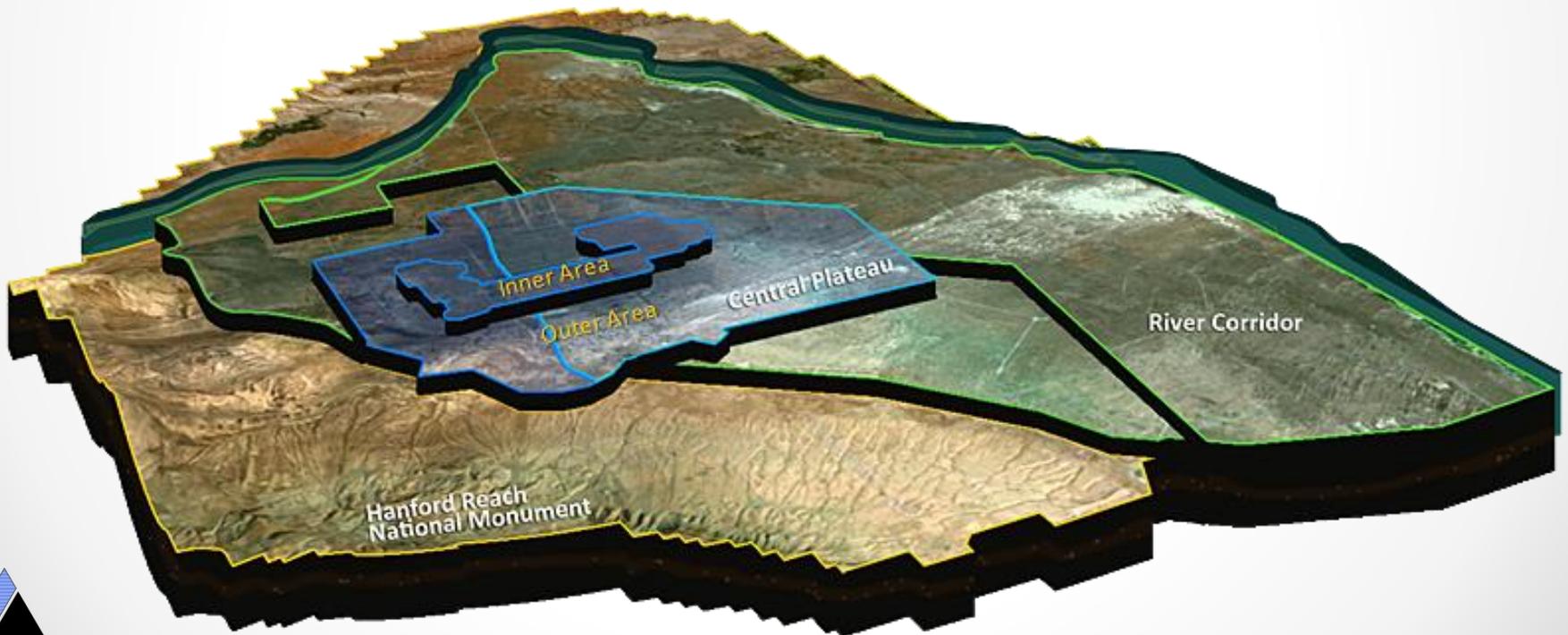


Central Plateau Inner Area Cleanup Principles



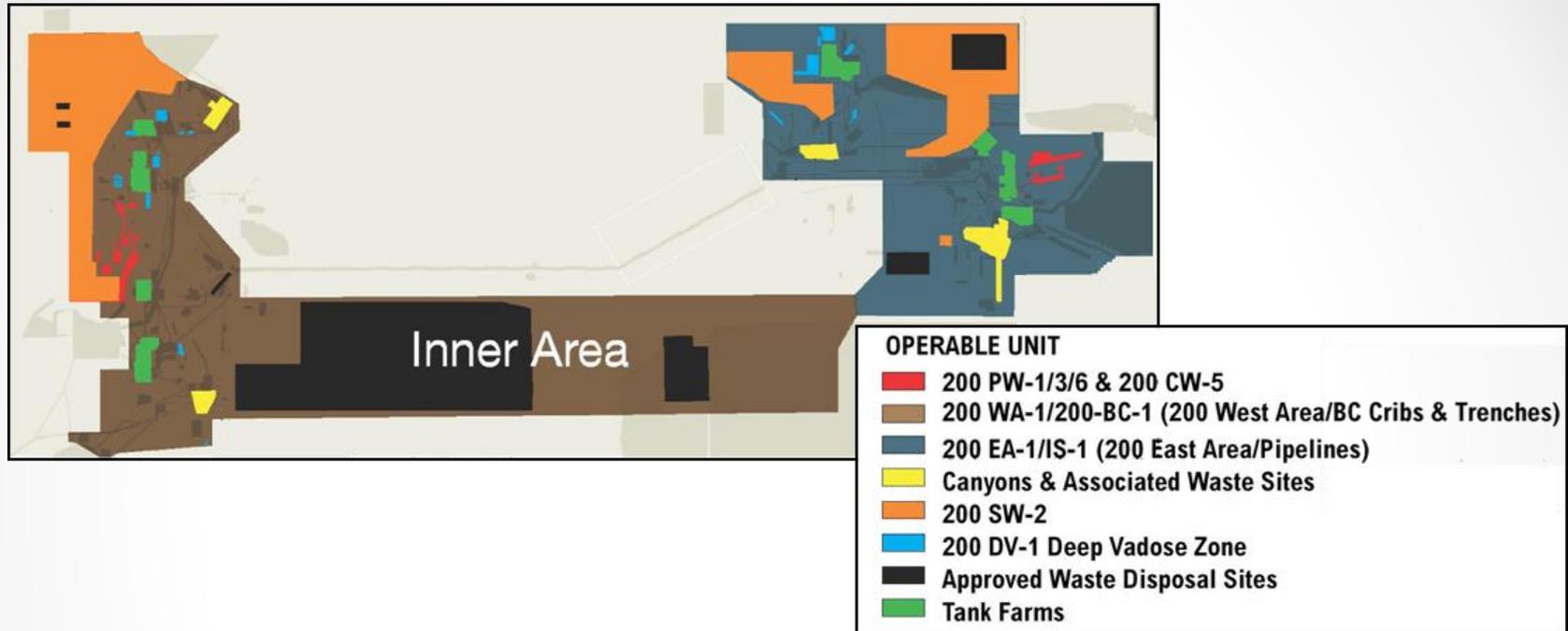
What are Cleanup Principles?

- 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
 - Historic plutonium extraction
 - Cribs, trenches, and ponds were used for liquid waste disposal
 - Areas where unplanned releases occurred
 - Many miles of pipelines
 - Solid waste disposal areas
 - Contaminated soil and groundwater
 - Environmental Restoration Disposal Facility (ERDF)
 - New waste treatment facilities such as 200 West pump and treat and the Waste Treatment Plant
 - 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

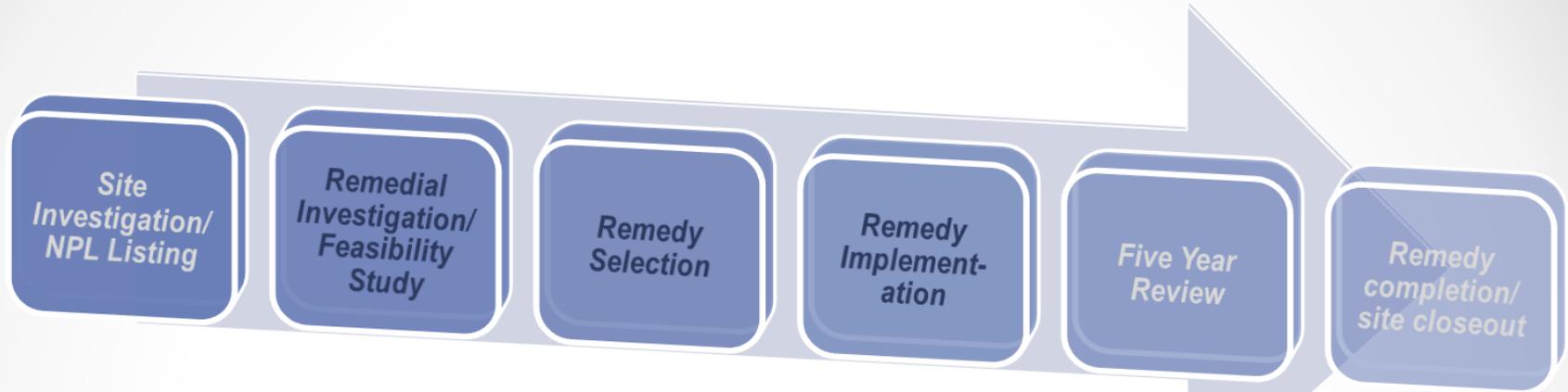
Groundwater OUs

- **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
 - Reduce document production time and resources
 - Reduce rework of documents
 - Reduce resolution of regulator comments
 - Increase consistency in remedial actions
 - May reduce the cost of developing the documents and decisions

CERCLA Process



Remedial Investigation/Feasibility Study

R/FS Work Plan

Site Characterization

Baseline Risk Assessment

Development & screening of alternatives

Treatability tests

Detailed analysis of alternatives

R/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

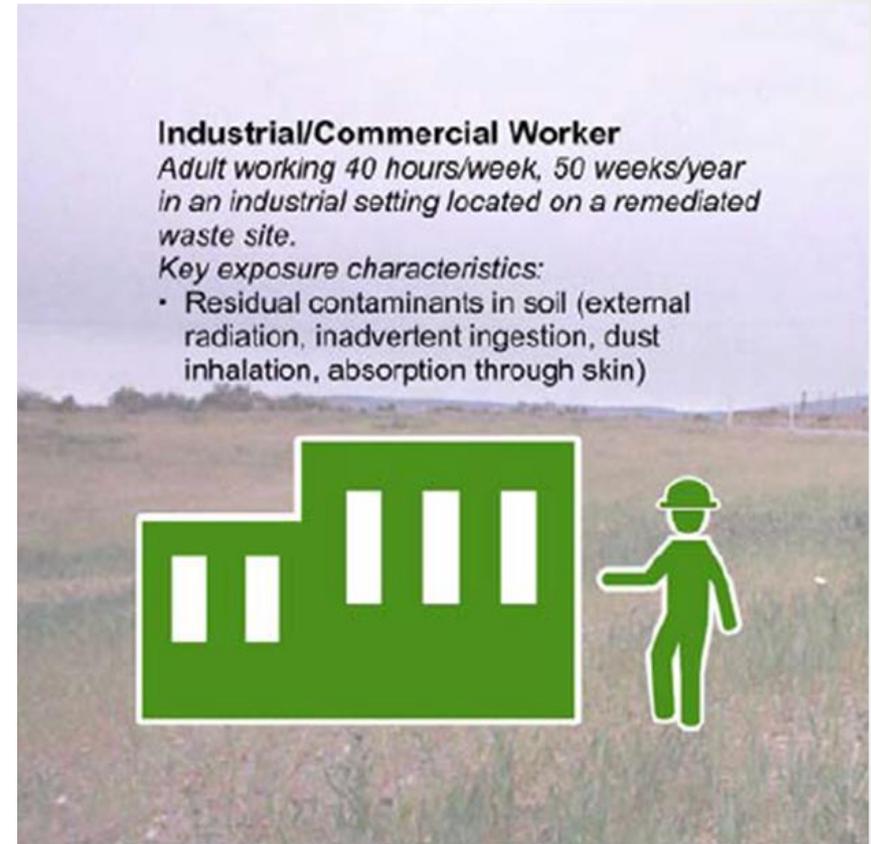
- Joint effort by DOE, EPA, and Ecology in 2013-2014
- Principles provide foundation for evaluating waste sites and making cleanup decisions for Inner Area Operable Units
- Inner Area principles are key to the RI/FS phase and address five areas:
 - Land Use
 - Baseline Risk Assessment
 - Cleanup Levels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

Land Use

- Inner Area land use is industrial.
 - 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

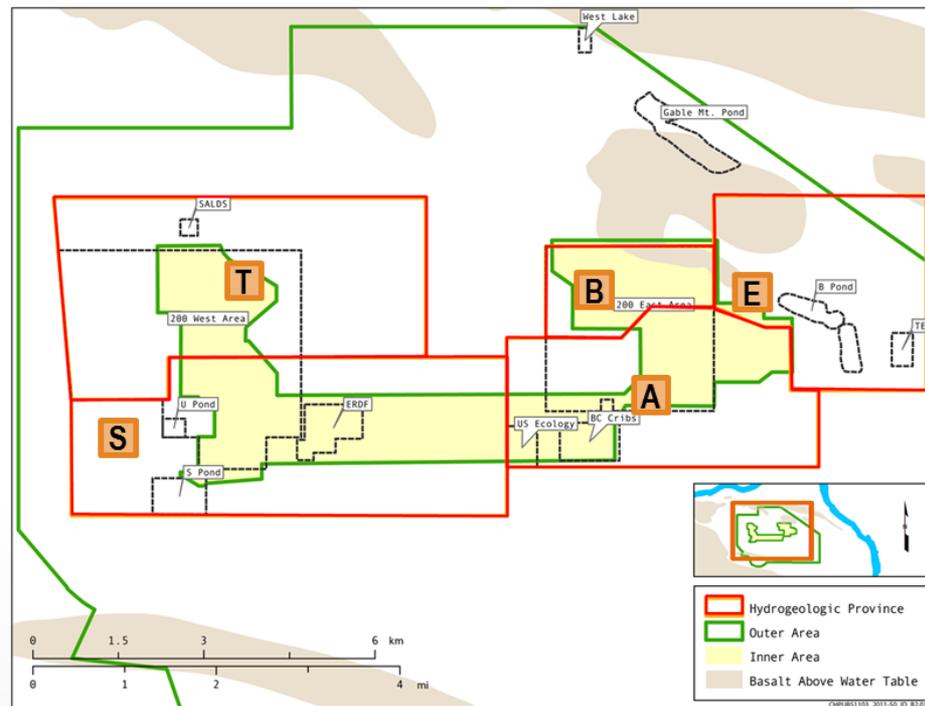
- Preliminary Remediation Goals (PRGs) for human health direct contact with radionuclides will be risk-based.*
 - The River Corridor interim decisions were dose-based.
 - The new River Corridor RODs are based on the lower of dose-based and risk-based.
- PRGs for chemicals will be based on MTCA Method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

Cleanup Levels (continued)

- 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)

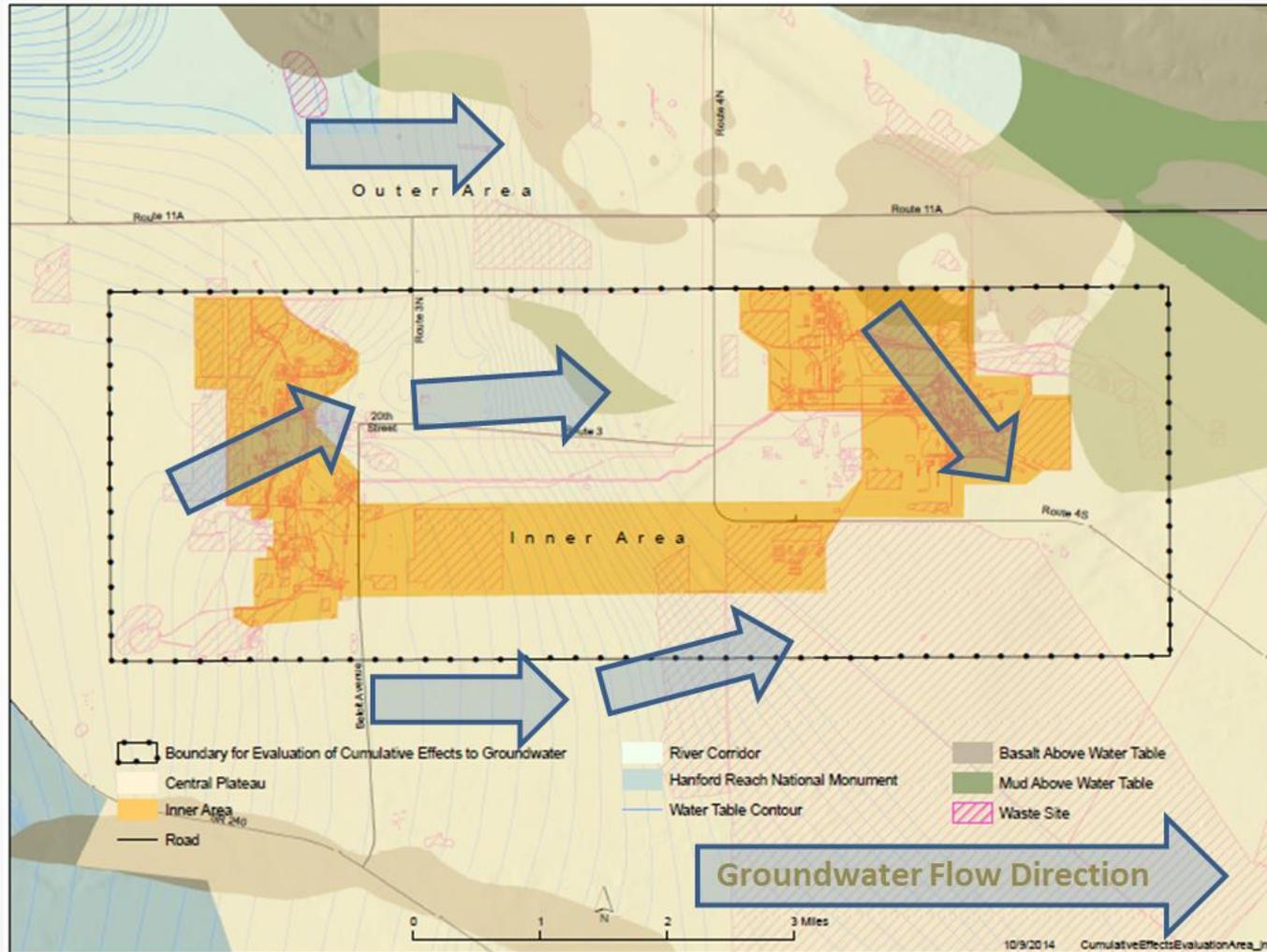
- Groundwater protection PRGs will be developed, discussed, and approved through a single process to develop PRGs applicable to each of the five unique areas of the Central Plateau.*



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:
 - Multiple remedial technologies
 - (e.g., Remove/treat/dispose (RTD) vs in-situ treatment or disposal)
 - 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)
 - Regulatory requirements
 - (e.g., The presence of RCRA TSDs may drive additional data.)
 - Cost avoidance
 - (e.g., Is it more cost effective to RTD a site rather than characterize it?)

Regulatory Strategies (continued)

- 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.