APPENDIX A PUBLIC LAW 105-119

This appendix contains the text of Public Law 105-119, which was passed by Congress on November 26, 1997. Public Law 105-119, the "Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Act," 1998 (section 632, 42 United States Code [U.S.C.] §§2391; "the Act"), directs the DOE to convey or transfer parcels of DOE land in the vicinity of LANL to the Incorporated County of Los Alamos, New Mexico, and the Secretary of the Interior, in trust for the Pueblo of San Ildefonso. The Act sets forth the criteria, processes and dates by which the tracts will be selected, titles to the tracts reviewed, environmental issues evaluated, and decisions made as to the allocation of the tracts between the two recipients defined in the Act.

APPENDIX A PUBLIC LAW 105-119

H.R.2267
Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Act, 1998 (Enrolled Bill [Sent to President])

SEC. 632. (a) IN GENERAL- The Secretary of Energy shall--

(1) convey, without consideration, to the Incorporated County of Los Alamos, New Mexico (in this section referred to as the 'County'), or to the designee of the County, fee title to the parcels of land that are allocated for conveyance to the County in the agreement under subsection (e); and

(2) transfer to the Secretary of the Interior, in trust for the Pueblo of San Ildefonso (in this section referred to as the 'Pueblo'), administrative jurisdiction over the parcels that are allocated for transfer to the Secretary of the Interior in such agreement.

(b) PRELIMINARY IDENTIFICATION OF PARCELS OF LAND FOR CONVEYANCE OR TRANSFER- (1) Not later than 90 days after the date of enactment of this Act, the Secretary of Energy shall submit to the congressional defense committees a report identifying the parcels of land under the jurisdiction or administrative control of the Secretary at or in the vicinity of Los Alamos National Laboratory that are suitable for conveyance or transfer under this section.

(2) A parcel is suitable for conveyance or transfer for purposes of paragraph (1) if the parcel--

(A) is not required to meet the national security mission of the Department of Energy or will not be required for that purpose before the end of the 10-year period beginning on the date of enactment of this Act;

(B) is likely to be conveyable or transferable, as the case may be, under this section not later than the end of such period; and

(C) is suitable for use for a purpose specified in sub-section (h).

(c) REVIEW OF TITLE- (1) Not later than one year after the date of enactment of this Act, the Secretary shall submit to the congressional defense committees a report setting forth the results of a title search on each parcel of land identified as suitable for conveyance or transfer under subsection (b), including an analysis of any claims against or other impairments to the fee title to each such parcel.

(2) In the period beginning on the date of the completion of the title search with respect to a parcel under paragraph (1) and ending on the date of the submittal of the report under that paragraph, the Secretary shall take appropriate actions to resolve the claims against or other impairments, if any, to fee title that are identified with respect to the parcel in the title search.

(d) ENVIRONMENTAL RESTORATION- (1) Not later than 21 months after the date of enactment of this Act, the Secretary shall--

(A) identify the environmental restoration or remediation, if any, that is required with respect to each parcel of land identified under subsection (b) to which the United States has fee title;

(B) carry out any review of the environmental impact of the conveyance or transfer of each such parcel that is required under the provisions of the *National Environmental Policy Act* of 1969 (42 U.S.C. 4321 *et seq*.); and

(C) submit to Congress a report setting forth the results of the activities under subparagraphs (A) and (B).

(2) If the Secretary determines under paragraph (1) that a parcel described in paragraph (1)(A) requires environmental restoration or remediation, the Secretary shall, to the maximum extent practicable, complete the environmental restoration or remediation of the parcel not later than 10 years after the date of enactment of this Act.

(e) AGREEMENT FOR ALLOCATION OF PARCELS- As soon as practicable after completing the review of titles to parcels of land under subsection (c), but not later than 90 days after the submittal of the report under subsection (d)(1)(C), the County and the Pueblo shall submit to the Secretary an agreement between the County and the Pueblo which allocates between the County and the Pueblo the parcels identified for conveyance or transfer under subsection (b).

(f) PLAN FOR CONVEYANCE AND TRANSFER- (1) Not later than 90 days after the date of the submittal to the Secretary of Energy of the agreement under subsection (e), the Secretary shall submit to the congressional defense committees a plan for conveying or transferring parcels of land under this section in accordance with the allocation specified in the agreement.

(2) The plan under paragraph (1) shall provide for the completion of the conveyance or transfer of parcels under this section not later than 9 months after the date of the submittal of the plan under that paragraph.

(g) CONVEYANCE OR TRANSFER- (1) Subject to paragraphs (2) and (3), the Secretary shall convey or transfer parcels of land in accordance with the allocation specified in the agreement submitted to the Secretary under subsection (e).

(2) In the case of a parcel allocated under the agreement that is not available for conveyance or transfer in accordance with the requirement in subsection (f)(2) by reason of its requirement to meet the national security mission of the Department, the Secretary shall convey or transfer the parcel, as the case may be, when the parcel is no longer required for that purpose.

(3)(A) In the case of a parcel allocated under the agreement that is not available for conveyance or transfer in accordance with such requirement by reason of requirements for environmental restoration or remediation, the Secretary shall convey or transfer the parcel, as the case may be, upon the completion of the environmental restoration or remediation that is required with respect to the parcel.

(B) If the Secretary determines that environmental restoration or remediation cannot reasonably be expected to be completed with respect to a parcel by the end of the 10-year period beginning on the date of enactment of this Act, the Secretary shall not convey or transfer the parcel under this section.

(h) USE OF CONVEYED OR TRANSFERRED LAND- The parcels of land conveyed or transferred under this section shall be used for historic, cultural, or environmental preservation purposes, economic diversification purposes, or community self-sufficiency purposes.

(i) TREATMENT OF CONVEYANCES AND TRANSFERS- (1) The purpose of the conveyances and transfers under this section is to fulfill the obligations of the United States with respect to Los Alamos National Laboratory, New Mexico, under sections 91 and 94 of the *Atomic Energy Community Act* of 1955 (42 U.S.C. 2391, 2394).

(2) Upon the completion of the conveyance or transfer of the parcels of land available for conveyance or transfer under this section, the Secretary shall make no further payments with respect to Los Alamos National Laboratory under section 91 or section 94 of the *Atomic Energy Community Act* of 1955.

(j) REPEAL OF SUPERSEDED PROVISION- In the event of the enactment of the *National Defense Authorization Act* for Fiscal Year 1998 by reason of the approval of the President of the conference report to accompany the bill (H.R. 1119) of the 105th Congress, section 3165 of such Act is repealed.

APPENDIX B ENVIRONMENTAL RESTORATION DATA

This appendix contains a brief summary of the "Environmental Restoration Report to Support Land Conveyance and Transfer Under Public Law 105-119," Public Information (Environmental Restoration Report) (DOE 1999b). This report is intended to give Congress and DOE decisionmakers information about the potential environmental restoration and remediation activities that may be undertaken for the subject land tracts. The Environmental Restoration Report contains the best information available at this time regarding any contamination that may be present on these tracts, anticipated cleanup activities and predictions of costs, duration, and waste volumes.

APPENDIX B ENVIRONMENTAL RESTORATION DATA

In parallel with the completion of the Final CT EIS, the DOE is completing the *Environmental Restoration Report to Support Land Conveyance and Transfer Under Public Law 105-119*, Public Information (Environmental Restoration Report) (DOE 1999b). The mandated completion time for both documents is August 26, 1999. This appendix briefly summarizes the Environmental Restoration Report. A greater level of detail is presented in the actual Report, which may be reviewed at the LANL Outreach Center and Reading Room, 1350 Central Avenue, Suite 101, MS-C314, Los Alamos, New Mexico 87544; and the Technical Vocational Institute, Montoya Campus Library, 4700 Morris NE, Albuquerque, New Mexico 87111. A copy of the Environmental Restoration Report may be obtained by contacting Mr. Ted Taylor in writing at 528 35th Street, Los Alamos, New Mexico 87544, or by telephone at (505) 665-7203.

The Environmental Restoration Report is intended to give Congress and DOE decisionmakers information about the potential environmental restoration and remediation activities (including decontamination and decommissioning [D&D], and demolition of site structures[1]) that may be undertaken for 9 of the 10 subject tracts. (Note: one of the 10 subject tracts, the Miscellaneous Manhattan Monument Tract, is not known to require any environmental restoration or remediation.) Information presented in the Environmental Restoration Report is based upon current knowledge of actual, suspected, or potential contamination on the subject tracts. Some of the tracts have not yet undergone field investigation and characterization for site contamination or may have been only partially investigated and characterized; thus, no information or only very limited information may be known at this time about a particular tract's actual contaminant condition. Additionally, the DOE's preliminary set of recommended cleanup activities will undergo public input and a review and approval process by the administrative authority, namely, the New Mexico Environment Department (NMED), the DOE, or both. As such, the information contained in the Environmental Restoration Report and in this appendix has a great level of uncertainty associated with it. However, it is the best information available at this time and, together with the information contained with the CT EIS, will serve the DOE decisionmakers in their decisionmaking efforts regarding the conveyance and transfer of the 10 subject tracts. Additionally, this information will serve to help with determining funding allocations and in making various other auxiliary decisions.

More site information will be generated as sampling and characterization progress and will result in refinements to current estimates of, for example, cleanup costs, cleanup techniques, and waste volumes. Some tracts already have undergone extensive site investigation and remediation; other tracts are in the beginning stages of the process, and little site investigation or work has occurred. The administrative authority review and approval process may result in changes to final plans and the actual amount of wastes generated by the cleanup activities. Ultimate costs of the cleanup would be adjusted accordingly. Site cleanup of the entire LANL facility is necessary as part of the DOE's national environmental remediation strategy for DOE facilities; however, the environmental restoration activities required on these subject tracts may be expedited in order for them to be considered suitable for conveyance or transfer by the end of the 10-year schedule required by Public Law (PL) 105-119 (the Act), which concludes November 26, 2007. In general, the projected environmental restoration and remediation activities are the same as those discussed in the DOE's plan, *Accelerating Cleanup: Paths to Closure* (DOE 1998c). Changes to this plan or the

[1] The term "structures" is used in the Environmental Restoration Report to denote all manmade construction items, including such items as permanent buildings, portable storage units, water supply wells, manholes, etc., that have at some time been assigned a LANL structure number. No attempt to verify actual structure ownership has been made. In this sense, the term is used much more broadly in the Environmental Restoration Report than in the CT EIS. The CT EIS refers to "structures" to mean a more selective set of manmade construction items such as permanent buildings or other constructed items using concrete pads for their footings. Where knowledge is readily available, an attempt to identify only DOE-owned site buildings also has been made in the CT EIS.

development of other, similar plans may be necessary to address the final site environmental restoration actions decided upon for the subject tracts.

The Environmental Restoration Report states that there are approximately 200 potential release sites (PRSs), approximately 152 structures, and 7 individual canyons within the 10 subject tracts. Some of the canyons have reaches that cross more than one of the tracts. The numbers of PRSs per tract range from none (for the Miscellaneous Manhattan Monument Tract) to 154 (for the Technical Area [TA] 21 Tract), and the numbers of structures range from one (Miscellaneous Site 22 Tract) to 125 (the TA 21 Tract). The Rendija Canyon, White Rock, DP Road, and Airport Tracts each have a single canyon floodplain within their borders; three other tracts have dual canyon floodplains within their boundaries: the TA 21, White Rock Y, and TA 74 Tracts. There are two tracts that have no PRSs recommended for remediation, no canyon systems recommended for restoration, and no structure for which decommissioning is projected: the Miscellaneous Manhattan Monument Tract and the White Rock Tract (as considered for cultural preservation and commercial development as the contemplated land use). The remaining tracts all require some level of cleanup activities, including the White Rock Tract, should residential and commercial development subsequently be considered as land uses.

Three PRS cleanup techniques are considered in Environmental Restoration Report: removal, in situ treatment, and in situ containment. Two decommissioning techniques are projected: removal of hazardous materials and complete demolition. Canyon system cleanups are all removal of contaminated soils. It is estimated that for seven of the nine tracts requiring cleanup, the necessary cleanup activities are fairly straightforward and can be completed in a few years, assuming the administrative authorities approve the recommended cleanup activities. Cleanup of the Airport Tract, DP Road Tract, and the TA 21 Tract may require a far longer period of time due to the complexity of the cleanup activities required of those sites, and in some cases, a degree of uncertainty regarding the technical feasibility of recommended cleanup activities. Costs for cleanup are expected to be greatest for these two tracts as well.

The Environmental Restoration Report bases most of its cleanup information projections upon the cleanup of PRSs. Six types of PRSs are identified in the report:

- **Surface Unit:** Areas having known or potential releases that are confined primarily to surface soils.
- **Subsurface Unit:** Areas having known or potential releases that reach deeper than surface soils. These units include underground seepage pits, dry wells, acid pits, etc.
- **Material Disposal Areas (MDAs):** Areas for the disposal of radioactive and/or other types of wastes. Area G at TA 54, for the disposal of low-level radioactive wastes, is an example of an active MDA.
- **Outfall:** An area whose contamination resulted from discharges from an existing or former wastewater outfall.
- **Construction Debris:** Rubble from standard construction activities, such as bricks, mortar, concrete blocks, drywall, ceiling tiles, etc.
- **Incinerators:** Areas of potential contamination resulting from stack emissions. These PRSs include incinerators and filter houses that will require the assessment of soils for elevated contamination levels.

The Environmental Restoration Report also discusses canyon systems within each tract. Canyon systems represent the channel created or followed by storm waters and outfall effluents, either now

or in the past. Additionally, the Environmental Restoration Report discusses the decommissioning, including demolition or razing, of site structures that have been associated with LANL operations. Structures are not limited to just buildings but include items such as electric substations, underground liquid storage tanks, cooling towers, etc. These have been categorized in the Environmental Restoration Report as one of six structure types (Types I through VI), based on the estimated cost per unit area anticipated for their decommissioning. The greater costs are typically associated with such things as the complexity of contaminant removal and/or difficulty of demolition.

The Environmental Restoration Report provides estimates of waste volumes for the cleanup of PRSs; some estimates for waste volumes to be generated by the decommissioning, including demolition of structures; and some estimates for waste generation resulting from cleanup of canyon systems. Projected waste volumes are provided with subtotals of volumes given by type of waste to be generated. Eight waste types are discussed: solid wastes (noncontaminated with either hazardous or radioactive wastes); hazardous wastes; low-level radioactive wastes (LLW); transuranic (TRU) wastes; mixed wastes (having both hazardous waste and radioactive waste components); asbestos wastes; polychlorinated biphenyl (PCB) wastes; and mixed PCB wastes (having both PCB and hazardous waste components). Definitions for these wastes can be found in either EPA regulations in Title 40 of the Code of Federal Regulations (CFR) (for example, solid waste and hazardous waste) or in DOE Order 5820.2A. Some of these terms also are included in Chapter 22, the glossary for this CT EIS.

Finally, the Environmental Restoration Report presents information and data that have been developed to date and provides estimates for all tracts. In the case of more than one potential contemplated use for a particular tract, the Environmental Restoration Report has taken a "bounding" approach that may, in some cases, be more conservative than the future site condition assumptions contemplated by the recipients and used in the CT EIS analysis of impacts. For example, where the contemplated use of a tract is a mixture of both residential and commercial purposes, the Environmental Restoration Report analysis used the bounding assumption that the entire tract would be cleaned up to accommodate future residential use based on human health and ecological risk analyses[2], rather than assuming that only a portion of the tract would need to meet the cleanup levels for residential future use as envisioned by the recipients. In other instances, differing assumptions were made in the Environmental Restoration Report with regard to structures

[2] The Environmental Restoration Report states that the LANL Environmental Restoration (ER) Project makes its decisions about site remediation based on the risks to human health, the environment, and ecological systems posed by residual site contamination. There are several references within the report to "No Action" (that is, No Further [Remediation] Action) being required based on [risks to] "human health." In these instances, the Environmental Restoration Report refers to human health risk analysis for an industrial future use scenario, namely, the continuation of LANL activities for a tract, as was assumed to be the future use before the enacted of PL 105-119. This type of use scenario assumes site occupants are present on the site for a portion of each day, 5 days a week during the year, for a small number of years. The residential future use scenario assumes a more intense site use, where the site occupants reside on the tract for 24 hours a day, 350 days a year for a large number of years. Similarly, ecological risk analysis considers the risk to animals and plants from residual site contamination and the wildlife's ability to bioaccumulate certain chemicals and heavy metals, up through the food chain. In the past, the ER Project did not consider the ecological risks that may be associated with site cleanups, although they do now so. It should be noted that both human health risk analysis and, especially, ecological risk analysis are relatively new tools that have been developed to aid the environmental restoration practicians and regulators. Both analytical methods are very conservative in the assumptions employed in their mathematical formulas due to the high degree(s) of uncertainties that underpin those assumptions. These uncertainties may result from unknown length of substance exposures, questionable contaminant pathways assumptions for exposures, inability to accurately predict ultimate doses to various body parts, limited scientific study of a chemical's effects to the human body (assumptions are frequently based on extremely limited animal studies that may not themselves be statistically adequate for the species studied and for which the subsequent extrapolation and application to the human body may result in very dubious consequences), unknown synergistic effects of chemicals and substances in the human body, etc.

being demolished than were made in the CT EIS analysis. For example, the Environmental Restoration Report analysis calculated the bounding waste produced from demolition of buildings associated with records center operations at the DP Road Tract based on possible cost savings that could result from the demolition of the buildings rather than the remodeling necessary for building reuse after decommissioning. These buildings were assumed to remain standing under the CT EIS analysis, however, due to stated intended reuse by the recipients. While these and other similar assumptions are inconsistent with the approach used for the CT EIS, which was to make as much use of tract planning documents, site drawings, and information from the recipients as reasonable (for analyzing the indirect impacts subsequent to the conveyance or transfer), the approach is consistent with the use of the bounding analysis approach employed where precise information is unknown or uncertain. The bounding approach allows the DOE to take uncertainties into account in its analysis with results that usually overestimate the final realities. In the case of the environmental restoration activities projected for these tracts, the bounding approach should result in an overestimate of the degree of site cleanup actually undertaken and the resulting waste volumes generated. Costs and cleanup durations should be overestimated as well. The CT EIS discusses the upper bounding estimates of waste volumes, etc. in its description of LANL Environmental Restoration (ER) Project activities under the existing environment at LANL.

B.1 Tract Summaries

The following sections summarize information from the Environmental Restoration Report for each of the 10 land tracts. The presentation sequence has been reordered from the Environmental Restoration Report to match the tract sequence presented elsewhere in this CT EIS, which proceeds from the northern-most tract to the southern-most tract, and is grouped by mesa top and canyon bottom locations.

B.1.1 Rendija Canyon

Information about this tract appears in Chapter 7 of the Environmental Restoration Report. The number of cleanup actions and time required to complete the cleanup are summarized in Tables B.1.1-1 and B.1.1-2. Information about estimated waste volumes (in cubic yards) is provided in Appendix A of the Environmental Restoration Report and is summarized in Table B.1.1-3 and B.1.1-4. The estimated waste volumes are based on specific assumptions of PRS cleanup waste removal and the D&D of certain structures and may represent a subset of the total information presented in the Environmental Restoration Report's Appendix A. Footnotes stating the specific assumptions are provided in Tables B.1.1-3 and B.1.1-4 as appropriate. Cleanup of the Los Alamos Sportsman's Club is included in both cleanup estimates. Cost estimates for remediation range from $19,053,000 to $20,462,000.

Table B.1.1-1. Proposed Remedies for Rendija Canyon Tract Land Use: Cultural Preservation

MEDIA	CLEANUP / D&D	NO ACTION	ESTIMATED DURATION (months)
PRSs	1	3	30
Structures	--	--	--
Canyon Systems	0	1	16

Table B.1.1-2. Proposed Remedies for Rendija Canyon Tract Land Use: Natural Areas and Residential Development

MEDIA	CLEANUP / D&D	NO ACTION	ESTIMATED DURATION (months)
PRSs	4	0	30
Structures	--	--	--
Canyon Systems	0	1	16

Table B.1.1-3. Waste Volume Estimates for Rendija Canyon Tract Land Use: Cultural Preservation

WASTE TYPE	CLEANUP OF PRSs	D&D OF STRUCTURES[a]	CLEANUP OF CANYONS	TOTALS
Solid	0	--	0	0
Hazardous	7,500	--	0	7,500
LLW	0	--	0	0
Mixed	0	--	0	0
PCB	0	--	0	0
Mixed PCB	0	--	0	0
Transuranic	0	--	0	0
Asbestos	0	--	0	0
Totals	7,500	--	0	7,500

[a] These waste volume totals are derived from assuming the D&D of no buildings and the cleanup of 3 PRSs (00-015, 00-011(c), and 00-11(e))

Table B.1.1-4. Waste Volume Estimates for Rendija Canyon Tract Land Use: Natural Areas and Residential Development

WASTE TYPE	CLEANUP OF PRSs	D&D OF STRUCTURES	CLEANUP OF CANYONS	TOTALS
Solid	1	--	0	1
Hazardous	7,500	--	0	7,500
LLW	0	--	0	0
Mixed	0	--	0	0
PCB	0	--	0	0
Mixed PCB	0	--	0	0
Transuranic	0	--	0	0
Asbestos	0	--	0	0
Totals	7,501	--	0	7,501

Note: These waste volume totals are derived from assuming the D&D of no buildings and the cleanup of 4 PRSs (00-011(a), 00-015, 00-011(c), and 00-11(e))

B.1.2 DOE LAAO Tract

Information about this tract appears in Chapter 4 of the Environmental Restoration Report. The number of cleanup actions and time required to complete the cleanup are summarized in Table B.1.2-1 and Table B.1.2-2. Information about estimated waste volumes (in cubic yards) is provided in Appendix A of the Environmental Restoration Report and is summarized in Table B.1.2-3 and Table B.1.2-4. The estimated waste volumes are based on specific assumptions of PRS cleanup waste removal and the D&D of certain structures and may represent a subset of the total information presented in the Environmental Restoration Report's Appendix A. Footnotes stating the specific assumptions are provided in Tables B.1.2-3 and B.1.2-4 as appropriate. Cost estimates for remediation range from $4,253,000 to $9,680,000.

Table B.1.2-1. Proposed Remedies for the DOE LAAO Tract Land Use: Commercial Development

MEDIA	CLEANUP / D&D	NO ACTION	ESTIMATED DURATION (months)
PRSs	3	0	18
Structures	1	2	18
Canyon Systems	--	--	--

Table B.1.2-2. Proposed Remedies for the DOE LAAO Tract Land Use: Residential Development

MEDIA	CLEANUP / D&D	NO ACTION	ESTIMATED DURATION (months)
PRSs	3	0	18
Structures	2	1	18
Canyon Systems	--	--	--

Table B.1.2-3. Waste Volume Estimates for the DOE LAAO Tract Land Use: Commercial Development

WASTE TYPE	CLEANUP OF PRSs	D&D OF STRUCTURES[a]	CLEANUP OF CANYONS	TOTALS
Solid	94	256	--	350
Hazardous	0	0	--	0
LLW	0	0	--	0
Mixed	0	0	--	0
PCB	0	0	--	0
Mixed PCB	0	0	--	0
Transuranic	0	0	--	0
Asbestos	0	46	--	46
Totals	94	302	--	396

[a] These waste volume totals are derived from assuming the D&D of Building 43-41 only.

Table B.1.2-4. Waste Volume Estimates for the DOE LAAO Tract Land Use: Residential Development

WASTE TYPE	CLEANUP OF PRSs	D&D OF STRUCTURES[a]	CLEANUP OF CANYONS	TOTALS
Solid	231	2,700	--	2,931
Hazardous	0	0	--	0
LLW	0	0	--	0
Mixed	0	0	--	0
PCB	0	0	--	0
Mixed PCB	0	0	--	0
Transuranic	0	0	--	0
Asbestos	0	486	--	486
Totals	231	3,186	--	3,417

[a] These waste volume totals are derived from assuming the D&D of Building 43-41 and 43-39.

B.1.3 Miscellaneous Site 22 Tract

Information about this tract begins appears in Chapter 9 of the Environmental Restoration Report. The number of cleanup actions and time required to complete the cleanup are summarized in Table B.1.3-1. Waste volumes for the Miscellaneous Site 22 Tract are estimated to total 10 cubic yards of solid wastes. The cost estimation for remediation of this tract is about $91,000.

Table B.1.3-1. Proposed Remedies for the Miscellaneous Site 22 Tract Land Use: Commercial Development

MEDIA	CLEANUP / D&D	NO ACTION	ESTIMATED DURATION (months)
Construction Debris	1	0	9

B.1.4 Miscellaneous Manhattan Monument Tract

The Miscellaneous Manhattan Monument Tract contains no PRSs within its boundaries and contains no structures other than the monument itself. Neither environmental restoration nor decommissioning activities are anticipated.

B.1.5 DP Road Tract

Information about this tract appears in Chapter 3 of the Environmental Restoration Report. The number of cleanup actions and time required to complete the cleanup are summarized in Table B.1.5-1 and B.1.5-2. Information about estimated waste volumes (in cubic yards) is provided in Appendix A of the Environmental Restoration Report and is summarized in Table B.1.5-3 and B.1.5-4. The estimated waste volumes are based on specific assumptions of PRS cleanup waste removal and the D&D of certain structures and may represent a subset of the total information presented in the Environmental Restoration Report's Appendix A. Footnotes stating the specific assumptions are provided in Tables B.1.5-3 and B.1.5-4 as appropriate. Cost estimates for remediation range from $26,986,000 to $29,070,000.

Table B.1.5-1. Proposed Remedies for the DP Road Tract
Land Use: Industrial and Commercial Development

MEDIA	CLEANUP / D&D	NO ACTION	ESTIMATED DURATION (months)
PRSs	6	4	70
Structures	10	0	13
Canyon Systems	0	1	8

Table B.1.5-2. Proposed Remedies for the DP Road Tract
Land Use: Commercial and Residential Development

MEDIA	CLEANUP / D&D	NO ACTION	ESTIMATED DURATION (months)
PRSs	6	4	84
Structures	10	0	13
Canyon Systems	0	1	8

Table B.1.5-3. Waste Volume Estimates for the DP Road Tract Land Use: Industrial and Commercial Development

WASTE TYPE	CLEANUP OF PRSs[a]	D&D OF STRUCTURES[a]	CLEANUP OF CANYONS	TOTALS
Solid	10	1,883	0	1,893
Hazardous	750	4	0	754
LLW	0	0	0	0
Mixed	0	0	0	0
PCB	0	0	0	0
Mixed PCB	0	0	0	0
Transuranic	0	0	0	0
Asbestos	50	330	0	380
Totals	810	2,217	0	3,027

[a] These waste volume totals are derived from assuming the D&D of all site structures and from the removal of waste from 3 PRSs (00-004, 00-027 and 00-033(a)).

Table B.1.5-4. Waste Volume Estimates for the DP Road Tract Land Use: Commercial and Residential Development

WASTE TYPE	CLEANUP OF PRSs[a]	D&D OF STRUCTURES[a]	CLEANUP OF CANYONS	TOTALS
Solid	10	1,883	0	1,893
Hazardous	740	4	0	744
LLW	0	0	0	0
Mixed	0	0	0	0
PCB	0	0	0	0
Mixed PCB	0	0	0	0
Transuranic	0	0	0	0
Asbestos	0	330	0	330
Totals	750	2,217	0	2,967

[a] These waste volume totals are derived from assuming the D&D of all site structures and from the removal of waste from 2 PRSs (000-027 and 0-033(a)).

B.1.6 TA 21 Tract

Information about this tract appears in Chapter 2 of the Environmental Restoration Report. The number of cleanup actions and time required to complete the cleanup are summarized in Table B.1.6-1. Information about estimated waste volumes (in cubic yards) is provided in

Appendix A of the Environmental Restoration Report and is summarized in Table B.1.6-2. The estimated waste volumes are based on specific assumptions of PRS cleanup waste removal and the D&D of certain structures and may represent a subset of the total information presented in the Environmental Restoration Report's Appendix A. A footnote stating the specific assumptions is provided in Table B.1.6-2 as appropriate. The cost estimation for remediation of this tract is about $400,184,000.

Table B.1.6-1. Proposed Remedies for the TA 21 Tract
Land Use: Commercial and Industrial Development

MEDIA	CLEANUP / D&D	NO ACTION	ESTIMATED DURATION (months)
PRSs	104	50	84
Structures	125	0	12
Canyon Systems	0	2	12

Table B.1.6-2. Waste Volume Estimates for the TA 21 Tract

WASTE TYPE	CLEANUP OF PRSs[a]	D&D OF STRUCTURES[a]	CLEANUP OF CANYONS	TOTALS
Solid	598	46,440	0	47,038
Hazardous	121	266	0	387
LLW	7,826	7,265	0	15,091
Mixed	479	629	0	1,108
PCB	169	27	0	196
Mixed PCB	40	0	0	40
Transuranic	54	0	0	54
Asbestos	0	1,929	0	1,929
Totals	9,287	56,556	0	65,843

[a] These waste volume totals are derived from assuming the D&D of all site structures and from the removal of waste from 104 PRSs.

B.1.7 Airport Tract

Information about this tract appears in Chapter 5 of the Environmental Restoration Report. The number of cleanup actions and time required to complete the cleanup are summarized in Table B.1.7-1. Information about estimated waste volumes (in cubic yards) is provided in Appendix A of the Environmental Restoration Report and is summarized in Table B.1.7-2. The estimated

waste volumes are based on specific assumptions of PRS cleanup waste removal and the D&D of certain structures and may represent a subset of the total information presented in the Environmental Restoration Report's Appendix A. Footnotes stating the specific assumptions are provided in Table B.1.7-2 as appropriate. The cost estimation for remediation of this tract is $28,217,000.

Table B.1.7-1. Proposed Remedies for the Airport Tract
Land Use: Commercial and Industrial Development

MEDIA	CLEANUP / D&D	NO ACTION	ESTIMATED DURATION (months)
PRSs	19	6	75
Structures	0	4	0
Canyon Systems	--	--	--

Table B.1.7-2. Waste Volume Estimates for the Airport Tract

WASTE TYPE	CLEANUP OF PRSs[a]	D&D OF STRUCTURES[a]	CLEANUP OF CANYONS[b]	TOTALS
Solid	24,056	0	--	24,056
Hazardous	0	0	--	0
LLW	400	0	--	400
Mixed	0	0	--	0
PCB	0	0	--	0
Mixed PCB	0	0	--	0
Transuranic	0	0	--	0
Asbestos	0	0	--	0
Totals	24,456	0	--	24,456

[a] These waste volume totals are derived from assuming the D&D of none of the site structures and from the removal of waste from the cleanup of 5 PRSs (73-001(a), 73-002, 73-004(a), c-73-001, and C-73-005(a)).

[b] DP Canyon, which lies within the boundaries of both the TA 21 and Airport Tracts, has been addressed in the section above for the TA 21 Tract.

B.1.8 White Rock Y Tract

Information about this tract appears in Chapter 8 of the Environmental Restoration Report. Information about estimated waste volumes (in cubic yards) is provided in Appendix A of the Environmental Restoration Report. The number of cleanup actions and time required to complete

the cleanup are summarized in Table B.1.8-1 and B.1.8-2. The estimated waste volumes are based on specific assumptions of PRS cleanup waste removal and the D&D of certain structures and may represent a subset of the total information presented in the Environmental Restoration Report's Appendix A. A footnote stating the specific assumptions is provided in Table B.1.8-2 as appropriate. Cost estimates for remediation range from $1,880,000 to $10,424,000.

Table B.1.8-1. Proposed Remedies for the White Rock Y Tract Land Use: Cultural and Environmental Preservation

MEDIA	CLEANUP / D&D	NO ACTION	ESTIMATED DURATION (months)
PRSs	--	--	--
Structures	0	6	0
Canyon Systems	0	2	24

Table B.1.8-2. Waste Volume Estimates for the White Rock Y Tract

WASTE TYPE	CLEANUP OF PRSs[a]	D&D OF STRUCTURES[a]	CLEANUP OF CANYONS	TOTALS
Solid	--	0	0	0
Hazardous	--	0	0	0
LLW	--	0	3,767	3,767
Mixed	--	0	0	0
PCB	--	0	0	0
Mixed PCB	--	0	0	0
Transuranic	--	0	0	0
Asbestos	--	0	0	0
Totals	--	0	3,767	3,767

[a] These waste volume totals are derived from assuming the D&D of none of the site structures, but, rather, from the selective removal of sediments within the floodplain area of the canyons.

B.1.9 TA 74 Tract

Information about this tract appears in Chapter 11 of the Environmental Restoration Report. The number of cleanup actions and time required to complete the cleanup are summarized in Table B.1.9-1. Information about estimated waste volumes (in cubic yards) is provided in Appendix A of the Environmental Restoration Report. The estimated waste volumes are based on specific

assumptions of PRS cleanup waste removal and the D&D of certain structures and may represent a subset of the total information presented in the Environmental Restoration Report's Appendix A. A footnote stating the specific assumptions is provided in Table B.1.9-2 as appropriate. Cost estimates for remediation range from $3,683,000 to $215,666,000.

Table B.1.9-1. Proposed Remedies for the TA 74 Tract
Land Use: Cultural and Environmental Preservation

MEDIA	CLEANUP / D&D	NO ACTION	ESTIMATED DURATION (months)
PRSs	0	4	18
Structures	0	3	0
Canyon Systems	0	2	22

Table B.1.9-2. Waste Volume Estimates for the TA 74 Tract

WASTE TYPE	CLEANUP OF PRSs[a]	D&D OF STRUCTURES[a]	CLEANUP OF CANYONS	TOTALS
Solid	2	0	0	2
Hazardous	2	0	0	2
LLW	1	0	98,881	98,882
Mixed	2	0	0	2
PCB	0	0	0	0
Mixed PCB	0	0	0	0
Transuranic	0	0	0	0
Asbestos	0	0	0	0
Totals	7	0	98,881	98,888

[a] These waste volume totals are derived from assuming the D&D of none of the site structures and from the removal of no waste from the cleanup of any PRSs, but, rather, from the selective removal of sediments within the floodplain area of the canyons.

B.1.10 White Rock Tract

Information about this tract appears in Chapter 6 of the Environmental Restoration Report. The number of cleanup actions and time required to complete the cleanup are summarized in Table B.1.10-1 and B.1.10-2.

Table B.1.10-1. Proposed Remedies for the White Rock Tract Land Use: Cultural Preservation and Commercial Development

MEDIA	CLEANUP / D&D	NO ACTION	ESTIMATED DURATION (months)
PRSs	--	--	--
Structures	0	1	0
Canyon Systems	0	1	16

Table B.1.10-2. Proposed Remedies for the White Rock Tract Land Use: Commercial and Residential Development

MEDIA	CLEANUP / D&D	NO ACTION	ESTIMATED DURATION (months)
PRSs	--	--	--
Structures	0	1	0
Canyon Systems	1	0	16

Because plans call for no cleanup or decommissioning under cultural preservation and commercial development, this land use scenario would generate no wastes. Under the commercial and residential development land use scenario, selective removal of sediments from the canyon system would generate an estimated 942 cubic yards of LLW wastes. Cost estimates for remediation range from $954,000 to $3,374,000.

B.2 Data Summary

Individual tract estimates are summarized in the following three tables. Table B.2-1 summarizes the total number of PRSs, structures, and canyon systems reported in the Environmental Restoration Report, as well as the number of cleanup actions planned for each tract and each contemplated land use. For example, one of four PRSs would be cleaned up in Rendija Canyon if cultural preservation is the contemplated land use subsequent to transfer of the tract; however, four of four PRSs would be cleaned up under the residential development land use scenario. The table enables a quick overview of planned cleanup actions, although details are not presented.

Table B.2-2 summarizes the estimated times required to perform cleanup of the 10 tracts. For example, cleanup of PRSs at TA 74 is estimated to require 18 months; decontamination of structures is estimated to require 2 months; and 22 months are estimated for removal of contaminated sediments from the canyons. Durations in the table are those estimated for the longest cleanup segment. Multiple sites within a tract can be restored simultaneously so that cleanup duration is determined by that PRS or structure or canyon that requires the most time.

Table B.2-3 summarizes estimated waste volumes resulting from cleanup of PRSs, D&D of structures, and remediation of canyons. The table also indicates the waste type that comprises the majority of expected wastes.

Table B.2-1. Summary of Estimated Environmental Restoration Actions

TRACT	CONTEMPLATED LAND USE	CLEANUP OF PRSs[a]	D&D[b] OF STRUCTURES	REMEDIATION OF CANYONS [c]	MAJOR WASTE TYPE
Rendija Canyon	Cultural Preservation	1/4	--	0/1	Hazardous wastes from munitions
	Residential	4/4	--	0/1	Hazardous wastes from munitions
DOE LAAO	Commercial	3/3	1/3	--	Construction debris
	Residential	3/3	2/3	--	Construction debris
Miscellaneous Site 22	Commercial	1/1	--	--	Construction debris
Miscellaneous Manhattan Monument	Cultural Preservation	--	--	--	No cleanup required
DP Road	Comm./Ind.	6/10	10/10	0/1	Solid wastes and RCRA hazardous wastes
	Res./Comm.	6/10	10/10	0/1	Solid wastes and RCRA hazardous wastes
TA 21	Comm./ Ind.	104/154	125/125	0/2	Radioactive and RCRA hazardous waste from historic operations
Airport	Comm./ Ind.	19/25	0/4	--	Solid waste from former landfill
White Rock Y	Preservation	--	0/6	0/2	Low-level radioactive canyon sediments
TA 74	Preservation	0/4	0/3	0/2	Low-level radioactive canyon sediments
White Rock	Pres./Comm.	--	0/1	0/1	No cleanup required
	Res./Comm.	--	0/1	1/1	Low-level radioactive canyon sediments

Note: Dash (--) indicates there are no PRSs or structures or canyons.

[a] For example, 1/3 indicates cleanup of one PRS with a total of 3 PRSs within the tract

[b] For example, 1/3 indicates D&D of one structure with a total of three structures within the tract

[c] For example, 2/2 indicates cleanup of sediments in two canyons with a total of two canyons within the tract

Table B.2-2. Estimated Duration of Environmental Restoration Actions[a,b]

TRACT	CONTEMPLATED LAND USE	CLEANUP OF PRSs	D&D OF STRUCTURES	REMEDIATION OF CANYONS	MAJOR WASTE TYPE
Rendija Canyon	Cultural Preservation	30	--	16	Hazardous wastes from munitions
	Residential	30	--	16	Hazardous wastes from munitions
DOE LAAO	Commercial	18	18	--	Construction debris
	Residential	18	18	--	Construction debris
Miscellaneous Site 22	Commercial	9	--	--	Construction debris
Miscellaneous Manhattan Monument	Cultural Preservation	--	--	--	No cleanup required
DP Road	Comm./ Ind.	70	13	8	Solid wastes and RCRA hazardous wastes
	Res./ Comm.	84	13	8	Solid wastes and RCRA hazardous wastes
TA 21	Comm./ Ind.	84	12	12	Construction debris
Airport	Comm./ Ind.	75	--	--	Solid waste from former landfill
White Rock Y	Cultural Preservation	--	0	24	Low-level radioactive canyon sediments
TA 74	Cultural Preservation	18	0	22	Low-level radioactive canyon sediments
White Rock	Pres./ Comm.	--	0	16	No cleanup required
	Res./ Comm.	--	0	16	Low-level radioactive canyon sediments

Note: Dash (--) indicates there are no PRSs or structures or canyons.

[a] In months

[b] Longest cleanup segment. Multiple sites can be restored simultaneously, so cleanup duration is determined by that PRS or structure or canyon which requires the most time.

Table B.2-3. Estimated Environmental Restoration Waste Volumes[a]

TRACT	CONTEMPLATED LAND USE	CLEANUP OF PRSs	D&D OF STRUCTURES	REMEDIATION OF CANYONS	MAJOR WASTE TYPE	COST ESTIMATE RANGES ($K) TO $(K)	
Rendija Canyon	Cultural Preservation	7,500 (5,700)	--	0	Hazardous wastes from munitions	19,053	20,462
	Residential	7,500 (5,700)		0	Hazardous wastes from munitions		
DOE LAAO	Commercial	90 (70)	300 (230)	--	Construction debris	4,253	9,680
	Residential	230 (176)	3,190 (2,440)	--	Construction debris		
Miscellaneous Site 22	Commercial	10 (8)	--	--	Construction debris	91	--
Miscellaneous Manhattan Monument	Cultural Preservation	--	--	--	No cleanup required	0	0
DP Road	Comm./Ind.	810 (620)	2,220 (1,690)	0	RCRA hazardous wastes	26,986	29,070
	Res./Comm.	750 (570)	2,220 (1,690)	0	RCRA hazardous wastes		
TA 21	Comm./Ind.	9,290 (7,090)	56,560 (43,220)	0	Construction debris	400,184	--
Airport	Comm./Ind.	24,460 (18,690)	0	--	Solid waste from former landfill	28,217	--
White Rock Y	Cultural Preservation	--	0	3,770 (2,880)	Low-level radioactive canyon sediments	1,880	10,424
TA 74	Cultural Preservation	0	0	98,880 (74,910)	Low-level radioactive canyon sediments	3,683	215,666
White Rock	Pres./Comm.	--	0	0	No cleanup required	954	3,374
	Res./Comm.	--	0	940 (720)	Low-level radioactive canyon sediments		

Notes:
Dash (--) indicates there are no PRSs or structures, or canyons.
Zero indicates that no wastes are expected to be generated.
[a] All volumes are cubic yards (approximate), followed by cubic meters (rounded).

APPENDIX C FEDERAL REGISTER NOTICES

This appendix contains copies of the notices to the public, published in the "Federal Register," regarding the Conveyance and Transfer EIS.

APPENDIX C FEDERAL REGISTER NOTICES

C.1 Notice of Intent

[Federal Register: May 6, 1998 (Volume 63, Number 87)]
[Page 25022-25025]

DEPARTMENT OF ENERGY

Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Conveyance and Transfer of Certain Land Tracts Located at Los Alamos National Laboratory, Los Alamos and Santa Fe Counties, NM

AGENCY: U.S. Department of Energy.

ACTION: Notice of Intent.

SUMMARY: The U.S. Department of Energy (DOE) announces its intent to prepare an environmental impact statement (EIS) to assess the potential environmental impacts of conveying and transferring certain land tracts located within the Incorporated Counties of Los Alamos and Santa Fe and at Los Alamos National Laboratory (LANL) in north central New Mexico.

This EIS for the proposed Conveyance and Transfer of Certain Land Tracts (Conveyance and Transfer EIS) will evaluate the action mandated by Congress to convey fee title to lands allocated for conveyance to Los Alamos County (County) and transfer to the Secretary of the Interior, in trust for the San Ildefonso Pueblo (Pueblo), administrative jurisdiction of parcels of land to be determined by agreement pursuant to Section 632 of the *Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Act*, 1998, Public Law 105-119. The EIS will analyze the potential impacts of up to three uses of land for the individual tracts: (1) Historic, cultural, or environmental preservation purposes, (2) economic diversification purposes, or (3) community self-sufficiency purposes. The EIS will also analyze any connected actions regarding the relocation of existing site tenants and the No Action Alternative of retaining the land tracts in their current state with the continuance of the existing uses of land.

DOE invites individuals, organizations, and agencies to present oral or written comments concerning the scope of the EIS, including the environmental issues and alternatives that the EIS should address.

DATES: The public scoping period starts with the publication of this Notice in the *Federal Register* and will continue until June 30, 1998. DOE will consider all comments received or postmarked by that date in defining the scope of this EIS. Comments received or postmarked after that date will be considered to the extent practicable. Public scoping meetings are scheduled to be held as follows:

- May 19, 1998, 2:00-5:00 p.m. and 6:00-8:00 p.m., U.S. Department of Energy, Los Alamos Area Office, 528 35th Street, Los Alamos, New Mexico.
- May 20, 1998, 2:00-5:00 p.m. and 6:00-8:00 p.m., Double Tree Hotel, 3347 Cerrillos Road; Santa Fe, New Mexico.
- May 21, 1998, 2:00-5:00 p.m. and 6:00-8:00 p.m., Northern New Mexico Community Center, 921 Paseo de Onate; Espanola, New Mexico.

The DOE will publish additional notices on the date, times, and location of the scoping meetings in local newspapers in advance of the scheduled meetings. Any necessary changes will be announced in the local media.

ADDRESSES: Written comments or suggestions concerning the scope of the Conveyance and Transfer EIS or requests for more information on the EIS and public scoping process should be directed to: Ms. Elizabeth Withers, EIS Document Manager, U.S. Department of Energy, Los Alamos Area Office, 528 35th Street, Los Alamos, New Mexico, 87544, facsimile at (505) 667-4872, or E-mail at ewithers@doe.lanl.gov.

In addition to providing oral comments at the public scoping meetings, all interested parties are invited to record their comments, ask questions concerning the EIS, or request to be placed on the EIS mailing or document distribution list by leaving a message on the EIS Hotline at (toll free) 1-800-791-2280. The Hotline will have instructions on how to record comments and requests.

FOR FURTHER INFORMATION CONTACT: For information on DOE's NEPA process, please contact: Carol Borgstrom, Director, Office of NEPA Policy and Assistance (EH-42), U.S. Department of Energy, 1000 Independence Avenue SW, Washington, DC 20585, (202) 586-4600, or leave a message at 1-800-472-2756.

SUPPLEMENTARY INFORMATION

Background

Los Alamos National Laboratory (LANL) is located in north-central New Mexico, 60 miles north-northeast of Albuquerque, 25 miles northwest of Santa Fe, and 20 miles southwest of Espanola in Los Alamos and Santa Fe Counties. It is located between the Jemez Mountains to the west and the Sangre de Cristo Mountains and Rio Grande to the east. LANL occupies an area of approximately 27,832 acres or approximately 43 square miles and is operated for DOE by a contractor, the University of California. It is a multidisciplinary, multipurpose institution engaged in theoretical and experimental research and development. LANL has mission responsibilities in national security, energy resources, environmental quality, and science.

Section 632 of the *Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Act,* 1998, Public Law (P.L.) 105-119, enacted November 26, 1997, established certain actions and reports to be completed by the DOE. It requires that the Secretary of Energy (Secretary) take certain actions with respect to the conveyance of certain suitable tracts of land at or in the vicinity of LANL, which are under the jurisdiction or administrative control of the Secretary, to the Incorporated County of Los Alamos, or their designee in fee title, and that administrative jurisdiction over certain other of these tracts be transferred to the Secretary of the

Interior in trust for the Pueblo of San Ildefonso. The legislation provides that the purpose of these conveyances and transfers is to fulfill the obligations of the United States with respect to LANL under sections 91 and 94 of the *Atomic Energy Community Act* of 1955 (42 U.S.C. 2391, 2394). Upon completion of these conveyances and transfers, the legislation also directs that the Secretary shall make no further payments with respect to LANL under sections 91 or 94 of the *Atomic Energy Community Act* of 1955.

The Secretary is required to undertake the preliminary identification of parcels of land under the jurisdiction or administrative control of the Secretary or in the vicinity of LANL for conveyance or transfer. The criteria established in Public Law 105-119 for land to be considered as being suitable for conveyance or transfer is that it is: (1) not required to meet the national security mission of the DOE or will not be required for that purpose before the end of a 10-year period beginning on the date of enactment of the law; (2) likely to be conveyable or transferable, as the case may be, not later than the end of such period; and (3) suitable for use either for historic, cultural, or environmental preservation purposes, for economic diversification purposes, or for community self-sufficiency purposes.

The Secretary of Energy has completed the preliminary identification of such parcels of land considered to be suitable and a report to Congress on this action was submitted in April 1998. The report, entitled *Land Transfer, A Preliminary Identification of Parcels of Land in Los Alamos, New Mexico for Conveyance or Transfer*, summarizes, for each of nine parcels identified for potential conveyance or transfer, the tract's location, size, boundaries, historical DOE use, existing use, functional support of LANL's mission, urban infrastructure present, known environmental and cultural issues associated with the tracts, economic potential, and estimated DOE preparation costs prior to transfer. The report includes maps of parcels with pertinent physical features (such as roads, topography, buildings, fences and major utility corridors). The total acreage of the tracts being considered for transfer is about 4,646 acres (roughly equal to about 16 percent of the DOE-controlled land in the LANL area).

About 3,000 acres are located within Santa Fe County and about 1,646 acres are located within Los Alamos County. The nine parcels identified in the report are as follows:

1. The Technical Area (TA) 21 Tract consists of approximately 243.8 acres and is located east of the Los Alamos Townsite. This occupied site is remote from the main LANL area. Relocation of operations and site workers would need to take place.

2. The DP Road (North, South and West) Tract consists of 49.8 acres. It is generally undeveloped except for the West section where the LANL Archives are currently located.

3. The DOE Los Alamos Area Office Site Tract consists of 12.9 acres. It is also within the Los Alamos Townsite and is readily usable. Relocation of site employees would need to take place.

4. The Airport Tract consists of 198 acres. Located east of the Los Alamos Townsite, it is close to the East Gate Business park.

5. The White Rock Site Tract consists of 98.7 acres. It is undeveloped except for utility lines and a water pump station.

6. Rendija Canyon Site Tract consists of 908.7 acres. The canyon is undeveloped except for the shooting range that serves the local community and is currently under lease from the DOE to the community.

7. The White Rock Y Site Tract consists of 435.1 acres. It is undeveloped and is associated with the major transportation routes connecting Los Alamos with northern New Mexico.

8. Two miscellaneous sites, Site 22 and the Manhattan Monument Site, consist of 0.27 acres. Site 22 is a small, Townsite parcel located on the edge of the mesa overlooking Los Alamos Canyon. The Manhattan site is a small, rectangular site located within Los Alamos County land and adjacent to Ashley Pond where most of the first Laboratory work was conducted.

9. The TA-74 Site Tract consists of 2,698.4 acres. It is a large, remote site located east of the Los Alamos Townsite. This parcel was restored to the public domain by Presidential Proclamation 3539 on May 27, 1963. Because it is public domain land, additional legislative action may be required to transfer it out of Federal government control.

A copy of the report may be obtained from Mr. Dennis Martinez, U.S. Department of Energy, Los Alamos Area Office, 528 35th Street, Los Alamos, New Mexico, 87544, telephone (505) 667-6146, or E-mail at dmartinez@doe.lanl.gov.

The Role of the Conveyance and Transfer EIS in the DOE NEPA Compliance Strategy

The Conveyance and Transfer EIS will be prepared pursuant to the *National Environmental Policy Act* (NEPA) of 1969, (42 U.S.C. 4321 *et seq.*), the Council on Environmental Quality's (CEQ) NEPA regulations (40 CFR Parts 1500-1508), and the DOE NEPA regulations (10 CFR Part 1021). The purpose of this EIS is to provide DOE decisionmakers and stakeholders with information on the projected environmental impacts that would result from the proposed conveyance and transfer of certain land tracts to the County and to the Pueblo respectively, as prescribed by Congress in P.L. 105-119, for the following future uses: (1) historic, cultural, or environmental preservation, (2) economic diversification, or (3) community self-sufficiency. Specific future land uses associated with each broad use category will be established through consultation with the recipient parties.

The EIS will provide an analysis of any reasonable alternatives identified through public scoping. The EIS will provide a baseline for DOE to use as a basis of comparison for environmental effects of proposed future changes in programs and activities, and could be a tiering (reference) document for future NEPA analysis of agency plans, functions, programs, and resource utilization.

Proposed Action and Alternatives

The proposed action is to convey and transfer land that is not required to meet the national security mission of DOE or will not be required for that purpose within the next 10 years. An alternative under consideration is the Conveyance and Transfer of All Tracts Alternative, which would be to convey and transfer to the County and/or the Pueblo all of the land identified. Another alternative, the Partial Conveyance and Transfer of Tracts Alternative, would involve the conveyance and transfer of most of the tracts with the retention by DOE of any land that cannot be cleaned up within the next 10 years. As information is obtained through the analysis process, the Partial Conveyance

and Transfer of Tracts Alternative may be refined and analyzed thoroughly or it may be eliminated from detailed analysis.

Each alternative would analyze the impacts of up to three potential uses of land depending on information on the intended use provided by the County and Pueblo. The following future uses could be analyzed for each land tract: (1) historic, cultural, or environmental preservation purposes, (2) economic diversification purposes, or (3) community self-sufficiency purposes. Follow-on actions involving the relocation of current tenants will be analyzed to the extent that the information is available. As required by the CEQ NEPA regulations, a No Action alternative will also be evaluated. The No Action alternative would be to continue the current use of the land tracts without the conveyance or transfer of any of the tracts to the identified parties.

Potential Issues for Analysis

Issues tentatively identified for analysis in this EIS include the socioeconomic impacts of development of the land tracts and their subsequent use; potential impacts to protected threatened, endangered, or sensitive species of animal or plants, or their critical habitat; potential impacts to cultural or historic resources; potential human health impacts to site occupants and the general public; potential effects on air, soil, and water quality from development and cleanup of the subject parcels and subsequent anticipated uses; potential irreversible and irretrievable commitment of resources, including the ultimate loss of LANL lands and land occupied and used as a result of conveyance and transfer actions; potential effects on members of the public, including minority and low-income populations from the development of the subject parcels and subsequent anticipated uses; and cumulative environmental impacts related to past, present and future development of the land and actions anticipated by neighboring land managers.

Related NEPA Reviews

Following is a summary of recent NEPA documents that may be considered in the preparation of this EIS and from which this EIS may be tiered. The Conveyance and Transfer EIS will include relevant information from each of these documents.

The Los Alamos National Laboratory (LANL) Draft Site-Wide Environmental Impact Statement (SWEIS) (DOE/EIS-0238) (in preparation). The Draft SWEIS analyzes four levels of operations alternatives for LANL to meet its existing and potential future program assignments: the No Action Alternative, the Expanded Operations Alternative, the Reduced Operations Alternative, and the Greener Alternative. The SWEIS also provides project specific analysis for two proposed projects: the Expansion of TA-54/Area G Low Level Waste Disposal Area; and Enhancement of Plutonium Pit Manufacturing. The SWEIS does not analyze changing the size or configuration of the LANL reserve through land conveyance or transfer.

The DP Road Tract EA (DOE/EA-1184) analyzed the proposed transfer of 28 acres of land located along the south side of DP Road next to the Los Alamos Townsite. The property is currently part of LANL's TA-21 and has been used most recently as a vacant buffer area. Previous uses of the tract include use of part of the tract as a mobile home park and playground. Portions of the tract are now wooded with mixed saplings and mature trees; the portion of the tract contiguous with DP Road is covered with native grasses and broadleaf plants. Should this land tract be transferred to the County, the County has indicated that its preferred use of the land tract would be to develop the property

within 5 to 10 years for its own use with the construction of a new office building to house County employees, paved parking areas, and new warehouses, garages, and support buildings for the transfer of the school bus yard, equipment maintenance, and school supply warehousing activities to the site. A maximum of about 800 employees would be expected to occupy the site. A Finding of No Significant Impact (FONSI) was issued on January 23, 1997, although no action has yet taken place.

The Research Park EA (DOE/EA-1212) analyzed the proposed lease of about 60 acres of land located next to the main administration portion of LANL, at the edges of TA-3 and TA-62. The property is currently a combination of wooded land and land used for parking lots. This tract is bounded in general by Diamond Drive on the east, West Jemez Road on the south, West Road on the west, and Los Alamos Canyon on the north. The land would be leased to the County to establish a research park. The term of the lease is expected to be 55 years with options for renewal depending upon final agreements between the County and DOE. The tract of land would be developed by the County or third parties within 5 to 10 years of the date of the lease. Research parks are professional developments that allow a wide range of companies to work within the same geographic location and to benefit from a well-planned environment suited to business needs. The County recommended that the type of research park best suited for Los Alamos would include freestanding buildings with landscaping and a possible atrium arrangement between related structures. About 10 buildings are planned for the research park and about 1,500 employees would be expected to occupy the site. A FONSI was issued on October 8, 1997, although no action has yet taken place.

Scoping Process

The scoping process is an opportunity for the public to assist the DOE in determining the alternatives and issues for analysis. The purpose of the scoping meetings is to receive oral and written comments from the public. The meetings will use a format to facilitate dialogue between DOE and the public and will be an opportunity for individuals to provide written or oral statements. DOE welcomes specific comments or suggestions on the content of these alternatives, or on other alternatives that could be considered. The above list of issues to be considered in the EIS analysis is tentative and is intended to facilitate public comment on the scope of this EIS. It is not intended to be all-inclusive, nor does it imply any predetermination of potential impacts. The Conveyance and Transfer EIS will describe the potential environmental impacts of the alternatives, using available data where possible and obtaining additional data where necessary. Copies of written comments and transcripts of oral comments will be available at the following locations: Los Alamos Outreach Center, 1350 Central Avenue, Suite 101, Los Alamos, New Mexico, 87544; and the Albuquerque Technical-Vocational Institute (TVI), Montoya Campus Library, 4700 Morris NE, Albuquerque, New Mexico 87111.

Issued in Washington, D.C., this 30th day of April 1998.
Peter N. Brush,
Acting Assistant Secretary Environment, Safety and Health.
[FR Doc. 98-11990 Filed 5-5-98; 8:45 am]
BILLING CODE 6450-01-P

C.2 Notice of Availability

[Federal Register: February 26, 1999 (Volume 64, Number 38)]

[Notices]

[Page 9483-9484]

From the Federal Register Online via GPO Access [wais.access.gpo.gov]

[DOCID:fr26fe99-39]

DEPARTMENT OF ENERGY

Availability of the Draft Environmental Impact Statement for the Conveyance and Transfer of Certain Land Tracts Administered by the Department of Energy and Located at Los Alamos National Laboratory, Los Alamos and Santa Fe Counties, New Mexico

AGENCY: Department of Energy.

ACTION: Notice of availability and public hearings.

SUMMARY: The Department of Energy (DOE) announces the availability of the Draft Environmental Impact Statement (EIS) for the Conveyance and Transfer (CT) of Certain Land Tracts Administered by the Department of Energy and Located at Los Alamos National Laboratory, Los Alamos and Santa Fe Counties, New Mexico (CT EIS), DOE/EIS-0293, for public review and comment. The CT EIS provides DOE and its stakeholders an analysis of the environmental impacts that could result from DOE's conveyance or transfer of up to approximately 4,800 acres of land located in north-central New Mexico to either the Incorporated County of Los Alamos or to the Secretary of the Interior, in trust for the San Ildefonso Pueblo.

DATES: Written comments on the Draft CT EIS are invited from the public and may be submitted through the end of the comment period, which is April 12, 1999 (see ADDRESSES section for more details). Comments must be postmarked by April 12, 1999, to ensure consideration; late comments will be considered to the extent practicable. The DOE will use the comments received to help prepare the Final CT EIS. Public hearings on the Draft CT EIS will be held as follows:

March 24, 1999 (Wednesday), 2:00-5:00 p.m. and 6:00-9:00 p.m., Cities of Gold Hotel, Pojoaque, New Mexico.

March 25, 1999 (Thursday), 2:00-5:00 p.m. and 6:00-9:00 p.m., Fuller Lodge, Los Alamos, New Mexico.

[Page 9484]]

The hearings will provide opportunities for information exchange and discussion among DOE and the public, as well as opportunities for the public to present oral or written comments. For more information on the public hearing call (800) 791-2280.

ADDRESSES: Comments may be submitted in writing or orally to DOE by contacting: Ms. Elizabeth Withers, CT EIS Document Manager, U.S. DOE, Los Alamos Area Office, 528 35th Street, Los Alamos, NM 87544; by leaving a message at (800) 791-2280; by faxing (505) 665-4872; or by electronic mail at cteis@doeal.gov. Oral and written comments may also be submitted at the public hearings described above in the DATES section. Requests for copies of the Draft CT EIS or other matters regarding this environmental review should be addressed to Ms. Withers at the address above. The Draft CT EIS will be available under the NEPA Analysis Module of the DOE NEPA Web Site at http://tis.eh.doe.gov/nepa/.

FOR FURTHER INFORMATION CONTACT: For general information on the DOE NEPA process, please contact Ms. Carol M. Borgstrom, Director, Office of NEPA Policy and Assistance, EH-42, Department of Energy, 1000 Independence Ave., SW, Washington, DC 20585. Ms. Borgstrom may be contacted by calling (202) 586-4600 or by leaving a message at (800) 472-2756.

SUPPLEMENTARY INFORMATION: The Draft CT EIS was prepared pursuant to the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321 et seq.), the Council on Environmental Quality NEPA regulations (40 CFR part 1500) and the DOE NEPA regulations (10 CFR part 1021).

DOE proposes to dispose of land that is not needed to support DOE's national security mission and that can be environmentally remediated or restored before November 26, 2007, by either conveyance to the Incorporated County of Los Alamos, or by transfer to the Secretary of the Interior, in trust for the San Ildefonso Pueblo, in accordance with section 632 of Public Law 105-119, enacted on November 26, 1997. Criteria established by Public Law 105-119 for determining if land is suitable for conveyance or transfer includes the requirement that the land be suitable for use by the named recipients for the purposes of environmental, historic or cultural preservation, economic diversification purposes, or community self-sufficiency purposes.

The DOE has analyzed two alternatives: (1) The No Action Alternative and (2) the Conveyance and Transfer of Each Tract Alternative (the Proposed Action). Under the No Action Alternative, DOE would continue its historical use of each of the land tracts identified as potentially being suitable for conveyance and transfer. Under the Conveyance and Transfer of Each Tract Alternative, the conveyance or transfer of each tract identified as suitable is considered, either in whole or in part, to either Los Alamos County or their designee, or the Secretary of the Interior in trust for the San Ildefonso Pueblo. DOE's Preferred Alternative is a subset of the Proposed Action Alternative, namely to convey or transfer several of the tracts of land entirely and several tracts in part (portions without potential contamination issues or mission support concerns). Environmental restoration activities would continue under current or future plans for the tracts that require such action and will include coordination with the State of New Mexico and public involvement.
The Draft CT EIS compares the environmental impacts that could be expected to occur from continuing to use the subject tracts of land as currently planned for the next 10 years with the direct consequences expected from conveying or transferring suitable tracts, in whole or in part, to the recipients named in Public Law 105-119, together with the indirect consequences expected from the

subsequent development and use of the tracts by the receiving parties. A wetland/floodplains assessment is included as an appendix to the EIS. A range of cost estimates for clean up of each tract is provided in a separate Environmental Restoration Report prepared to support the CT EIS and can be obtained by contacting Ms. Elizabeth Withers as indicated in the ADDRESSES section above.

DOE has distributed copies of the Draft CT EIS to appropriate Congressional members and committees, the State of New Mexico, American Indian tribal and pueblo governments, local county governments, other Federal agencies, and other interested parties. After the public comment period, which ends April 12, 1999, DOE will consider the comments received, revise the Draft CT EIS, and issue a Final CT EIS. DOE will consider the Final CT EIS, along with other considerations such as economic and technical considerations, in deciding the action it will take regarding the conveyance and transfer of the subject tracts.

Issued in Washington, DC, on February 22, 1999.
John C. Ordaz,
Program Manager, CT EIS, Defense Programs.
[FR Doc. 99-4844 Filed 2-25-99; 8:45 am]
BILLING CODE 6450-01-P

C.3 Notice of Involvement

protocol, and other information associated with attendants at functions. Locator records of personnel attached to the organization.

AUTHORITY FOR MAINTENANCE OF THE SYSTEM:

5 U.S.C. 301, Departmental Regulations and E.O. 9397 (SSN).

PURPOSE(S):

To notify personnel of arrival of visitors; recall personnel to duty station when required; locate individuals on routine matters; provide mail distribution and forwarding addresses; compile a social roster for official and non-official functions; send personal greetings and invitations; and locate individuals during medical emergencies, facility evacuations, and similar threat situations.

ROUTINE USES OF RECORDS MAINTAINED IN THE SYSTEM, INCLUDING CATEGORIES OF USERS AND THE PURPOSES OF SUCH USES:

In addition to those disclosures generally permitted under 5 U.S.C. 552a(b) of the Privacy Act, these records or information contained therein may specifically be disclosed outside the DoD as a routine use pursuant to 5 U.S.C. 552a(b)(3) as follows:

The 'Blanket Routine Uses' that appear at the beginning of the Navy's compilation of systems of records notices apply to this system.

POLICIES AND PRACTICES FOR STORING, RETRIEVING, ACCESSING, RETAINING, AND DISPOSING OF RECORDS IN THE SYSTEM:

STORAGE:

Manual and automated records.

RETRIEVABILITY:

Name, Social Security Number, and/or organization code.

SAFEGUARDS:

Documents are marked 'FOR OFFICIAL USE ONLY—PRIVACY SENSITIVE' and are only distributed to those persons having an official need to know. Computerized records as password protected and only accessible by those persons with an official need to know.

RETENTION AND DISPOSAL:

Records are destroyed upon update of roster to add/delete individuals who have arrived/departed the organization.

SYSTEM MANAGER(S) AND ADDRESS:

Commanding officer of the activity in question. Official mailing addresses are published as an appendix to the Navy's compilation of systems of records notices.

NOTIFICATION PROCEDURE:

Individuals seeking to determine whether information about themselves is contained in this system should address written inquiries to the Commanding officer of the activity in question. Official mailing addresses are published as an appendix to the Navy's compilation of systems of records notices.

RECORD ACCESS PROCEDURES:

Individuals seeking access to information about themselves contained in this system should address written inquiries to the Commanding officer of the activity in question. Official mailing addresses are published as an appendix to the Navy's compilation of systems of records notices.

CONTESTING RECORD PROCEDURES:

The Navy's rules for accessing records, and for contesting contents and appealing initial agency determinations are published in Secretary of the Navy Instruction 5211.5; 32 CFR part 701; or may be obtained from the system manager.

RECORD SOURCE CATEGORIES:

Individual and records of the activity.

EXEMPTIONS CLAIMED FOR THE SYSTEM:

None.

[FR Doc. 99-16441 Filed 6-28-99; 8:45 am]

BILLING CODE 5001-10-M

DEPARTMENT OF ENERGY

Notice of Floodplain and Wetlands Involvement for the Conveyance and Transfer of Certain Land Tracts Administered by the Department of Energy, Los Alamos National Laboratory, New Mexico

AGENCY: Los Alamos Area Office, Department of Energy (DOE).

ACTION: Notice of floodplain and wetlands involvement.

SUMMARY: In compliance with the requirements of Public Law 105-119, DOE proposes to convey to the Incorporated County of Los Alamos, and transfer to the Secretary of the Department of the Interior in trust for San Ildefonso Pueblo, ten (10) tracts of land located at Los Alamos National Laboratory in Los Alamos, New Mexico. The conveyance and transfer involves about 4,800 acres located within various canyon systems and over several mesa tops. Some of these tracts encompass floodplains and wetlands located in Los Alamos and Santa Fe Counties, New Mexico.

In accordance with 10 CFR part 1022, DOE has prepared a floodplain and wetlands assessment. This assessment is included as part (Appendix D) of the *Draft Environmental Impact Statement for the Conveyance and Transfer of Certain Land Tracts Administered by the Department of Energy and Located at Los Alamos National Laboratory, Los Alamos and Santa Fe Counties, New Mexico,* prepared for the proposed project in accordance with the National Environmental Policy Act.

DATE: Comments are due to the address below no later than July 15, 1999.

ADDRESS: Comments should be addressed to: Elizabeth Withers, CT EIS Document Manager, U.S. Department of Energy, Los Alamos Area Office 528 35th Street, Los Alamos, New Mexico 87544, PHONE: (505) 667-8690; FAX: (505) 665-4872.

The Draft Environmental Impact Statement is available for review at the Los Alamos Outreach Center, 1619 Central Avenue, Los Alamos, New Mexico 87544; and the Government Information Department, Zimmerman Library, University of New Mexico, Albuquerque, New Mexico 87131. The Draft CT EIS is also available under the NEPA Analysis Module of the DOE NEPA Web Site at http://tis.eh.doe.gov/nepa/.

FOR FURTHER INFORMATION ON THIS PROPOSED ACTION, CONTACT: Elizabeth Withers, CT EIS Document Manager, at the above listed address.

FOR FURTHER INFORMATION ON GENERAL DOE FLOODPLAIN/WETLANDS ENVIRONMENTAL REVIEW REQUIREMENTS, CONTACT: Carol M. Borgstrom, Director, Office of NEPA Policy and Assistance, EH-42, U. S. Department of Energy, 1000 Independence Avenue, SW, Washington, DC. 20585, (202) 586-4600 or (800) 472-2756.

SUPPLEMENTARY INFORMATION: In compliance with the requirements of Pub. L. 105-119, DOE is proposing to convey and transfer ten (10) tracts of land, totaling about 4,800 acres, to the Incorporated County of Los Alamos, and to the Secretary of the Interior in trust for San Ildefonso Pueblo. Six (6) of the ten tracts encompass wetlands and floodplains within their boundaries: the Rendija Canyon Tract, TA-21 Tract, Airport Tract, White Rock "Y" Tract, TA-74 Tract and the White Rock Tract. These tracts are located within or contain portions of Rendija Canyon, DP Canyon, Los Alamos Canyon, Bayo/Pueblo Canyons confluence, and in Canada del Buey. Future use of the tracts as established by Pub. L. 105-119 is limited to historic, cultural, or environmental preservation, economic diversification, and community self-sufficiency purposes. The two named recipients identified their contemplated uses of the tracts as follows:

Rendija Canyon Tract (about 910 acres)—environmental preservation (including recreational use) and residential development or cultural preservation.

TA–21 Tract (about 260 acres)—commercial and industrial development.

Airport Tract (about 205 acres)—commercial and industrial development or commercial development.

White Rock "Y" Tract (about 540 acres)—environmental preservation or cultural preservation.

TA–74 Tract (about 2715 acres)—cultural preservation or environmental preservation.

White Rock Tract (about 100 acres)—cultural preservation and commercial development or commercial and residential development.

Each of these tracts may have existing or future infrastructure uses that include utility lines, utility support structures, water supply wells, storage tanks or structures, water or effluent treatment structures and transportation routes.

The proposed action encompasses floodplains and wetlands because Pub. L. 105–119 requires DOE to identify land that may meet the criteria established by the Law. The suitability criteria does not exclude land containing wetland and floodplain areas; therefore, potentially suitable land in wetland and floodplain areas was included in the tracts DOE identified for possible conveyance and transfer. The conveyance or transfer of each tract, in whole or in part, constitutes DOE's Proposed Action Alternative. The only alternative to the proposed action considered is the No Action Alternative. The proposed action of conveying or transferring each of the tracts, either in whole or in part, conforms to applicable State or local floodplain protection standards. Contemplated use of the tracts as articulated to DOE by the named recipients would also conform to applicable State or local floodplain protection standards. Both Los Alamos and Santa Fe Counties have protective ordinances pertaining to flood damage prevention that is inclusive of language requiring new construction to be placed outside of floodplains. The pertinent Los Alamos County Code Ordinance is: 85–70 "An Ordinance Repealing Chapter 15.16 of the Los Alamos County Code Adopting a New Chapter 17.70 Pertaining to Flood Damage prevention." The pertinent Santa Fe County Code Ordinances are: 1988–1 "An Ordinance to Establish Regulations for Development in Flood Hazard Areas, Set Minimum Floor Elevations for Compliance, Define Flood Plains, Address Required Building Improvements, and Establish Variance Regulations for Cases Where There Isn't an Ability to Comply with Adopted Standards," and 1996–1 "Flood Hazards."

A floodplain statement of findings will be published in the *Final Environmental Impact Statement for the Conveyance and Transfer of Certain Land Tracts Administered by the Department of Energy and Located at Los Alamos National Laboratory, Los Alamos and Santa Fe Counties, New Mexico* in accordance with the National Environmental Policy Act. The anticipated issuance date for the Final Environmental Impact Statement is August 1999. Notice of its availability will be announced in the **Federal Register**.

Issued in Los Alamos, NM on June 16, 1999.

David A. Gurulé,

Area Manager, U.S. Department of Energy, Los Alamos Area Office.

[FR Doc. 99–16517 Filed 6–28–99; 8:45 am]

BILLING CODE 6450–01–P

DEPARTMENT OF ENERGY

Environmental Management Site-Specific Advisory Board, Paducah Gaseous Diffusion Plant

AGENCY: Department of Energy (DOE).

ACTION: Notice of open meeting.

SUMMARY: This notice announces a meeting of the Environmental Management Site-Specific Advisory Board (EM SSAB), Paducah Gaseous Diffusion Plant. The Federal Advisory Committee Act (Pub. L. 92–463, 86 Stat. 770) requires that public notice of these meetings be announced in the **Federal Register**.

DATES: Thursday, July 15, 1999: 5:30 p.m.–8:30 p.m.

ADDRESSES: Paducah Information Age Park Resource Center, 2000 McCracken Boulevard Paducah, Kentucky

OTHER INFORMATION CONTACT: John D. Sheppard, Site Specific Advisory Board Coordinator, Department of Energy Paducah Site Office, Post Office Box 1410, MS–103, Paducah, Kentucky 42001, (502) 441–6804.

SUPPLEMENTARY INFORMATION: Purpose of the Board: The purpose of the Board is to make recommendations to DOE and its regulators in the areas of environmental restoration and waste management activities.

Tentative Agenda:

5:30 p.m. Call to order/Discussion
6:00 p.m. Approve Meeting Minutes
6:05 p.m. Public Comment/Questions
6:30 p.m. Presentations
7:15 p.m. Sub Committee Reports
8:15 p.m. Administrative Issues
8:30 p.m. Adjourn

Copies of the final agenda will be available at the meeting.

Public Participation: The meeting is open to the public. Written statements may be filed with the Committee either before or after the meeting. Individuals who wish to make oral statements pertaining to agenda items should contact John D. Sheppard at the address or telephone number listed above. Requests must be received 5 days prior to the meeting and reasonable provision will be made to include the presentation in the agenda. The Deputy Designated Federal Official is empowered to conduct the meeting in a fashion that will facilitate the orderly conduct of business. Each individual wishing to make public comment will be provided a maximum of 5 minutes to present their comments as the first item of the meeting agenda.

Minutes: The minutes of this meeting will be available for public review and copying at the Freedom of Information Public Reading Room, 1E–190, Forrestal Building, 1000 Independence Avenue, SW, Washington, DC 20585 between 9 a.m. and 4 p.m., Monday-Friday, except Federal holidays. Minutes will also be available at the Department of Energy's Environmental Information Center and Reading Room at 175 Freedom Boulevard, Highway 60, Kevil, Kentucky between 8:00 a.m. and 5:00 p.m. on Monday thru Friday or by writing to John D. Sheppard, Department of Energy Paducah Site Office, *Post Office Box 1410, MS–103,* Paducah, Kentucky 42001 or by calling him at (502) 441–6804.

Issued at Washington, DC on June 21, 1999

Rachel M. Samuel,

Deputy Advisory Committee Management Officer.

[FR Doc. 99–16516 Filed 6–28–99; 8:45 am]

BILLING CODE 6450–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket No. CP99–557–000]

Columbia Gas Transmission Corporation; Notice of Application

June 23, 1999.

Take notice that on June 15, 1999, Columbia Gas Transmission Corporation (Columbia), 1700 MacCorkle Ave, SE, Charleston, WV 25314, tendered for filing in Docket No. CP99–557–000 an

APPENDIX D FLOODPLAINS AND WETLANDS

This appendix contains wetlands and floodplains documentation for the 10 subject tracts. Section D.1 is the Floodplain Statement of Finding. Section D.2 is an Addendum to the Floodplain and Wetland Assessments that contains recently modeled information on changes to stormwater flood flows estimated to result from the contemplated land uses. Section D.3 contains the Floodplain and Wetland Assessments that was produced as a stand-alone report by LANL and thus has its own format, page numbering, and references.

APPENDIX D FLOODPLAINS AND WETLANDS

D.1 Statement of Findings

DEPARTMENT OF ENERGY

Floodplain Statement of Findings for the Conveyance and Transfer of Certain Tracts Administered by the Department of Energy and Located at Los Alamos National Laboratory, Los Alamos and Santa Fe Counties, New Mexico

AGENCY: Department of Energy (DOE)

ACTION: Floodplain Statement of Findings

SUMMARY: This is a Floodplain Statement of Findings for the Conveyance and Transfer of Certain Tracts Administered by the Department of Energy and Located at Los Alamos National Laboratory, Los Alamos and Santa Fe Counties, New Mexico, prepared in accordance with 10 CFR Part 1022. DOE proposes to convey to the Incorporated County of Los Alamos and transfer to the Secretary of the Department of the Interior, in trust for San Ildefonso Pueblo, ten (10) tracts of land located at Los Alamos National Laboratory in compliance with the requirements established by Public Law 105-119. The acreage involved is about 4,800 acres; tracts are located within various canyon systems and over several mesa tops. Some of these tracts encompass floodplains and wetlands located in Los Alamos and Santa Fe Counties, New Mexico. The land shall be used by the named recipients for the purposes of historic, cultural, or environmental preservation purposes; economic diversification purposes; or community self-sufficiency purposes. DOE prepared floodplain and wetlands assessments (published in the Draft EIS and attached, together with a short addendum of newly developed clarifying information) describing the effects, alternatives, and measures designed to avoid or minimize potential harm to or within the affected floodplain. DOE will allow 30 days of public review after publication of the statement of findings before implementing the proposed action.

FOR FURTHER INFORMATION, CONTACT:

Elizabeth Withers, CT EIS Document Manager
Los Alamos Area Office
528 35th Street
Los Alamos, New Mexico 87544
PHONE: (505) 667-8690; FAX: (505) 665-4872

APPENDIX D FLOODPLAINS AND WETLANDS

FOR FURTHER INFORMATION ON GENERAL DOE FLOODPLAIN/WETLANDS ENVIRONMENTAL REVIEW REQUIREMENTS, CONTACT:

Carol M. Borgstrom, Director
Office of NEPA Policy and Assistance, EH-42
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, D.C. 20585
(202) 586-4600 or (800) 472-2756

SUPPLEMENTARY INFORMATION:

This Floodplain Statement of Findings for the Conveyance and Transfer of Certain Tracts Administered by the Department of Energy and Located at Los Alamos National Laboratory, Los Alamos and Santa Fe Counties, New Mexico, was prepared in accordance with 10 CFR Part 1022. A Notice of Intent to Prepare an Environmental Impact Statement was published in the *Federal Register* on May 6, 1998 (63 FR 25022), followed by a Notice of Availability for the Draft Environmental Impact Statement published in the *Federal Register* on February 26, 1999 (164 FR 9483); a floodplain and wetlands assessment was incorporated in the Draft Environmental Impact Statement. DOE is proposing to convey and transfer ten (10) tracts of land, totaling about 4,800 acres, to the Incorporated County of Los Alamos and the Secretary of the Interior, in trust for San Ildefonso Pueblo, in compliance with the requirements of Public Law 105-119. Six (6) of the ten tracts encompass wetlands and floodplains within their boundaries: the Rendija Canyon Tract, TA-21 Tract, Airport Tract, White Rock "Y" Tract, TA-74 Tract and the White Rock Tract. These tracts are located within or contain portions of Rendija Canyon, DP Canyon, Los Alamos Canyon, Bayo/Pueblo Canyons confluence, and in Canada del Buey (see individual tract maps within the attached Floodplain/Wetlands Assessments). Future use of the tracts is established in Public Law 105-119 as for: historic, cultural, or environmental preservation purposes; economic diversification purposes; or community self-sufficiency purposes. The two named recipients identified their contemplated uses of the tract as follows:

- Rendija Canyon Tract (about 910 acres) – environmental preservation (including recreational use) and residential development **or** cultural preservation.
- TA-21 Tract (about 260 acres) – commercial and industrial development.
- Airport Tract (about 205 acres) – commercial and industrial development **or** commercial development.
- White Rock "Y" Tract (about 540 acres) – environmental preservation **or** cultural preservation.
- TA-74 Tract (about 2715 acres) – cultural preservation **or** environmental preservation.
- White Rock Tract (about 100 acres) – cultural preservation and commercial development **or** commercial and residential development.

Each of these tracts may have existing or future infrastructure uses that include utility lines, utility support structures, water supply wells, storage tans or structures, water or effluent treatment structures and transportation routes.

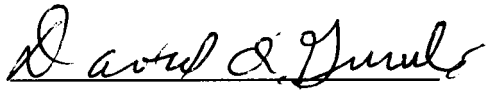
APPENDIX D FLOODPLAINS AND WETLANDS

The action is proposed to be located within the floodplains and wetlands due to the requirements of Public Law 105-119 that states that DOE should identify land that is suitable per the criteria established by the Law; the suitability criteria do not exclude lands lying within wetland and floodplain areas. Therefore, such potentially suitable lands were included in the tracts identified for possible conveyance and transfer action by the DOE. The conveyance and transfer of each tract, in whole or in part, constitutes DOE's Proposed Action Alternative. The only alternative to the proposed action considered is the No Action Alternative. The proposed action of conveying and transferring each of the tracts, either in whole or in part, does conform to applicable State or local floodplain protection standards. Subsequent use of the tracts by the named recipients would also conform to applicable State or local floodplain protection standards. Both Los Alamos and Santa Fe Counties have protective ordinances pertaining to flood damage prevention that is inclusive of language requiring new construction to be placed outside of floodplains. The pertinent Los Alamos County Code Ordinance is: 85-70 "An Ordinance Repealing Chapter 15.16 of the Los Alamos County Code Adopting a New Chapter 17.70 Pertaining to Flood Damage prevention". The pertinent Santa Fe County Code Ordinances are: 1988-1, "An Ordinance to Establish Regulations for Development in Flood Hazard Areas, Set Minimum Floor Elevations for Compliance, Define Flood Plains, Address Required Building Improvements, and Establish Variance Regulations for Cases Where There Isn't an Ability to Comply with Adopted Standards"; and 1996-1, "Flood Hazards".

DOE may include deed restrictions in the conveyance documents requiring the placement of new construction outside of the areas occupied by 100- and 500-year floodplains or wetlands in order to further minimize the possibility of potential harm to or within the affected floodplain consistent with the provisions of Public Law 105-119. DOE will also recommend to the potential recipients ways to reduce or eliminate surface water runoff and protect surface water quality degradation for those tracts where development may take place.

DOE will allow 30 days of public review after publication of the statement of findings prior to implementing the proposed action.

Issued in Los Alamos, New Mexico on July 20, 1999.



Program Office Official

D.2 Addendum

Quantitative information on stormwater flood flows from the 10 individual tracts was not available when the Floodplain and Wetland Assessment was prepared in December 1998 for inclusion in the Draft CT EIS. In February 1999, University of California employees developed computer modeled estimations for the 6-hour, 100-year storm event for each of the 10 subject land tracts and combinations of tracts for affected watersheds in which the tracts are located (McLin 1999). The analyses were completed to provide estimates of quantitative information on the potential changes to stormwater flood flows as a result of urbanization at the proposed conveyance and transfer tracts. Although these numbers and figures provide insight to the changes anticipated under the modeled scenarios, quantification of the corresponding potential effects is still unavailable. Data on the determination of the relationship between peak flow (flood flow height), width of canyon floodplains, and the potential for modeled flows to scour streambed material and impact structures would be needed to provide this type of predictive information.

The 10 individual land tracts were assigned to one or more of the established watersheds at LANL (McLin 1992). Each of these groups was then used in Hydrologic Engineering Center (HEC)-1 model (Dodson 1995) simulations using the 6-hour, 100-year design storm event for Los Alamos County (McLin 1999). Baseline hydrographs were developed for each watershed to simulate pre-existing (current) conditions. These baseline hydrographs were then compared to modeled hydrographs. Only areas with a slope of less than 20 percent were considered as available for urbanization. Consideration was given to the fact that several tracts are located in the Los Alamos Canyon watershed.

Bayo Canyon above Los Alamos Canyon and Barrancas Canyon above Guaje Canyon were identified as experiencing the highest percent change in peak flow (149.5 percent) and volume (117.5 percent). Although these values are significant, neither Bayo Canyon above Los Alamos Canyon nor Barrancas Canyon above Guaje Canyon would be developed (urbanized) as a result of the conveyance and transfer process. Under this assumption, impacts are nonexistent for the TA 74 Tract. Increases in the stormwater runoff from Rendija Canyon modeled for the Guaje Canyon confluence approximate 20 percent in both peak flow and volume within the canyon itself, and in increased flows in Guaje Canyon. These changes could be significant with respect to utility locations in Guaje Canyon just downstream of the Rendija Canyon confluence. The increased stormwater runoff from Rendija Canyon could result in flow changes predicted over a distance of several miles downstream to within Los Alamos Canyon. However, the Los Alamos Canyon floodplain is probably broad enough to dampen the increased runoff. Thus, based on the proposed development scenarios for each tract, urbanization in the Rendija Canyon Tract is of greatest concern with regard to stormwater runoff effects.

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Floodplain and Wetland Assessments
for the
Proposed Conveyance and Transfer Tracts
at
Los Alamos National Laboratory,
Los Alamos and Santa Fe Counties, New Mexico

Date Prepared: December 22, 1998

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Table of Contents

Tables

Figures

Acronyms

ac	*acres*
BMPs	*Best Management Practices*
CFR	*Code of Federal Regulations*
cfs	*cubic feet per second*
cms	*cubic meters per second*
DOE	*Department of Energy*
EIS	*environmental impact statement*
E.O.	*Executive Order*
EPA	*Environmental Protection Agency*
ft	*feet*
GIS	*geographic information system*
ha	*hectares*
km	*kilometers*
LAAO	*Los Alamos Area Office*
LANL	*Los Alamos National Laboratory*
m	*meter*
mi	*miles*
NPDES	*National Pollutant Discharge Elimination System*
NWI	*National Wetlands Inventory*
P.L.	*Public Law*
SWPP	*Storm Water Pollution Prevention*
TA	*technical area*
UC	*University of California*
USFWS	*United States Fish and Wildlife Service*

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Summary

Ten land tracts are proposed for conveyance or transfer from Department of Energy (DOE) administrative control under mandates of Public Law (P.L.) 105-119 (1997). Floodplains as defined in 10 Code of Federal Regulations (CFR) 1022 are present in six of the ten tracts: Rendija Canyon Land Tract; TA-21 Land Tract; Airport Land Tract; White Rock "Y" Land Tract; TA-74 Land Tract; and White Rock Land Tract. Wetlands as defined in 10 CFR 1022 are present in six of the ten tracts: Rendija, TA-21, Airport, White Rock "Y," TA-74, and White Rock. Floodplain and wetland values for each land tract are evaluated against the guidance in 10 CFR 1022 and the DOE "Guidance on Environmental Requirements for DOE Real Property Transfers." Impacts are reported for each land tract. Issues associated with increases in stormwater flows from mesa top areas into canyon areas are identified with respect to suggested mitigations for protecting floodplain values, wetland values and potential contaminant migration.

1.0 Project Description

1.1 Department of Energy Notice of Intent

The U.S. Department of Energy (DOE) announced its intent (FR May 6, 1998, Volume 63, Number 87) to prepare an environmental impact statement (EIS) to assess the potential environmental impacts of conveying and transferring certain land tracts located within the Incorporated Counties of Los Alamos and Santa Fe at Los Alamos National Laboratory (LANL) in north-central New Mexico. This Notice of Intent to prepare an EIS was issued in response to Section 632 of the Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Act, 1997, P.L. 105-119.

1.2 Purpose and Scope of This Document

This document provides an analysis of potential impacts to floodplains and wetlands associated with the proposed conveyance and transfer action as required by 10 Code of Federal Regulations (CFR) 1022. The No Action Alternative for this proposed action is to not convey and transfer the subject parcels of land. Individual tracts would continue to be used as they are currently. Two primary mandates from 10 CFR 1022 drive floodplain and wetland review and analysis requirements for real property transfers: Executive Order (E.O.)11988, "Floodplain Management," and E.O. 11990 "Protection of Wetlands." Both E.O.s dictate that Federal agencies take action to minimize loss and to preserve the natural and beneficial values of floodplains and wetlands in carrying out their responsibilities for acquiring, managing, and disposing of Federal land and facilities. Section 3(d) of E.O. 11988 and Section 4 of E.O. 11990 direct that when Federal property in a floodplain or wetland is proposed for lease, easement, right-of-way, or disposal to a non-Federal party, the Federal agency shall:

(1) Reference in the conveyance (e.g., lease, property deed, etc.) those uses that are restricted under identified Federal, State, or local floodplain/wetland regulations;

(2) Attach other appropriate restrictions to the uses of properties by the grantee or purchaser and any successor, except where prohibited by law; or

(3) Withhold such properties from conveyance.

This document addresses regulatory issues associated with floodplain and wetland resources. Other issues such as Endangered Species Act considerations within the boundaries of the land tracts proposed for conveyance or transfer are addressed in a separate Biological Assessment currently under preparation. Analysis of potential impacts to floodplains and wetlands is conservative in that the highest anticipated impact is evaluated based on proposed uses noted in Table 1.

Table 1[1]. Conveyance and Transfer Land Tracts and Proposed Uses

Land Tract Name	Proposed Uses		
Rendija Canyon	Cultural Preservation	or	Natural Areas & Residential
DOE LAAO	Commercial Development	or	Residential
Site 22	Commercial		
Manhattan Monument	Cultural Site		
DP Road	Commercial Development	or	Commercial/Industrial
TA-21	Commercial/Industrial		
Airport	Commercial Use	or	Commercial/Industrial
White Rock Y	Cultural Preservation	or	Natural Areas, Transportation & Utilities
TA-74	Cultural Preservation	or	Natural Areas & Utilities
White Rock	Cultural Preservation & Commercial Development	or	Commercial/Residential

Information is from two sources: (1) Letter from Joseph C. King, Los Alamos County Administrator to Dennis Martinez, Assistant Area Manager, DOE LAAO dated June 30, 1998, regarding Land Use Information for the Land Transfer EIS; and (2) Letter from Governor Harvey A. Martinez, Pueblo of San Ildefonso to DOE LAAO dated June 8, 1998, regarding DOE/Laboratory Land Parcel Use Determination.

1.3 U.S. Congressional Mandate

Congress mandated that DOE convey fee title to lands allocated for conveyance to the Incorporated County of Los Alamos (County) and transfer to the Secretary of the Interior, in trust for the San Ildefonso Pueblo (Pueblo). Parcels of land for conveyance and transfer were determined by DOE pursuant to Section 632 of the Departments of Commerce, Justice, and State; the Judiciary; and Related Agencies Appropriations Act, 1998, P.L. 105-119.

This proposed action, conveyance and transfer of federal lands, requires an EIS per 10 CFR 1021, DOE's National Environmental Policy Act Implementing Procedures. This Conveyance and Transfer EIS, in response to the Congressional mandate, will analyze potential direct impacts regarding the relocation of existing site tenants and indirect impacts of up to three uses of land for the individual tracts: (1) historic, cultural, or environmental preservation purposes; (2) economic diversification purposes; or (3) community self-sufficiency purposes. A No Action Alternative, retaining the land tracts in their current state with continuance of the existing uses of land, is also analyzed in the EIS.

Only parcels of land presently under the administrative control of DOE are considered in the proposed conveyance and transfer action. DOE administratively controls 28,654 acres (ac) (11,596 hectares [ha]) of the approximately 70,400 ac (28,489 ha) of Los Alamos County. Total area of the tracts being considered for conveyance or transfer is about 4,646 ac (1,918 ha), of which approximately 3,000 ac (1,214 ha) is within Santa Fe County and the remainder is within the boundaries of Los Alamos County (Figures 1 and 2).

1.4 Project Setting

LANL and the communities of Los Alamos and White Rock are situated primarily in Los Alamos County in north-central New Mexico (Figures 1 and 2). Portions of LANL and portions of the tracts proposed for conveyance and transfer are in Santa Fe County. LANL is located approximately 60 miles (mi) (100 kilometer [km]) north-northwest of Albuquerque and 25 mi (40 km) northwest of Santa Fe. Los Alamos County is located on the Pajarito Plateau on the eastern slope of the Jemez Mountains.

The Pajarito Plateau is composed of numerous narrow mesas defined by canyons. From the base of the Jemez Mountains, the Plateau slopes gently downward to the east-southeast for more than 15 mi (24 km) to end in a scarp that drops to the Rio Grande. The upper reaches of the Plateau are approximately 7,800 feet (ft) (2,380 meters [m]) above sea level, and its lower edge, on the rim of White Rock Canyon, is at 6,200 ft (1,890 m). Plateau canyons are 150–300 ft (46−91 m) deep and 300−1150 ft (91–350 m) wide.

Pajarito Plateau and the Los Alamos area are biologically diverse. This diversity is due partly to the dramatic 5,000-ft (1,500-m) elevation gradient from the Rio Grande on the east to the Jemez Mountains 12 mi (20 km) to the west, and partly to the many steep canyons that dissect the area. Five major vegetative community types are found in Los Alamos County: juniper-grassland; piñon-juniper; ponderosa pine; mixed conifer; and spruce-fir. Juniper-grassland communities predominate along the Rio Grande on the eastern border of the plateau and extend upward on the south-facing sides of canyons, at elevations between 5,600 to 6,200 ft (1,700 and 1,900 m). The piñon-juniper community, generally in the 6,200- to 6,900-ft (1,900- to 2,100-m) elevation range, covers large portions of the mesa tops and north-facing slopes at the lower elevations. Ponderosa pines are found in the western portion of the plateau in the 6,900- to 7,500-ft (2,100- to 2,300-m) elevation range. These three communities predominate, each occupying roughly one-third of the LANL site. The mixed conifer community, at an elevation of 7,500 to 9,500 ft (2,300 to 2,900 m), overlaps the ponderosa pine community in the deeper canyons and on north slopes and extends from the higher mesas onto the slopes of the Jemez Mountains. The subalpine grassland community is mixed with the spruce-fir communities at higher elevations of 9,500 to 10,500 ft (2,900 to 3,200 m). Wetlands and several riparian areas enrich the diversity of plant and animals found on LANL lands. Diversity of species on LANL is reflected in the Final LANL Site Wide Environmental Impact Statement as follows:

> " ... diversity is illustrated by the presence of over 900 species of vascular plants; 57 species of mammals; 200 species of birds, including 112 species known to breed in Los Alamos County 28 species of reptiles; 9 species of amphibians; over 1,200 species of arthropods; and 12 species of fish (primarily found in the Rio Grande, Cochiti Lake and the Rito de los Frijoles). No fish species have been found within LANL boundaries" (DOE 1999c).

Partially as a result of this diversity, significant use of these resources is made by both residents and visitors. Biking, hiking, skiing, photography, and other unstructured, outdoor recreation activities are common throughout the mesas and canyons of the Pajarito Plateau, including portions of those areas presented for conveyance and transfer.

Each of the canyon areas of the individual tracts includes stream courses, areas where the long-term effects of runoff water are apparent.

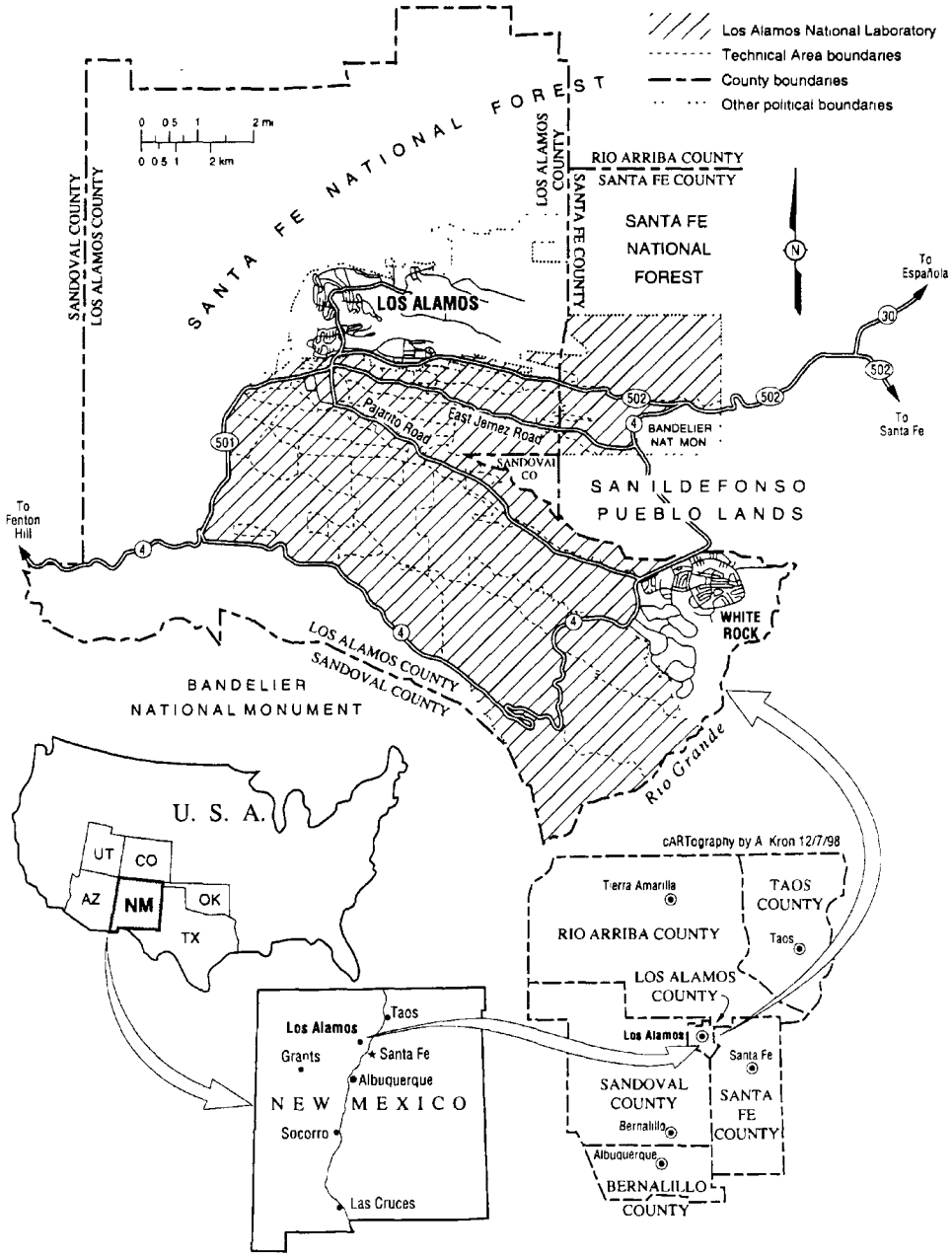

Figure 1. Location of Los Alamos National Laboratory

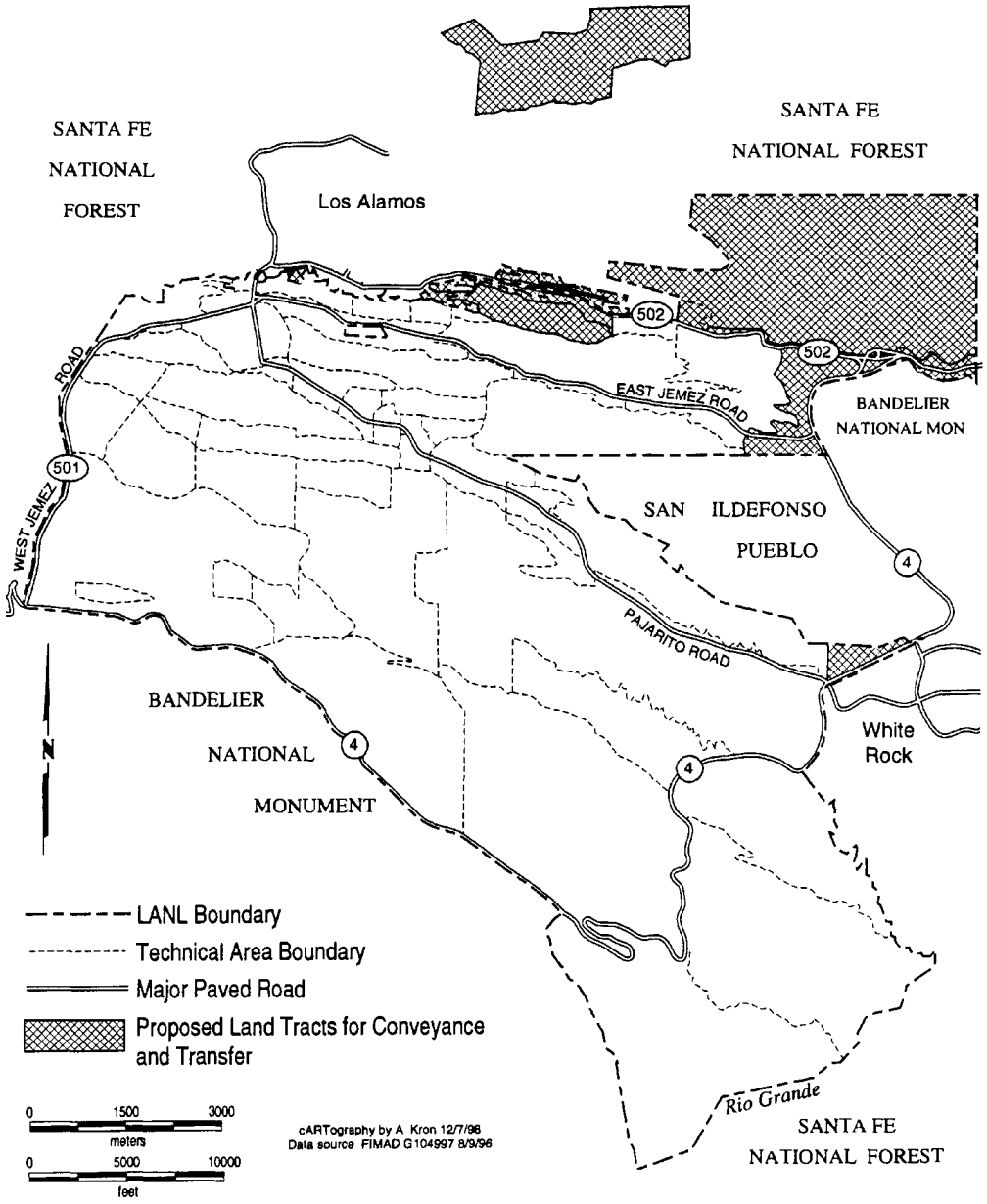

Figure 2. Location of proposed conveyance and transfer land tracts in Los Alamos and Santa Fe Counties

Floodplains are present in the Rendija, TA-21, Airport, White Rock "Y," TA-74, and White Rock tracts. Well-defined wetlands occur in the TA-21, Airport, and TA-74 tracts. These wetlands, although mapped, have not been delineated using the 1987 Corps of Engineers Wetlands Delineation Manual. Wetlands identified by the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) exist in Rendija Canyon, White Rock "Y," and White Rock tracts. Additionally, the NWI reflects wetlands in Los Alamos Canyon near the DOE Los Alamos Area Office(LAAO), DP Road, TA-21 tracts, part of the Airport tract, and in Pueblo Canyon near the Airport tract. These NWI wetland features are described using the methodology of Cowardin et al. (1979). Wetlands features cataloged in the NWI may not be consistent with the wetland delineation process in the 1987 Corps of Engineers Wetland Delineation Manual. Table 2 includes information for each tract regarding floodplain and wetland areas. Table 3 includes information for each tract regarding NWI features both within the tract and in nearby canyons. No floodplain or wetland resources are present in the DOE LAAO, Site 22, Manhattan Monument, or DP Road land tracts.

Table 2[1]. Conveyance and Transfer Tracts: Floodplains and Wetlands Areas.

Tract Name	Area ac/ha	Wetland Area in Tract ac/ha	Floodplain Area in Tract ac/ha
Rendija Canyon	910/368	NWI Area, See Table 3 [2]	6.0/2.5
DOE LAAO	15/6	None	None
Site 22	< 0.25/0.10	None	None
Manhattan Monument	< 0.25/0.10	None	None
DP Road	50/20	None	None
TA-21	260/105	NWI Area, See Table 3 [2] See also footnotes 3, and 4	See footnote 5
Airport	205/83	See footnote 4	See footnote 5
White Rock "Y"	540/219	NWI Area, See Table 3 [2]	11.7/4.7
TA-74	2,715/1,099	10.7/4.33 and see footnote 2	37.9/15.3
White Rock	100/40	NWI Area, See Table 3 [2]	4.0/1.64
TOTALS	4,795/1,950	10.7/4.33	56.1/27.6

1. Floodplain and Wetland areas calculated from GIS ARC/INFO and ArcView software using multiple UC data sets (Koch 1998). These figures are preliminary in nature. Final area calculations will be based upon surveyed boundaries for each land tract.

2. This tract includes wetlands identified on the NWI database in "line feature" format. These NWI wetlands are described in Table 3. Methods used to identify these areas may not be consistent with the wetland delineation process in the 1987 Corps of Engineers Wetland Delineation manual.

3. Wetlands in TA-21. These mesa top wetlands were associated with industrial outfalls. At some time in the past, these outfalls resulted in the creation of small (<1 ac, <1 ha) wetlands. These industrial outfalls have since been decommissioned and closed (DOE 1996). Eventually, these wetlands will disappear. This finding was confirmed by on-site evaluation during the 1998 field season.

4. A small (<1 ac, <1 ha) wetland exists in the bottom of DP Canyon, near the head of the canyon. With presently designated conveyance and transfer tract boundaries, portions of this wetland exist in both the Airport Tract (III) and the TA-21 Tract (I).

5. A non-delineated floodplain is present in DP Canyon. Location with respect to land tract has not been established. This floodplain may occur entirely in the TA-21 land tract or be partially in the Airport land tract.

Table 3. Conveyance and Transfer Tracts and Adjacent Canyons: National Wetlands Inventory Features[1] (Bennett 1993)

Tract	NWI Wetland Line Feature on Tract	NWI Wetlands in Nearby Canyons	Length of NWI Feature ft/m	Estimated Area[2] ac/ha
Rendija Canyon	R4SBA[3]	See below	5,597/1,706	1.3/0.5
Rendija Canyon	See above	Guaje Canyon[4] R4SBA/PEM1A[5]	22,068/6,726 40,401/12,314	5.1/2.1 9.3/3.8
DOE LAAO	None	LA Canyon[6] R4SBA/PSS1A [7]	32,369/13,100	7.4/3.0
Site 22	None	None	NA	NA
Manhattan Monument	None	None	NA	NA
DP-Road	None	LA Canyon R4SBA/PSS1A	NA	NA
TA-21	None	LA Canyon R4SBA/PSS1A	NA	NA
Airport	None	Pueblo Canyon[8] R4SBA/R4SBJ[9] PEM1KF[10] R4SBKC[11] PEM1A	24,346/7,421	5.6/2.3
White Rock "Y"	R4SBA/R4SBC[12]	None	19,373/5,905	4.5/1.8
TA-74	R4SBA/R4SBJ PEM1KF/ R4SBKC	None	13,518/4,120	3.1/1.3
White Rock	R4SBA	None	957/292	0.2/0.09
TOTALS	NA	NA	NA	36.5/14.8

1. Based on electronic versions of the NWI and classification terminology of Cowardin et al. (1979).
2. Area of the NWI wetlands was calculated by multiplying the total length by a mean width of 10 ft (3 m) and converting to acres and hectares.
3. R4SBA - Riverine (associated with a river or stream course, wetland not dominated by trees, shrubs, etc.), intermittent (flowing only part of each annual cycle), streambed (located in a streambed), and temporarily flooded (surface or subsurface water is present some portion of the year).
4. Length of Rendija Canyon NWI below transfer tract measured from tract to New Mexico (NM) State Route 502. Length of Guaje NWI measured from Guaje/Rendija confluence to NM State Route 502.
5. PEM1A - palustrine, (all nontidal wetlands dominated by trees, shrubs), emergent (plant tissue above the water surface), persistent (consistently present), temporarily flooded.
6. Length of Los Alamos Canyon NWI measured from Diamond Drive (Otowi Bridge) to NM State Route 4.
7. PSS1A - palustrine, scrub-shrub, broad-leaved deciduous plant species, temporarily flooded.
8. Length of Pueblo Canyon NWI measured from the West Airport Tract Boundary to NM State Route 502.
9. R4SBJ - riverine, intermittent, streambed, intermittently flooded.
10. PEM1KF - palustrine, emergent, persistent, artificially and intermittently flooded.
11. R4SBKC - riverine, intermittent, streambed, artificially and seasonally flooded.
12. R4SBC - riverine, intermittent, streambed, seasonally flooded

2.0 Description and Effects on Floodplains and Wetlands

Floodplains and wetlands are defined in 10 CFR 1022. Wetland functions are naturally occurring characteristics of wetlands such as food web production; general, nesting, resting, or spawning habitat; sediment retention; erosion prevention; flood and runoff storage; retention and future release; ground water discharge, or recharge; land nutrient retention and removal. Wetland values are ascribed by society based on perception of significance and include water quality improvement, aesthetic or scenic value,

experiential value, and educational or training value. These values often reflect concerns regarding economic values; strategic locations; and in arid regions, location relative to other landscape features. Thus, two wetlands with similar size and shape could serve the same function but have different values to society. For example, a wetland that retains or changes flood flow timing of a flood high in the mountains might not be considered as valuable as one of similar size that retains or changes flood flow timing of a flood near a developed community. Wetlands were addressed in the DRAFT LANL Site-Wide Environmental Impact Statement as follows:

> "Wetlands in the general LANL region provide habitat for reptiles, amphibians, and invertebrates and potentially contribute to the overall habitat requirements of the peregrine falcon, Mexican spotted owl, southwestern willow flycatcher, and spotted bat. Wetlands also provide habitat, food, and water for many common species such as deer, elk, small mammals, and many migratory birds and bats. The majority of the wetlands in the LANL region are associated with canyon stream channels or are present on mountains or mesas as isolated meadows containing ponds or marshes, often in association with springs (DOE 1998)."

Presence or absence of floodplains and wetlands on each of the ten land tracts proposed for conveyance or transfer has been assessed using Flood Hazard Boundary Maps for Los Alamos County (DHUD 1987), geographic information system (GIS) data sets, including the USFWS NWI, University of California (UC) internal data sets, on-site surveys, and previously developed floodplain modeling (McLin 1992). Proposed uses for each of the ten tracts being evaluated for conveyance or transfer are discussed, and specific information on floodplains, tract wetlands, and adjoining or nearby wetlands is provided. Land tract boundaries presented in this report are approximate. All land tracts will be surveyed and boundary lines defined prior to conveyance and transfer. These changes, if relevant to floodplain or wetlands concerns, will be addressed in revisions to the information presented in this report, as appropriate.

Each of the ten subject tracts is discussed below in the context of land uses proposed by the future recipients: the Los Alamos County (County), or the Secretary of Interior in trust for the San Ildefonso Pueblo (Pueblo). Only a "bounding" use is analyzed for each tract with respect to floodplains and wetlands. Floodplain and wetland considerations are presented as mandated in 10 CFR 1022 and the DOE Guidance on Environmental Requirements for DOE Real Property Transfers (1997).

Locations of floodplains and wetlands associated with, or in close proximity to, land tracts proposed for conveyance or transfer appear with the discussion of the individual tracts, in sections 2.1 through 2.10, below. McLin (1992) modeled all major 100-year floodplains for LANL using U.S. Army Corps of Engineers Hydrologic Engineering Center Hec-1 and Hec-2 computer based models. Figure 3 represents those floodplains on LANL. Wetlands within LANL have been broadly mapped by the USFWS. This information is available in the NWI in a GIS-based format. This hierarchical system follows Cowardin et al., 1979, and is based entirely on aerial photography. Small wetlands, or those in steep canyons, may not be detected using this method. Additional on-site surveys and internal UC databases were also used to gather information regarding these resources.

Sections 2.1 through 2.10 discuss the direct and indirect (both primary and secondary) effects of the Proposed Conveyance and Transfer Action on floodplain and wetlands resources located in the tracts or located within adjoining or nearby tracts not proposed for conveyance or transfer. Effect of proposed floodplain actions on lives and property, and on natural and beneficial floodplain values is evaluated. Los Alamos County Code NO. 85-70 (1987) identifies and addresses floodplain issues with respect to Los Alamos County lands. Provisions of the Los Alamos County Code No. 85-70 (1987) limit development in floodplains, eliminating or reducing the potential for loss of life or property. Similar provisions are provided by Santa Fe County Building Codes for construction within floodplain areas. Clean Water Act

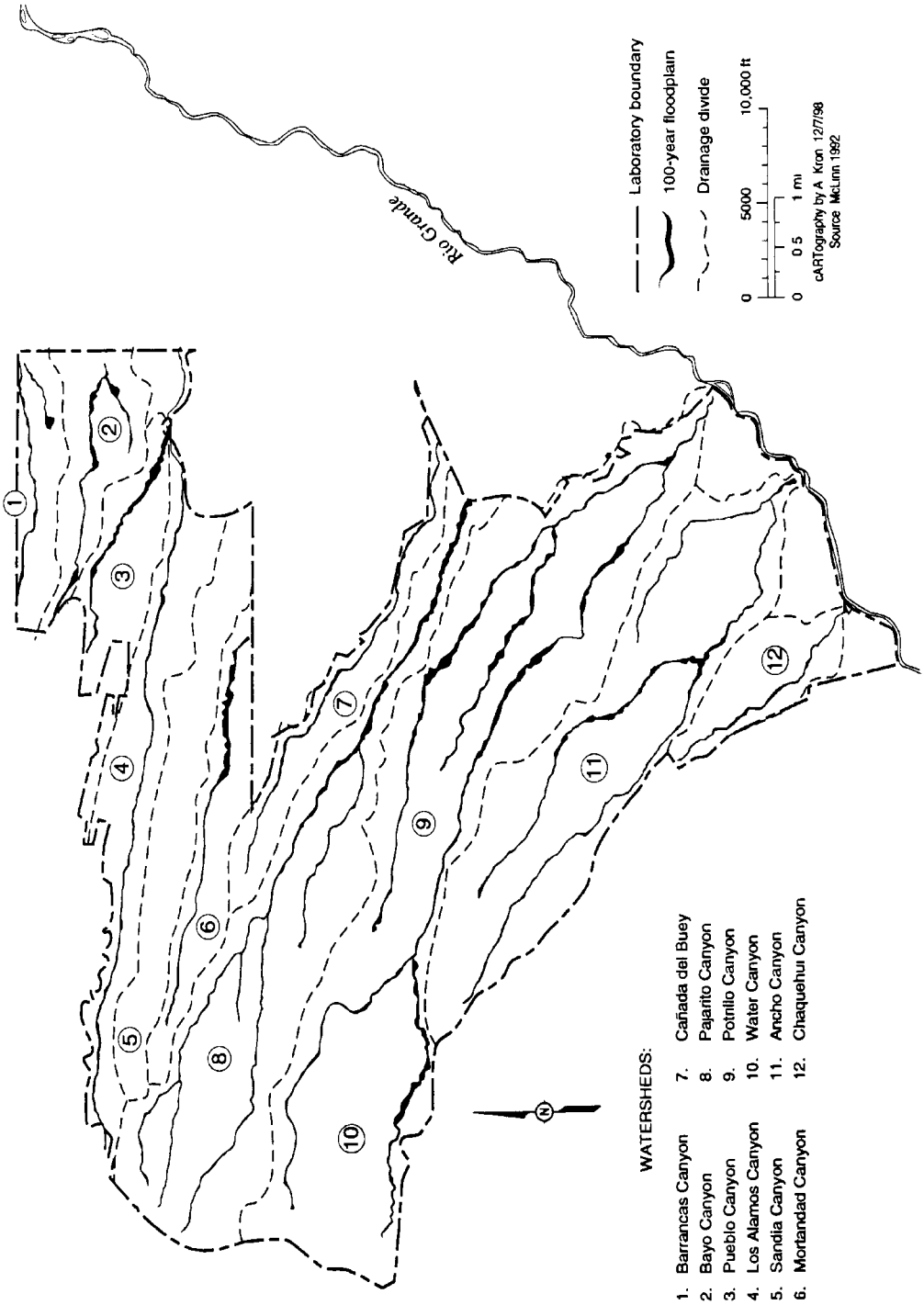

Figure 3. Los Alamos National Laboratory 100-year floodplain map.

404 permit process requirements would limit development in wetlands without regulatory review and consensus from the Corps of Engineers.

In the preparation of this report, a qualitative evaluation of potential development on mesa tops identified increased stormwater flows off mesas into canyons as a concern. These concerns include a potential for impacts to floodplain and wetland values, and contaminant-plume-movement. Potential effects are based on areas of impervious surface during and following development of mesa top areas.

Previous studies have quantified stormwater runoff for areas similar to the TA-21, DP Road, Airport, and DOE LAAO land tracts. In the "Environmental Assessment for the Transfer of the DP Road Tract to the County of Los Alamos, Los Alamos New Mexico," DOE (1997a), an analysis of the effect of changes to the DP Road Tract stormwater run-off is presented, noting:

> 'The Los Alamos Canyon watershed upstream from the DP Road Tract comprises about 24.6 sq km (9.5 sq mi) (based on McLin 1995). The DP Road Tract contributes about 12 hectares (28 acres) to the Los Alamos Canyon watershed. An individual six-hour storm event with a probability of reoccurring once every two years, would produce a total runoff volume in Los Alamos Canyon in the vicinity of the DP Road tract of about 8 acre-feet, with a peak flow of about 19 cubic feet per second.'

DOE concluded that the effects of this change were minimal, stating:

> 'Because stormwater runoff from the DP Road tract would constitute a very small fraction of the runoff from the upstream watershed, surface water quality would not be appreciably affected by the Proposed Action. BMPs (Best Management Practices) to control soil and sediment erosion would be implemented during construction.
>
> Development of the DP Road tract would probably increase stormwater runoff into Los Alamos Canyon. If the County discharges stormwater from a point source then LANL may implement erosion controls, such as the use of hay bales, riprap, and splash pads. Since the DP Road tract is approximately 0.1 percent of the Los Alamos Canyon watershed, the amount of additional runoff from development of the tract would be small compared to that derived from the total upstream watershed area. Therefore, any increase in mobilization of contaminated sediments due to increased runoff is expected to be negligible.'

Additional analysis was performed in the environmental assessment for the Research Park land lease (DOE 1997b). In this instance, DOE noted:

> 'Surface water discharge and soil erosion from annual and 100-year storm events are primary water quality issues associated with the construction and operation of new facilities at LANL. The proposed Research Park tract is situated in an area that is partially developed for use as parking lots and includes vacant land covered by native vegetation and undisturbed rock and soil. The 30 ac (12 ha) proposed for development has a less than 20 percent slope and is divided by a natural drainage channel which flows from the west to the east and northward into Los Alamos Canyon (See Figure 2-2). Los Alamos Canyon contains an established perennial stream, which flows from the west down stream to the east. Currently, it is estimated that the site proposed for development generates 14 acre-feet of runoff per year and could generate 58 cubic feet per second (cfs) during a 100-year flood event (Lemke 1997). Surface water generated during storm events is directly absorbed by soil and vegetation, collected from over a small portion of the site into a small existing retention pond, or flows off the site into Los Alamos Canyon via natural drainage channels.'

In this instance, DOE (1997b) presented two conclusions, one addressing responsibilities of the parties to the lease agreement:

> 'As a provision of the DOE lease on the proposed Research Park tract, the County would be required to apply for, and attain, an NPDES [sic National Pollutant Discharge Elimination System] permit through the State of New Mexico or EPA. As part of the NPDES construction permit application, the County would prepare and submit an NPDES SWPP [sic Storm Water Pollution Prevention (SWPP)] Plan. The NPDES SWPP Plan would formally identify all site surface water drainage plans and the BMPs that would be implemented to avoid unnecessary soil erosion during the construction and operation of the proposed Research Park. The BMPs would include designs for constructing and maintaining all necessary surface water flow check dams, stormwater retention ponds, and other erosion control measures. Specific measures would be implemented to avoid disturbance, stormwater run-on and run-off from existing PRSs as deemed necessary by the NMED and EPA under the NPDES permit.'

and a second, concerning potential impacts:

> 'A maximum of about 30 ac (12 ha) would be disturbed during construction of the proposed Research Park, and after construction, the developed area would consist of an estimated 14.2 ac (5.6 ha) of rooftops, asphalt, and concrete surfaces. Based on this and other site-specific information, LANL analyzed the potential stormwater discharge that could be generated during and after the construction of the proposed Research Park. During construction, the site under development could generate a peak surface water discharge of 58 cfs [sic cubic feet per second] during a single 100-year flood event. Once constructed, the developed area of the proposed Research Park would generate 27 ac-ft [sic acre-feet] of stormwater runoff annually, and could generate as much as 118 cfs during a single 100-year flood event (Lemke 1997).
>
> The EPA has established regulations and guidelines for the development of a SWPP Plan for construction sites. The EPA regulations state that for a common drainage serving an area with 10 or more disturbed ac (4 or more ha), a stormwater retention pond providing 3,600 ft^3 (100 m^3) of storage capacity must be provided to sufficiently control erosion from surface water discharges. During both construction and operation of the proposed Research Park, surface water discharges off the site would be controlled using the BMPs specified in the NPDES permit and SWPP Plan. Under these conditions, the proposed action is not expected to adversely affect water quality.'

Quantitative information with respect to stormwater flood flows from the ten individual land tracts has not been developed. Stormwater flood flows for the White Rock land tract were assessed (McLin 1998) using current commercial versions of the U.S. Army Hec-1 and Hec-2 hydrology models. Soils, slope, and vegetation on the White Rock land tract are similar to conditions existing on other land tracts, but a direct correlation between all tracts has not been established. McLin's (1998) model evaluation of the White Rock land tract indicates current runoff from the White Rock land tract, with no human-made impervious services is 26 cubic feet per second (cfs) (0.7 cubic meters per second [cms]). That flow would increase to 74 cfs (2.1 cms) if one-half of the White Rock land tract were paved. Additional information for other flows is presented in Section 2.10 on the White Rock land tract.

Although this information is not specific to all areas being considered for conveyance or transfer, it reflects the nature and scope of the anticipated effects on floodplain values, wetland values, and potential movement of contaminant plumes in canyon areas. Existing human-made structures designed to collect and convey stormwater flows may be insufficient to control increased stormwater flows. Also, current "end-of-pipe" velocity diffusing devices (such as "rip/rap") and erosion control devices (such as silt fence)

may be overwhelmed by increased flows, potentially impacting downstream floodplain or wetland values on lands not associated with the conveyance and transfer process.

2.1 Rendija Canyon Tract

2.1.1 Description

The Rendija Canyon tract consists of approximately 910 ac (368 ha) (Figure 4). Rendija Canyon lies at the extreme north edge of the Los Alamos townsite and extends north and east into open land without facilities or structures. This tract includes a significant portion of Rendija Canyon. The tract is adjacent to Forest Service property in Guaje Canyon to the north and Barrancas Canyon to the south.

Rendija Canyon is mostly undeveloped. There is a shooting range on land leased from DOE and a single residence near the shooting range. A portion of this tract was previously used as a firing site for military ordnance by LANL's management and operations contractor. Water well pumping stations exist in the bottom of the canyon just off the tract.

2.1.2 Proposed Use

Rendija Canyon tract may be used for cultural preservation or natural areas and residential use. Residential use is the bounding use for the purposes of this analysis. The bounding use assumes all land area with less than a 20 percent slope will be incorporated in that use, if the use is commercial, industrial, or residential. Uses for cultural preservation or natural areas assume no development will occur.

2.1.3 Floodplains and Wetlands Description and Impacts from Proposed Conveyance and Transfer Action

Floodplains

Rendija Canyon has an ephemeral stream with a moderately broad floodplain occupying 30 to 50 percent of the canyon bottom. Flow and seasonality information are not available. It is apparent from a reconnaissance of the area that flood waters have occurred in the past. Floodplain information is depicted in DHUD (1987), and was confirmed by on-site evaluation during the 1998 field season (April to October 1998).

Tract Wetlands

Wetlands in Rendija Canyon consist primarily of disjointed segments separated by non-wetland vegetation and exposed rock. These linear wetlands range in width from a few feet (<1 m) to perhaps 10 ft (3 m). Individual segments of wetland plant species range from sparse to moderately dense. These wetlands are primarily riparian (stream associated), and vegetation is dominated by willow (*Salix* sp.). Other species that may occur include cottonwood (*Populus* sp.), Rocky Mountain maple, or box elder (*Acer* sp.) and water birch (*Betula* sp.). Species of wet grasses may also be present. These riparian wetlands function primarily as sediment traps and also provide valuable habitat diversity for resident animals and migratory birds. Small quantities of water, sufficient for requirements of resident or

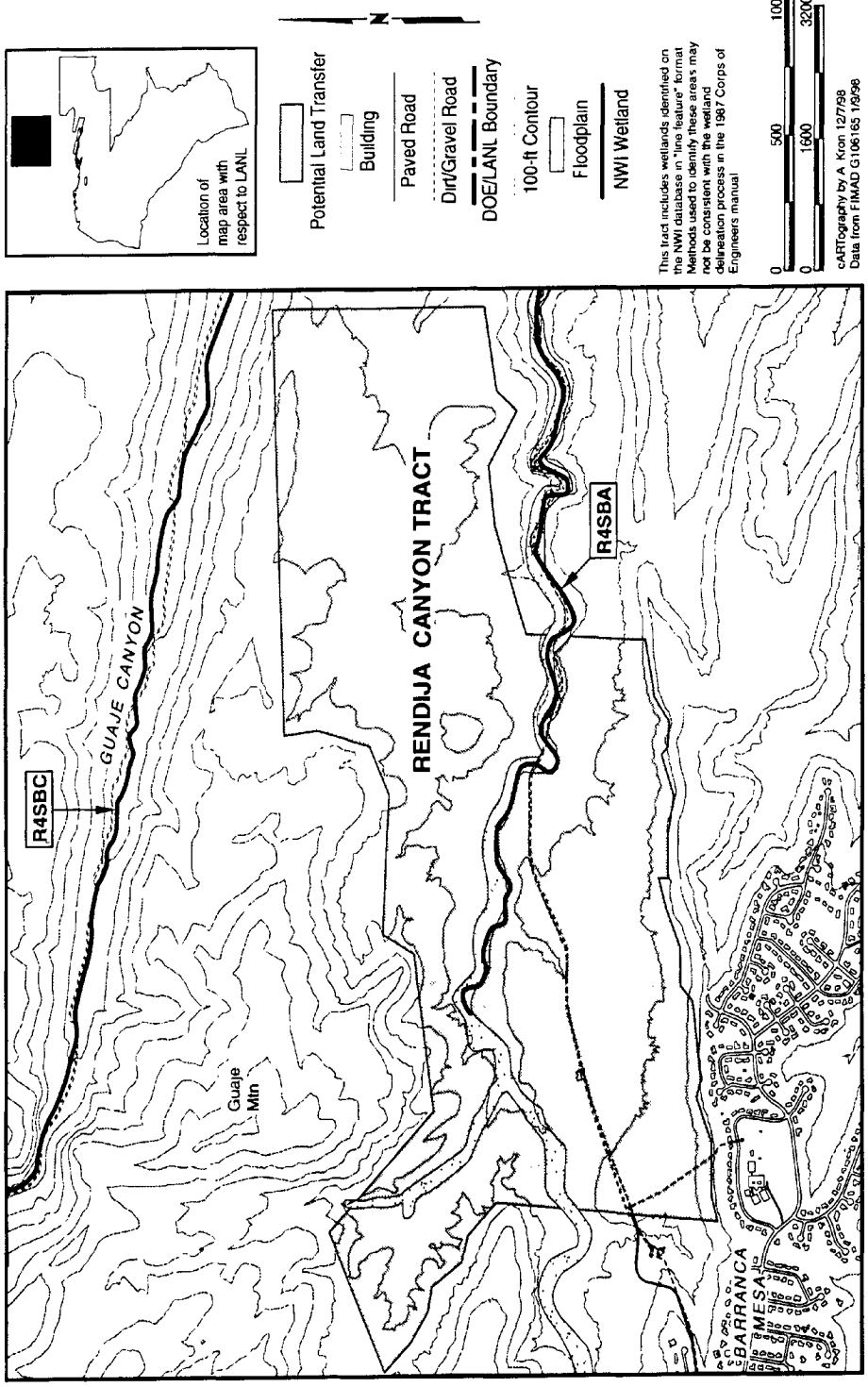

Figure 4. Overview and surface water features (floodplains and wetlands) for proposed land tract Rendija Canyon.

migratory species, may be present during dry portions of the year, depending upon precipitation, evaporation, and other natural processes.

These wetlands were identified as a "line feature" and categorized by the NWI process as "riverine," or "R4SBA," where R-riverine is associated with a river or stream course, wetland not dominated by trees, shrubs, etc., 4-intermittent is flowing only part of each annual cycle, SB-streambed is located in a streambed, and A-temporarily flooded is surface or subsurface water is present some portion of the year. A total of approximately 5,597 ft (1,706 m) of R4SBA category of wetlands exists in the Rendija Canyon land tract. Methods used to identify these areas may not be consistent with the wetland delineation process in the 1987 Corps of Engineers Wetland Delineation Manual. An explanation of the types and extent of these NWI wetlands is presented in Table 3 in Section 1.4 of this assessment.

Summary of Impacts

Direct impacts or effects on floodplain or wetland values have not been identified for the Rendija Canyon land tract. No potential for loss of life or property have been identified with respect to floodplains in this tract.

Primary indirect impacts (on tract lands) resulting from future development of this tract for residential use could result in complete or partial loss of wetlands and their associated values as a direct result of construction activities (removal of wetland areas or impact from vehicle activity) or by indirect effects (such as runoff). Wetland values are described in the first paragraph of Section 2.0 of this assessment. Wetland values potentially impacted by residential development in the Rendija Canyon land tract include food production, nesting or resting habitat, sediment retention, water quality improvement, and experiential or educational. Development in the floodplain portion of the tract could result in a potential for loss of human life and/or property. Mitigations could be installed to reduce or eliminate these impacts.

Secondary indirect impacts (off tract lands) resulting from future development of the Rendija Canyon land tract for residential use could result in effects to floodplain and wetland resources in canyon bottoms not associated with the subject tract. These secondary indirect effects are anticipated to come from both changes in timing of stormwater runoff and increases in stormwater runoff from increased impermeable surfaces within the tract. Floodplain values potentially impacted by residential development in the Rendija Canyon land tract include alteration of flood flow retention times, redistribution of sediments, and stream channel migration. Wetland values potentially impacted by residential development in the Rendija Canyon Land Tract include alteration of downstream wetland food production, nesting or resting habitat, sediment retention time changes, and loss of experiential or educational opportunities. Mitigations could be installed to reduce or eliminate these off-site impacts.

At a minimum, best management practices for runoff control, such as silt barriers and stormwater retention ponds, should be in place to mitigate runoff effects during construction or development efforts. These best management practices should incorporate considerations of the NPDES permit program and Environmental Protection Agency (EPA) requirements for a SWPP Plan on projects where more than 5 ac (2 ha) will be disturbed. A stormwater retention pond providing 3,600 ft^3 (100 m^3) of storage capacity is the EPA standard for NPDES permits for a common drainage serving an area with 10 or more disturbed acres (4 ha or more). Following construction, stormwater runoff from developed sites may be subject to NPDES permit restrictions and requirements.

2.2 DOE Los Alamos Area Office Tract

2.2.1 Description

The DOE LAAO tract consists of approximately 15 ac (6 ha) within the Los Alamos townsite. It is located in the urban portion of the Los Alamos townsite (Figure 5) and is accessible from Trinity Drive, a major vehicle artery. The site is separated from Trinity Drive by private property. This tract is above and to the north of Los Alamos Canyon. All utilities (gas, water, sewer, and electric) are present at the site.

2.2.2 Proposed Use

The DOE LAAO tract has been identified for future commercial or residential use; commercial use constitutes the bounding future use for this analysis. The bounding use assumes all land area with less than a 20 percent slope will be incorporated in that use if the use is commercial, industrial, or residential. Uses for cultural preservation or natural areas assume no development will occur.

2.2.3 Floodplains and Wetlands Description and Summary of Impacts from Conveyance and Transfer Action

Floodplains

The DOE LAAO land tract has no floodplains within its boundaries. Floodplains have been defined in adjacent Los Alamos Canyon.

Tract Wetlands

The DOE LAAO tract has no wetlands within its boundaries. Wetlands have been defined in adjacent Los Alamos Canyon.

Nearby or Adjoining Wetlands

Wetlands are present in Los Alamos Canyon which adjoins the DOE LAAO land tract, the DP Road land tract, the TA-21 land tract, and the Airport land tract (through DP Canyon). These Los Alamos Canyon wetlands consist of lengthy but disjointed segments with non-wetland vegetation or rock areas intermixed. These linear wetland features range in width from one to several feet (<1 m to ~ 3 m) and individual segments of vegetation may be sparse, consisting of only a few plants, or moderately dense. A “riverine” element, or “R4SBA,” has been identified by the NWI, where R-riverine is associated with a river or stream course, wetland not dominated by trees, shrubs, etc., 4-intermittent is flowing only part of each annual cycle, SB-streambed is located in a streambed, and A-temporarily flooded is surface or subsurface water and is present some portion of the year. Vegetation in these stretches is dominated by willow. Other species that may occur include cottonwood, Rocky Mountain maple or box elder, and water birch. Species of wet grasses may also be present.

“Palustrine” reaches of wetlands, or “PSS1A,” have also been identified by the NWI for this tract, where P-palustrine is all non-tidal wetlands dominated by trees and shrubs, SS-scrub-shrub is 1-broad-leaved deciduous plant species, and A-temporarily flooded. These wetlands are primarily riparian (stream associated) in nature, and the understory vegetation is dominated by cattails (*Typha* sp.) or sedges (*Carex* sp.) and rushes (*Juncus* sp.), generally occurring in the stream channel. Overstory species include

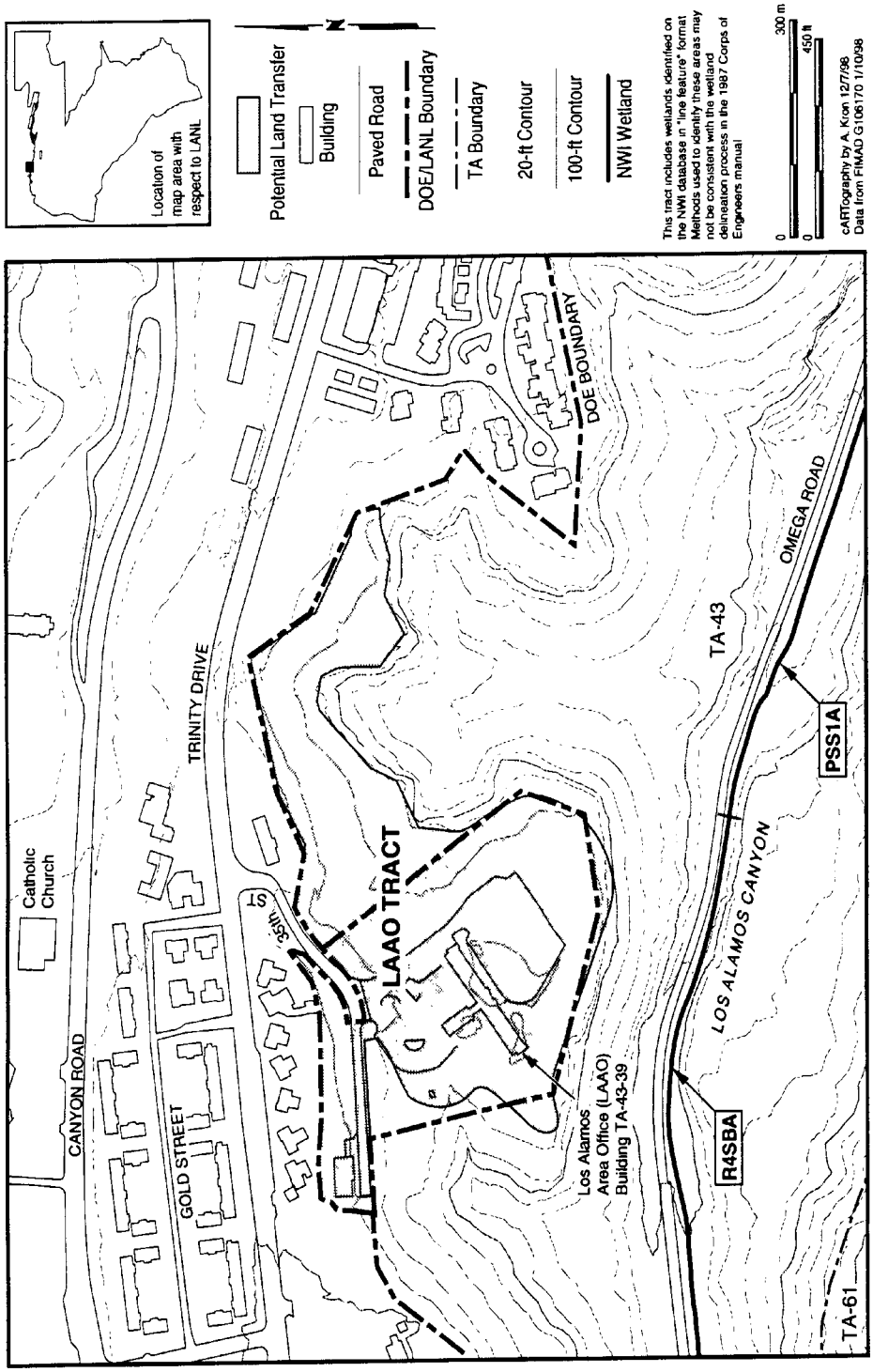

Figure 5. Location of proposed land tract LAAO.

cottonwood and willow with other species such as Rocky Mountain maple or box elder present in some locations.

These riparian wetlands function primarily as sediment traps and also provide valuable diversity of habitat for resident animals and migratory birds. Small quantities of water, sufficient for requirements of resident or migratory species may be present during dry portions of the year, depending upon precipitation, evaporation and other natural processes. Hydrology for these wetlands is surface water and potentially subsurface alluvial flow from the stream in Los Alamos Canyon. A total of 32,369 ft (13,100 m) of RS4BA and PSS1A wetlands are present in Los Alamos Canyon between the Otowi Bridge and New Mexico State Route 4.

Summary of Impacts

Direct impacts or effects on floodplain or wetland values have not been identified for the DOE LAAO land tract. No potential for loss of life or property have been identified with respect to floodplains in this tract.

Primary indirect impacts (on tract lands) to floodplains or wetlands resulting from future development of the DOE LAAO land tract for commercial or industrial use have not been identified. No on tract floodplain or wetland values would be impacted by commercial development on the DOE LAAO land tract.

Secondary indirect impacts (off tract lands) resulting from future development of the DOE LAAO land tract for commercial or industrial use could result in minimum impacts to floodplain and wetland values in canyon bottoms not associated with the subject tract. Off tract floodplain values potentially impacted by commercial development in the DOE LAAO land tract include alteration of flood flow retention times, redistribution of sediments, and stream channel migration.

Wetland values are described in the first paragraph of Section 2.0 of this assessment. Off tract wetland values potentially impacted by commercial development in the DOE LAAO land tract include alteration of downstream wetland food production, nesting or resting habitat, sediment retention time changes, and loss of experiential or educational opportunities. These minor secondary indirect impacts are anticipated to come from both changes in timing of stormwater runoff and increases in stormwater runoff from increased impermeable surfaces within the tract. Mitigation could be installed to eliminate or minimize these impacts.

At a minimum, best management practices for runoff control, such as silt barriers and stormwater retention ponds, should be in place to mitigate runoff effects during construction or development efforts. These best management practices should incorporate considerations of the NPDES permit program and EPA requirements for a SWPP Plan on projects where more than 5 ac (2 ha) will be disturbed. A stormwater retention pond providing 3,600 ft^3 (100 m^3) of storage capacity is the EPA standard for NPDES permits for common drainage serving an area with 10 or more disturbed acres (4 ha or more). Following construction, stormwater runoff from developed sites may be subject to NPDES permit restrictions and requirements.

2.3 Site 22 Tract

The Site 22 land tract consists of a location west of Trinity Drive and surrounded by commercial development (Figure 6) that totals less than 0.25 ac (0.10 ha) in the center of the Los Alamos townsite on the Los Alamos mesa top. Site 22 is immediately adjacent to Los Alamos Canyon and behind commercial developments on Trinity Drive. No floodplains or wetlands are associated with this land tract. Commercial use is the bounding use for this analysis.

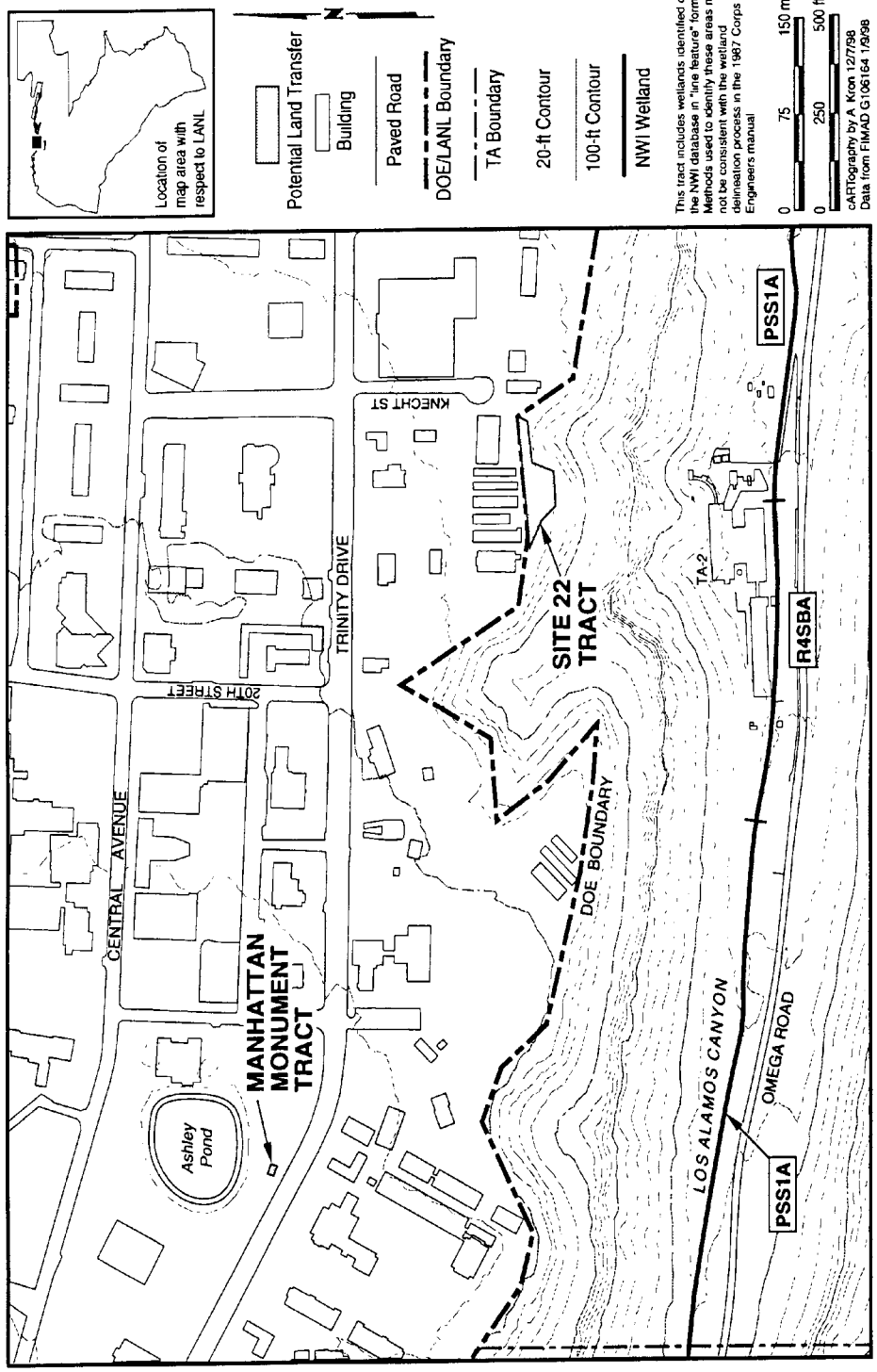

Figure 6. Location of proposed land tract Site 22 and Manhattan Monument.

2.4 Manhattan Monument Tract

The Manhattan Monument (Figure 6) consists of a small timber and roof building in the center of the Los Alamos commercial district. A plaque is displayed. Total area of this site is less than 0.25 ac (0.10 ha). No floodplains or wetlands are associated with this land tract. Future use is expected to remain unchanged.

2.5 DP Road Tract

2.5.1 Description

The DP Road tract consists of approximately 50 ac (20 ha) of generally undeveloped lands on the eastern edge of the Los Alamos townsite (Figure 7). The DP Road segments, north, south and west, are west of the TA-21 Tract and adjacent to it. The south DP Road area is adjacent to Los Alamos Canyon. A portion of the extreme upper end of DP Canyon may be included in the DP Road land tract.

The land proposed for conveyance or transfer is on the mesa top above Los Alamos Canyon on the south and DP Canyon on the north at elevations of approximately 7,200 ft (2,195 m). This tract is bisected by DP Road which terminates at a LANL complex (TA-21) at the end of South Mesa.

2.5.2 Proposed Use

DP Road tract has been identified as an area for commercial and industrial use. DP Road South has been identified for possible residential use. The bounding use for the tract is commercial/industrial. The bounding use assumes all land area with less than a 20 percent slope will be incorporated in that use, if the use is commercial, industrial, or residential. Uses for cultural preservation or natural areas assume no development will occur.

2.5.3 Floodplains and Wetlands Description and Impacts from Proposed Conveyance and Transfer Action

Floodplains

At this time, no floodplains have been identified on the DP Road land tract.

Tract Wetlands

A review of the USFWS NWI revealed no wetlands in the DP Road land tract. An on-site evaluation performed during the 1998 field season confirmed that there are no wetlands within the tract boundaries.

Nearby or Adjoining Wetlands

Wetlands are present in Los Alamos Canyon which adjoins the DP Road land tract. These wetland features are presented in Section 2.2.3 “Nearby or Adjoining Wetlands” for the DOE LAAO land tract.

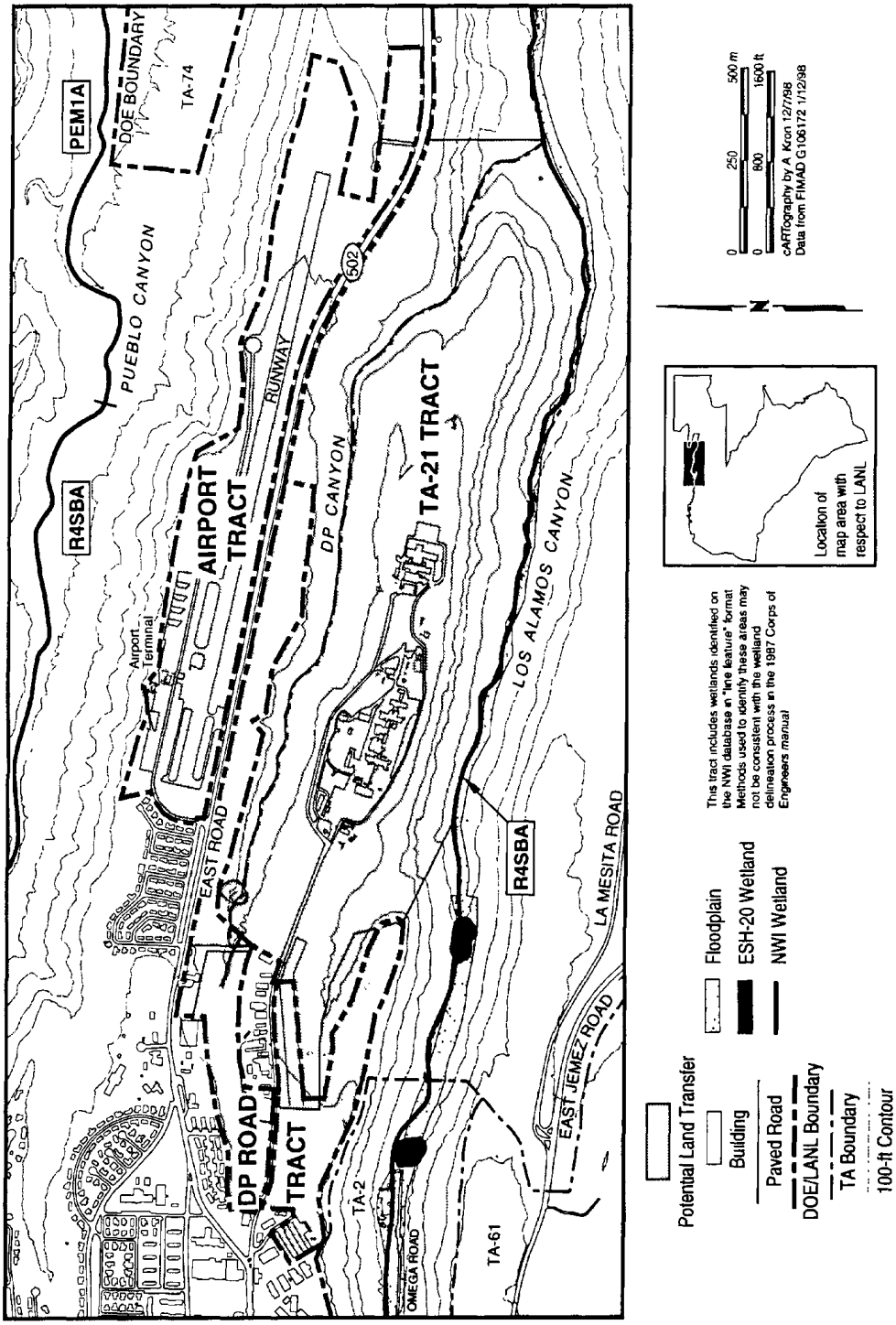

Figure 7. Overview and surface water features (floodplains and wetlands) for proposed land tracts TA-21, DP Road, and Airport.

Summary of Impacts

Direct impacts or effects on floodplain or wetland values have not been identified for the DP Road land tract. No potential for loss of life or property have been identified with respect to floodplains in this tract.

No floodplains or wetlands are present on the DP Road land tract. No primary indirect impacts (on tract lands) resulting from future development of the DP Road land tract for commercial or industrial would occur.

Secondary indirect impacts (off tract lands) resulting from future development of the DP Road land tract for commercial or industrial use could result in minimum effects to floodplain and wetland resources in canyon bottoms not associated with the subject tract. Off tract floodplain values potentially impacted by commercial development in the DP Road land tract include alteration of flood flow retention times, redistribution of sediments, and stream channel migration. Wetland values are described in the first paragraph of Section 2.0 of this assessment. Off tract wetland values potentially impacted by commercial development in the DP Road land tract include alteration of downstream wetland food production, nesting or resting habitat, sediment retention time changes, and loss of experiential or educational opportunities. These secondary indirect effects are anticipated to come from both changes in timing of stormwater runoff and increases in stormwater runoff from increased impermeable surfaces within the tract. Mitigations could be installed to eliminate or minimize these impacts.

At a minimum, best management practices for runoff control, such as silt barriers and stormwater retention ponds, should be in place to mitigate runoff effects during construction or development efforts. These best management practices should incorporate considerations of the NPDES permit program and EPA requirements for a SWPP Plan on projects where more than 5 ac (2 ha) will be disturbed. A stormwater retention pond providing 3,600 ft^3 (100 m^3) of storage capacity is the EPA standard for NPDES permits for common drainage areas serving an area with 10 or more disturbed acres (4 ha or more). Following construction, stormwater runoff from developed sites may be subject to NPDES permit restrictions and requirements.

2.6 TA-21 Tract

2.6.1 Description

Technical Area (TA) 21 (Figure 7) consists of approximately 260 ac (105 ha) of land on the eastern edge of the Los Alamos townsite. TA-21 tract is located primarily on a mesa top above Los Alamos Canyon on the south and DP Canyon on the north at elevations of approximately 7,200 ft (2,195 m). A portion of the DP Canyon is included in the TA-21 land tract. TA-21 is among the oldest technical areas at LANL. It is the site of the former radioactive materials (plutonium) processing facility.

2.6.2 Proposed Use

The TA-21 land tract has been identified for commercial and industrial use. Commercial or industrial use constitutes the bounding use. The bounding use assumes all land area with less than a 20 percent slope will be incorporated in that use.

2.6.3 Floodplains and Wetlands Description and Impacts from Proposed Conveyance and Transfer Action

Floodplains

The TA-21 land tract mesa top lands include no floodplain areas. Boundary lines for the TA-21 land tract extend to the canyon bottoms in Los Alamos Canyon and DP Canyon where floodplains exist. Land tract boundaries presented in Figure 7 indicate that a portion of the upper end of DP Canyon is included in the TA-21 land tract. This DP Canyon floodplain has not been evaluated for size or extent.

Tract Wetlands

TA-21 has two types of wetlands present within its boundaries. A review of the USFWS NWI and wetland mapping data of LANL indicated the presence of wetlands in TA-21. At some time in the past, industrial outfalls resulted in the creation of these small, mesa top (<1 ac [<0.4 ha]) wetlands. These industrial outfalls have since been decommissioned and closed. Eventually, these associated wetlands will be depleted and disappear. Additionally, a small section of non-delineated riverine wetland and wetland dominated by willows exists in the bottom of DP Canyon, near the upper end of the canyon. The apparent water source for this wetland is surface runoff from the top and sides of the canyon. This wetland is in the floodplain for DP Canyon. This wetland is located between the Airport land tract on the north and the TA-21 land tract on the south. Final surveys for land tract boundaries may result in this wetland being incorporated in one or the other of these tracts.

Nearby or Adjoining Wetlands

Wetlands are present in Los Alamos Canyon which adjoins the TA-21 land tract. These wetland features are presented in Section 2.2.3 “Nearby or Adjoining Wetlands” for the DOE LAAO land tract.

Summary of Impacts

Direct impacts or effects on floodplain or wetland values have not been identified for the TA-21 land tract. No potential for loss of life or property have been identified with respect to floodplains in this tract.

Primary indirect impacts (on tract lands) resulting from future development of the TA-21 land tract for commercial or industrial use could result in complete or partial loss of wetlands and their associated values as a direct result of construction activities (removal or wetland areas or impact from vehicle activity) or by indirect effects (such as runoff).

Wetland values are described in the first paragraph of Section 2.0 of this assessment. Wetland values potentially impacted by commercial or industrial development in the TA-21 land tract include food production, nesting or resting habitat, sediment retention, water quality improvement, and experiential or education. Mitigations could be installed to eliminate or minimize these impacts.

Secondary indirect impacts (off tract lands) resulting from future development of the TA-21 land tract for commercial or industrial use could result in slight impacts to floodplain and wetland resources in canyon bottoms not associated with the subject tract. These secondary indirect impacts are anticipated to come from both changes in timing of stormwater runoff and increases in stormwater runoff from increased impermeable surfaces within the tract. Mitigation could be installed to minimize or eliminate these impacts. Off tract floodplain values potentially impacted by commercial development in the TA-21 land tract include alteration of flood flow retention times, redistribution of sediments, and stream channel migration. Off tract wetland values potentially impacted by commercial development in the TA-21 land tract include alteration of

downstream wetland food production, nesting or resting habitat, sediment retention time changes, and loss of experiential or educational opportunities.

At a minimum, best management practices for runoff control, such as silt barriers and stormwater retention ponds, should be in place to mitigate runoff effects during construction or development efforts. These best management practices should incorporate considerations of the NPDES permit program and EPA requirements for a SWPP Plan on projects where more than 5 ac (2 ha) will be disturbed. A stormwater retention pond providing 3,600 ft^3 (100 m^3) of storage capacity is the EPA standard for NPDES permits for a common drainage serving an area with 10 or more disturbed acres (4 ha or more).
Following construction, stormwater runoff from developed sites may be subject to NPDES permit restrictions and requirements.

2.7 Airport Tract

2.7.1 Description

The Los Alamos Airport tract consists of approximately 205 ac (83 ha) located east of the Los Alamos townsite (Figure 7). The Airport Tract is immediately adjacent to New Mexico State Route 502 (East Road) near the old "East Gate" location.

The Airport tract occupies the mesa top above Pueblo Canyon on the south and Bayo Canyon on the north. To the south approximately 0.4 km (0.25 mi), is Los Alamos Canyon. Single-family residential development borders the western side of this tract and commercial development and East Gate Park are to the east on New Mexico State Route 502. Airport features include a single runway, taxi-ways, a terminal building, private hangars, parking and other associated facilities. All utilities are available: water, sewer, gas, and electric. Commercial air transportation has been present at this site since 1948. Prior to use as an airport, the area was used as a landfill. Other areas of the tract are currently undeveloped.

2.7.2 Proposed Use

The Airport tract has been identified as an area for commercial use or commercial and industrial use. The bounding use assumes all land area with less than a 20 percent slope will be incorporated in that use, if the use is commercial, industrial, or residential. Uses for cultural preservation or natural areas assume no development will occur.

2.7.3 Floodplains and Wetlands Description and Impacts from Proposed Conveyance and Transfer Action

Floodplains

The Airport land tract contains primarily mesa top lands and includes no floodplains on the mesa top. Land tract boundaries presented in Figure 7 indicate that a portion of the upper end of DP Canyon is included in the Airport land tract. This DP Canyon floodplain has not been evaluated for size or extent.

Tract Wetlands

The Airport land tract has no USFWS NWI wetlands. However, a small willow-dominated wetland exists in the bottom of DP Canyon near the top of the drainage. With the designated tract boundaries, portions of this wetland exist in both the Airport tract and the TA-21 tract. This wetland and potential impacts to wetland values are discussed in Section 2.6, TA-21 Land Tract.

Nearby or Adjoining Wetlands

Adjoining the Airport land tract is Pueblo Canyon (Figures 3 and 8) where stretches of riverine (R4SBA) and palustrine (PEM1A) wetlands are identified by the USFWS NWI. These wetlands are discussed in the TA-74 Land Tract, Section 2.9.3.

Summary of Impacts

Direct impacts on floodplain or wetland values have not been identified for the Airport land tract. No potential for loss of life or property has been identified with respect to floodplains in the tract.

Primary indirect impacts (on tract lands) resulting from future development of the Airport land tract for commercial or industrial use could result in complete or partial or complete loss of wetlands and their associated values as a direct result of construction activities (removal or wetland areas or impact from vehicle activity) or by indirect effects (such as runoff).

These losses of floodplain and wetland values are discussed in the TA-74 and TA-21 sections. Mitigations could be installed to eliminate or minimize these impacts.

Secondary indirect impacts (off tract lands) resulting from future development of the Airport land tract for commercial or industrial use could result in minor impacts to floodplain and wetland resources in canyon bottoms not associated with the subject tract. These secondary indirect impacts are anticipated to come from both changes in timing of stormwater runoff and increases in stormwater runoff from increased impermeable surfaces within the tract. Mitigations could be installed to minimize or mitigate these impacts.

At a minimum, best management practices for runoff control, such as silt barriers and stormwater retention ponds, should be in place to mitigate runoff effects during construction or development efforts. These best management practices should incorporate considerations of the NPDES permit program and EPA requirements for a SWPP Plan on projects where more than 5 ac (2 ha) will be disturbed. A stormwater retention pond providing 3,600 ft^3 (100 m^3) of storage capacity is the EPA standard for NPDES permits for a common drainage serving an area with 10 or more disturbed acres (4 ha or more). Following construction, stormwater runoff from developed sites would be subject to NPDES permit restrictions and requirements.

2.8 White Rock "Y" Tract

2.8.1 Description

The White Rock "Y" tract (Figure 8) consists of approximately 540 ac (219 ha) of undeveloped land. It is adjacent to New Mexico State Route 4 and a portion of Bandelier National Monument. It is located at the extreme southern end of LANL property. The White Rock "Y" tract area is adjacent to Los Alamos Canyon to the east, and Mortandad, and Sandia canyons to the west.

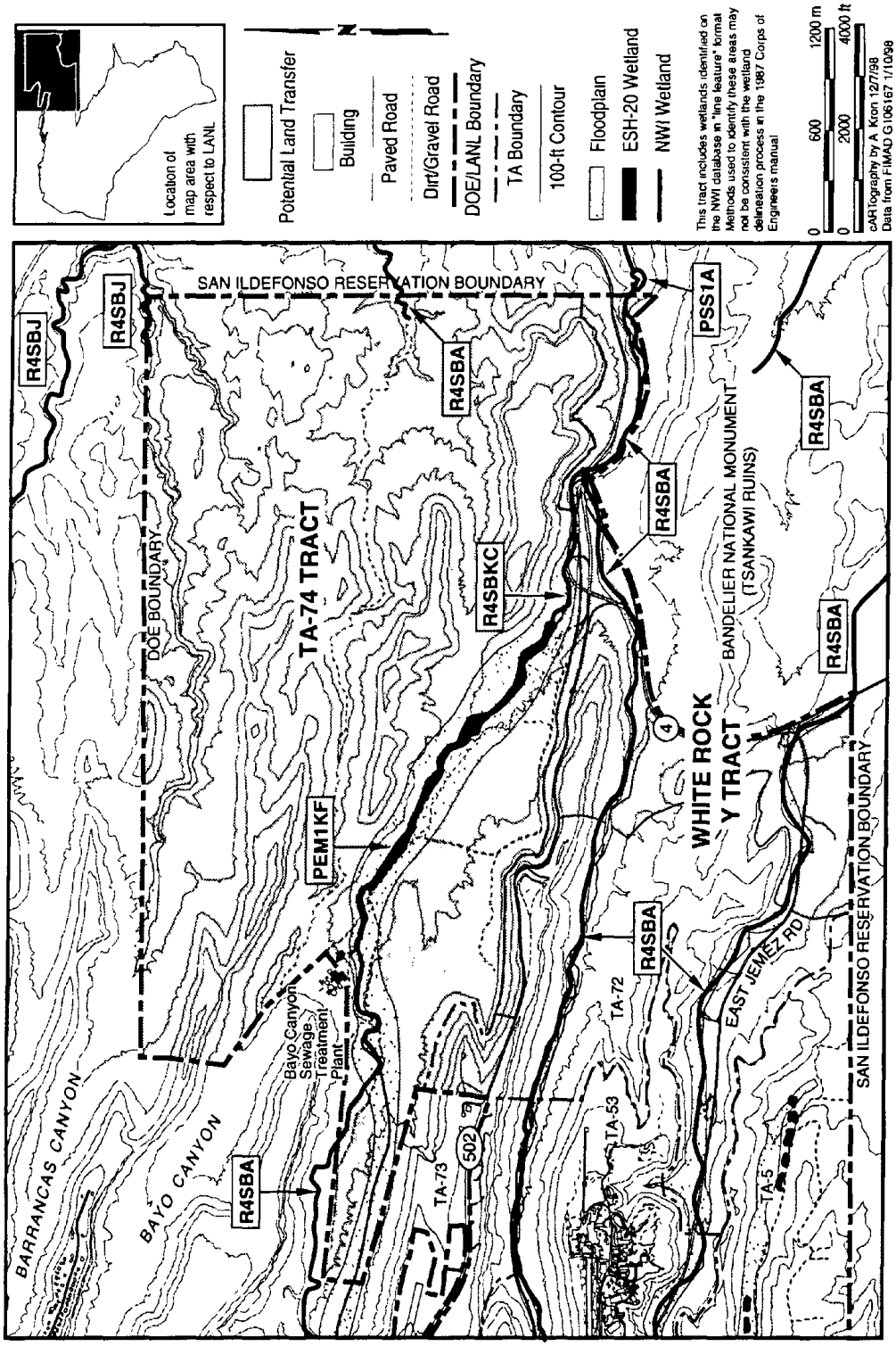

Figure 8. Overview and surface water features (floodplains and wetlands) for proposed land tract TA-74 and White Rock "Y".

2.8.2 Proposed Use

The White Rock "Y" tract has been identified for cultural preservation use or as an area for natural areas, transportation, and utility use. The bounding land use is natural areas, transportation, and utility use for the purposes of this analysis. The bounding use for the White Rock "Y" land tract includes no development.

2.8.3 Floodplains and Wetlands Description and Impacts from Proposed Conveyance and Transfer Action

Floodplains

Los Alamos Canyon and its perennial stream and floodplain cross the White Rock "Y" land tract. Additionally, the ephemeral Sandia Canyon stream and portions of its floodplain are present in the White Rock "Y" land tract.

Tract Wetlands

Wetlands in the White Rock "Y" land tract consist primarily of severely disjointed segments separated by non-wetland vegetation and exposed rock. These linear wetlands range in width from a few feet to perhaps 10 ft (3 m). Individual segments of wetland plant species range from sparse to moderately dense. White Rock "Y" wetlands are categorized by the NWI process as riverine (R4SBA) in "line feature" format. A total of approximately 19,373 ft (5,905 m) of this category of wetlands exists the White Rock "Y" land tract. These wetlands are primarily riparian (stream associated) in nature and the vegetation is dominated by willow. These riparian wetlands function primarily as sediment traps and also provide valuable diversity of habitat for resident animals and migratory birds. Small quantities of water, sufficient for requirements of resident or migratory species may be present during dry portions of the year, depending upon precipitation, evaporation, and other natural processes. Methods used to identify these areas may not be consistent with the wetland delineation process in the 1987 Corps of Engineers Wetlands Delineation Manual.

Nearby or Adjoining Wetlands

Wetlands are present in both Sandia Canyon, to the west of the White Rock "Y" land tract and upstream in Los Alamos Canyon. As these wetlands are upstream of the White Rock "Y" land tract, no impacts to these resources are anticipated as a result of conveyance and transfer activities. Wetlands present in Los Alamos Canyon are described in Section 2.2.3 addressing the DOE LAAO land tract.

Summary of Impacts

Direct impacts on floodplain or wetland values have not been identified for the White Rock "Y" tract. No potential for loss of life or property has been identified with respect to floodplain in the tract. Floodplain values in the White Rock "Y" have been impacted by previous actions such as highway and utility corridors. Any additional construction actions taken in this floodplain could further erode floodplain values. Development actions taken in the White Rock "Y" floodplain for transportation and utility use could result in loss of floodplain values from land disturbance. These impacts would be expected to be minor and short term. Mitigations could be installed to eliminate or minimize these impacts.

Secondary indirect impacts (off tract lands) resulting from future development of the White Rock "Y" tract for installation of utilities or roadways could result in impacts to floodplains and wetland resources in

canyon bottoms not associated with the subject tract. These minor secondary indirect impacts are anticipated to come from both changes in timing of stormwater runoff and increases in stormwater runoff from increased impermeable surfaces within the tract. Floodplain values potentially impacted by future utility development in the White Rock "Y" land tract include alteration of flood flow retention times, redistribution of sediments, and stream channel migration. Wetland values potentially impacted by future utility development in the White Rock "Y" land tract include alteration of downstream wetland food production, nesting or resting habitat, sediment retention time changes, and loss of experiential or educational opportunities. Mitigations could be installed to eliminate or minimize these impacts.

At a minimum, best management practices for runoff control, such as silt barriers and stormwater retention ponds, should be in place to mitigate runoff effects during construction or development efforts. These best management practices should incorporate considerations of the NPDES permit program and EPA requirements for a SWPP Plan on projects where more than 5 ac (2 ha) will be disturbed. A stormwater retention pond providing 3,600 ft^3 (100m^3) of storage capacity is the EPA standard for NPDES permits for a common drainage serving an area with 10 or more disturbed acres (4 ha or more). Following construction, stormwater runoff from developed sites may be subject to NPDES permit restrictions and requirements.

2.9 TA-74 Tract

2.9.1 Description

The TA-74 tract (Figure 8) is approximately 2,715 ac (1,099 ha) north and east of the Los Alamos townsite partially within Bayo/Pueblo Canyon confluence and extends into remote locations. TA-74 is adjacent to New Mexico State Route 4. It is mostly undeveloped and covered with natural vegetation, including ponderosa pines and shrubs.

2.9.2 Proposed Use

The TA-74 tract has been identified for cultural preservation or natural areas and utility use. For the purposes of this analysis, the natural area and utility use is the bounding use.

2.9.3 Floodplains and Wetlands Description and Impacts from Proposed Conveyance and Transfer Action

Floodplains

Floodplains exist for both Bayo and Pueblo Canyons in the TA-74 tract. McLin (1992) reports a floodplain in the northeast portion of the TA-74 tract in addition to the centrally located floodplain below the Los Alamos County Waste Water Treatment Facility.

Tract Wetlands

Extensive stretches of NWI riverine and palustrine wetlands are a dominant visual feature of the TA-74 area, occupying up to 30 percent of the canyon bottom. This finding was confirmed by field observation in the 1998 field season. The riverine element of these wetlands has vegetation dominated by willow. Other species that may occur include cottonwood, Rocky Mountain maple or box elder, and water birch. Species of wet grasses may also be present.

More extensive global positioning system mapping of the wetlands in TA-74 has been completed. Approximately 10.7 ac (4.3 ha) of wetlands were identified within the TA-74 tract. Plant species in the wetland understory confirmed during this process included those noted in Table 4, including wetland indicator status for each species. It is important to note that the hydrology supporting this wetland receives a major contribution from the Los Alamos County Waste Water Treatment Facility located off the tract at the base of the mesa separating Bayo and Pueblo canyons (Figure 8). Palustrine (PSS1A) wetlands are present. As described in Section 2.2.3, these wetlands are dominated by wetland grasses and rushes with small areas of cattails present.

These riparian wetlands function primarily as sediment traps and also provide valuable diversity of habitat for resident animals and migratory birds. Small quantities of water, sufficient for requirements of resident or migratory species may be present during dry portions of the year, depending upon precipitation, evaporation, and other natural processes A total of approximately 13,518 ft (4,120 m) of this category of wetlands exists in the TA-74 land tract. Methods used to identify these areas may not be consistent with the wetland delineation process in the 1987 Corps of Engineers Wetlands Delineation Manual.

Table 4[1]. Understory Plant Species Confirmed in the TA-74 Wetland

Species Code	Species Name	Common Name	Relative Occurrence	Wetland Plant[2] Indicator Status
AGAL (AGG12)	*Agrostis alba auct.*non L. *Argostis gigantea* Roth	redtop	Occasional	FacW+
ECCU	*Echinochioa cus-galli* (L.) Beauv.	barnyard grass	Predominant vegetation	FacW
JUIN (JUIN2)	*Juncus interior* Wieg.	inland rush	Occasional	FacW
RUCR	*Rumex crispus* L.	curlyleaf dock	Abundant	FacW
URTI (URDIG)	*Urtica dioica* ssp. Gracillis (Alt.) Seland	stinging nettle	Abundant	FacW
TYLA	*Typha latifolia* L.	cattail	Rare	Obligate
XAST	*Xanthium strumarium* L.	cocklebur	Rare	Fac + to Fac-

1. Species list composed during the 1998 field season.

2. Wetland Plant Indicator Status (Reed, 1988)
   FAC = Facultative plants are equally likely to occur in wetlands or nonwetlands.
   ECO = Economic
   FACU = Facultative upland plants usually occur in nonwetlands.
   NW = Non-weedy
   COL = Colonizing
   FACW = Facultative wetland plants usually occur in wetlands.
   OBL = Obligate wetland plants occur almost always in wetlands.

Nearby or Adjoining Wetlands

No wetlands have been identified in land tracts nearby the TA-74 land tract.

Summary of Impacts

Direct impacts or effects on floodplain or wetland values have not been identified for the TA-74 land tract. No potential forms of life on property has been identified with respect to floodplains on the tract.

Primary indirect impacts (on tract lands) resulting from future development of this tract for utility use could result in partial or complete loss of wetlands and their associated values as a direct result of construction activities (removal of wetland areas or impact from vehicle activity) or by indirect effects (such as runoff).

Development in this tract could result in a potential for loss of property if within the floodplain area. Actions taken in the TA-74 wetlands could adversely impact survival, quality, and natural and beneficial values of the wetlands. Wetland values are described in the first paragraph of Section 2.0 of this assessment. Wetland values potentially impacted by future utility development in the TA-74 land tract include food production, nesting or resting habitat, sediment retention, water quality improvement, and experiential or education use. Mitigations could be installed to minimize or eliminate these impacts.

Secondary indirect impacts (off tract lands) resulting from future development of the TA-74 land tract for utility use could result in minor impacts to floodplain and wetland values in canyon bottoms not associated with the subject tract. These minor secondary indirect impacts are anticipated to come from both changes in timing of stormwater runoff and increases in stormwater runoff from increased impermeable surfaces within the tract, and from increases in sewage treatment effluents. Floodplain values potentially impacted by future utility development in the TA-74 land tract include alteration of flood flow retention times, redistribution of sediments, and stream channel migration. Wetland values potentially impacted by future utility development in the TA-74 land tract include alteration of downstream wetland food production, nesting or resting habitat, sediment retention time changes, and loss of experiential or educational opportunities. Mitigations could be installed to minimize or eliminate these impacts.

At a minimum, best management practices for runoff control, such as silt barriers and stormwater retention ponds, should be in place to mitigate runoff effects during construction or development efforts. These best management practices should incorporate considerations of the NPDES permit program and EPA requirements for a SWPP Plan on projects where more than 5 ac (2 ha) will be disturbed. A stormwater retention pond providing 3,600 ft^3 (100 m^3) of storage capacity is the EPA standard for NPDES permits for a common drainage area serving an area with 10 or more disturbed acres (4 ha or more). Following construction, stormwater runoff from developed sites may be subject to NPDES permit restrictions and requirements; sewage plant effluents would similarly require permitting, as appropriate.

2.10 White Rock Tract

2.10.1 Description

The White Rock tract consists of approximately 100 ac (40 ha) of undeveloped lands immediately adjacent to New Mexico State Route 4. State Route 4 separates the tract from the City of White Rock (Figure 9). It borders a portion of the San Ildefonso Indian Reservation Sacred Area. LANL's current low-level waste landfill facility (TA-54) is adjacent to this tract. Cedro Canyon to the east and Pajarito Canyon to the west are adjacent to this tract. Canada del Buey passes through this tract and continues into the town of White Rock. The floodplain in this area is conveyed under State Route 4 via a culvert. A water pump station is located near the eastern terminus of the tract and the Los Alamos Chamber of Commerce operates a small visitor center on the south side adjacent to New Mexico State Route 4.

2.10.2 Proposed Use

The White Rock tract has been identified for cultural preservation and commercial development or commercial and residential use. The use of the tract for commercial and residential use is the bounding

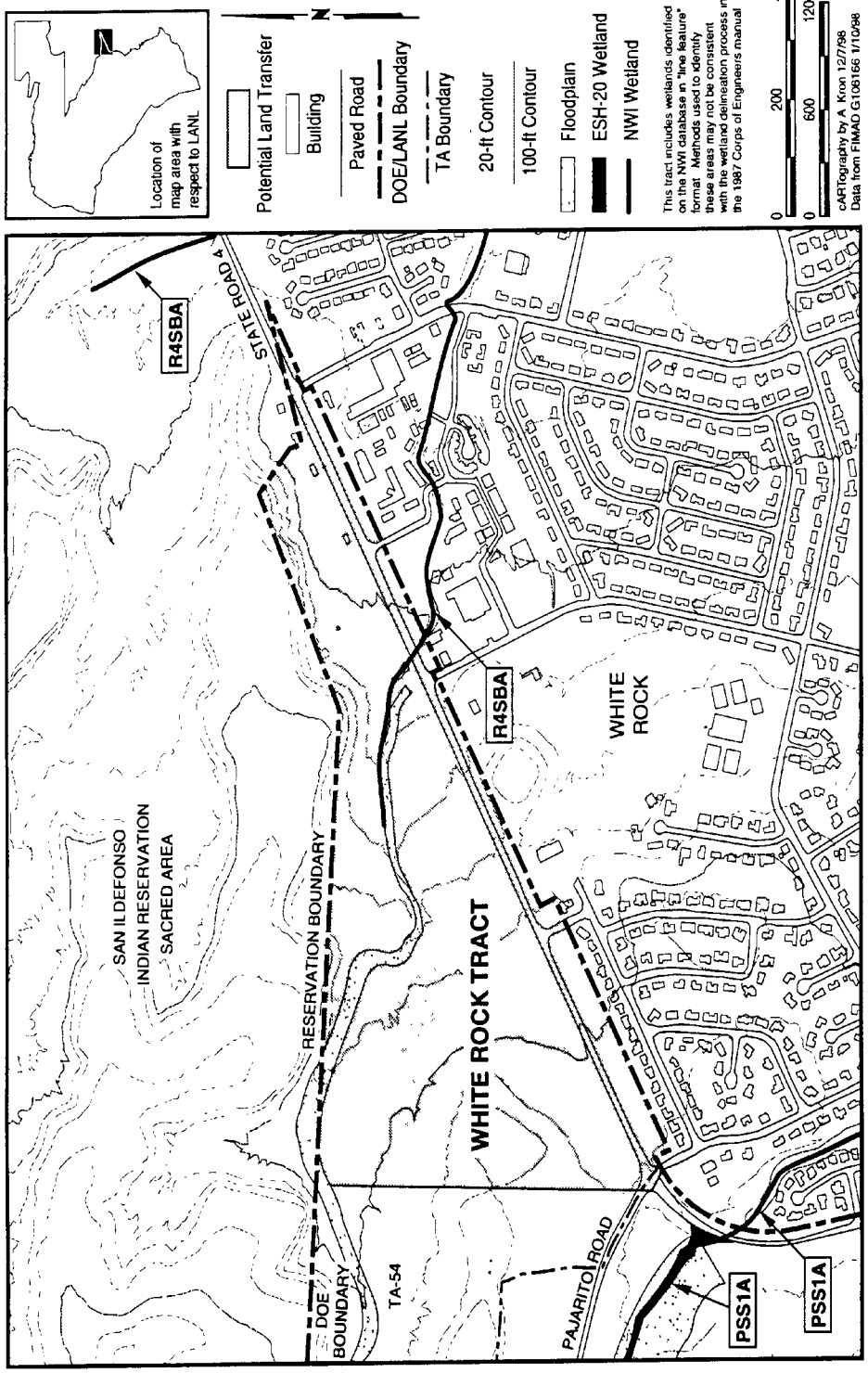

Figure 9. Overview and surface water features (floodplains and wetlands) for proposed land tract White Rock.

use for this analysis. The bounding use assumes all land area with less than a 20 percent slope will be incorporated in that use, if the use is commercial, industrial, or residential. Uses for cultural preservation or natural areas assume no development will occur.

2.10.3 Floodplains and Wetlands Description and Impacts from Proposed Conveyance and Transfer Action

Floodplains

Canada del Buey and its associated floodplain pass through the White Rock land tract. Potential for effects on off-tract resources and values exists. McLin (1998) modeled stormwater flows for the White Rock tract. Values for existing conditions (no human-made impervious surfaces) and for several potential impervious surface levels (percentages of the tract) are presented in Table 5.

Table 5. Surface Water Flow from White Rock Land Tract Assuming Various Levels of Impervious Surface.

Percent of Tract Impervious	0 percent (existing conditions)	10 percent	20 percent	50 percent	70 percent	100 percent
Peak Q water flow (cfs/cms)	26/0.7	35/1.0	45/1.3	74/2.1	94/2.7	123/3.5
24-hr runoff volume (ac-ft)	1.98	3.97	5.95	7.93	9.92	11.90

Tract Wetlands

Wetlands segments in the White Rock land tract consist primarily of extremely disjointed segments separated by expanses of non-wetland vegetation and exposed rock. These linear wetlands range in width from a few feet to perhaps 10 ft (3 m). Individual segments of wetland plant species range from sparse to moderately dense. These riparian wetlands function primarily as sediment traps and also provide valuable diversity of habitat for resident animals and migratory birds. Small quantities of water, sufficient for requirements of resident or migratory species may be present during dry portions of the year, depending upon precipitation, evaporation, and other natural processes Wetlands identified from the USFWS NWI were in “line feature” format and categorized as riverine (R4SBA). A total of approximately 957 ft (292 m) of this category of wetlands exist in the White Rock tract. Methods used to identify these areas may not be consistent with the wetland delineation process in the 1987 Corps of Engineers Wetlands Delineation Manual.

Nearby or Adjoining Wetlands

Pajarito Canyon, located south and west of the tract, contains wetlands within the stream channel (Figure 9). These adjoining wetlands should not be subjected to direct or indirect impacts as a result of development activities in the White Rock land tract due to their upstream location and associated spatial separation from the tract.

Summary of Impacts

Direct impacts on floodplain and wetland resources have not been identified for the White Rock tract. No potential for loss of life or property have been identified with respect to floodplain in this tract.

Primary indirect impacts (on tract) resulting from commercial development in the White Rock land tract could eliminate floodplain values in the portion of the floodplain within the tract. Development on this site may require changes to the culvert under State Route 4 that conveys the Canada del Buey floodplain under the highway. A potential exists for adverse effects on lives and property subsequent to development of this land tract. Mitigations could be installed to eliminate these impacts.

Secondary indirect impacts (off tract lands) resulting from future development of the White Rock land tract for commercial use could result in impacts to floodplain and wetland resources in canyon bottoms not associated with the conveyance and transfer tracts. These secondary indirect impacts are anticipated to come from both changes in timing of stormwater runoff and increases in stormwater runoff from increased impermeable surfaces within the tract. Floodplain values potentially impacted by commercial development in the White Rock land tract include alteration of flood flow retention times, redistribution of sediments, and stream channel migration. Wetland values potentially impacted by development in the White Rock land tract include alteration of downstream wetland food production, nesting or resting habitat, sediment retention time changes, and loss of experiential or educational opportunities. Mitigations could be installed to minimize or eliminate these impacts.

At a minimum, best management practices for runoff control, such as silt barriers and stormwater retention ponds, should be in place to mitigate runoff effects during construction or development efforts. These best management practices should incorporate considerations of the NPDES permit program and EPA requirements for a SWPP Plan on projects where more than 5 ac (2 ha) will be disturbed. A stormwater retention pond providing 3,600 ft^3 ($100m^3$) of storage capacity is the EPA standard for NPDES permits for a common drainage serving an area with 10 or more disturbed acres (4 ha or more). Following construction, stormwater runoff from developed sites may be subject to NPDES permit restrictions and requirements.

3.0 Mitigations to the Proposed Conveyance and Transfer Action

Floodplains are present in six of the ten tracts proposed for conveyance or transfer: Rendija Canyon, TA-21, Airport, White Rock "Y," TA-74, and White Rock land tracts. Impacts to floodplains are not expected for proposed uses such as cultural preservation or natural areas which do not involve significant development. Mitigation actions associated with activities in floodplains could be evaluated against requirements of the Los Alamos Code Ordinance NO. 85-70 "An Ordinance Repealing Chapter 15.16 of the Los Alamos County Code Adopting a New Chapter 17.70 Pertaining to Flood Damage Prevention." This statute addresses development in floodplains on County lands. Similar county code ordinances are applicable to land within Santa Fe County. Mitigation to impacts associated with commercial, industrial, and residential development will require on-site efforts during and after development. These mitigation actions may include avoiding construction in all areas of floodplains or developing buffer areas around floodplains. Specific terms in the conveyance and transfer documents could establish the legal requirements for these mitigation actions.

Wetlands are present in Rendija Canyon, TA-21, Airport, White Rock "Y," TA-74, and White Rock land tracts. Potential wetland impacts could be evaluated against requirements of the Clean Water Act 404 permit process, implementation of SWPP measures and NPDES permitting requirements.

Impacts to off-site resources could be mitigated by appropriate management of stormwater runoff during construction and operation of new facilities or activities. These mitigation actions could include elimination of construction activities in wetland areas or establishing buffer areas around wetlands to reduce or eliminate impacts. Specific terms in the conveyance and transfer documents could establish the legal requirements for these mitigation actions.

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APPENDIX E CULTURAL RESOURCE ASSESSMENT

This appendix contains detailed information on the cultural resources that may be impacted by the conveyance or transfer of these tracts and the contemplated land uses. It provides a discussion of the studies that have been conducted to identify cultural resources, a description of the recorded cultural resources on each tract, background information on cultural resource types, an overview of the past and continued human use of the area, and a discussion of the traditional cultural property (TCP) consultation process.

APPENDIX E CULTURAL RESOURCE ASSESSMENT

E.1 Introduction

This appendix provides additional information used in assessing the potential impacts to cultural resources occurring as a result of the transfer or conveyance of land parcels at LANL. It provides background on cultural resource studies that have been conducted in the LANL area and the methods used to identify cultural resources. A more detailed cultural chronology is provided to supplement the discussion in Chapter 3, Section 3.2.8 of the CT EIS. This chronology, in table form, summarizes the long history of human use of the LANL area. In addition, the types of resources that have been recorded in the region of influence (ROI) are described in greater detail.

E.2 Previous Cultural Resource Studies

Cultural resource studies of the LANL area include prehistoric resource studies, historic resource studies, and studies of TCPs. Prehistoric resource studies include reconnaissance, survey, and excavation of archaeological resources. Historic resource studies also include inventories of archaeological resources, as well as research into buildings and structures that are associated with historic people or events or are architecturally important. TCP studies include research and consultation to identify places of ongoing traditional use or of cultural or religious significance to contemporary groups. A more detailed review of previous studies is presented in Appendix E of the LANL SWEIS (DOE 1999c).

A number of previous cultural resource inventories have been conducted at LANL that include all or portions of the tracts considered for conveyance or transfer. Most of these studies have been conducted in the past 10 years in compliance with Section 106 of the *National Historic Preservation Act* (NHPA) for specific undertakings related to construction, decontamination and demolition, environmental studies, and environmental restoration. To provide information for the CT EIS, all 10 proposed tracts have now been completely inventoried for prehistoric and historic resources.

As part of the LANL SWEIS study, a TCP study was conducted that involved consultations with 19 Native American tribes and two Hispanic communities to identify cultural resources in the LANL region important to them. Contacts were made initially with 23 Native American tribes; however, four chose not to participate in the consultations. All of the consulting groups stated that they had at least some TCPs present on or near LANL; however, specific locations were not identified. Legal counsel for San Ildefonso Pueblo has indicated that TCPs are present on four of the tracts. Consultation with potentially interested tribes is not included in the results of this CT EIS. However, extensive consultations will be completed prior to conveyance and transfer of any proposed tracts (see Chapters 16 and 17).

E.3 Research Methods: Identification of Cultural Resources

E.3.1 Prehistoric and Historic Resources

Information for this CT EIS regarding known prehistoric and historic resources on tracts considered for transfer or conveyance was obtained from several sources. The principal source of information was the LANL Cultural Resource Management Team (CRMT), which maintains comprehensive hardcopy records and electronic databases of cultural resources located on LANL lands. Results of CRMT surveys of the tracts were reviewed and utilized for impact analyses (DOE 1998d).

E.3.2 Traditional Cultural Properties

The LANL CRMT also was able to provide some information on TCPs located within or near the 10 land tracts. This information was obtained by them during previous environmental studies through consultations with nearby tribes. Records of the LANL SWEIS ethnographic research and consultations were reviewed for this CT EIS to determine any previously recorded concerns for TCPs located in or near the land tracts.

As stated earlier, consultations with Native American tribes were not completed for the CT EIS; however, consultations will be completed prior to conveyance and transfer of any proposed tracts (see Chapters 16 and 17). These consultations will be conducted to identify the presence and locations of TCPs within the ROI, to assess potential direct and indirect impacts to these TCPs, and to provide recommendations for avoiding or mitigating any potential adverse impacts. As with the LANL SWEIS, 23 tribes are identified for consultation. These tribes included:

- Hopi Tribe
- Jicarilla Apache Tribe
- Mescalero Apache Tribe
- Navajo Nation
- Pueblo of Acoma
- Pueblo of Cochiti
- Pueblo of Isleta
- Pueblo of Jemez
- Pueblo of Laguna
- Pueblo of Nambe
- Pueblo of Picuris
- Pueblo of Pojoaque
- Pueblo of Sandia
- Pueblo of San Felipe
- Pueblo of San Ildefonso
- Pueblo of San Juan
- Pueblo of Santa Ana
- Pueblo of Santa Clara
- Pueblo of Santo Domingo
- Pueblo of Taos
- Pueblo of Tesuque
- Pueblo of Zia
- Pueblo of Zuni

The consultation process involves one to three stages, dependent upon the response of the individual tribes.

E.3.2.1 Stage 1: Initial Consultation with Potentially Interested Tribes

This stage has been completed. It involves identifying the appropriate contact, usually the director of the tribal environmental or cultural resources department, at each of the 23 tribes. Two letters have been sent to this contact, as well as to the governor/chairman/president of each tribe. The letters describe the CT EIS and the effort underway to identify TCPs, asks if the tribe has concerns for TCPs in the 10 land tracts, and offers to provide the tribe with a project briefing and a tour of the land tracts at their convenience.

E.3.2.2 Stage 2: Continued Consultation with Interested Tribes

Consultation will continue with those tribes who express a concern for TCPs potentially located within the 10 land tracts. Each interested tribe will design the culturally appropriate methods used to continue the consultation with them. These methods will include review of archaeological and environmental information pertaining to the 10 land tracts; field visits to the land tracts; and interviews and meetings with tribal representatives, leaders, knowledgeable individuals, and

resource specialists. Efforts will be made to locate and identify TCPs, document concerns for potential impacts to these resources, and document suggestions for measures to mitigate any potential adverse impacts. Some tribes may conduct interviews with tribal members themselves or prepare reports of their findings for submission to the DOE. All information received from the tribes will be protected with strict confidentiality. Official procedures to protect the information will be developed and followed throughout the consultation process.

E.3.2.3 Stage 3: Review of Consultation Results

Upon completion of consultation with each tribe, the tribe will be given the opportunity to review the results of the consultation. This review process will be limited to only the reference materials pertaining to that particular tribe. Review comments will be addressed and the results revised to reflect relevant comments.

E.4 Cultural Overview

Archaeological investigations in the vicinity of LANL indicate human use of the area for thousands of years. A variety of chronological schemes have been proposed as a framework to discuss the cultural history of the region. In 1954, Fred Wendorf defined five major periods for the northern Rio Grande Valley: Preceramic, Developmental, Coalition, Classic, and Historic. These period classifications, with some modifications, are still in use. The Preceramic period has been subdivided into Paleo-Indian and Archaic, based upon changes in settlement patterns and subsistence over time as reflected by material culture. The Historic period includes both Native American sites where people abandoned their homelands and changed their ways of life in response to Euro-American and other influences, and sites that reflect the European and American settlement of the Rio Grande Valley. This chronology is summarized in Table E.4-1. The number of known sites assigned to each cultural period by tract is presented in Table E.4-2. A detailed description of the chronology and culture periods is available in Appendix E of the LANL SWEIS (DOE 1999c).

Table E.4-1. Chronological Framework Used for the LANL Cultural ROI

TIME PERIOD	DATES	CHARACTERISTICS OF PERIOD	LANL CULTURAL RESOURCES
Paleo-Indian	10,000 to 4000 B.C.	Hunter/gatherers with an emphasis on large game; use of lance-shaped projectile points.	Occasional surface finds of projectile points
Archaic	4000 B.C. to A.D. 600	Hunter/gatherers with more diverse subsistence strategy; increased plant collection, smaller (dart) projectile points, wide range of stone tools and debris and hearths found on sites. Cave and rock shelters also used.	Lithic scatters, rock features. Possible buried sites.
Developmental	A.D. 600 to 1100	Increased sedentism and reliance on agriculture; shift in dwelling size and complexity from pithouses to multiple rooms and adobe and masonry structures; ceramics and milling tools common, smaller (arrow) points used.	Some pithouse, adobe and crude masonry structures close to the Rio Grande in the vicinity of Chaquihui Mesa and Lower Water Canyon.
Coalition	A.D. 1100 to 1325	Increased agricultural focus, larger communities—typically 30 rooms but later sites larger with plazas, increased use of adobe; refinement of ceramics.	Increased site density. Most pueblo ruins recorded at LANL date to this period. Sites are distributed widely, primarily on the mesa tops.
Classic	A.D. 1325 to 1600	Increased agricultural focus with ditch irrigation systems, multiple story masonry dwellings and associated one- or -two-room isolated structures. Droughts during the Late Classic led to abandonment of many Pueblos.	Consolidation of populations at Navawi, Otowi, Tsankawi, and Tsirege (Tsirege and Otowi are located on DOE lands). Abandonment of settlements on the plateau by A.D.1600.
Spanish Colonial	A.D. 1600 to 1849	Population loss among Native groups; Spanish and (later) Mexican rule; Pueblo groups given land grants. Spanish and American goods traded in.	Seasonal use probable, but not documented.
Early U.S. Territorial/ Statehood	A.D. 1849 to 1942	U.S. takes control, railroad arrives, increase in population and in mining, homesteading, and ranching activities.	Structural remains, agricultural and ranching features.
Nuclear Energy	A.D. 1943 to Present	Los Alamos Science Laboratory established for research and development of nuclear weaponry during WW II; continuing through the Cold War. Considerable new construction and population increase in Los Alamos area.	Historic structures.

Table E.4-2. Cultural Sites Dating to the Cultural Periods By Tract

	CULTURAL PERIODS										
Land Tract	**Paleo-Indian**	**Archaic**	**Developmental**	**Coalition**	**Classic**	**Unknown Prehistoric**	**Spanish Colonial**	**U.S. Territorial, Statehood**	**Nuclear Energy**	**Unknown Historic**	**TOTAL**
Rendija Canyon		2		7	23	18		3		2	55
DOE LAAO									2		2
Miscellaneous Site 22											0
Miscellaneous Manhattan Monument									1		1
DP Road				1					2		3
Technical Area 21				1		1		1	40	1	44
Airport		1		2					3		6
White Rock Y	1	5		21	15	9		3	1	1	56
Technical Area 74		4		54	22	29		2	1		112
White Rock				4					1		5
TOTAL	1	12	0	90	60	57	0	9	51	4	284

Note: Some cultural sites were used during multiple cultural periods. The totals show the number of cultural periods represented, not the number of sites. The number of sites by tract can be found in the individual tract discussions, Chapters 5 through 14 of this CT EIS.

E.5 Description of Resources in the Region of Influence

This section describes the kinds of resources recorded in the tracts considered for transfer or conveyance. Certain resource types, such as buried archaeological sites or unidentified TCPs, are not likely to be identified during survey, so there is a potential for undiscovered resources on these tracts.

E.5.1 Prehistoric Resources

A total of 190 prehistoric archaeological sites have been recorded within the tracts considered for transfer. Preliminary eligibility evaluations have been made for all of these sites, with 140 sites evaluated as eligible for inclusion in the National Register of Historic Places (NRHP). There are 32 sites that are considered potentially eligible, and 18 have been evaluated as not eligible for nomination to the NRHP. Table E.5.1-1 summarizes the types of resources found on prehistoric sites located in each tract. These resource types are defined further in the following paragraphs.

Table E.5.1-1. Prehistoric Archaeological Resources by Tract

	PREHISTORIC RESOURCE TYPES									
Land Tract	**Simple Pueblos**	**Complex Pueblos**	**Rock Shelters, Cavates**	**Rock Art**	**Water Control, Game Traps**	**Trails, Steps**	**Garden Plots**	**Masonry Features, Rubble**	**Artifact Scatters, Rock Rings**	**TOTAL**
Rendija Canyon	37				1			5	5	48
DOE LAAO										0
Miscellaneous Site 22										0
Miscellaneous Manhattan Monument										0
DP Road			1							1
Technical Area 21	1		1							2
Airport	1								1	2
White Rock Y	8	1	7	2			2		18	38
Technical Area 74	51	4	11	2	1	3	8	4	17	101
White Rock	4				2				1	7
TOTAL	102	5	20	4	4	3	10	9	42	199

Note: An archaeological site may have multiple types of resources present on it. The totals represent the number of resource types, not the number of sites. The number of sites by tract can be found in the individual tract discussions, Chapters 5 through 14 of the CT EIS.

E.5.1.1 Simple Pueblos

One hundred two simple Pueblos were identified on the tracts considered for transfer or conveyance. Simple Pueblos include single-resident or small-scale multiple-resident units, associated features, and artifact scatters.

E.5.1.2 Complex Pueblos

Five complex Pueblos were identified on the tracts considered for transfer or conveyance. Complex Pueblos include multiple residential structures or units with public areas or structures such as plazas, towers, or kivas.

E.5.1.3 Rock Shelters and Cavates

Twenty rock shelters and cavates were identified on the tracts considered for transfer or conveyance. Rock shelters are naturally formed overhangs or indentations in a rockface that have been used for human shelter. Rock shelters may be modified with structural elements. Cavates are habitation rooms carved out of volcanic tuff or other soft material.

E.5.1.4 Rock Art

Four rock art sites were identified on the tracts considered for transfer or conveyance. Rock art includes petroglyphs, which are designs scratched, pecked, or scraped into a rock surface and pictographs, which are designs drawn in pigment on a rock surface.

E.5.1.5 Water Control Features and Game Traps

Four water control features and game traps were identified on the tracts considered for transfer or conveyance. Water control sites include small prehistoric features for the control or collection of water, such as irrigation ditches, cisterns, and retention dams. Game traps include a variety of features related to hunting by driving game over a cliff or into an enclosed area.

E.5.1.6 Trails or Steps

Three trails or stair-step resources were identified on the tracts considered for transfer or conveyance. Trails and steps show evidence of human use or modification for passage across the land or access to different levels.

E.5.1.7 Garden Plots

Ten garden plots were identified on the tracts considered for transfer or conveyance. Garden plots are indicated by evidence of terracing or boundaries.

E.5.1.8 Masonry Features and Rubble

Nine masonry features or rubble sites were identified on the tracts considered for transfer or conveyance. Masonry features and rubble sites are poorly defined or undefined rock alignments or concentrations of material that may represent prehistoric structural or feature remains.

E.5.1.9 Artifact Scatters and Rock Rings

Forty-two artifact scatters and rock rings were identified on the tracts considered for transfer or conveyance. Artifact scatters contain no formal habitation structures and include lithic debris from chipped stone manufacture or use, groundstone tools, or ceramic sherds. Rock ring sites contain simple rock rings, hearths, or concentrations of fire-cracked rock.

E.5.2 Historic Resources

A total of 64 historic sites have been recorded within the tracts considered for transfer or conveyance. Preliminary eligibility evaluations have been made for all, with 5 sites evaluated as eligible for inclusion in the NRHP. There are 55 sites that are considered potentially eligible, and 4 have been evaluated as not eligible for nomination to the NRHP. Table E.5.2-1 summarizes the types of resources found on historic sites located in each tract. These resources are described further in the following paragraphs.

Table E.5.2-1. Historic Resources by Tract

	HISTORIC RESOURCE TYPES					
Land Tract	**Homestead, Ranching, Agriculture Features**	**Historic Artifact Scatters**	**Historic Trails**	**Historic Native American Resources**	**LANL Buildings, Structures, Objects**	**TOTAL**
Rendija Canyon	2		1	2		5
DOE LAAO					2	2
Miscellaneous Site 22						0
Miscellaneous Manhattan Monument					1	1
DP Road					2	2
Technical Area 21	1		1		40	42
Airport					3	3
White Rock Y	3		1		1	5
Technical Area 74	1		1		1	3
White Rock					1	1
TOTAL	7	0	4	2	51	64

Note: A historic site may have multiple types of resources present. The totals represent the number of resource types, not the number of sites. The number of sites by tract can be found in the individual tract discussions, Chapters 5 through 14 of the CT EIS.

E.5.2.1 Homestead, Ranching, and Agricultural Features

Seven homestead, ranching, and agricultural resources were identified on the tracts considered for transfer or conveyance. Homestead, ranching, and agricultural resources include historic era homestead and ranch structural remains and associated outbuildings, fences, roads, equipment, agricultural fields, and other features and refuse scatters.

E.5.2.2 Artifact Scatters

No historic artifact scatters were identified on the tracts considered for transfer or conveyance. Historic artifact scatters are sites that are not directly associated with ranches or homesteads that contain historic era refuse such as cans, bottles, or other objects.

E.5.2.3 Historic Trails

Four historic trails were identified on the tracts considered for transfer or conveyance. These trails often are still used for recreational purposes.

E.5.2.4 Historic Native American Resources

Two historic resources used by Native Americans were identified on the tracts considered for transfer or conveyance. Both of these resources are rock rings used in the construction of tipis or wickiups.

E.5.2.5 Buildings, Structures, and Objects

Fifty-one LANL buildings, structures, and objects were identified on the tracts considered for transfer or conveyance. LANL buildings, structures, and objects may be architecturally distinctive or associated with historic events such as the Manhattan Project, World War II, the development of nuclear energy, and the Cold War.

E.5.3 Traditional Cultural Properties

A TCP is a place or object that is significant to a particular living community. This significance is "derived from the role the TCP plays in the community's historically rooted beliefs, customs, and practices" (Parker and King 1990). TCPs are associated with the cultural practices and beliefs that are based in a community's history or important in maintaining the cultural identity of the community. TCPs are used within social, spiritual, political, and economical contexts, and thus, are essential to the preservation and viability of a culture. TCPs are not limited to ethnic minority groups; rather, Americans of every ethnic origin have properties to which they ascribe traditional cultural value. In northern New Mexico, Hispanic culture and Native American groups in particular have maintained traditional communities, practices, beliefs, and subsistence patterns.

Several general types of TCPs have been identified by Native American and Hispanic cultures in northern New Mexico. These traditional cultures have had many generations of interaction with each other and often have overlapping subsistence, artistic, and religious practices with unique cultural importance attached to similar kind of sites. TCPs located in and near LANL are divided into five general categories. Each of these categories represents specific cultural and physical sensitivity and susceptibility to adverse impacts. A detailed description of the categories can be found in Appendix E of the LANL SWEIS (DOE 1999c). These categories include:

- **Ceremonial and Archaeological Sites:** Ceremonial and archaeological sites include Native American shrines, ancestral villages, petroglyphs, places where religious ceremonies are conducted, and Hispanic shrines and moradas. All prehistoric archaeological sites are also considered sacred according to certain Pueblo groups.
- **Natural Features:** A variety of natural features in the landscape such as mountain peaks, lakes, springs, or distinctive rock formations are considered TCPs by traditional cultures in the LANL area.
- **Ethnobotanical Gathering Sites:** Native Americans and traditional Hispanic communities use a variety of wild plants for food and medicine. Certain plants are also used in traditional ceremonies.
- **Artisan Material Gathering Sites:** The gathering of various raw materials used in the production of artistic and utilitarian items is important in the continuation of traditional arts among Native American and Hispanic communities. These materials include a variety of dye plants and minerals; plant fibers for weaving; woods for carving, construction, and drummaking; and clay for adobe construction and pottery making.
- **Traditional Subsistence Features:** Traditional subsistence features include community-maintained irrigation system (acequias), traditional trails, gathering and hunting areas, traditionally used fields, grazing areas, and firewood-gathering sites. Land grants by the Spanish and Mexican governments may be considered TCPs in that all of the parts (for example, individual holdings, commons, acequias, and village) are interrelated.

During the LANL SWEIS TCP study, 19 of the 23 Native American groups and two Hispanic groups indicated the presence of TCPs from all five categories within the LANL region. However, no specific locations or features were identified. The number of consultations indicating TCPs are summarized in Table E.5.3-1. No consultations were conducted for the CT EIS; however, consultations will be completed prior to conveyance and transfer of any of the proposed tracts. This decision was made based on the limited amount of time to prepare the CT EIS and the DOE's concern to conduct a thorough consultation. The Pueblo of San Ildefonso has indicated, in general terms, that TCPs are present on the Rendija Canyon, White Rock Y, TA 74, and White Rock Tracts.

Table E.5.3-1. Number of Consultations During the LANL SWEIS TCP Study Indicating TCPs on or near LANL Property

	CEREMONIAL AND ARCHAEOLOGY SITES	NATURAL FEATURES	ETHNO-BOTANICAL SITES	ARTISAN MATERIAL SITES	SUBSISTENCE FEATURES
Number of Consultations	15	14	10	7	8

Source: DOE 1999c

APPENDIX F CONTRACTOR DISCLOSURE STATEMENTS

This appendix contains disclosure statements, pursuant to 40 Code of Federal Regulations (CFR) 1506.5(c), provided by Tetra Tech, Inc., its subcontractors, and by DOE support contractors who prepared or reviewed the CT EIS. These disclosure statements specify that the contractors have no financial interest or other interest in the outcome of the project.

APPENDIX F CONTRACTOR DISCLOSURE STATEMENTS

Contract No.: DE-AM04-97AL77612
Task Order No.: DE-AT32-98AL78588

QUALIFICATION CRITERION NO.1

NEPA DISCLOSURE STATEMENT FOR THE PREPARATION OF THE ENVIRONMENTAL IMPACT STATEMENT FOR THE CONVEYANCE AND TRANSFER OF CERTAIN LAND TRACTS ADMINISTERED BY THE DEPARTMENT OF ENERGY AND LOCATED AT LOS ALAMOS NATIONAL LABORATORY, LOS ALAMOS AND SANTA FE COUNTIES, NEW MEXICO

The Council on Environmental Quality (CEQ) regulations at 40 CFR 1506.5(c), which have been adopted by the Department of Energy (10 CFR 1021), require contractors who will prepare an Environmental Impact Statement (EIS) to execute a disclosure specifying that they have no financial or other interest in the outcome of the project. The term "financial or other interest in the outcome of the project" is defined for the purposes of this disclosure in Question 17 of the CEQ guidance "*Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*," (46 FR 18026 - 18038).

> "Financial or other interest in the outcome of the project" includes "Any financial benefit such as promise of future construction or design work in the project, as well as indirect benefits the contractor is aware of (e.g., if the project would aid proposals sponsored by the firm's other clients)."

In accordance with these requirements the offer and any proposed subcontractors hereby certify as follows: (check either (a) or (b) and list financial or other interest if (b) is checked).

(a) [X] Contractor has no financial or other interest in the outcome of the project.

(b) [ ] Offeror or any subcontractor have the following financial or other interest in the outcome of the project and hereby agree to divest themselves of such interest prior to award of this contract.

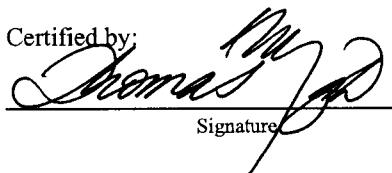
Financial or Other Interest

1.

2.

3.

Certified by:



Signature

Thomas E. Magette
Name

Vice President, Tetra Tech
Title

July 14, 1999
Date

APPENDIX F CONTRACTOR DISCLOSURE STATEMENTS

Contract No.: DE-AM04-97AL77612
Task Order No.: DE-AT32-98AL78588

QUALIFICATION CRITERION NO.1

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(b) [ ] Offeror or any subcontractor have the following financial or other interest in the outcome of the project and hereby agree to divest themselves of such interest prior to award of this contract.

Financial or Other Interest

1.

2.

3.

Certified by:

Albert M. Thomas

Signature

Albert M. Thomas, P.E.
Name

Vice President, Bohannan Huston, Inc.
Title

July 13, 1999
Date

Contract No.: DE-AM04-97AL77612
Task Order No.: DE-AT32-98AL78588

QUALIFICATION CRITERION NO.1

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(a) ☒ Contractor has no financial or other interest in the outcome of the project.

(b) ☐ Offeror or any subcontractor have the following financial or other interest in the outcome of the project and hereby agree to divest themselves of such interest prior to award of this contract.

Financial or Other Interest

1.

2.

3.

Certified by:

Karen R. Marcotte
Signature

Karen R. Marcotte
Name

President, Consensus Planning, Inc.
Title

7/13/99
Date

APPENDIX F CONTRACTOR DISCLOSURE STATEMENTS

Contract No.: DE-AM04-97AL77612
Task Order No.: DE-AT32-98AL78588

QUALIFICATION CRITERION NO.1

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In accordance with these requirements the offer and any proposed subcontractors hereby certify as follows: (check either (a) or (b) and list financial or other interest if (b) is checked).

(a) [X] Contractor has no financial or other interest in the outcome of the project.

(b) [ ] Offeror or any subcontractor have the following financial or other interest in the outcome of the project and hereby agree to divest themselves of such interest prior to award of this contract.

Financial or Other Interest

1.

2.

3.

Certified by:

Steven B. Treibel
Signature

Steven B. Treibel
Name

Los Alamos Technical Associates, Inc.
Contracts Manager
Title

7/14/99
Date

APPENDIX F CONTRACTOR DISCLOSURE STATEMENTS

Contract No.: DE-AM04-97AL77612
Task Order No.: DE-AT32-98AL78588

QUALIFICATION CRITERION NO.1

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(a) [X] Contractor has no financial or other interest in the outcome of the project.

(b) [ ] Offeror or any subcontractor have the following financial or other interest in the outcome of the project and hereby agree to divest themselves of such interest prior to award of this contract.

Financial or Other Interest

1.

NA

2.

3.

Certified by:

Signature

Mark J. Gradkowski
Name

Vice President, MDM Services Corp.
Title

July 28,1999
Date

APPENDIX G HUMAN HEALTH

This appendix contains a primer on the human health effects of radioactive and chemical exposures. It is provided to supplement the discussion of human health in the CT EIS main text with general information and the findings of recent public health studies. The material in this appendix was taken directly from Appendix D of the 1999 LANL SWEIS. Only the section and table numbering was changed. References cited and sections and chapters discussed in this appendix refer to the Final LANL SWEIS and not this CT EIS.

G.1 PUBLIC HEALTH CONSEQUENCES: PRIMER AND RECENT STUDIES NEAR LANL

In this appendix, supplemental information is presented on the effects on human health of radioactive and chemical exposures. The information is presented in two sections: that addressing our general knowledge and understanding (section G.1.1) and that presenting in more detail the findings of the recent studies of public health in the community of Los Alamos, and New Mexico and U.S. studies (including Native Americans in New Mexico, Hispanic white and nonhispanic white populations throughout the U.S. (section G.1.2). The presentation in section G.1.1 is useful to the reader as a primer on human health effects of exposures to radioactivity or to chemicals. The summaries presented in section G.1.2 are the results of descriptive epidemiology studies. That is, they are analyses of disease incidence rates and causes of death using statistical analytical methodologies.

Exposure to toxic chemicals is regulated by other agencies, and DOE subscribes to and applies those regulations without change to its own activities. The Occupational Safety and Health Administration (OSHA) promulgates and enforces regulations for the protection of workers, and EPA regulates exposures to the public. Chapter 7 provides a detailed review of the regulatory requirements for the operation of LANL.

G.1.1 Primer on Human Health Consequences of Radiological and Chemical Exposures

Table G.1.1–1 summarizes the differences in consequences between exposures to radioactive materials and exposures to chemicals. More detailed information on the modes of exposure and potential effects of these exposures are given in the sections below.

G.1.1.1 *About Radiation and Radioactivity*

In the simplest sense, radiation is defined as energy propagated through space (NBS 1952). This definition covers a broad range, including visible light, radio and television transmissions, microwaves, and emissions from atomic and nuclear reactions and interactions. The method by which radiation interacts with matter is by transferring its energy to the atoms of the matter. The amount of energy transferred determines the effect that it will have on matter. The broad spectrum of radiation can be subdivided into two groups, ionizing and nonionizing. Ionization occurs when the radiation transfers enough energy to strip one or more electrons from the interacting atom. When ionization takes place in the body, it can cause chemical and physical changes that are of concern to human health. Radiation that does not have enough energy to strip electrons is called “nonionizing.”

Ionizing radiation is used in a variety of ways, many of which are familiar to us in our everyday lives. The machines used by doctors to diagnose and treat medical patients typically use x-rays, which is one form of ionizing radiation. The process by which a television displays a picture is by ionizing coatings on the inside of the screen with electrons. Most home smoke detectors use a small source of ionizing radiation to detect smoke particles in the room’s air.

Ionizing radiation is generated through many mechanisms. The two most common mechanisms are the electrical acceleration of atomic particles such as electrons, as in x-ray machines, and the emission of energy from nuclear reactions in atoms. This second process is termed “radioactive decay.” Atoms are made up of various combinations of particles called protons, neutrons, and electrons. In most cases, the numbers of neutrons and protons are balanced such that the atom will stay together

TABLE G.1.1–1.—*Comparison of Consequences of Radioactivity and Toxic Chemicals*

	RADIOACTIVE MATERIALS	TOXIC CHEMICALS
Threshold for effects?	Assume no threshold (stochastic effects).	Yes, and different thresholds for different effects.
Accumulative effects?	Assumed exposures accumulate over a lifetime, with no repair.	Typically, the body repairs itself between exposures; may build sensitive allergic reaction or interact with cells.
Sensory perception?	We do not feel, smell, or otherwise sense ionizing radiation.	Very low concentrations not sensed. Often an annoying odor and irritating effects at low concentrations. Some gases are visible when in high concentrations.
Carcinogenic?	All ionizing radiation is regulated as carcinogenic.	Only some chemicals are confirmed human carcinogens. Some others are suspected, and some are animal (mammal, or closer to human, primate) carcinogens.
Effects-exposure relationship?	Usually treated as linear at low doses, although this is a conservative simplification (BEIR V 1990).	Typically nonlinear and nonadditive. Thresholds exist. For some chemicals, effects can be treated as linear with exposures, but only over small ranges. Synergisms among chemicals are not understood.
Acute effects?	Acute deterministic effects are soon observed, but occur only above a threshold of about 50 rem (less for the eye).	Effects may be immediately observed for levels of exposures above the thresholds.
Entry paths of particulates into the body?	Radionuclides enter through inhalation, ingestion, and wounds. A few are absorbed through the skin.	Same routes, except a greater percentage of chemicals than of radionuclides are absorbed through the skin.
Target organs?	The chemistry of the radionuclide determines its residence time and location in the body.	Same as for radionuclides. Except, the body also metabolizes chemicals, sometimes into more toxic chemicals.
Penetrating?	Alpha and beta radiation do not penetrate skin. In contrast, dense materials are needed to shield against gamma and x-ray radiation.	About 20% of OSHA-regulated chemicals have skin as an import route of entry. Only corrosive chemicals penetrate protective gear rapidly.

forever. An atom formed with too many of either the neutrons or protons will attempt to change itself into a more stable form. To do this, the atom will emit an atomic particle, such as an electron, normally called a beta particle, or a "packet" of energy called a photon. This is the process of radioactive decay. The time that it takes for the atom to decay is characterized by a value called the half-life. This is the time it takes for a quantity of radioactive material to decay to one-half its original amount. In general, radioactive materials are identified by their half-lives and the type and energy of their emissions. In some cases, atoms may emit a highly energetic, ionized, helium atom, called an alpha particle. The energy carried away by these emissions is normally capable of creating a large number of ionizations in matter.

Besides ionization, other particles can often be emitted during interactions between radiation and matter, depending upon the type and energy of the interaction. Neutrons, protons, and some other more exotic particles are often emitted during various processes. Nuclear reactors use neutrons to break apart, or fission, particular isotopes of uranium and plutonium in order to release heat and more neutrons to continue the reaction. Large machines, often called "atom smashers," cause atoms at high energies to collide and break apart, releasing particles in order to study their nuclear structure. However, due to the design and operation of these types of facilities, it would be highly unlikely for these types of radiations to reach the public outside the boundaries of the facility.

When an individual is in the presence of an unshielded radiation source, this is referred to as being exposed. The amount of ionizing radiation that the individual receives during the exposure is referred to as dose. The measurement of radiation dose is called radiation dosimetry, and is done by a variety of methods depending upon the characteristics of the incident radiation. The units of measure for radiation doses are normally rads and rem. (Note that the term millirem [mrem] is also used often. A millirem is one one-thousandth of a rem.) The rad is a measure of the energy deposited in the body by the radiation, regardless of the type of emission. The rem is a measure of the biological effect, by including the effectiveness of the particular type and energy of the incident radiation for causing biological effects. This is due to the fact that some heavier or higher energy radiations, such as alpha particles or neutrons, can deposit their energy into much smaller volumes, and consequently, cause more intense damage through localized, chemical changes.

When an individual is exposed to an unshielded radiation source, this is called external radiation. If radioactive material is incorporated into the body and consequently decays, it is called internal radiation. The external radiation is measured as a value called the deep dose equivalent (DDE). Internal radiation is measured in terms of the committed effective dose equivalent (CEDE). More information about the CEDE is presented in the discussion about the processes by which radioactive material enters the body. The sum of the two contributions (DDE and CEDE) provides the total dose to the individual, called the total effective dose equivalent (TEDE). Often the radiation dose to a selected group or population is of interest, and is referred to as the collective dose equivalent, with the measurement units of person-rem.

G.1.1.2 *About Radiation and the Human Body*

Ionizing radiation affects the body through two basic mechanisms. The ionization of atoms can generate chemical changes in body fluids and cellular material. Also, in some cases the amount of energy transferred can be sufficient to actually knock an atom out of its chemical bonds, again resulting in chemical changes. These chemical changes can lead to alteration or disruption of the normal function of the affected area. At low levels of exposure, such as the

levels experienced in occupational or environmental settings, these chemical changes are very small and ineffective. The body has a wide variety of mechanisms that repair the damage induced. However, occasionally, these changes can cause irreparable damage that could ultimately lead to initiation of a cancer, or changes to genetic material that could be passed to the next generation. The probability for the occurrence of health effects of this nature depends upon the type and amount of radiation received, and the sensitivity of the part of the body receiving the dose.

At much higher levels of exposure, at least 10 to 20 times higher than the legal limits for occupational exposures, the body is unable to recover from the large amount of chemical changes occurring during the exposure. At these levels, damage is much more immediate, direct, and observable. Health effects range from reversible changes in the blood to vomiting, loss of hair, temporary or permanent sterility, and other changes leading ultimately to death at exposures above about 100 times the regulatory limits. In these cases, the severity of the health effect is dependent upon the amount and type of radiation received. Exposures to radiation at these levels are quite rare, and, outside of intentional medical procedures for cancer therapy, are always due to accidental circumstances.

For low levels of radiation exposure, the probabilities for induction of various cancers or genetic effects have been extensively studied by both national and international expert groups. The problem is that the potential for health effects at low levels is extremely difficult to determine without extremely large, well-characterized exposed populations. Therefore, only particular groups with fairly high exposures, such as atomic bomb survivors, radiation accident victims, and some groups receiving large medical exposures, can be studied to evaluate the probabilities. Unfortunately, the levels and rates of exposures, and the conditions under which they occurred, are very different from those in which the normal population is exposed to background radiation or to normal operational releases from nuclear operations. Therefore, expert groups must make significant approximations and assumptions in order to apply the study results to the lower levels of exposure. This is done in a manner that attempts to ensure that the resulting risk factors are conservative estimates of the actual probabilities. In other words, it is unlikely that the actual risks are greater than the estimates, while it is fairly likely that the actual risk is smaller than the estimate.

There is another type of study, referred to as an epidemiology study, that attempts to estimate the risk factors in populations with much lower doses than mentioned above. These studies are even more difficult to perform. There are two types of epidemiology studies: descriptive (based on statistical analyses of death and disease incidences) and analytical (case studies and observational analysis within a community or work force). The studies summarized in section G.1.2, are descriptive. The risk factors for radiation-induced cancer at low levels of exposure are very small, and it is extremely important to account for the many nonradiation related mechanisms for cancer induction, such as smoking, diet, lifestyle, and chemical exposures. These multiple factors also make it difficult to establish cause-and-effect relationships that could attribute high or low cancer rates to specific initiators. As a consequence, the results of such studies have not been generally accepted within the scientific community and are not currently used as the primary basis for establishing the risk factors.

Risk factors are estimated for a large number of fatal and nonfatal cancers, for hereditary effects, and a few other identified radiation-induced health effects. Table G.1.1.2–1 lists the fatal cancer risk factors used in this SWEIS, which are based upon the recommendations of a recognized authoritative international expert group, the International Commission on Radiological Protection (ICRP). The other,

smaller risk factor in the table for nonfatal cancer and hereditary effects may be similarly applied by interested readers.

In keeping with the previous discussion of the difficulties in determining the risk factors used in this document, it is worthwhile to discuss the level of confidence that is associated with those factors. The ICRP, in the recommendation that established the risk factors used here, stated that, "The nominal values of fatal cancer risk, which form the basis of the detriment following radiation exposure, are not to be regarded as precise and immutable. They are, unfortunately, at this time still subject to many uncertainties and to many assumptions involving factors which may be subject to change. ...It is hoped, and indeed expected, that these uncertainties will diminish in the future as the accumulated experience in exposed populations such as the Japanese survivors increases and as more information develops from a broader variety of human experiences" (ICRP 1991). The Committee on the Biological Effects of Ionizing Radiations (BEIR), which developed the risk factors that the ICRP recommends, also discussed the uncertainty of the factors: "Finally, it must be recognized that derivation of risk estimates for low doses and dose rates through the use of any type of model involves assumptions that remain to be validated. ...Moreover, epidemiologic data cannot rigorously exclude the existence of a threshold in the millisievert (1 millisievert = 100 millirem) dose range. Thus the background radiation cannot be ruled out. At such low doses and dose rates, it must be acknowledged that the lower limit of the range of uncertainty in the risk estimates extends to zero" (BEIR V 1990).

Given these concerns, the reader should recognize that these risk factors are intended to provide a conservative estimate of the potential impacts to be used in the decision-making process, and are not necessarily an accurate representation of actual anticipated fatalities. In other words, one could expect that the stated impacts from an activity or accident form an envelope around the situation, and that actual consequences could be less, but probably would not be worse.

When considering the risks from exposure to ionizing radiation, it is important to remember that we are always being exposed to the radiation in the environment around us. Natural background radiation is the collective term for all of the sources that occur naturally, such as cosmic radiation and naturally occurring radioactive materials, such as potassium, uranium, thorium, radium, and others. These sources contribute an average of 0.3 rem per year to each individual. Manufactured radiation sources contribute another 0.06 rem per year on

TABLE G.1.1.2–1.—*Risk Factors for Cancer Induction and Heritable Genetic Effects from Exposure to Ionizing Radiation*

EXPOSED POPULATION[a]	FATAL CANCER[b]	NONFATAL CANCER	HEREDITARY EFFECTS (SEVERE)[d]	TOTAL DETRIMENT
Adult Workers	0.0004[c]	0.00008	0.00008	0.00056
Whole Population	0.0005[c]	0.0001	0.00013	0.00073

[a] The distinction between the worker risk and the general public risk is attributable to the fact that sensitivities vary with age, general health, and other factors that contribute more to the general population than to the worker population.

[b] When applied to an individual, units are lifetime probability of excess cancer fatalities per rem of radiation dose. When applied to a population of individuals, units are excess numbers of fatal cancers per person-rem of radiation dose.

c This is the source of the 4×10^{-4} worker and 5×10^{-4} public risk factors used in this SWEIS.

[d] Heritable genetic effects as used here apply to populations, not individuals. For the other columns, the units would change accordingly, in terms of number of effects per unit dose.

Source: ICRP 1991

the average, with the majority coming from medical procedures. Fallout from the atmospheric testing of nuclear weapons currently contributes less than 0.001 rem per year to our doses (NCRP 1987).

G.1.1.3 *About Radioactive Material Within the Body*

Typically, radioactive material that is released into the environment is in the form of very fine particulates, gases, or liquids. That is usually because these forms are the hardest to contain in a facility. This material is easily carried into and spread around the air, soil, and water. As these materials move through the environment, it is possible for them to be taken into the body, through breathing, eating, or drinking. During normal operations of a facility, every effort is made to minimize these releases to levels well below natural background. During accidents, it is possible that higher levels may be released; but, the facilities are designed and operated to control these releases as much as possible.

Radioactive material normally enters the body through one of three mechanisms. When the material is in the air, it is inhaled into the lungs, where a fraction will be trapped, depending upon the size of the particles. When it is ingested by eating or drinking, or by clearing of the respiratory tract, it passes through the stomach and into the gastrointestinal tract. Under the right conditions, it can also be absorbed through the skin or enter through open wounds.

Once in the body, the fate of the material is determined by its chemical behavior. Some material will be dissolved into bodily fluids and transferred into various organs of the body. Remaining material may either be retained at its point of entry, such as in the lungs, or pass through the body rapidly, as in the gastrointestinal tract. The effect of material in the body is characterized by the type of radiation it delivers and the organs in which it tends to collect. The rate at which the material is removed from the body is represented by a value called effective biological half-life (the time it takes for the activity in the body to be reduced to one-half as a consequence of radioactive decay and biological turnover of the radionuclide).

When radioactive material is in the body, it irradiates the living tissue around it. Some radiation types, like beta and alpha particles, are much more effective at causing changes when inside the body than when outside. This is because these types of radiation cannot effectively penetrate the dead layer of the skin from an external source. As mentioned above, the radiation dose from material inside the body is called the CEDE. Remember that the dose from an external source stops when you walk away or are shielded from it. But you cannot walk away from an internal source. Therefore, the CEDE is designed to determine the risk commitment from the intake. It is the dose that will be received over the next 50 years from the material in the body. Because of the assumptions that doses are cumulative and their effects are not repaired, this means that the lifetime risk from an internal source in rem CEDE can be directly compared to the risk from an external source in rem DDE.

G.1.1.4 *About the Material of Interest at LANL*

LANL has a large involvement in nuclear science and applications. Therefore, there are many types of radioactive material and radiation sources in use. However, many of the uses require only very small amounts of material. Note that all radioactive materials are considered in this SWEIS; but, there are three types that tend to dominate the human health effects and DOE accident scenarios. This is due to either their particular radioactive and biological characteristics, the quantities of material being used, or the potential for

dispersion in an accident. These materials are plutonium, uranium, and tritium.

Plutonium is a man-made element that has several applications in weapons, nuclear reactors, and space exploration. There are several types of plutonium atoms, called isotopes, which are distinguished by the different numbers of neutrons in their nucleus. (Note that isotopes of a particular atom all behave the same chemically.) In most cases, the isotopes of plutonium of interest here decay by alpha particle emission with radioactive half-lives ranging from tens to thousands of years. There is nothing unique about plutonium as a health risk compared to other radioactive materials. It is only that once incorporated into the body, it tends to stay for a very long time and deposits a lot of localized energy due to its alpha particles.

Uranium is a naturally occurring radioactive element. The discovery that an atom of uranium could be fissioned with neutrons was the starting point of the Nuclear Age. Uranium-235 is one of several fissile materials that fission with the release of energy.

Various applications require the use of different isotopes of uranium. Because isotopes cannot be chemically separated, processes have been developed to enrich uranium to various isotopic ratios. Enriched uranium is uranium that is enhanced in the isotope uranium-235 above its natural ratio of 0.72 percent. Highly enriched uranium (HEU) is where the uranium-235 content is 20 percent or greater. Depleted uranium (DU) is where the content of uranium-235 is below its natural value. Obviously, natural uranium is where the material is in its natural isotopic ratios.

Most uranium isotopes of interest here have very long half-lives and are alpha emitters. Their half-lives are much longer than the plutonium isotopes, and as a result uranium is generally of lower radiological concern than plutonium. However, its actual radiological concern varies with its enrichment. As a heavy metal, uranium also can be chemically toxic to the kidneys. Depending upon the enrichment and chemical form, either chemical or radiological considerations will dominate.

Tritium is a radioactive isotope of hydrogen. It is generated at low levels in the environment by interactions of cosmic radiation with the upper atmosphere, but for practical applications it is normally produced in a nuclear reactor. Tritium has a half-life of around 12 years and decays by emitting a low energy beta particle. Because tritium is an isotope of hydrogen, it can be incorporated into the water molecule, forming tritiated water. In the environment, tritium is most often found either in its elementary form as a gas, or as water. Tritiated water is a significant concern to the human body because the body is composed mostly of water. This actually is a mixed blessing. Tritiated water will easily and rapidly enter the body and irradiate it rather uniformly; however, it also is removed from the body rather quickly, being easily displaced with regular water and with a biological half-life of about 12 days under normal conditions.

G.1.1.5 *How DOE Regulates Radiation and Radioactive Material*

Radiation doses to workers and the public and the release of radioactive materials are regulated by DOE for its contractor facilities. Under the conditions of the *Atomic Energy Act* (as amended by the *Price-Anderson Amendments Act of 1988)*, DOE is authorized to establish federal rules controlling radiological activities at DOE sites. The act also authorizes DOE to impose civil and criminal penalties for violations of these requirements. Some activities are also regulated through a DOE Directives System that uses contractual means to regulate the contractor activities.

Occupational radiation protection is regulated by the *Occupational Radiation Protection Rule*,

Title 10 of the Code of Federal Regulations, Part 835 (10 CFR 835). Environmental radiation protection is currently regulated contractually with DOE Order 5400.5, which is in the process of being converted to a rule. There is a process by which these regulations are developed. The EPA, working with other agencies such as DOE and the NRC, develops a federal guidance document that is signed by the President (52 *Federal Register* [FR] 2822–2834). This document is based upon the recommendations of the National Council on Radiation Protection and Measurements (NCRP), and considers recommendations of international expert groups such as the ICRP. This federal guidance then becomes the basis for all federal regulations for radiation protection, including DOE's and also U.S. Nuclear Regulatory Commission (NRC) rules. This process ensures a common, scientifically based approach to all radiation protection in the U.S.

G.1.1.6 *About Chemicals and Human Health*

The characteristics and consequences of exposures to chemicals are quite different from those of exposure to ionizing radiation. Table G.1.1–1 summarizes the differences.

For noncarcinogens, there are threshold concentrations that must be exceeded for observable adverse effects to happen; whereas, for ionizing radiation it is assumed that the integrated (accumulated) exposure determines the likelihood of observable effects.

The threshold values for effects from toxic chemicals vary somewhat among individuals, but values can be determined that represent most of the more vulnerable people among the general population. The several different effects from a chemical each have different thresholds. For instance, there may be different concentrations that produce odor, irritation, effects that last only a short time, permanent effects, and death. Older and ill people, and those with a particular sensitivity such as respiratory problems, are more vulnerable and will have lower thresholds for effects.

Using human inhalation of chlorine in illustration, 0.2 to 0.4 parts per million (parts of chlorine per million parts of air) is the odor threshold; 1 to 3 parts per million for periods less than an hour produce burning eyes, scratchy or irritated throat, and headache; 15 parts per million is the lowest concentration observed to cause respiratory distress; no deaths were observed in any animals exposed to 50 parts per million for 30 minutes; and 210 parts per million has been estimated to be the 30-minute LC50 for humans, although 50 parts per million might cause death in some vulnerable individuals. (The 30-minute LC50 is defined as the concentration that produces 50 percent fatalities among individuals exposed for 30 minutes.)

The ability to resist a potential effect and to recover from that effect clearly depends upon a person's health and age. For the population of workers, presumed to have few individuals who are especially vulnerable, regulatory agencies set permissible exposure limits and average concentrations for the 8-hour and 10-hour work day. Lower values than these would be appropriate to public exposures; whereas, higher values are deemed acceptable for military personnel under military exigencies.

Again using inhalation of chlorine gas in illustration, the OSHA permissible exposure limit is a time-weighted average (TWA) over the 8-hour work day of 0.5 parts per million[1]. There also is an OSHA short-term exposure limit of a 1-part-per-million 15-minute TWA that should not be exceeded at any time during the work day. The immediately dangerous to life and health (IDLH) value is 30 parts per million; this is the concentration from which a

1. The definition of the TWA is the sum of all the instantaneous air concentrations over the 8 hours, averaged by dividing by the 8 hours.

worker could escape within 30 minutes without a respirator and without escape-impairing or irreversible effects.

This SWEIS analysis uses the TWA as a convenient measure for screening the chemical inventory at LANL, and then uses Emergency Response Planning Guidelines (ERPGs) or their surrogate Temporary Emergency Exposure Limits (TEELs) for bounding the consequences to persons exposed to a release to the atmosphere. ERPGs are provided by the American Industrial Hygiene Association (AIHA) for planning for emergencies, rather than for determining consequences. ERPG–1, ERPG–2, and ERPG–3 are defined and described in detail in appendix G, Accident Analysis. They are intended to provide protection for most members of the public, and so their exposure time (up to one hour) and their concentrations are directly related to effects (no safety factor of ten was applied).

Again using chlorine in illustration, the ERPG–2 is 3 parts per million, the concentration at which nearly all individuals could be exposed without irreversible or other serious health effects or impairment of ability to take protective actions. The ERPG–3 is 20 parts per million, below which nearly all individuals could be exposed without life-threatening effects.

Only for some chemicals and only for a limited extent, effects are directly related to the product of the concentration and length of exposure ("Haber's Law"). Chlorine is not such a chemical. When attempting to apply an existing guideline to a different exposure period than for which the guideline applies, toxicologists must be consulted, and they will consider actual effects data.

G.1.1.7 *How Toxic Chemicals Affect the Body*

Some toxic chemicals can have direct effects upon the eyes and the skin through contact and can enter the body by absorption through the skin. These are considered in the derivation of guides and limits for airborne concentration. Toxic chemicals also can enter the body via ingestion (eating and drinking). All the LANL accidents considered in the SWEIS that pose significant risk to the public produce their exposure through airborne releases, and so airborne concentrations guides and limits are used in the screening and consequence analyses.

After intake, the chemical may follow primarily one or more routes within the body, involving the respiratory system and digestive system, the blood circulatory system, and the urinary tract. The route and residence time before excretion is strongly determined by the chemical's solubility, and if particulate, by its particle size. The chemical may be metabolized, usually in the liver, into other chemicals that are either more or less toxic. For carcinogens, the principal target organs (i.e., where the effects primarily occur) are the respiratory tract, urinary bladder, and to a lesser extent the bone marrow, gastrointestinal tract, and liver.

G.1.1.8 *About Chemical Carcinogens*

Some chemicals are regulated as carcinogens because they or their metabolites may cause cancer. There are limited data on chemical carcinogens for humans, and there are problems with applying the results of animal studies to humans. Therefore, these chemicals are classified as known human carcinogens, potential or suspected carcinogens, and chemicals that cause cancer in animals. Exposure to chemical carcinogens is treated in the same manner as cumulative exposure to ionizing radiation; that is, exposures are assumed to be additive in producing cancer.

Some chemicals are carcinogenic at concentrations that do not produce observable effects from acute (short-term) exposures. For these, the airborne exposure limits and guidelines are based on their carcinogenicity. Some chemicals may produce an irreversible change to cells (tumor initiation), which then may be submitted to chemicals that are promoters of cancer. Such promoters must be given repeatedly to be effective. For this reason, chemical carcinogens are regarded as additive to one another, and individual chemicals are regulated at 1/100 of the exposure level regarded as hazardous, perhaps to account for the conservative possibility of having 100 such chemicals in one's environment.

The carcinogenic effects of certain chemicals are similar to those of ionizing radiation and have been noted in virtually every organ, depending on the chemical, the species, and conditions of exposure. The cancers induced by chemicals and by ionizing radiation cannot be distinguished from cancers induced by other causes. Therefore, the effects of chemicals and ionizing radiation are inferred only on a statistical basis, and must inferred from exposures at higher doses and dose rates. The choice of model has a large influence on the estimated excess cancer risk. The extrapolation is made by assuming an uncertain and controversial no-threshold, linear mathematical relationship between dose and resultant effects. This model is usually thought likely to overestimate the risk at low doses, and so is often said to estimate the "upper limit" of risk (NCRP 1989).

Chemicals vary widely in their capacity to induce cancer. There are even fewer data on the carcinogenic effects for chemicals than for radiation. With most chemicals, assessment of risks for humans must be based on extrapolation from laboratory animals or other experimental systems. Hence, the risk assessment for chemicals has even more uncertainty than risk assessment for ionizing radiation (NCRP 1989). Ultimately, the desired certainty in risk assessment at low-level exposures to chemicals and radiation will require better understanding of their effects at all stages of carcinogenesis.

The EPA, in setting standards for compliance with the *Clean Air Act*, is required by judicial decision and the *Clean Air Act* to determine a "safe" level with an "ample margin of safety to protect public health" without consideration as to cost or technology feasibility (Bork 1987). After that level is determined, costs and feasibility can be considered in setting the standard. Although this decision applied specifically to vinyl chloride and the *Clean Air Act*, it aids in understanding the EPA challenge faced in determining what is "safe," "adequate," or "acceptable" when setting standards for protection of workers, public, and environment. In the attempt to provide an objective context for evaluating the risks posed by LANL operations, the SWEIS authors have searched for authoritative statement on acceptable risk levels. A few such statements and inferences can be found in ICRP, NCRP, EPA, and OSHA documents.

EPA regulations provide goals for environmental remediation (cleanup). The EPA goals "for acceptable exposure levels to known or suspected carcinogens are generally concentration levels that represent an excess upper bound lifetime cancer risk between 10^{-4} and 10^{-6}. The 10^{-6} risk level shall be used as the point of departure for determining remediation goals" when existing and relevant requirements are not available or sufficiently protective because there are multiple contaminants or pathways. When the combined risk from multiple contaminants exceed 10^{-4}, then factors such as detection limits and uncertainties may be considered in determining the cleanup level to be attained (40 CFR 300.430). Note that this is the lifetime risk to an undetermined public population group.

OSHA (OSHA 1997) expressed that its proposed worker permissible exposure limit for methylene chloride of 25 parts per million

(average for 8 hours per day) would entail an employment lifetime risk of 3.62×10^{-3}, and that this was "clearly well above any plausible upper boundary of the significant risk range defined by the Supreme Court and used by OSHA in its prior rulemaking." OSHA noted that typical lifetime occupational risk for all manufacturing industries is 1.98×10^{-3}, and that the risk in occupations of relatively low risk, like retail trade, is 8.2×10^{-4}. Note that worker risk is generally accepted at a higher level than public dose because it is an accepted risk of employment. This is compatible with the EPA upper bound lifetime public cancer risk of between 10^{-4} and 10^{-6}.

G.1.1.9 *Radionuclides and Chemicals of Interest at LANL*

LANL has used, uses, and will use a wide variety of chemicals because of its research mission. LANL has a chemical database that tracks the quantity and location of chemicals on site. About 51 of the chemicals tracked in the database are carcinogenic. A large number of the chemicals tracked in the database are toxic; that is, they are able to produce harm to humans. The analysis of the consequences to the public from chemical emissions under normal operations of LANL is provided in chapter 5, sections 5.2.4 and 5.2.6 of the LANL SWEIS. Methodology is provided in section 5.1.4 and 5.1.6 of the LANL SWEIS. Those of risk to the public, should they be accidentally released to the atmosphere, were determined by screening the entire database. Details on the accidental release screening and its results are presented in appendix G, Accident Analysis of the LANL SWEIS.

G.1.2 Supplemental Information on Public Health: U.S., New Mexico, and the Local LANL Community

The information presented below is supplemental to the information presented in chapter 4, section 4.6. It is presented to provide the context of the human health analysis provided in chapter 5, which estimates potential consequence to public health.

The population of Los Alamos County has grown primarily by immigration. The average annual fertility rate has remained at approximately 48/1,000 women across all races (DOC 1990 and Athas and Key 1993), which would produce annual growth of only 2.4 percent if there were no deaths. However, the growth rate has been approximately 25 percent between 1950 and 1960, more than 16 percent between 1960 and 1970 as well as between 1970 and 1980, and approximately 3 percent between 1980 and 1990.

Several studies have been conducted in the community due to concerns expressed within the community concerning the rates of some cancers. While these are summarized in section 4.6 of the SWEIS, additional information is presented here in order to meet the request of many during the scoping meetings for presentation of these results in the SWEIS.

These studies are largely descriptive; that is, they use statistical analyses to identify patterns of disease or death in a community. The thyroid cancer study (Athas 1996) reported below is a mixture of descriptive and analytical approaches (based on case studies and observational analyses). All epidemiological studies are subject to limitations in attempting to determine cause and effect relationships. Some of these limitations are:

- Small population sizes in the community to be studied

- Relatively few total numbers of cases of the specific disease or cancer to be studied
- High mobility in the population to be studied (if a large portion of the community has been in the community for shorter periods of time than that necessary to detect chronic disease, results are inconclusive)
- Disease etiology—one may have received the causative exposure decades before its diagnosis; households in the U.S. move on average every 3 years; in Los Alamos County in 1980, 45 percent of residents had been in the same home for 5 years; earlier census data showed lesser periods of time in the same residence
- Comparability—for instance, the makeup of Los Alamos County is quite dissimilar from its surrounding counties in ethnic distribution and in socioeconomic and occupational conditions
- Natural variability in disease incidence within the human population from any and all sources
- Increased technology efficiency used in disease detection, therefore, causing apparent increases in rates of incidence of the better-detected disease
- More than one causal agent suspected or known to cause the disease being studied, including lifestyle choices such as smoking and dietary patterns
- Disease cause from multiple sources in the same community
- Methodology limitations such as multiple comparison across differing time periods, across studies made for different purposes, consideration of all combinations across the study time frame, etc.

G.1.2.1 *Public Health: United States*

Heart disease remains the leading cause of death in the U.S. (Table G.1.2.1–1). There has been a significant decrease in mortality in the U.S. attributable to heart disease and cerebrovascular disease over the last 20 years. Cancer remains the second leading cause of death.

Table G.1.2.1–2 identifies the lifetime risk of dying from cancer for men and women by cancer type. Over all cancer types, the lifetime risk of dying from cancer is approximately 24 percent for men and 21 percent for women.

Cancer incidence and mortality trends have changed over the last 20 years (Table G.1.2.1–3). Melanoma of the skin, for example, has increased in both incidence and mortality rate, as has brain and other nervous system

TABLE G.1.2.1–1.—*Leading Causes of Death in U.S.: Percent of All Causes of Death (1973 Versus 1993)*

CAUSE OF DEATH	PERCENT OF ALL CAUSES (1973)	PERCENT OF ALL CAUSES (1993)
Heart Disease	38.4	32.8
Cerebrovascular	10.9	6.6
Cancer	17.1	23.4
Pneumonia and Influenza	3.2	3.7
Chronic Lung Disease	1.5	1.2
Accidents	5.9	4.0
All Other Causes	22.5	28.4

Source: Ries et al. 1996

TABLE G.1.2.1–2.—*Lifetime Risk (Expressed as Percent) of Dying from Cancer: SEER[a] Areas (1973 Through 1993), All Races*

TYPE OF CANCER	MEN	WOMEN
All Types	23.77	20.66
Oral and Pharynx	0.45	0.24
Esophagus	0.65	0.23
Stomach	0.81	0.53
Colon and Rectum	2.54	2.54
Liver and Bile Duct	0.52	0.33
Pancreas	1.11	1.21
Larynx	0.25	0.07
Lung and Bronchus	7.11	4.35
Melanomas of Skin	0.31	0.20
Breast	0.03	3.54
Cervix Uteri	—	0.27
Corpus and Uterus	—	0.53
Ovary	—	1.12
Prostate	3.62	—
Testis	0.02	—
Urinary Bladder	0.69	0.34
Kidney and Renal Pelvis	0.49	0.33
Brain and Other Nervous	0.51	0.41
Thyroid	0.04	0.07
Hodgkin's Disease	0.06	0.05
Non-Hodgkin's Lymphoma	0.90	0.85
Multiple Myeloma	0.47	0.43
Leukemias	0.93	0.74

[a] SEER is the NIH/NCI Surveillance, Epidemiology, and End Results Program.
Source: Ries et al. 1996

cancers. Leukemia incidence and mortality rates have decreased.

G.1.2.2 *Comparison of Cancer Mortalities Between the U.S. and New Mexico*

A comparison of cancer mortality rates between the U.S. as a whole and New Mexico is given in Table G.1.2.2–1. These comparisons were made for 1989 through 1993 based on the National Institute of Health/National Cancer Institute (NIH/NCI) Surveillance, Epidemiology, and End Results (SEER) Program (Ries et al. 1996). For most cancers, differences were insignificant.

However, New Mexico had significantly higher mortality from thyroid cancer. (The reader is referred also to Athas 1996 for the local Los Alamos County study of thyroid cancer presented below.) New Mexico deaths due to thyroid cancers ranked 4th among the states. Thyroid cancers are associated with some types of radiological processes and research applications, principally those that could result in emitted radio-iodine. LANL has historically not used more than research amounts of radio-iodine. Radio-iodine emissions from LANL have been measured and have continually been very low (chapter 4, section 4.4 and the tables of emissions estimated for key LANL facilities, in chapter 3, section 3.6 discuss this further).

New Mexico had statistically lower rates of cancer mortalities for several cancers (Table G.1.2.2–1) relevant to the Los Alamos cancer studies, specifically, brain and other nervous system cancers and breast cancer.

G.1.2.3 *Cancer Incidence and Mortality Among Ethnic Groups Relevant to the LANL Area*

While the Native American population within Los Alamos County remains less than 3 percent (DOC 1990), the populations down gradient (with respect to air emissions and water flow) in the adjacent Santa Fe County Area are

TABLE G.1.2.1–3.—*Trends in Cancer Incidence and Mortality for Selected Cancers (1973 Through 1993), All Races, Both Sexes*

DECREASING INCIDENCE; DECREASING MORTALITY	INCREASING INCIDENCE; DECREASING MORTALITY	INCREASING INCIDENCE; INCREASING MORTALITY
Oral Cavity and Pharynx	Ovary	Total Cancers
Stomach	Testis	Esophagus
Colon and Rectum	Urinary Bladder	Liver and Bile Duct
Pancreas	Thyroid	Lung and Bronchus
Larynx		Melanoma of Skin
Cervix Uteri		Breast
Corpus and Uterus		Prostate
Hodgkin's Disease		Kidney and Renal Pelvis
Leukemia		Brain and Other Nervous
		Non-Hodgkin's Lymphoma
		Multiple Myeloma

Source: Ries et al. 1996

TABLE G.1.2.2–1.—*Comparison of Cancer Mortality Rates for the United States and New Mexico (1989 Through 1993), All Races, Both Sexes (Rate per 100,000 Population, Age Adjusted to 1970 U.S. Standard Population)*

TYPE OF CANCER	U.S. RATE	NEW MEXICO RATE	RANKING (AMONG STATES)	COMPARISON U.S. VS. NEW MEXICO
Breast	26.8	23.4	49th	NM < U.S.
Colon and Rectum	18.4	14.2	50th	NM < U.S.
Esophagus	3.5	2.4	49th	NM < U.S.
Hodgkin's Disease	0.6	0.6	25th	NSD
Larynx	1.4	1.2	34th	NSD
Leukemia	6.4	6.1	40th	NSD
Liver and Bile Duct	3.0	3.2	15th	NSD
Lung and Bronchus	49.9	35.0	49th	NM < U.S.
Melanomas of Skin	2.2	2.1	49th	NSD
Non-Hodgkin's Lymphoma	6.4	5.6	46th	NSD
Brain and Nervous	4.2	3.5	48th	NM < U.S.
Stomach	4.6	5.0	12th	NSD
Testis	0.3	0.2	43rd	NM < U.S.
Urinary Bladder	3.3	2.7	47th	NM < U.S.
Oral/Pharynx	2.9	2.6	32nd	NSD
Pancreas	8.4	8.1	40th	NSD
Thyroid	0.3	0.4	4th	NM > U.S.
Prostate	26.4	23.2	49th	NM < U.S.
Ovary	7.8	6.7	47th	NSD
Kidney and Renal Pelvis	3.5	3.4	36th	NSD
Multiple Myeloma	3.0	3.0	30th	NSD
Corpus and Uterus	3.4	3.0	43rd	NSD
Cervix Uteri	2.9	2.7	33rd	NSD

Sources: SEER Database and Ries et al. 1996
NSD = No significant difference

dominantly Native American (San Ildefonso Pueblo).

Table G.1.2.3–1 summarizes the findings regarding the top five cancers (both incidence and mortality) among nonhispanic whites (U.S.), Hispanic whites (U.S.), and Native Americans (New Mexico). The Native American cancer incidence and cancer mortality rates are lower than either of the other examined populations for both men and women. This is the case for all cancer types, not just the top five cancers with respect to incidence and mortality rate.

Among men, lung and prostate cancer dominate incidence and mortality. Among women, breast and lung cancer dominate cancer incidence and mortality. A fairly rare cancer, gall bladder, is the leading cause of cancer mortality among New Mexican Native American women. However, because there were so few cases, and the uncertainty level thus associated with the observation is so high, it is inappropriate to draw conclusions even regarding gall bladder cancer incidence in this population of women.

G.1.2.4 *Supplemental Information on Recent Studies of Los Alamos County Cancer*

Objectives

The primary objective of the study was to review Los Alamos County incidence rates for brain and nervous system cancer and other major cancers during the 21-year time period 1970 to 1990 (Athas and Key 1993). Secondary objectives were to review mortality rate data for select cancers of concern and to review Los Alamos County mortality data relating to benign brain and nervous system tumors.

Specific aims developed for incidence study were as follows:

- To calculate age-adjusted cancer incidence rates for Los Alamos County and a New Mexico state reference population using data of the New Mexico Tumor Registry (NMTR)
- To compare Los Alamos County cancer incidence rates to (1) incidence rates calculated for a New Mexico state reference population, and (2) national rates obtained from the SEER Program of the National Cancer Institute
- To determine if any of the Los Alamos County cancer incidence rates were elevated in comparison to rates observed in the reference population

The study protocol specified that statistical tests would be used to determine whether any of the Los Alamos County rates were elevated in comparison to the reference populations. Early in the course of the study, however, it became apparent that the small number of cases for virtually all of the Los Alamos County cancers reviewed would make the finding of statistical significance unlikely for small to modest elevations in a rate. Consequently, the analysis of the Los Alamos County incidence data was expanded to include not only statistical considerations but other types of information such as temporal patterns of cancer occurrence, prevalence of established risk factors, case characteristics, and tumor cell types. Cancers of concern were: oral cavity and pharynx, digestive system, respiratory system, melanoma of the skin, female breast, female genital system, urinary system, male genital system, lymphoreticular system, childhood cancers (ages 0 to 19 years) thyroid, and brain and nervous system cancers.

Following a review of tabulated incidence rate data for 23 major cancers, nine were selected for additional review and evaluation: liver and intrahepatic bile duct cancer, non-Hodgkin's lymphoma, leukemia, melanoma of skin, ovarian cancer, breast cancer, childhood cancers, thyroid cancer, and brain and nervous

TABLE G.1.2.3–1.—*The Five Most Frequently Diagnosed Cancer and the Five Most Common Types of Cancer Death (1988 Through 1992) Among White Non-Hispanics (all U.S.), White Hispanics (all U.S.), Native Americans (New Mexico)*

POPULATION GROUP	CANCER INCIDENCE[a]		CANCER MORTALITY[a]	
	CANCER TYPE (RATES/100,000 POPULATION, AGE ADJUSTED TO 1970 U.S. STANDARD)			
	MEN	WOMEN	MEN	WOMEN
White, Non-Hispanic	Prostate (137.9)	Breast (115.7)	Lung (74.2)	Lung (32.9)
	Lung (79.0)	Lung (43.7)	Prostate (24.4)	Breast (27.7)
	Colon/Rectum (57.6)	Colon/Rectum (39.2)	Colon/Rectum (23.4)	Colon/Rectum (15.6)
	Bladder (33.1)	Corpus Uteri (23.0)	Pancreas (9.8)	Ovary (8.2)
	Non-Hodgkin's Lymphoma (19.1)	Ovary (16.2)	Leukemia (8.6)	Pancreas (7.0)
White, Hispanic	Prostate (92.8)	Breast (73.5)	Lung (33.6)	Breast (15.7)
	Lung (44.0)	Colon/Rectum (25.9)	Prostate (15.9)	Lung (11.2)
	Colon/Rectum (40.2)	Lung (20.4)	Colon/Rectum (13.4)	Colon/Rectum (8.6)
	Bladder (16.7)	Cervix (17.1)	Stomach (8.8)	Pancreas (5.4)
	Stomach (16.2)	Corpus Uteri (14.5)	Pancreas (7.4)	Ovary (5.1)
Native American, NM	Prostate (52.5)	Breast (31.6)	Prostate (16.2)	Gallbladder (8.9)[b]
	Colon/Rectum (18.6)	Ovary (17.5)	Stomach (11.2)[b]	Breast (8.7)[b]
	Kidney (15.6)	Colon/Rectum (15.3)	Liver (11.2)[b]	Cervix (8.0)[b]
	Lung (14.4)	Gallbladder (13.2)	Lung (10.4)[b]	Pancreas (7.4)[b]
	Liver (13.1)[b]	Corpus Uteri (10.7)	Colon/rectum (8.5)[b]	Ovary (7.3)[b]

[a] NIH/NCI SEER Program statistics from several regions around the U.S.

[b] Statistics calculated with extremely high uncertainty because they are based on fewer than 25 cases. Other rates (not footnoted) were calculated from larger total numbers of cases and, therefore, have less uncertainty associated with them.

Source: Miller et al. 1996

system cancer. The majority of these cancers were chosen on the basis of incidence rates, which were higher in Los Alamos County in comparison to the reference populations. Childhood cancer was chose for further review based on mortality rate data showing an apparent excess of childhood cancer deaths in Los Alamos County. Leukemia and liver cancer where chosen as cancers of concern specifically to examine tumor cell types. Cancers not chosen for further review included major sites in the respiratory, digestive, and urinary systems.

Incidence Data: Data Sources

Information regarding newly diagnosed cancers among Los Alamos County residents and New Mexico non-Hispanic Whites was compiled from records collected since 1969 by the NMTR at the University of New Mexico Cancer Center. Cancer is a reportable disease in New Mexico by regulation of the New Mexico Department of Health (NMDOH). Since the late 1960's, NMTR has been the repository of the confidential medical record abstracts and computerized masterfile for cancer in New Mexico. NMTR has been a part of the SEER Program since that program began in 1973.

Cancer Incidence Findings (1970 to 1990)

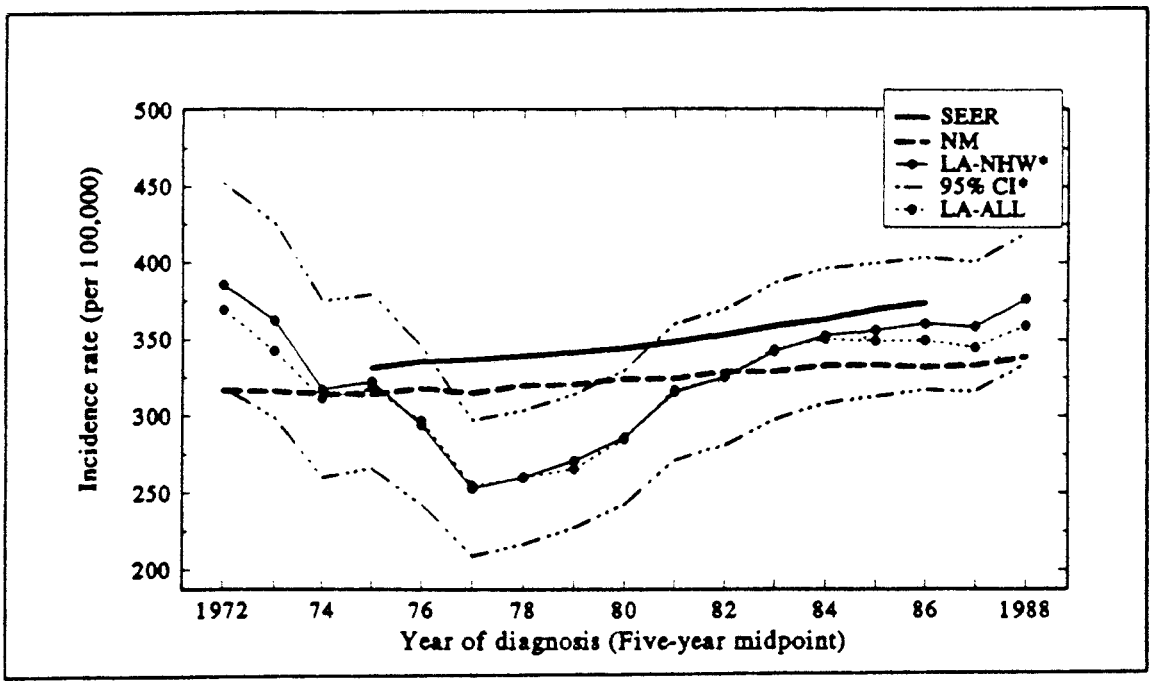
All Cancers. Figure G.1.2.4–1 shows that the Los Alamos County incidence rates for "all cancers" fluctuated considerably; but the rates generally were comparable to or lower than rates observed in the state and national reference populations.

Liver and Intra-Hepatic Duct Cancer. Seven cases of primary liver and intra-hepatic bile duct cancer occurred in Los Alamos County. Four of the seven cases (57 percent) were diagnosed between 1981 and 1982. Los Alamos County incidence rates were highly variable as a result of the small number of cases and the clustered temporal distribution of cases. No cases were reported up until the early 1980's, at which time the four cases diagnosed in 1981 to 1982 caused a marked elevation in the Los Alamos County rates in comparison to the state and national reference rates (Figure G.1.2.4–2). Los Alamos County rates subsequently diminished to a level consistent with the reference rates.

Non-Hodgkin's Lymphoma. Los Alamos County consistently experienced a small to modest elevation in incidence compared to the reference populations (Figure G.1.2.4–3). The magnitude of the elevated Los Alamos County incidence varied widely up to a two-fold higher than expected level. None of the Los Alamos County lower confidence limits excluded the reference rates. Incidence in the Los Alamos County non-Hispanic White population was consistently higher than that observed in the total county population. All Los Alamos County rates were based on 14 or fewer cases. For the most recent five-year time period (1986 to 1990), the rate for non-Hispanic Whites in Los Alamos County was 57 percent greater than the state reference rate.

Leukemia. The incidence of leukemia in Los Alamos County generally was the same or lower than that observed in the reference populations (Figure G.1.2.4.–4). Wide fluctuations in the Los Alamos County rates occurred as a result of low case numbers. All Los Alamos County rates were based on nine or fewer cases. For the most recent 5-year time period (1986 to 1990), the Los Alamos County rate equalled the state reference rate.

Melanoma. The incidence of melanoma consistently was around 50 percent higher in New Mexico non-Hispanic Whites compared with SEER Whites. Melanoma incidence steadily increased in both reference populations. Incidence rates in Los Alamos County were higher than the state reference rates over most of the 21-year study time period (Figure G.1.2.4–5). Early time periods were characterized by a small elevation in the Los Alamos County incidence; whereas, a more pronounced excess of melanoma in Los Alamos County began to appear in the mid 1980's.



SOURCE: Athas and Key 1993

FIGURE G.1.2.4–1.—*5-Year Average Annual Incidence of All Cancer Sites, Los Alamos County, New Mexico NHW, SEER Whites, 1970 to 1990.*

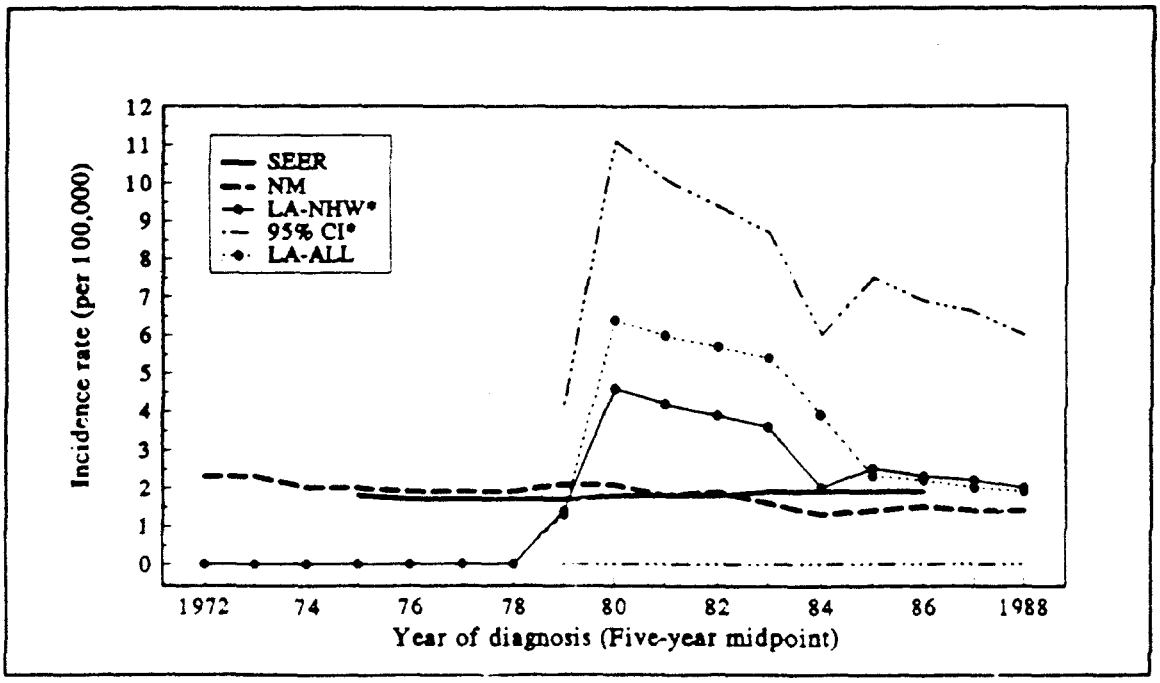


FIGURE G.1.2.4–2.—*5-Year Average Annual Incidence of Liver and Intra-Hepatic Bile Duct Cancer, Los Alamos County, New Mexico NHW, SEER Whites, 1970 to 1990.*

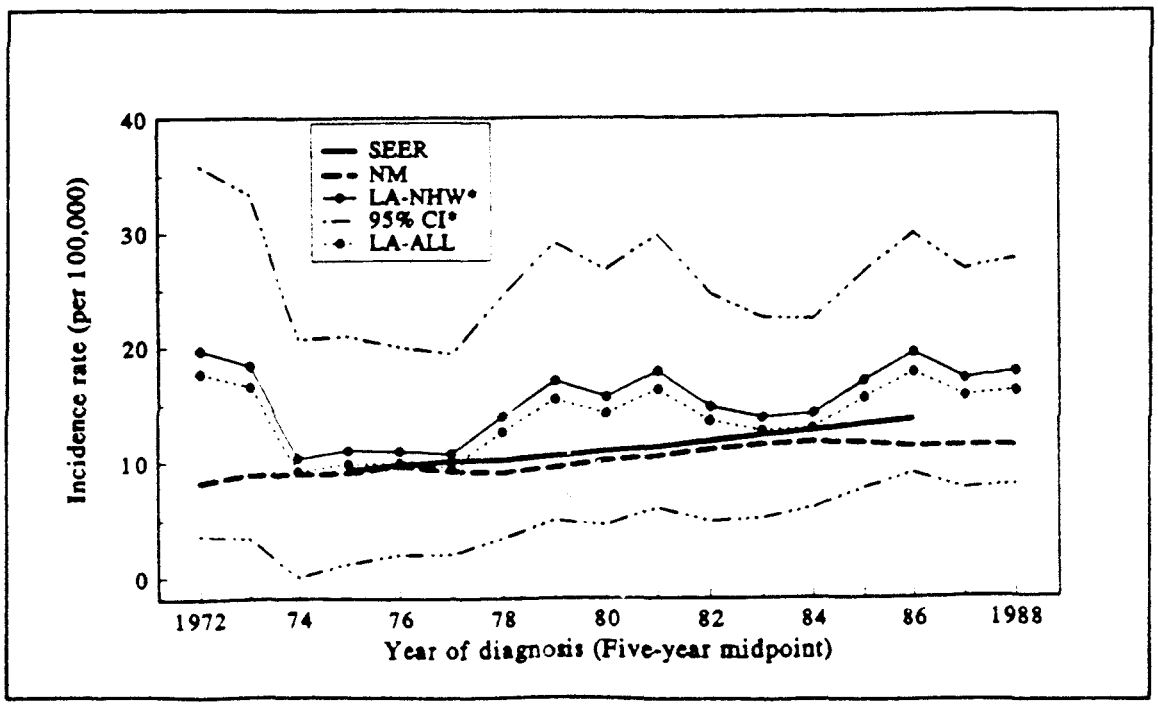


FIGURE G.1.2.4–3.—*5-Year Average Annual Incidence of Non-Hodgkin's Lymphoma, Los Alamos County, New Mexico NHW, SEER Whites, 1970 to 1990.*

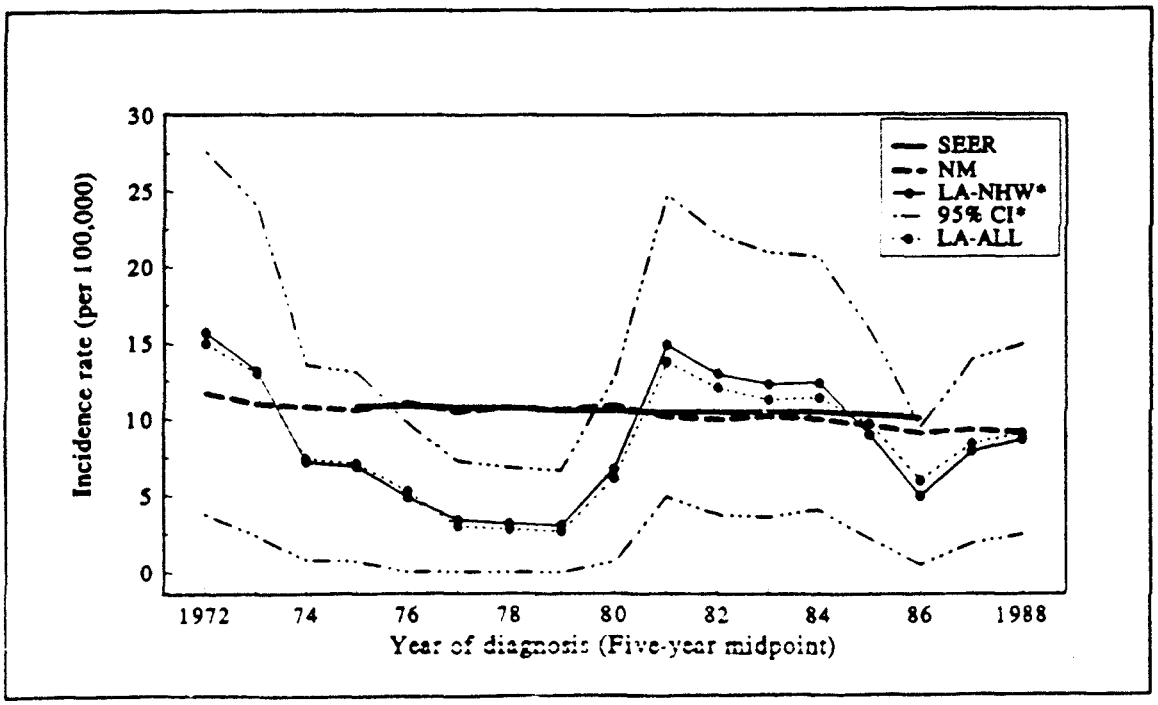


FIGURE G.1.2.4–4.—*5-Year Average Annual Incidence of Leukemia, Los Alamos County, New Mexico NHW, SEER Whites, 1970 to 1990.*

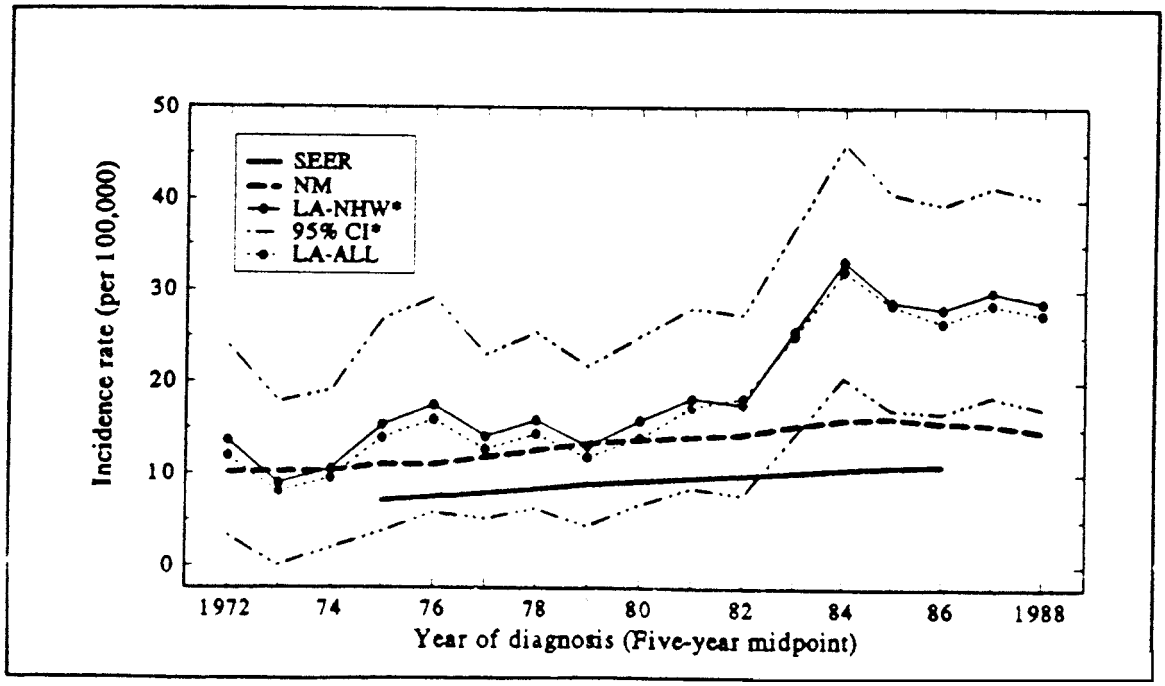


FIGURE G.1.2.4–5.—*5-Year Average Annual Incidence of Melanoma of Skin, Los Alamos County, New Mexico NHW, SEER Whites, 1970 to 1990.*

Beginning with the 1982 to 1986 period, and for all subsequent periods, the lower confidence limit of the Los Alamos County rate excluded the state reference rates. During these later periods, the incidence of melanoma in Los Alamos County increased roughly two-fold over that observed statewide.

Ovarian. Los Alamos County rates steadily rose by three-fold during 1970 to 1990, while both the sate and national reference rates remained essentially constant (Figure G.1.2.4–6). Initially lower than the reference rates, Los Alamos County incidence climbed to a statistically significant three-fold excess level during the 1982 to 1986 period. Half of all the Los Alamos County cases (15 out of 30) were diagnosed during these 5 years. Los Alamos County ovarian cancer incidence was two-fold higher than that observed in the state during the most recent 5-year period (1986 to 1990).

Breast. Breast cancer incidence in Los Alamos County women varied little over time; whereas, both reference populations displayed increasing incidence over time (Figure G.1.2.4–7). Los Alamos County incidence rates were 10 percent to 50 percent higher than the state and national reference rates over the entire study period. The lower confidence limits for the Los Alamos County rates consistently were near the reference rates, but excluded the reference rates in only several instances.

Childhood Cancers. Los Alamos County childhood cancer rates fluctuated around the more stable state and national reference population rates (Figure G.1.2.4–8). Following an initial two-fold elevation during the earliest period (1970 to 1972), subsequent periods were characterized by incidence rates that were slightly higher than or lower than the reference incidence rates. Two childhood brain cancer cases not in the original childhood cancer data set were discovered through a supplemental review of childhood cancer mortality statistics. The two additional cases, diagnosed in 1978 and 1980, would raise the original 1978 to 1982 Los Alamos County rate (13.7 per 100,000) by about

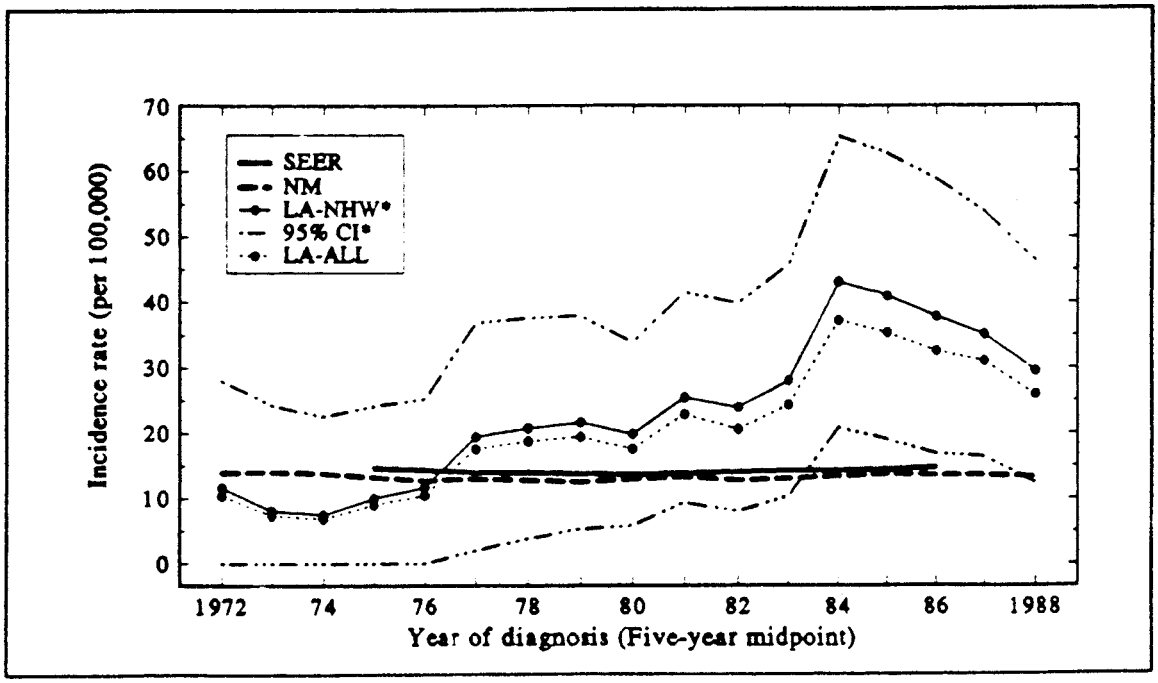


FIGURE G.1.2.4–6.—*5-Year Average Annual Incidence of Ovarian Cancer, Los Alamos County, New Mexico NHW, SEER Whites, 1970 to 1990.*

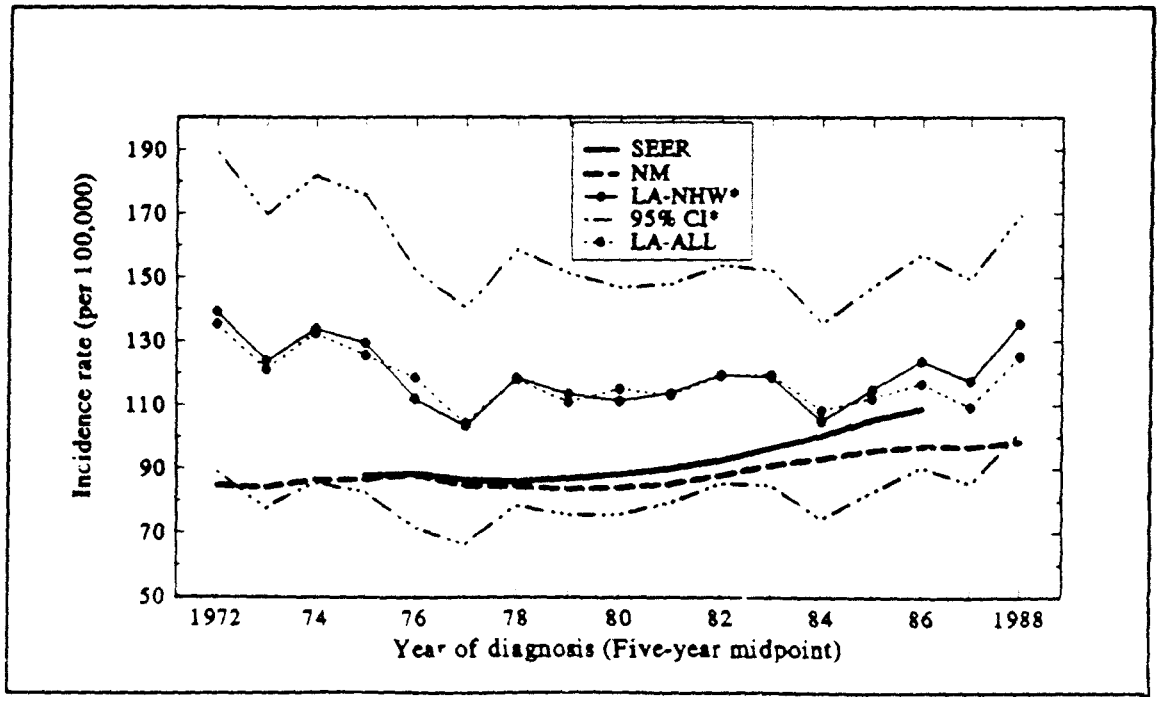


FIGURE G.1.2.4–7.—*5-Year Average Annual Incidence of Female Breast Cancer, Los Alamos County, New Mexico NHW, SEER Whites, 1970 to 1990.*

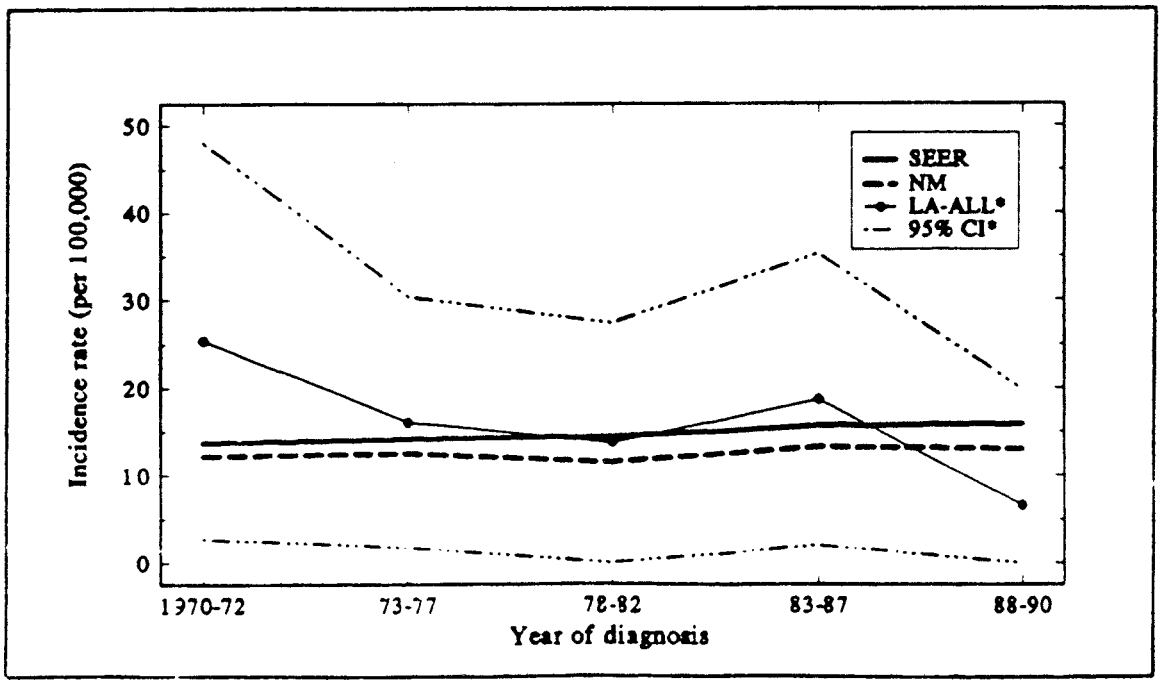


FIGURE G.1.2.4–8.—*Average Annual Incidence of Childhood Cancer (0 to 19 Years), Los Alamos County, New Mexico NHW, SEER Whites, 1970 to 1990.*[a]

[a] Incidence rate data based on independent time periods and not 5-year moving averages.

50 percent to 20.3 cases per 100,000. For the latest period (1988 to 1990), the incidence of childhood cancers in Los Alamos County was roughly 50 percent lower than that seen in the state reference population; however, the Los Alamos County rate was based on only one case.

Thyroid. The incidence of thyroid cancer in Los Alamos County prior to the mid 1980's was roughly stationary and less than two-fold higher than that seen in the reference populations (Figure G.1.2.4–9). Los Alamos County incidence rates began to rise during the mid 1980's and continued to climb up until the latest time interval (1986 to 1990). The incidence of thyroid cancer in Los Alamos County during 1986 to 1990 was nearly four- fold higher than that observed in the state reference population. The near four-fold elevation for Los Alamos County was statically significant. Roughly half (17 out of 37) of all thyroid cancer cases that occurred in Los Alamos County between 1970 and 1990 were diagnosed during the 1986 to 1990 interval.

Brain and Nervous System. The incidence of brain cancer in Los Alamos County increased over time (Figure G.1.2.4–10). Los Alamos County incidence rates were lower than or comparable to the reference rates up until the mid 1980's. Increases in Los Alamos County brain cancer incidence became apparent during the mid to late 1980's. Los Alamos County incidence rates (all races) during this period were 60 to 80 percent higher than rates for the state and national reference populations. Diagnosed in 1978 and 1980, two additional cases raised the central portion of the incidence rate curve to a range more comparable with the reference rates, but had no effect on the rates observed during the period of elevated incidence.

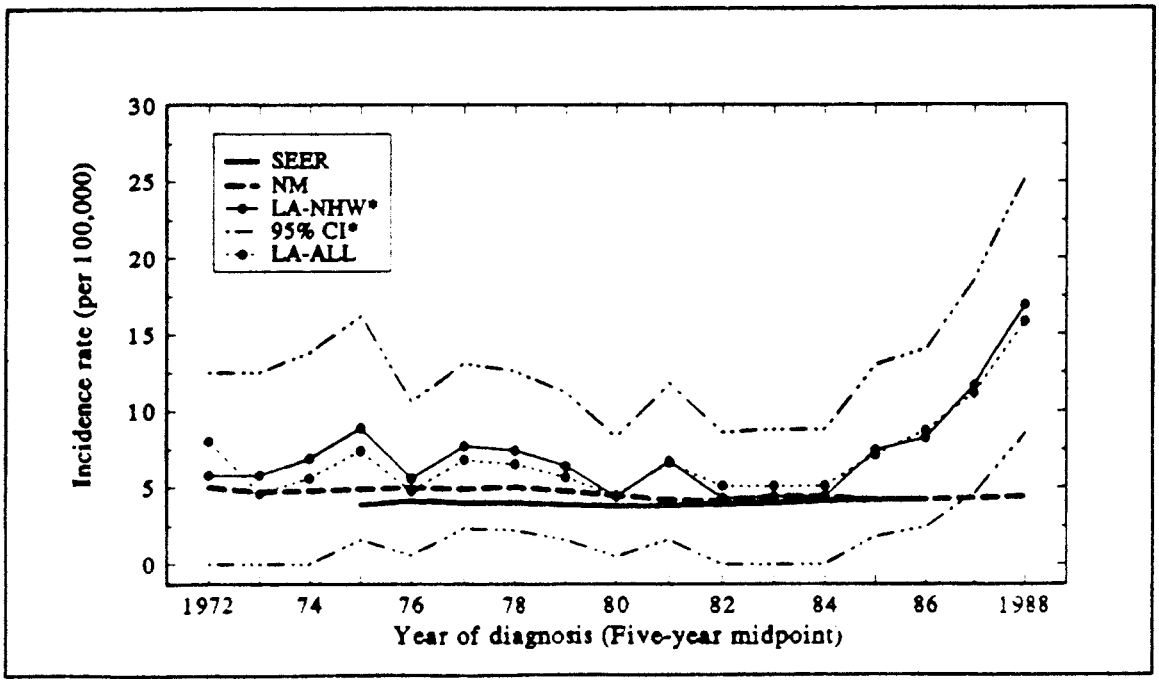


FIGURE G.1.2.4–9.—*5-Year Average Annual Incidence of Thyroid Cancer, Los Alamos County, New Mexico NHW, SEER Whites, 1970 to 1990.*

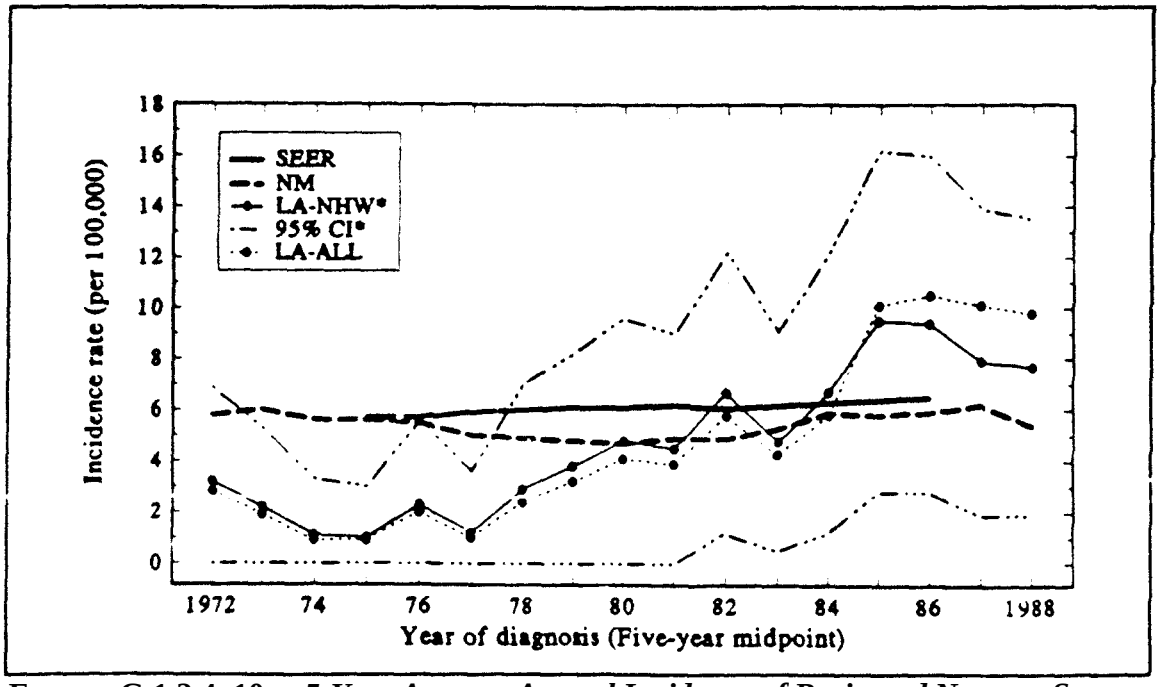


FIGURE G.1.2.4–10.—*5-Year Average Annual Incidence of Brain and Nervous System Cancer, Los Alamos County, New Mexico NHW, SEER Whites, 1970 to 1990.*

Mortality

Mortality rates for Los Alamos County and the U.S. were obtained as age-adjusted average annual mortality rates from the National Center for Health Statistics (NCHS) and the National Cancer Institute. All rates were standardized to the 1970 U.S. standard population and were race-specific for Whites. Site-specific Los Alamos County mortality rates were available for the periods 1969 to 1972, 1973 to 1977, 1978 to 1982, and 1983 to 1987. U.S. rates were available for the time period 1968 to 1972. For some cancers, both Los Alamos County and U.S. rates were available for the period 1968 to 1972. The confidence intervals that accompany the mortality rates were calculated as described for the incidence rates. Table G.1.2.4–1 summarizes the mortality rates by cancer type for Los Alamos County. Nationwide rates are also reported for comparison.

Subcounty Cancer Incidence

Table G.1.2.4–2 describes the cancer incidence for the five census tracts within Los Alamos County for all races, 1980 to 1990. The New Mexico non-Hispanic White population rates are provided also.

TABLE G.1.2.4–1.—*Average Annual Age-Adjusted Mortality Rates by Cancer Type for Los Alamos County and U.S. Whites (1969 to 1987)*

CANCER TYPE	LOCATION	MORTALITY RATE[a]			
		1969 TO 1972	1973 TO 1977	1978 TO 1982	1983 TO1987
Liver and Bile	Los Alamos	14.6 (2)[b]	0 (0)	5.4 (3)	7.1 (4)
	U.S.	—	2.1	2.1	2.3
Non-Hodgkin's Lymphoma	Los Alamos	13.5 (2)	5.8 (2)	12.0 (6)	2.3 (2)
	U.S.	NA[c]	4.9	5.2	5.9
Leukemia	Los Alamos	1.2 (1)	11.2 (6)	1.3 (1)	4.5 (4)
	U.S.	NA	6.8	6.7	6.5
Melanoma	Los Alamos	0 (0)	6.5 (3)	2.9 (2)	1.0 (1)
	U.S.	1.7	1.9	2.2	2.3
Ovarian	Los Alamos	19.7 (3)	5.7 (1)	8.9 (3)	3.8 (2)
	U.S.	NA	8.6	8.1	7.9
Breast	Los Alamos	39.6 (8)	17.4 (7)	60.7 (20)	29.7 (12)
	U.S.	26.9	26.9	26.6	27.2
Childhood Cancer	Los Alamos	3.6 (1)	12.3 (4)	16.1 (5)	10.6 (3)
	U.S.	6.6	5.4	4.6	4.0
Brain and Nervous System	Los Alamos	0 (0)	6.3 (4)	5.8 (5)	5.8 (5)
	U.S.	NA	4.0	4.1	4.3
Thyroid	Los Alamos	0 (0)	0 (0)	0 (0)	0 (0)
	U.S.	NR[d]	NR	NR	NR

[a] Rates per 100,000 and are age-adjusted to the 1970 U.S. standard population.
[b] Number of deaths given in parentheses.
[c] NA = Not available
[d] NR = Not reported

TABLE G.1.2.4–2.—*Average Annual Age-Adjusted Cancer Incidence Rates for Sub-County Regions of Los Alamos County, All Races (1980 to 1990)*[a]

SITE	CENSUS TRACT[b]					CDP[c]		LOS ALAMOS COUNTY	NEW MEXICO NHW[d]
	1	2	3	4	5	LOS ALAMOS	WHITE ROCK		
Non-Hodgkin's Lymphoma	18.9 (2)	4.5 (2)	20.4 (5)	11.1 (5)	16.7 (10)	12.6 (14)	16.7 (10)	14.3 (24)	11.0
	{0.0 to 45.6}	{0.0 to 11.0}	{2.2 to 38.7}	{1.2 to 21.0}	{6.1 to 27.2}	{5.8 to 19.3}	{6.1 to 27.2}	{8.5 to 20.1}	
Leukemia	1.9 (1)	10.3 (4)	17.5 (2)	5.5 (3)	11.8 (7)	7.1 (10)	11.8 (7)	8.5 (17)	9.5
	{0.0 to 5.7}	{0.0 to 20.6}	{0.0 to 42.2}	{0.0 to 11.8}	{2.9 to 20.7}	{2.6 to 11.6}	{2.9 to 20.7}	{4.4 to 12.6}	
Melanoma[e]	33.8 (10)	22.0 (10)	35.8 (7)	13.5 (6)	21.7 (11)	23.2 (32)	21.7 (11)	22.0 (43)	14.5
	{12.4 to 55.2}	{8.1 to 35.9}	{8.7 to 62.9}	{1.5 to 24.5}	{8.6 to 34.8}	{15.0 to 31.4}	{8.6 to 34.8}	{15.3 to 28.7}	
Ovary (Female)	76.7 (9)	19.4 (4)	19.5 (2)	14.0 (3)	12.7 (4)	27.4 (18)	12.7 (4)	23.0 (22)	12.8
	{25.6 to 127.8}	{0.0 to 38.8}	{0.0 to 47.0}	{0.0 to 30.2}	{0.0 to 25.4}	{14.5 to 40.3}	{0.0 to 25.4}	{13.2 to 32.8}	
Breast (Female)	145.3 (28)	120.5 (21)	159.2 (16)	85.3 (21)	116.0 (41)	119.8 (86)	116.0 (41)	119.0 (127)	92.2
	{90.4 to 200.2}	{67.9 to 173.1}	{79.6 to 238.9}	{48.1 to 122.5}	{79.8 to 152.3}	{93.9 to 145.6}	{79.8 to 152.3}	{97.9 to 140.1}	
Childhood (< 20 years)	21.9 (2)	6.7 (1)	0.0 (0)	24.5 (2)	16.9 (4)	14.2 (5)	16.9 (4)	15.2 (9)	14.8
	{0.0 to 52.8}	{0.0 to 20.2}	{ - }	{0.0 to 59.2}	{0.0 to 33.9}	{1.5 to 26.9}	{0.0 to 33.9}	{5.1 to 25.3}	
Thyroid	16.0 (6)	3.8 (2)	5.8 (1)	8.7 (4)	9.3 (9)	9.0 (13)	9.3 (9)	9.8 (22)	4.3
	{2.9 to 29.1}	{0.0 to 9.1}	{0.0 to 17.5}	{0.0 to 17.4}	{3.1 to 15.4}	{4.0 to 14.0}	{3.1 to 15.4}	{5.6 to 14.0}	
Brain	7.3 (2)	5.7 (3)	14.2 (3)	7.4 (2)	8.2 (7)	7.4 (10)	8.2 (7)	7.9 (17)	5.1
	{0.0 to 17.5}	{0.0 to 12.4}	{0.0 to 30.6}	{0.0 to 18.0}	{2.0 to 14.3}	{2.7 to 12.1}	{2.0 to 14.3}	{4.1 to 11.7}	

[a] Rates are for residence at diagnosis for all races per 100,000, age-adjusted to U.S. 1970 standard population; number of cases in parentheses ( ); 95% confidence limits in brackets { }, truncated at zero.
[b] Census Tract Designations: (1) North/Barranca Mesa; (2) North Community; (3) Western Area; (4) Eastern Area; (5) White Rock.
[c] Los Alamos Census Designated Place (CDP) comprises census tracts 1 through 4, White Rock CDP comprises census tract 5.
[d] Non-Hispanic Whites
[e] Excludes two cases with unknown residence at diagnosis.
Source: New Mexico Tumor Registry

APPENDIX H COMMENT RESPONSE DOCUMENT

This appendix provides a record of the solicitation of public comments on the Draft CT EIS and the consideration of those comments in the preparation of the Final CT EIS. The appendix outlines the public comment process and describes the changes made to the Final CT EIS. General or common issues of concern to the public are addressed collectively. This appendix also includes scanned images of all original comment documents and transcripts of the public hearings. Specific comments are identified and responses provided.