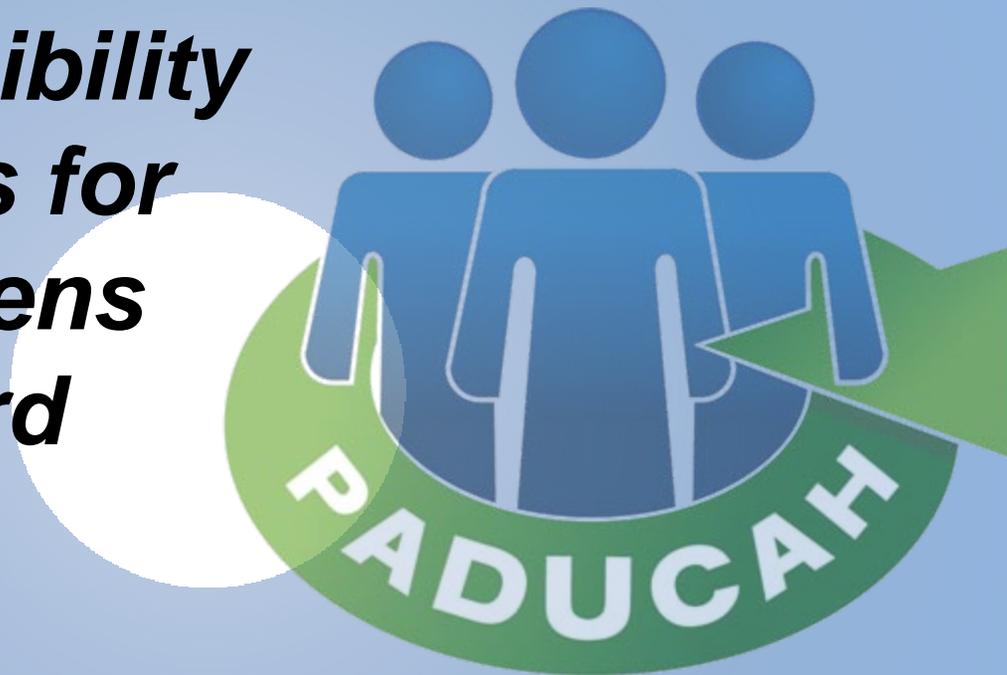




U.S. DEPARTMENT OF
ENERGY

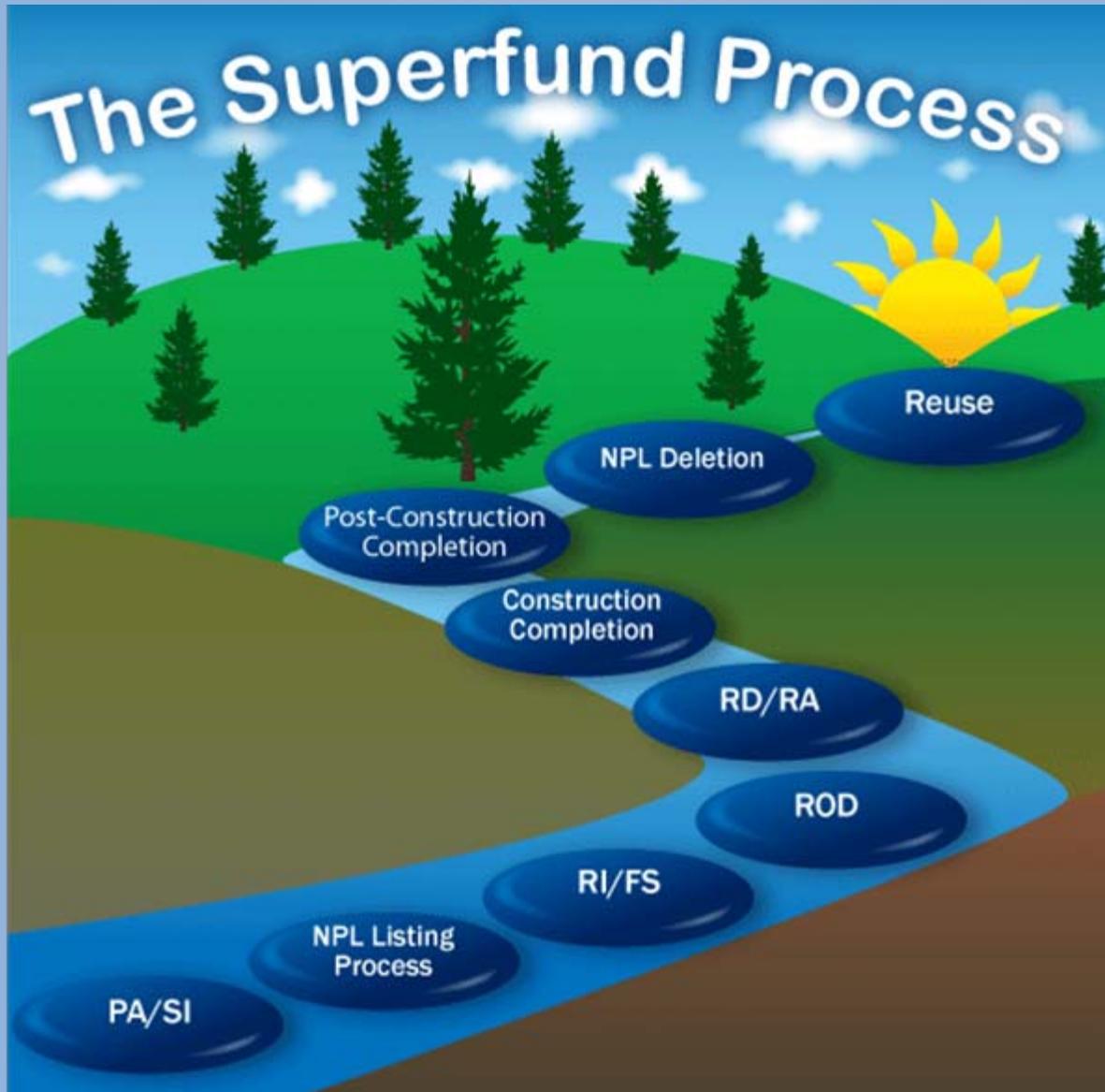
***CERCLA Feasibility
Study Process for
Paducah Citizens
Advisory Board***



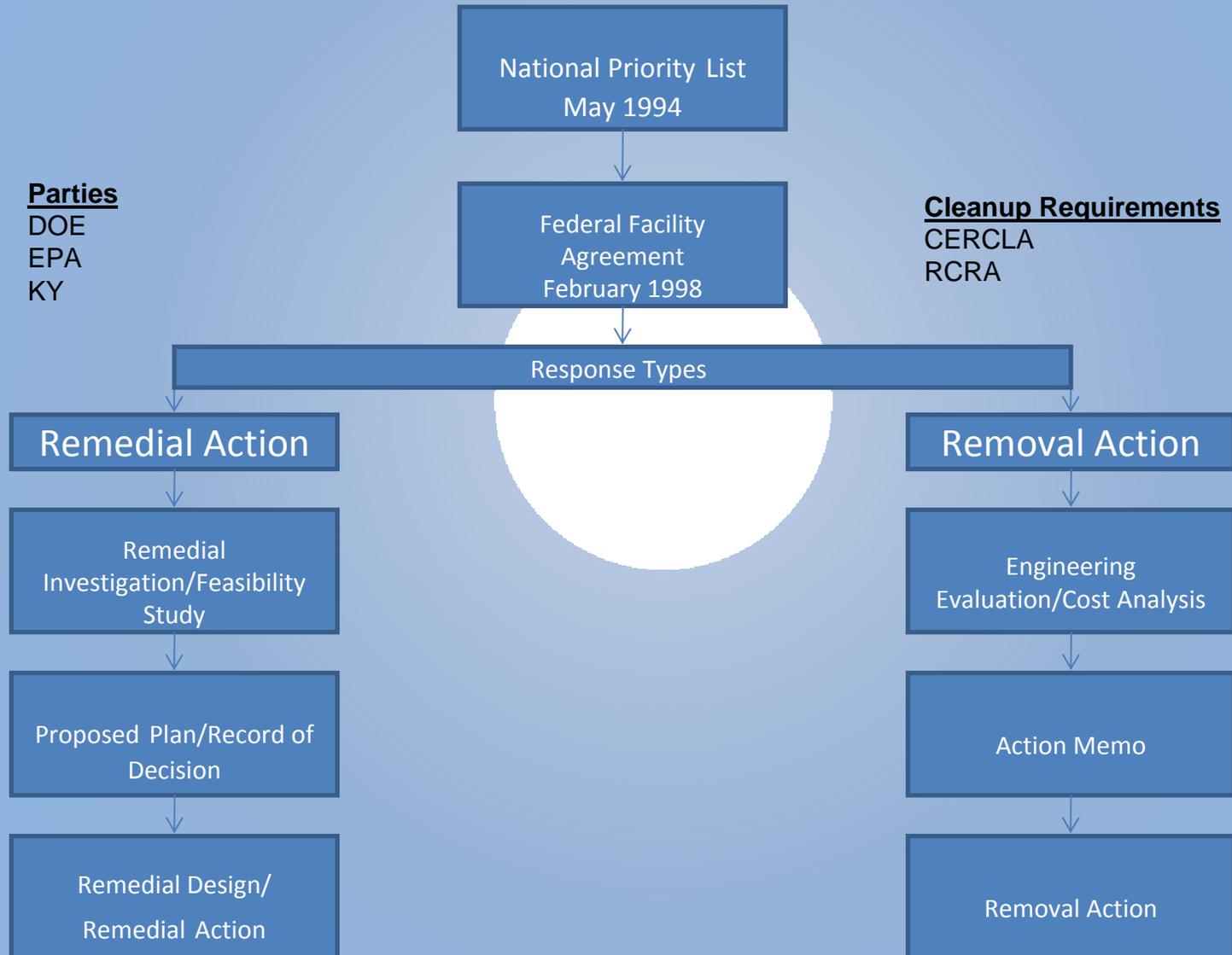
CITIZENS
ADVISORY BOARD

September 15, 2011

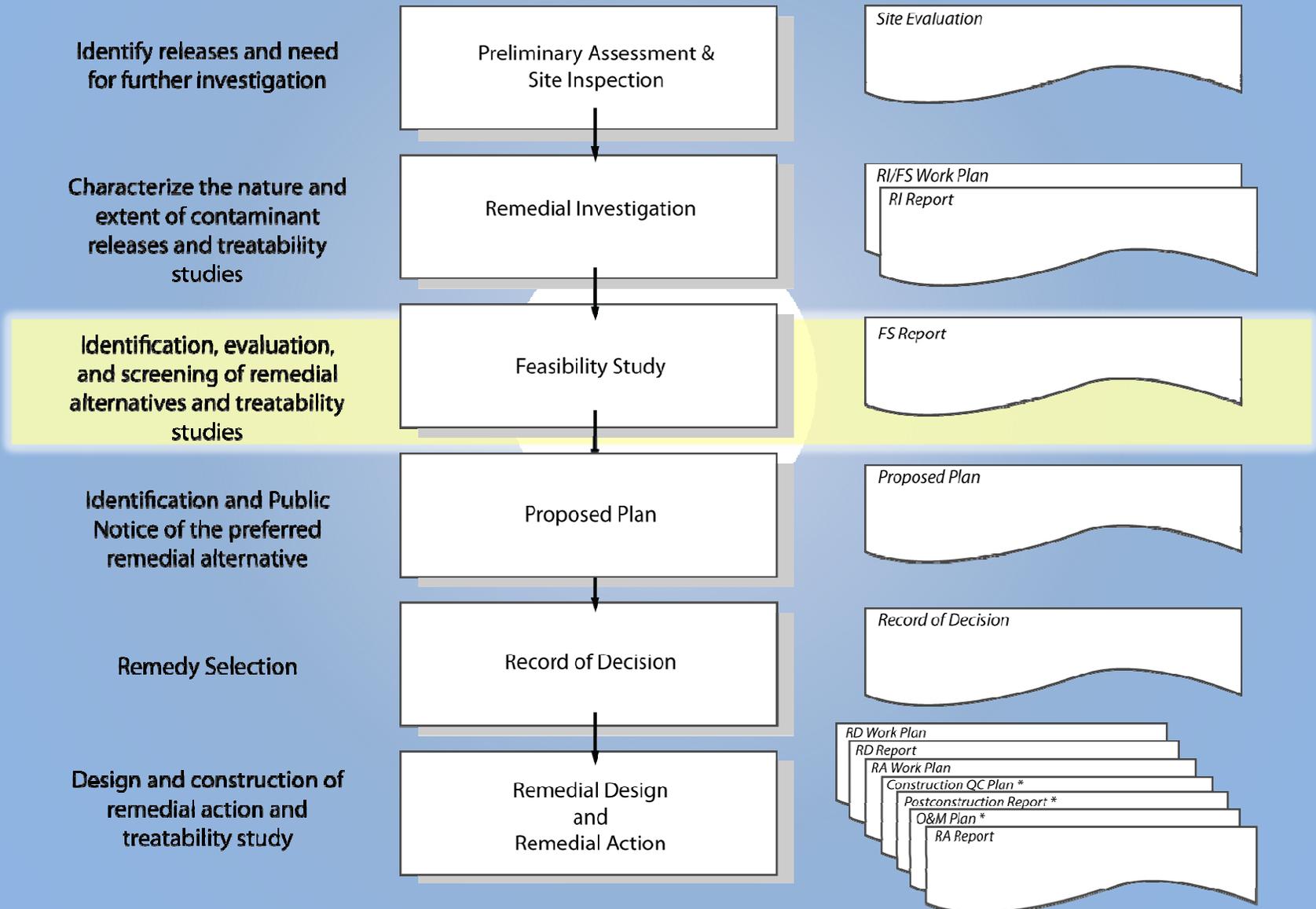
The Typical CERCLA Remedial Process



Paducah Federal Facility Agreement



FFA Primary Documents



Feasibility Study

- The National Contingency Plan (NCP) regulations [40 CFR 300.430(e)] of CERCLA states the purpose of a Feasibility Study is as follows:

(e) Feasibility study. (1) The primary objective of the feasibility study (FS) is to ensure that appropriate remedial alternatives are developed and evaluated such that relevant information concerning the remedial action options can be presented to a decision-maker and an appropriate remedy selected. The lead agency may develop a feasibility study to address a specific site problem or the entire site. The development and evaluation of alternatives shall reflect the scope and complexity of the remedial action under consideration and the site problems being addressed. Development of alternatives shall be fully integrated with the site characterization activities of the remedial investigation described in paragraph (d) of this section. The lead agency shall include an alternatives screening step, when needed, to select a reasonable number of alternatives for detailed analysis.

Feasibility Study

- The Feasibility Study is the mechanism for the **development, screening, and detailed analysis** of alternative remedial actions.
- The purpose of the detailed analysis of alternatives is to provide decision makers with adequate information to permit selection of an appropriate remedy for a site or operable unit.
- The results of the detailed analysis support the final selection of a remedy and provide the foundation for the Record of Decision.
- The detailed analysis, like other phases of the RI/FS process, is tailored to the scope and complexity of the site or operable unit. Level of details vary from site to site, although all major components always must be addressed.

Development/Screening of Alternatives

Objective of Choosing Alternatives

Develop an appropriate range of distinct remedial alternatives that do these things:

- Protect human health and the environment
- Attain ARARs
- Be cost-effective
- Utilize permanent solutions and treatment technologies to maximum extent practicable

Development/Screening of Alternatives

- Range of practicable alternatives should reflect program expectations
 - Address principal threats through treatment
 - Use engineering controls for waste that poses low ,long-term threat or where treatment is impracticable
 - Use institutional controls primarily as supplements to engineering controls
 - Combine approaches, as appropriate
 - Consider innovative technologies, as appropriate
 - Return groundwater to its beneficial uses within a reasonable time frame
- Response actions selected for sites with similar characteristics should be considered and evaluated

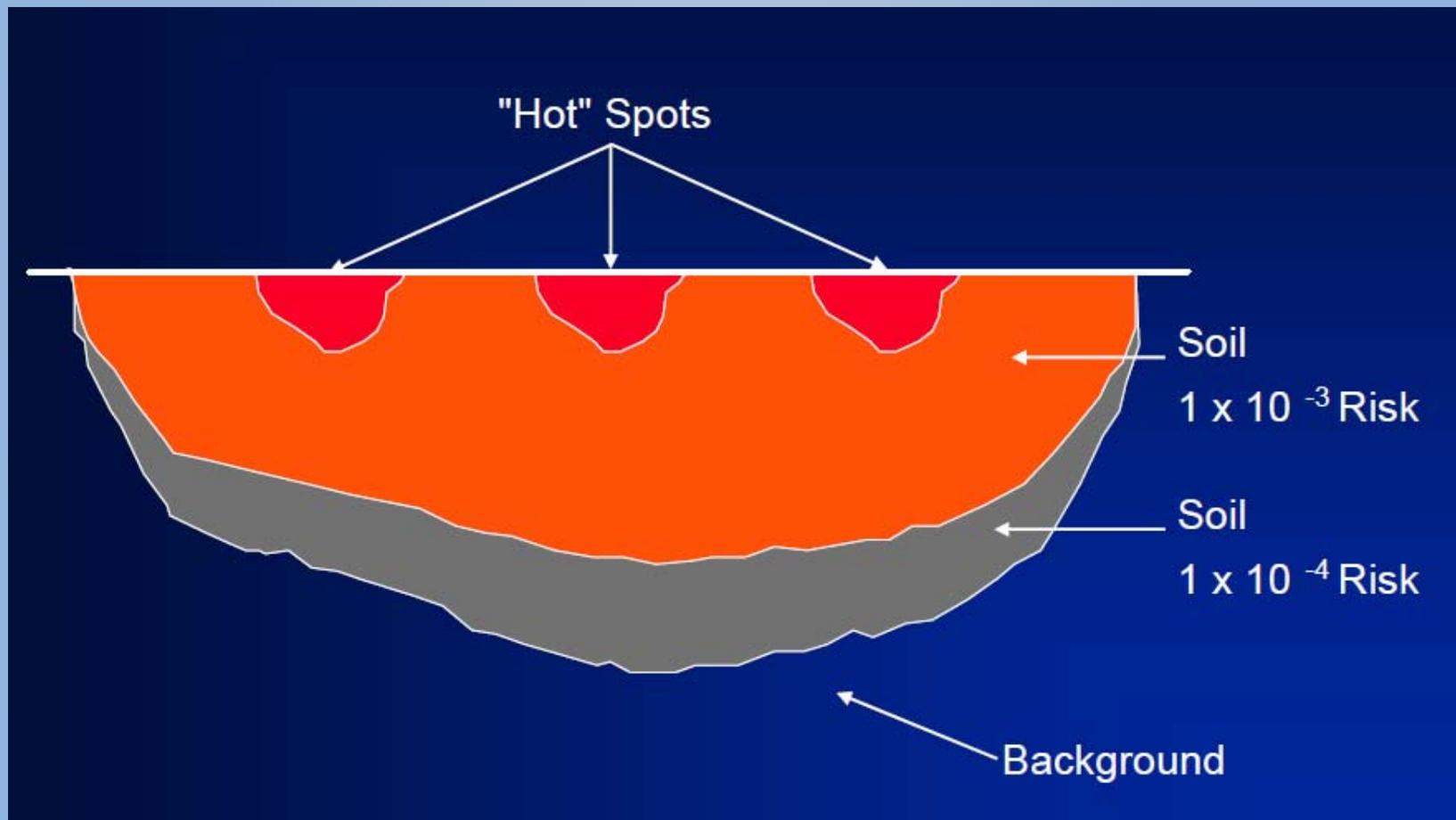
Development/Screening of Alternatives

Range of Source Control Options

- Treatment option to eliminate, or minimize to extent feasible, need for long-term management
- Treatment options that address principal threats
- Innovative treatment technologies, as appropriate
- One or more containment options utilizing little or no treatment
- No action alternative range of practicable alternatives should reflect program expectations

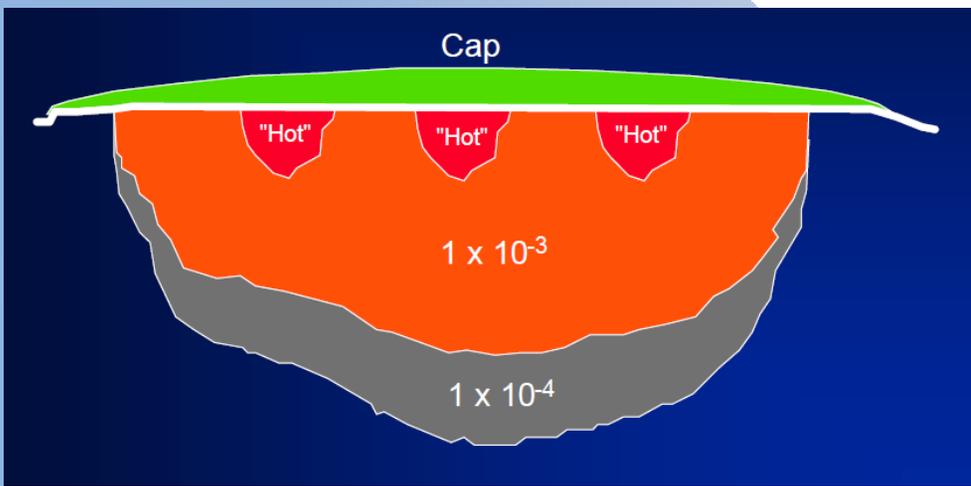
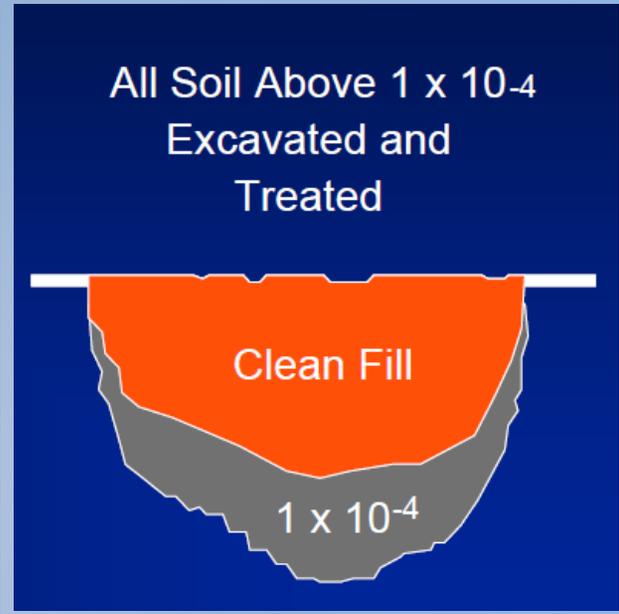
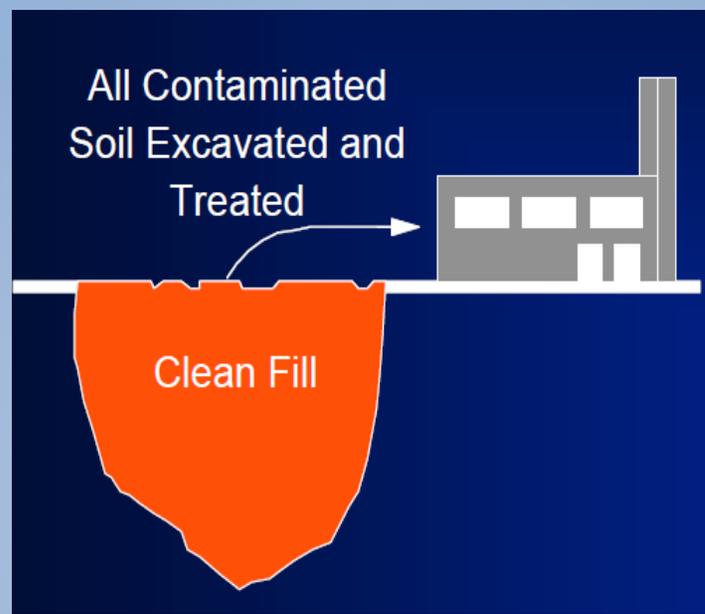
Development/Screening of Alternatives

Source Control



Development/Screening of Alternatives

Eliminate or minimize need for long-term management



Containment with little or no treatment

Detailed Analysis Activities

- The purpose of the detailed analysis is to compare the alternatives that survived the initial screening, describe the differences among them, and demonstrate whether the alternatives satisfy mandatory requirements.
- Alternative Definition
 - Alternatives progressing from the development and screening phase of the FS may need to be better defined in order to adequately evaluate them during the detailed analysis. Necessary refinement to the remedial alternatives may include the following:
 - ✓ Modification of contaminated media volume estimate
 - ✓ Revision of sizing requirements of process options
 - ✓ Selection of a more suitable process option
- Individual Analysis of Alternatives
 - Once remedial action alternatives are sufficiently defined to allow for further evaluation, each alternative is assessed against the **nine evaluation criteria**.
 - The criteria enable the analysis of each alternative to address the statutory requirements and considerations and the technical and policy considerations important for selecting among remedial alternatives.

Criteria for Detailed Analysis of Alternatives

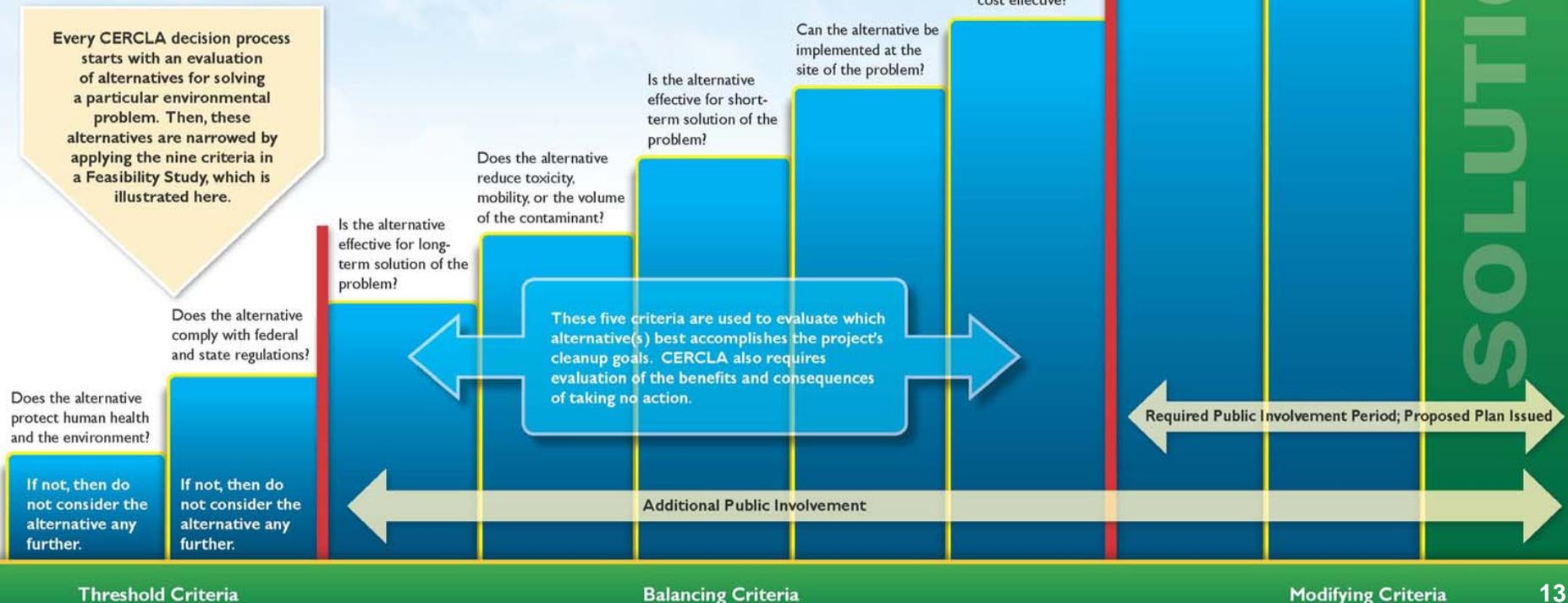
What the Law Requires in Making Cleanup Decisions

Before making cleanup decisions,

DOE must evaluate potential cleanup technologies against criteria spelled out in a federal law called CERCLA. There are nine criteria to be considered; these are divided into three categories.

Threshold Criteria determine if the possible solution to an environmental problem protects people and the environment and meets federal and state regulations. **Balancing Criteria** are used to determine which of the criteria meeting the Threshold Criteria will work the best. **Modifying Criteria** are used to determine if the recommended solution is acceptable to Kentucky and the local community.

Every CERCLA decision process starts with an evaluation of alternatives for solving a particular environmental problem. Then, these alternatives are narrowed by applying the nine criteria in a Feasibility Study, which is illustrated here.



Detailed Analysis Deliverables

The following are major elements included in the FS Report :

- Description of Alternatives and Individual Analysis
 - Includes a narrative description of each alternative and a discussion of the evaluation of each alternative against the nine criteria
 - Should focus on how, and to what extent, each alternative performs in terms of the key factors under each criterion.
- Comparative Analysis Presentation
 - The FS Should describe the strengths and weaknesses of the alternatives relative to one another with respect to each criterion.
 - Difference in alternatives may be measured either qualitative or quantitative, as appropriate.
- ARARs Documentation
 - Major ARARs associated with the alternatives that undergo detailed analysis should be integrated into the description of alternatives. Comparative Analysis Presentation
 - The FS should include in an appendix a table that summarizes all federal and state requirements determined to be ARARs for those alternatives. The table should cite the ARAR, indicate which alternatives meet the ARAR, and identify any waiver and its justification. Individual Analysis Presentation.



BACK-UP SLIDES

Feasibility Study

- The Paducah FFA requires an evaluation of remedial alternatives when the baseline risk assessment indicates any of the following:
 - The cumulative carcinogenic risk is greater than 10^{-6} ;
 - The noncarcinogenic hazard quotient is greater than 1;
 - The release has caused adverse environmental impacts;
 - Maximum contaminant levels (MCLs), non-zero MCL goals, or other chemical-specific ARARs are exceeded; or
 - Other site-specific or release-specific circumstances warrant an evaluation of alternatives.