

General  
Key: DOU

# ENVIRONMENTAL RESTORATION DOCUMENT OF UNDERSTANDING

*New Mexico Environment Department  
US Environmental Protection Agency  
US Department Of Energy  
Los Alamos National Laboratory  
Sandia National Laboratories—New Mexico*

November 16, 1995



12681

~~DOU~~  
General

# AGENDA

## NMED, EPA, DOE, LANL, and SNL DOCUMENT OF UNDERSTANDING AND ANNEXES TRAINING

April 18, 1996

Morgan Hall Auditorium (G101), New Mexico State Land Office  
310 Old Santa Fe Trail

<b>Time</b>	<b>Topic</b>	<b>Presenter</b>
8:30 - 8:45	Welcome	Edgar Thornton, NMED <i>Deputy Secretary</i>
8:45 - 9:00	Introduction	Deborah Griswold, DOE/AL/ERD <i>LANL Program Engineer</i>
9:00 - 9:45	Document of Understanding	Barbara Driscoll, EPA - Region 6 <i>RCRA Facility Manager</i>
9:45 - 10:00	<i>Break</i>	
10:00 - 10:30	Land Use Annex E	Theodore Taylor, DOE/AL/LAAO <i>ER Program Manager</i>
10:30 - 11:15	Remedy Selection, Annex H Cleanup Levels, Annex F	Warren Cox, SNL - NM <i>ER Project Manager</i>
11:15 - 11:45	No Further Action Annex B	Ron Kern, NMED <i>Manager, RCRA Technical Compliance Program</i> and Tim Michael, NMED <i>DOE Oversight Bureau</i>
11:45 - 1:00	<i>Lunch</i>	
1:00 - 1:45	Voluntary Corrective Action Annex C	Tracy Glatzmaier, LANL <i>ER Project Consistency Manager</i>
1:45 - 2:15	CAMU/TU Annex J	Mark Jackson, DOE/AL/KAO <i>ER/WM Team Leader</i>
2:15 - 2:30	<i>Break</i>	
2:30 - 3:30	Panel Discussion	Core Team
3:30 - 4:00	Close-out	Deborah Griswold

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**Document of Understanding**

**OVERVIEW**

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**ENVIRONMENTAL RESTORATION  
DOCUMENT OF UNDERSTANDING**

**New Mexico Environment Department  
U.S. Environmental Protection Agency  
U.S. Department of Energy  
Los Alamos National Laboratory  
Sandia National Laboratories—New Mexico**

**November 16, 1995**

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**Signatories to Document of Understanding**

**Ed Kelley**, Ph.D., Director of Water and Waste Management  
Division, New Mexico Environment Department

**Allyn M. Davis**, Director, Multimedia Planning and Permitting  
Division, U.S. Environmental Protection Agency, Region 6

**Richard F. Sena**, Director, Environmental Restoration Division  
U.S. Department of Energy, Albuquerque Operations Office

**Larry Kirkman**, Acting Area Manager  
U.S. Department of Energy, Los Alamos Area Office

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**Signatories to Document of Understanding** (continued)

**Michael Zamorski**, Acting Area Manager  
U.S. Department of Energy, Kirtland Area Office

**Thomas Baca**, Director, Environmental Management Program  
University of California, Los Alamos National Laboratory

**Thomas Bljwas**, Ph.D., Director, Environmental Operations  
Center, Sandia National Laboratories--New Mexico

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**Purpose**

**For the Environmental Restoration Programs at the Department of Energy's New Mexico Laboratories**

- **Develop a cooperative effort among the parties to foster:**
  - timely and cost-effective program implementation
  - standardization of program planning and execution
  - development of annexes to the DOU which provide technical guidelines for criteria and processes for decision making

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**Objectives**

1. **Define areas of agreement among all parties;**
2. **Document standard approaches to common and significant issues which impact the design and execution of the environmental restoration (ER) program;**
3. **Provide a device for revising technical agreements as additional experience is accumulated;**

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**Objectives** (continued)

4. Clarify the regulatory and administrative process with all major aspects of the ER program; and
5. Provide a more standardized format and level of detail for documents necessary to the ER process.

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**History of the Process:  
January 1995 to April 1996**

- 1/95 Change of administrations in New Mexico; potential delegation of HSWA authority to New Mexico
- 2/95 Concept of DOU initiated
- 3/95 Core Team appointed; negotiations initiated
- 7/95 Core Team kick-off meeting
- 9/95 Core Team separated the DOU into an umbrella document and annexes
- 12/95 DOU signed by all parties

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**History of the Process:  
January 1995 to April 1996** (continued)

- 1/96 HSWA authority delegated to New Mexico; workshare agreement signed
- 3/96 Annexes B, C, E, F, H, J, and O signed by Core Team
- 4/96 Annexes A, D, G, I, K, L, and M signed by Core Team; initial DOU/Annex training conducted for all parties

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## **Tier I and Tier II Documents: The DOU and Its Annexes**

### **DOU**

**Purpose, Scope, Objectives, Limitations, Amendment process,  
and General Statements**  
**Decision Flowchart**

### **Annexes**

**A Acronyms and Definitions**  
**B NFA Process and Criteria**  
**C VCA Process and Criteria**  
**DEC/VCM Process and Criteria**  
**E Land Use**

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## **Tier I and Tier II Documents: The DOU and Its Annexes** (continued)

### **Annexes (cont.)**

**F Cleanup Levels**  
**G Sampling and Analysis Guidelines**  
**H Remedy Selection Process**  
**I Temporary Waste Storage**  
**J CAMU/TU**  
**K Groundwater and Vadose Zone Monitoring**  
**L Permit Modification**  
**M Public Involvement**  
**N Deliverable Submittal and Approval**  
**O Budget**  
**P RCRA Closures**

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## **Core Team – Members**

### **NEW MEXICO ENVIRONMENT DEPARTMENT**

**Barbara Hoditschek**  
**Ron Kern**  
**John Parker (represented by Tim Michael)**

### **U.S. ENVIRONMENTAL PROTECTION AGENCY**

**Barbara Driscoll**  
**Nancy Morlock**

### **U.S. DEPARTMENT OF ENERGY**

**Court Fesmire (replaced by Ted Taylor)**  
**Mark Jackson**  
**Julianne Levings (replaced by Deborah Griswold)**

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**Core Team – Members** (continued)

LOS ALAMOS NATIONAL LABORATORY  
Bob Vocke (replaced by Tracy Glatzmaier)

SANDIA NATIONAL LABORATORIES--NEW MEXICO  
Warren Cox

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**Process**

1. DOE and Laboratory members prepare draft annexes.
2. EPA and NMED members review and provide comments on draft annexes.
3. All members discuss and revise draft annexes at regular meetings.
4. All members discuss the revised draft annexes within their organizations.

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**Process** (continued)

5. All members approve annexes at a regular meeting; annexes are checked for consistency and are then circulated for required signatures.
6. Training is conducted for approved annexes.

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## Core Team - Schedule

### Annexes Signed to Date

- B NFA Process and Criteria
- C VCA Process and Criteria
- E Land Use
- F Cleanup Levels
- H Remedy Selection Process
- I Temporary Waste Storage
- J CAMU/TU
- K Groundwater and Vadose Zone Monitoring
- O Budget

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## Core Team - Schedule (continued)

### Annexes to Be Completed in April

- A Acronyms and Definitions
- D EC/VCM Process and Criteria
- G Sampling and Analysis Guidelines
- L Permit Modification
- M Public Involvement

### Annexes to Be Completed in May

- N Deliverable Submittal and Approval
- P RCRA Closures

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## Core Team - Schedule (continued)

### Training

- |                             |   |
|-----------------------------|---|
| April 18, 1996              | Document of Understanding                         |
|                             | Annex B NFA Process and Criteria                  |
|                             | Annex C VCA Process and Criteria                  |
|                             | Annex E Land Use                                  |
|                             | Annex F Cleanup Levels                            |
|                             | Annex H Remedy Selection Process                  |
|                             | Annex J CAMU/TU                                   |
| June 5, 1996<br>(tentative) | Annex D EC/VCM Process and Criteria               |
|                             | Annex G Sampling and Analysis Guidelines          |
|                             | Annex I Temporary Waste Storage                   |
|                             | Annex K Groundwater and Vadose Zone<br>Monitoring |
|                             | Annex O Budget                                    |

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**Core Team – Schedule** (continued)

**Training (cont.)**

July 1996	Annex L	Permit Modification
	Annex M	Public Involvement
	Annex N	Deliverables Submittal and Approval
	Annex P	RCRA Closures

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**Some Definitions**

**Administrative Authority** - The agency that has the regulatory authority over the proposed action.

<b>Activity</b>	<b>Administrative Authority</b>
Corrective Action	NMED
Closures	NMED
CAMU/TU	EPA
Rad-only	DOE

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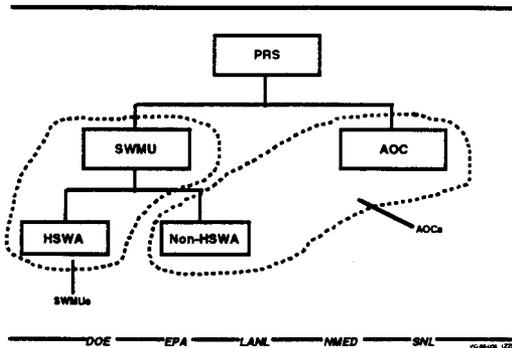
**Some Definitions** (continued)

**SWMU** - Any discernable unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste.

**AOC** - Unit that potentially contains hazardous substances, such as radionuclides.

**Potential Release Site** - Any site suspected of releasing contaminants to the environment. Includes RCRA/HSWA SWMUs and DOE AOCs.

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**Structure of the DOU/Annexes**

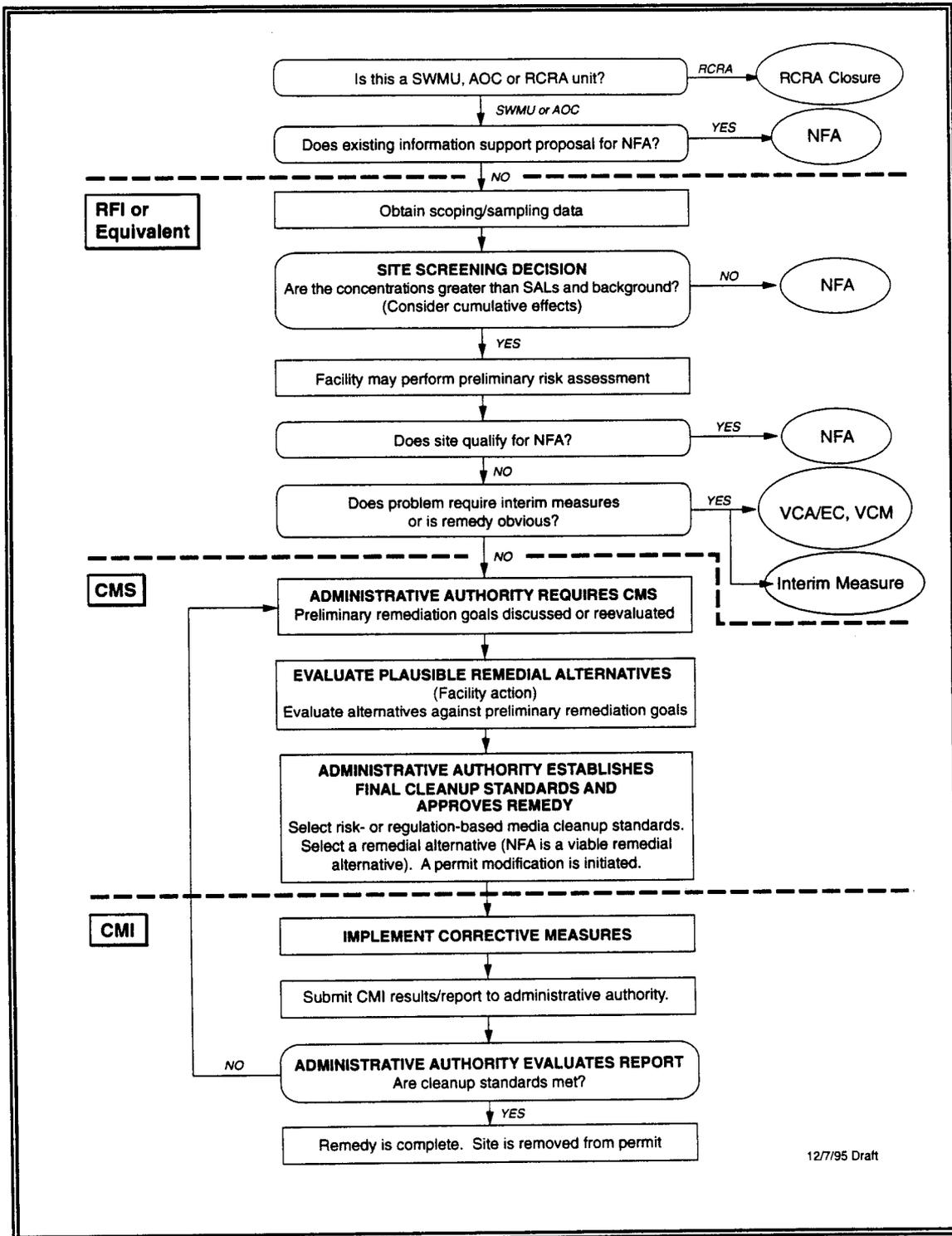
**Process Annexes**

- L - Permit Modification**
  - regulatory procedure
- M - Public Involvement**
  - when/how to involve public
- N - Deliverables Submittal and Approval**
  - consistent formats
  - quality of deliverables
- O - Budget**
  - schedule
  - process

**Structure of the DOU/Annexes (continued)**

- P - RCRA Closures**
  - standard guidelines
- Cleanup Process Annexes**
  - B - NFA Process and Criteria**
    - consistent process and criteria
  - C - VCA Process and Criteria**
    - guidelines on candidate sites
    - consistent process and criteria
  - D - EC/VCM Process and Criteria**
    - guidelines on candidate sites
    - consistent process and criteria

# Figure 1. Decision Flow



**Structure of the DOU/Annexes** (continued)

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**Implementation Annexes**

- E - Land Use**
  - jurisdiction (DOE call)
- F - Cleanup Levels**
  - standard, consistent assumptions
- G - Sampling and Analysis Guidelines**
  - general guidelines on methods, QA/QC, locations
- H - Remedy Selection Process**
  - proposal guidelines and process

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**Structure of the DOU/Annexes** (continued)

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**Other Annexes**

- I - Temporary Waste Storage**
  - how/where to store wastes
- J - CAMU/TU**
  - regulatory (NMED/EPA) guidelines
- K - Groundwater and Vadose Zone Monitoring**
  - general guidelines on locations, process

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**Amendments**

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- A living document
- Guidelines to follow
- Open to improvements

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**Document of Understanding**

**ANNEX E. LAND USE**

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**Land Use Planning**

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- Designated by DOE/Laboratory
- 30 year horizon, consistent with facility planning
- Not related to local zoning

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**Purpose of Land Use Assumptions**

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- Determine Risk Exposure Scenarios

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## **Land Use Scenarios**

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- Residential
- Industrial
- Recreational
- Native American
- Special

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## **Post Cleanup Conditions**

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- None required for residential scenario
- Institutional controls required for all other scenarios
- Controls approved by administrative authority
- Controls included in permit modifications

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## **Types of Institutional Controls**

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- Industrial
  - warning or informational signs
  - general facility surveillance and security
- Recreational
  - warning or informational signs
- Deed restriction or equivalent required

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## Document of Understanding

### ANNEX H. REMEDY SELECTION PROCESS

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#### Definitions

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**Interim Measure (or Action) - Partial remedy, not a final cleanup**

**Final Remedy - No other corrective action required, site could be proposed as NFA after remedy implementation**

**Innovative - Remedial technologies that have not been demonstrated at full scale, or the application experience base cannot be used as a reliable predictor of site-specific performance**

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#### Remedy Selection

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- The applicable remedy selection approval and permit modification process will be followed:
  - one - pass
  - closure
- The DOE/Laboratories will propose for approval by the AA:
  - location where compliance (cleanup levels) must be achieved
  - verification sampling and analysis plan

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## **Remedy Selection** (continued)

- any long-term monitoring that may be required
- remedy

Note: The above does not prohibit the DOE/  
Laboratories from proceeding at risk

- The proposed remedy must be a reasonable balance of, and include consideration of:
  - long-term reliability and effectiveness,
  - reduction of toxicity, mobility, or volume of wastes
  - short-term effectiveness
  - implementability
  - cost

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## **Remedy Selection** (continued)

- Innovative technologies may be proposed as a remedial method, given that:
  - the technology is consistent with the general selection criteria
  - demonstration of long-term time or cost savings are considered in applying a compliance schedule
- Innovative technologies need not have been proven at full scale

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## **Completion of Remedy**

- DOE/Laboratories will submit a final cleanup verification report that indicates:
  - established cleanup levels have been reached
  - source control has been achieved
  - long-term monitoring, if required, has been established
- If requirements have been met, the AA removes the site from the permit list

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## Document of Understanding

### ANNEX F. CLEANUP LEVELS

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#### Purpose of Cleanup Levels Annex

- Provide guidance to the DOE/Laboratories for developing human health risk-based cleanup levels for sites to be remediated

**Note:** The LANL and SNL/NM Risk-Based Corrective Action Process Document provides the basic process and assumptions to be used in the application of site risk assessments

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#### Basic Principles and Departure Points

- Cleanup levels are based on risk to human health and the environment
- Screening assessments and process knowledge are acceptable departure points for initial risk assessments in some cases
- If, based on reasonable process knowledge, a contaminant is not expected to be present at a site, it need not be evaluated in a risk assessment

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**Basic Principles and Departure  
Points** (continued)

- Site-specific exposure scenarios and projected land use are considered in establishing media cleanup standards
- Exposure estimates are based on the distribution of contamination throughout areas/volumes of contaminated media, and over time periods that are consistent with projected land use
- The length of time over which residual contamination is evaluated is tied to the projected land use term

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**Basic Principles and Departure  
Points** (continued)

- Fate and transport properties of contaminants are considered in establishing media cleanup standards
- Risk due to background must be presented in the risk evaluation, and may influence the media cleanup standards
- Exposure units may encompass more than one site, and thus more than one site may be aggregated for a risk evaluation

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**Basic Principles and Departure  
Points** (continued)

- The cost of remediating contaminants is not excluded from decision on media cleanup standards
- Generic cleanup levels for simple sites may be proposed
- Deterministic risk assessment is required, but may be supplemented by probabilistic risk assessment

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## **Hazardous Constituents**

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- **Media cleanup standards for non-radioactive carcinogens are derived using EPA's target incremental risk range of 1E-06 to 1E-04**
- **A target hazard index value of 1 is used for non-carcinogens**
- **Total risk is to be evaluated, not just individual risk from constituents**

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DOE EPA LANL NMED SNL 10-0000 113

## **Radionuclides**

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- **For rad-only complex industrial-use sites**
  - the media cleanup standard is based on DOE's 100 mrem/yr limit, with ALARA considerations
  - consideration of EPA proposed 15 mrem/yr dose
  - proposed to DOE as the regulatory authority
- **Where radionuclides and hazardous constituents exist, the combined risk is considered and the 15 mrem/yr proposed EPA standard is the relevant target for risk for the radioactive components**

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## **Verification of Cleanup**

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- **Verification sampling must collect an appropriate number of samples to calculate the 95% UTL**
- **Methods of calculation and risk evaluation must be supplied to the regulatory authority**
- **The 95% UTL will estimate average residual concentrations over the appropriate areas/volumes of contaminated media used in the risk assessment**

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**Verification of Cleanup** (continued)

- Where the 95% UTL is not demonstrated by the verification sampling to have achieved the cleanup, individual data points may be evaluated

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**Document of Understanding**

**ANNEX B. NO FURTHER ACTION (NFA)  
PROCESS AND CRITERIA**

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DOE EPA LANL NMED SNL 10-2008 (1)

**What is NFA?**

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**Determination by the Administrative Authority, based on a request and documentation provided by the Laboratory, that there are no significant releases from PRSs of RCRA hazardous waste or hazardous constituents, mixed waste, radioactive waste, or other CERCLA hazardous constituents.**

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DOE EPA LANL NMED SNL 10-2008 (2)

# Overall Decision Chart

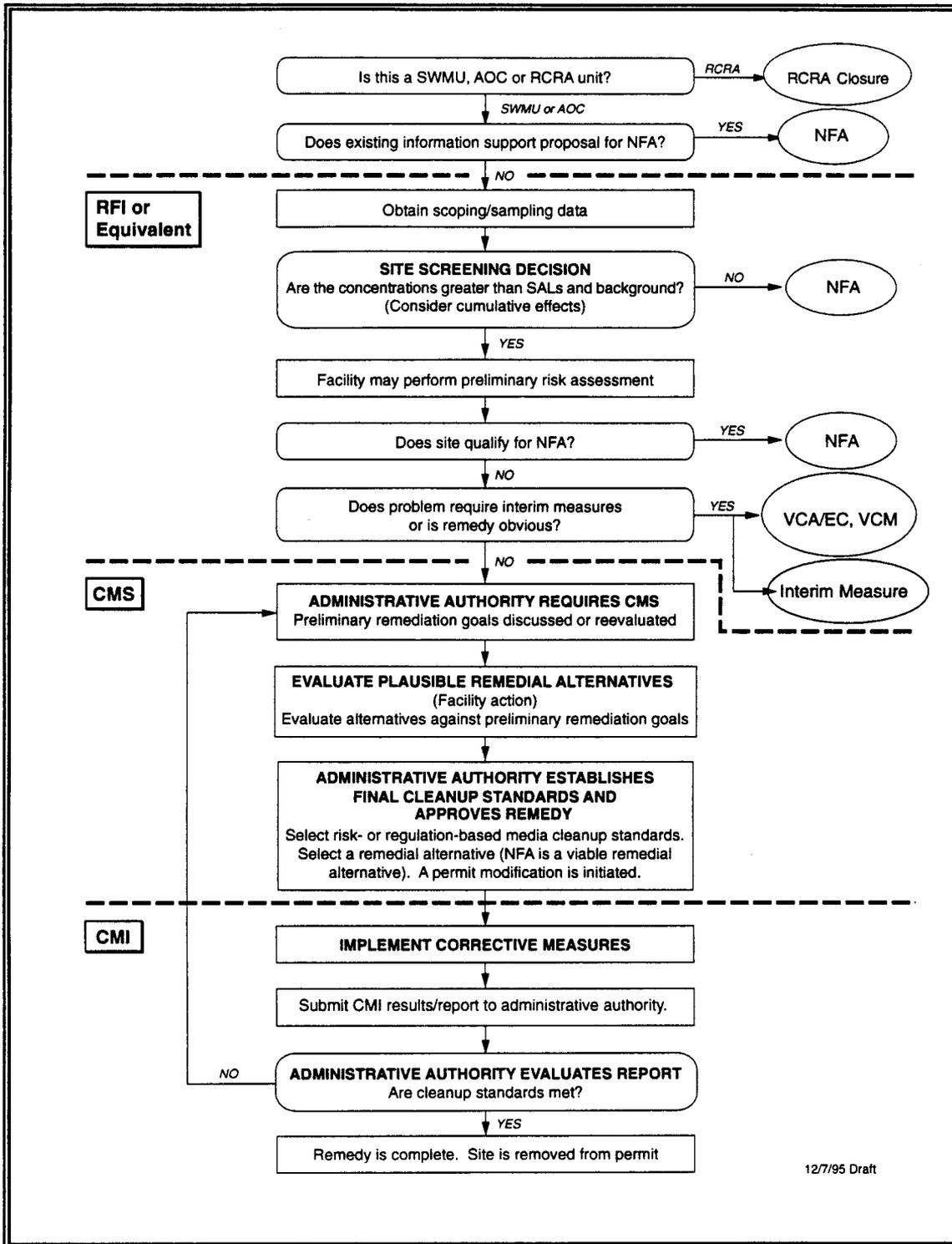


Figure 1

### **What an NFA Determination Does NOT Do**

- **Affect other responsibilities or authorities of the NMED Secretary, EPA Regional Administrator, or DOE (e.g., requirement for air emissions control in a permit)**
- **Preclude future corrective action activities that might be required based upon new information**

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### **Why is the NFA Annex in the DOU?**

- **To expedite the NFA process**
- **To establish a consistent set of criteria for the determination of whether an NFA proposal is appropriate**

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### **NFA Criteria**

1. **The site cannot be located or has been found not to exist, is a duplicate PRS, or is located within and therefore, investigated as part of another PRS.**
2. **The site has never been used for the management (that is, generation, treatment, storage, or disposal) of RCRA solid or hazardous wastes and/or constituents or other CERCLA hazardous substances.**
3. **No release to the environment has occurred, nor is likely to occur in the future.**

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**NFA Criteria** (continued)

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4. There was a release, but the site was characterized and/or remediated under another authority which adequately addresses corrective action, and documentation, such as a closure letter, is available.
5. The PRS has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

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**Evidence**

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- Relevant
- Accurate
- Consistent
- Traceable
- Documented
- Available for review by regulators and public

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**Some Evidence Carries More Weight Than Other Evidence**

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- Interviews
- Historical records
- Site visual inspections
- Site surveys
- Sampling

Generally, no single kind of evidence provides, by itself, justification for NFA; however, the combination of several forms of evidence may be sufficient.

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## **Interviews**

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- **Initiate investigation**
- **General scoping investigations**
- **By themselves are not sufficient to justify NFA**

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## **Historical Records**

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- **Engineering drawings**
- **Process histories**
- **Shipping records or bill of lading**
- **Test reports**
- **Historical aerial photos**

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## **Site Visual Inspections**

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- **Locate sites**
- **Estimate migration pathways**

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### **Site Surveys**

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- **Magnetic surveys**
- **Gravity surveys**
- **Soil gas surveys**
- **Radiation surveys**

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### **Release Assessment Sampling**

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- **May demonstrate that there was no release**
- **May demonstrate that the release was insignificant**
- **May demonstrate that the extent of contamination is known**
- **May not require an approved work plan**

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### **Final Steps of the NFA Process for HSWA SWMUs**

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- **Based on Laboratory documentation, Administrative Authority makes initial determination of NFA appropriateness**
- **Class 3 modification to the HSWA module of the RCRA permit will be proposed for public comment**
- **Administrative Authority makes final determination for removal of PRS from the permit**

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Document of Understanding

**ANNEX C. VCA PROCESS AND CRITERIA**

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DOE EPA LANL NMED SNL VCS-00-17

**VCA Process**

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- Intended to address
  - small-scale PRSs
  - low-risk contamination
- VCAs are implemented at risk
- Discussions of potential VCAs included as part of budgetary negotiations with NMED/EPA

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**Candidate Sites**

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- Radioactive-only
- Promulgated remediation criteria
- Non-systematic releases (e.g., spill cleanup criteria typically addressed by Spill Prevention Control and Countermeasures Plans)

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DOE EPA LANL NMED SNL VCS-00-13

**Criteria for VCA Candidates**

- 1. Potential remedy is obvious and can be readily applied
- 2. Remedy is a final resolution in order to prevent potential release or migration of contaminants from the site in the future
- 3. Previous sampling data and/or archival data are available to adequately identify constituents of concern
- 4. Adequate treatment, storage, and disposal capacity is available for all expected waste types

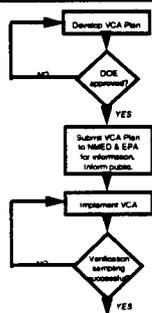
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**Criteria for VCA Candidates (continued)**

- 5. Cleanup levels are based on background concentrations, promulgated standards, or previously determined risk-based levels
- 6. Estimated cost to complete the action is relatively small
- 7. Estimated time to complete field activities is relatively short

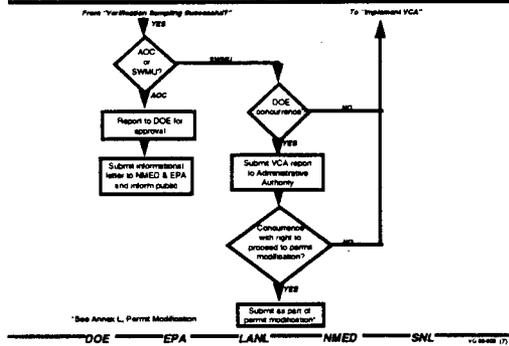
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**Figure C-1. VCA Process**



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**Figure C-1. VCA Process** (continued)



**Completion of VCA**

- **Confirmation/verification sampling and analysis**
- **AOCs**
  - report to DOE for approval
  - information letter to NMED and EPA
- **SWMUs**
  - report to AA for approval
  - request for Class 3 permit modification to delete from permit

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## Document of Understanding

### ANNEX J. CAMU/TU

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#### CAMU/TU Definition

- CAMU/TU used to handle remediation wastes per EPA final rule
- Remediation wastes could include:
  - hazardous
  - non-hazardous
  - mixed
  - low-level radioactive

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#### CAMU/TU Process

- DOE, LANL, NMED, and EPA will review annotated outline prior to any formal submittal
- CAMU/TU proposal will:
  - include waste information (quantities & compatibility)
  - address the EPA SOP
  - address the NMED checklist
  - include an evaluation of treatment options

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**CAMU/TU Process** (continued)

- For low-level radioactive waste proposal include waste information in proposal and permit application
- TU can operate for one year, with a possible one-year extension

# Figure J-1. CAMU/TU

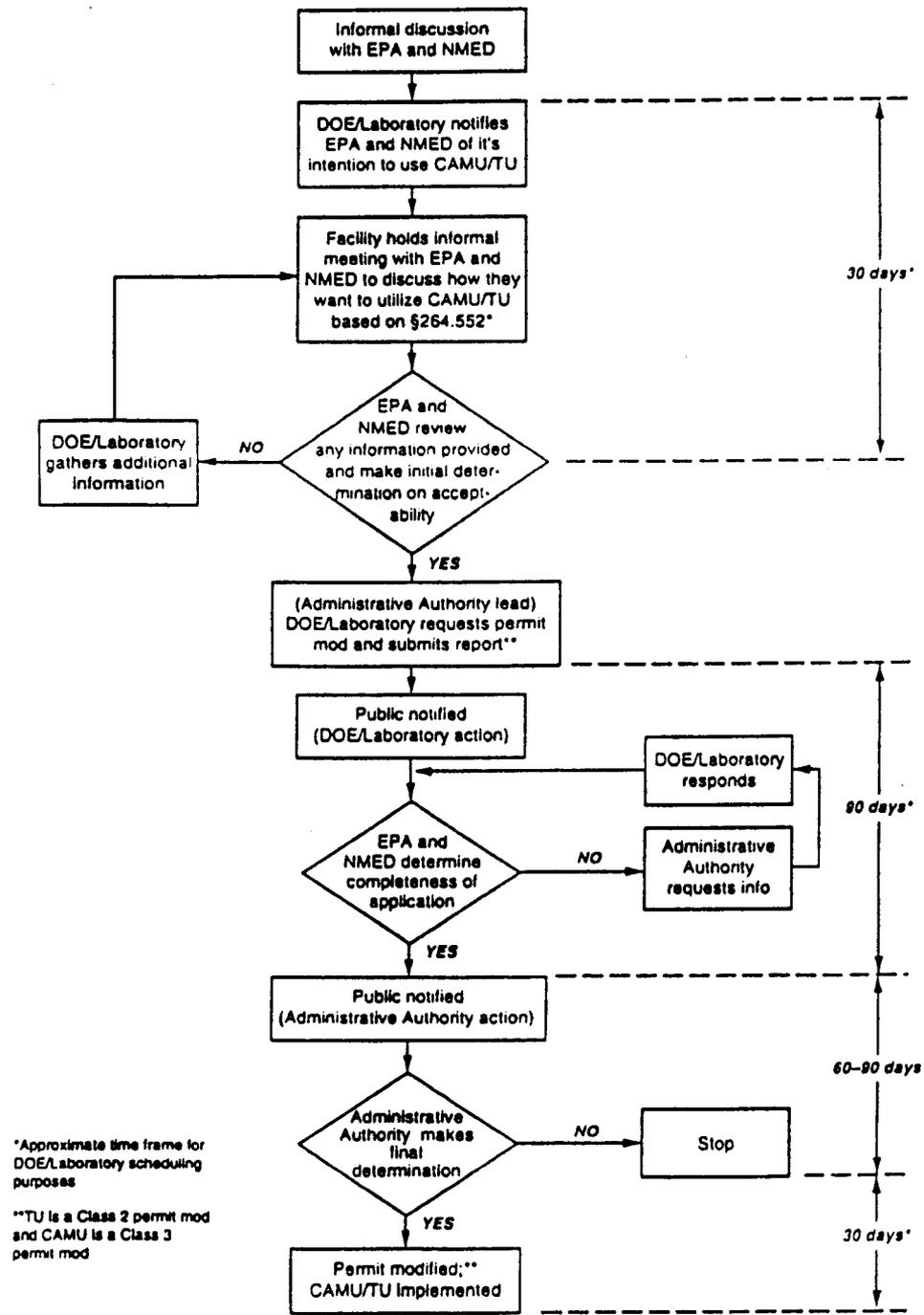


Figure J-1. CAMU/TU permit modification process and schedule.

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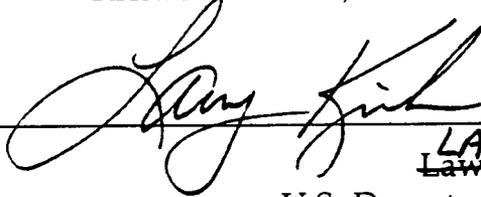
Ed Kelley, Ph.D., Director of Water and Waste Management Division  
New Mexico Environment Department

 12/6/95

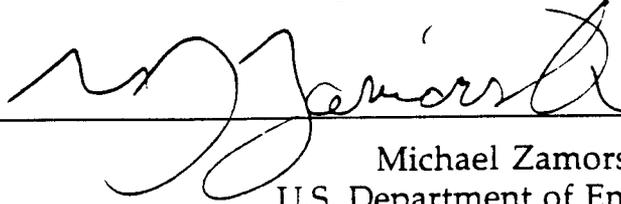
Allyn M. Davis, Director, Multi-Media Planning and Permitting Division  
US Environmental Protection Agency

 11/22/95

Richard F. Sena, Director-Environmental Restoration Division  
US Department Of Energy

 11/20/95

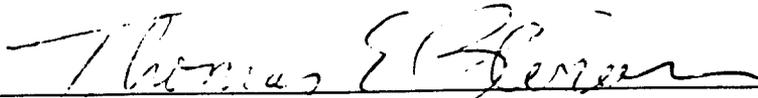
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## Table 1 - Annexes

## Figure 1 - Overall Decision Flow Chart

# DOCUMENT OF UNDERSTANDING

## I. STATEMENT OF PURPOSE

This Document of Understanding (DOU) is entered into by the Department of Energy (DOE), Sandia National Laboratories–New Mexico (SNL), Los Alamos National Laboratory (LANL), the Environmental Protection Agency (EPA) Region 6, and the New Mexico Environment Department (NMED) for the purpose of facilitating the timely and cost-effective implementation of environmental restoration (ER) programs at SNL and LANL. All parties have a strong interest in greater standardization in the planning and execution of SNL's and LANL's ER projects.

### I.1. Scope

The DOU contains a summary of the programmatic approach for accomplishing the ER programs at SNL and LANL. General technical guidelines are included as annexes to the DOU. Both laboratories have a list of sites in their HSWA permits, called Solid Waste Management Units (SWMUs). There is also a category called Areas of Concerns (AOCs), which are not SWMUs or listed in the HSWA permit, but are sites being investigated for potential releases. AOCs, which are not listed in the permits, are included in this document for the purpose of completeness and are under the jurisdiction of DOE. SWMUs and AOCs are collectively known as Potential Release Sites (PRSs).

### I.2. Objectives

The basic objectives of the DOU are to:

1. define areas of agreement among all parties;
2. document standard approaches to common and significant issues which impact the design and execution of the ER program;
3. provide a device for revising technical agreements as additional experience is accumulated;
4. clarify the regulatory and administrative process involved with all major aspects of the ER program; and
5. provide a more standardized format and level of detail for documents necessary to the ER process.

### **I.3. Limitations**

This DOU is not legally binding or enforceable among the parties hereto, or their designated signatories. Nothing in this DOU shall be construed to supercede state or federal laws and regulations, orders, permits, permit modifications or conditions required by EPA or NMED. This DOU is not intended and cannot be relied upon to create rights, substantive or procedural, enforceable by any party in any administrative or judicial proceeding. This document and any internal procedures adopted for its implementation are intended exclusively for the use of NMED, DOE, EPA, LANL, and SNL. It is intended to define, clarify, and outline the processes and procedures to be utilized for implementing the ER programs.

### **I.4. Term of Agreement**

This DOU shall be effective upon the signature of all parties. It shall remain in effect until terminated by mutual consent of all the parties. Any party may withdraw from this agreement without consent and upon written notification to all other parties.

## **II. SUMMARY OF PROCESS**

### **II.1. Communications**

All parties agree to jointly develop and employ appropriate intra- and inter-agency communication processes to relay information during program planning and execution. This process will include consultation among all parties to this DOU prior to and following transfer of corrective action authority from EPA to NMED.

### **II.2. Budget**

There will be early and meaningful involvement by EPA and NMED in evaluating resource allocation based on prioritization during the DOE's baseline and budget review processes.

The DOU budget annex will define a process for inter-agency involvement in DOE's budget and prioritization process for the laboratories. This process will define the general time frames for these collaborative discussions to provide the regulatory agencies sufficient opportunity to contribute substantive input to budgeting, site prioritization, scope, and schedule.

All parties are committed to achieving the most beneficial use of the DOE environmental restoration budget in addressing risk and meeting enforceable commitments under the laboratories' existing federal or state permits or orders. As

such, inter-agency collaboration will extend to a joint effort by all parties to address program efficiencies. Aspects that impact program efficiencies include program and project scope, schedule, and cost.

### **II.3. Resolution of Differences**

The parties agree to make reasonable efforts to resolve any disputes under this DOU informally at the appropriate organizational level. If informal resolution cannot be achieved, the Administrative Authority or designee shall make a final decision. This process is intended solely to encourage resolution of disputes and not to create rights in such processes or to replace any dispute resolution processes required by law, including permits, orders or other legally enforceable documents.

### **II.4. Amendment of DOU**

This DOU may be amended to include new or revised provisions at any time with the consent of all signatory parties. As new issues arise, the parties will agree to discuss the new issue(s) and develop an amendment to this agreement. Nothing in this DOU shall prohibit NMED or EPA from imposing additional or new requirements without an amendment when deemed necessary by regulation or law.

Designated representatives of any signatory party may propose issues for discussion. The party wishing to raise an issue will prepare a preliminary draft of the amendment for discussion. This preliminary draft will be provided to the rest of the signatory parties at least ten (10) days prior to the proposed meeting. The time and place of the meeting to discuss the issue will be determined by mutual agreement between the parties. When a final agreement is reached, the finalized amendment will be inserted into the DOU with an amendment date on the bottom of each page. Within thirty days of reaching an agreement an amendment signature form will be signed by all parties to the DOU, upon which time the amendment will be effective.

### **II.5. Developing and Updating Technical Annexes**

All parties are committed to developing and implementing the annexes listed in Table 1 to this DOU. All annexes will be agreed to by all parties prior to inclusion in the DOU. These annexes are intended to provide technical guidelines and framework for the criteria and processes associated with determinations including No Further Action (NFA), VCA, EC/VCM, land use, and budget. The Administrative Authority has discretion to require additional or new information as necessary under the circumstances to enable any decision hereunder. As needed, the annexes will be amended or additional ones created in a manner analogous to that described in section II.4 above. This will be done in a timely manner.

### III. TECHNICAL APPROACHES

#### III.1 Cleanup Process

##### *No Further Action Determination*

The Overall Decision Flowchart (Figure 1) indicates a number of places in the overall study and remediation process in which No Further Action (NFA) could be requested. For SWMUs, the Laboratory would propose the NFA to the Administrative Authority as a Class 3 permit modification per Module VIII, Section J of the Part B permit for LANL and Section M of SNL's Part B permit. For AOCs which are not listed in the permit, the Laboratory would propose to DOE that the site be removed from further consideration as an AOC. A courtesy copy of the request for removal from the list would be sent to NMED and EPA for information purposes only. The basic criteria for determining an NFA are listed in Annex B. These criteria will be used for designating NFA in RCRA Facility Investigation (RFI) work plans, RFI reports, or other similar documents. Any AOC, which is determined to be a SWMU, will follow proper permit notification procedures.

The decision criteria discussed in Annex B apply initially during the evaluation of archival information and development of the RFI work plans. They will apply again at each point where new data or information become available, including screening assessment data.

A request for NFA for any SWMU can be made to the Administrative Authority based on the criteria presented. If approved, a modification to the HSWA Module of the Laboratory's RCRA Part B operating permit to delete the site (if a SWMU) from the HSWA Module will be put forward for public comment. The determination of NFA shall not preclude the Administrative Authority from requiring further investigation or remediation at a later date, if new information indicates that a release may threaten human health or the environment.

The criteria in Annex B will be used for all SWMUs identified in the HSWA permit, as well as units not identified in the permit, referred to by the Laboratory's ER Project as AOCs. In using a consistent set of criteria, the ER Project can ensure to the EPA, NMED, DOE, the public, and other interested stakeholders, that the same standards used in investigating and determining NFA are appropriate for any potentially contaminated sites within the Project.

### *Voluntary Corrective Action*

The VCA process is intended to address small-scale PRSs (mostly AOCs and some SWMUs) with relatively low-risk contamination problems where an obvious remedy may be implemented with a minimum of administrative requirements. VCAs at SWMUs are completed entirely at risk of both DOE and the laboratories. DOE accepts the risk of completing these VCAs until such time as public input has been obtained and the Administrative Authority has made a final determination. Furthermore, the completion of a VCA at a SWMU does not absolve DOE of the requirement to submit an RFI Report or any other requirements related to that SWMU under the HSWA permit.

These sites, typically cleaned up as part of normal facility housekeeping or best management practices, may include stained soils at small waste or materials storage areas, construction debris accumulation piles, or one-time historical spills of materials such as paint solvents or oils.

VCA plans will be limited in size; once developed, these plans will be submitted by the laboratories to DOE for approval prior to initiating VCA field activities. When submitted to DOE for review, the VCA plans also will be forwarded to EPA Region 6 and NMED for informational purposes. For SWMUs, formal public involvement may not be necessary because VCAs are completed at sites of low risk or inconsequential sites. However, ER Project public meetings may provide a forum for informing the public of plans and progress in implementing VCAs. All SWMUs will have public involvement prior to removal from the permit.

For AOCs, a letter will be sent to NMED and EPA stating that the AOC has been cleaned up in accordance with the VCA plan. This letter will include a brief summary of the verification data. For SWMUs, a VCA Report may be submitted in support of a NFA request to the Administrative Authority.

### *Expedited Cleanups/Voluntary Corrective Measures*

The EC/VCM process is intended to address only SWMUs identified in the HSWA permit. These units may require a risk assessment, which will include human risk, and if needed, ecological risk, both at the appropriate level of detail. This will be used to establish cleanup levels prior to remedy implementation. Because the remedy selection is obvious, the site in question would not benefit from a full Corrective Measures Study (CMS). This EC/VCM process allows for regulatory and public review of remedy selection prior to implementation.

### III.2 Risk-Based Corrective Action Process

The technical approach for the risk-based corrective action process at LANL and SNL within the ER programs depends on a number of assumptions related to statistics and risk assessment. Figure 1 depicts the decision flow in the ER programs. The ER programs will design and conduct data collection activities sufficient to implement the risk-based corrective action process.

The technical approach used by the LANL and SNL ER programs is a modified DOE streamlined approach incorporating Data Quality Objectives (DQOs) and risk assessment. In addition, LANL and SNL are employing elements of EPA's Superfund Accelerated Clean-up Model (SACM) to facilitate the rapid cleanup of those units that potentially pose an unacceptable risk. Both the technical approach and decision logic are subject to approval by the Administrative Authority.

#### *Land Use*

The DOE has the responsibility for determination of future land use for the time frame specified in the individual long-range plans within facility boundaries. DOE and the laboratories may seek input from their stakeholders on future land use. The results will be provided to NMED and EPA as reference information. Land uses, designated by the DOE and the laboratories, include but are not limited to industrial, recreational, and residential. These terms are not intended to represent zoning areas as they relate to city planning zones.

DOE and the laboratories will propose an exposure scenario. The Administrative Authority has the approval authority for the exposure scenario and reserves the right to require that a different exposure scenario (other than the one proposed by DOE and the laboratories) be considered when evaluating remedial alternatives. Public input will be considered in determining the exposure scenario. Exposure scenarios include, but are not limited to, industrial, recreational, and residential. These scenarios describe and determine the risk approach that will be used at a SWMU, and therefore in part will determine the potential remediation goals for the site.

The default exposure assumptions for each land use are addressed in the Annex F. Institutional controls are inherent in all land use scenarios except the residential. The Administrative Authority must be satisfied that these controls are adequate for a specific site at which they are used. For land remediated to levels above a residential exposure scenario, a deed restriction will be entered with the appropriate authority. If a site-specific deed restriction is not possible, DOE and the Laboratory will ensure that a mechanism acceptable to the Administrative Authority is in place to address land use in the future. See Land Use Annex for details.

Site-specific land use assumptions and exposure scenarios will be considered in establishing preliminary remediation goals and media cleanup standards, and also in risk assessments to estimate the reduction of risk that could be realized by a potential corrective action. Target risk and dose levels will be set following EPA and DOE guidance. Following EPA guidance, preliminary remediation goals and media cleanup standards for nonradioactive carcinogens will be derived using EPA's target incremental risk range of  $10^{-4}$  to  $10^{-6}$ . A target hazard index value of 1 is used for non-carcinogens. Hazardous constituents and radionuclide cleanup levels will be evaluated based on total overall risk from the site. If radionuclides are the only contaminant of concern, then the cleanup is under the jurisdiction of DOE and based on DOE Orders.

DOE agrees to provide information regarding radionuclide contaminants if requested by EPA or NMED as necessary to determine the appropriate corrective action level related to cleanup under RCRA or the state Hazardous Waste Act.

### **III.3 Implementation of Corrective Action**

#### *Sampling and Analysis Requirements*

Sampling and analysis requirements will be determined by the application of DQOs that are tied to the final remedy for the site in question.

After remediation of a contaminated site, the area involved will be subject to confirmation/verification sampling. An appropriate number of samples will be collected to demonstrate compliance with cleanup levels. The samples generated will be analyzed for the constituents of concern at this site.

#### *Remedy Selection and Implementation*

The primary criteria for developing and selecting remedies are long-term reliability and effectiveness; reduction of toxicity, mobility, or volume of contaminants; short-term effectiveness; implementability; and cost. Potential remedies, which could conceivably include new technologies, will be evaluated based on their ability to meet the following standards: protection of human health and the environment; attainment of established cleanup levels; control of the source of release; and compliance with waste management requirements.

Remedy selection will be made and media cleanup standards will be established by the Administrative Authority, after the results of the CMS have been considered. As low as reasonably achievable (ALARA) considerations will enter into the determination of media cleanup standards for radionuclides. Remedy selection criteria will conform with those specified in proposed Subpart S.

If meeting the requirements of a remedy becomes difficult or impossible because of unexpected site-specific technical reasons, DOE will propose that the Administrative Authority modify the appropriate permit so that more time is allowed or additional or alternate methods may be used. Additionally, DOE and the laboratories are committed to completing remediation in an expeditious manner.

### *Temporary Waste Storage*

ER remediation activities may generate hazardous or mixed wastes for which disposal capacity is unavailable in the short term. The ability to have on-site temporary storage (except if via a Temporary Unit, see next section) would become essential for maintaining the proper cleanup priorities for the laboratories.

The DOE and laboratories are responsible for planning for waste management needs, including temporary storage. As soon as it becomes apparent that current on-site storage may not be adequate, the Administrative Authority will be notified of the problem. A meeting then will be held with the Administrative Authority to determine the information that needs to be submitted to ensure a timely response from the Administrative Authority. Any additional data needs requested by the Administrative Authority will be submitted promptly.

### *Corrective Action Management Unit/Temporary Unit (CAMU/TU)*

With concurrence from NMED, EPA will coordinate with DOE and the laboratories to expedite to the extent possible the CAMU/TU permitting process for the management of on-site facility remediation wastes. This concept is aimed at expediting the environmentally sound management of these remediation wastes.

Sites for unit(s) at both laboratories will be chosen in a manner compatible with the CAMU rule. The possible need for treatment of wastes (and treatment options) will be evaluated for any proposed CAMU. The CAMU is a Class 3 and a TU is a Class 2 permit modification. The laboratories will provide timely and complete submissions to EPA, with concurrent copies to NMED. All parties are committed to reviewing an annotated outline of the CAMU/TU application prior to formal submission. At a minimum, it will address EPA's SOP and any NMED CAMU/TU checklist.

A major management option for the laboratories will be to utilize CAMU for appropriate treatment and disposal of remediation wastes. Depending on the outcome of internal engineering estimates, each Laboratory currently needs the following degrees of freedom for their evaluation:

1. The ability to have one or more CAMU sites.
2. A wide range of engineering options will be evaluated. The engineering option chosen will be demonstrated to be protective of human health and the environment.
3. The CAMU disposal site(s) would be designed to handle a variable volume of waste, up to a specified maximum. Along with this, the CAMU could be generically designated to receive remediation wastes from all SWMUs and PRSs at the given Laboratory.
4. The CAMU could include an internal or associated area (i.e., TU) used for the temporary staging of remediation derived wastes, which are slated for management elsewhere. The TU can operate for up to one year, with the possibility of a one-year extension. This would not trigger the need for a permitted greater than 90-day storage area.

#### *Groundwater and Vadose Zone Monitoring*

Monitoring approaches and systems may be proposed by the DOE and laboratories, and requirements will be determined by the Administrative Authority on a site-specific basis. Considerations include, but are not limited to, the nature and extent of contaminants in the vadose zone and groundwater; and available data from the site-wide groundwater studies at both laboratories.

The DOE and laboratories may propose to install vadose and/or groundwater monitoring in a step-wise manner. The DOE and laboratories may propose vadose zone monitoring when it provides more timely detection of releases than groundwater monitoring.

### **III.4. Other Important Considerations**

#### *Public Involvement*

All parties are committed to involving the public in early and meaningful discussions concerning the ER programs at both laboratories. Community Relations Plans will be updated to include all current RCRA public participation requirements. The Plans also will include public involvement efforts beyond the regulatory requirements, such as meeting with Citizens Advisory Boards. The goal of these public involvement efforts is to give interested citizens and affected parties an opportunity to participate in the Administrative Authority's decision-making process with respect to ER activities.

### *Permit Modifications*

To the extent possible, a one-pass permit modification approach should be used in the corrective action process for all Class III permit modifications. DOE and the laboratories will continue to work with the Administrative Authority to define this process. The process for permit modifications related to closures in the ER programs will be evaluated in Annex L.

### *Deliverable Submittal and Approval*

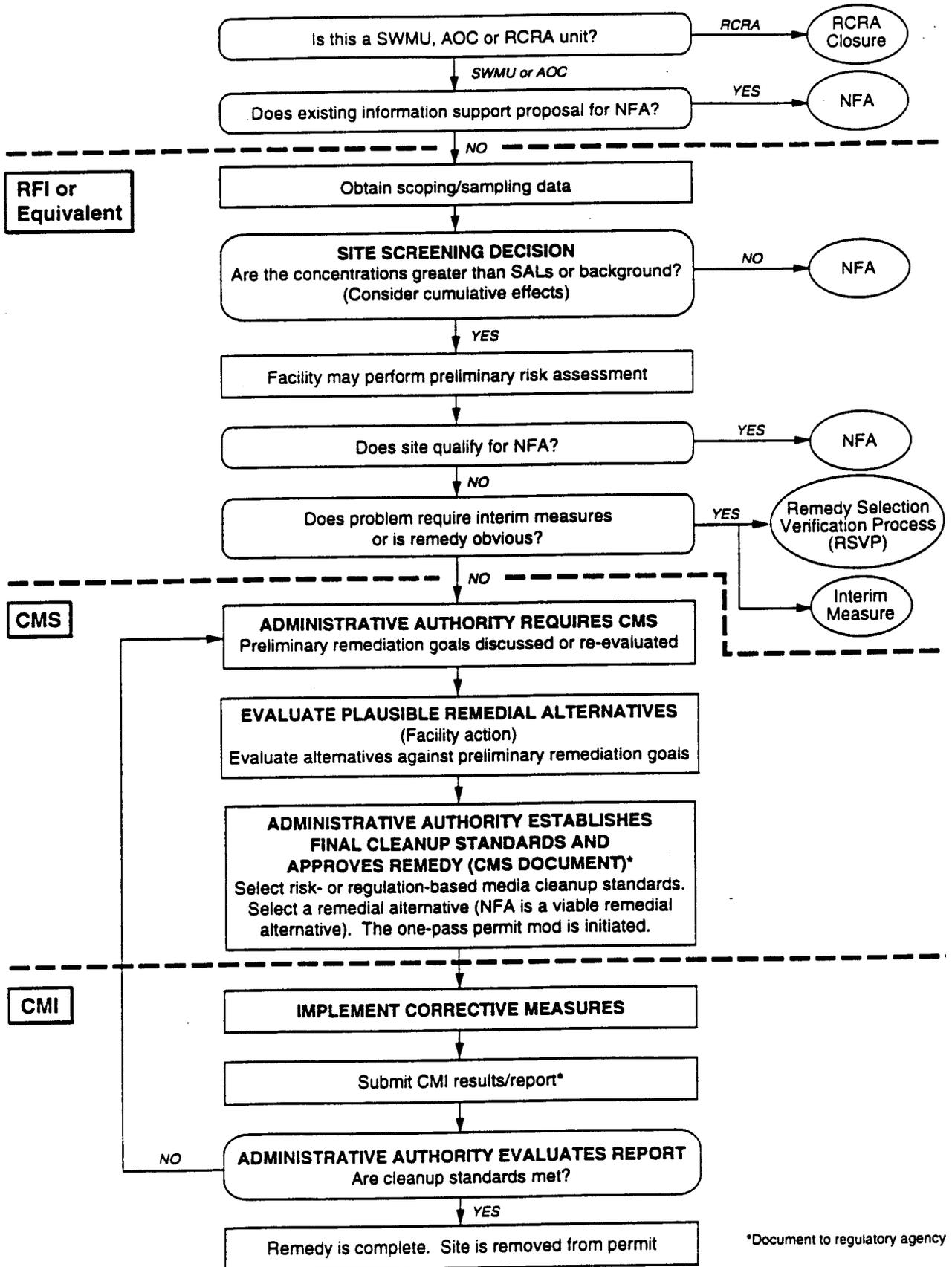
As a means of standardizing form and content and reducing unnecessary repetition in submittals used in the ER programs, key documents will be identified, and annotated outlines of the information required in each deliverable will be provided in Annex N.

DOE and the laboratories will submit documents according to a schedule provided periodically to NMED and EPA. These deliverables will be reviewed; comments will be provided on a timely basis by the administrative authority.

## **Table 1. Annexes**

- A. Acronyms and Definitions
- B. NFA Process and Criteria
- C. VCA Process and Criteria
- D. EC/VCM Process and Criteria
- E. Land Use
- F. Cleanup Levels
  - F.1. Hazardous Constituents–Risk Based
  - F.2. Radionuclides–Risk-Based Dose Levels
- G. Sampling and Analysis Guidelines
  - G.1. Waste and Site Characterization
  - G.2. Confirmation/Verification
- H. Remedy Selection Process
- I. Temporary Waste Storage
- J. CAMU/TU
- K. Groundwater and Vadose Zone Monitoring
- L. Permit Modification
- M. Public Involvement
- N. Deliverable Submittal and Approval
- O. Budget
- P. RCRA Closures

Figure 1. Overall decision flow chart.



## **Annex Introduction**

The DOU provides the basic guidelines and understandings reached among the signatory parties for the implementation of the SNL and LANL ER programs. These annexes contain more detailed agreements on specific subject areas, consistent with the guidelines and understandings of the DOU. It is noted that annexes are not stand-alone documents and are not to be implemented independently of each other. Each individual Annex must be used with its corresponding DOU section.

Each annex is signed by the appropriate representatives of each party. If any representative is replaced in their function, their replacement will also immediately sign the existing set of annexes. It is the expectation of all parties that these annexes will be revised from time to time to reflect additional experience gained, or changes in conditions. Additional annexes may be created to address new subject areas. In all cases, revisions to annexes or new annexes will be jointly developed and signed by all parties.

## Annex B. NFA Process and Criteria

A request for NFA for any SWMU can be made to the Administrative Authority based on the criteria presented below. Prior to submittal, sufficient documentation must be developed to provide reasonable assurance that an NFA is appropriate. To assist this process, DOE and the laboratories will conduct a site visit with the Administrative Authority upon request and review relevant information prior to submitting a request for NFA. The Administrative Authority makes the final determination on the NFA and if approved, a Class 3 modification to the HSWA Module of the Laboratory's RCRA Part B operating permit to delete the site from the HSWA Module will be put forward for public comment.

A determination by the Administrative Authority that a site has not met NFA criteria and needs further investigation does not necessarily mean that remedial action is required. It can indicate that more information or further evaluation is required. The results of any additional investigation may potentially lead to a proposal of NFA at a future point in the overall ER process, or alternatively, a Corrective Measures Study or other action may become necessary. These criteria apply to both SWMUs and AOCs.

The laboratories, DOE and the Administrative Authority are committed to a process to expedite the completion of NFAs. The process will include an informal review upon request in a technical staff level meeting, with relevant data, maps, etc. The DOE and the laboratories will then submit documentation to justify their request for NFA. The NFA information and proposal should be consistent with the results of the informal review.

**NFA Criterion 1.** The site cannot be located or has been found not to exist, is a duplicate PRS, or is located within and therefore, investigated as part of another PRS.

**NFA Criterion 2.** The site has never been used for the management (that is, generation, treatment, storage, or disposal) of RCRA solid or hazardous wastes and/or constituents or other CERCLA hazardous substances.

**NFA Criterion 3.** No release to the environment has occurred, nor is likely to occur in the future.

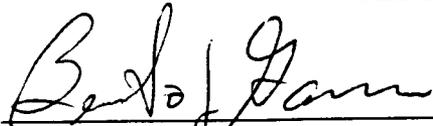
**NFA Criterion 4.** There was a release, but the site was characterized and/or remediated under another authority which adequately addresses corrective action, and documentation, such as a closure letter, is available.

**NFA Criterion 5.** The PRS has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

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February 1, 1996  
Revision 0

Annex B. NFA Process and Criteria



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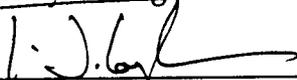
Barbara Hoditschek, NMED  
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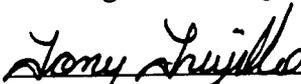
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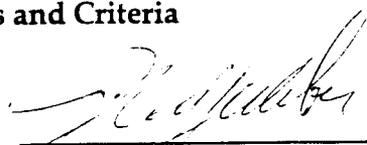
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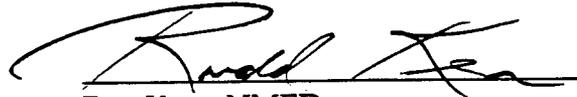
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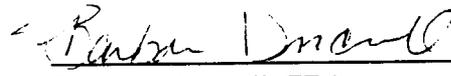
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Ron Kern, NMED  
Manager, RCRA Technical  
Compliance Program



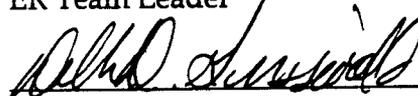
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RCRA Facility Manager



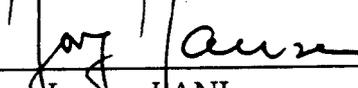
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LANL Program Engineer



Jorg Jansen, LANL  
Program Manager  
Environmental Restoration Project

## Annex C. VCA Process and Criteria

The VCA process is intended to address small-scale PRSs (mostly AOCs and some SWMUs) with relatively low-risk contamination. VCAs are implemented without prior approval of NMED and EPA. DOE and the laboratories will implement the VCAs at risk. Overall budgetary dollars to be allocated to VCAs will be discussed with NMED and EPA during budgetary negotiations.

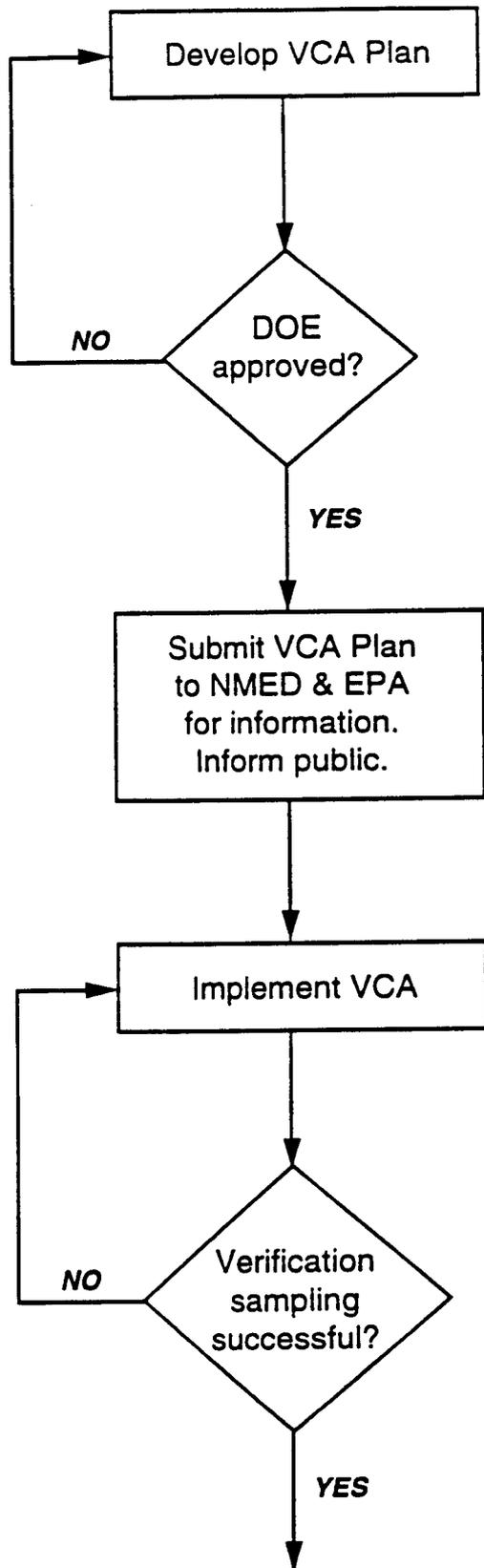
The criteria used to evaluate candidate sites for VCA include:

1. the potential remedy is obvious and can be readily applied;
2. the remedy will be a final resolution in order to prevent potential release or migration of contaminants from the site in the future;
3. previous sampling data and/or archival data are available to adequately identify constituents of concern;
4. adequate treatment, storage, and disposal (TSD) capacity is available for all expected waste types;
5. cleanup levels are based on background concentrations, promulgated standards, or previously determined risk-based levels;
6. estimated cost to complete the action is relatively small; and
7. estimated time to complete field activities is relatively short.

Candidate sites may include, but are not limited to:

- radioactive-only sites;
- some sites with promulgated remediation criteria; and
- non-systematic releases (e.g., spill cleanup criteria typically addressed by Spill Prevention Control and Countermeasures Plans).

The VCA process is shown in Figure C-1. A VCA plan is developed by the facility. Similar VCA sites can be included in the same plan. Refer to the outline in Annex N (Deliverable Submittal and Approval). The VCA plan is then submitted to DOE for approval, and submitted to NMED and EPA and the public for informational purposes. VCA plans approved by DOE are implemented to the extent allowed by funding levels.

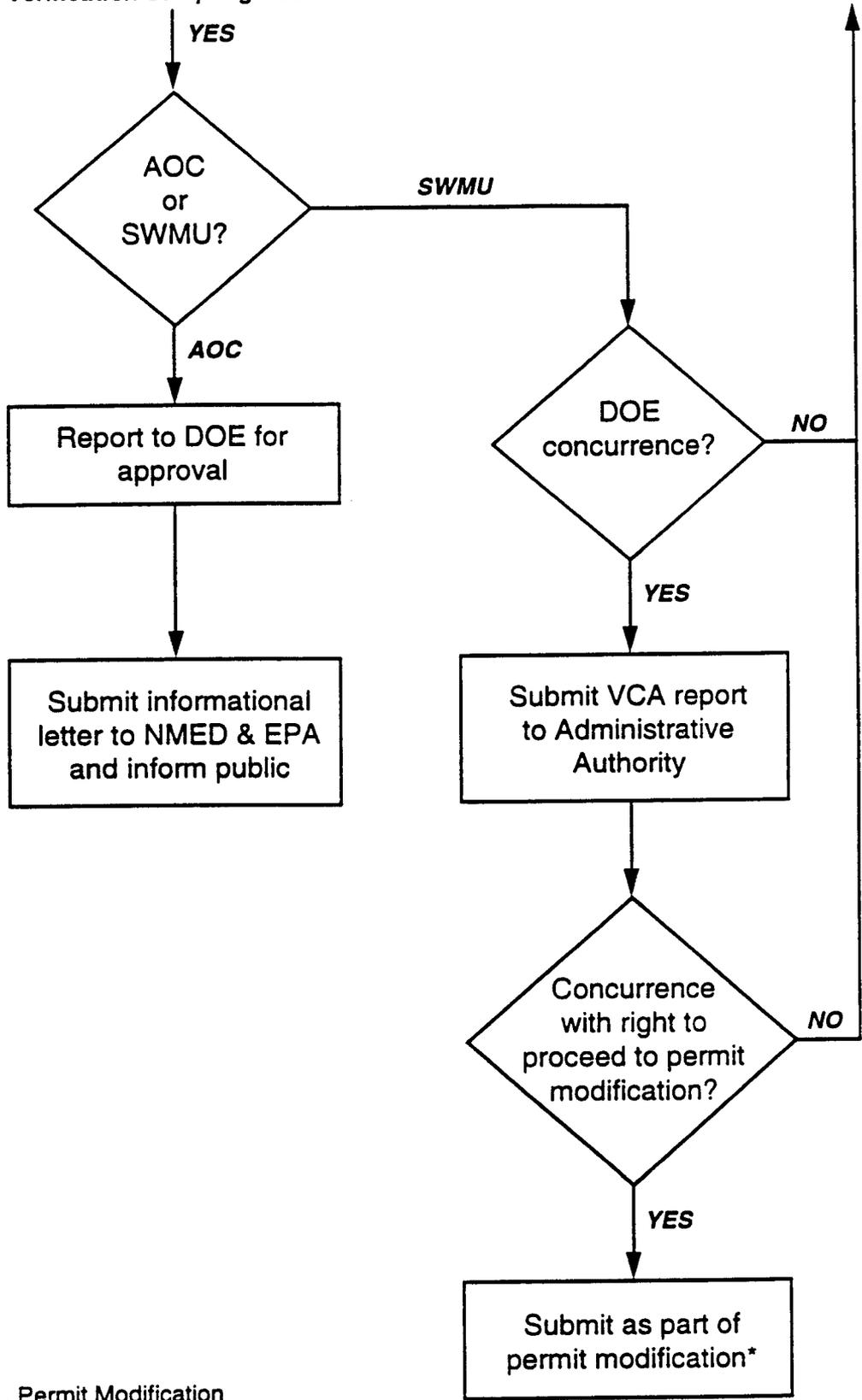


See Fig. C-1 (con't)

Figure C-1. VCA process.

From "Verification Sampling Successful?"

To "Implement VCA"



\*See Annex L, Permit Modification

Figure C-1 (con't). VCA process.

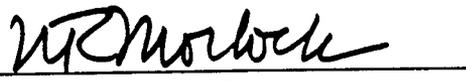
After completion of the VCA, verification/confirmation sampling and analysis will be performed at Level III as defined in Annex G (Sampling and Analysis Guidelines). For AOCs, a VCA report will be sent to DOE for approval. Following approval, an informational letter will then be sent to NMED and EPA stating that the AOC has been cleaned up in accordance with the VCA plan. This letter will include a brief summary of the verification data. For SWMUs, the VCA report is submitted to the Administrative Authority for review and approval. If approved, the Laboratory will include the SWMU in an NFA for deletion from the permit.

Annex C. VCA Process and Criteria

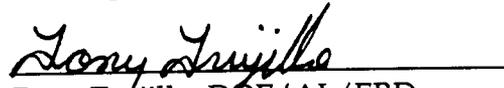
  
Benito J. Garcia, NMED  
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Materials Bureau

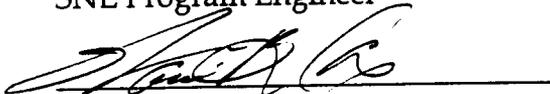
  
Barbara Hoditschek, NMED  
Manager, RCRA Permit Program

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John W. Parker, NMED-AIP  
Program Manager  
DOE Oversight Technical Support

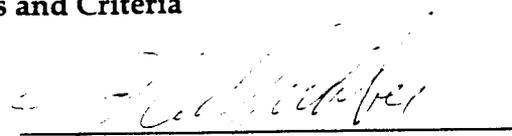
  
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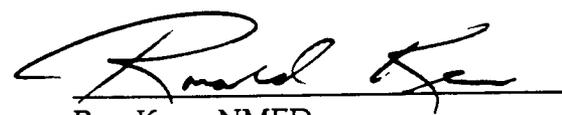
  
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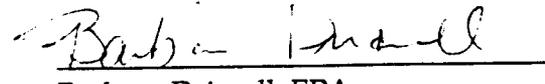
  
Tony Trujillo, DOE/AL/ERD  
SNL Program Engineer

  
Warren Cox, SNL  
Project Manager  
Environmental Restoration Project

  
David Neleigh, EPA  
Chief, New Mexico and Federal  
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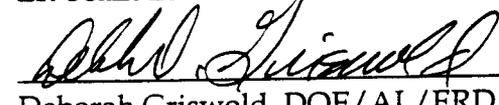
  
Neil S. Weber, NMED-AIP  
Chief, DOE Oversight Bureau

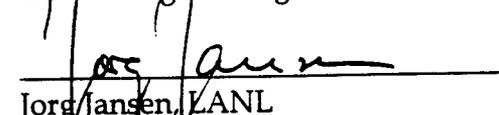
  
Ron Kern, NMED  
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## Annex E. Land Use

Land uses, designated by DOE and the laboratories (over a 30-year planning horizon) include, but are not limited to, industrial, recreational, and residential. These terms are not intended to represent zoning areas as they relate to city planning zones. Rather, these terms determine the risk approach which will be proposed at a PRS by the Laboratory. For example, "residential" when used as a future land use means that the level of cleanup would provide exposure risk reduction appropriate for a residential setting. It does not mean that the area would necessarily be zoned for residential use by the city or county.

The land uses and associated exposure assumptions are fundamental to the development of risk based cleanup levels. The default exposure assumptions for each land use are addressed in Annex F (Cleanup Levels).

Institutional controls are inherent in all land use scenarios except residential. The Administrative Authority must be satisfied that these controls are adequate for a specific site at which they are used.

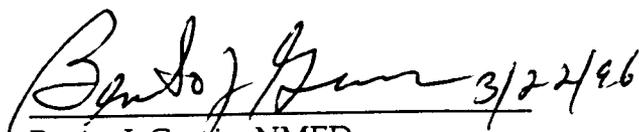
Institutional controls include:

1. For PRS(s) designated for future industrial land use on DOE property, access is limited to workers or authorized visitors by normal Laboratory operations and procedures, which restrict the general public from casual access. These include signs, sign-in procedures, and general facility surveillance and security as appropriate.
2. For PRS(s) designated for future recreational land use, warning or informational signs constitute minimum institutional controls.

The Administrative Authority may require additional institutional controls, such as water use restrictions to supplement engineering controls, as appropriate, for short- and long-term management to prevent or limit exposure to contaminants. The use of institutional controls shall not substitute for active response measures (e.g. treatment and/or containment of source material) as the sole remedy unless such active measures are determined not to be practicable during or following remedy selection.

For PRSs remediated to cleanup levels other than background or residential, a deed restriction or equivalent land use restriction will be entered with the appropriate authority and submitted to the Administrative Authority during the HSWA permit modification process (refer to Annex L, Permit Modification).

Annex E. Land Use

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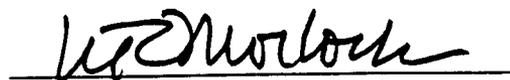
Benito J. Garcia, NMED  
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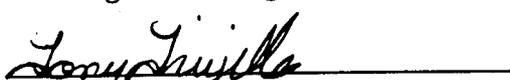
For John W. Parker, NMED-AIP  
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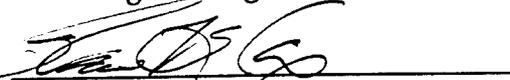
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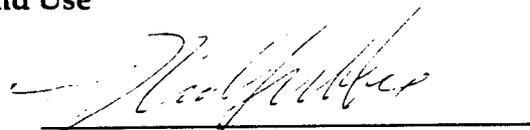
Tony Trujillo, DOE/AL/ERD  
SNL Program Engineer



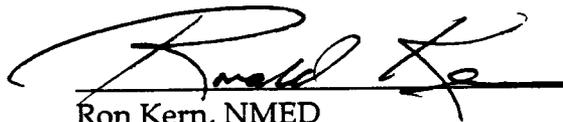
Warren Cox, SNL  
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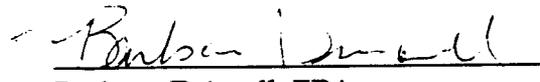
David Neleigh, EPA  
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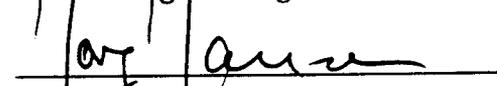
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## **ANNEX F. Cleanup Levels**

### **Introduction**

The purpose of this annex is to provide guidance to the DOE/Laboratories for developing human health risk-based cleanup levels for sites to be remediated. For any given site, the ultimate objective of the approach is to reach a point at which no further action (NFA) is necessary to achieve acceptable levels of risk to human health and the environment. If the site poses an unacceptable risk to human health or the environment, remedial alternatives will be evaluated and cleanup standards will be proposed to the Administrative Authority.

One of the ER Program's primary roles is to design and conduct data collection activities that will be sufficient to support each decision made during the corrective action process. DOE/Laboratories recognize that the Administrative Authority has final decision authority and will base decisions on data provided by the Laboratories.

The proposed approach for implementing the corrective action process at the Laboratories is intended to facilitate the rapid cleanup of those units that potentially pose an unacceptable human health risk. Sites failing an initial screening assessment may undergo further evaluation to provide data sufficient to support NFA, a site-specific baseline risk assessment, or remedy selection. A determination of whether the remediated site meets the established cleanup standards will be necessary in order to complete the corrective action.

The assumptions used to implement the corrective action process are presented in the LANL and SNL/NM Risk-Based Corrective Action Process Document, which is pending approval by the Administrative Authority. Those assumptions pertaining specifically to this annex are summarized below.

### **Risk-Based Decision Assumptions**

Constituents identified as contaminants of potential concern (COPCs) because the detection limit was greater than the screening level may be evaluated qualitatively based on process knowledge. If a COPC is not expected to be present at a site, the COPC needs no further consideration. Risks to human health and the environment posed by contamination at a site are necessary considerations in further decisions about a site (e.g., NFA, risk assessment or remedy selection). Decisions made after comparison of analytical data to screening levels are based on generic, conservative assumptions. Appropriate site-specific risks may differ from screening conclusions because the exposure assumptions underlying the screening level calculation are not site-specific, and also because risk depends on the extent of contamination, the number of constituents, as well as the concentration. Site-specific land-use assumptions and exposure scenarios are considered in establishing media cleanup standards, and also in risk assessments to estimate the residual risk realized by a potential corrective action. Fate and transport properties of the COPCs should be

considered in establishing media-specific cleanup standards. Any generic cleanup levels proposed for simple sites and given COPCs should be formulated using USEPA conservative default assumptions. Risk due to background for the appropriate site-specific exposure scenarios will be calculated and presented with the site risk from COPCs for use in the risk management cleanup level decision. Estimation of risks to human health and the environment is based on reasonable and site-specific exposure assumptions. Human health and ecological risks can only be appropriately evaluated on a scale of relevant exposure units, thus individual sites may be aggregated as necessary for appropriate risk evaluation. The size of each aggregate may differ for human health and ecological evaluations depending on the receptors.

Media cleanup standards may also be impacted by financial constraints. Alternate standards, within the acceptable risk range, may be proposed for consideration if lower cleanup levels cause the cost of remediation to be prohibitively high. If a less conservative standard is proposed due to financial constraints the Administrative Authority will be provided a comparison of the financial and risk impacts for both standards.

Exposure estimates are based on the distribution of contamination throughout areas/volumes of contaminated media and over time periods that are consistent with land use assumptions.

The DOE/Laboratories may pursue a set of generic cleanup levels for simple sites and given COPCs. A table of these standard levels will be formulated using EPA's exposure assumptions based on several different land uses. These may be presented at a later date as a separate addendum to this annex.

### **F.1. Hazardous Constituents**

Following EPA guidance, media cleanup standards for non radioactive carcinogens are derived using EPA's target incremental risk range of  $10^{-4}$  to  $10^{-6}$ . A target hazard index value of 1 is used for non-carcinogens. If prior to, or following remediation, the total carcinogenic risk at a site falls within the target range, or lower, and the non-carcinogenic risk threshold has not been exceeded, the site may be proposed for NFA.

Signature Page

Annex F. Cleanup Levels

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## **F.2. Radionuclides**

For complex industrial sites with radionuclide contamination only, DOE's dose limit of 100 mrem/yr, with ALARA considerations, may be used to calculate media cleanup standards for radionuclides using RESRAD methodology or other appropriate methods. The EPA proposed dose limit of 15 mrem/yr for a single site should also be considered. If the expected radiation dose does not exceed cleanup requirements in DOE Orders, the site will proposed for NFA under DOE jurisdiction.

The estimates of the lifetime risk of cancer to exposed individuals resulting from radiological and chemical risk assessments may be summed in order to determine the overall potential human health hazard associated with a site.

### **Verification of Cleanup**

The attainment of cleanup standards is based on achievement of the required risk levels or promulgated standards judged to be relevant to the site by the Administrative Authority. Verification sampling plans based on nature and extent will be designed to collect the appropriate number of samples to calculate a 95% UCL to compare to cleanup levels. The DOE/Laboratories will provide to the Administrative Authority the statistical method to be used to calculate the 95% UCL. The 95% UCL will estimate average residual concentrations in appropriate areas/volumes of contaminated media used in the risk analysis. The 95% UCL is a conservative comparison. If the site has been remediated to appropriate, agreed-upon, standards but the 95% UCL does not indicate this, the Laboratories may propose using a comparison of individual data points, or other similar comparison. These will be used on a site-specific basis.

## Annex H. Remedy Selection Process

This remedy selection process applies to all PRSs. The DOE/Laboratories will propose that the Administrative Authority approve the following: the location where compliance levels must be achieved; the sampling and analysis plan that will be used to determine compliance; and the length of time (if any) that a site must be monitored following attainment of approved cleanup levels.

When the Administrative Authority and DOE/laboratory agree that it is in the interest of human health and the environment to delay implementation of the final remedy, interim measures may be proposed subject to approval by the Administrative Authority. For example, interim measures may be needed at active laboratory sites. Such remedies include prompt corrective measures that reduce risk, and/or partial cleanup when total cleanup is currently impractical. When an interim measure is used, the site must be revisited after a pre-established period to determine whether additional action will be required or the interim measure is appropriate for a final remedy.

The applicable remedy selection approval and permit modification process will be followed. The remedy will be consistent with EPA's Remedy Selection Verification Process (RSVP). RSVP is an acronym developed for this Document of Understanding to serve as a shorthand for the remedy selection considerations embodied in EPA's proposed Part 264 Subpart S. Briefly stated, Subpart S requires that the following general decision factors be utilized in the selection of remedy:

- Long-term reliability and effectiveness,
- Reduction of toxicity, mobility, or volume of wastes,
- Short-term effectiveness (particularly during the implementation phase),
- Implementability, and
- Cost.

Innovative technologies may be proposed as a remedy, consistent with the above criteria. Full scale demonstration of the technology is not a prerequisite for selection. However, a bench scale demonstration might be necessary to determine if the remedy will be effective at the site. If the acquisition of additional test data is needed in order to encourage innovative technology, a reasonable extension in schedule may be required. In some cases, innovative technology may appear to be beneficial regarding technical time or cost advantages such that a delay in final remedy selection may be needed until necessary data are developed.

## **Completion of Remedy**

Upon completion of the remedy, DOE/laboratory will submit a final cleanup verification report and may also submit a request to terminate the schedule of compliance. The final cleanup verification report or request to terminate the schedule of compliance will include verification that all media cleanup levels have been achieved (See Annex F) and actions required for source control have been satisfied. The Administrative Authority will then review the submittal to determine whether a remedy has been completed in accordance with the requirements. After such determination, the Administrative Authority will modify the permit to remove the site from the permit list. In the case of an AOC, a permit modification is not necessary because DOE is the Administrative Authority.

Signature Page

**Annex H. Remedy Selection Process**

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## Annex J. CAMU/TU

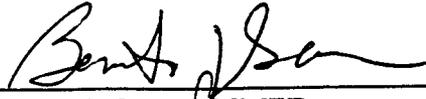
Corrective Action Management Units(s) (CAMU) and Temporary Unit(s) (TU) will be used to handle remediation wastes consistent with EPA's final rule (2/16/93). Prior to submission of the permit modification application, the Administrative Authority can request relevant information to support the decision to proceed.

The CAMU/TU could accept all remediation wastes including hazardous, non-hazardous, mixed, and low level radioactive wastes from the ER program. Should DOE/laboratories request low level radioactive wastes be included in the CAMU, they would provide to the Administrative Authority documentation to demonstrate how all DOE requirements are met. The wastes would have to be compatible both with each other (or properly separated within the unit) and with the engineered components of the CAMU/TU units. Information on all wastes, including radioactive wastes, will be included in the CAMU/TU proposal to the Administrative Authority.

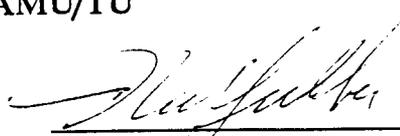
If a common infrastructure is used, boundaries of units will be clearly delineated to prevent inadvertent mixing of laboratory and remediation wastes.

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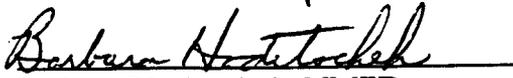
Annex J. CAMU/TU

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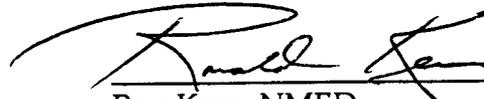
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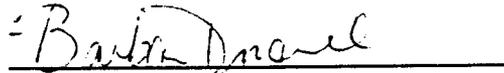
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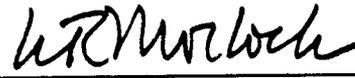
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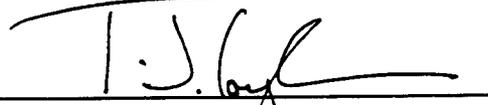
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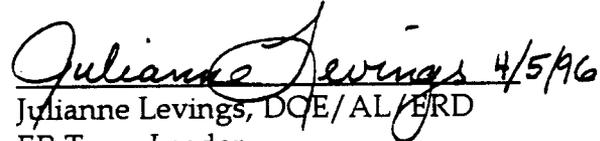
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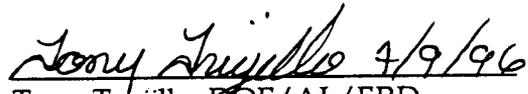
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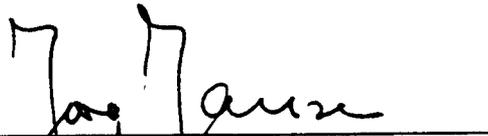
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