  o Increase consistency in remedial actions
  o May reduce the cost of developing the documents and decisions
CERCLA Process

Site Investigation/NPL Listing
Remedial Investigation/Feasibility Study
Remedy Selection
Remedy Implementation
Five Year Review
Remedy completion/site closeout

Remedial Investigation/Feasibility Study
- RI/FS Work Plan
- Site Characterization
- Baseline Risk Assessment
- Development & screening of alternatives
- Treatability tests
- Detailed analysis of alternatives
- RI/FS Reports

Remedy Selection
- Identification of Preferred Alternative
- Proposed Plan
- Public Comment
- Record of Decision

Remedy Implementation
- Remedial Design
- Remedial Action
Inner Area Cleanup Principles

• Joint effort by DOE, EPA, and Ecology in 2013-2014
• Principles provide foundation for evaluating waste sites and making cleanup decisions for Inner Area Operable Units
• Inner Area principles are key to the RI/FS phase and address five areas:
  o Land Use
  o Baseline Risk Assessment
  o Cleanup Levels
  o Point of Compliance
  o Regulatory strategies
Land Use

• Inner Area land use is industrial.
  o HAB Advice #132 and the Tri-Party response confirmed the industrial land use.

• The agencies are in agreement that current 10 mi² Inner Area footprint will not be reduced further.*
Baseline Risk Assessment

- Baseline Risk Assessment (BRA) will use default EPA industrial scenario (multiple pathway) to determine need for action at cumulative cancer risk level of 1 in 10,000 and at 1 in 100,000 and a hazard index of 1 for non-carcinogenic effects.*
Baseline Risk Assessment

• State requirement for cumulative cancer risk of 1 in 100,000 will be considered because of future corrective action requirements.

• Once basis for action is determined, cleanup standards for chemicals will be based on MTCA-C industrial levels for direct contact.
Baseline Risk Assessment (continued)

- The only institutional control is the industrial land use.*
- BRA will not include residential or tribal scenarios*
- BRA will be done on OU-by-OU basis (each work plan)
- DOE will develop RI/FS Work Plan sections that describe the principles and specific parameters on baseline risk assessment that will serve as guiding principles for all work plans.
Cleanup Levels

• Preliminary Remediation Goals (PRGs) for human health direct contact with radionuclides will be risk-based.*
  
  - The River Corridor interim decisions were dose-based.
  - The new River Corridor RODs are based on the lower of dose-based and risk-based.

• PRGs for chemicals will be based on MTCA Method C (direct contact).

• Approach to ecological cleanup will be the same as for River Corridor, as applied for the 100-D/H Area RI/FS.
• Groundwater protection modeling will be based on natural recharge and will not consider irrigation.

• Groundwater protection modeling and PRG development will be based on the process defined in the document "Regulatory Basis and Implementation of a Graded Approach to Evaluation of Groundwater Protection" February 2012. (DOE/RL-2011-50).
Cleanup Levels (continued)

• Groundwater protection PRGs will be developed, discussed, and approved through a single process to develop PRGs applicable to each of the five unique areas of the Central Plateau.*
Point of Compliance – Groundwater

• Feasibility Studies will present an evaluation of groundwater protection at the standard POC immediately beneath each waste site or facility under consideration.

• DOE may also choose to perform an analysis in the first Inner Area Feasibility Study to evaluate a conditional point of compliance at an alternative boundary for groundwater protection.*
Example of Potential Conditional Point of Compliance for Groundwater
Point of Compliance – Soil Depth

• Feasibility Studies will present an alternative that will evaluate compliance with human health (direct contact) and ecological PRGs at the standard POC of 15 ft.

• DOE may also choose to perform an analysis in the first Inner Area Feasibility Study to evaluate a conditional point of compliance at 10 ft. below ground surface for direct contact and ecological protection.*

• Unlike in the River Corridor, engineered structures and/or mass of contamination will not be removed unless it is a risk management decision.*
Regulatory Strategies

• Similar site approach can be used with proper analysis and use of available information, data, and process knowledge.

• Characterization strategies will consider:
  o Multiple remedial technologies
    • (e.g., Remove/treat/dispose (RTD) vs in-situ treatment or disposal)
  o Risk reduction
    • (e.g., Use process knowledge to develop a conservative inventory for select sites to eliminate or reduce the need for high hazard sampling)
  o Regulatory requirements
    • (e.g., The presence of RCRA TSDs may drive additional data.)
  o Cost avoidance
    • (e.g., Is it more cost effective to RTD a site rather than characterize it?)
The observational approach can also be a valid strategy where RTD is appropriate.

- The observational approach was used in the River Corridor.

The regulatory agencies are willing to consider a plug-in approach. They generally believe that it applies primarily to RTD sites but could be applied to other potential remedies if justified.

- The plug-in approach would be used with newly discovered sites and changed conditions.

Post-ROD characterization (meaning limited pre-ROD characterization) is a valid approach but may result in interim action RODs.
Path Forward

- These Principles are being incorporated into RI/FS Work Plans for Inner Area OUs.
- The RI/FS Work Plans will be shared with the HAB when submitted to the Regulators.
- The Proposed Plans, as influenced by the Principles, will go through a formal public comment period.
- Formal agreement on these Principles occurs with the RI/FS process.