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# Los Alamos National Laboratory

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Date: June 26, 2000  
Symbol: ESH-DO:00-073

ASWALANL G/M/CGF

Secretary Peter Maggiore  
New Mexico Environment Department  
Harold Runnels Building  
1190 St. Francis Drive, P.O. Box 26110  
Santa Fe, New Mexico 87502-6110

**Subject:** Post-Fire Environmental Restoration and Natural Hazard Mitigation Activities

Dear Secretary Maggiore:

On behalf of Laboratory Director John Browne and DOE Los Alamos Manager David Gurulé, we are pleased to respond to the concerns expressed in your May 31 certified letter. As the administrative authority for RCRA permits that govern the Los Alamos National Laboratory, your concerns are well taken as to the impacts of the Cerro Grande Fire on the lands of the Laboratory, on its activities, and on the consequent water quality of the Rio Grande and its watersheds. The Laboratory and the DOE are in fact exercising aggressive mitigation measures to minimize floodwaters and debris flows emanating from burned watersheds above and on Laboratory property. The Laboratory and DOE, in full consultation with NMED, have expedited or are implementing comprehensive actions intended to minimize the movement of contaminated sediments and surface waters. Please note that the Laboratory has responded to a related request by Congressman Tom Udall for information pertaining to environmental monitoring.

The following are specific responses to your inquiries.

### **Emergency Rehabilitation for the Los Alamos National Laboratory.**

As you are aware, Dr. Browne established an Emergency Rehabilitation Team (ERT) on June 2. The ERT was chartered to aggressively manage the assessment and mitigation of the adverse impact to the Laboratory resulting from the devastation of the Cerro Grande Fire. This team is under the direction of Dr. Richard Burick, Deputy Laboratory Director for Operations. The formation of the ERT was important in several regards, including timing and purpose. As the Burned Area Emergency Rehabilitation Team was completing its regional assessment and formulating mitigation plans, the DOE and the Laboratory moved to focus on the rehabilitation of the Lab-site. In so doing, we also committed to the ERT as an institutionally empowered task force, which further organized efforts born during the fighting of the fire.

The ERT has focused efforts on five key areas -- water, potential release sites, air, engineering, and assessment. The ERT includes participation by the DOE Los Alamos Area



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Office. The team maintains active coordination and exchange with the BAER Team, the associated Multi-Agency Coordination Team, the County of Los Alamos, the four Accord Pueblos (Santa Clara, San Idelfonso, Cochiti, and Jemez), and the New Mexico Environment Department.

As recently as this past Monday, June 19, the ERT reviewed its project plan with NMED staff headed by Deputy Secretary Paul Ritzma. The review featured a set of potential actions by the U.S. Army Corps of Engineers to reduce flood potential and consequent erosion and sediment transport. Substantial commitments are imminent. We believe this review provided understanding and support for actions being taken and for proposed actions. A similar review was held with environmental teams from the Pueblos with comparable responses. As you know, the actions of the ERT are updated daily. The updates are provided electronically to your offices. Shortly after formation of the ERT, an open invitation was extended (and accepted) to the chief of your Oversight Bureau to observe and participate in our team meetings. Each of these endeavors reflects our commitment to provide a complete view of our decision making processes, plans, and actions. Participation by NMED is much appreciated.

#### **Access to Laboratory by NMED staff.**

Your letter expressed an early concern as to access for NMED staff to the Laboratory for assessment and sampling. This concern was quickly resolved. On June 5, teams comprising NMED, DOE, and LANL staff were formed to assess fire damage and mitigations to the Laboratory's Potential Release Sites (PRSs). The assessment concluded on June 22 following verification, inspection, and determination of site-specific Best Management Practices (BMPs). We understand the work of these teams used a LANL procedure (i.e., ER-SOP-2.01) that was developed with NMED and is being considered as a standard for state-wide application. Another joint team has conducted a flood evaluation of PRSs, developing a basis for accelerated rehabilitation. These joint efforts featured full access to Laboratory property, complete exchange of information, and mutually confident schedules.

Similar commitments and approaches are evidenced in sampling and monitoring efforts. Examples include the soon-to-be-completed pre-flood characterization of sediment contaminants in Laboratory canyons, treatment and remediation of MDA-R at S-Site (TA-16) and the removal of contaminated sediments in progress in Los Alamos Canyon (LA-2 East).

In-the-field-participation of NMED staff has been most valuable in terms of timely decision making and real-time oversight.

**Inventory of potential release sites directly affected by the fire or at risk to damage from erosion, flash floods, or debris flows as a result of fire damage to the watershed (to include solid waste management units, areas of concern, hazardous waste man-**

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**agement operating units, operating facilities that treat, store, dispose, or otherwise manage hazardous or radioactive materials, and other contaminated sites).**

**Potential Release Sites** -- The NMED/DOE/LANL assessment teams determined 308 PRSs with surface exposure were touched by flame during the fire. This number excludes sites for no-further-action. The locations and descriptions of the affected PRSs are in daily use by your staff, as are maps showing burn areas, burn intensities, and PRS locations. Work is concluding to assess PRSs that were not burned but may be vulnerable to increased risk of flood and erosion.

Evaluations by the assessment teams determined that 91 of the 308 affected PRSs require supplementary or new BMPs. BMPs were implemented at six PRSs during the fire to address imminent threats. The Laboratory has worked with NMED to evaluate the types of BMPs to be implemented at the remaining PRSs. The Laboratory is now actively installing the BMPs in accordance with a prioritized schedule. As of Friday, June 23, BMPs were implemented at 14 ERs. Full implementation at the 91 sites is scheduled for July 15.

**Waste Accumulation, Storage, and Treatment Areas** -- The Laboratory operates and tracks within its buildings and facilities 589 satellite waste accumulation areas, less-than-90-day waste storage areas, and interim waste storage areas. Required weekly inspections were missed at some of these areas during the Cerro Grande Fire or until certain of these buildings or facilities were deemed safe for occupancy after the Laboratory resumed operations on May 22. NMED has been notified informally by telephone and formally by mail of these situations. Subsequently, each of the 589 waste accumulation storage areas was inspected as a reoccupation requirement for a building or facility. None of these areas, including their waste holdings were damaged or otherwise compromised by the fire.

To mitigate potential impact of floods on facilities situated in canyons, materials and structures are being removed from TA-2 and TA-41 in Los Alamos Canyon and operations are underway at TA-18 in Pajarito Canyon to mitigate flood potential.

Major Laboratory waste storage, handling, and treatment facilities were unaffected by the fire and are not at risk to damage from floods, debris flows, and erosion. Several of these facilities have special interest to NMED:

**TA-50-1 Radioactive Waste Treatment Facility** -- This facility is located on a mesa between Mortandad Canyon to the north and Pajarito Canyon to the south. The facility was not damaged in the fire and is not vulnerable to damage from floods, debris flows, or erosion. The facility operated throughout the Cerro Grande Fire and had little vulnerability to fire damage due to cinder block construction and distance from forested areas. The facility continues to operate normally.

**TA-21-257 Radioactive Liquid Waste Treatment Facility** -- This facility is located on a mesa with DP and Pueblo Canyons to the north and Los Alamos Canyon to the south. The facility was not damaged in the fire and is not vulnerable to damage from

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floods, debris flows, or erosion. Facility operations were terminated during the fire with no adverse impact and have now returned to normal. There was low vulnerability to fire damage due to cinder block construction and distance from forested areas. The pipeline from the facility to TA-50-1 is vulnerable to damage from flooding or debris flows, primarily in Los Alamos Canyon. Activities are underway to process and transfer the remaining waste inventory at TA-21-257 to TA-50-1, after which the pipeline will be decommissioned. This action, initiated prior to the fire, is being tracked by the Emergency Rehabilitation Team.

*TA-54 Solid Waste Operations Facility* – This facility is located on a mesa with Ten Site and Mortandad Canyons to the north and Pajarito Canyon to the south. The facility was not damaged in the fire and is not vulnerable to damage from floods, debris flows, or erosion. Vulnerability to fire damage is low because of design features and specific actions employed to mitigate the threat of fire.

**The criteria and application thereof in the prioritization of sites at risk to damage from erosion, flash floods, or debris flows as a result of fire damage to the watershed and proposed mitigation.**

The ERT is tasked with assuring timely and appropriate prioritization of actions necessary to mitigate potential damage from floods, debris flows, and erosion. Prioritized schedules based on risk criteria are now available (or soon to be available) for BMP implementation, burned area rehabilitation, sediment removal, and an ambitious set of engineered mitigation projects. NMED staff have been actively involved in determining many of these schedules. Affected Accord Pueblos and the EPA are expected to participate in subsequent prioritized scheduling.

The Engineering and PRS sub-teams of the ERT are managing day-to-day activities. As highlighted above, pre-existing prioritization criteria and protocols for surface water issues are formally defined in Environmental Restoration Project standard operating procedure ER-SOP-2.01 -- Surface Water Site Assessments (September 1999). The Engineering sub-team developed a new procedure that explicitly addresses "...design basis, technical requirements and standards, functional and operational requirements, and criteria for mitigations from the Cerro Grande Fire to minimize the risks of flood/runoff following watershed upland deforestation." The procedure ERP-EI-PLAN-002 is entitled "Design Criteria for Engineering Implementation Mitigation".

**Interim plan for implementation of preliminary erosion controls and timely reporting as controls are implemented.**

The Laboratory's ERT and its sub-teams are working with NMED and other federal agencies to identify and mitigate imminent threats in the aftermath of the Cerro Grande Fire through the application of a graded approach and defense in depth. Daily updates of ERT

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actions are forwarded electronically to NMED and posted on the web at <http://www.lanl.gov/worldview/news/fire/ert/>.

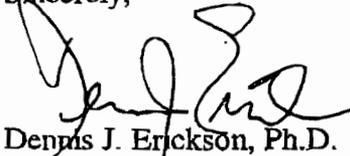
### **Environmental Restoration activities and long-term effects**

In addition, the Laboratory is intent on meeting expectations for environmental restoration to which it was obligated prior to the Cerro Grande Fire. As you note in your letter, delays and shifting priorities are likely as efforts continue to understand the full effects of the fire. The Laboratory will work closely with NMED as those issues are identified and will negotiate in good faith to assure any changes necessary are amenable to all parties.

The information for this response was compiled by Dr. Bill Zwick. Bill may be contacted for clarification, additional information, or related inquiries at (505)665-4407 or by e-mail at [bdz@lanl.gov](mailto:bdz@lanl.gov). You may also contact me at (505)667-4218 or by e-mail at [derrickson@lanl.gov](mailto:derrickson@lanl.gov).

In closing, the Laboratory and the DOE are grateful for your concerns in the exercise of your statutory responsibilities. The support and oversight of the New Mexico Environment Department are highly valued and much appreciated.

Sincerely,



Dennis J. Erickson, Ph.D.  
Division Director  
Environment, Safety, and Health

DJE/BZ/dis

Cy: Congressman Tom Udall  
David Gurulé, DOE/LAAO/MS A105  
Howard Hatayama, UC-LAO-ESH  
John Browne, DIR/A100  
Richard Burick, DLDOPS/A100  
Karl Braithwaite, GRO/D442  
CIC-10/A110  
ESH-DO File

# DRAFT



## **1.0 INTRODUCTION**

### **1.1 CHARTER**

The Emergency Rehabilitation Project will:

- Evaluate and estimate the impacts from the Cerro Grande Fire.
- Design appropriate mitigation measures for fire, increased runoff and potential flood conditions.
- Implement these measures to prevent further damage to people, property, and the environment.

Phase I of the Project was initiated on June 1, 2000 and will complete rehabilitation activities on August 10, 2000. Additional projects or project phases will be planned and executed to accomplish mid- to long-term rehabilitation objectives.

### **1.2 BACKGROUND**

In May 2000, the Cerro Grande fire burned across upper and mid-elevation zones of several watersheds that have multiple facilities in middle and lower stream reaches. Streams draining watersheds which have been impacted by the fire will greatly increase runoff response to storm event and have potential to affect highways 4, 30, 501, 502 565, and multiple facilities, utilities, and potential release sites (PRSs) on Los Alamos National Laboratory property. The fire has also increased potential sediment delivery to the downstream Rio Grande and Cochiti reservoir.

### **1.3 PROJECT OBJECTIVES**

The four main objectives of the ERP, in order of importance, are:

1. The safety of workers and the public
2. The control of off-site transport of contaminants
3. The protection of physical assets including Laboratory structures, utilities, roads and other assets
4. The rehabilitation of Laboratory watersheds

### **1.4 PROJECT MANAGER**

Dick Burick, Deputy Laboratory Director for Laboratory Operations, has been designated the Project Manager for the Emergency Rehabilitation Project by John Browne, Director, LANL. Key personnel have been assigned to the project as shown in Figure 1.1.

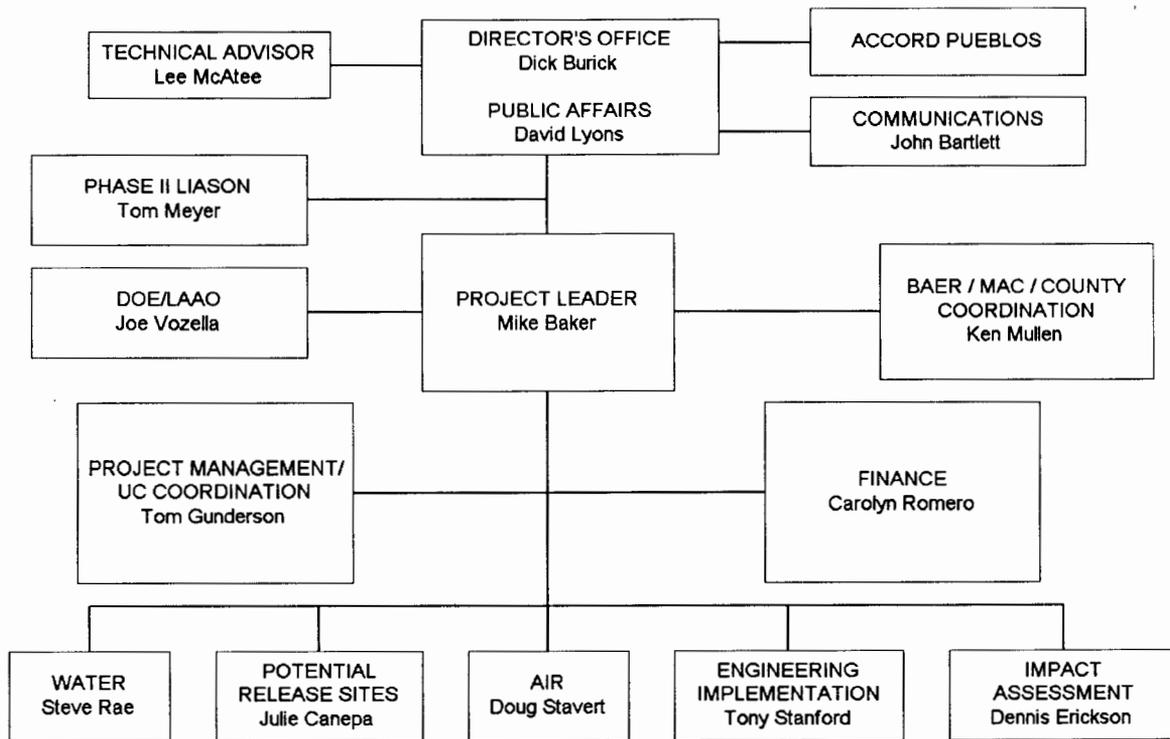
### **1.5 ROLES AND RESPONSIBILITIES**

Roles and responsibilities have been defined for the ERP; specific assignments are detailed in the internal project management schedule maintained in the ERP office.

**1.6 ACRONYMS**

|      |  |      |                                      |
|------|--|------|--------------------------------------|
| BAER | Burned Area Environmental Rehabilitation | ERT  | [LANL] Emergency Rehabilitation Team |
| BMP  | Best Management Practice                 | LANL | Los Alamos National Laboratory       |
| D&D  | Decommissioning and Decontamination      | PRS  | Potential Release Site               |
| ERP  | Emergency Rehabilitation Project         | SSC  | Structure, System, or Component      |
|      |  | QA   | Quality Assurance                    |
|      |  | USQ  | Unresolved Safety Questions          |

**Figure 1. Emergency Rehabilitation Team**



**2.0 PROJECT INTEGRATION**

**2.1 INTRODUCTION**

This project will be implemented following accepted LANL and DOE project management policies and procedures according to project-specific plans. This includes the development and execution of this project plan and the institution of formal change controls to insure that scope is defined, priorities are set, and commitments are met.

Integration activities include coordination with external agencies, accord Pueblos and the public. Internal project integration consists of focus area coordination and resolution of site-wide issues through an approved communications plan.

**2.2 EXTERNAL AGENCIES/ACCORD PUEBLOS**

LANL is coordinating the ERP with the Accord Pueblos, and federal, state and local stakeholders that are adjacent to or have been impacted by the Cerro Grande fire. This

coordination includes the sharing of information and resources, to manage the response to potential flooding and other post-fire effects. These organizations include:

- The four Accord Pueblos
- Department of Energy
- Department of Interior, Park Service
- Department of Agriculture, Forest Service
- State of New Mexico
- Los Alamos and surrounding counties

Integration also includes obtaining technical assistance and input from the New Mexico Department of Health, U.S. Army Corps of Engineers, the Bureau of Reclamation, the New Mexico State Engineer's Office, the Environmental Protection Agency, the New Mexico Environmental Department, and the Federal Emergency Management Agency.

This project includes Memorandums of Agreement with external agencies in order to rapidly respond to shared problems.

### **2.3 PUBLIC AFFAIRS**

Contained within this project are activities to ensure that the public remains informed of ERP progress on a daily basis. The LANL Public Affairs office is responsible for the dissemination of this information and has appointed a public affairs liaison as part of the project management team.

### **2.4 INTERNAL PROJECT COORDINATION**

The project is divided into six main focus areas. They are:

- Project Management – Responsible for overall coordination and management of the ERP
- Water – Activities to analyze, model, and monitor the water resource
- PRS – Assessment of fire damage and mitigation of fire and flood effects to the potential release sites located on LANL property
- Air – Monitoring of air quality during execution of rehabilitation work
- Engineering Implementation– Activities for the design, construction and maintenance of mitigation features implemented to reduce the risks from fire and runoff/flooding from the Cerro Grande fire
- Assessment – Provide topical and institutional integrated assessments to appropriate agencies

Through the coordination efforts of the Project Leader, the ERP will maintain plans, specifications, priorities, and designs and share this information with the focus area team leaders responsible for implementation. In turn, the team leaders will coordinate and communicate project findings, results and status utilizing management tools, such as Plan of the Day Meetings.

## 2.5 CHANGE CONTROL

There are two primary reasons for utilizing a formal change control process for the ERP:

- Project changes based on input and findings from project staff and external agencies
- The need for action to mitigate the effects of summer rains

This change control procedure is documented in “Cost Schedule Controls Criteria,” ERP-EI-006.

## 3.0 PROJECT SCOPE

The following sub-projects have been planned and are considered as alternatives for inclusion in the ERP. Summary scope descriptions are provided in this project plan. Detailed scope descriptions have been developed for sub-projects that are currently being implemented. The detailed scope descriptions, design specifications, and drawings are controlled within the ERP office.

For reference, see Figure 2 for a general view of the locations of canyons referenced in this document. A six-step scope development process was utilized in the development of ERP mitigations to be implemented. This process included:

1. Vulnerability assessments.
2. Brainstorming of alternatives.
3. Down-selection of alternatives using, as appropriate, LANL staff, external stakeholders, and experts.
4. Feasibility assessments of selected alternatives.
5. Final alternative selection.
6. Detailed engineering.

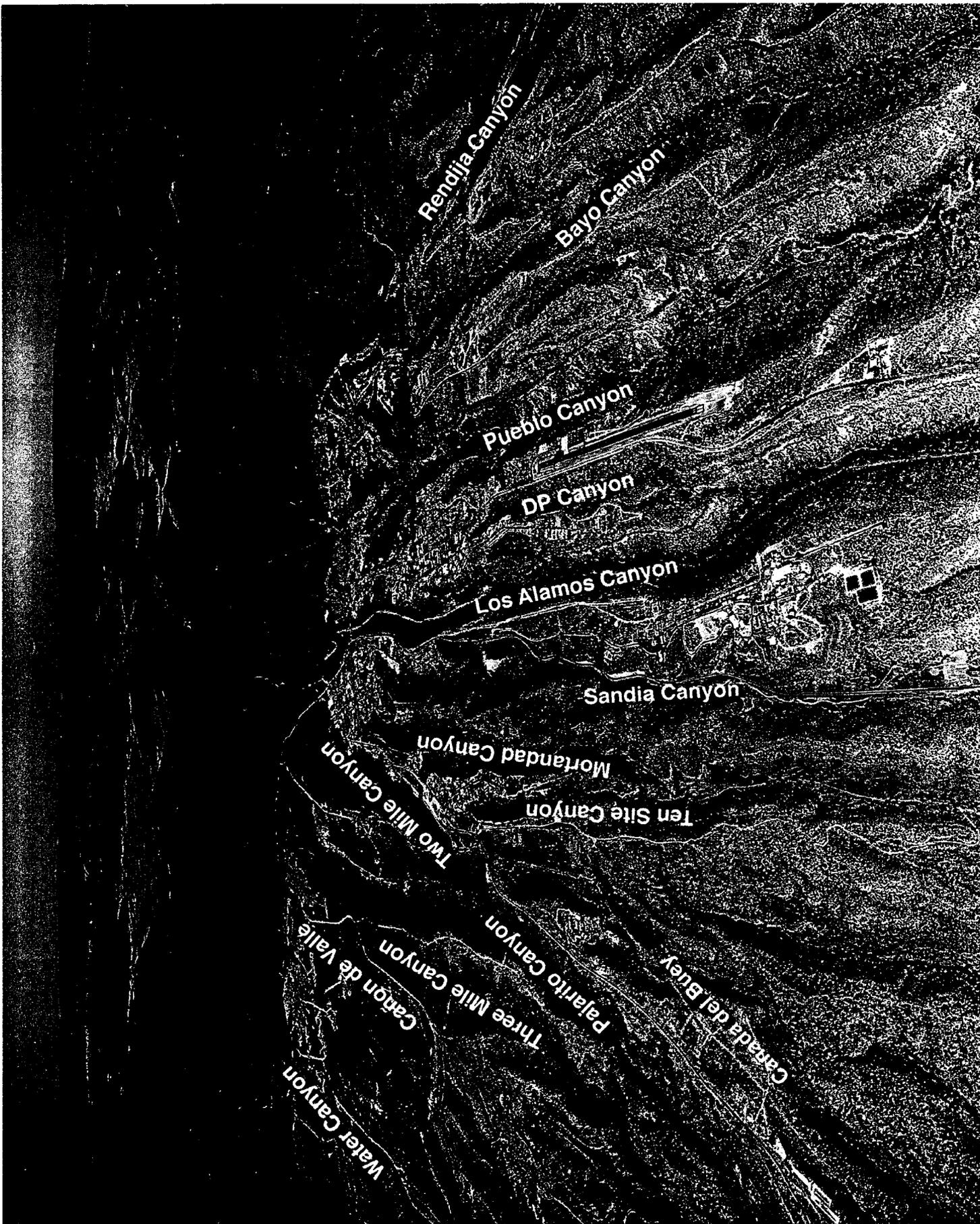
All alternatives will be considered and engineered based on water-modeling information. This important activity will result in the following products:

1. Runoff flow calculations for all impacted watersheds
2. Cross-sections at selected areas for facility/utility protection determinations
3. Flow depth, height, and flow-rate calculations for input to runoff sedimentation control designs
4. Sedimentation information for use in contaminant transport mitigation and design

## 3.1 SELECTED ALTERNATIVES

### PRS Assessment

- *Evaluate Cerro Grande fire impacts on all known PRSs on LANL property. Categorize severity of impact and plan BMP efforts to mitigate fire damage. Determine which PRSs are vulnerable to flooding, and assess potential remedies.*



Rendija Canyon

Bayo Canyon

Pueblo Canyon

DP Canyon

Los Alamos Canyon

Sandia Canyon

Mortandad Canyon

Ten Site Canyon

Two Mile Canyon

Pajarito Canyon

Cañon de Valle

Three Mile Canyon

Carada del Buey

Water Canyon

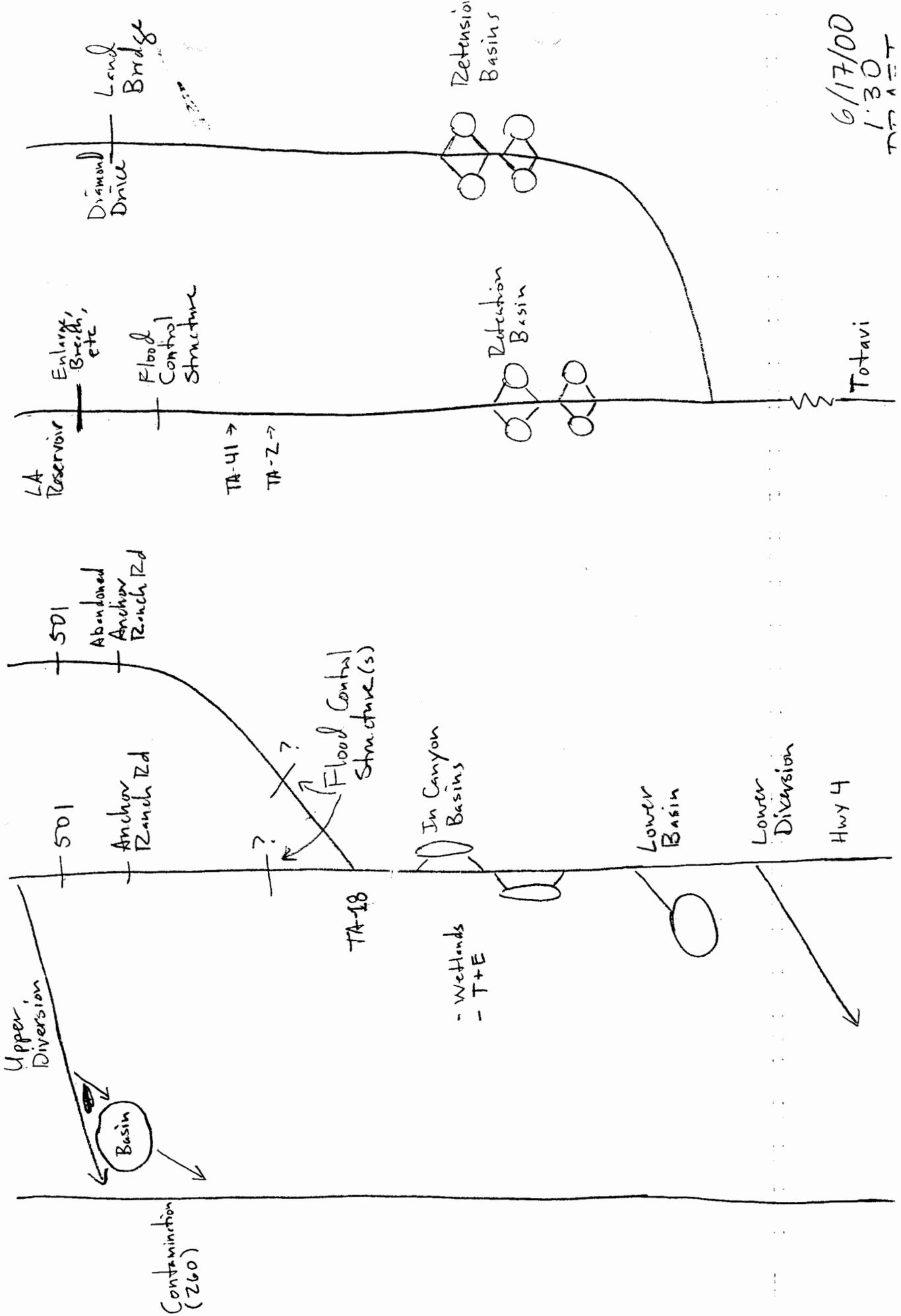
CAN. DE VALLE

PAJARITO CANYON

ZEMILE CANYON

LOS ALCAMOS CANYON

PUBLICO CANYON



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- *Remove selected sediments from Pueblo Canyon and/or Los Alamos Canyon and dispose of at TA-54.* Conduct sampling and field investigation to determine nature and extent of contamination that may be selected for removal. Provide field markings of sediment areas and estimate sediment volume to be removed. Determine access, cost estimate and schedule for removal. Remove sediments using in-field verification of contaminant locations. Provide erosion control around removal sites to protect from flood erosion, as needed.

#### **PRS Protection**

- *Install jute matting, erosion control, and other BMPs on PRSs impacted by the Cerro Grande fire.* Protect PRSs from potential flood erosion using BMPs.

#### **MDA R Fire Suppression**

- *Utilize accepted fire suppression techniques and excavate smoldering debris to extinguish remaining fire.* Excavate smoldering debris at MDA R with remote operated backhoe. Continue to monitor all LANL property for fire and smoldering materials.

#### **Canyon Sediments**

- *In canyon off-channel retention.* Install one or more sediment catch basins (outside the pre-fire 50 year floodplain) to collect and store excessive run-off. Limit run-off through Los Alamos and Pueblo Canyons to pre-fire rates.
- *Analysis of water flows and sedimentation.* Develop cross-sections and model projected flood flows and sedimentation loads for use in engineering flood control measures.
- *Protect wellheads.* Identify all environmental and drinking water wells that may be impacted by run-off erosion. Harden all potentially impacted wellheads in accordance with approved engineering details.
- *Flow diversion through TA-02/41.* Design and construct flow barriers, channels, etc. to route water around TA-02 and TA-41 with minimal damage to structures. Remove utilities, access bridges, fences, etc. as necessary to facilitate flow.
- *Evaluate need for sediment trapping in Canon de Valle and Water Canyon.*
- *Two Mile Canyon Storage.* Analyze the structural integrity of the existing land bridge. If acceptable, upgrade land bridge at Two Mile Canyon and Anchor Ranch Road to accommodate storage of run-off. Include emergency spillway return to Two Mile Canyon.
- *Lower Pajarito Storage.* Collect run-off in lower Pajarito Canyon in a series of one or more kettle basins, settling basins, and/or dikes, and addition of two more culverts at State Road 4. Design will be based on projected flood flows; additional options (trans-basin diversion to Portrillo) are under consideration.

#### **Protect Structures/Utilities**

- *Removal of Hazardous Material.* Identify at-risk hazardous and rad material at facilities within the projected flood plane. Dispose of and/or relocate

materials as necessary to remove from danger of flood and environmental contamination.

- *Harden Critical Utilities and Roads.* Identify all utilities (e.g., gas, water, electric, rad waste, sanitary, communication, etc.) that may be impacted by run-off/erosion and document in database. Review each impacted utility and determine risk to Laboratory and need for hardening or compensatory measures. Install hardening for at-risk utilities in accordance with approved engineering details.
- *D&D of Selected Structures.* Remove cooling tower, surge tank, and other contaminated structures at TA-02.
- *TA-18 Flow Diversion.* Install sheet pile barrier around Kiva 1. Harden/modify road box culvert and cable raceway to accommodate run-off. Protect historic cabin.

#### **Air**

- *Air Monitoring.* Conduct air monitoring to ensure air quality remains at acceptable levels. Document findings and support specific air monitoring requests as needed.

#### **Health Effects**

- *Health effects analysis.* Using existing data, models, and baseline environmental conditions information, study and report on health effects based on the Cerro Grande Fire and mitigation efforts of the ERP.

#### **Adjoining Property**

- *Coordinate mitigation efforts with adjoining stakeholders.* Work with adjoining property stakeholders in mitigation efforts involving air, water, soils, and runoff control.
- *Hydroseeding/mulching in steep-slope burn areas.* Coordinate hydroseeding/mulching with adjoining property owners. Upon concurrence, hydroseed adjoining properties (e.g., Santa Clara properties) to streamline mitigation activity and reduce overall costs.

#### **Site-wide Actions**

- *Contingency Planning.* Develop site wide contingency plans for pre-rain and post-rain compensatory actions.
- *Upper Watershed Reforestation.* Implement normal USFS tree-felling, contour raking and reseed (on LANL/USFS property). Implement hydroseeding/mulching under park service agreement for steep slope/severe burn areas (USFS property).
- *Maintenance, Monitoring, and Surveillance.* Develop, implement, and document a program to routinely inspect all run-off/flood mitigation features (e.g. culverts, retention basins, well-head protection, etc.). Monitor conditions as weather events occur, conduct field surveillance activities to verify systems performance.

### 3.2 ALTERNATIVES UNDER CONSIDERATION

#### Canyon Sediments

- *Mortandad Canyon Sediment Traps*. Build additional sediment traps and restore to original capability of existing traps, if warranted.

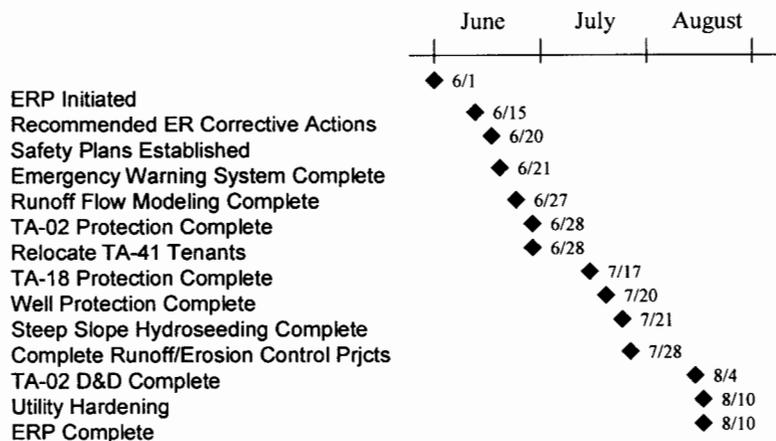
### 4.0 PROJECT TIME AND COST

#### 4.1 TIME

The ERP is a schedule-driven project based on the need to meet project objectives within a very restrictive timeframe.

In order to complete the ERP by the 8/10/2000 end date, multiple, parallel activities are planned. A summary of major milestones is shown in Figure 3. Three to five hundred (300 – 500) scheduled activities will be planned and managed using accepted project scheduling techniques and will be maintained in the ERP Office. These activities will be assigned to project personnel and are organized by watershed to track parallel activities occurring on the project. The schedule will be revised by following the change control procedure, as needed.

## Major ER Project Milestones



### 4.2 COST

#### 4.2.1 Planned Costs

Prioritization of sub-projects within the ERP will allow for management decisions that are responsive to funding constraints. As part of the prioritization, cost estimates are required to determine overall project budget needs and to support funding requests. Cost estimates have been developed as part of the initial planning phase. These estimates are preliminary, and will be refined as engineered alternatives are selected and as more

specifications and product descriptions are developed. Subject to change control procedures, new estimates will be initiated for work not previously planned.

#### **4.2.2 Actual Costs**

Actual costs will be tracked utilizing an ERP-specific project cost coding structure. This information will allow for cost performance measurements to ensure the project remains within budget and that cost commitment thresholds are not exceeded. The established LANL cost charging system will be utilized. As work orders, invoices, and timesheets are executed, costs are tallied against the ERP Work Breakdown Structure. Reports will be provided to ERP managers that compare planned versus actual costs.

### **5.0 PROCUREMENT**

Selection of engineered alternatives will be constructed through the life of the ERP. This includes utility hardening, construction of sediment basins, channels and retention areas, removal or protection of facilities, and other subprojects as required. Although many of these subprojects can be completed by the Laboratory subcontractor, Johnson Controls Northern New Mexico (JCNNM), the need to run concurrent projects may necessitate procurement of outside contractors.

Procurement will follow established LANL policies and procedures, and will be expedited through the use of an ERP dedicated procurement team. Emergency rehabilitation conditions may warrant sole-source selection of contractors if time does not permit the use of competitive bidding procedures. In all cases, proper procurement documentation procedures will remain in place and appropriate signature authority, negotiations, audits and cost reconciliation will occur.

### **6.0 PROJECT QUALITY MANAGEMENT**

The products from this project will be managed in accordance with LANL quality procedures and the project-specific quality assurance plan ERP-EI-PLAN-001, "Quality Management Plan." Highlights of this plan include:

- Assessment and analysis following sound scientific principles, DOE Orders, environmental laws and regulations, and LANL approved procedures.
- Engineering design in accordance with project specific design criteria. (ERP-EI-002, *Design Criteria for Engineering Implementation Mitigation*).
- Construction following technical requirements and standards that include the USQ process and any updates to existing authorization bases.

In addition, this Project will utilize a formal peer review process to verify and validate (where appropriate) scientific analyses, models, environmental data and conformance to design and construction specifications. This peer review process will be further documented in "Peer Review Process for the Emergency Rehabilitation Project," currently under development.

### **7.0 COMMUNICATIONS**

Quality communications throughout the ERP are critical to the success of this schedule-driven project. Rehabilitation activities will occur throughout the laboratory, involve multiple agencies, and require in-the-field changes in response to changing conditions.

Most importantly, safety of the rehabilitation workers requires infallible communications. Communication to surrounding communities and the news media must also be consistent, reliable and timely. Due to these complex communications issues, the ERT has developed a project specific communications plan. This plan delineates all levels of communications required for successful completion of the project.

The ERT has also developed contingency plans to communicate information in the event of a severe weather event, such as flooding. These plans also outline contingency actions required to restore LANL infrastructure (utilities, roads, etc.).

Internal project communications consist of daily project updates, performance reporting, information distribution, and administrative closure. These activities will be managed in accordance with LANL project communications guidelines and are important to the safety of the project team.

The ERP will utilize existing LANL document control procedures to facilitate formal communication and maintain records of project decisions, timelines and events.

## **8.0 RISK MANAGEMENT**

Risk management involves the identification, quantification and mitigation of risk events. The ERT will implement risk management in the following areas:

- *Worker safety.* Development of communication plans to mitigate worker risk and contingency plans for safe mitigation after a catastrophic weather event. In addition, the use of trained personnel and proper safety equipment will be used to reduce the possibility of injury. All activities will be conducted in accordance with the Laboratory's Integrated Safety Management Plan.
- *Schedule.* Identification of critical path schedule activities and mitigation through human resource management, including double-shift work, additional resources, and dedicated support teams (procurement, work control).
- *Funding.* Mitigation of inadequate or delayed funding involves the development of proper estimates, activity prioritization, and sound fiscal management to plan and track project budgets.
- *Technical risk.* The risks are potential design inadequacies, insufficient environmental data, and incomplete analysis. Mitigation activities will include peer review and use of external agency technical expertise.