

*Monitoring Well
Installation Project*

*Conceptual
Design Plan*

July 14, 1995

HSWA LANL G/M/95

Los Alamos
NATIONAL LABORATORY



12642

CONCEPTUAL DESIGN PLAN
FOR
MONITORING WELL INSTALLATION PROJECT
AT THE
LOS ALAMOS NATIONAL LABORATORY
Project Identification Number: 16810

Prepared by

Environmental, Safety, and Health (ESH) Division
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and

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A. Description

The Monitoring Well Installation Project includes the installation of 23 main aquifer wells, 14 intermediate perched zone wells, 50 alluvial perched groundwater zone wells, and the plugging of 9 existing wells across Los Alamos National Laboratory (LANL or Laboratory). See Attachment A for maps showing proposed well locations. The purpose of this project is to update and enhance the current monitoring well network so that many areas of concern regarding groundwater protection, groundwater management, and compliance with regulatory issues can be addressed. The proposed wells will be located near areas where potential contamination is an issue, such as in canyon bottoms and near material disposal areas (MDAs) and waste treatment facilities, and in areas where hydrogeologic data is much needed, such as in the western and southern portion of the Laboratory.

The well installation project is required to support the Groundwater Protection Management Program Plan (GWPMPP), which is a detailed framework for coordinating groundwater protection activities at LANL.

B. Justification

The need for this well installation project is compliance driven: the Laboratory requires a better understanding of the hydrogeologic system beneath the Pajarito Plateau in order to comply with Resource Conservation and Recovery Act (RCRA) Module VIII requirements (i.e., the Hazardous and Solid Waste Amendments (HSWA) permit Task III requirements), 20 New Mexico Administrative Code (NMAC) Subpart VI, 40 CFR 265, and Department of Energy (DOE) Order 5400.1, "General Environmental Protection Program". These compliance issues are reflected by the following:

- The New Mexico Environment Department (NMED) Technical Compliance Program states: "It has been determined by NMED that the existing ground water monitoring system is inadequate to sufficiently address the requirements under the HSWA module." (Letter to Mr. Joseph Vozella, Chief, ES&H Branch, DOE, LAAO from Ronald Kern, Program Manager, RCRA Technical Compliance Program, dated July 7, 1994.)
- Groundwater monitoring waiver requests for four Technical Areas containing surface impoundments and MDAs have been denied on the basis of "inadequate and incomplete information pertaining to the unsaturated and saturated conditions across the Pajarito Plateau." (Certified letter to Mr. Larry Kirkman, Acting Area Manager, DOE, LAAO, from Benito Garcia, Hazardous & Radioactive Materials Bureau, NMED, Santa Fe, dated May 30, 1995.) The letter further specified that because of this, groundwater monitoring program plans will be required for LANL to be in compliance with 20 NMAC Subpart VI and 40 CFR 265 Subpart F regulations.
- The HSWA permit, Section A.1 of Task III, requires the Laboratory to conduct a program to evaluate hydrogeologic conditions and to provide the following information: (1) a description of regional and facility specific geologic and hydrologic characteristics affecting groundwater flow; (2) an analysis of fractures; (3) a representative and accurate classification and description of hydrogeologic units; and (4) a representative description of water level or fluid pressure monitoring.

- DOE Order 5400.1, Chapter III, Section 4a requires the establishment of a groundwater protection management program which will provide: (1) documentation of the groundwater regime with respect to quantity and quality; (2) design and implementation of a groundwater monitoring program to support resource management and comply with applicable environmental laws and regulations; and (3) a management program for groundwater protection and remediation, including specific Safe Drinking Water Act, RCRA, and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) actions.
- DOE Order 5400.1, Chapter IV, Section 9b defines general requirements including: (1) determining baseline groundwater quality and quantity conditions; (2) demonstrating compliance with, and implementation of all applicable regulations and DOE Orders; (3) providing data that will allow early detection of groundwater pollution and contamination; (4) maintaining surveillance of potential groundwater contamination sources; and (5) providing data upon which decisions can be made concerning land disposal practices and the management and protection of groundwater resources.

The need for this well installation project is driven by other important issues. They include:

- The Memorandum of Understanding (MOU) with the San Ildefonso Pueblo which addresses sampling of wells and protection of water quality on Pueblo lands.
- The water supply requirements for future Laboratory use and for Los Alamos County.
- The impacts of National Pollutant Discharge Elimination System (NPDES) permitted discharges on groundwater quality, the quality of the Rio Grande, and the quality of the water supply for the Pueblo.
- New Mexico Water Quality Act and New Mexico Water Quality Control Commission regulations, which require preservation of surface water and groundwater quality.

The existing monitoring well network at LANL is owned by DOE. It consists of 20 main aquifer wells (Figure 1), 2 intermediate depth observation wells, and 23 shallow alluvial observation wells (Figure 2). The distribution of wells in the network is most dense in the northern and eastern portion of the Laboratory with very few wells located in the southern or western portion. Figure 3 shows a generalized cross section of the geology of the Pajarito Plateau. Many of the monitoring wells in the current network were installed 30 to 50 years ago by the United States Geological Survey (USGS) using cable-tool methods which did not include the installation of annular seals to prevent migration of contamination along the well bore. The completion methods on many of the wells are not well documented, and it is not known if these wells were properly grouted (per Tritium Fact Sheet, 1995). Further, supply wells are screened over large intervals; they are not suitable for chemical contaminant sampling of the upper main aquifer.

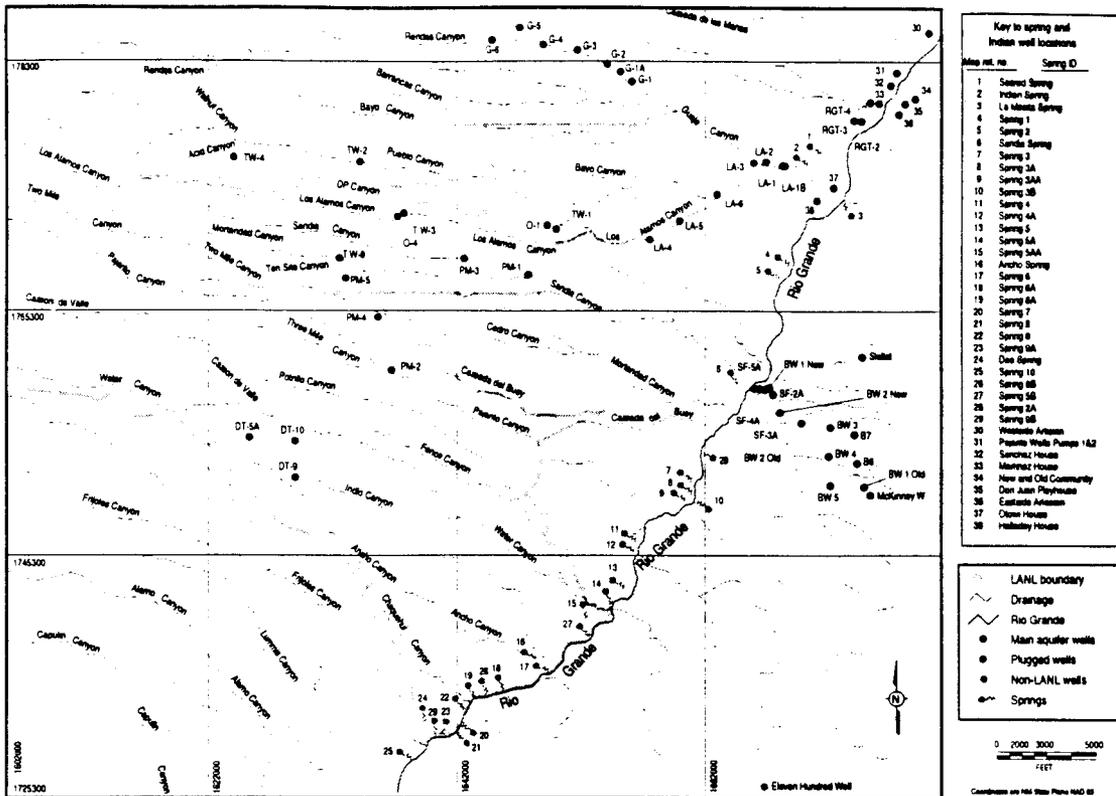


Figure 1. Existing main aquifer wells and springs.

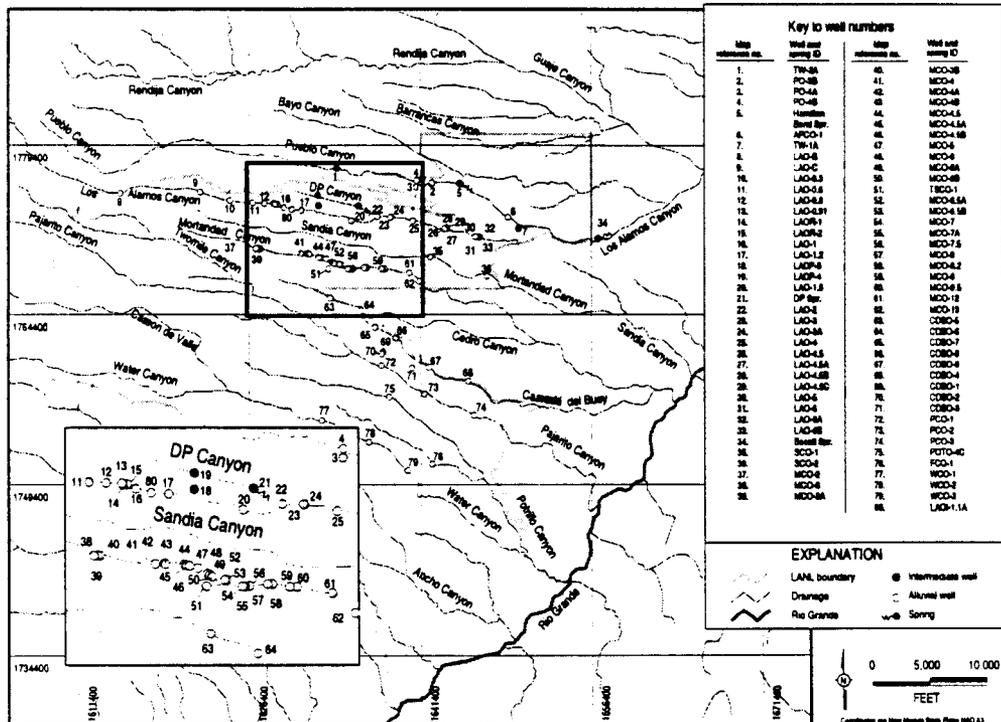


Figure 2. Existing alluvial and intermediate perched water wells and springs.

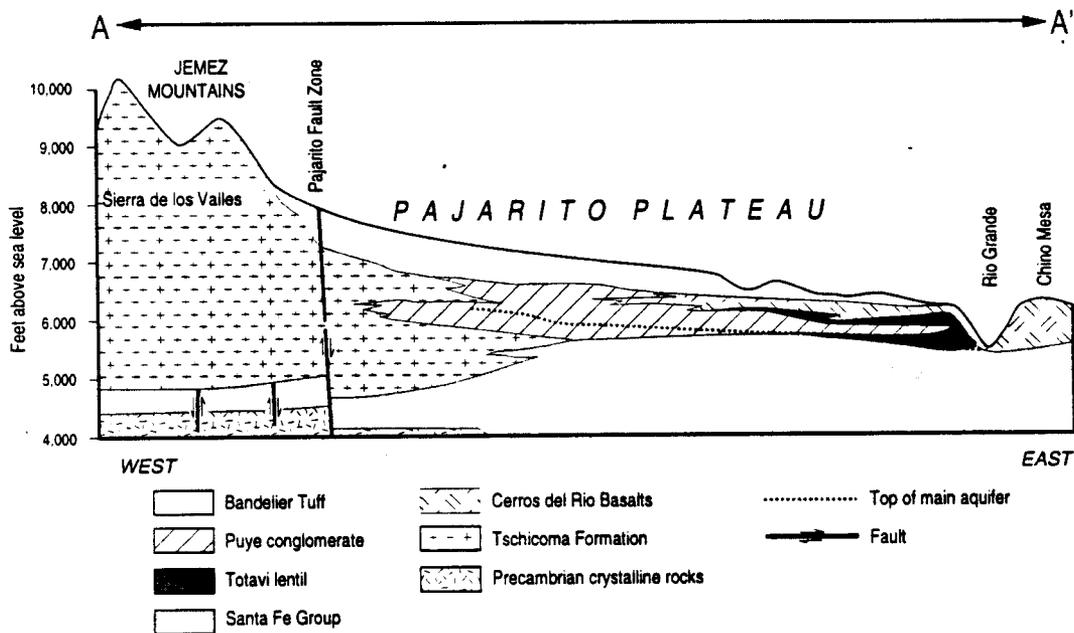
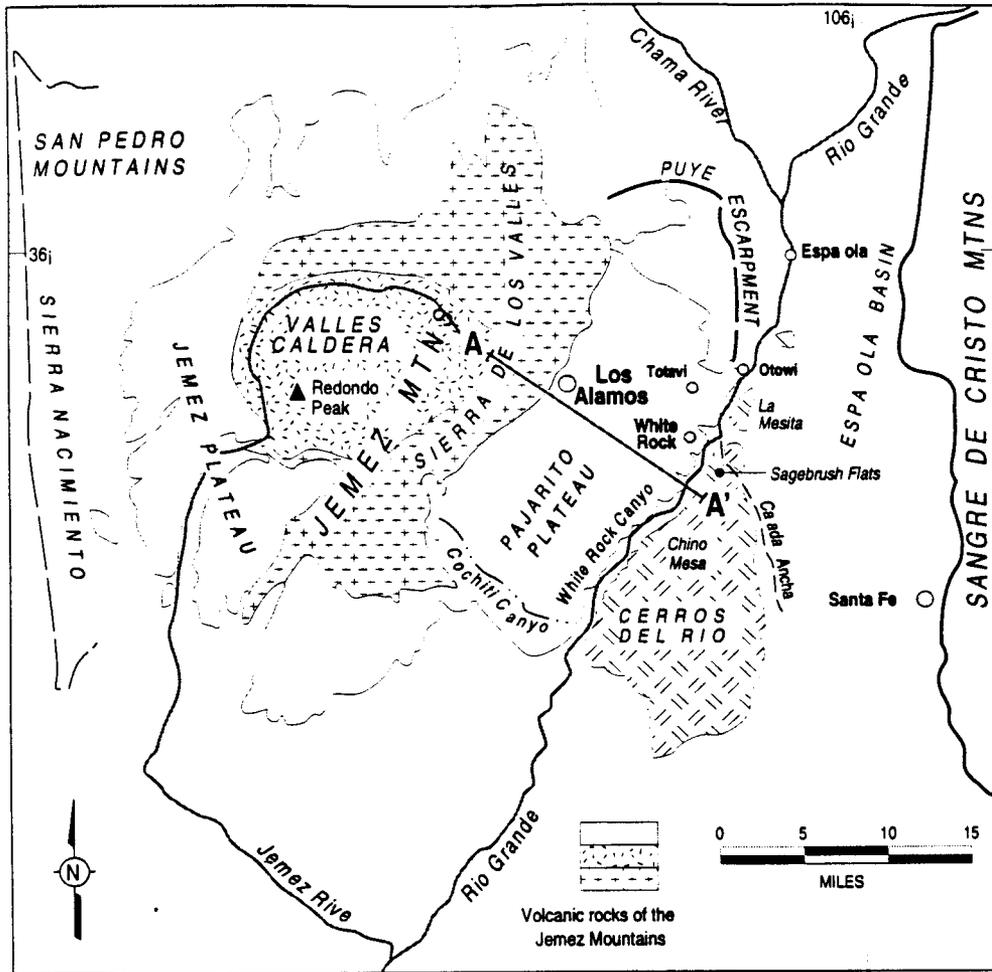


Figure 3. Generalized cross section of Pajarito Plateau.

Low-level tritium studies recently conducted at the Laboratory have revealed detectable levels of tritium in some intermediate perched zone and main aquifer wells. This could indicate either recent recharge or possible contaminant migration from the surface. Because of the cable-tool construction methods used to install these wells, migration of contaminants along the well bore is one of the possible pathways (Tritium Fact Sheet, 1995).

Completion of the proposed project will provide DOE and the Laboratory with:

- The ability to address state and federal regulatory concerns associated with the Laboratory's RCRA permit and HSWA permit, and DOE Order 5400.1.
- A much higher probability of early detection of contaminants.
- A better understanding of contaminant transport mechanisms and recharge pathways.
- A better understanding of the site-wide and site-specific geology and hydrology.
- A much more evenly-distributed groundwater surveillance network that includes wells constructed in accordance with current regulatory requirements.

If the well installation project is not completed, then the following impacts are probable:

- LANL's groundwater monitoring well network will not be able to characterize the impact of DOE operations on groundwater quality as required by DOE Order 5400.1 (per the DOE Tiger Team Assessment, 1991).
- LANL's current understanding of the basic geology and hydrology will not be adequate to address the requirements of the DOE GWPMPP guidance or the requirements of the RCRA Corrective Action studies (per the LANL Self Assessment, 1991).
- LANL's current understanding of the regional and facility-specific geologic and hydrologic characteristics will not be adequate to address the requirements of Task III of the HSWA permit.

C. Potential Problems

Potential problems are defined as those issues that could affect the project's technical scope, budget, and schedule. These include:

1. Access to the desired drilling sites near the Pajarito Fault Zone and completion depth of the Pajarito Fault Zone wells.

No monitoring wells have yet been installed near the fault. Historical data does not exist for this portion of the proposed project. The depth required for drilling is unknown, and drill rig access to these locations may be difficult. Every effort will be made to mitigate these problems by obtaining data from the USGS for additional review of the geological make up and to establish a pathway with the least amount of impact to the existing terrain. An Environmental Assessment will be performed if it is deemed necessary per National Environmental Policy Act (NEPA) requirements. This would be an additional cost and could affect well installation schedules and priority.

2. Well installation on San Ildefonso Pueblo land, National Forest Service land, and National Park Service land.

This project includes installation of two wells on San Ildefonso Pueblo land, three wells on National Forest land, and one well on National Park Service land. There are existing MOU agreements with the San Ildefonso Pueblo for sampling and maintenance of existing wells. However, the addition of new wells may not be covered and may require additional negotiations. Installation of wells on Forest Service and Park Service land may also require negotiations and permit applications. Cost of permits for drilling, access, and time required for approval should be considered.

3. Well installation near potential release sites (PRS).

It is not the intention of this project to place wells within PRSs, yet the issues associated with placement of wells in close proximity to PRSs need to be understood.

Communications with Field Team Leaders in the Environmental Restoration (ER) Project about the nature of PRS contaminants may give rise to the need for protective clothing and additional health and safety personnel. This could affect installation costs and schedules of some wells.

4. Access to secured areas.

It is not the intention of this project to place wells within areas designated as "Secured". If it becomes necessary to do so, escorts for the drilling team and the sampling team will be required.

5. Input from the NMED on well locations and construction specifications.

NMED personnel have been instrumental in the development of well locations and rationale from the onset of this project. It is possible that additional input from the NMED or a change in NMED's priorities will require adjustment of some well locations and/or their final construction. Changes of this nature could affect the completion costs and installation schedules.

6. Impact of new scientific results.

As new information is obtained during the drilling process, the designated purpose of a well may require re-evaluation. If unexpected geologic conditions or contaminants are found, well completion designs may be altered to better monitor that area. More wells may need to be placed in this area for surveillance purposes. This could affect design, cost, and schedule.

D. Preliminary Technical Baseline

The proposed Monitoring Well Installation Project will create a more extensive, multipurpose network to provide a more thorough understanding of water supply issues, potential contamination and contaminant migration, and recharge mechanisms to the aquifer. The proposed wells and their locations were selected to fill known hydrogeologic data gaps, investigate potential contaminant migration, and facilitate compliance with DOE Order 5400.1 and other regulations.

The proposed project includes installation of additional wells to the main aquifer, the intermediate perched groundwater zone, and the alluvial perched groundwater zone (Attachment A). Figure 4 shows a cross section of a generic monitoring well. This project will answer many of the existing questions about hydrogeology and contaminant transport.

1. Network Considerations

Twenty-three wells are proposed to further characterize the main aquifer, which include the evaluation of recharge pathways and potential flow directions, and to monitor water quality and water supply.

Fourteen wells are proposed to complete the intermediate perched groundwater zone. These wells are to determine the extent and character of intermediate perched groundwater zones, to replace existing wells in areas of known contamination, and to investigate areas of possible recharge to the main aquifer.

Fifty wells are proposed to complete the alluvial groundwater zone. These wells are to investigate the extent of alluvial groundwater zones, to replace existing wells in areas of known contamination, and to study the lateral extent of moisture under the mesas.

Nine test wells are to be plugged and abandoned. These wells are both intermediate depth and deep aquifer wells. They were drilled 30 to 50 years ago and are in need of replacement. Replacement wells are included in the proposed project.

Many of the proposed wells are to be located near facilities where potential contamination is an issue of concern (e.g., the waste treatment facilities, material disposal areas, sediment traps, and sewage lagoons). See Attachment A, Proposed Well Locations.

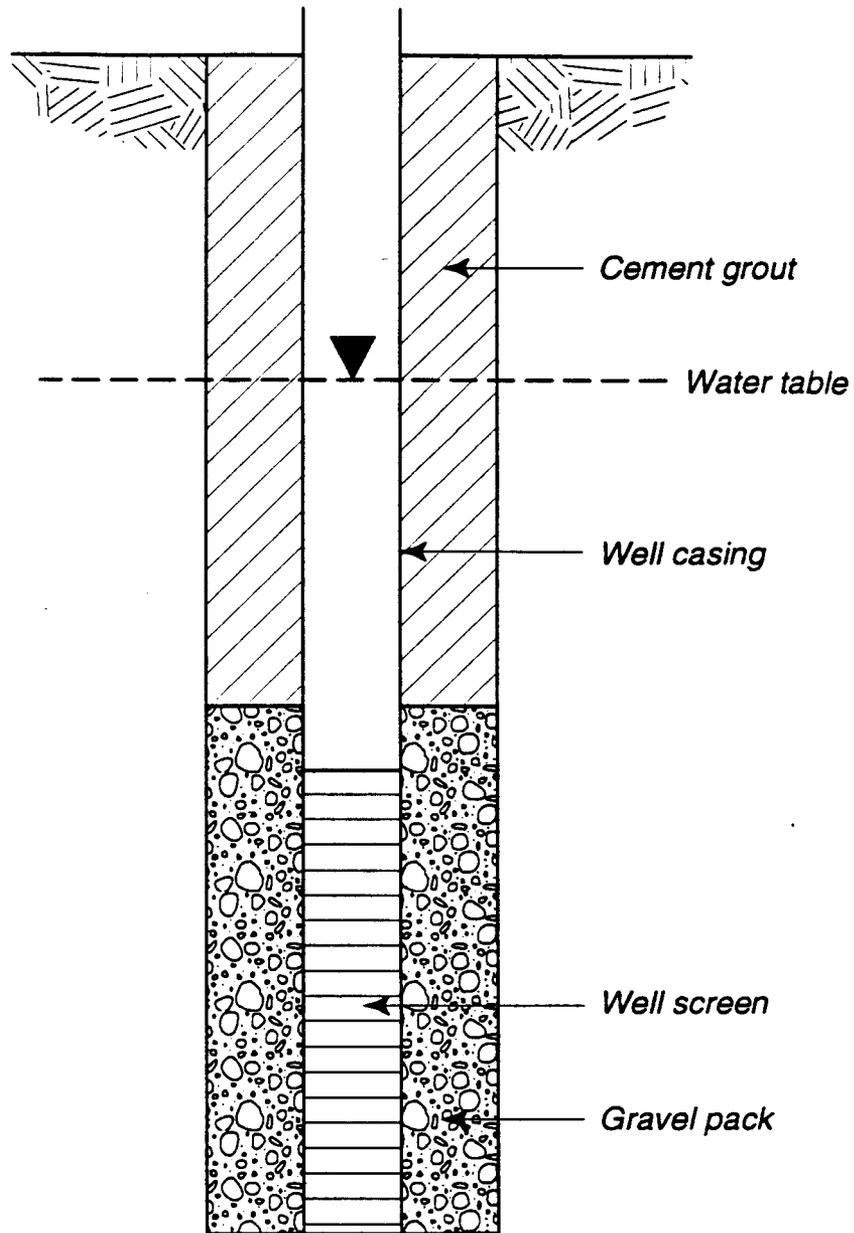


Figure 4. Cross section of generic monitoring well.

Network considerations include:

- Better areal coverage within the Laboratory boundary with more wells in the southern and western portions of the Laboratory.
- Better perimeter coverage outside the Laboratory boundaries with wells upgradient and downgradient as well as to the north and south.
- Additional wells on San Ildefonso Pueblo land to better monitor possible Laboratory impacts on groundwater quality.
- More wells near the Rio Grande to better monitor possible Laboratory impacts on surface water.
- Better coverage near the waste treatment facilities, material disposal areas, sediment traps, and sewage lagoons.

2. *Site-specific Considerations*

Objectives for drilling and sampling differ for each well at each proposed location. The amount of hydrogeologic information varies across the facility and even over small distances. This variability of information means that the objectives of each well must be examined on a case-by-case basis. Drilling and sampling objectives for main, intermediate, and alluvial wells will be designed to provide as much multipurpose hydrogeologic data as reasonably possible.

All new wells installed will become part of the Laboratory's annual environmental surveillance program and will include dedicated equipment for sampling and monitoring water levels. Some of the more shallow alluvial groundwater wells may not require dedicated water level measuring devices.

Construction of each well in the installation project will be dependent upon the main purpose of that well, information obtained during drilling, and whether groundwater is encountered. Design, construction, required materials, and equipment among the wells will differ based on the depth of the well and its purpose (e.g., aquifer testing purposes versus detection of contaminants).

Construction materials will also vary depending on the location (e.g., canyon bottoms where stream flow is likely, versus mesa tops where it is not) and whether a perched groundwater zone is encountered. Perched zones must be adequately sealed before deeper drilling can be continued in order to prevent mixing.

Final completion of the well installation is also dependent upon the main purpose of the well, information obtained during drilling, and whether groundwater is encountered. If intermediate perched groundwater is encountered during the drilling of a main aquifer well, drilling will stop at the perched zone, and the well will be completed as an intermediate well. Then a nearby location will be chosen and the original main aquifer well will be initiated and completed.

E. Site Development Plan

The Monitoring Well Installation Project is included in the LANL Site Development Plan Annual Update 1995. The justification and need for this project are noted accordingly.

F. Capital Assets Management Plan (CAMP)

This project is included in the Laboratory's FY97 Capital Assets Management Plan entitled: Surveillance Well Installation Project (ID ALLA971009), which received a score of 62 in the CAMP. Additional CAMP scoring information is reflected in Attachment B, CAMP Data.

G. Preliminary Schedule

The project development process began in FY95. If funded, the construction and installation will commence in FY01 with completion in FY06. The following reflects a summary schedule of the significant activities and milestones.

<u>Item Description</u>	<u>Type</u>	<u>Start</u>	<u>Complete</u>
1. CDP	Activity	6/95	8/95
2. KD-0	Milestone	8/95	8/95
3. CDR	Activity	9/95	2/97
4. KD-1	Milestone	7/97	7/97
5. Project Authorization	Milestone	10/98	10/98
6. Title I Design	Activity	3/99	9/99
7. KD-2	Milestone	3/00	3/00
8. Title II Design	Activity	3/00	9/00
9. KD-3	Milestone	3/01	3/01
10. Construction/Installation	Activity	3/01	3/06

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See Attachment C, Monitoring Well Installation Project Proposed Schedule, for additional details.

H. Alternative Considerations

There are no alternative possibilities for meeting the objectives of this project. The completion of this project is the only means to capture necessary data to identify and evaluate contaminate migration, water supply, and to take steps to protect the groundwater for LANL and the surrounding areas.

I. Relationship to Other Projects

Groundwater protection is part of many programs at the Laboratory including the ER Project, the Decontamination and Decommissioning Program, RCRA closures, and compliance with the Laboratory's environmental permits (e.g., the NPDES permit).

The major environmental programs currently underway are:

- ER Project, to protect natural resources and restore those damaged by contamination from past and present releases of hazardous substances.
- Decontamination and Decommissioning Program, to manage nonoperational, contaminated facilities, including assessment and cleanup of facilities and equipment not regulated under CERCLA or RCRA.
- RCRA Closures, to regulate hazardous wastes from their generation through disposal by reducing hazardous waste volume and toxicity, and either mitigating or eliminating releases through identification of problem areas and beginning corrective actions.
- NPDES Permit compliance requires permitting of all point-source effluent discharges into the nation's water supply. The Laboratory completed the Sanitary Wastewater Consolidation System Project to eliminate violations of the NPDES permit by constructing a new centralized sanitary wastewater treatment plant. Storm water discharges also fall under the NPDES regulations, as do waste stream characterization, and spill pollution prevention activities.
- Groundwater Discharge Plans are prepared to satisfy requirements of the New Mexico Water Quality Act regarding monitoring the effects of actual and potential releases to groundwater.

All of these efforts involve the monitoring of groundwater. All of these programs are dependent upon the capability to gather additional information and more accurately characterize the groundwater regime at Los Alamos.

J. Scope of Conceptual Design Report (CDR)

This project is included in the LANL construction program as an FY99 project. This document supports a request for DOE authorization to prepare a CDR as part of Key Decision Zero.

The CDR will be prepared in accordance with DOE Order 4700.1 and the DOE/Albuquerque (AL) Program Management Document memorandum dated October 8, 1992, subject "Conceptual Design Guidance Revisions, October, 1992." An Energy Conservation Report will be included in this phase of design. This CDR will be prepared from September 1995 to February 1997, as identified in the proposed preliminary project schedule (see Attachment C).

K. Proposed Cost Basis and Breakdown

The following cost estimate is based on well drilling experience at LANL and engineering estimates for installing and equipping monitoring wells. The estimated costs for new and replacement wells to completely upgrade LANL's existing monitoring well network is \$49.8 million. It includes two intermediate zone wells proposed by the ER Project. This cost estimate provides a rough order magnitude of cost and does not represent the cost baseline for this well installation project. The cost baseline will be established with the completion of the CDR. See Attachment D for Other Project Cost (OPC) Breakdown.

Monitoring Well Installation Project—Summary Cost Estimate (\$000)

Item Description	Subtotal	Total Cost
A. Design & Management Costs		\$4,133
1. Facility Design Costs @9% of ECC	\$2,110	
2. Facility Project Management @ 8.5% of ECC	\$2,023	
B. Estimated Construction Costs (ECC)		\$23,900
1. Install 23 Test Wells to Main Aquifer	\$17,590	
2. Plug 9 existing wells (Replacement Wells)	\$860	
3. Install 14 Test Wells to Intermediate Zones	\$4,015	
4. Install 50 Test Wells to Shallow Alluvium	\$1,435	
C. Mat Tax on Contracts and Purchase Orders		\$700
	Subtotal	\$28,733
D. Escalation @ 33.2% (7/95-10/03)		\$9,539
	Subtotal	\$38,272
E. Contingency @ 25% of Subtotal		\$9,568
Total Estimated Construction Costs (TEC)		\$47,840
F. Other Project Costs (OPC)		\$1,570
G. Contingency on OPC @ 25%		\$393
Total Project Cost (TPC)		\$49,802
	Round To:	\$49,800

L. Preliminary Funding Profile (\$000)

<u>Fiscal Year</u>	<u>Funding</u>
FY95	325
FY96	738
FY97	438
FY98	225
FY99	707
FY00	766
FY01	9,283
FY02	9,282
FY03	9,282
FY04	9,282
FY05	9,282
FY06	194
TOTAL	49,800

M. Preliminary Cost Estimate (\$000)

ITEMS	FISCAL YEARS												TOTAL	
	95	96	97	98	99	00	01	02	03	04	05	06		
ENGINEERING														
CDP/SFDS	90													\$90
CDR/UPDATES	60	255	35											\$350
CDR REVIEWS	5	15	5											\$25
DESIGN CRITERIA			15	45										\$60
A/E SELECTION				35										\$35
VE STUDY		70												\$70
ICE REVIEW			25											\$25
PROJECT MANAGEMENT														
PMP/QA PLAN				40										\$40
SCHEDULE DEVELOPMENT		5	10											\$15
CPDS		10												\$10
STATUS REPORTS		10	5											\$15
JUSTIFICATION/VALIDATION	5	10	10	5										\$30
GENERAL PM/TM	50	95	95	60										\$300
SAFETY ACTIVITIES														
PHA		15												\$15
SAFETY REVIEW			10			5						10		\$25
ENVIRONMENTAL														
EA	30	45	45	20	5	5								\$150
BIO/ARCH STUDIES	10	30	25											\$65
SMWU	10	10	10	10	5	5								\$50
PRE-OPERATIONAL SURVEY					10									\$10
SWPP PLAN		20	20	5										\$45
START UP														
OPERATING PLANS/PROC.												30		\$30
ACCEPTANCE TESTING												15		\$15
ORR												60		\$60
OPERATOR TRAINING/CERT.												25		\$25
USER MOVE IN												15		\$15
OTHER PROJECT COST (OPC)	\$260	\$590	\$350	\$180	\$20	\$15							\$155	\$1,570
OPC CONTINGENCY @ 25%	\$65	\$148	\$88	\$45	\$5	\$4							\$39	\$393
TOTAL OPC	\$325	\$738	\$438	\$225	\$25	\$19							\$194	\$1,963
TOTAL ESTIMATED COST					\$682	\$747	\$9,283	\$9,282	\$9,282	\$9,282	\$9,282		\$47,840	
TOTAL PROJECT COST*	\$325	\$738	\$438	\$225	\$707	\$766	\$9,283	\$9,282	\$9,282	\$9,282	\$9,282	\$194	\$49,800	

*Rounded

N. Quality Assurance

The Laboratory recognizes the significance of the quality-related goals as defined by DOE Order 5700.6C, Quality Assurance, DOE Order 5480.19, Conduct of Operations Requirements for DOE Facilities, and the project management-related goals of DOE Order 4700.1/4700.5, Project Management System, as demonstrated by issuance of Director's Policy 110. Furthermore, the Laboratory has established the Quality Assurance Management Plan, PRD110.01.0 to establish a Laboratory quality assurance program that meets the ten criteria of DOE Order 5700.6C. To ensure compliance with DOE requirements, the Laboratory has prepared and is administering three documents that control Quality Assurance at the Laboratory. These documents are the *Quality Assurance Management Plan*, *Quality Assurance Guidebook*, and *Quality Assurance Reference Manual*. Administration of these documents is performed by the Quality Assurance Support Group/Laboratory and Policy Office. The policies and procedures defined in the documents defined above will be incorporated in the Construction Plan for the Monitoring Well Installation Project. A formalized Quality Assurance Management Plan will be included in the Program Management Plan for the project.

O. Environmental Compliance/Considerations

The Monitoring Well Installation Project will not involve routine emissions of gases or solids as part of its normal operations. Rather, small samples of water will be taken periodically for analysis. Sample preparation, analysis, and subsequent disposal will be in accordance with all applicable permits, regulations, laws, and standard operating procedures. Some small water discharges to the environment will be required to purge wells for sampling.

During the construction process, work areas will be monitored and controlled to provide a safe and healthful work environment that meets all applicable Occupational Safety and Health Act, DOE, and other standards. Discharge of well cuttings and fluids will be controlled in compliance with applicable regulations.

Installation of the wells is for gathering hydrogeologic data and for surveillance purposes. A great deal of geologic information will be gathered during the drilling and installation process. The drilling cores are of great interest in characterizing the hydrogeology of the area, and will be routinely analyzed and sampled. If trace contamination is detected, the samples and cores will be disposed of in accordance with applicable state and federal regulations.

Site considerations include provisions for access so as not to unduly disturb the environment. Applicable checklists will be submitted (see following section) addressing such concerns as archeological and historical assessment, NPDES permit, RCRA permit, CERCLA, and others.

P. DOE Environmental Checklist (DEC)

An Environment, Safety, and Health (ESH) project identification number (ID), 16810, was initiated on July 7, 1995. This will result in the required checklists that will support the DOE Environmental Checklist (DEC) which will be developed and completed during the preparation of the CDR. The ESH Questionnaire is currently underway for the well installation project.

Q. Safety Compliance/Considerations

Based on preliminary consultation with LANL's Facility Risk Management Group (ESH-3), the level of safety documentation will most likely be a preliminary hazard assessment. This will probably cause the project to fall under "Other Industrial Facilities", based on DOE Standard (EM) 5502.94, Hazard Baseline Documentation. This will be confirmed with the completion of the ESH checklist.

The design criteria will require compliance with DOE Order 6430.1A, General Design Criteria; the Uniform Building Code; the Uniform Mechanical Code; the National Electric Code; the Uniform Plumbing Code; and the National Fire Codes.

R. Value Engineering

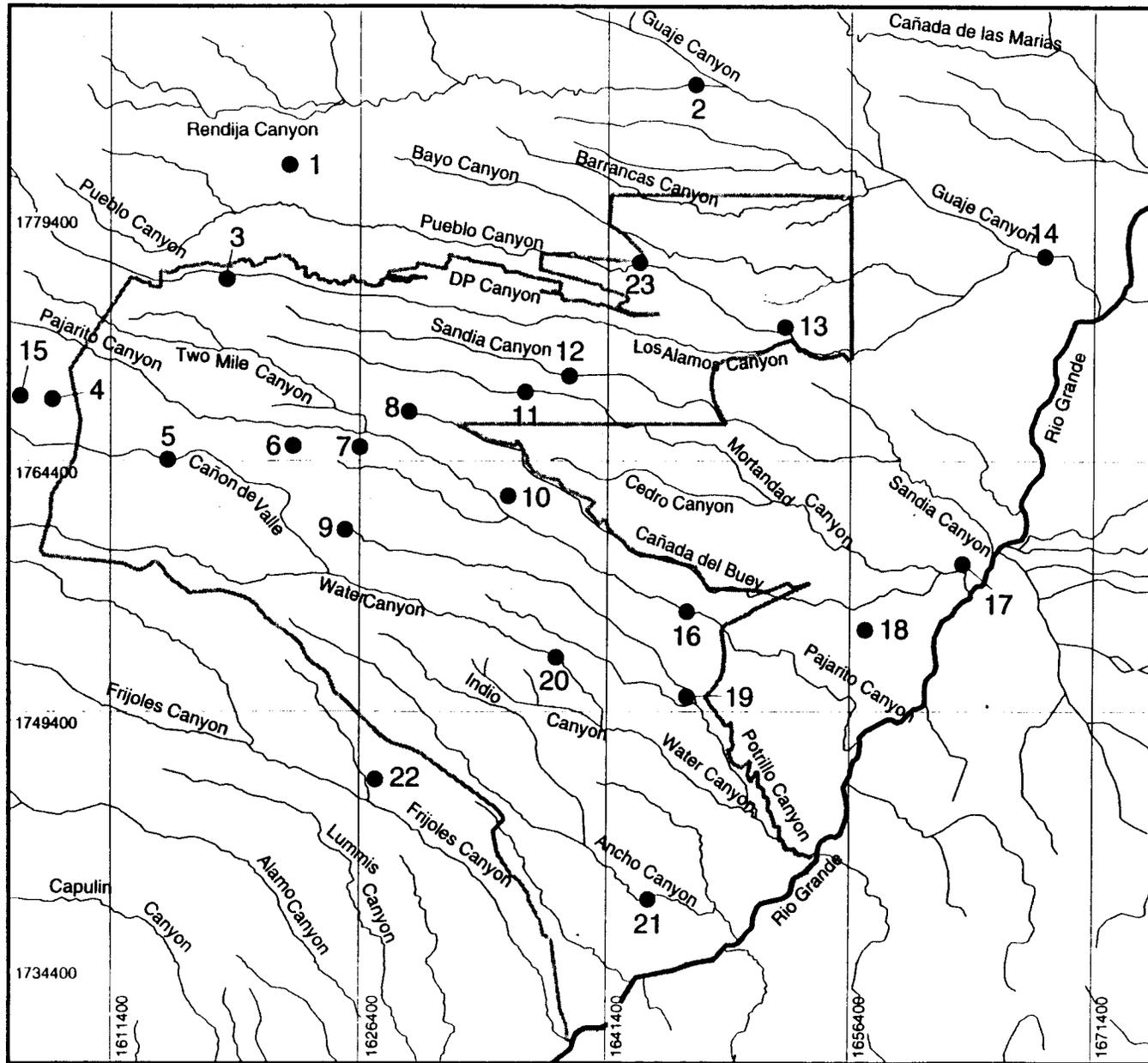
As required by DOE Order 4010.1, Preamble - Value Engineering, a value engineering study will be performed on this project to identify possible areas of cost savings before Title I begins. This study will review the design proposed in the CDR and offer cost savings alternatives where applicable.

S. Security Considerations

It is not the intention of this project to place wells within areas designated as "Secured". If it becomes necessary to do so, escorts for the drilling team will be provided.

When wells are completed, they will be fitted with securely-locked covers and access ports. They will be marked and protected in such a manner to preclude accidental damage by vehicles.

ATTACHMENT A
Proposed Well Locations

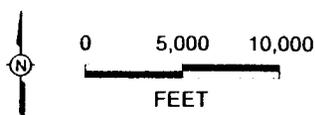


Key to well locations

Map reference no.	Proposed well ID
1	PLATS-1
2	PGC-1
3	PLAC-1
4	PPFZ-1
5	PWC-1
6	PPC-1
7	PPC-2
8	PTSC-1
9	PPOC-1
10	PPC-3
11	PMC-1
12	PSC-1
13	PPBC-1
14	PLAC-2
15	PPFZ-2
16	PPC-4
17	PMC-2
18	PCDB-1
19	PPOC-2
20	PWC-2
21	PAC-1
22	PBHQ
23	PBC-1

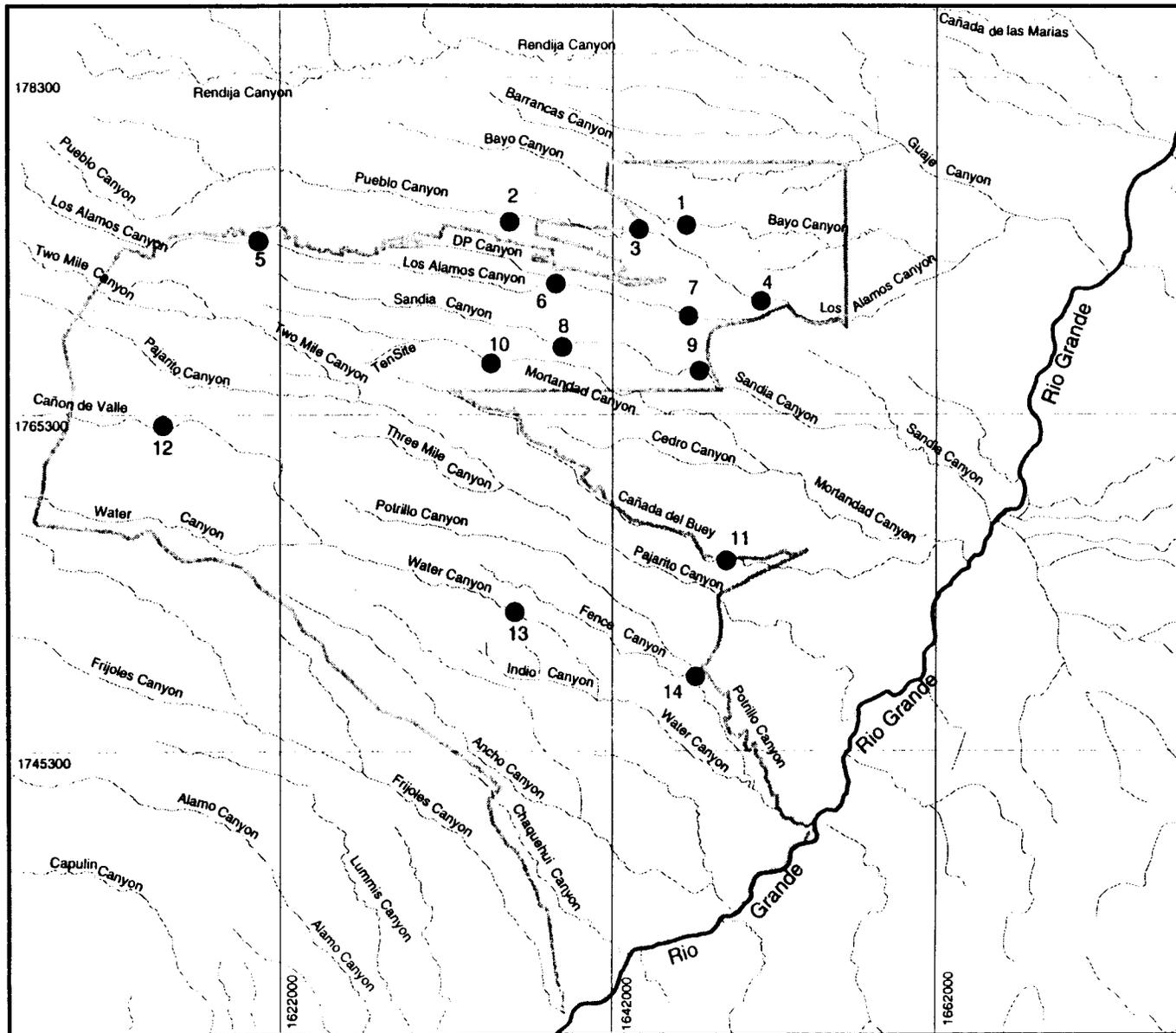
EXPLANATION

- LANL boundary
- Drainage
- Rio Grande
- Proposed well



Coordinates are New Mexico State Plane NAD 83

Proposed main aquifer well locations.

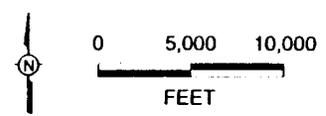


Key to well locations

Map reference no.	Proposed well ID
1	PIBC-1
2	PIPBC-1
3	PIPBC-2
4	PIPBC-3
5	PILC-1
6	PILC-2
7	PILC-3
8	PISC-1
9	PISC-2
10	PIMC-1
11	PIPC-1
12	PICDV-1
13	PIWC-1
14	PIPOC-1

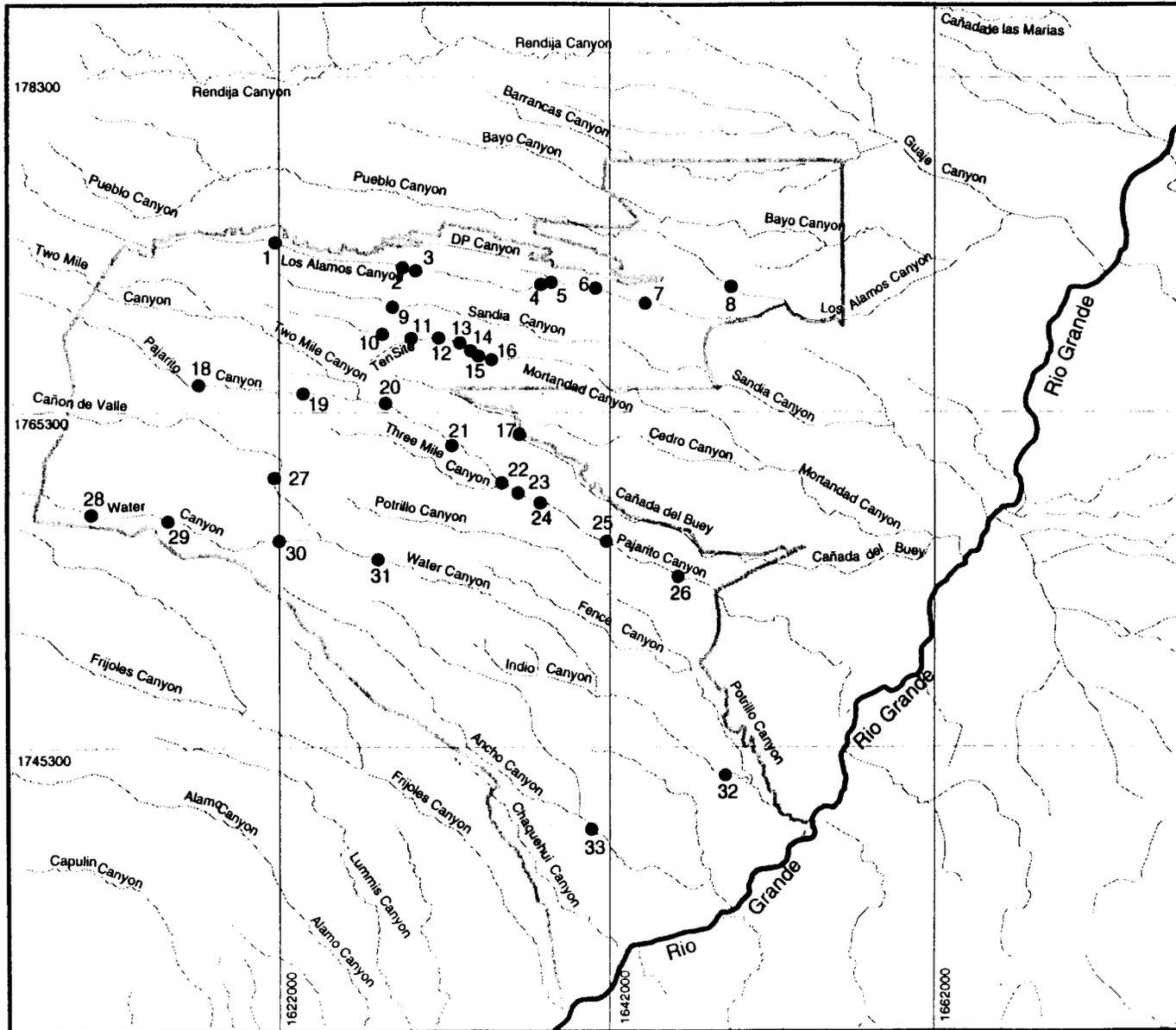
EXPLANATION

- LANL boundary
- Drainage
- Rio Grande
- Proposed well



Coordinates are New Mexico State Plane NAD 83

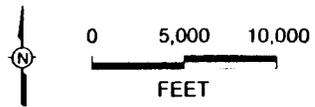
Proposed intermediate aquifer well locations.



Map reference no.	Proposed well ID
1	PALC-1
2	PALC-3
3	PALC-3 through 3E
4	PALC-4
5	PALC-5
6	PALC-6
7	PALC-7
8	PAPBC-1
9	PASC-1 through 1E
10	PAMC-1
11	PAMC-2 through 2E
12	PAMC-3
13	PAMC-4
14	PAMC-5
15	PAMC-6
16	PAMC-7
17	PACDB-1 through 1E
18	PAPC-1
19	PAPC-2
20	PAPC-3
21	PAPC-4
22	PAPC-5 through 5E
23	PAPC-6
24	PAPC-7
25	PAPC-8
26	PAPC-9
27	PACDV-1
28	PAWC-1
29	PAWC-2
30	PAWC-3
31	PAWC-4
32	PAWC-5
33	PAAC-1

EXPLANATION

- LANL boundary
- Drainage
- Rio Grande
- Proposed well



Coordinates are New Mexico State Plane NAD 83

Proposed alluvial aquifer well locations.



ATTACHMENT B
Capital Assets Management Plan

Project Title: SURVEILLANCE WELL INSTALLATION PROJECT				
B&R Code: GB01		Rev #: 0		FY: 1999
Project Id #: ALLA971009			FUDS:	
	Major Categories			
Subcategories	H&S	ER/WM	S&S	M&I
Compliance with Orders etc.				
Technological Base (R&D)		60		
Industrial Hygiene				
Industrial Safety				
Fire Protection				
Health Physics				
Criticality				40
Infrastructure				
Liquid and Hazardous Waste				
Solid and Hazardous Waste				
Airborne Pollutants				
Waste Minimization				
Environmental Restoration				
Corrective Activities				
SNM Accountability				
Protection of SNM				
Protection of Classified Information, etc.				
Protection of Property from Theft & Loss etc.				
Protection from Hostile Action				
Business Benefits				
Mission Capability, Capacity, & Quality				
Asset Condition				
National Business Strategies/Partnerships				
Highest of Each Subcategory	20	60	20	40
PROJECT RATING:				62
Final Project Rating				62
Note: 20 is a Default Rating				
CAMP Rating Group				2/24/95
Rated By		Ext		Date Rated
Reviewed By		Ext		Date Reviewed
Applicable Regulations or Policies				
Additional Information & Affected Projects				

CAMP Project Ratings

Projects scheduled for 1997 through 2001 were rated on four Major Categories according to DOE Order 4320.2 Chapter IV. The rating criteria score descriptions are shown below.

Major Category Rating Criteria				
Score	I. Health & Safety	II. Environmental & Waste Management	III. Safeguards & Security	IV. Mission & Investment
20	Minor incidents slightly likely	Consistently in compliance; violations extremely unlikely	Routinely secure with acceptable risk	Adequate with acceptable risk
30	Minor incidents moderately likely; serious incidents unlikely	Routinely in compliance; low-impact violations are the exception; no off-site concern	Routinely secure with some minor problems	Adequate with some minor problems
40	Minor incidents moderately likely; serious incidents slightly likely	Occasional violations of moderate consequence	Modest threat to classified information, technology, and parts (moderately likely)	Adequacy in question with many minor problems
50	Minor incidents likely; serious incidents moderately likely	Frequent problems of moderate consequence; occasional serious problems; moderate off-site concern	Serious threat to classified information, technology, property and parts (moderately likely)	Mission accomplishment at moderate risk
60	Serious incidents likely; fatalities unlikely	Consistently have problems of moderate consequence; frequent serious problems	Serious threat to SNM/tritium or personnel (moderately likely)	Mission accomplishment at high risk
70	Serious incidents highly likely; fatalities moderately likely	Highly likely large and uncontrolled contamination/release to off-site areas with lasting serious environmental impact	Extreme threat to SNM or personnel (moderately likely); extreme threat to classified information, technology, property, and parts (highly likely)	Critical/strategic mission accomplishment severely impacted or shut down
80	Highly likely life-threatening situation		Extreme threat to SNM or personnel (highly likely)	

ATTACHMENT C

Monitoring Well Installation Project

Proposed Schedule

ATTACHMENT D

Other Project Cost (OPC) Breakdown

Other Project Cost (OPC) Breakdown

<u>Item</u>	<u>SUB-COST</u>	<u>TOTAL</u>
CDR		\$465
CDP/SFDS	\$90	
CDR	\$350	
CDR Reviews	\$25	
NEPA		\$360
EA	\$150	
BIO/ARCH STUDIES	\$65	
SWMU INVESTIGATION	\$50	
PRE-OPERATIONAL SURVEY	\$10	
PHA	\$15	
STORMWATER POLLUTION PREVENTION PLAN	\$45	
SAFETY REVIEW	\$25	
OTHER PROJECT COSTS		\$745
DESIGN CRITERIA	\$60	
A/E SELECTION	\$35	
VE STUDY	\$70	
ICE REVIEW	\$25	
PMP/QA PLAN	\$40	
SCHEDULE DEVELOPMENT	\$15	
CPDS	\$10	
STATUS REPORTS	\$15	
JUSTIFICATION/VALIDATION	\$30	
GENERAL PROJECT MANAGEMENT	\$300	
OPERATING PLANS/PROCEDURES	\$30	
ACCEPTANCE TESTING	\$15	
OPERATIONAL READINESS REVIEW	\$60	
OPERATOR TRAINING/CERTIFICATION	\$25	
USER MOVE IN	\$15	
GRAND TOTAL		\$1,570

ATTACHMENT E

References

References

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