

~~Return~~ General



Department of Energy
Albuquerque Operations Office
Los Alamos Area Office
Los Alamos, New Mexico 87544

MAY 15 2001



CERTIFIED MAIL - RETURN RECEIPT REQUESTED

James P. Bearzi, Chief
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
2044-A Galisteo Street
Santa Fe, New Mexico 87505

Dear Mr. Bearzi:

SUBJECT: RESPONSE TO REQUEST FOR INFORMATION PURSUANT TO THE NEW MEXICO HAZARDOUS WASTE ACT AND THE RESOURCE CONSERVATION AND RECOVERY ACT, LOS ALAMOS NATIONAL LABORATORY, EPA ID NO. NM0890010515

The purpose of this letter is to provide the Department of Energy (DOE) and University of California's (UC) response to the New Mexico Environment Department's (NMED), Request for Information ([RI] Mr. James Bearzi, Hazardous Waste Bureau, to Dr. John Browne, LANL, and Mr. David Gurulé, U.S. Department of Energy [DOE] February 12, 2001). This response includes supplemental answers for the information requests numbered 1 through 17, 20, and 21, as described in the sixty-day response submitted on April 16, 2001. The response and supporting documentation are included as attachments to this letter.

The document consists of additional information collected for four of the responses to the information requests with supporting attachments, as referenced in the numbered information requests. DOE and UC are continuing to collect information for wastes historically managed and disposed of at LANL in addition to current data to supplement that presented in the continuing responses to the RI. Further submittals addressing the information requested will be submitted on the schedule described in the April 16 transmittal in accordance with Instruction 4, page 3 of the RI.

This response includes listings of the persons responsible for the production of the data used to answer the response and identifies the documents that provided information as required by information requests 20 and 21 of the February 12, 2001 letter. A certification for the contained data is also attached as required by 20.4.1 NMAC, Subpart IX, §270.11(d)(1).



13541

Mr. James P. Bearzi

2

MAY 15 2001

We are hopeful that this information will expedite the current schedule for the renewal of the DOE/UC hazardous waste facility permit. If you have questions concerning this submittal, please contact Gene Turner, DOE at (505) 667-5794 or Jack Ellvinger, University of California/LANL, at (505) 667-0633.

Sincerely,



Joseph C. Vozella
Assistant Area Manager
Office of Environment

LAAME:2GT-001

Enclosures

cc:
See page 3

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Mr. James P. Bearzi

4

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G. Turner, LAAME, LAAO
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T. Gunderson, DLDOPS, LANL, MS-A100
D. Erickson, ESH-DO, LANL, MS-K491
J. Canepa, EM/ER, LANL, MS-M992
M. Kirsch, EM/ER, LANL, MS-M992
D. McInroy, EM/ER, LANL, MS-M992
E. Louderbough, LC-GL, LANL, MS-A187
J. Ellvinger, ESH-19, LANL, MS-K490
G. Bacigalupa, ESH-19, LANL, MS-K490

Contract 003CT0008-8L
Project No. 819592.01
May 2001

**Response to Request for Information
Pursuant to the New Mexico Hazardous Waste Act
and the Resource Conservation and Recovery Act,
Los Alamos National Laboratory
EPA ID No. 0890010515**

Prepared by:

*Los Alamos National Laboratory
Hazardous and Solid Waste Group (ESH-19)
Los Alamos, New Mexico 87545*

**Response to Request for Information
Pursuant to the New Mexico Hazardous Waste Act
and the Resource Conservation and Recovery Act
Los Alamos National Laboratory
EPA ID No. 0890010515**

Introduction

The following information supplements the April 16, 2001, 60-day response by Los Alamos National Laboratory (LANL) to a Request for Information (RI) sent by the New Mexico Environment Department (NMED) on February 12, 2001. The full title of the RI is "Request for Information Pursuant to the New Mexico Hazardous Waste Act and the Resource Conservation and Recovery Act, Los Alamos National Laboratory, EPA ID No. 0890010515," officially received by LANL on February 16, 2001. The RI asked for additional information to prepare corrective action requirements in conjunction with the renewal of the LANL Resource Conservation and Recovery Act (RCRA) Hazardous Waste Facility Permit, originally issued on November 8, 1989.

LANL has continued efforts to collect historical and other process-generation documentation from internal waste-generating organizations to supplement the information presented in the April 16, 2001, response. As stated in that response, proposed dates for submittal of supplemental data collected for the 60-day response are June 15 and July 15, 2001, in addition to this May 15, 2001, submittal.

This document consists of supplemental responses, where additional information has been obtained for the 19 information requests contained in the RI. The submittal includes appendices, as referenced in the individual responses to the numbered information requests. NMED's original information requests are included in this document as italicized text for ease of review.

Information Requests and Responses

- 1. Please identify each radionuclide waste or waste stream, including mixed and non-mixed wastes, that is currently or has been at any time generated, treated, stored, disposed of, otherwise managed at, or transported to the LANL Facility, and that meets the statutory definition of "hazardous waste" in section 1004(5) of RCRA, 42 U.S.C. § 6903(5). (Please note that the statutory definition is broader than the regulatory definition.)*

Additional waste management information collected for Request No. 1 since the April 16, 2001, submittal is presented below.

Available information about radionuclide wastes and waste streams at LANL potential release sites (PRS) was included in Appendix C of the April 16, 2001 response; in

documents previously submitted to the NMED; or in documents listed in Appendix D of the April 16, 2001 response. Additional information is provided in Appendix A of this response. The Environmental Restoration (ER) Project reviewed its records and the Appendix C database in the April 16, 2001, response to identify sites among the 299 PRSs from which wastes have been removed. A list of these PRSs is provided in Table B-1 in Appendix B of this response.

Depleted uranium (DU) chips and turnings waste is stored at Technical Area (TA) 54, Area G, as shown in Appendix C of the April 16, 2001, response. These radioactive wastes are stored in oil.

As stated in the April 16, 2001, response to Request No. 7, LANL periodically receives small amounts of Nuclear Regulatory Commission (NRC)-licensed material in the form of radioactive sealed sources from off site. Additional discussion regarding the Off-Site Source Recovery Project (OSRP) is presented herein in the responses to Request Nos. 7 and 9.

Ray Hahn (Facility and Waste Operations Division [FWO] Solid Waste Operations [SWO] Group Leader), Paul Schumann (ER Project Team Leader), and Gian Bacigalupa (Hazardous and Solid Waste Group [ESH-19] Technical Staff Member [TSM]) provided information used to prepare this response. Their address is P.O. Box 1663, Los Alamos, NM 87545.

Documents providing information used to prepare the response to Request No. 1 are identified in the text above.

Any additional waste management information that can be identified regarding generation, treatment, storage, disposal, recycling, and transportation of radioactive and mixed waste will be produced in a later supplement to the RI, as provided by Instruction No. 5 on page 3 of NMED's February 12, 2001, letter.

2. *Please identify each radionuclide waste or waste stream, including mixed and non-mixed wastes, that is currently or has been at any time generated, treated, stored, disposed of, otherwise managed at, or transported to the LANL Facility, and that meets the following criteria: a) LANL claims the waste to be exempt from regulation as a solid waste under section 1004(27) of RCRA, 42 U.S.C. § 6903(27), because such waste meets the definition of source, special nuclear, or by-product material as defined by the Atomic Energy Act, 42 U.S.C. §§ 2011 et seq.; and b) the waste would meet the statutory definition of "hazardous waste" in section 1004(5) of RCRA, 42 U.S.C. § 6903(5), but for such exemption.*

There has been no additional waste management information identified or collected for Request No. 2 since the April 16, 2001, submittal. Any additional waste management information that can be identified regarding the generation, treatment, storage, disposal, recycling, and transportation of Atomic Energy Act (AEA)-exempt radioactive

waste at LANL will be provided in a later supplement to the RI, as provided by Instruction No. 5 on page 3 of NMED's February 12, 2001, letter.

3. *For each waste and waste stream identified in response to Request #1 and #2, please provide a detailed description of the radioactive, chemical, and physical properties of the waste. Include in your response a description of all radionuclides, all radioactive decay chains, and the half-lives of both the radionuclides and their daughter products.*

Additional waste management information regarding the descriptions of radioactive, chemical, and physical properties of radioactive and mixed waste collected for Request No. 3 since the April 16, 2001, submittal is presented below.

Radionuclide information for the sealed sources to be managed under the OSRP is included in the response to Request Nos. 7 and 9. Information that can be used to determine radioactive decay chains, half-lives, and daughter products can be found in the reference cited in the response to Request No. 3 in the April 16, 2001, response.

Gian Bacigalupa (ESH-19 TSM) collected information used to prepare this response. His address is P.O. Box 1663, Los Alamos, NM 87545.

Documents providing information used to prepare the response to Request No. 3 are referenced in the text above.

Any additional waste management information that can be identified regarding the descriptions of radioactive, chemical, and physical properties of radioactive and mixed waste at LANL will be provided in a later supplement to the RI, as provided by Instruction No. 5 on page 3 of NMED's February 12, 2001, letter.

4. *For each waste and waste stream identified in response to Request #1 and #2, please state whether or not the waste exhibits any of the characteristics of a hazardous waste under 40 C.F.R. pt. 261, subpt. C:*

- a. *Ignitability under 40 C.F.R. § 261.21;*
- b. *Corrosivity under 40 C.F.R. § 261.22;*
- c. *Reactivity under 40 C.F.R. § 261.23;*
- d. *Toxicity under 40 C.F.R. § 261.24.*

There has been no additional waste management information identified or collected for Request No. 4 since the April 16, 2001, submittal.

5. *For each waste and waste stream identified in response to Request #1 and #2, please state whether or not the waste contains any hazardous constituents listed under 40 C.F.R. pt. 261, Appendix VIII and name the specific constituent or constituents.*

There has been no additional waste management information identified or collected for Request No. 5 since the April 16, 2001, submittal.

6. *For each waste and waste stream identified in response to Request #1 and #2, please provide a detailed description of the generation of the waste, including the location of its generation, the date of its generation, the process or processes by which it was generated, and the volume of waste that was generated.*

There has been no additional waste management information collected for Request No. 6 since the April 16, 2001, submittal. Any additional waste stream descriptions that can be identified for radioactive and mixed waste at LANL will be provided in a later supplement to the RI, as provided by Instruction No. 5 on page 3 of NMED's February 12, 2001, letter.

7. *For each waste and waste stream identified in response to Request #1 and #2 that was transported to the LANL Facility from elsewhere, please state the origin of the waste, the volume of the waste transported to the LANL Facility, broken down by shipment if possible, and the date or dates the waste was received at the LANL Facility.*

Additional waste management information collected for Request No. 7 since the April 16, 2001, submittal is presented below.

As stated in the April 16, 2001 response, LANL periodically receives small amounts of NRC-licensed material in the form of radioactive sealed sources from numerous off-site locations. Since September 1977, approximately 1,400 sealed sources have been received at LANL. Additional information regarding this material and the OSRP can be found at <http://osrp.lanl.gov/home.html>.

As stated in the April 16, 2001 response, in most instances where wastes were excavated from PRSs, these wastes were transported to TA-54 for further management and/or disposal. Therefore, they were reported in that response as wastes "transported to the facility from elsewhere," although the wastes are from LANL PRSs located within former facility boundaries. The ER Project reviewed its records and the Appendix C database in the April 16, 2001, response to identify off-site PRSs among the 299 PRSs from which wastes have been excavated. The only identified off-site PRS among the 299 PRSs from which wastes have been excavated is PRS No. 0-030(h).

Gian Bacigalupa (ESH-19 TSM), Ray Hahn (FWO-SWO Group Leader), and Paul Schumann (ER Project Team Leader) provided information used to prepare this response. Their address is P.O. Box 1663, Los Alamos, NM 87545.

Documents providing information used to prepare the response to Request No. 7 are identified in the text above.

Any additional waste management information regarding the transportation of radioactive and mixed waste to LANL that can be identified will be provided in a later supplement to the RI, as provided by Instruction No. 5 on page 3 of NMED's February 12, 2001, letter.

8. *For each waste and waste stream identified in response to Request #1 and #2 that was treated at the LANL Facility, please provide a detailed description of the treatment, including the method or process of treatment, the effectiveness of the treatment in reducing the hazardous properties of the waste, and the volume of waste treated.*

There has been no additional waste management information collected for Request No. 8 since the April 16, 2001, submittal. Any additional waste management information that can be identified regarding treatment of radioactive and mixed waste will be provided in a later supplement to the RI, as provided by Instruction No. 5 on page 3 of NMED's February 12, 2001, letter.

9. *For each waste and waste steam identified in response to Request #1 and #2 that was stored at the LANL Facility, please state the location of such storage at the LANL Facility, the method of storage, the volume of waste stored, and the dates during which each volume of such waste was stored at each such location.*

Additional waste management information collected for Request No. 9 since the April 16, 2001, submittal is presented below.

As stated in the April 16, 2001 response, LANL periodically receives small amounts of NRC-licensed material in the form of radioactive sealed sources from off site. Since September 1977, approximately 1,400 sealed sources (predominantly Pu²³⁸) have been received at LANL. Most of the sealed sources (approximately 100 drums) are stored at TA-54, Area G. The remaining drums are stored at the Chemistry and Metallurgy Research Building at TA-3. Additional information regarding this material and the OSRP can be found at <http://osrp.lanl.gov/home.html>.

Gian Bacigalupa (ESH-19 TSM) collected the information that was used to prepare this response. His address is P.O. Box 1663, Los Alamos, NM 87545.

Documents providing information used to prepare the response to Request No. 9 are identified in the text above.

Any additional waste management information regarding storage of radioactive waste at LANL that can be identified will be provided in a later supplement to the RI, as provided by Instruction No. 5 on page 3 of NMED's February 12, 2001, letter.

10. *For each waste and waste stream identified in response to Request #1 and #2 that was disposed of at the LANL Facility, please provide a detailed description of the disposal, including the method of disposal, the location of disposal, the dates of disposal, and the volume of waste disposed of at each such location.*

There has been no additional waste management information identified or collected for Request No. 10 since the April 16, 2001, submittal. Any additional waste management information regarding disposal of radioactive waste and mixed waste at LANL that can be identified will be provided in a later supplement to the RI, as provided by Instruction No. 5 on page 3 of NMED's February 12, 2001, letter.

11. *For each waste and waste stream identified in response to Request #2, please state the basis for LANL's claim that the waste is exempt from regulation as a solid waste under RCRA because such waste is source, special nuclear, or by-product material as defined by the Atomic Energy Act.*

There has been no additional waste management information identified or collected for Request No. 11 since the April 16, 2001, submittal. Any additional waste management information regarding generation, treatment, storage, disposal, recycling, and transportation of AEA exempt radioactive waste at LANL that can be identified will be provided in a later supplement to the RI, as provided by Instruction No. 5 on page 3 of NMED's February 12, 2001, letter. Further discussion of the basis for the AEA exemption as source, special nuclear, or by-product material will be included, as such information is applicable.

12. *For each Site listed in Part 1 of Attachment A, please identify each waste or waste stream that is currently or has been at any time disposed of at the Site.*

There has been no additional information identified or collected for Request No. 12 since the April 16, 2001, submittal. Any additional wastes and waste streams that can be identified will be provided in a later supplement to the RI, as provided by Instruction No. 5 on page 3 of NMED's February 12, 2001, letter.

13. *For each waste and waste stream identified in response to Request #12, please provide a detailed description of the radioactive, chemical, and physical properties of the waste. Include in your response a description of all radionuclides, all radioactive decay chains, and the half-lives of both the radionuclides and their daughter products.*

There has been no additional information identified or collected for Request No. 13 since the April 16, 2001, submittal.

14. *For each waste and waste stream identified in response to Request #12, please state whether or not the waste is a listed hazardous waste under 40 C.F.R. pt. 261, subpt. D and indicate the specific listing or listings.*

There has been no additional information identified or collected for Request No. 14 since the April 16, 2001, submittal. Any additional information regarding listed hazardous wastes and waste streams that can be identified will be provided in a later supplement to the RI, as provided by Instruction No. 5 on page 3 of NMED's February 12, 2001, letter.

15. *For each waste and waste stream identified in response to Request #12, please state whether or not the waste meets any of the characteristics of a hazardous waste under 40 C.F.R. pt. 261, subpt. C:*

- a. *Ignitability under 40 C.F.R. § 261.21;*
- b. *Corrosivity under 40 C.F.R. § 261.22;*
- c. *Reactivity under 40 C.F.R. § 261.23;*
- d. *Toxicity under 40 C.F.R. § 261.24.*

There has been no additional information identified or collected for Request No. 15 since the April 16, 2001, submittal. Any additional information regarding characteristic hazardous wastes and waste streams that can be identified will be provided in a later supplement to the RI, as provided by Instruction No. 5 on page 3 of NMED's February 12, 2001, letter.

16. *For each waste and waste stream identified in response to Request #12, please state whether or not the waste contains any hazardous constituents listed under 40 C.F.R. pt. 261, Appendix VIII and name the specific constituent or constituents.*

There has been no additional information identified or collected for Request No. 16 since the April 16, 2001, submittal. Any additional information regarding whether or not the wastes or waste streams contain any hazardous constituents listed in 20.4.1 NMAC, Subpart II, Part 261, Appendix VIII, that can be identified will be provided in a later supplement to the RI, as provided by Instruction No. 5 on page 3 of NMED's February 12, 2001, letter.

17. *For each waste and waste steam identified in response to Request #12, please provide a detailed description of the disposal, including the method of disposal, the location of disposal, the dates of disposal, and the volume of waste disposed of at each such location.*

There has been no additional information identified or collected for Request No. 17 since the April 16, 2001, submittal. Any additional information regarding a detailed description, method, location, date and volume of waste disposal that can be identified will be provided in a later supplement to the RI, as provided by Instruction No. 5 on page 3 of NMED's February 12, 2001, letter.

20. *For each Request #1 through #19, inclusive, identify each and every person who provided information that was used to prepare the response. Identify each such person by name, title or job description, employer, and current or last known address.*

As discussed in the April 16, 2001 response, numerous sources of information were used to prepare this response. A responsible individual (or individuals) who collected data and prepared the response has been identified for the appropriate portion of the response for each numbered request. If necessary, these individuals can provide further details regarding the preparation of this response. Title or job description, employer, and current or last known addresses for these individuals are also provided in each numbered request, in accordance with Instruction No. 7 of the RI.

21. *For each Request #1 through #19, inclusive, identify each and every document that provided information that was used to prepare your response. Identify each such document by type of document, title or description, author, and date.*

Each and every document that provided information used to prepare responses are identified in the corresponding responses to each numbered request, in accordance with Instruction No. 7 of the RI. The document type, title or description, author, and document date are also provided in each numbered request, per Instruction No. 7.

ATTACHMENT A**PART 1**

PRS Name	TA	SWMU Number
MDA-A	21	21-014
MDA-B	21	21-015
MDA-C	50	50-009
MDA-D	33	33-003(a)-99
MDA-E	33	33-001(a)-99
MDA-F	6	6-007(a)-99
MDA-K	33	33-002(a)-99
MDA-M	9	9-013
MDA-N	15	15-007(a)
MDA-P	16	16-018
MDA-Q	8	8-006(a)
MDA-R	16	16-019
MDA-S	11	11-009
MDA-T	21	21-016(a)-99
MDA-U	21	21-017(a)-99
MDA-V	21	21-018(a)-99
MDA-W	35	35-001
MDA-X	35	35-002
MDA-Y	39	39-001(b)
MDA-Z	15	15-007(b)
MDA-AA	36	36-001
MDA-AB	49	49-001(a-g)
90's Line	16	16-008(a)
Firing Sites	39	39-004(a-e), 39-008
Firing Sites	15	15-004(f); 15-006(a, c, d); 15-008(a)
Townsite PRS's	0, 1	0-010(b), 1-001(a-w), 1-002, 1-003(a-e)
Outfall	21	21-011(k)
Surface Impoundments	35	35-003(d, r), 35-010(a-e)
Outfalls	46	46-004(g, h, m, q, s, u, v, x, y, z, a2, b2, c2)
Bayo Canyon Sites	10	10-003(a-o), 10-007
Fish Ladder	16	16-003(o)

APPENDIX A

**COPY OF THE “VOLUNTARY CORRECTIVE ACTION PLAN FOR
POTENTIAL RELEASE SITES AT TA-21 SEPTIC TANKS”**

Hard copies of this document were provided to
the New Mexico Environment Department.

**ERM/Golder Los Alamos Project Team
July 27, 1995**

**Voluntary Corrective Action Plan
for Potential Release Sites at TA-21 Septic Tanks**

Sites under Field Unit 1 at TA-21

21-024(b), Septic Tank

21-024(d), Septic Tank

21-024(h), Septic Tank

1.0 INTRODUCTION

The following potential release sites (PRSs) at Los Alamos National Laboratory (LANL) have been selected for voluntary corrective action (VCA) because their remedies are obvious, are easily implemented, and will prevent transport of contaminated soil into the canyon, which might result in violation of state water quality regulations. These voluntary corrective actions have been grouped in a single plan because they are similar and located within the same technical area. The tasks in this action plan include assessing the extent of plutonium-239 contamination and removing contaminated structures and soil.

1.1 Field Unit 1, PRS 21-024(b)

The septic system at PRS 21-024(b) routed sewage from Building TA-21-17 (removed in 1969) through a concrete septic tank to the ground surface south of Building TA-21-5. The outfall is a short, cast iron pipe emerging 70 ft from the cliff edge with no clearly defined drainage channel. The septic tank and outlet pipe are not visible but were located and monitored during the RCRA facility investigation. A road, flanked by security fences and linking secured areas at TA-21, runs next to the site.

In 1992, a radiation survey was conducted and soil samples were collected from the drainage area at three depths from three locations. In 1993, a shallow borehole was advanced near the septic tank and samples were collected at four depths. Samples from both years were analyzed for radionuclides, metals, semivolatile organic compounds, and volatile organic compounds.

Results of these investigations [presented in *Phase Report Addendum 1B and 1C: Operable Unit 1106 RCRA Facility Investigation* (January 1995)] suggest that the only contaminant present at levels greater than LANL screening action levels is plutonium-239. (The screening action level for plutonium-239 is 18 pCi/g.) Soil samples collected in 1992 near the canyon edge had 324 pCi/g of plutonium-239 in the 0-to-6-in. depth, 145 pCi/g in the 6-to-12-in. depth, and 84 pCi/g in the 12-to-18-in. depth. Soil samples collected midway between the septic tank and the canyon edge had 36 pCi/g of plutonium in the 0-to-6-in. depth and less than the screening

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action level in the 6-to-12-in. and 12-to-18-in. depths. Soil samples collected near the septic tank had 22 pCi/g of plutonium-239 in the 0-to-6-in. depth and less than the screening action level in the 6-to-12-in. and 12-to-18-in. depths. Borehole samples collected in 1993 adjacent to the tank outlet had 29 pCi/g of plutonium-239 in the 4-to-6-ft depth and less than the screening action level in the 0-to-2-ft, 2-to-4-ft, and 6-to-8-ft depths.

Because the site has radioactive contamination only, it was proposed to EPA that no further action be taken for RCRA constituents and a risk assessment be performed for radioactivity in the document *Phase Report Addendum 1B and 1C: Operable Unit 1106 RCRA Facility Investigation* (January 1995). This proposal was accepted and a request for a Class 3 modification to the HSWA permit was recommended by EPA in a notice of deficiency (March 1995).

1.2 Field Unit 1, PRS 21-024(d)

The septic system at PRS 21-024(d) routed sewage from Building TA-21-1 (removed in 1965) through a concrete septic tank to the ground surface on the south rim above Los Alamos Canyon. The outfall terminates at the cliff edge. This septic tank is visible, open at the top, and filled with pieces of concrete, dirt, and rainwater. The outlet pipe is also visible.

In 1992, a radiation survey was conducted and soil samples were collected from the drainage area at a single depth from one location and at three depths from another location. In 1993, a shallow borehole was advanced near the septic tank and samples were collected at four depths. Samples from both years were analyzed for radio-nuclides, metals, semivolatile organic compounds, and volatile organic compounds.

Results of these investigations [presented in *Phase Report Addendum 1B and 1C: Operable Unit 1106 RCRA Facility Investigation* (January 1995)] suggest that the only contaminant present at levels greater than LANL screening action levels is plutonium-239. (The screening action level for plutonium-239 is 18 pCi/g.) Soil samples collected in 1992 from the bench below the canyon edge had 34 pCi/g of plutonium-239 in the 0-to-6-in. depth and less than the screening action level in the 6-to-12-in. and 12-to-18-in. depths. The soil sample collected near the septic tank had less than the screening action level in the 0-to-6-in. depth. Borehole samples collected in 1993 adjacent to the tank outlet had 27 pCi/g of plutonium-239 in the 0-to-2-ft depth, 34 pCi/g in the 2-to-4-ft depth, and less than the screening action level in the 4-to-6-ft and 6-to-8-ft depths.

Because the site has radioactive contamination only, it was proposed to EPA that no further action be taken for RCRA constituents and corrective action be taken for radioactivity in the document *Phase Report Addendum 1B and 1C: Operable Unit 1106 RCRA Facility Investigation* (January 1995). This proposal was accepted and a request for a Class 3 modification to the HSWA permit was recommended by EPA in a notice of deficiency (March 1995).

1106-RCRA-Facility-Inv-17

1.3 Field Unit 1, PRS 21-024(h)

The septic system at PRS 21-024(h) discharged sewage from Building TA-21-151 through a concrete septic tank (abandoned in place in 1966) to the ground surface on the north rim of DP Mesa. Vitrified clay pipes carried effluent to the septic tank and then to the outfall. A corner of the septic tank is visible; the outlet pipe is not. The tank is under the road that provides access to the TA-21 sewage treatment plant.

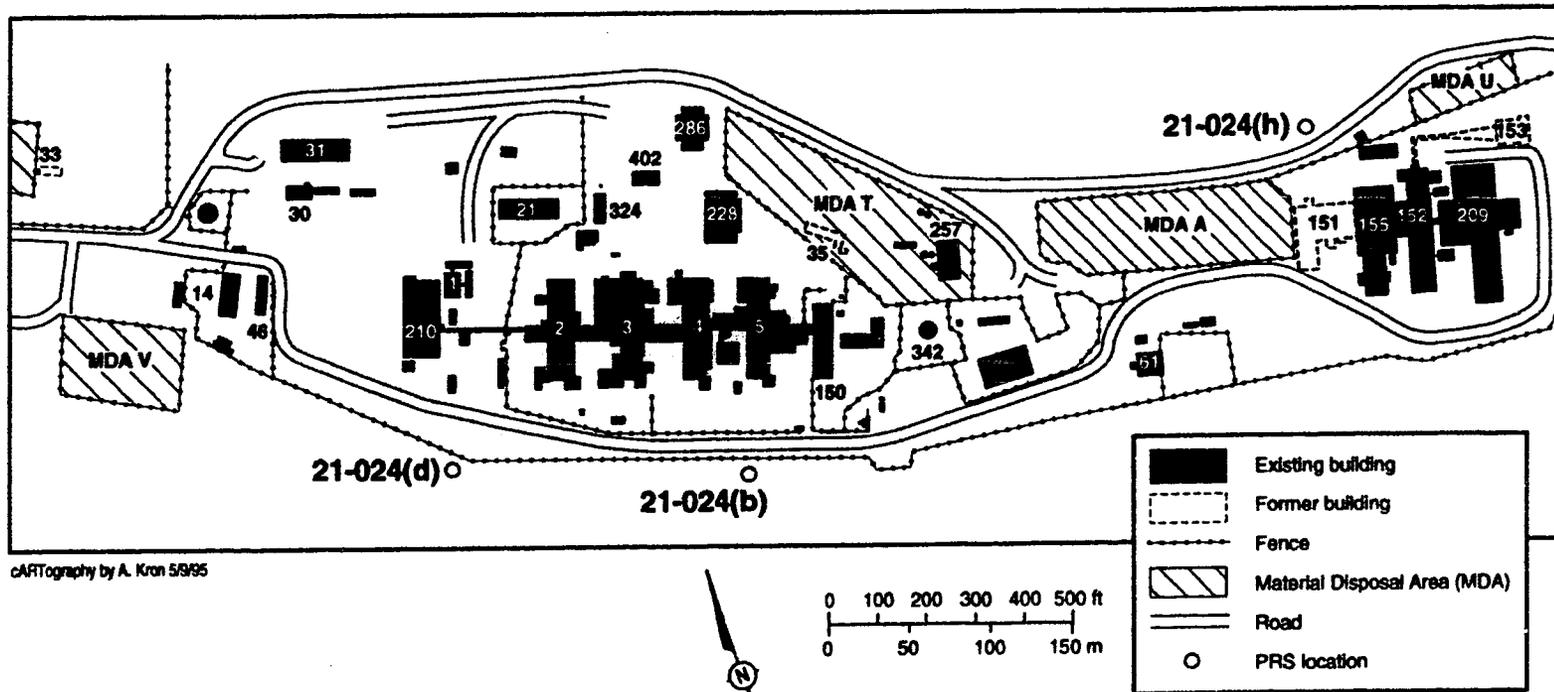
In 1992, a radiation survey was conducted and soil samples were collected from the drainage area at two depths from one location and at three depths from two locations. In 1993, a shallow borehole was advanced near the septic tank and samples were collected at four depths. Samples from both years were analyzed for radionuclides, metals, semivolatile organic compounds, and volatile organic compounds.

Results of these investigations [presented in *Phase Report Addendum 1B and 1C: Operable Unit 1106 RCRA Facility Investigation* (January 1995)] suggest that the only contaminant present at levels greater than screening action levels is plutonium-239. (The screening action level for plutonium-239 is 18 pCi/g.) Soil samples collected in 1992 midway between the septic tank and the canyon edge had 33 pCi/g of plutonium-239 in the 6-to-12-in. depth and less than the screening action level in the 0-to-6-in. and 12-to-18-in. depths. Soil samples collected near the septic tank and near the canyon edge had less than the screening action level for plutonium-239 in all three depths. Borehole samples taken in 1993 adjacent to the tank outlet had less than the screening action level for plutonium-239 greater in all four depths.

Because the site has radioactive contamination only, it was proposed to EPA that no further action be taken for RCRA constituents and a risk assessment be performed for radioactivity in the document *Phase Report Addendum 1B and 1C: Operable Unit 1106 RCRA Facility Investigation* (January 1995). In a notice of deficiency (March 1995), EPA deferred accepting this proposal until information related to blank contamination could be presented. This information was provided in LANL's April 1995 response to EPA's notice of deficiency. With this information, EPA is expected to accept the proposal for no further action with a risk assessment for radioactivity and to recommend a request for a Class 3 modification to the HSWA permit.

2.0 SITE TYPE AND DESCRIPTION

A map of these sites is shown in Figure 2.1. Table 2.1 identifies each site and includes a description of each site location, site type, and waste type.



cARTography by A. Kron 5/9/95

Figure 2.1 TA-21 sites proposed for Voluntary Corrective Action.

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Table 2.1. Site Type and Description

No.	Field Unit	PRS Number	PRS Location (State Planar Coordinates)	PRS Type/ Description	Waste Type/ Description
1	1	21-024(b)	1632466.2, 1774055.9, 7134.9	Septic System/ Outfall	Soil, Pipe, Septic Tank Sludge, PPE, Decon Liquid
2	1	21-024(d)	1631879.7, 1774229.0, 7136.3	Septic System/ Outfall	Soil, Pipe, Septic Tank Sludge, PPE, Decon Liquid
3	1	21-024(h)	1633698.9, 1774309.8, 7116.8	Septic System/ Outfall	Soil, Pipe, Septic Tank Sludge, PPE, Decon Liquid

3.0 PROPOSED REMEDY

These potential release sites are listed in the Laboratory's Hazardous and Solid Waste Amendments (HSWA) permit; however, all three sites have been proposed for removal from the permit (a Class 3 modification) because no hazardous constituents are present, as discussed in the document *Phase Report IC: TA-21 Operable Unit RCRA Facility Investigation Outfalls Investigation* (February 28, 1994). The proposed voluntary corrective actions address radiological contamination (plutonium-239) only. Field screening and analysis will be used to confirm the extent of radiological contamination.

Radioactively contaminated material will be managed and prepared for disposal as low-level radioactive waste. All other waste will be managed as nonhazardous solid waste. Uncontaminated soil will be left on-site; other nonhazardous construction debris will be properly disposed of at an industrial waste landfill. A single waste characterization scheme is being prepared for all three sites.

Disturbance of existing vegetation will be minimized. Clean fill material may be obtained from areas on-site or may be brought in from off-site. Each site disturbance will be regraded to adjacent contours and revegetated.

Future land use for these sites will continue to be industrial. The minimum cleanup level for these sites will be the same as that adopted by the TA-21 decontamination and decommissioning project, 75 pCi/g of plutonium-239. This level was calculated using a dose-based method¹, in accordance with DOE Order 5400.5. Field instruments will be chosen based on their ability to detect plutonium-239 at this level.

Before beginning corrective actions, each site will be assessed using hand-held field instruments to define the extent of contaminated soil or structures. Contaminated areas will be clearly identified in the field, and all field personnel will be familiarized with each site before corrective actions begin. Field personnel will wear modified Level D personnel protective equipment.

¹ Code for Calculating Residual Radioactivity in Soil Ver. 5.60 (RESRAD 5.60), Washington, D. C.: U. S. Department of Energy

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During corrective action, samples collected will be screened in the field using hand-held instruments. A percentage of these samples, including those suspected of contamination at levels greater than the cleanup level, will be analyzed at a mobile radiological laboratory.

3.1 PRS 21-024(b), Septic Tank #1

The proposed remedy for this site is removal of soil, septic tank contents, and structures that are contaminated in excess of cleanup criteria. Our approach requires that the road beside the site, which links secured areas of TA-21, be closed (possibly over a weekend) while it is excavated to expose the septic tank for sampling and possible cleanup.

The septic tank will be uncovered and its contents sampled using a hand auger or other appropriate method. Samples will be screened in the field for plutonium-239 using hand-held instruments (gross alpha and FIDLER) and mobile laboratory techniques (gross alpha screening). No hazardous constituents are expected; however, to characterize the tank's contents for waste disposal, samples will be analyzed in accordance with the waste characterization strategy. If sample results indicate the contents of the septic tank are contaminated, the tank will be cleaned out, monitored to ascertain that it is no longer contaminated, and filled with pea gravel. If samples indicate the septic tank is not contaminated, the tank will be cleaned out and filled with clean pea gravel for proper abandonment in accordance with the New Mexico Waste Water Bureau's Uniform Plumbing Code. (If the tank was previously filled for abandonment and the fill meets abandonment requirements, it will be opened and sampled but not cleaned out.)

If samples indicate the septic tank contents are contaminated, the inlet pipe will be excavated and removed to the extent practicable, considering its proximity to the access road and security fence. The end of the inlet pipe will be grouted, and the remaining pipe will be proposed for removal, if necessary, during decommissioning and decontamination activities. Soil beneath the pipe will be sampled using a spade and scoop, hand auger, or other appropriate method and screened for plutonium-239 using hand-held field instruments and mobile laboratory techniques. If plutonium-239 at levels greater than the cleanup level is indicated, the soil will be removed until the cleanup level is met, as indicated by hand-held field instruments. If plutonium-239 at levels less than the cleanup level is indicated, no further action will be taken.

An east-west trench will be excavated approximately 15 ft south of the septic tank to locate the outlet pipe. Sections of the pipe will be removed, and the inside of the pipe will be screened for plutonium-239 using hand-held field instruments. Soil beneath pipe joints will be sampled using a spade and scoop, hand auger, or other appropriate method. These samples will be screened for plutonium-239 using hand-held field instruments and mobile laboratory techniques. If plutonium-239 at levels greater than the cleanup level is indicated, the entire pipe will be removed. Soil around the pipe will be excavated until the cleanup level is met, as indicated by hand-

held field instruments. If plutonium-239 at levels less than the cleanup level is indicated, the removed pipe will be disposed of as uncontaminated waste, the trench will be filled with clean fill, and the remaining pipe will be abandoned in place.

In the drainage or outfall area, soil contaminated with plutonium-239 may erode and be transported into the canyon, possibly in violation of state water quality regulations; therefore, plutonium-239 contamination will be removed to the extent possible, even if it is found at levels less than the cleanup level. The drainage area will be surveyed for plutonium-239 on the mesa and cliff face below using hand-held field instruments. If plutonium-239 levels are elevated, as indicated by hand-held field instruments, soil will be excavated until elevated levels are no longer detected. If plutonium-239 levels are not elevated, as indicated by hand-held field instruments, no further action will be taken.

3.2 PRS 21-024(d), Septic Tank #2

The proposed remedy for this site, which does not have plutonium-239 contamination outside the septic tank in excess of the cleanup level, is to abandon the septic tank in accordance with New Mexico requirements. Our approach is to obtain samples of the tank's contents using a hand auger or other appropriate method. No hazardous constituents are expected; however, to characterize the tank's contents for waste disposal, samples will be analyzed in accordance with the waste characterization strategy. The tank will be cleaned out and filled with clean pea gravel for proper abandonment in accordance with the New Mexico Waste Water Bureau's Uniform Plumbing Code. (If the tank was previously filled for abandonment and the fill meets abandonment requirements, it will be opened and sampled but not cleaned out.)

In the drainage or outfall area, soil contaminated with plutonium-239 may erode and be transported into the canyon, possibly in violation of state water quality regulations; therefore, plutonium-239 contamination will be removed to the extent possible, even if it is found at levels less than the cleanup level. The drainage area will be surveyed for plutonium-239 on the mesa and cliff face below using hand-held field instruments. If plutonium-239 levels are elevated, as indicated by hand-held field instruments, soil will be excavated until elevated levels are no longer detected. If plutonium-239 levels are not elevated, as indicated by hand-held field instruments, no further action will be taken.

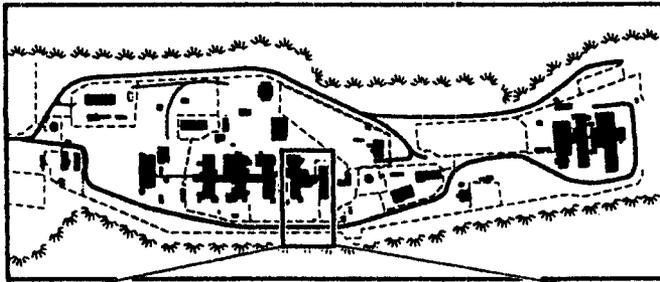
3.3 PRS 21-024(h), Septic Tank #3

The proposed remedy for this site, which does not have plutonium-239 contamination outside the septic tank in excess of the cleanup level, is to abandon the septic tank in accordance with New Mexico requirements. Our approach requires that the road near the site, which provides access to the TA-21 sewage treatment plant, be closed for a day at a time. The septic tank will be uncovered and its contents sampled using a hand auger or other appropriate method. No hazardous constituents are

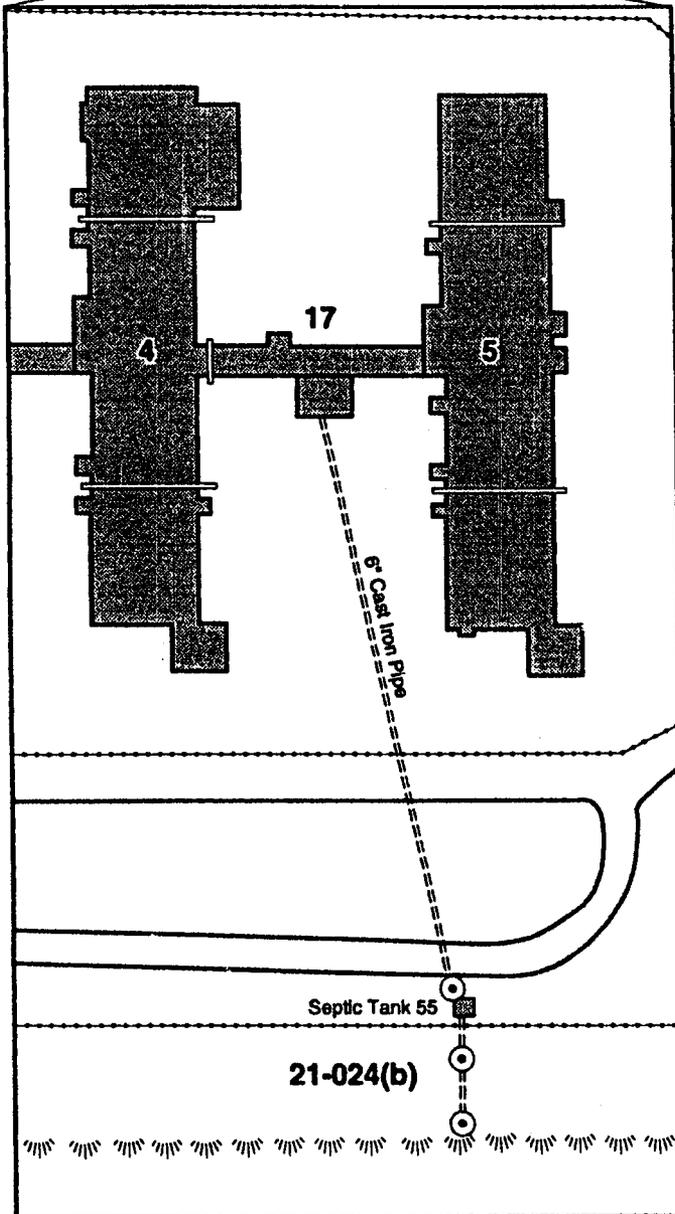
Table 5.1 Estimated Waste Volumes by Type

No.	Field Unit	PRS Number	Waste Type	Waste Description	Estimated Bulk Volume (yd ³)	Disposal Container Type	Anticipated Disposal
1	1	21-024(b)	Low-Level Radioactive Nonhazardous Solid	Soil, Pipe, Septic Tank Sludge, PPE, Decon Liquid	33	Rolloff Containers or 55-Gal. Drums (as needed for waste segregation)	TA-54 Low-Level Radioactive Waste Disposal Area/ Industrial Landfill
2	1	21-024(d)	Low-Level Radioactive Nonhazardous Solid	Soil, Septic Tank Sludge, PPE, Decon Liquid	38	Rolloff Containers or 55-Gal. Drums (as needed for waste segregation)	TA-54 Low-Level Radioactive Waste Disposal Area/ Industrial Landfill
3	1	21-024(h)	Low-Level Radioactive Nonhazardous Solid	Soil, Septic Tank Sludge, PPE, Decon Liquid	16	Rolloff Containers or 55-Gal. Drums (as needed for waste segregation)	TA-54 Low-Level Radioactive Waste Disposal Area/ Industrial Landfill

TA-21 VCA Plan



Index map of TA-21 showing approximate location of detail below



	Building
	Septic tank
	Pipeline
	Road (edge of asphalt)
	Fence
	Edge of canyon
	Confirmatory sampling location

0 50 100 ft
cARTography by A. Kron 5/9/95



Figure 6.1 Possible confirmatory sampling locations at PRS 21-024(b).

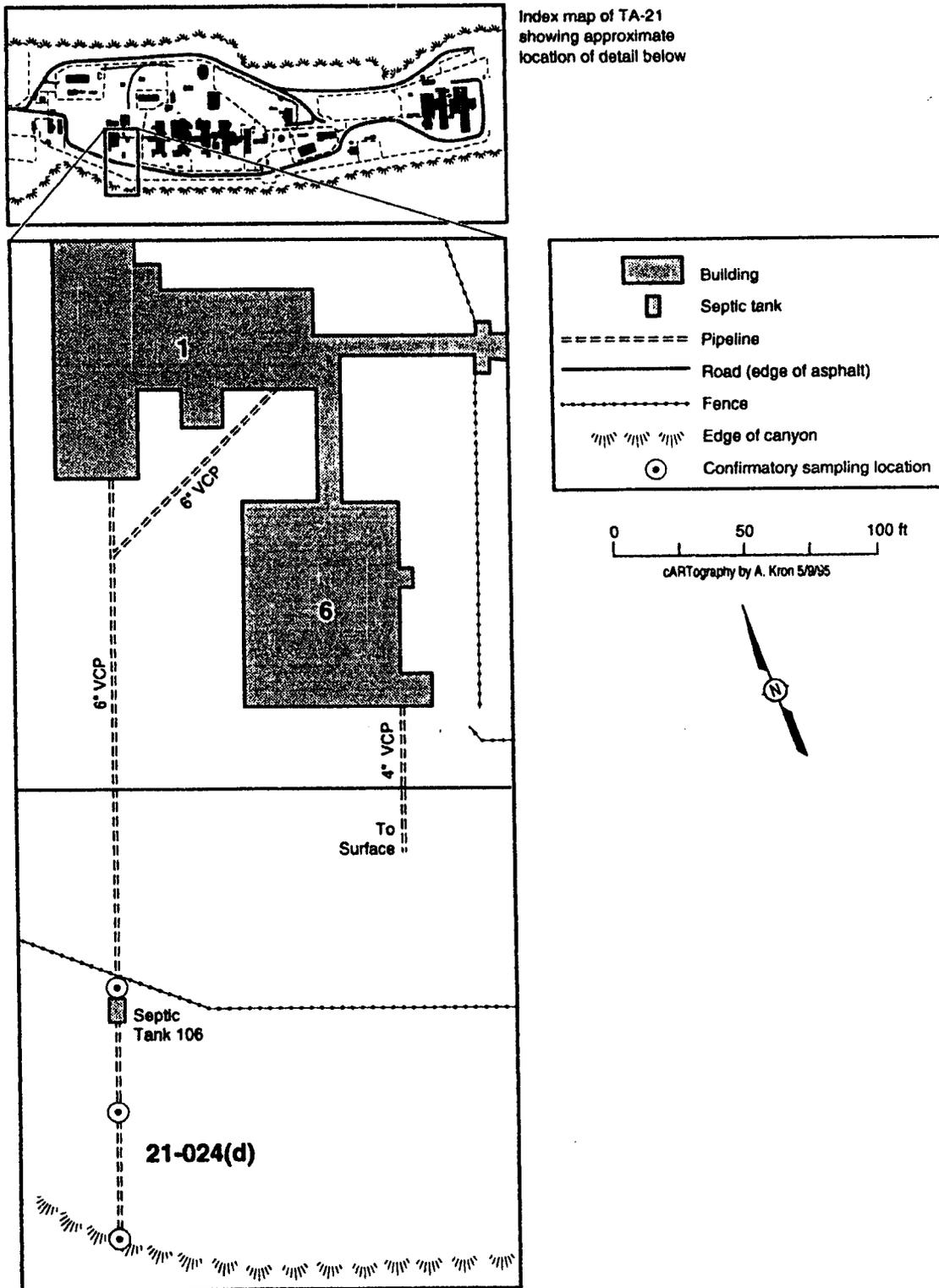


Figure 6.2 Possible confirmatory sampling locations at PRS 21-024(d).

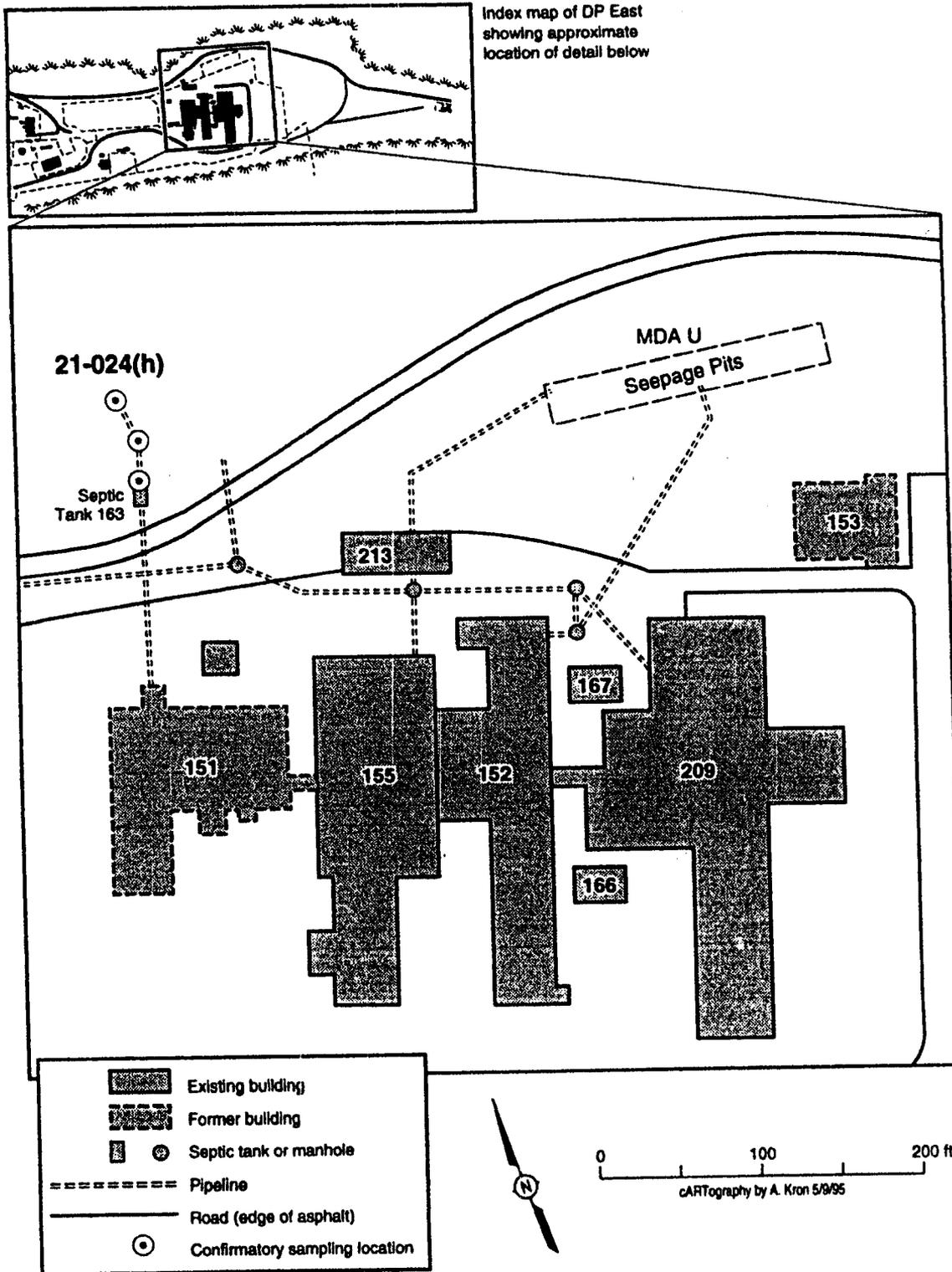


Figure 6.3 Possible confirmatory sampling locations at PRS 21-024(h).

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APPENDIX B

**LIST OF POTENTIAL RELEASE SITES (PRS) FROM WHICH
WASTES HAVE BEEN EXCAVATED**

Table B-1

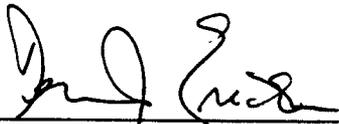
List of Potential Release Sites (PRS) from Which Wastes Have Been Excavated

PRS Number

0-030(h)
05-001(a)
05-002
11-001(c)
12-001(a)
14-001(f)
14-002(a)
14-010
15-004(b)
15-008(b)
15-012(b)
33-007(c)
49-008(d)
53-002(a)

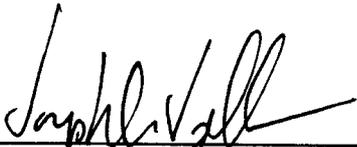
CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Dennis J. Erickson
Division Director for Environment, Safety, and
Health Division
Los Alamos National Laboratory
Operator

May 15, 2001
Date Signed



Joseph C. Vozella
Assistant Area Manager, Los Alamos Area Office
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Albuquerque Operations
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5/15/01
Date Signed