Permit

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

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

FEB 11 1988

Mr. Michael Burkhart, Director
N. M. Environmental Improvement Division
P. O. Box 968
Santa Fe, New Mexico 87504-0968

Dear Mr. Burkhart:

NOTICE OF VIOLATION (NOV) DATED JANUARY 8, 1988

The enclosed information is the Department of Energy's (DOE) official response to the New Mexico Environmental Improvement Division's (EID) Notice of Violation (NOV) that was transmitted in a letter dated January 8, 1988 and received January 12, 1988. Although further discussion is required on specific deficiencies, DOE has attempted to respond as fully as possible.

The following delineates DOE's response:

DEFICIENCY 1: The Part A certification was not dated.

Response: The DOE's November 25, 1987 submittal of a revised Part B hazardous waste permit application to the EID's Hazardous Waste Program included an amended, dated Part A application.

It is unclear why Section 202.E. was also cited in this deficiency. EID's NOV cites a deficiency in DOE's Part A and does not cite deficiencies in the Notification Form requirements that are referenced in Section 202.E. However, a revised Notification Form has been prepared and included (see enclosure #1).

DEFICIENCY 2: Manifests for shipments of recyclable solvents and precious metals were not available for review.

Response: Enclosed are copies of various manifests for the shipping of recyclable metals and solvents (see enclosure #2a). Although some of these manifests are not the form specified in the regulations, they have served the purpose of tracking the recyclable material from generator to recycler for over ten years. We have since implemented administrative instruments to ensure the use of the required manifest form, Environmental Protection Agency (EPA) Form 8700-22, and if necessary, EPA Form 8700-22A (see enclosure #2b).

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DEFICIENCY 3: There is no ground-water monitoring at the Area P landfill, the surface impoundment at Area 16 or the solvent disposal area at Area 16-Building 340.

Response: The DOE has recently requested a ground-water monitoring waiver for the TA-16 Area P landfill and the TA-16 surface impoundment following the drilling of seventeen boreholes in the area (see enclosure #3a). Four of these holes were completed as Resource Conservation and Recovery Act (RCRA) ground-water monitoring wells at the limit of the landfill's waste management area, three downgradient and one upgradient. They have been screened partially in the alluvium above the tuff and partially in the tuff below to intercept any liquid which might travel along the interface between the two materials. Four additional holes were completed as wells to detect the presence and exchange of any perched ground water between the canyon creek and the landfill. Three boreholes were completed around the landfill as neutron moisture access holes, as was one at the TA-16 surface impoundment and one (200 ft. deep) towards the end of the mesa. To date, no free-flowing ground water has been observed in any of the boreholes. Gravimetric moisture data was collected from all the boreholes and also suggests the unlikely occurrence of free-flowing ground water in the subsurface (see enclosure #3b, "Site Geology and Hydrology of Technical Area 16 Area P"). The DOE has, therefore, based its waiver request on the absence of saturated flow within the upper 200 ft beneath TA-16 Area P landfill and TA-16 surface impoundment.

DOE is in receipt of the EID's December 22, 1987 letter deferring a decision regarding our ground-water monitoring waiver pending receipt and evaluation of additional information. The material that DOE agreed to provide by February 1988 is enclosed (see enclosure #3c) as well as analytical data from the surface water and sediment sampling performed in December 1987. The information hereby provided and that which was previously sent, along with supporting documentation from our waiver at TA-54, demonstrate the low potential for migration. The requirement to install additional ground-water monitoring wells in an area with no evidence of free-flowing ground water in the upper 200 ft. is inappropriate at this time. However, we will continue to inspect our existent monitoring wells for evidence of quantities of water sufficient to sample.

It is unclear exactly where EID considers a "solvent disposal area at Area 16-Building 340" to be located. However, following the November 19, 1987 meeting between EID, DOE, and the Los Alamos National Laboratory (LANL), and review of the EPA inspection checklist and transmittal letter dated October 13, 1987, DOE is interpreting this reference to indicate the National Pollutant Discharge Elimination System (NPDES) permitted outfall.

The outfall at TA-16-340 does not qualify as a RCRA disposal unit and would consequently not require ground-water monitoring. This outfall is currently regulated by the Federal Water Pollution Control Act (WPCA) under the DOE's NPDES permit. This permit (NM0028355) specified certain parameters which must meet particular concentration levels prior to discharge. These parameters and their respective concentrations are derived from sample results of a typical process discharge. The analytical results of the sample collected to represent a typical discharge from the manufacture of high explosives at LANL indicated the presence of solvents. In response to these solvents, the permit specifies a Chemical Oxygen Demand (COD) parameter and a corresponding permissible discharge concentration. The release of solvent from this discharge point is, therefore, a regulated activity under a federally issued NPDES permit.

Because the outfall is regulated by the NPDES permit, it does not fall under the jurisdiction of the RCRA statutory and regulatory authority. Specifically, the expressed intent of both the RCRA and the New Mexico Hazardous Waste Act (NMHWA) precludes the simultaneous regulation of an area by both the RCRA and the WPCA and requires that duplication of enforcement efforts be avoided (see RCRA Section 1006(a) and (b), and NMHWA Section 74-4-3.1). In support of this position, the regulations clearly exempt industrial wastewater point source discharges subject to Section 402 of the Clean Water Act (NPDES) from the definition of solid waste (see HWMR-3 Section and 201.A.4.a.(2)40CFR261.4(a)(1)) and thereby from the definition of hazardous waste. If the NPDES discharge is not a hazardous waste, it cannot be construed as a RCRA disposal unit.

DEFICIENCY 4: Containers of hazardous waste being accumulated at TA-33-39, TA-43, and TA-51 were not marked.

Response: We have ensured that all containers of hazardous waste being accumulated at TA-33-39, TA-43-1, and TA-51 are marked appropriately (see enclosure 4).

At TA-43-1, all hazardous waste is stored in a designated area and is either labeled with the container's contents or a hazardous waste sign as required by Section 204.B.3.a.(2). It should be noted that in EID's inspection checklist, the inspector (B. Hamilton) states "outdated products, not labeled as H. W. (hazardous waste) but name of compound is present." The labeling requirements for satellite storage allow either method of identification.

At TA-51, it is uncertain from EID's NOV what containers of hazardous waste are referenced. Activities at TA-51 do not generate hazardous waste. Several drums of a roofing material may have been stored at a nearby area (TA-51 West) at the time of the inspection and may not have been labeled. These drums contained a product and, therefore, would not have required hazardous waste labeling.

DEFICIENCY 5: Containers of hazardous waste being accumulated at TA-53 were not labeled.

Response: We have ensured that all containers of hazardous waste at TA-53 are labeled (see enclosure #5).

DEFICIENCY 6: The design capacity at TA-54 Area L had been exceeded.

Response: Over capacity at TA-54 Area L is partly the result of circumstances beyond DOE's control. Many of our efforts to ship hazardous waste to acceptable off-site commercial disposal facilities have been thwarted by several facilities' already overloaded conditions. We continue to agressively work the off-site disposal problem.

As previously mentioned, our November 26, 1987 submittal of a revised Part B hazardous waste permit application to the EID's Hazardous Waste Program included an amended Part A application. As per discussion with EID Hazardous Waste Program staff on September 22, 1987, the Part A included an increase in storage capacity to address DOE's waste storage needs. Also included in the Part A are waste minimization efforts that would help alleviate the large volume of waste being stored at TA-54 Area L.

DEFICIENCY 7: Tanks being used to store hazardous waste at Area L for less than 90 days were not labeled.

Response: In response to this noted deficiency, DOE will address the tanks identified by Mr. Hamilton at the DOE, LANL, and EID meeting of November 19, 1987 as the tank truck and the rectangular tank on the concrete pad at TA-54 Area L. Please note that EID's inspection checklist specifically stated that the tank truck was labeled with a hazardous waste sticker. To ensure that hazardous waste labels are in place on any and all tanks that contain hazardous waste, inspections of these tanks are performed and inspection logs completed. Laboratory policy also reinforces the importance of proper labeling with upper management and employees directly handling the waste through the use of Administrative Requirements (AR) in the "Health and Safety Manual."

DEFICIENCY 8: Detailed chemical and physical analyses have not been obtained from waste streams at Area 16-Building 340, wastes awaiting laboratory results at Area L, equipment and material possibly HE contaminated at Area 16 prior to treatment, storage and/or disposal.

Response: Pursuant to DOE's EID approved waste analysis plan (see enclosure #8, EID's December 10, 1985 letter approving the waste analysis plan revised in response to EID's August 26, 1985 NOV and EID's letter dated November 4, 1985 - Violation 13), we utilize both prior knowledge of the waste

generation process and typically perform chemical analyses to identify the contents of waste. This approach has also been acknowledged and determined to be acceptable by EPA inspectors on this and a previous inspection dated January 22, 1986. If there is no reason to believe that a change in process has occurred, analysis is only repeated periodically to ensure accuracy and currency. Hence, the waste is not being stored without prior knowledge necessary to handle it in accordance with the treatment, storage and disposal requirements of Section 206.B.3.a.

Drums noted during the inspection were awaiting confirmation analyses at TA-54 Area L prior to shipment off-site and treatment on-site. Off-site commercial disposal facilities and LANL internal policies mandate that LANL sample and analyze either every drum of waste or representative samples from drums batched with the same waste before treating or shipping.

DEFICIENCY 9: The Contingency Plan has not been updated to identify the primary emergency coordinator.

Response: The Part B Contingency Plan identifies the primary emergency coordinator in our Part B submittal dated November 25, 1987 (see enclosure #9).

DEFICIENCY 10: Waste analyses are not maintained in the operating record for wastes that have not previously been burned.

Response: The wastes indicated by the EID have previously been burned. DOE's Part B hazardous waste permit application describes the thermal treatment referred to in the NOV as a current practice so as to comply with Section 206.C.11.c. Also, in more than one instance, the EID inspector has been informed of this practice during previous site visits. Furthermore, as can be seen upon review of the operating record at TA-16, Building 200, Room 125, reference has been made regarding the nature of the waste being burned. Due to the volume of information comprising this operating record, it has not been included in this response.

In addition, the regulatory citation referenced in EID's noted deficiency does not require that waste analyses be maintained in the operating record. Section 203.C.2.c. does make this a requirement. In fact, the latter citation was used in EPA's transmittal letter summarizing the findings of last year's inspection (1/27,#28/86) citing the same violation. This EPA summary letter was transmitted to LANL on April 25, 1986. EID's letter stated that EPA's findings had been reviewed and no violations actually existed.

DEFICIENCY 11: The following information was not available in the operating record for Area P:

a. a map showing the location and dimensions of each cell

b. the contents of each cell and location within the cell

Response: All available information noted in deficiency #11 can be found in the operating record and the closure plan. Due to the nature of the waste that was disposed of in the TA-16 Area P landfill and its associated safety concerns, no more information can be obtained. Every attempt was made to be as specific and accurate as possible.

DEFICIENCY 12: LANL has failed to prepare a ground-water monitoring assessment outline for those areas identified in #3 (TA-16-340, Area P landfill, TA-16 surface impoundment).

Response: DOE has amended its closure plan for TA-16 Area P landfill to include a more comprehensive ground-water monitoring program (see enclosure #12). Although a ground-water monitoring waiver has been requested by DOE, the above-noted program would be initiated in the event quantities of ground water are encountered sufficient for sample collection and analysis. This monitoring program contains collection and analysis. This monitoring program contains a ground-water assessment outline.

The TA-16 surface impoundment closure plan also contains a ground-water monitoring plan should free-flowing ground water be encountered. A commitment to evaluate and, if necessary, remediate any ground-water contamination has been included.

A ground-water assessment outline would not be required for the outfall at TA-16-340 because it is not subject to RCRA ground-water monitoring requirements (see "Response" to "DEFICIENCY 3").

DEFICIENCY 13: LANL has failed to develop a closure plan for the hazardous waste management unit at Area 16-Building 340.

Response: It is unclear where a hazardous waste management unit exists at TA-16-340. We are assuming, as in our response to DEFICIENCY 3, that EID is referring to the NPDES outfall. A closure plan would not be required for the outfall at TA-16-340 because it is not subject to RCRA regulation (see "Response" to "DEFICIENCY 3").

DEFICIENCY 14: LANL has managed hazardous waste at Area 16-Building 340, an area not specified on the Part A.

Response: Inclusion of the permitted outfall at TA-16-340 on the Part A application is not necessary because it is not subject to the RCRA regulatory requirements (see "Response" to "DEFICIENCY 3").

DEFICIENCY 15: The Part A does not specifically identify what is being treated and/or stored and/or disposed of, but disposed of on-site.

Response: It is DOE's interpretation that the words "to be treated, stored, or disposed" in Section 302.A.4.a.(15), imply those wastes that could expect to be generated. This would include those wastes that DOE may generate in the future. For this reason, DOE has tried to be as inclusive as possible.

Again, it is unclear why Section 202.E. was cited in this deficiency. The deficiency cited is for suggested inadequacies in the Part A and does not cite inadequacies in the Notification Form requirements.

DEFICIENCY 16: The Part A does not identify all past, present, and/or future hazardous waste management activities, such as the hazardous waste management unit at Area 16-Building 340 and the surface impoundment at Area 16.

Response: In DOE's request to revise its Part A application dated August 17, 1987, the surface impoundment at TA-16 was included in an attempt to identify all past, present, and future hazardous waste management activities. This request was denied in EID's letter dated September 9, 1987. DOE has since provided additional information regarding the TA-16 surface impoundment in DOE's most recent Part A revision submittal (November 25, 1987). DOE feels this constitutes proper identification of the surface impoundment at TA-16.

The outfall at TA-16-340 does not constitute a hazardous waste management unit (see "Response" to DEFICIENCY #3) and therefore would not require inclusion in the Part A application.

DEFICIENCY 17: There are 10 drums of transformer oil at TA-53, MPF-14 for which a determination had not been made as to whether the oil is a hazardous waste.

Response: Adherence to the AR contained in LANL's "Health and Safety Manual" is required at LANL to ensure facility-wide control over the management of hazardous waste. Specifically, AR 10-3 (see enclosure #17a) requires Group Leaders to be knowledgeable of the waste his or her group generates and ensure that it is handled properly. The non-hazardous waste status of the drums of transformer oil was known by the user group at the time of the inspection; however, not by the inspection escorts. The transformer oil was not a waste but rather a product intended for use in another transformer. Enclosed (see enclosure #17b) is a certification by the group leader that this was indeed the situation.

DEFICIENCY 18: A determination has not been made as to whether the 4 USMC tanks at Area L are being used to treat a hazardous waste.

Response: The 4 USMC tanks at TA-54 Area L have never been used to treat hazardous waste. The tanks were formerly used for storage of waste oil. DOE will, however, close them pursuant to interim status closure standards. Closure plans for the 4 USMC tanks, the tank truck, and the rectangular tank have been included for your review and subsequent approval (see enclosure #18).

DEFICIENCY 19: Inspection checklists were not available for the tanks at Area L.

Response: Enclosed for your review are inspection checklists for TA-54 Area L from several dates before the inspection (see enclosure #19). These checklists were available at TA-54 Area L and TA-59-03 at the time of the inspection. It should be noted, however, that the EPA inspector indicated that applicable inspections were being performed on his checklist.

Based on this submittal, DOE believes that all issues referenced in the NOV have been resolved. If you have any questions regarding this submittal, please contact Mr. James Phoenix (667-5288) of my staff.

Sincerely,

Harold E. Valencia
Area Manager

8218A

Enclosures

cc w/Enclosures: A. Davis, Region VI, EPA, Dallas, Texas

FEB 11 1988

LIST OF ENCLOSURES

1. Notification Form

2a. Various Manifests
2b. Administrative Instruments

3a. Request for Groundwater Monitoring Waiver
3b. "Site Geology and Hydrology of Technical Area 16 Area P"
3c. Surface Water and Sediment Sampling Results
D. B. Stevens Report of Soil Hydraulic Properties

4. Photographs of TA-33-39 Containers and TA-43-1 Designated Storage Area

5. Photograph of TA-53 Containers

6. Refusal Letters

7. BLANK

8. December 10, 1985 and November 4, 1985 Letters from EID to DOE

9. Primary Emergency Coordinator

10. BLANK

11. BLANK

12. (date) Letter from DOE to EID Amending Area P Closure Plan

13. BLANK

14. BLANK

15. BLANK

16. BLANK

17a. Administrative Requirement 10-3
17b. Transformer Oil Certification

18. TA-54 Area L Tank Closure Plans

19. Inspection Record Form for TA-54 Area L

ENCLOSURE #1
NOTIFICATION FORM

Please print or type with ELITE type *(12 characters per inch)* in the unshaded areas only

Form Approved. OMB No. 2050-0028. Expires 9-30-88.
GSA No. 0246-EPA-OT

United States Environmental Protection Agency
Washington, DC 20460

EPA Notification of Hazardous Waste Activity

Please refer to the *Instructions for Filing Notification* before completing this form. The information requested here is required by law *(Section 3010 of the Resource Conservation and Recovery Act).*

For Official Use Only

Comments

C C

Installation's EPA ID Number	Approved	Date Received (yr. mo. day)
C F T/A C 1		

I. Name of Installation

LOS ALAMOS NATIONAL LABORATORY

II. Installation Mailing Address

Street or P.O. Box	City or Town	State	ZIP Code
C 3 DOE LOS ALAMOS AREA OFFICE	C 4 LOS ALAMOS	NM	87545

III. Location of Installation

Street or Route Number	City or Town	State	ZIP Code
C 5 SAME	C 6		

IV. Installation Contact

Name and Title *(last, first, and job title)*	Phone Number *(area code and number)*
C 2 VALENCIA H. AREA MGR	505 667 5105

V. Ownership

A. Name of Installation's Legal Owner	B. Type of Ownership *(enter code)*
C R US DEPT OF ENERGY	FC

VI. Type of Regulated Waste Activity *(Mark 'X' in the appropriate boxes. Refer to instructions.)*

A. Hazardous Waste Activity

- [X] 1a. Generator
- [ ] 1b. Less than 1,000 kg/mo.
- [X] 2. Transporter
- [X] 3. Treater/Storer/Disposer
- [ ] 4. Underground Injection
- [ ] 5. Market or Burn Hazardous Waste Fuel *(enter 'X' and mark appropriate boxes below)*
  - [ ] a. Generator Marketing to Burner
  - [ ] b. Other Marketer
  - [ ] c. Burner

B. Used Oil Fuel Activities

- [ ] 6. Off-Specification Used Oil Fuel *(enter 'X' and mark appropriate boxes below)*
  - [ ] a. Generator Marketing to Burner
  - [ ] b. Other Marketer
  - [ ] c. Burner
- [ ] 7. Specification Used Oil Fuel Marketer (or On-site Burner) Who First Claims the Oil Meets the Specification

VII. Waste Fuel Burning: Type of Combustion Device *(enter 'X' in all appropriate boxes to indicate type of combustion device(s) in which hazardous waste fuel or off-specification used oil fuel is burned. See instructions for definitions of combustion devices.)*

[ ] A. Utility Boiler [ ] B. Industrial Boiler [ ] C. Industrial Furnace

VIII. Mode of Transportation *(transporters only — enter 'X' in the appropriate box(es))*

[ ] A. Air [ ] B. Rail [X] C. Highway [ ] D. Water [ ] E. Other *(specify)*

IX. First or Subsequent Notification

Mark 'X' in the appropriate box to indicate whether this is your installation's first notification of hazardous waste activity or a subsequent notification. If this is not your first notification, enter your installation's EPA ID Number in the space provided below.

[ ] A. First Notification [X] B. Subsequent Notification *(complete item C)*

C. Installation's EPA ID Number: NM 089 001 051 5

EPA Form 8700-12 (Rev. 11-85) Previous edition is obsolete.

Continue on reverse

For Official Use Only														
C													T/A	C
W														1

C. Description of Hazardous Wastes *(continued from front)*

A. Hazardous Wastes from Nonspecific Sources. Enter the four-digit number from 40 *CFR* Part 261.31 for each listed hazardous waste from nonspecific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
F001	F002	F003	F004	F005	F006
7	**8**	**9**	**10**	**11**	**12**
F007	F008	F009	F027	F028	

B. Hazardous Wastes from Specific Sources. Enter the four-digit number from 40 *CFR* Part 261.32 for each listed hazardous waste from specific sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
K044	K045	K047			
19	**20**	**21**	**22**	**23**	**24**
25	**26**	**27**	**28**	**29**	**30**

C. Commercial Chemical Product Hazardous Wastes. Enter the four-digit number from 40 *CFR* Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
P001	P002	P003	P004	P005	P006
37	**38**	**39**	**40**	**41**	**42**
P007	P008	P009	P010	P011	P012
43	**44**	**45**	**46**	**47**	**48**
P013	P014	P015	P016	P017	P018

D. Listed Infectious Wastes. Enter the four-digit number from 40 *CFR* Part 261.34 for each hazardous waste from hospitals, veterinary hospitals, or medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. Characteristics of Nonlisted Hazardous Wastes. Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 — 261.24)*

- ☐ 1. Ignitable *(D001)*
- ☒ 2. Corrosive *(D002)*
- ☒ 3. Reactive *(D003)*
- ☒ 4. Toxic *(D000)*

XI. Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature	Name and Official Title *(type or print)*	Date Signed

EPA Form 8700-12 (Rev. 11-85) Reverse

ID — For Official Use Only														
C													C/A	C
W														1

C. Description of Hazardous Wastes *(continued from front)*

A. Hazardous Wastes from Nonspecific Sources. Enter the four-digit number from 40 *CFR* Part 261.31 for each listed hazardous waste from nonspecific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

B. Hazardous Wastes from Specific Sources. Enter the four-digit number from 40 *CFR* Part 261.32 for each listed hazardous waste from specific sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	**20**	**21**	**22**	**23**	**24**
25	**26**	**27**	**28**	**29**	**30**

C. Commercial Chemical Product Hazardous Wastes. Enter the four-digit number from 40 *CFR* Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
P 0 2 0	P 0 2 1	P 0 2 2	P 0 2 3	P 0 2 4	P 0 2 6
37	**38**	**39**	**40**	**41**	**42**
P 0 2 7	P 0 2 8	P 0 2 9	P 0 3 0	P 0 3 1	P 0 3 3
43	**44**	**45**	**46**	**47**	**48**
P 0 3 4	P 0 3 6	P 0 3 7	P 0 3 8	P 0 3 9	P 0 4 0

D. Listed Infectious Wastes. Enter the four-digit number from 40 *CFR* Part 261.34 for each hazardous waste from hospitals, veterinary hospitals, or medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. Characteristics of Nonlisted Hazardous Wastes. Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 — 261.24)*

☐ 1. Ignitable *(D001)* ☐ 2. Corrosive *(D002)* ☐ 3. Reactive *(D003)* ☐ 4. Toxic *(D000)*

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I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

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EPA Form 8700-12 (Rev. 11-85) Reverse

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C. Description of Hazardous Wastes *(continued from front)*

A. Hazardous Wastes from Nonspecific Sources. Enter the four-digit number from 40 *CFR* Parts 261.21-24 for each listed hazardous waste from nonspecific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

B. Hazardous Wastes from Specific Sources. Enter the four-digit number from 40 *CFR* Part 261.32 for each listed hazardous waste from specific sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	**20**	**21**	**22**	**23**	**24**
25	**26**	**27**	**28**	**29**	**30**

C. Commercial Chemical Product Hazardous Wastes. Enter the four-digit number from 40 *CFR* Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
P 0 4 1	P 0 4 2	P 0 4 3	P 0 4 4	P 0 4 5	P 0 4 6
37	**38**	**39**	**40**	**41**	**42**
P 0 4 7	P 0 4 8	P 0 4 9	P 0 5 0	P 0 5 1	P 0 5 4
43	**44**	**45**	**46**	**47**	**48**
P 0 5 6	P 0 5 7	P 0 5 8	P 0 5 9	P 0 6 0	P 0 6 2

D. Listed Infectious Wastes. Enter the four-digit number from 40 *CFR* Part 261.34 for each hazardous waste from hospitals, veterinary hospitals, or medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. Characteristics of Nonlisted Hazardous Wastes. Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 - 261.24)*

☐ 1. Ignitable *(D001)* ☐ 2. Corrosive *(D002)* ☐ 3. Reactive *(D003)* ☐ 4. Toxic *(D000)*

F. Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature	Name and Official Title *(type or print)*	Date Signed

EPA Form 8700-12 (Rev. 11-85) Reverse

For Official Use Only

C													T/A	C
RV														1

X. Description of Hazardous Wastes *(continued from front)*

A. Hazardous Wastes from Nonspecific Sources. Enter the four-digit number from 40 *CFR* Part 261.31 for each listed hazardous waste from nonspecific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

B. Hazardous Wastes from Specific Sources. Enter the four-digit number from 40 *CFR* Part 261.32 for each listed hazardous waste from specific sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	**20**	**21**	**22**	**23**	**24**
25	**26**	**27**	**28**	**29**	**30**

C. Commercial Chemical Product Hazardous Wastes. Enter the four-digit number from 40 *CFR* Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
P063	P064	P065	P066	P067	P068
37	**38**	**39**	**40**	**41**	**42**
P069	P070	P071	P072	P073	P074
43	**44**	**45**	**46**	**47**	**48**
P075	P076	P077	P078	P081	P082

D. Listed Infectious Wastes. Enter the four-digit number from 40 *CFR* Part 261.34 for each hazardous waste from hospitals, veterinary hospitals, or medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. Characteristics of Nonlisted Hazardous Wastes. Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 — 261.24)*

☐ 1. Ignitable *(D001)* ☐ 2. Corrosive *(D002)* ☐ 3. Reactive *(D003)* ☐ 4. Toxic *(D000)*

XI. Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature	Name and Official Title *(type or print)*	Date Signed

EPA Form 8700-12 (Rev. 11-85) Reverse

C														T/A	C
RW															1

C. Description of Hazardous Wastes *(continued from front)*

A. Hazardous Wastes from Nonspecific Sources. Enter the four-digit number from 40 *CFR* Part 261.31 for each listed hazardous waste from nonspecific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

B. Hazardous Wastes from Specific Sources. Enter the four-digit number from 40 *CFR* Part 261.32 for each listed hazardous waste from specific sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	**20**	**21**	**22**	**23**	**24**
25	**26**	**27**	**28**	**29**	**30**

C. Commercial Chemical Product Hazardous Wastes. Enter the four-digit number from 40 *CFR* Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
P084	P085	P087	P088	P089	P092
37	**38**	**39**	**40**	**41**	**42**
P093	P094	P095	P096	P097	P098
43	**44**	**45**	**46**	**47**	**48**
P099	P101	P102	P103	P104	P105

D. Listed Infectious Wastes. Enter the four-digit number from 40 *CFR* Part 261.34 for each hazardous waste from hospitals, veterinary hospitals, or medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. Characteristics of Nonlisted Hazardous Wastes. Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 – 261.24)*

☐ 1. Ignitable *(D001)* ☐ 2. Corrosive *(D002)* ☐ 3. Reactive *(D003)* ☐ 4. Toxic *(D000)*

XI. Certification

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Signature	Name and Official Title *(type or print)*	Date Signed

EPA Form 8700-12 (Rev. 11-85) Reverse

														T/A	C
W															1

C. Description of Hazardous Wastes *(continued from front)*

A. Hazardous Wastes from Nonspecific Sources. Enter the four-digit number from 40 *CFR* Part 261.31 for each listed hazardous waste from nonspecific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

B. Hazardous Wastes from Specific Sources. Enter the four-digit number from 40 *CFR* Part 261.32 for each listed hazardous waste from specific sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	**20**	**21**	**22**	**23**	**24**
25	**26**	**27**	**28**	**29**	**30**

C. Commercial Chemical Product Hazardous Wastes. Enter the four-digit number from 40 *CFR* Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
P 1 0 6	P 1 0 7	P 1 0 8	P 1 0 9	P 1 1 0	P 1 1 1
37	**38**	**39**	**40**	**41**	**42**
P 1 1 2	P 1 1 3	P 1 1 4	P 1 1 5	P 1 1 6	P 1 1 8
43	**44**	**45**	**46**	**47**	**48**
P 1 1 9	P 1 2 0	P 1 2 1	P 1 2 2	P 1 2 3	U 0 0 1

D. Listed Infectious Wastes. Enter the four-digit number from 40 *CFR* Part 261.34 for each hazardous waste from hospitals, veterinary hospitals, or medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. Characteristics of Nonlisted Hazardous Wastes. Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 – 261.24)*

☐ 1. Ignitable *(D001)* ☐ 2. Corrosive *(D002)* ☐ 3. Reactive *(D003)* ☐ 4. Toxic *(D000)*

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Signature	Name and Official Title *(type or print)*	Date Signed

EPA Form 8700-12 (Rev. 11-85) Reverse

For Official Use Only														
G													T/A	C
W														1

X. Description of Hazardous Wastes (continued)

A. Hazardous Wastes from Nonspecific Sources. Enter the four-digit number from 40 *CFR* Part 261.31 for each listed hazardous waste from nonspecific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

B. Hazardous Wastes from Specific Sources. Enter the four-digit number from 40 *CFR* Part 261.32 for each listed hazardous waste from specific sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	**20**	**21**	**22**	**23**	**24**
25	**26**	**27**	**28**	**29**	**30**

C. Commercial Chemical Product Hazardous Wastes. Enter the four-digit number from 40 *CFR* Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
U002	U003	U004	U005	U006	U007
37	**38**	**39**	**40**	**41**	**42**
U008	U009	U010	U011	U012	U014
43	**44**	**45**	**46**	**47**	**48**
U015	U016	U017	U018	U019	U020

D. Listed Infectious Wastes. Enter the four-digit number from 40 *CFR* Part 261.34 for each hazardous waste from hospitals, veterinary hospitals, or medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. Characteristics of Nonlisted Hazardous Wastes. Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40* CFR *Parts 261.21 — 261.24)*

☐ 1. Ignitable *(D001)* ☐ 2. Corrosive *(D002)* ☐ 3. Reactive *(D003)* ☐ 4. Toxic *(D000)*

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Signature	Name and Official Title *(type or print)*	Date Signed

EPA Form 8700-12 (Rev. 11-85) Reverse

ID — For Official Use Only

C														T/A	C
															1

X. Description of Hazardous Wastes *(continued from front)*

A. Hazardous Wastes from Nonspecific Sources. Enter the four-digit number from 40 *CFR* Part 261.31 for each listed hazardous waste from nonspecific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

B. Hazardous Wastes from Specific Sources. Enter the four-digit number from 40 *CFR* Part 261.32 for each listed hazardous waste from specific sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	**20**	**21**	**22**	**23**	**24**
25	**26**	**27**	**28**	**29**	**30**

C. Commercial Chemical Product Hazardous Wastes. Enter the four-digit number from 40 *CFR* Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
U021	U022	U023	U024	U025	U026
37	**38**	**39**	**40**	**41**	**42**
U027	U028	U029	U030	U031	U032
43	**44**	**45**	**46**	**47**	**48**
U033	U034	U035	U036	U037	U038

D. Listed Infectious Wastes. Enter the four-digit number from 40 *CFR* Part 261.34 for each hazardous waste from hospitals, veterinary hospitals, or medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. Characteristics of Nonlisted Hazardous Wastes. Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 — 261.24)*

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Signature	Name and Official Title *(type or print)*	Date Signed

EPA Form 8700-12 (Rev. 11-85) Reverse

ID — For Official Use Only														
S													T/A	C
RW														1

X. Description of Hazardous Wastes *(continued from front)*

A. Hazardous Wastes from Nonspecific Sources. Enter the four-digit number from 40 *CFR* Part 261.31 for each listed hazardous waste from nonspecific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

B. Hazardous Wastes from Specific Sources. Enter the four-digit number from 40 *CFR* Part 261.32 for each listed hazardous waste from specific sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	**20**	**21**	**22**	**23**	**24**
25	**26**	**27**	**28**	**29**	**30**

C. Commercial Chemical Product Hazardous Wastes. Enter the four-digit number from 40 *CFR* Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
U 0 3 9	U 0 4 1	U 0 4 2	U 0 4 3	U 0 4 4	U 0 4 5
37	**38**	**39**	**40**	**41**	**42**
U 0 4 6	U 0 4 7	U 0 4 8	U 0 4 9	U 0 5 0	U 0 5 1
43	**44**	**45**	**46**	**47**	**48**
U 0 5 2	U 0 5 3	U 0 5 5	U 0 5 6	U 0 5 7	U 0 5 8

D. Listed Infectious Wastes. Enter the four-digit number from 40 *CFR* Part 261.34 for each hazardous waste from hospitals, veterinary hospitals, or medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. Characteristics of Nonlisted Hazardous Wastes. Mark "X" in the box corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 — 261.24)*

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Signature	Name and Official Title *(type or print)*	Date Signed

EPA Form 8700-12 (Rev. 11-85) Reverse

For Official Use Only

C														
W														

X. Description of Hazardous Wastes (continued from page 1)

A. Hazardous Wastes from Nonspecific Sources. Enter the four-digit number from 40 *CFR* Part 261.31 for each listed hazardous waste from nonspecific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

B. Hazardous Wastes from Specific Sources. Enter the four-digit number from 40 *CFR* Part 261.32 for each listed hazardous waste from specific sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	**20**	**21**	**22**	**23**	**24**
25	**26**	**27**	**28**	**29**	**30**

C. Commercial Chemical Product Hazardous Wastes. Enter the four-digit number from 40 *CFR* Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
U059	U060	U061	U062	U063	U064
37	**38**	**39**	**40**	**41**	**42**
U066	U067	U068	U069	U070	U071
43	**44**	**45**	**46**	**47**	**48**
U072	U073	U074	U075	U076	U077

D. Listed Infectious Wastes. Enter the four-digit number from 40 *CFR* Part 261.34 for each hazardous waste from hospitals, veterinary hospitals, or medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. Characteristics of Nonlisted Hazardous Wastes. Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 — 261.24)*

☐ 1. Ignitable *(D001)* ☐ 2. Corrosive *(D002)* ☐ 3. Reactive *(D003)* ☐ 4. Toxic *(D000)*

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Signature	Name and Official Title *(type or print)*	Date Signed

EPA Form 8700-12 (Rev. 11-85) Reverse

For Official EPA Use Only														
W														C 1

X. Description of Hazardous Wastes *(continued from front)*

A. Hazardous Wastes from Nonspecific Sources. Enter the four-digit number from 40 *CFR* Part 261.31 for each listed hazardous waste from nonspecific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

B. Hazardous Wastes from Specific Sources. Enter the four-digit number from 40 *CFR* Part 261.32 for each listed hazardous waste from specific sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	**20**	**21**	**22**	**23**	**24**
25	**26**	**27**	**28**	**29**	**30**

C. Commercial Chemical Product Hazardous Wastes. Enter the four-digit number from 40 *CFR* Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
U078	U079	U080	U081	U082	U083
37	**38**	**39**	**40**	**41**	**42**
U084	U085	U086	U087	U088	U089
43	**44**	**45**	**46**	**47**	**48**
U090	U091	U092	U093	U094	U095

D. Listed Infectious Wastes. Enter the four-digit number from 40 *CFR* Part 261.34 for each hazardous waste from hospitals, veterinary hospitals, or medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. Characteristics of Nonlisted Hazardous Wastes. Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 — 261.24)*

☐ 1. Ignitable *(D001)* ☐ 2. Corrosive *(D002)* ☐ 3. Reactive *(D003)* ☐ 4. Toxic *(D000)*

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EPA Form 8700-12 (Rev. 11-85) Reverse

For Official Use Only															
C														T/A	C
W															1

X. Description of Hazardous Wastes *(continued from front)*

A. Hazardous Wastes from Nonspecific Sources. Enter the four-digit number from 40 *CFR* Part 261.31 for each listed hazardous waste from nonspecific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

B. Hazardous Wastes from Specific Sources. Enter the four-digit number from 40 *CFR* Part 261.32 for each listed hazardous waste from specific sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	**20**	**21**	**22**	**23**	**24**
25	**26**	**27**	**28**	**29**	**30**

C. Commercial Chemical Product Hazardous Wastes. Enter the four-digit number from 40 *CFR* Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
U096	U097	U098	U099	U101	U102
37	**38**	**39**	**40**	**41**	**42**
U103	U105	U106	U107	U108	U109
43	**44**	**45**	**46**	**47**	**48**
U110	U111	U112	U113	U114	U115

D. Listed Infectious Wastes. Enter the four-digit number from 40 *CFR* Part 261.34 for each hazardous waste from hospitals, veterinary hospitals, or medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. Characteristics of Nonlisted Hazardous Wastes. Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 — 261.24)*

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Signature	Name and Official Title *(type or print)*	Date Signed

EPA Form 8700-12 (Rev. 11-85) Reverse

Official Use Only			
W	T/A	C	1

Description of Hazardous Wastes *(continued from front)*

A. Hazardous Wastes from Nonspecific Sources. Enter the four-digit number from 40 *CFR* Part 261.31 for each listed hazardous waste from nonspecific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	8	9	10	11	12

B. Hazardous Wastes from Specific Sources. Enter the four-digit number from 40 *CFR* Part 261.32 for each listed hazardous waste from specific sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30

C. Commercial Chemical Product Hazardous Wastes. Enter the four-digit number from 40 *CFR* Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
U 1 1 6	U 1 1 7	U 1 1 8	U 1 1 9	U 1 2 0	U 1 2 1
37	38	39	40	41	42
U 1 2 2	U 1 2 3	U 1 2 4	U 1 2 5	U 1 2 6	U 1 2 7
43	44	45	46	47	48
U 1 2 8	U 1 2 9	U 1 3 0	U 1 3 1	U 1 3 2	U 1 3 3

D. Listed Infectious Wastes. Enter the four-digit number from 40 *CFR* Part 261.34 for each hazardous waste from hospitals, veterinary hospitals, or medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. Characteristics of Nonlisted Hazardous Wastes. Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 — 261.24)*

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EPA Form 8700-12 (Rev. 11-85) Reverse

For Office Use Only			
C		T/A	C
W			1

X. Description of Hazardous Wastes (continued from front)

A. Hazardous Wastes from Nonspecific Sources. Enter the four-digit number from 40 *CFR* Part 261.31 for each listed hazardous waste from nonspecific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	8	9	10	11	12

B. Hazardous Wastes from Specific Sources. Enter the four-digit number from 40 *CFR* Part 261.32 for each listed hazardous waste from specific sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30

C. Commercial Chemical Product Hazardous Wastes. Enter the four-digit number from 40 *CFR* Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
U134	U135	U136	U137	U138	U139
37	38	39	40	41	42
U140	U141	U142	U143	U144	U145
43	44	45	46	47	48
U146	U147	U148	U149	U150	U151

D. Listed Infectious Wastes. Enter the four-digit number from 40 *CFR* Part 261.34 for each hazardous waste from hospitals, veterinary hospitals, or medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. Characteristics of Nonlisted Hazardous Wastes. Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 — 261.24)*

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EPA Form 8700-12 (Rev. 11-85) Reverse

C															
W															

Description of Hazardous Wastes *(continued from front)*

A. Hazardous Wastes from Nonspecific Sources. Enter the four-digit number from 40 *CFR* Part 261.31 for each listed hazardous waste from nonspecific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

B. Hazardous Wastes from Specific Sources. Enter the four-digit number from 40 *CFR* Part 261.32 for each listed hazardous waste from specific sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	**20**	**21**	**22**	**23**	**24**
25	**26**	**27**	**28**	**29**	**30**

C. Commercial Chemical Product Hazardous Wastes. Enter the four-digit number from 40 *CFR* Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
U152	U153	U154	U155	U156	U157
37	**38**	**39**	**40**	**41**	**42**
U158	U159	U160	U161	U162	U163
43	**44**	**45**	**46**	**47**	**48**
U164	U165	U166	U167	U168	U169

D. Listed Infectious Wastes. Enter the four-digit number from 40 *CFR* Part 261.34 for each hazardous waste from hospitals, veterinary hospitals, or medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. Characteristics of Nonlisted Hazardous Wastes. Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 — 261.24)*

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EPA Form 8700-12 (Rev. 11-85) Reverse

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C													T/A	C
W														1

X. Description of Hazardous Wastes *(continued from front)*

Hazardous Wastes from Nonspecific Sources. Enter the four-digit number from 40 *CFR* Part 261.31 for each listed hazardous waste from nonspecific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

B. Hazardous Wastes from Specific Sources. Enter the four-digit number from 40 *CFR* Part 261.32 for each listed hazardous waste from specific sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	**20**	**21**	**22**	**23**	**24**
25	**26**	**27**	**28**	**29**	**30**

C. Commercial Chemical Product Hazardous Wastes. Enter the four-digit number from 40 *CFR* Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
U170	U171	U172	U173	U174	U176
37	**38**	**39**	**40**	**41**	**42**
U177	U178	U179	U180	U181	U182
43	**44**	**45**	**46**	**47**	**48**
U183	U184	U185	U186	U187	U188

D. Listed Infectious Wastes. Enter the four-digit number from 40 *CFR* Part 261.34 for each hazardous waste from hospitals, veterinary hospitals, or medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. Characteristics of Nonlisted Hazardous Wastes. Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40* CFR *Parts 261.21 — 261.24)*

☐ 1. Ignitable *(D001)* ☐ 2. Corrosive *(D002)* ☐ 3. Reactive *(D003)* ☐ 4. Toxic *(D000)*

XI. Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature	Name and Official Title *(type or print)*	Date Signed

EPA Form 8700-12 (Rev. 11-85) Reverse

ID — For Official Use Only														
C													T/A	C
W														1

X. Description of Hazardous Wastes *(continued from front)*

Hazardous Wastes from Nonspecific Sources. Enter the four-digit number from 40 *CFR* Part 261.31 for each listed hazardous waste from nonspecific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

B. Hazardous Wastes from Specific Sources. Enter the four-digit number from 40 *CFR* Part 261.32 for each listed hazardous waste from specific sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	**20**	**21**	**22**	**23**	**24**
25	**26**	**27**	**28**	**29**	**30**

C. Commercial Chemical Product Hazardous Wastes. Enter the four-digit number from 40 *CFR* Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
U189	U190	U191	U192	U193	U194
37	**38**	**39**	**40**	**41**	**42**
U196	U197	U200	U201	U202	U203
43	**44**	**45**	**46**	**47**	**48**
U204	U205	U206	U207	U208	U209

D. Listed Infectious Wastes. Enter the four-digit number from 40 *CFR* Part 261.34 for each hazardous waste from hospitals, veterinary hospitals, or medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. Characteristics of Nonlisted Hazardous Wastes. Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40* CFR *Parts 261.21 — 261.24)*

☐ 1. Ignitable *(D001)* ☐ 2. Corrosive *(D002)* ☐ 3. Reactive *(D003)* ☐ 4. Toxic *(D000)*

XI. Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature	Name and Official Title *(type or print)*	Date Signed

EPA Form 8700-12 (Rev. 11-85) Reverse

ID — For Official Use Only														
C													T/A	C
W														1

IX. Description of Hazardous Wastes *(continued from front)*

A. **Hazardous Wastes from Nonspecific Sources.** Enter the four-digit number from 40 *CFR* Part 261.31 for each listed hazardous waste from nonspecific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	8	9	10	11	12

B. **Hazardous Wastes from Specific Sources.** Enter the four-digit number from 40 *CFR* Part 261.32 for each listed hazardous waste from specific sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30

C. **Commercial Chemical Product Hazardous Wastes.** Enter the four-digit number from 40 *CFR* Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
U 2 1 0	U 2 1 1	U 2 1 2	U 2 1 3	U 2 1 4	U 2 1 5
37	38	39	40	41	42
U 2 1 6	U 2 1 7	U 2 1 8	U 2 1 9	U 2 2 0	U 2 2 1
43	44	45	46	47	48
U 2 2 2	U 2 2 3	U 2 2 5	U 2 2 6	U 2 2 7	U 2 2 8

D. **Listed Infectious Wastes.** Enter the four-digit number from 40 *CFR* Part 261.34 for each hazardous waste from hospitals, veterinary hospitals, or medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. **Characteristics of Nonlisted Hazardous Wastes.** Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40* CFR *Parts 261.21 — 261.24)*

☐ 1. Ignitable *(D001)* ☐ 2. Corrosive *(D002)* ☐ 3. Reactive *(D003)* ☐ 4. Toxic *(D000)*

XI. Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature	Name and Official Title *(type or print)*	Date Signed

EPA Form 8700-12 (Rev. 11-85) Reverse

ID — For Official Use Only														
C													T/A	C
W														1

X. Description of Hazardous Wastes *(continued from front)*

A. **Hazardous Wastes from Nonspecific Sources.** Enter the four-digit number from 40 *CFR* Part 261.31 for each listed hazardous waste from nonspecific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

B. **Hazardous Wastes from Specific Sources.** Enter the four-digit number from 40 *CFR* Part 261.32 for each listed hazardous waste from specific sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	**20**	**21**	**22**	**23**	**24**
25	**26**	**27**	**28**	**29**	**30**

C. **Commercial Chemical Product Hazardous Wastes.** Enter the four-digit number from 40 *CFR* Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
U 2 3 0	U 2 3 1	U 2 3 2	U 2 3 3	U 2 3 4	U 2 3 5
37	**38**	**39**	**40**	**41**	**42**
U 2 3 6	U 2 3 7	U 2 3 8	U 2 3 9	U 2 4 0	U 2 4 2
43	**44**	**45**	**46**	**47**	**48**
U 2 4 3	U 2 4 4	U 2 4 6	U 2 4 7		

D. **Listed Infectious Wastes.** Enter the four-digit number from 40 *CFR* Part 261.34 for each hazardous waste from hospitals, veterinary hospitals, or medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. **Characteristics of Nonlisted Hazardous Wastes.** Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 — 261.24)*

☐ 1. Ignitable *(D001)* ☐ 2. Corrosive *(D002)* ☐ 3. Reactive *(D003)* ☐ 4. Toxic *(D000)*

XI. Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature	Name and Official Title *(type or print)*	Date Signed
	Harold E. Valencia, Area Manager	

EPA Form 8700-12 (Rev. 11-85) Reverse

ENCLOSURE #2A
VARIOUS MANIFESTS

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: NM0890010515
Manifest Document No.: 65483
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
PAN AM
STATIONARY EQUIP
LOS ALAMOS NM 87544
4. Generator's Phone (505) 667-5991

A. State Manifest Document Number
B. State Generator's ID

5. Transporter 1 Company Name: SAFETY-KLEEN CORP.
6. US EPA ID Number: ILD051060408
C. State Transporter's ID
D. Transporter's Phone: 505/884-2277

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
SAFETY-KLEEN CORP.
2720 GIRARD NE
ALBUQUERQUE, NM 87107
10. US EPA ID Number: NMD000804294
G. State Facility's ID
H. Facility's Phone: 505/884-2277

GENERATOR

	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	WASTE PETROLEUM NAPHTHA, COMBUSTIBLE LIQUID, UN1255 (EPA, IGNITABILITY, D001)	X	1	DM	45	P	D001
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above
FOR RECYCLE

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
7-008-01-1056
765483 6PT
TERR 04 MK 8741

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Harry Clifford
Signature: Harry Clifford
Date: Month 10 Day 13 Year 87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Scott Gariss
Signature: Scott Gariss
Date: Month 10 Day 13 Year 87

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: BARBARA ROCKWELL
Signature: Barbara Rockwell
Date: Month 10 Day 14 Year 87

EPA Form 8700-22 (Rev. 9-86) previous editions obsolete

1290

Safety Kleen. (9-86) 6

ORIGINAL - RETURN TO GENERATOR

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Exoires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: NM0890010515
Manifest Document No.: 65487
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
PAN AM
ROAD DEPT
LOS ALAMOS NM 87544

4. Generator's Phone (505) 667-5276

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: SAFETY-KLEEN CORP.
6. US EPA ID Number: ILD051060408

C. State Transporter's ID

7. Transporter 2 Company Name
8. US EPA ID Number

D. Transporter's Phone: 505/884-2277

E. State Transporter's ID

9. Designated Facility Name and Site Address
SAFETY-KLEEN CORP.
2720 GIRARD NE
ALBUQUERQUE, NM 87107
10. US EPA ID Number: NMD000804294

F. Transporter's Phone

G. State Facility's ID

H. Facility's Phone: 505/884-2277

GENERATOR

	HM	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	X	WASTE PETROLEUM NAPHTHA, COMBUSTIBLE LIQUID, UN1255 (EPA, IGNITABILITY, D001)	1	DM	45	P	D001
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above
FOR RECYCLE

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
7-008-01-1074
765487 6PT
TERR 04 NK 8741

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Ernest Helsey
Signature: Ernest T Helsey
Date: Month 10 Day 13 Year 87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Scott Gariss
Signature: Scott Gariss
Date: Month 10 Day 13 Year 87

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: BARBARA ROCKWELL
Signature: Barbara Rockwell
Date: Month 10 Day 14 Year 87

EPA Form 8700-22 (Rev. 9-86) previous editions obsolete

1290

ORIGINAL - RETURN TO GENERATOR

Safety Kleen. (9-86) 6

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: NM0890010515
Manifest Document No.: 65486
2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
PAN AM
TOOL ROOM
LOS ALAMOS NM 87544

4. Generator's Phone (505) 667-5276

A. State Manifest Document Number: DM HOLMIDAKE
B. State Generator's ID
C. State Transporter's ID
D. Transporter's Phone 505/884-2277
E. State Transporter's ID
F. Transporter's Phone
G. State Facility's ID
H. Facility's Phone 505/884-2277

5. Transporter 1 Company Name: SAFETY-KLEEN CORP.
6. US EPA ID Number: ILD051060408
7. Transporter 2 Company Name
8. US EPA ID Number

9. Designated Facility Name and Site Address
SAFETY-KLEEN CORP.
2720 GIRARD NE
ALBUQUERQUE, NM 87107
10. US EPA ID Number: NMD000804294

GENERATOR

	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	WASTE PETROLEUM NAPHTHA, COMBUSTIBLE LIQUID, UN1255 (EPA, IGNITABILITY, D001)	X	1	DM	45	P	D001
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above
FOR RECYCLE

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
7-008-01-1072
765486 6PT
TERR 04 WK 5741

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Joseph Crespin
Signature: Joseph Crespin
Date: Month 10 Day 14 Year 87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Scott Gariss
Signature: Scott Gariss
Date: Month 10 Day 13 Year 87

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: BARBARA ROCKWELL
Signature: Barbara Rockwell
Date: Month 10 Day 14 Year 87

EPA Form 8700-22 (Rev. 9-86) previous editions obsolete

1290

ORIGINAL - RETURN TO GENERATOR

Safety Kleen. (9-86) 6

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST

Form Approved. OMB No. 2050-0039 Expires 9-30-8

1. Generator's US EPA ID No.: NM0890010515
Manifest Document No.: 65484
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
PAN AM
TRANSPORTATION DEPT
LOS ALAMOS NM 87544

4. Generator's Phone (505) 667-5178

5. Transporter 1 Company Name: SAFETY-KLEEN CORP.
6. US EPA ID Number: ILD051060408

7. Transporter 2 Company Name
8. US EPA ID Number

9. Designated Facility Name and Site Address
SAFETY-KLEEN CORP.
2720 GIRARD NE
ALBUQUERQUE, NM 87107
10. US EPA ID Number: NMD000804294

A. State Manifest Document Number
B. State Generator's ID
C. State Transporter's ID
D. Transporter's Phone: 505/884-2277
E. State Transporter's ID
F. Transporter's Phone
G. State Facility's ID
H. Facility's Phone: 505/884-2277

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)

	HM		12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	X	WASTE PETROLEUM NAPHTHA, COMBUSTIBLE LIQUID, UN1255 (EPA, IGNITABILITY, D001)	2	DM	160	P	D001
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above
FOR RECYCLE

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
7-008-01-1057
765484 6PT
TERR 04 MK 8741

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Ed Tapia Jr. | Signature: Ed Tapia | Date: Month 10 Day 13 Year 87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Scott Garriss | Signature: Scott Garriss | Date: Month 10 Day 13 Year 87

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: BARBARA ROCKWELL | Signature: Barbara Rockwell | Date: Month 10 Day 14 Year 87

EPA Form 8700-22 (Rev. 9-86) previous editions obsolete

1290

ORIGINAL - RETURN TO GENERATOR

Safety Kleen. (9-86) 6

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: NM0890010515
Manifest Document No.: 65485
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
PAN AM
HEAVY EQUIP
LOS ALAMOS
MAIL STOP PENJ, P.O. BOX 50
NM 87544
ATTN: TOM HOLMHANSEN

4. Generator's Phone (505) 667-5276

A. State Manifest Document Number
B. State Generator's ID

5. Transporter 1 Company Name: SAFETY-KLEEN CORP.
6. US EPA ID Number: ILD051060408
C. State Transporter's ID
D. Transporter's Phone: 505/884-2277

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
SAFETY-KLEEN CORP.
2720 GIRARD NE
ALBUQUERQUE, NM 87107
10. US EPA ID Number: NMD000804294
G. State Facility's ID
H. Facility's Phone: 505/884-2277

GENERATOR

	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	WASTE PETROLEUM NAPHTHA, COMBUSTIBLE LIQUID, UN1255 (EPA, IGNITABILITY, D001)	X	1	DM	80	P	D001
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above
FOR RECYCLE

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
7-008-01-1063
765485 6PT
TERR 04 WK 8741

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: T. Daniel Archuleta
Signature: T. Daniel Archuleta
Date: Month 10 Day 13 Year 87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Scott Gariss
Signature: Scott Gariss
Date: Month 10 Day 13 Year 87

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: BARBARA ROCKWELL
Signature: Barbara Rockwell
Date: Month 10 Day 14 Year 87

EPA Form 8700-22 (Rev. 9-86) previous editions obsolete

1290

ORIGINAL - RETURN TO GENERATOR

Safety Kleen. (9-86) 6

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: NMO890010515

Manifest Document No.: 57583

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
PAN AM
HEAVY EQUIP
LOS ALAMOS NM 87544

4. Generator's Phone (505) 667-5276

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: SAFETY-KLEEN CORP.

6. US EPA ID Number: ILD051060408

C. State Transporter's ID

7. Transporter 2 Company Name

8. US EPA ID Number

D. Transporter's Phone 505/884-2277

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
SAFETY-KLEEN CORP.
2720 GIRARD NE
ALBUQUERQUE, NM 87107

10. US EPA ID Number: NMD000804294

G. State Facility's ID

H. Facility's Phone 505/884-2277

GENERATOR

	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	WASTE PETROLEUM NAPHTHA, COMBUSTIBLE LIQUID, UN1255 (EPA, IGNITABILITY, D001)	X	1	DM	80	P	D001
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above
FOR RECYCLE

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
7-008-01-1068
457583 6PT
TERR 04 WK 8737

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: V. Daniel Archuleta | Signature: J. Daniel Archuleta | Date: Month 9 Day 16 Year 87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: DICK SNYDER | Signature: [illegible] | Date: Month 9 Day 16 Year 87

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: BARBARA ROCKWELL | Signature: Barbara Rockwell | Date: Month 9 Day 17 Year 87

EPA Form 8700-22 (Rev. 9-86) previous editions obsolete

1290

ORIGINAL - RETURN TO GENERATOR

Safety Kleen. (9-86) 6

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NM0890010515

Manifest Document No. 57584

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
PAN AM
TOOL ROOM
LOS ALAMOS NM 87544

4. Generator's Phone (505) 667-5276

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name
SAFETY-KLEEN CORP.

6. US EPA ID Number
ILD051060408

C. State Transporter's ID

D. Transporter's Phone 505/884-2277

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
SAFETY-KLEEN CORP.
2720 GIRARD NE
ALBUQUERQUE, NM 87107

10. US EPA ID Number
NMD000804294

G. State Facility's ID

H. Facility's Phone 505/884-2277

GENERATOR

	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	WASTE PETROLEUM NAPHTHA, COMBUSTIBLE LIQUID, UN1255 (EPA, IGNITABILITY, D001)	X	1	DM	45	P	D001
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above
FOR RECYCLE

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
7-008-01-1072
457584 6PT
TERR 04 WK 8737

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: DEL JACQUES | Signature: [signature] | Date: Month Day Year 9/16/87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: DICK SNYDER | Signature: [signature] | Date: Month Day Year 9/16/87

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: BARBARA ROCKWELL | Signature: [signature] | Date: Month Day Year 9/17/87

EPA Form 8700-22 (Rev. 9-86) previous editions obsolete

1290

ORIGINAL - RETURN TO GENERATOR

Safety Kleen. (9-86) 6

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-8

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NM0890010515

Manifest Document No. 57581

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
PAN AM
STATIONARY EQUIP
LOS ALAMOS NM 87544

4. Generator's Phone (505) 667-5991

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name
SAFETY-KLEEN CORP.

6. US EPA ID Number
ILD051060408

C. State Transporter's ID

D. Transporter's Phone 505/884-2277

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
SAFETY-KLEEN CORP.
2720 GIRARD NE
ALBUQUERQUE, NM 87107

10. US EPA ID Number
NMD000804294

G. State Facility's ID

H. Facility's Phone 505/884-2277

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)

	HM		12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	X	WASTE PETROLEUM NAPHTHA, COMBUSTIBLE LIQUID, UN1255 (EPA, IGNITABILITY, D001)	1	DM	45	P	D001
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above
FOR RECYCLE

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
7-008-01-1056
457581 6PT
TERR 04 WK 8737

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name | Signature | Date Month Day Year 9 16 87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature DICK SNYDER | Date Month Day Year 9 16 87

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name BARBARA ROCKWELL | Signature Barbara Rockwell | Date Month Day Year 9 17 87

EPA Form 8700-22 (Rev. 9-86) previous editions obsolete

1290

ORIGINAL - RETURN TO GENERATOR

Safety Kleen. (9-86) 6

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NM0890010515

Manifest Document No. 57582

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
PAN AM
TRANSPORTATION DEPT
LOS ALAMOS NM 87544

4. Generator's Phone (505) 667-5178

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name
SAFETY-KLEEN CORP.

6. US EPA ID Number
ILD051060408

C. State Transporter's ID

D. Transporter's Phone 505/884-2277

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
SAFETY-KLEEN CORP.
2720 GIRARD NE
ALBUQUERQUE, NM 87107

10. US EPA ID Number
NMD000804294

G. State Facility's ID

H. Facility's Phone 505/884-2277

GENERATOR

	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	WASTE PETROLEUM NAPHTHA, COMBUSTIBLE LIQUID, UN1255 (EPA, IGNITABILITY, D001)	X	2	DM	160	P	D001
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above
FOR RECYCLE

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
T-008-01-1057
457582 6PT
TERR 04 WK 8737

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Ed TAPIA JR | Signature: Ed Tapia | Date: Month 9 Day 16 Year 87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: DICK SNYDER | Signature: [illegible] | Date: Month 9 Day 16 Year 87

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: BARBARA ROCKWELL | Signature: Barbara Rockwell | Date: Month 9 Day 17 Year 87

EPA Form 8700-22 (Rev. 9-86) previous editions obsolete

1290

ORIGINAL - RETURN TO GENERATOR

Safety Kleen. (9-86) 6

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NM0890010515

Manifest Document No. 57585

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
PAN AM
ROAD DEPT
LOS ALAMOS NM 87544

4. Generator's Phone (505) 667-5276

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name
SAFETY-KLEEN CORP.

6. US EPA ID Number ILD051060408

C. State Transporter's ID

D. Transporter's Phone 505/884-2277

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
SAFETY-KLEEN CORP.
2720 GIRARD NE
ALBUQUERQUE, NM 87107

10. US EPA ID Number NMD000804294

G. State Facility's ID

H. Facility's Phone 505/884-2277

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)

	HM	11. US DOT Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	X	WASTE PETROLEUM NAPHTHA, COMBUSTIBLE LIQUID, UN1255 (EPA, IGNITABILITY, D001)	1	DM	45	P	D001
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above
FOR RECYCLE

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
7-008-01-1074
457585 6PT
TERR 04 WK 8737

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: ERNEST T HELSEY
Signature: [signature]
Date: Month 9 Day 1 Year 6 87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: DICK SNYDER
Signature: [signature]
Date: Month 9 Day 1 Year 6 87

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: BARBARA ROCKWELL
Signature: [signature]
Date: Month 9 Day 1 Year 7 87

EPA Form 8700-22 (Rev. 9-86) previous editions obsolete

1290

ORIGINAL - RETURN TO GENERATOR

Safety Kleen. (9-86) 6

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: NMD890010515
Manifest Document No.: 46793

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
PAN AM
~~STATIONARY EQUIP~~ MAILSTOP PENU, P.O. BOX 50
LOS ALAMOS NM 87544
ATTN: TOM HOLMANSEN

4. Generator's Phone (505) 667-5991

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name
~~SAFETY-KLEEN CORP.~~

6. US EPA ID Number
ILD051604C8

C. State Transporter's ID

D. Transporter's Phone 505/884-2277

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
SAFETY-KLEEN CORP.
2720 GIRARD NE
ALBUQUERQUE, NM 87107

10. US EPA ID Number
NMD000804294

G. State Facility's ID

H. Facility's Phone 505/884-2277

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM		12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	X	WASTE PETROLEUM NAPHTHA, COMBUSTIBLE LIQUID, UN1255 (EPA, IGNITABILITY, D001)	1	DF	60	P	D001
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above
FOR RECYCLE

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
7-008-01-1056
148793 6PT
TERR CA HX 6733

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: Ray Mangum
Signature: Ray Mangum
Date: Month 8 Day 18 Year 87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Scott Gariss
Signature: Scott Gariss
Date: Month 8 Day 18 Year 87

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: BARBARA ROCKWELL
Signature: Barbara Rockwell
Date: Month 8 Day 19 Year 87

EPA Form 8700-22 (Rev. 9-86) previous editions obsolete

1290

Safety Kleen. (9-86) 6

ORIGINAL - RETURN TO GENERATOR

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: NM0890010515
Manifest Document No.: 48794

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
PAN AM
~~TRANSPORTATION DEPT~~ MAILSTOP PENU, P.O. BOX 50
LOS ALAMOS NM 87544
ATTN: TOM HOLMHANSEN

4. Generator's Phone (505) 667-5178

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name
~~SAFETY-KLEEN CORP.~~

6. US EPA ID Number
~~ILD051060408~~

C. State Transporter's ID

D. Transporter's Phone ~~505/884-2277~~

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
SAFETY-KLEEN CORP.
2720 GIRARD NE
ALBUQUERQUE, NM 87107

10. US EPA ID Number
~~NMD000604294~~

G. State Facility's ID

H. Facility's Phone
~~505/884-2277~~

GENERATOR

	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	WASTE PETROLEUM NAPHTHA, COMBUSTIBLE LIQUID, UN1255 (EPA, IGNITABILITY, D001)	X	2	DM	235	P	D001
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above
FOR RECYCLE

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
7-0C8-01-1057
148794 EPT
TERR 06 NM 8723

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: Ed Tapia JR
Signature: Ed Tapia
Date: Month 8 Day 19 Year 87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Scott Barriss
Signature: Scott Barriss
Date: Month 8 Day 18 Year 87

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: BARBARA ROCKWELL
Signature: Barbara Rockwell
Date: Month 8 Day 19 Year 87

EPA Form 8700-22 (Rev. 9-86) previous editions obsolete

1290

Safety Kleen. (9-86) 6

ORIGINAL - RETURN TO GENERATOR

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: NM0890010515
Manifest Document No.: 48795
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
PAN AM
~~HEAVY EQUIP~~ MAIL STOP PENV, P.O. BOX 50
LOS ALAMOS NM 87544
4. Generator's Phone (505) 667-5276 ATTN: TOM HOLMHANSEN

A. State Manifest Document Number
B. State Generator's ID

5. Transporter 1 Company Name: SAFETY-KLEEN CORP.
6. US EPA ID Number: ILD051060468
C. State Transporter's ID
D. Transporter's Phone 505/884-2277

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
SAFETY-KLEEN CORP.
2720 GIRARD NE
ALBUQUERQUE, NM 87107
10. US EPA ID Number: NMD000606294
G. State Facility's ID
H. Facility's Phone 505/884-2277

GENERATOR

	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	WASTE PETROLEUM NAPHTHA, COMBUSTIBLE LIQUID, UN1255 (EPA, IGNITABILITY, D001)	X	1	DM	115	P	D001
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above
FOR RECYCLE

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
7-006-01-1068
148795 6PT
TERR 64 BK 8733

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: Scott Garriss
Signature: Scott Garriss
Date: Month 8 Day 18 Year 87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: E.C. Seay
Signature: E.C. Seay
Date: Month 8 Day 18 Year 87

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: BARBARA ROCKWELL
Signature: Barbara Rockwell
Date: Month 8 Day 19 Year 87

EPA Form 8700-22 (Rev. 9-86) previous editions obsolete

1290

Safety Kleen. (9-86) 6

ORIGINAL - RETURN TO GENERATOR

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: NMD890010515
Manifest Document No.: 48797
2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
PAN AM
~~ROAD DEPT~~ MAILSTOP PENU, P.O. BOX 50
LOS ALAMOS NM 87544

4. Generator's Phone (505) 667-5276 ATTN: TOM HOLMHANSEN

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: SAFETY-KLEEN CORP.
6. US EPA ID Number: ILD051060408

C. State Transporter's ID

D. Transporter's Phone 505/884-2277

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
SAFETY-KLEEN CORP.
2720 GIRARD NE
ALBUQUERQUE, NM 87107
10. US EPA ID Number: NMD000804294

G. State Facility's ID

H. Facility's Phone 505/884-2277

GENERATOR

	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	WASTE PETROLEUM NAPHTHA, COMBUSTIBLE LIQUID, UN1255 (EPA, IGNITABILITY, D001)	X	1	DM	60	P	D001
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above
FOR RECYCLE

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
7-008-01-1C74
148797 6PT
TERR C4 BK 8733

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: Ernest Kelsey
Signature: Ernest T. Kelsey
Date: Month 8 Day 15 Year 87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Scott Gariss
Signature: Scott Gariss
Date: Month 8 Day 18 Year 87

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: BARBARA ROCKWELL
Signature: Barbara Rockwell
Date: Month 8 Day 19 Year 87

EPA Form 8700-22 (Rev. 9-86) previous editions obsolete

1290

ORIGINAL - RETURN TO GENERATOR

Safety Kleen. (9-86) 6

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: NM5890010515
Manifest Document No.: 48796

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
PAN AM
~~TOOL ROOM~~ MAILSTOP PENU, P.O. BOX 50
LOS ALAMOS NM 87544

4. Generator's Phone (505) 667-5276 ATTN: TOM HOLMHANSEN

5. Transporter 1 Company Name: SAFETY-KLEEN CORP.
6. US EPA ID Number: ILD051060408

7. Transporter 2 Company Name
8. US EPA ID Number

9. Designated Facility Name and Site Address
SAFETY-KLEEN CORP.
2720 GIRARD NE
ALBUQUERQUE, NM 87107
10. US EPA ID Number: NMD000804294

A. State Manifest Document Number
B. State Generator's ID
C. State Transporter's ID
D. Transporter's Phone 505/884-2277
E. State Transporter's ID
F. Transporter's Phone
G. State Facility's ID
H. Facility's Phone 505/884-2277

GENERATOR

	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	WASTE PETROLEUM NAPHTHA, COMBUSTIBLE LIQUID, UN1255 (EPA, IGNITABILITY, D001)	X	1	DM	60	P	D001
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above
FOR RECYCLE

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
7-008-01-1072
148796 6PT
TERR 04 BK 5733

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: DEL JACQUES
Signature: Del Jacques
Date: Month 8 Day 18 Year 87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Scott Gurriss
Signature: Scott Gurriss
Date: Month 8 Day 18 Year 87

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: BARBARA Rockwell
Signature: Barbara Rockwell
Date: Month 8 Day 19 Year 87

EPA Form 8700-22 (Rev. 9-86) previous editions obsolete

1290

ORIGINAL - RETURN TO GENERATOR

Safety Kleen. (9-86) 6

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2000-0404. Expires 7-31-86

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NM0890010515 Manifest Document No. 144391

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
PAN AM STATIONARY EQUIP.
LOS ALAMOS N.M. 87544

4. Generator's Phone (505) 667-5991

5. Transporter 1 Company Name
SAFETY KLEEN CORP

6. US EPA ID Number
NMD000804294

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address
SAFETY-KLEEN CORP.
8720 Girard NE
Albq. NM 87107

10. US EPA ID Number
NMD000804294

A. State Manifest Document Number

B. State Generator's ID

C. State Transporter's ID

D. Transporter's Phone 505 884-2277

E. State Transporter's ID

F. Transporter's Phone

G. State Facility's ID

H. Facility's Phone 505 884-2277

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)

	HM	11. US DOT Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	X	Waste, Petroleum Naphtha, Combustible Liquid, UN 1255 D001	1	DM	60	F	0001
b.		Waste, Compound, Cleaning, Liquid, Corrosive Material, NA 1760 F002-F004		DM			
c.		Waste, Perchloroethylene, ORM-A, UN 1897 F002		DM			
d.							

J. Additional Descriptions for Materials Listed Above
For recycle

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
7-008-01-1056
844391
Terr 04 wk 8729

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name: Levi J Medina
Signature: [signature]
Date: Month 7 Day 22 Year 87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Scott Garias
Signature: [signature]
Date: Month 7 Day 22 Year 87

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: DAVE RODLWELL
Signature: [signature]
Date: Month 7 Day 24 Year 87

ORIGINAL-RETURN TO GENERATOR

EPA Form 8700-22 (3-84)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2000-0404. Expires 7-31-86

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NM0890010515 — Manifest Document No. 44396

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
DAN AM
Road Dept.
Los Alamos N.M. 87544

4. Generator's Phone (505) 667-5276

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: SAFETY Kleen Corp

6. US EPA ID Number: NMD000804294

C. State Transporter's ID

D. Transporter's Phone: 505 884 2277

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
SAFETY-KLEEN CORP.
2720 Girard NE
Alba NM 87107

10. US EPA ID Number: NMD000804294

G. State Facility's ID

H. Facility's Phone: 505 884 2277

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)

	HM	11. US DOT Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	X	Waste, Petroleum Naphtha, Combustible Liquid, UN 1255 D001	1	DM	60	lbs	0001
b.		Waste, Compound, Cleaning, Liquid, Corrosive Material, NA 1760 F002-F004		DM			
c.		Waste, Perchloroethylene, ORM-A, UN 1897 F002		DM			
d.							

J. Additional Descriptions for Materials Listed Above
For Recycle

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
7-008-01-1074-5
844396
Term 04 87-29

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name: Ernest Itzisey — Signature: Ernest Itzisey — Date: Month 7 Day 22 Year 87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Scott Gariss — Signature: Scott Gariss — Date: Month 7 Day 22 Year 87

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: DAVE ROCKWELL — Signature: Dave Rockwell — Date: Month 7 Day 24 Year 87

ORIGINAL-RETURN TO GENERATOR

EPA Form 8700-22 (3-84)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2000-0404. Expires 7-31-86

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NM0890010515 Manifest Document No. 144393

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
PAN AM
HEAVY EQUIPMENT LOS ALAMOS NM 87544

4. Generator's Phone (505) 667-5276

5. Transporter 1 Company Name
SAFETY KLEEN CORP

6. US EPA ID Number
NMD000804294

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address
SAFETY-KLEEN CORP.
2720 GINAND NE
ALBQ NM 87107

10. US EPA ID Number
NMD000804294

A. State Manifest Document Number

B. State Generator's ID

C. State Transporter's ID

D. Transporter's Phone 5058842277

E. State Transporter's ID

F. Transporter's Phone

G. State Facility's ID

H. Facility's Phone 505 884 2277

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)

	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	X	Waste, Petroleum Naphtha, Combustible Liquid, UN 1255 D001	1	DM	115	Lbs	0001
b.		Waste, Compound, Cleaning, Liquid, Corrosive Material, NA 1760 F002-F004		DM			
c.		Waste, Perchloroethylene, ORM-A, UN 1897 F002		DM			
d.							

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
7-008-01-1068-3
844393
Terr 04 WR 8729

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name: J DANIEL R ARCHULETA
Signature: J. Daniel Archuleta
Date: Month 7 Day 22 Year 87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Scott Gariss
Signature: Scott Gariss
Date: Month 7 Day 22 Year 87

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: DAVE ROCKWELL
Signature: Dave Rockwell
Date: Month 7 Day 24 Year 87

ORIGINAL-RETURN TO GENERATOR

EPA Form 8700-22 (3-84)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2000-0404 Expires 7-31-86

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NM0890010515 Manifest Document No. 144392

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
PAN AM
TRANSPORTATION Dept Los Alamos N.M 87544

4. Generator's Phone ( )

5. Transporter 1 Company Name
Safety Kleen Corp

6. US EPA ID Number
NMD000304294

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address
SAFETY-KLEEN CORP.
2720 Girard NE
Albq NM 87107

10. US EPA ID Number
NMD000304294

A. State Manifest Document Number

B. State Generator's ID

C. State Transporter's ID

D. Transporter's Phone 505 854 2277

E. State Transporter's ID

F. Transporter's Phone

G. State Facility's ID

H. Facility's Phone 505-884-2277

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)

	HM	11. US DOT Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.		Waste, Petroleum Naphtha, Combustible Liquid, UN 1255 D001	2	DM	235	lbs	0001
b.		Waste, Compound, Cleaning, Liquid, Corrosive Material, NA 1760 F002-F004		DM			
c.		Waste, Perchloroethylene, ORM-A, UN 1897 F002		DM			
d.							

J. Additional Descriptions for Materials Listed Above
For Recycle

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
7-008-01-1057-9
844392
Term Oil WK 8729

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name: Ed Tafa Jr. Signature: Ed Tafa Date: Month 7 Day 2 Year 7

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Scott Garriss Signature: Scott Garriss Date: Month 7 Day 2 Year 87

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: Signature: Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: DAVE ROCKWELL Signature: Dave Rockwell Date: Month 7 Day 24 Year 87

ORIGINAL-RETURN TO GENERATOR

EPA Form 8700-22 (3-84)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST

Form Approved. OMB No. 2000-0404. Expires 7-31-86

1. Generator's US EPA ID No. NM0890010515
Manifest Document No. 44395
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
PAN AM
Tool Room Los Alamos NM 87544
4. Generator's Phone (505) 667-5276

A. State Manifest Document Number
B. State Generator's ID

5. Transporter 1 Company Name
Safety Kleen Corp
6. US EPA ID Number NMD000804294
7. Transporter 2 Company Name
8. US EPA ID Number

C. State Transporter's ID
D. Transporter's Phone 505 884 2277
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
SAFETY-KLEEN CORP.
2720 Girard NE
Albq NM 87107
10. US EPA ID Number NMD000804294

G. State Facility's ID
H. Facility's Phone 505 884-2277

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)

	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste, Petroleum Naphtha, Combustible Liquid, UN 1255 D001	X	1	DM	60	P	0001
b. Waste, Compound, Cleaning, Liquid, Corrosive Material, NA 1760 F002-F004			DM			
c. Waste, Perchloroethylene, ORM-A, UN 1897 F002			DM			
d.						

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
7-008-01-1072-1
844395
Terry 8729

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name: DEZ JACQUES
Signature: [signature]
Date: Month 7 Day 22 Year 87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Scott Garriss
Signature: Scott Garriss
Date: Month 7 Day 22 Year 87

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: DAVE ROCKWELL
Signature: [signature]
Date: Month 7 Day 24 Year 87

ORIGINAL-RETURN TO GENERATOR

EPA Form 8700-22 (3-84)

E.P.A. MANIFEST RECORD

№ 70354

Generator of Waste (Must be filled by producer)

COMPANY NAME [illegible] SERVICES

PICK UP ADDRESS TH-95

*MAILING ADDRESS P.O. Box 53 Los Alamos

PHONE NO. 667-4897 ZIP CODE 87544

EPA PERMIT NO. _____ P.O. NO. _____

ORDER PLACED BY _____ DATE 8/20/89

TYPE OF PROCESS
WHICH PRODUCED WASTES _____ CODE NO. [illegible]

Description Of Waste (Must be filled in by producer)

☑ OIL [illegible] GALLONS DIESEL

☐ OTHER _____, _____ GALLONS

This waste is described to the best of my ability and was delivered to a licensed liquid waste hauler. There are no characteristic and/or listed hazardous materials and/or PCB's in this waste.

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

[illegible] HSE-8

SIGNATURE OF AUTHORIZED AGENT AND TITLE

Transporter, Storer and Treator of Waste

MILT ADAMS, INC.
dba APPROVED DRAIN OIL SERVICE
EPA Permit No. COD-060627262 / NMD 98 115 2028
5390 E. 72nd Avenue, Commerce City, CO 80022
Phone (303) 287-2807

PICKUP DATE 8/20/89 TIME 5:00

VEHICLE UNIT NO. 102

☑ OIL [illegible] GALLONS $ [illegible]

☐ OTHER DIESEL _____, _____ GALLONS $_____

THE DESCRIBED WASTE was handled by me, the treatment facility named, and was accepted.

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

[illegible]

SIGNATURE OF AUTHORIZED AGENT

WHITE-Office CANARY-Billing PINK-Acknowledgement GOLD-Generator's Copy

E.P.A. MANIFEST RECORD

№ 70353

Generator of Waste (Must be filled by producer)

COMPANY NAME LAB ALL SERVICES

PICK UP ADDRESS TA-15

*MAILING ADDRESS P.O. Box 1663 LOS ALAMOS HSE-HP

PHONE NO. 667-5477 ZIP CODE 87544

EPA PERMIT NO. _____ P.O. NO. 7-4-9411

ORDER PLACED BY _____ DATE 9/20/87

TYPE OF PROCESS

WHICH PRODUCED WASTES _____ CODE NO. 1001

Description Of Waste (Must be filled in by producer)

☐ OIL _____ GALLONS

☑ OTHER Solv , 500 GALLONS

This waste is described to the best of my ability and was delivered to a licensed liquid waste hauler. There are no characteristic and/or listed hazardous materials and/or PCB's in this waste.

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

HSE-8

SIGNATURE OF AUTHORIZED AGENT AND TITLE

Transporter, Storer and Treator of Waste P.O. # 7-4-9411

MILT ADAMS, INC.
dba APPROVED DRAIN OIL SERVICE
EPA Permit No. COD-060627262 / NMD 98 115 2028
5390 E. 72nd Avenue, Commerce City, CO 80022
Phone (303) 287-2807

PICKUP DATE 9/20/87 TIME 10:00

VEHICLE UNIT NO. 107

☐ OIL _____ GALLONS $ _____

☑ OTHER Solv 500 GALLONS $ 62.50

THE DESCRIBED WASTE was handled by me, the treatment facility named, and was accepted.

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

SIGNATURE OF AUTHORIZED AGENT

WHITE-Office CANARY-Billing PINK-Acknowledgement GOLD-Generator's Copy

[redacted] 87545

SHIPPING MANIFEST NUMBER N- 15903

[redacted] Salazar	Telephone Number (505) 667-5039	Laboratory Reference No.
[redacted] T-14 Mail Stop P274	Return Material Authorization No. LOT #N 034 01380	Consignee's Reference No.
		☐ PPD ☐ Collect
		Delivery Date Requested
		Carrier
		Pro Number
		No. of Pieces / Weight
		Kind of Packages

MID-STATES RECYCLING

5561 Milton Parkway

Rosemont, IL 60018

Reference: WMCO, P.O. No. J-76997
Hold For WMCO Representative

ALL PACKAGES AND CORRESPONDENCE MUST BE IDENTIFIED WITH LABORATORY REFERENCE NUMBER

ITEM NO.	QUANTITY	COMPLETE DESCRIPTION	P/N	TOTAL VALUE
1	60,819.7 Grams	PM-0950 Silver (Pure) Account #1843	N/A	13,688.00

Reason for Shipment: Precious Metal Recovery Program

TOTAL VALUE: $13,688.00

Attention ACT-1: Money is now due the Laboratory as a result of this transaction ☐ Yes ☐ No

WARNING: IT IS A FEDERAL OFFENSE TO VIOLATE SHIPPING REGULATIONS FOR HAZARDOUS MATERIALS, WASTES, OR SUBSTANCES.

☐ Radioactive
☐ Blasting Agent
☐ Explosives ☐A ☐B ☐C
☐ Combustible Liquid
☐ Poison ☐A ☐B
☐ Flammable Liquid
☐ Flammable Solid
☐ Oxidizer
☐ Corrosive
☐ Flammable Gas
☐ Nonflammable Gas
☐ Etiologic Agent
☐ Magnetized Material
☐ Organic Peroxide
☐ Irritant
☐ Hazardous Waste
☐ Hazardous Substance

Security Classification of This Document: _____

Security Classification of This Material: _____

ATTENTION TRAFFIC: ☐ **RUSH** - Priority shipping service required
(This will incur additional shipping and freight charges.)

☐ Loan How long?	☐ Repair ☐ Return of Loan	☐ Permanent Transfer ☐ Other:	Account Code 1843	Program Code	
Check Date	From	Group	Site	Building	Room No.	Telephone
To Be Hand Carried To Shipping						
Authorized Signature		Buyer Signature		Packed By	Date Shipped
Joe A Rayford					

Form Number 1118 (1/86)

PACKING MANIFEST

ST—2609

☆ U.S. GOVERNMENT PRINTING OFFICE 1986—671-157

Los Alamos

Los Alamos National Laboratory

Los Alamos, New Mexico 87545

This form must be typed. Reproduce a copy for your files.

SHIPPING MANIFEST NUMBER 30979

Date	5-7-87
Laboratory Reference No.	2-SGH-1712A-1
Consignee's Reference No.	
☒ PPD ☐ Collect	
Delivery Date Requested	5-13-87
Carrier	Federal P-1
Pro Number	1068141233
No. of Pieces	1
Weight	2#
Kind of Packages	Ctn

From	Telephone Number	
JOHN HERNANDEZ	(505) 667- 3613	
Group: MAT-11	Mail Stop: P274	Return Material Authorization No.: n/a

TO:

JOHNSONN MATTHEY, INC.
1481 KING ROAD
WEST CHESTER, PA. 19380

215-648-8000

ALL PACKAGES AND CORRESPONDENCE MUST BE IDENTIFIED WITH LABORATORY REFERENCE NUMBER

ITEM NO.	QUANTITY	COMPLETE DESCRIPTION	P/N	TOTAL VALUE
1.	450 GMS.	PLATINUM PURE SCRAP METAL FROM MAT-14 PM INVENTORY.	PM-750	
		Metal is supplied to seller in exchange for finished precious metal products ordered on ref. order.		

MAY 7 4 33 PM '87

Reason for Shipment: Vendor will credit LANL on ref. order for delivery of items at no cost.

TOTAL VALUE: approximately $6,500.00.

Attention ACT-1: Money is now due the Laboratory as a result of this transaction ☐ Yes ☐ No

WARNING: IT IS A FEDERAL OFFENSE TO VIOLATE SHIPPING REGULATIONS FOR HAZARDOUS MATERIALS, WASTES, OR SUBSTANCES.

☐ Radioactive
☐ Blasting Agent
☐ Explosives ☐A ☐B ☐C
☐ Combustible Liquid
☐ Poison ☐A ☐B
☐ Flammable Liquid
☐ Flammable Solid
☐ Oxidizer
☐ Corrosive
☐ Flammable Gas
☐ Nonflammable Gas
☐ Etiologic Agent
☐ Magnetized Material
☐ Organic Peroxide
☐ Irritant
☐ Hazardous Waste
☐ Hazardous Substance

Security Classification of This Document: n/a

Security Classification of This Material:

ATTENTION TRAFFIC: ☒ **RUSH** - Priority shipping service required
(This will incur additional shipping and freight charges.)

☐ Loan How long?	☐ Repair ☐ Return of Loan	☒ Permanent Transfer ☐ Other:	Account Code: 1804	Program Code: --

Pick-up Date	From	Group	Site	Building	Room No.	Telephone
ASAP	TONY FRESQUEZ	MAT-14		SM30	PM	7-4171

Authorized Signature	Buyer Signature	Packed By	Date Shipped
	John Hernandez	LMS	5/11/87

Form Number 1118 (1/86)

Los Alamos

Los Alamos National Laboratory

Los Alamos, New Mexico 87545

This form must be typed. Reproduce a copy for your files.

SHIPPING MANIFEST NUMBER No 22520

Date	2-13-87
Laboratory Reference No.	2-SGH-1712A-1
Consignee's Reference No.	
☒ PPD ☐ Collect	
Delivery Date Requested	2-20-87
Carrier	Federal P-I
No. of Pieces	1
Weight	[illegible]
Kind of Packages	

From	Telephone Number	
JOHN HERNANDEZ	(505) 667-3613	
Group: MAT-11	Mail Stop: P274	Return Material Authorization No.: N/A

TO:

JOHNSON MATTHEY, INC.
ATTN: JOHN STRAUSS
1401 KING ROAD
WEST CHESTER, PA. 19380

(215) 648-8000

ALL PACKAGES AND CORRESPONDENCE MUST BE IDENTIFIED WITH LABORATORY REFERENCE NUMBER

ITEM NO.	QUANTITY	COMPLETE DESCRIPTION	P/N	TOTAL VALUE
1 & 2	448.50	GRAMS, PLATINUM, "SCRAP" 99.9% MINIMUM PURITY, TAKEN FROM STOCK	?	$1,547.33

Reason for Shipment: SUPPLYING VENDOR WITH "SCRAP" IN EXCHANGE FOR DELIVERY OF PLATINUM CRUCIBLES AS ORDERED [illegible] TOTAL VALUE: ~ 1,547.33

Attention ACT-1: Money is now due the Laboratory as a result of this transaction ☐ Yes ☐ No

WARNING: IT IS A FEDERAL OFFENSE TO VIOLATE SHIPPING REGULATIONS FOR HAZARDOUS MATERIALS, WASTES, OR SUBSTANCES.

☐ Radioactive
☐ Blasting Agent
☐ Explosives ☐A ☐B ☐C
☐ Combustible Liquid
☐ Poison ☐A ☐B
☐ Flammable Liquid
☐ Flammable Solid
☐ Oxidizer
☐ Corrosive
☐ Flammable Gas
☐ Nonflammable Gas
☐ Etiologic Agent
☐ Magnetized Material
☐ Organic Peroxide
☐ Irritant
☐ Hazardous Waste
☐ Hazardous Substance

Security Classification of This Document: X
Security Classification of This Material: X

ATTENTION TRAFFIC: ☐ **RUSH** - Priority shipping service required
(This will incur additional shipping and freight charges.)

☐ Loan How long?	☐ Repair ☐ Return of Loan	☐ Permanent Transfer ☐ Other:	Account Code	Program Code

Pick-up Date	From	Group	Site	Building	Room No.	Telephone
2-13-87	TONY BURGESS	MT-11	[illegible]	1004	[illegible]	[illegible]

Authorized Signature	Buyer Signature	Packed By	Date Shipped
	[illegible]		

Form Number 1118 (1-86)

Los Alamos

Los Alamos National Laboratory

Los Alamos, New Mexico 87545

This form must be typed. Reprodu[redacted]our files.

SHIPPING MANIFEST NUMBER NO. 16029

Date	11-21-86
Laboratory Reference No.	2-SCE-0191A-1
Consignee's Reference No.	
☒ PPD ☐ Collect	
Delivery Date Requested	
Carrier	Federal P-1
Pro Number	1067961683
No. of Pieces	1
Weight	3#
Kind of Packages	Ctn

From		Telephone Number
BARBARA HOLDER		(505) 667- 5028
Group	Mail Stop	Return Material Authorization No.
MAT-11	P274	

TO:

JOHNSON MATTHEY
ATTN: DOCK #3
1401 KING ROAD
WEST CHESTER, PA 19380

ALL PACKAGES AND CORRESPONDENCE MUST BE IDENTIFIED WITH LABORATORY REFERENCE NUMBER

ITEM NO.	QUANTITY	COMPLETE DESCRIPTION	P/N	TOTAL VALUE
1.	704 GMS	(PM-950) PLATINUM, PURE, SCRAP NOTE: APPROX 704 GRAMS OF PLATINUM REQUIRED FOR PO 2-SCE-0191A-1 (671 GRAMS REQUIRED FOR FABRICATION AND 33 GRAMS REQUIRED FOR POSSIBLE REFINING LOSS)		

Reason for Shipment: FOR FABRICATION OF FOIL COVERED BY PO 2-SCE-0191A-1

TOTAL VALUE: $10,000.00

Attention ACT-1: Money is now due the Laboratory as a result of this transaction ☐ Yes ☐ No

WARNING: IT IS A FEDERAL OFFENSE TO VIOLATE SHIPPING REGULATIONS FOR HAZARDOUS MATERIALS, WASTES, OR SUBSTANCES.

☐ Radioactive
☐ Blasting Agent
☐ Explosives ☐A ☐B ☐C
☐ Combustible Liquid
☐ Poison ☐A ☐B
☐ Flammable Liquid
☐ Flammable Solid
☐ Oxidizer
☐ Corrosive
☐ Flammable Gas
☐ Nonflammable Gas
☐ Etiologic Agent
☐ Magnetized Material
☐ Organic Peroxide
☐ Irritant
☐ Hazardous Waste
☐ Hazardous Substance

Security Classification of This Document: _____

Security Classification of This Material: _____

ATTENTION TRAFFIC: ☐ **RUSH** - Priority shipping service required
(This will incur additional shipping and freight charges.)

☐ Loan How long?	☐ Repair ☐ Return of Loan	☒ Permanent Transfer ☐ Other:	Account Code	Program Code

Pick-up Date	From	Group	Site	Building	Room No.	Telephone
ASAP	TONY FRESQUEZ	MAT-14	LA-3	30	111	1171

Authorized Signature	Buyer Signature	Packed By	Date Shipped
			12/3

Form Number 1113 (1/86)

Los Alamos

Los Alamos National Laboratory

Los Alamos, New Mexico 87545

This form must be typed. Reproduce a copy for your files.

SHIPPING MANIFEST NUMBER NO 22510

Date	1-28-87
Laboratory Reference No.	2-SGH--1519A-1
Consignee's Reference No.	N/A
☐ PPD ☐ Collect	
Delivery Date Requested	2-2-87
Carrier	FEDERAL EXPRESS P-1
Pro Number	#3312755305
No. of Pieces	1
Weight	2#
Kind of Packages	

From	Telephone Number	Return Material Authorization No.
JOHN HERNANDEZ	(505) 667- 3613	N/A
Group: MAT-11	Mail Stop: P274	

TO:

JOHNSON MATTHEY, INC.
1401 KING ROAD
WEST CHESTER, PA. 19380

(215) 648-3000

ALL PACKAGES AND CORRESPONDENCE MUST BE IDENTIFIED WITH LABORATORY REFERENCE NUMBER

ITEM NO.	QUANTITY	COMPLETE DESCRIPTION	P/N	TOTAL VALUE
1.	710 GRAMS	GOLD METAL SCRAP		~$410.00/TZ

Reason for Shipment: TO REFINE & FABRICATE INTO GOLD SHEETS PER P.O. INSTRUCTIONS

TOTAL VALUE: ~$4,300.00

Attention ACT-1: Money is now due the Laboratory as a result of this transaction ☐ Yes ☒ No

WARNING: IT IS A FEDERAL OFFENSE TO VIOLATE SHIPPING REGULATIONS FOR HAZARDOUS MATERIALS, WASTES, OR SUBSTANCES.

☐ Radioactive
☐ Blasting Agent
☐ Explosives ☐A ☐B ☐C
☐ Combustible Liquid
☐ Poison ☐A ☐B
☐ Flammable Liquid
☐ Flammable Solid
☐ Oxidizer
☐ Corrosive
☐ Flammable Gas
☐ Nonflammable Gas
☐ Etiologic Agent
☐ Magnetized Material
☐ Organic Peroxide
☐ Irritant
☐ Hazardous Waste
☐ Hazardous Substance

Security Classification of This Document: _____

Security Classification of This Material: _____

ATTENTION TRAFFIC: ☐ **RUSH** - Priority shipping service required
(This will incur additional shipping and freight charges.)

☐ Loan How long?	☐ Repair	☐ Permanent Transfer	Account Code: 1802	Program Code: -
	☐ Return of Loan	☒ Other:		

Pick-up Date	From	Group	Site	Building	Room No.	Telephone
2-2-87	TONY FRESQUEZ	MAT-14	3	SM-30	STOCK	7-4171

Authorized Signature	Buyer Signature	Packed By	Date Shipped
	[signature]		

Form Number 1118 (1/86)

Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

This form must be typed. Reproduce a copy for your files.

SHIPPING MANIFEST NUMBER NO 15988

Date	10-21-86
Laboratory Reference No.	2-SGB-Tb214-1
Consignee's Reference No.	n/a
☒ PPD ☐ Collect	
Delivery Date Requested	10-27-86
Carrier	Federal P-1, SSS
Pro Number	1067959933
No. of Pieces	1
Weight	
Kind of Packages	Pkg

From		Telephone Number
JOHN HERNANDEZ		(505) 667-[illegible]
Group	Mail Stop	Return Material Authorization No.
MAT-11	P274	not required

TO:

ENGELHARD INDUSTRIES, INC.
ATTN: RON TOMASSO
700 BLAIR ROAD
CARTERET, NEW JERSEY 07008

ALL PACKAGES AND CORRESPONDENCE MUST BE IDENTIFIED WITH LABORATORY REFERENCE NUMBER

ITEM NO.	QUANTITY	COMPLETE DESCRIPTION	P/N	TOTAL VALUE
1.	20.5 TZ	PLATINUM SCRAP, 99.9% PURE	N/A	$
2.	37.0 TZ	GOLD SCRAP, 99.9% PURE	N/A	$15,614.00

Reason for Shipment

TOTAL VALUE:

Attention ACT-1: Money is now due the Laboratory as a result of this transaction ☐ Yes ☐ No

WARNING: IT IS A FEDERAL OFFENSE TO VIOLATE SHIPPING REGULATIONS FOR HAZARDOUS MATERIALS, WASTES, OR SUBSTANCES.

☐ Radioactive
☐ Blasting Agent
☐ Explosives ☐A ☐B ☐C
☐ Combustible Liquid
☐ Poison ☐A ☐B
☐ Flammable Liquid
☐ Flammable Solid
☐ Oxidizer
☐ Corrosive
☐ Flammable Gas
☐ Nonflammable Gas
☐ Etiologic Agent
☐ Magnetized Material
☐ Organic Peroxide
☐ Irritant
☐ Hazardous Waste
☐ Hazardous Substance

Security Classification of This Document: _____
Security Classification of This Material: UNC

ATTENTION TRAFFIC: ☐ **RUSH** - Priority shipping service required
(This will incur additional shipping and freight charges.)

☐ Loan How long?	☐ Repair	☐ Permanent Transfer	Account Code	Program Code
	☐ Return of Loan	☐ Other:		

Pick-up Date	From	Group	Site	Building	Room No	Telephone

Authorized Signature: _____ Agent Signature: _____ Packed By: JAB Date Shipped: _____

Form Number 1115 (1-82)

This form must be typed. Reproduce a copy for your files.

SHIPPING MANIFEST NUMBER No 1475

Date: April 14, 1987

Laboratory Reference No: WMCO J-76996

Consignee's Reference No.:

☐ PPD XXX Collect

Delivery Date Requested:

Carrier: FEDERAL EXPRESS

Pro Number: 0452-0741-2

No. of Pieces: | Weight:

Kind of Packages:

Fresquez	Telephone Number (505) 667- 7-4171
Mail Stop MAT-14 P274	Return Material Authorization No. N/A

TO:

Johnson Matthey, Inc.
Attn: Bob Beyer
2001 Nolte Drive
West Deptford, N. J. 08066

Federal Express 0452-0741-2
collect

WMCO J76996 Lot # N04401445
Hold for WMCO Rep.

ALL PACKAGES AND CORRESPONDENCE MUST BE IDENTIFIED WITH LABORATORY REFERENCE NUMBER

ITEM NO	QUANTITY	COMPLETE DESCRIPTION	P/N	TOTAL VALUE
1.	9331 GM	PLATINUM, SCRAP PURE Contact John Madoffori FTS 774-6460 to inform of ETA when shipment is released.	PM-0750	175,236.00

Reason for Shipment

TOTAL VALUE: $175,236.00

Attention ACT-1: Money is now due the Laboratory as a result of this transaction ☐ Yes ☐ No

WARNING: IT IS A FEDERAL OFFENSE TO VIOLATE SHIPPING REGULATIONS FOR HAZARDOUS MATERIALS, WASTES, OR SUBSTANCES.

☐ Radioactive
☐ Blasting Agent
☐ Explosives ☐A ☐B ☐C
☐ Combustible Liquid
☐ Poison ☐A ☐B
☐ Flammable Liquid
☐ Flammable Solid
☐ Oxidizer
☐ Corrosive
☐ Flammable Gas
☐ Nonflammable Gas
☐ Etiologic Agent
☐ Magnetized Material
☐ Organic Peroxide
☐ Irritant
☐ Hazardous Waste
☐ Hazardous Substance

Security Classification of This Document: _____

Security Classification of This Material: _____

ATTENTION TRAFFIC: ☐ **RUSH** - Priority shipping service required
(This will incur additional shipping and freight charges.)

Loan How long?	☐ Repair ☐ Return of Loan	☐ Permanent Transfer ☐ Other:	Account Code 1844	Program Code

Pick-up Date	From	Group	Site	Building	Room No.	Telephone
	Tony Fresquez	MAT-14	TA-3	SM-30	Precious Metal	7-4171

Authorized Signature	Buyer Signature	Packed By	Date Shipped
[signature]			

Form Number 115 (1-86) PACKING MANIFEST ST--2609

Los Alamos

Los Alamos National Laboratory

Los Alamos, New Mexico 87545

This form must be typed. Reproduce a copy for your files.

SHIPPING MANIFEST NUMBER № 1427

Date	
Laboratory Reference No.	
Consignee's Reference No.	Lot#N042 01390
☐ PPD ☐ Collect	
Delivery Date Requested	
Carrier	
Pro Number	
No. of Pieces	Weight
Kind of Packages	

From MAT-2 Joe A. Roybal	Telephone Number (505) 667-8509
Group MAT-2 / Mail Stop P 274	Return Material Authorization No. Lot# N 042 01390

TO: Mid-States Recycling, Inc.
~~55Milton Parkway~~
5561 Milton Parkway
Rosemont, Il 60018

Ref:WMCO P. O. J-76997
Hold for WHCO Rep.

ALL PACKAGES AND CORRESPONDENCE MUST BE IDENTIFIED WITH LABORATORY REFERENCE NUMBER

ITEM NO	QUANTITY	COMPLETE DESCRIPTION	P/N	TOTAL VALUE
1	1870.4grs	Gold scrap Lot # N 042 01390	N/A	$19,000 approx

Reason for Shipment: DOE Precious Metal Recovery Program

TOTAL VALUE: $19,000 approx

Attention ACT-1: Money is now due the Laboratory as a result of this transaction ☐ Yes ☐ No

WARNING: IT IS A FEDERAL OFFENSE TO VIOLATE SHIPPING REGULATIONS FOR HAZARDOUS MATERIALS, WASTES, OR SUBSTANCES.

☐ Radioactive
☐ Blasting Agent
☐ Explosives ☐A ☐B ☐C
☐ Combustible Liquid
☐ Poison ☐A ☐B
☐ Flammable Liquid
☐ Flammable Solid
☐ Oxidizer
☐ Corrosive
☐ Flammable Gas
☐ Nonflammable Gas
☐ Etiologic Agent
☐ Magnetized Material
☐ Organic Peroxide
☐ Irritant
☐ Hazardous Waste
☐ Hazardous Substance

Security Classification of This Document: _____

Security Classification of This Material: _____

ATTENTION TRAFFIC: ☐ **RUSH** - Priority shipping service
(This will incur additional shipping and freight charges.)

☐ Loan How long?	☐ Repair ☐ Return of Loan	☒ Permanent Transfer ☐ Other	Account Code	Program Code

Pick-up Date	From	Group	Site	Building	Room No.

Authorized Signature	Buyer Signature	Packed By

Form Number 1112 (1/86)

PACKING MANIFEST

mos
National Laboratory
mos, New Mexico 87545

This form must be typed. Reproduce a copy for your files.

SHIPPING MANIFEST NUMBER № 1426

Date	12-5-86
Laboratory Reference No.	
Consignee's Reference No.	
☒ PPD ☐ Collect	
Delivery Date Requested	
Carrier	
Pro Number	
No. of Pieces	Weight
Kind of Packages	

From: Joe A. Roybal		Telephone Number: (505) 667- 8509
Group: MAT-2	Mail Stop: P-274	Return Material Authorization No.: Lot# N 042 01391

TO:
Mid-States Recycling, Inc.
5561 Milton Parkway
Rosemont, Il 60018

Ref: WMCO P.O. J-76997
Hold for WMCO Rep.

ALL PACKAGES AND CORRESPONDENCE MUST BE IDENTIFIED WITH LABORATORY REFERENCE NUMBER

ITEM NO.	QUANTITY	COMPLETE DESCRIPTION	P/N	TOTAL VALUE
1	2526.6 grs	Gold, W/Alloys Lot # N 042 01391		$26,500 approx.

Reason for Shipment: DOE Precious Metal Recovery Program

TOTAL VALUE: $26,500 approx.

Attention ACT-1: Money is now due the Laboratory as a result of this transaction ☐ Yes ☐ No

WARNING: IT IS A FEDERAL OFFENSE TO VIOLATE SHIPPING REGULATIONS FOR HAZARDOUS MATERIALS, WASTES, OR SUBSTANCES.

☐ Radioactive
☐ Blasting Agent
☐ Explosives ☐A ☐B ☐C
☐ Combustible Liquid
☐ Poison ☐A ☐B
☐ Flammable Liquid
☐ Flammable Solid
☐ Oxidizer
☐ Corrosive
☐ Flammable Gas
☐ Nonflammable Gas
☐ Etiologic Agent
☐ Magnetized Material
☐ Organic Peroxide
☐ Irritant
☐ Hazardous Waste
☐ Hazardous Substance

Security Classification of This Document: _____
Security Classification of This Material: _____

ATTENTION TRAFFIC: ☐ **RUSH** - Priority shipping service required
(This will incur additional shipping and freight charges.)

☐ Loan How long?	☐ Repair ☐ Return of Loan	☒ Permanent Transfer ☐ Other:	Account Code: 6214	Program Code

Pick-up Date	From	Group	Site	Building	Room No	Telephone
Handcarried	to SM-30					

Authorized Signature	Buyer Signature	Packed By	Date Shipped
Joe A. Roybal			

Form Number [illegible] 86)

LOS
National Laboratory
New Mexico 87545

This form must be typed. Reproduce a copy for your files.

SHIPPING MANIFEST NUMBER No 8202

Date	1/26/87
Laboratory Reference No.	
Consignee's Reference No.	J77012
☐ PPD ☐ Collect	☒
Delivery Date Requested	
Carrier	NW Transport
Pro Number	
No. of Pieces	1
Weight	495
Kind of Packages	Drum

Paul Balo	Telephone Number (505) 667-1008
Mail Stop E549	Return Material Authorization No.

TO: ~~PGP Industries INC. 13429Landra Bvd. Santa Fe Springs, CA. 96965 ATT: B N Hernandez Hold for WMCO REP~~

PGP Industries, Incorporated
Attn: B. N. Hernandez
13429 Alondra Boulevard
Santa Fe Springs, CA 90670

RE; WMCO P.O. J-77012
Hold for WMCO rep.

ALL PACKAGES AND CORRESPONDENCE MUST BE IDENTIFIED WITH LABORATORY REFERENCE NUMBER

ITEM NO	QUANTITY	COMPLETE DESCRIPTION	P/N	TOTAL VALUE
1	1 drum	SPENT GOLD STRIPPER CYANIDE SOUUTION FURTHER ANALYSIS ATTACHED Lot number n 040 01392 Alkaline Liquid NOS, Corrosive ~~liquid~~ Material, NA1719, 50 gal in DOT 17c		5,000.

Reason for Shipment: FOR PRECIOUS METAL RECOVERY

TOTAL VALUE:

Attention ACT-1: Money is now due the Laboratory as a result of this transaction ☐ Yes ☐ No

WARNING: IT IS A FEDERAL OFFENSE TO VIOLATE SHIPPING REGULATIONS FOR HAZARDOUS MATERIALS, WASTES, OR SUBSTANCES.

☐ Radioactive
☐ Blasting Agent
☐ Explosives ☐A ☐B ☐C
☐ Combustible Liquid
☐ Poison ☐A ☒B
☐ Flammable Liquid
☐ Flammable Solid
☐ Oxidizer
☐ Corrosive
☒ Flammable Gas
☐ Nonflammable Gas
☐ Etiologic Agent
☐ Magnetized Material
☐ Organic Peroxide
☐ Irritant
☒ Hazardous Waste
☐ Hazardous Substance

Security Classification of This Document: _____
Security Classification of This Material: _____

ATTENTION TRAFFIC: ☐ **RUSH** - Priority shipping service required
(This will incur additional shipping and freight charges.)

☐ Loan How long?	☐ Repair ☐ Return of Loan	☒ Permanent Transfer ☐ Other:	Account Code 8107*	Program Code

Pick-up Date	From	Group	Site	Building	Room No.	Telephone
		MST 7	TA 3	66	P 100	7-1007

Authorized Signature	Buyer Signature	Packed By	Date Shipped
Hawa Duchane		Group RH	1-29-87

Form Number 1118 (1/86)

ST-2603

MAT-14 SHIPPING

D. Pando for file

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

This form must be typed. Reproduce a copy for your files.

SHIPPING MANIFEST NUMBER No 5282

Date	1/26/87
Laboratory Reference No.	
Consignee's Reference No.	J77012
☒ PPD ☐ Collect	
Delivery Date Requested	
Carrier	NW Transport
Pro Number	
No. of Pieces	1
Weight	495
Kind of Packages	Drum

From	Telephone Number
Paul Balo	(505) 667-1000
Group: MST-7 / Mail Stop: E549	Return Material Authorization No.

TO: ~~PGP Industries INC. 13429Landra Bvd. Santa Fe Springs, CA. 90670 ATTN D.H. Hernandez Hold for WMCO REP~~

PGP Industries, Incorporated
Attn: D. H. Hernandez
13429 Alondra Boulevard
Santa Fe Springs, CA 90670

RE: WMCO P.O. J-77012
Hold for WMCO rep.

ALL PACKAGES AND CORRESPONDENCE MUST BE IDENTIFIED WITH LABORATORY REFERENCE NUMBER

ITEM NO.	QUANTITY	COMPLETE DESCRIPTION	P/N	TOTAL VALUE
1	1 drum	SPENT GOLD STRIPPER CYANIDE SOLUTION FURTHER ANALYSIS ATTACHED Lot number n 042 01392 Alkaline Liquid NOS, Corrosive ~~liquid~~ Material, NA1719, 50 gal in DOT 17c		5,000.

Reason for Shipment: FOR PRECIOUS METAL RECOVERY

TOTAL VALUE:

Attention ACT-1: Money is now due the Laboratory as a result of this transaction ☐ Yes ☐ No

WARNING: IT IS A FEDERAL OFFENSE TO VIOLATE SHIPPING REGULATIONS FOR HAZARDOUS MATERIALS, WASTES, OR SUBSTANCES.

☐ Radioactive
☐ Blasting Agent
☐ Explosives ☐A ☐B ☐C
☐ Combustible Liquid
☐ Poison ☐A ☒B
☐ Flammable Liquid
☐ Flammable Solid
☐ Oxidizer
☐ Corrosive
☒ Flammable Gas
☐ Nonflammable Gas
☐ Etiologic Agent
☐ Magnetized Material
☐ Organic Peroxide
☐ Irritant
☐ Hazardous Waste
☐ Hazardous Substance

Security Classification of This Document: _____
Security Classification of This Material: _____

ATTENTION TRAFFIC: ☐ **RUSH** - Priority shipping service required
(This will incur additional shipping and freight charges.)

☐ Loan How long?	☐ Repair ☐ Return of Loan	☒ Permanent Transfer ☐ Other:	Account Code: 9107*	Program Code:

Pick-up Date	From	Group	Site	Building	Room No.	Telephone
		MST 7	TA 3	66	P 100	7-1000

Authorized Signature	Buyer Signature	Packed By	Date Shipped
Paul Balo		Group RH	1-29-87

MAT-14 SHIPPING

Los Alamos

Los Alamos National Laboratory

Los Alamos, New Mexico 87545

This form must be typed. Reproduce a copy for your files.

SHIPPING MANIFEST NUMBER № 1485

Date	August 26, 1987
Laboratory Reference No.	
Consignee's Reference No.	
X PPD ☐ Collect	
Delivery Date Requested	
Carrier	
Pro Number	
No. of Pieces / Weight	
Kind of Packages	

m: Joe A. Roybal	Telephone Number: (505) 667-8509	
Group: MAT-2 / Mail Stop: P274	Return Material Authorization No.	

TO:

Teledyne Isotopes
Attn: L. Casabona
50 Van Buren Avenue
Westwood, NJ 07675

ALL PACKAGES AND CORRESPONDENCE MUST BE IDENTIFIED WITH LABORATORY REFERENCE NUMBER

ITEM NO.	QUANTITY	COMPLETE DESCRIPTION	P/N	TOTAL VALUE
		METAL LOT NUMBER		
1	8.9	Pt/Ir, T 099 01461		
2	14.0	Pt/Rh, T 099 01462		
3	0.3	Au , T 042 01463		
4	1244.4	Pt/Ir, T 099 01464		
5	4078.8	Pt , T 044 01465		
6	4190.3	Pt , T 044 01466		
7	330.8	Pt , T 044 01467		
8	199.5	Pt/Rh, T 099 01468		
9	43.4	Pt/Rh, T 099 01469		

Reason for Shipment: Precious Matel Recovery Program

TOTAL VALUE: EST. 161,447.00

Attention ACT-1: Money is now due the Laboratory as a result of this transaction ☐ Yes ☐ No

WARNING: IT IS A FEDERAL OFFENSE TO VIOLATE SHIPPING REGULATIONS FOR HAZARDOUS MATERIALS, WASTES, OR SUBSTANCES.

☐ Radioactive
☐ Blasting Agent
☐ Explosives ☐A ☐B ☐C
☐ Combustible Liquid
☐ Poison ☐A ☐B
☐ Flammable Liquid
☐ Flammable Solid
☐ Oxidizer
☐ Corrosive
☐ Flammable Gas
☐ Nonflammable Gas
☐ Etiologic Agent
☐ Magnetized Material
☐ Organic Peroxide
☐ Irritant
☐ Hazardous Waste
☐ Hazardous Substance

Security Classification of This Document: _____

Security Classification of This Material: _____

ATTENTION TRAFFIC: ☐ **RUSH** - Priority shipping service required
(This will incur additional shipping and freight charges.)

Loan / How long?	☐ Repair / ☐ Return of Loan	☒ Permanent Transfer / ☐ Other:	Account Code: 5701	Program Code

Pick-up Date	From	Group	Site	Building	Room No.	Telephone
	WILL HAND CARRY TO SM-30					

Authorized Signature	Buyer Signature	Packed By	Date Shipped
Joe A. Roybal			

Form Number 1118 (1/86)

PACKING MANIFEST

ST-250

This form must be typed. Reproduce a copy for your files.

SHIPPING MANIFEST NUMBER № 19898

Date	
Laboratory Reference No.	~~2 SGH 98HL 2~~
Consignee's Reference No.	J-77013
XX ☐ PPD ☐ Collect	
Delivery Date Requested	
Carrier	
Pro Number	
No. of Pieces	Weight
Kind of Packages	

A. Roybal	Telephone Number (505) 667- 8509 FTS-843-8509	
MAT-14	Mail Stop P-274	Return Material Authorization No.

TO: Handy & Harmon
47 Frank Mossberg Drive
Attleboro, MA XX)
02703

ALL PACKAGES AND CORRESPONDENCE MUST BE IDENTIFIED WITH LABORATORY REFERENCE NUMBER

ITEM NO.	QUANTITY	COMPLETE DESCRIPTION	P/N	TOTAL VALUE
1	4,733.1 GRAMS	GOLD SCRAP, PURE ACCOUNT CODE	PM-0450 1842-0	64,370.16
		Re: M WMCO P.O. J-77013		
		HOLD FOR WMCO REP.		
				$64,370.16

Reason for Shipment: PRECIOUS METAL RETURN

TOTAL VALUE: $XXXXXXXX

Attention ACT-1: Money is now due the Laboratory as a result of this transaction ☐ Yes ☐ No

WARNING: IT IS A FEDERAL OFFENSE TO VIOLATE SHIPPING REGULATIONS FOR HAZARDOUS MATERIALS, WASTES, OR SUBSTANCES.

☐ Radioactive
☐ Blasting Agent
☐ Explosives ☐A ☐B ☐C
☐ Combustible Liquid
☐ Poison ☐A ☐B
☐ Flammable Liquid
☐ Flammable Solid
☐ Oxidizer
☐ Corrosive
☐ Flammable Gas
☐ Nonflammable Gas
☐ Etiologic Agent
☐ Magnetized Material
☐ Organic Peroxide
☐ Irritant
☐ Hazardous Waste
☐ Hazardous Substance

Security Classification of This Document: _____
Security Classification of This Material: _____

ATTENTION TRAFFIC: ☐ **RUSH** - Priority shipping service required
(This will incur additional shipping and freight charges.)

☐ Loan How long?	☐ Repair ☐ Return of Loan	XX ☐ Permanent Transfer ☐ Other:	Account Code ¢@ 6214	Program Code

Pick-up Date	From	Group	Site	Building	Room No.	Telephone
Handcarried to	SM-30					

Authorized Signature	Buyer Signature	Packed By	Date Shipped
A. Roybal			

Form Number 1118 (1/86) ST-2609

PACKING MANIFEST

Los Alamos, New Mexico 87545

SHIPPING MANIFEST NUMBER № 19910

09-16-86
Laboratory Reference No.

From	Telephone Number
Salazar, Henry	(505) 667- 5039

Group	Mail Stop	Return Material Authorization No.
AT-14	P274	N/A

Consignee's Reference No.

☐ PPD ☐ Collect

Delivery Date Requested

Carrier

Pro Number

No. of Pieces | Weight

Kind of Packages

TO: Johnson Matthey, Inc.
Chemical Division
2001 Nolte Drive
West Deptford, N.J. 08066

Attn: Mr. Bob Beyer

Reference: WMCO, P.O. No. J-76996
Hold for WMCO Representative

ALL PACKAGES AND CORRESPONDENCE MUST BE IDENTIFIED WITH LABORATORY REFERENCE NUMBER

ITEM NO.	QUANTITY	COMPLETE DESCRIPTION	P/N	TOTAL VALUE
1	45,499.6 Grams	Platinum and Iridium scrap PM-0751 w/MP 17,827.4 Grams Pt w/mp PM-0752 MP Zeiss 27,672.2 Grams Pt various Account #1844	N/A	585,147.00

Reason for Shipment: Precious Metal Recovery Program

TOTAL VALUE: $585,147.00

Attention ACT-1: Money is now due the Laboratory as a result of this transaction ☐ Yes ☐ No

WARNING: IT IS A FEDERAL OFFENSE TO VIOLATE SHIPPING REGULATIONS FOR HAZARDOUS MATERIALS, WASTES, OR SUBSTANCES.

☐ Radioactive
☐ Blasting Agent
☐ Explosives ☐A ☐B ☐C
☐ Combustible Liquid
☐ Poison ☐A ☐B
☐ Flammable Liquid
☐ Flammable Solid
☐ Oxidizer
☐ Corrosive
☐ Flammable Gas
☐ Nonflammable Gas
☐ Etiologic Agent
☐ Magnetized Material
☐ Organic Peroxide
☐ Irritant
☐ Hazardous Waste
☐ Hazardous Substance

Security Classification of This Document: _____
Security Classification of This Material: _____

ATTENTION TRAFFIC: ☐ **RUSH** - Priority shipping service required
(This will incur additional shipping and freight charges.)

☐ Loan	☐ Repair	☐ Permanent Transfer	Account Code	Program Code
How long?	☐ Return of Loan	☐ Other:	1844	

Pick-up Date	From	Group	Site	Building	Room No.	Telephone

Authorized Signature	Buyer Signature	Packed By	Date Shipped
Jose A Rafael			

Form Number 1118 (1/86) ST—2609

PACKING MANIFEST

☆ U.S. GOVERNMENT PRINTING OFFICE: 1986—671-157

COPY NO. 1 SHIPPING OFFICE FILE

FORM 796 (11/81)

SHIPPING REQUEST

SR 04321D

(Entire Form To Be Completed By Author Except Where Indicated)

DATE 3/11/85

Consignee TELEDYNE ISOTOPES Attn: L. Casobona

Street Address 50 Van Buren Avenue

City/State Westwood, New Jersey Zip Code 07675

ITEM	QUAN.	DESCRIPTION	PROPERTY NO. OR STOCK NO.	UNIT COST	TOTAL COST
1	1 Lot	SHIPPING CONTAINER CONSISTING OF 33,015.6 GRAMS OF VARIOUS TYPES OF METAL (AU, PT, PT/RH, PT/IR & PT/RH/IR) IN THE FORM OF SHAVINGS, DISCS, BOATS, CUPS, TUBES AND SCRAP.			
		NOTE: FOR IDENTIFICATION PURPOSES, SHOW THE ASSIGNED LOT NUMBER ON THE PRINCIPAL SURFACE OF EACH INNERMOST CONTAINER AND ON ALL DOCUMENTS.			
		MAT-14 TO NOTIFY JOHN MADOFFORI, VIA TELEPHONE, FTS 774-6460, OF THE BILL OF LADING NUMBER AND DATE OF SHIPMENT.			
		SEE ATTACHMENT FOR LOT NUMBER ASSIGNMENTS.			
REASON FOR SHIPMENT		IN ACCORDANCE WITH SHIPPING AUTHORIZATION FROM NLO - SEE ATTACHMENT		TOTAL	

WARNING: It is a Federal offense to knowingly or unknowingly violate hazardous materials shipping regulations.

U. OF C. LABORATORY P.O. No.

CONSIGNEE'S P.O. #

PREPAID COLLECT FOLLOW UP

LOAN XX HOW LONG RETURN OF LOAN

REPAIR OTHER PERMANENT TRANSFER XX

(2R Containers)

(Contents Only)

COMPLETE ALL OF THE FOLLOWING, IF ANSWER IS YES, DESCRIBE ABOVE

RADIOACTIVITY YES (THRU CONTAMINATION)

EXPLOSIVES A NO B NO C NO

COMBUSTIBLE LIQUID NO

POISON A NO B NO

FLAMMABLE LIQUID NO

FLAMMABLE SOLID NO

OXIDIZER NO

CORROSIVE LIQUID NO

COMPRESSED GAS NO

FLAMMABLE NO

COMPRESSED GASES – NON-FLAMMABLE NO

ETIOLOGICAL AGENTS NO

MAGNETIZED MATERIAL NO

IRRITATING MATERIAL NO

ORGANIC PEROXIDE NO

SECURITY CLASSIFICATION OF MATERIAL NONE

SECURITY CLASSIFICATION OF THIS SR NONE

HSE-DO WILL DELIVER

PICK UP ABOVE MATERIAL FROM: PHONE

PERSON GROUP OR STOCKROOM

SITE BLDG. ROOM NO.

PICK UP DATE TIME DELIVERY DATE REQUIRED

CREDIT

GROUP NAME	ACCOUNT CODE
HSE-1	5701

VALUE $350,000 (Est.)

PROGRAM NO. W-571

APPROVED

AUTHORIZED GROUP SIGNATURE

PROPERTY REPRESENTATIVE

PROPERTY MANAGEMENT GROUP MAT - 2

PROCUREMENT

INFORMATION BELOW TO BE COMPLETED BY GROUP MAT - 4 ONLY

S.M. NO.	DATE	NO. PKGS.	WT.	DIMENSIONS	PACKED BY

COPY NO. 4 AUTHOR REQUEST

SHIPPING REQUEST

SR 29778

DATE 3/18/85

Consignee: PGP INDUSTRIES, INC. ATTN: D. M. HERNANDEZ FOR: NLO Rep.

Street Address: 13429 Alondra Blvd.

City/State: Santa Fe Springs, CA Zip Code: 90670

ITEM	QUAN.	DESCRIPTION	PROPERTY NO. OR STOCK NO.	UNIT COST	TOTAL COST
1	1 Lot	SHIPPING CONTAINER CONSISTING OF ~~5,475.7~~ 6,466.3 GRAMS OF PLATINUM SCRAP.			
		SHIP FEDERAL EXPRESS - HOLD FOR NLO REP.			
		NOTE: FOR IDENTIFICATION PURPOSES, SHOW THE ASSIGNED LOT "NUMBER (N 044 01159) ON THE PRINCIPAL SURFACE OF EACH INNERMOST CONTAINER AND ON ALL DOCUMENTS.			
		MAT-14 TO NOTIFY JOHN MADOFFORI, VIA TELEPONE, FTS 774-6460, OF THE BILL OF LADING NUMBER AND DATE OF SHIPMENT.			

REASON FOR SHIPMENT: MEMO FROM JOHN MADOFFORI, NLO, INC. TO BENNIE DURAN, MAT-2

TOTAL

WARNING: It is a Federal offense to knowingly violate hazardous materials shipping regulations.

U. OF C. LABORATORY P.O. No.

CONSIGNEE'S P.O. #

XX FOLLOW UP

LOAN HOW LONG RETURN OF LOAN

REPAIR OTHER PERMANENT TRANSFER XX

COMPLETE ALL OF THE FOLLOWING (IF ANSWER IS YES, DESCRIBE ABOVE)

RADIOACTIVITY None

EXPLOSIVES No No No

COMBUSTIBLE LIQUID No

COMPRESSED GASES

NON-FLAMMABLE No

EXTINGUISHING AGENTS No

No No No No No No No No No No No No No None None

PHONE 7-4171

PERSON Bill Ruston

GROUP OR STOCKROOM MAT-14

SITE BA-3 BLDG. SM 30 ROOM NO. P/M Stockroom

PICK UP DATE 3/19/85 TIME

DELIVERY DATE REQUIRED 3/20/85

VALUE $62,000 (Est.)

MAT-14 6214

AUTHORIZED GROUP SIGNATURE

PROPERTY REPRESENTATIVE

PROPERTY MANAGEMENT GROUP MAT - 2

PROCUREMENT

S.M. NO.	DATE	NO. PKGS.	WT.	DIMENSIONS	PACKED BY

FORM 53R

SHIPPING MEMO NO. SM 97069

Date 12-29-83

SM 97069

FROM: UNIVERSITY OF CALIFORNIA
LOS ALAMOS SCIENTIFIC LABORATORY
Box 990 LAB SP-2
Los Alamos, New Mexico 87545

Consignor's Order No. None

Consignee's Order No. ELO P.O. J-43763

Shipping Request No. 903760

Ship by [illegible] ABF
CARRIER

Group Name	Account Code	Program No.	Stockroom
H-4 George LittleJohn	3794	6571	

TO: Johnson Matthey Inc
Attn: Mr. Bob Bayer
Piney Hollow Road
Winslow, NJ 08096

Money Waybill ☐ Prepaid ☒ Collect ☐

Waybill No.

Evaluation [illegible] No. of Pkgs. [illegible]

Total Wt. 6630

ITEM NO.	QUANTITY	DESCRIPTION	P/N	UNIT COST	TOTAL COST
1	11,160 ea	Dosimetry film badges with approximately 4,640.0 grams of GOLD SEE ATTACHED MEMORANDUMS			

219/83

Reason for shipping [illegible]

Authorized by [illegible] Carlos Jaramillo Packed by Date Shipped 12-29-83

COPY NO. 6 — PROPERTY GROUP SP-2

FORM 53R

SHIPPING MEMO NO. SM [illegible] Date [illegible]

ROM: **UNIVERSITY OF CALIFORNIA**
LOS ALAMOS SCIENTIFIC LABORATORY
Box 990 LAB-SP-2
Los Alamos, New Mexico 87545

Consignor's Order No. _____

Consignee's Order No. _____

Shipping Request No. [illegible]

Ship by Government Truck
CARRIER

CREDIT

Group Name	Account Code	Program No.	Stockroom
SP-4	6204		

TO:
W.A.Johnson,Jr
Sandia Laboratoreis
Rec Section,Bldg [illegible]
Kirtland Air Force Base East
Albuquerque, New Mexico 87115
Attn: F.T.Leahy, F & [illegible] Div

Money Waybill ☐ Prepaid ☐ Collect ☐

Waybill No. _____

Evaluation _____ No. of Pkgs. [illegible]

Total Wt. [illegible]

ITEM NO.	QUANTITY	DESCRIPTION	P/N	UNIT COST	TOTAL COST
1.	100 lbs	Film, Assorted, Exposed Unclassified			

Reason for shipping _____

Authorized by _____ Packed by _____ Date Shipped [illegible]

FORM 53R

SHIPPING MEMO NO. SM 7223-18

Date [illegible]

FROM: UNIVERSITY OF CALIFORNIA
LOS ALAMOS SCIENTIFIC LABORATORY
Box 990 LAB-SP-2
Los Alamos, New Mexico 87545

Consignor's Order No.

Consignee's Order No.

Shipping Request No. [illegible]

Ship by Government Truck
CARRIER

Group Name	Account Code	Program No.	Stockroom
SP-4	6274		

TO:
W.A.Johnson, Jr
Sandia Laboratories
Rec Section, Bldg P-94
Kirtland Air Force Base East
Albuquerque, New Mexico 87115
Attn: R.K.Leany R &D Div

Money Waybill ☐ Prepaid ☐ Collect ☐

Waybill No.

Evaluation _____ No. of Pkgs. [illegible]

Total Wt. [illegible]

ITEM NO.	QUANTITY	DESCRIPTION	P/N	UNIT COST	TOTAL COST
1.	250 lbs	Film, Assorted, Exposed NOT CLASSIFIED			

Reason for shipping [illegible]

Authorized by [illegible] Packed by [illegible] Date Shipped [illegible]

FORM 53R

SHIPPING MEMO NO. SM 86791

Date 10/7/81

SM-36791

FROM: UNIVERSITY OF CALIFORNIA
LOS ALAMOS SCIENTIFIC LABORATORY
Box 990 LAB SP-2
Los Alamos, New Mexico 87545

Consignor's Order No.

Consignee's Order No.

Shipping Request No. 79982 C

Ship by Government Truck
CARRIER

CREDIT

Group Name	Account Code	Program No.	Stockroom
MAT-4	6204		

TO:
Joe H. Apodaca
Sandia Laboratories
Rec Section, Bldg 894
1515 Eubank SE
Albuquerque, New Mexico 87115
Attn: Patty McPherqason

Money Waybill ☐ Prepaid ☐ Collect ☐

Waybill No.

Evaluation _____ No. of Pkgs. 2 boxes

Total Wt. 1090 lbs

ITEM NO.	QUANTITY	DESCRIPTION	P/N	UNIT COST	TOTAL COST
1.	760 lbs	FILM, ASSORTED, EXPOSED			
		MATERIAL CLASSIFIED SECRET RD			

Reason for shipping For Silver Recovery. Permanent Transfer

Authorized by Pabich Packed by JB Date Shipped 10/7/81

FORM 53F

SUPPLEMENT #1

SHIPPING MEMO NO. SM 86791-1

Date 10/29/81

FROM: UNIVERSITY OF CALIFORNIA
LOS ALAMOS SCIENTIFIC LABORATORY
Box 990 LAB-SP-2
Los Alamos, New Mexico 87545

Consignor's Order No. none

Consignee's Order No.

Shipping Request No. 79982 C

Ship by Government Truck
CARRIER

CREDIT

Group Name	Account Code	Program No.	Stockroom
MAT-4	6204		

TO: Joe H. Apodaca
Sandia Laboratories
1515 Eubank SE
Rec Section, Bldg 394
Albuquerque, New Mexico 87115
Attn: Patty McPearson

Money Waybill ☐ Prepaid ☐ Collect ☐

Waybill No.

Evaluation

No. of Pkgs. 2 boxes

Total Wt. 1300

ITEM NO.	QUANTITY	DESCRIPTION	P/N	UNIT COST	TOTAL COST
1.	970 lbs	Film, Assorted, Exposed			
		MATERIAL CLASSIFIED SECRET RD			

Reason for shipping For silver recovery. Permanent Transfer

Authorized by JB Packed by wnm Date Shipped 10/29/81

JB

Chris - Let's place in your file for documentation purposes. Thanks GD

LOS ALAMOS NEWSBULLETIN

Vol. 5 No. 37, September 27, 1985

Los Alamos National Laboratory

Film disposal

Sandia National Laboratories will accept and process all non-radioactive classified and unclassified scrap film (including microfiche). Sandia no longer accepts photographs, Polaroid film, vellums, viewgraphs or any other photo paper because of the negligible amount of silver recovered. Classified glass slides and Polaroid film should be handled and destroyed as prescribed in DOE Appendix 2105, Part II.

To prepare classified film for disposal, seal the film in a carton or container weighing no more than 60 pounds and secure it with tape signifying the classification. Mark each carton with identifying numbers, including the disposing group's designation (i.e., IS-9).

Place unclassified waste film in a carton or container, seal with tape and mark "Unclassified." Before sending film to MAT-14, remove any steel or hard metal rollers.

Improperly marked packages will not be picked up. To ensure that there is no mistaking classified and unclassified packages, a receipt must be prepared for classified material, and signed by the Materials Management division representative.

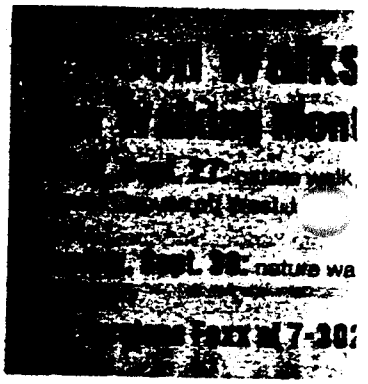
Call MAT-14 at 7-4171, to request pickup.

Equipment available

CTR-5 has a Ricoh copie[illegible] number FT4060, serial number 5930718468, under a lease/purch agreement that is no longer need after Sept. 30. The purchase price $7,242.80, less $2,477.80 accrued credit; lease price is $168 per mor Call Donna Schneider at 7-8592 b Sept. 30. First come, first served.

New LA-series form

A revision of the LA-series rep submittal form is now available f stock (595R12, ST2643). Because stock has been destroyed and bec the form is a major revision, IS-1 commends that you order a pad o new forms to submit reports in th series.



LABNET sch

	Monday Sept. 30	Tuesday Oct. 1
8-9 a.m. and 2-3 p.m.	Introduction to MASS (5/7)	Introductio MASS (6/
9-10 a.m. and 1-2 p.m.	Expert Systems (6/6)	XNET (1/4)
10-10:30 a.m. and 4-4:30 p.m. 10:30-11 a.m. and 4:30-5 p.m.	Parallel Processing Seminar (6/10) ↓	Parallel Proce Seminar (7/ ↓
11 a.m.-Noon and 3-4 p.m	Introduction to FRAMIS (1/6)	Introductior FRAMIS (2,
	Monday Oct. 7	**Tuesday Oct. 8**
8-9 a.m. and	FORTRAN 77	FORTRAN

SHIPPING REQUEST

SM-93854

SR 82938C

DATE JULY 29, 1982

Consignee PROFESSIONAL X-RAY SERVICE

Street Address 7320 FOURTH STREET, NW

City/State ALBUQUERQUE, NEW MEXICO Zip Code 87107

ITEM	QUAN.	DESCRIPTION	PROPERTY NO. OR STOCK NO.	UNIT COST	TOTAL COST
1	2 EA	CARTRIDGES, SILVER HYPO (S/N A9295,A9296) (WX-3)			
2	2 EA	CARTRIDGES, SILVER HYPO (S/N DA22851, C19738)(WX-3)			
3	27 GALS	SILVER HYPO SOLUTION (H-2)			
		THIS IS A CONFIRMING SHIPPER SINCE PROFESSIONAL SERVICE PERSONNEL PICKED UP CONTAINERS FOR TRANSPORATION AT THEIR OWN EXPENSE.			
		(REFERENCE: RECEIPT #1438, #1437, #1436)			
REASON FOR SHIPMENT				TOTAL	

U. OF C. LASL P.O. #

CONSIGNEE'S P.O. #

FOLLOW UP

LOAN HOW LONG RETURN OF LOAN

REPAIR OTHER PERMANENT TRANSFER

(CONFIRMATION ONLY)

PHONE

PERSON GROUP OR STOCKROOM

SITE BLDG. ROOM NO.

PICK UP DATE TIME DELIVERY DATE REQUIRED

VALUE $350.00 (EST.)

NAT-2 6202

DESCRIBE ABOVE

RADIOACTIVITY NO

EXPLOSIVES NO NO NO

COMBUSTIBLE NO

NO NO

AUTHORIZED GROUP SIGNATURE

PROPERTY REPRESENTATIVE

PROP. GROUP SP-2

PROCUREMENT

S.M. NO.	DATE	NO. PKGS.	WT.	DIMENSIONS	PACKED BY

SHIPPING REQUEST

SM-89521

SR 82928C

DATE 2/6/82

(Entire Form To Be Completed By Initiator, Except Where Indicated)

Consignee PROFESSIONAL X-RAY SERVICE

Street Address 134 RIO RANCHO INDUSTRIAL PARK

City/State RIO RANCHO, NEW MEXICO Zip Code 87124

ITEM	QUAN.	DESCRIPTION	PROPERTY NO. OR STOCK NO.	UNIT COST	TOTAL COST
1	30 GALS	SILVER HYPO-SOLUTION (H-2)			
		THIS IS A CONFIRMING SHIPPER SINCE PROFESSIONAL SERVICE PERSONNEL PICKED UP CONTAINERS FOR TRANSPORTATION AT THEIR OWN EXPENSE.			
		(REFERENCE: RECEIPT #1026)			
REASON FOR SHIPMENT		FOR RECLAMATION PER P.O. 1-LR-1-0290-P		TOTAL	

WARNING: [illegible]

COMPLETE ALL OF THE FOLLOWING IF ANSWER IS YES DESCRIBE ABOVE

RADIOACTIVITY NONE

EXPLOSIVES NO NO NO

COMBUSTIBLE LIQUID NO

COMPRESSED GASES

FLAMMABLE NO

ETIOLOGICAL AGENTS NO

NO NO NO

NO NO

NO NO

NO

NO

NO NONE

NO NONE

U. OF C. LASL P.O. #

CONSIGNEE'S P.O. #

PREPAID COLLECT FOLLOW UP

LOAN HOW LONG RETURN OF LOAN

REPAIR OTHER PERMANENT TRANSFER

(CONFIRMATION ONLY)

PHONE

PERSON GROUP OR STOCKROOM

SITE BLDG. ROOM NO.

PICK UP DATE TIME DELIVERY DATE REQUIRED

VALUE 9150.00 (EST.)

MAT-2 0202

AUTHORIZED GROUP SIGNATURE

PROPERTY REPRESENTATIVE

PROP. GROUP SP-2

PROCUREMENT

S.M. NO.	DATE	NO. PKGS.	WT.	DIMENSIONS	PACKED BY

SHIPPING REQUEST

SR 04309D

DATE 9/26/03

(Entire Form To Be Completed By Author, Except Where Indicated)

Consignee: PROFESSIONAL X-RAY SERVICES

Street Address: 590 DIERS ROAD, N.W.

City/State: ALBUQUERQUE, NEW MEXICO Zip Code: 87114

ITEM	QUAN.	DESCRIPTION	PROPERTY NO. OR STOCK NO.	UNIT COST	TOTAL COST
1	15 GAL	SILVER HYPO SOLUTION FIXER (HSE-2)			
2	10 GAL	SILVER HYPO SOLUTION FIXER (M-4)			
3	20 GAL	SILVER HYPO SOLUTION FIXER (M-3)			
		NOTE: THIS IS A CONFIRMATION SHIPPER			
		(REF: RECEIPT #0287, #0288, #0289)			
				TOTAL	

REASON FOR SHIPMENT: FOR RECLAMATION PER P.O. 2-LR3-C7942-1

WARNING: It is a Federal offense to knowingly or unknowingly violate hazardous materials shipping regulations.

COMPLETE ALL OF THE FOLLOWING, IF ANSWER IS YES, DESCRIBE ABOVE

RADIOACTIVITY NONE

EXPLOSIVES A NO B NO C NO

COMBUSTIBLE LIQUID NO

COMPRESSED GASES – NON-FLAMMABLE NO

ETIOLOGICAL AGENTS NO

MAGNETIZED MATERIAL NO

U. OF C. LABORATORY P.O. No.

CONSIGNEE'S P.O. #

PREPAID ____ COLLECT ____ FOLLOW UP ____

LOAN ____ HOW LONG ____ RETURN OF LOAN ____

REPAIR ____ OTHER ____ PERMANENT TRANSFER ____

(CONFIRMATION ONLY)

PHONE

PERSON GROUP OR STOCKROOM

SITE ____ BLDG. ____ ROOM NO.

PICK UP DATE ____ TIME ____ DELIVERY DATE REQUIRED

CREDIT VALUE $200 (EST.)

AUTHORIZED GROUP SIGNATURE

PROPERTY REPRESENTATIVE

PROPERTY MANAGEMENT GROUP MAT-2

PROCUREMENT

S.M. NO.	DATE	NO. PKGS.	WT.	DIMENSIONS	PACKED BY

SHIPPING REQUEST

SM

SR 043037

(Entire Form To Be Completed By Author, Except Where Indicated)

DATE 8/12/93

onsignee PROFESSIONAL X-RAY SYSTEMS

reet Address 250 DIERS ROAD, N.W.

ty/State ALBUQUERQUE, NEW MEXICO Zip Code 87114

ITEM	QUAN.	DESCRIPTION	PROPERTY NO. OR STOCK NO.	UNIT COST	TOTAL COST
1	1 EA	CARTRIDGE, SILVER HYPO (SN DA33090) (M-4)			
2	5 EA	CARTRIDGES, (SN DA19139, DA30189, DA30192) (IS-7)			
3	12 GAL	SILVER HYPO SOLUTION FIXER (MST-3)			
4	55 GAL	SILVER HYPO SOLUTION FIXER (HSE-2)			
5	1 EA	CARTRIDGE, SILVER HYPO (SN DA32351) (M-4)			
		NOTE: THIS IS A CONFIRMATION SHIPPER			
		(REF: RECEIPT #0277, #0278, #0279, #0280, #0281)			
ASON FOR IPMENT		FOR RECLAMATION PER P.O. 2-LR3-C7942-1		TOTAL	

ARNING: It is a Federal offense to knowingly or unknowingly violate hazardous materials shipping regulations.

OF C. LABORATORY P.O. No.

ONSIGNEE'S P.O. #

PAID COLLECT FOLLOW UP

OAN HOW LONG RETURN OF LOAN

EPAIR OTHER PERMANENT TRANSFER

COMPLETE ALL OF THE FOLLOWING. IF ANSWER IS YES, DESCRIBE ABOVE

RADIOACTIVITY NONE

EXPLOSIVES A NO B NO C NO

COMBUSTIBLE LIQUID NO

COMPRESSED GASES – NON-FLAMMABLE NO

ETIOLOGICAL AGENTS NO

NO NO

PHONE

ERSON GROUP OR STOCKROOM

TE BLDG. ROOM NO.

CK UP ATE TIME DELIVERY DATE REQUIRED

VALUE

AUTHORIZED GROUP SIGNATURE

PROPERTY REPRESENTATIVE

PROPERTY MANAGEMENT GROUP MAT - 2

PROCUREMENT

S.M. NO.	DATE	NO. PKGS.	WT.	DIMENSIONS	PACKED BY

SHIPPING REQUEST

SR 043015

(Return Form To Be Completed By Author, Except Where Indicated)

DATE 6/6/83

ee PROFESSIONAL X-RAY SERVICE, INC.

Street Address 850 DIERS ROAD, N.W.

City/State ALBUQUERQUE, NEW MEXICO Zip Code 87114

ITEM	QUAN.	DESCRIPTION	PROPERTY NO. OR STOCK NO.	UNIT COST	TOTAL COST
1	2 EA	CARTRIDGES, SILVER HYPO (SN A9294, B22196) WX-3			
2	10 GAL	SILVER HYPO SOLUTION HSE-2			
3	2 EA	BUCKETS IS-7			
		NOTE: THIS IS A CONFIRMATION SHIPPER			
		(REF: RECEIPT #0137, #0138, #0139)			
				TOTAL	

REASON FOR SHIPMENT FOR RECLAMATION PER P.O. 1-LR2-C7903-1

WARNING: It is a Federal offense to knowingly or unknowingly violate hazardous materials shipping regulations.

U. OF C. LABORATORY P.O. No.

CONSIGNEE'S P.O. #

PREPAID COLLECT FOLLOW UP

LOAN HOW LONG RETURN OF LOAN

REPAIR OTHER PERMANENT TRANSFER

COMPLETE ALL OF THE FOLLOWING, IF ANSWER IS YES, DESCRIBE ABOVE

RADIOACTIVITY NONE

EXPLOSIVES A NO B NO C NO

COMBUSTIBLE LIQUID NO

POISON A NO B NO

COMPRESSED GASES – NON-FLAMMABLE NO

ETIOLOGICAL AGENTS NO

MAGNETIZED MATERIAL NO

PHONE

PERSON

GROUP OR STOCKROOM

SITE BLDG. ROOM NO.

PICK UP DATE TIME

DELIVERY DATE REQUIRED

VALUE

AUTHORIZED GROUP SIGNATURE

PROPERTY REPRESENTATIVE

PROPERTY MANAGEMENT GROUP MAT - 2

PROCUREMENT

S.M. NO.	DATE	NO. PKGS.	WT.	DIMENSIONS	PACKED BY

SHIPPING REQUEST

SR 04312

(Entire Form To Be Completed By Author, Except Where Indicated)

DATE 11/16/83

Consignee [illegible]

Street Address [illegible]

City/State Albuquerque, New Mexico Zip Code 87114

ITEM	QUAN.	DESCRIPTION	PROPERTY NO. OR STOCK NO.	UNIT COST	TOTAL COST
1	35 Gal	Silver Hypo Solution Fixer (HSZ-2)			
2	45 Gal	Silver Hypo Solution Fixer (H-4)			
3	2 Ea	Cartridges (GV DA30506 & DA30616) (TS-7)			
		NOTE: This is a Confirmation Shipper			
		(Ref: Receipt #0410, #0411, #0412)			

REASON FOR SHIPMENT For reclamation per P.O. 2-LR3-C7942-1 TOTAL

WARNING: It is a Federal offense to knowingly or unknowingly violate hazardous materials shipping regulations.

U. OF C. LABORATORY P.O. No.

CONSIGNEE'S P.O. #

PREPAID COLLECT FOLLOW UP

LOAN HOW LONG RETURN OF LOAN

REPAIR OTHER PERMANENT TRANSFER

COMPLETE ALL OF THE FOLLOWING. IF ANSWER IS YES, DESCRIBE ABOVE

RADIOACTIVITY None

EXPLOSIVES A no B no C no

COMBUSTIBLE LIQUID no

COMPRESSED GASES --

NON--FLAMMABLE

ETIOLOGICAL AGENTS

PHONE

PERSON

GROUP OR STOCKROOM

SITE BLDG. ROOM NO.

PICK UP DATE TIME

DELIVERY DATE REQUIRED

VALUE

AUTHORIZED GROUP SIGNATURE

PROPERTY REPRESENTATIVE

PROPERTY MANAGEMENT GROUP MAT - 2

PROCUREMENT

S.M. NO.	DATE	NO. PKGS.	WT.	DIMENSIONS	PACKED BY

COPY NO. 4 AUTHOR REQUEST

SHIPPING REQUEST

SR 18053

(Entire Form To Be Completed By Author, Except Where Indicated)

DATE 2/14/84

for Address)

Telephone:

Address

State Albuquerque, New Mexico

Zip Code 87114

ITEM	QUAN.	DESCRIPTION	PROPERTY NO. OR STOCK NO.	UNIT COST	TOTAL COST
1	1 ea	Cartridge, S/N DA37222 (IS-7)			
2	3 ea	Cartridges, S/N DA30605, B22200, DA30607 (IS-7)			
3	15 Gal	Silver Nyro Solution Fixer (IS-3)			
		NOTE: This is a confirmation Shipper			
		(Reference: Receipt #0424 & #0225)			
		REQUESTED ROUTING			
		SPECIAL INSTRUCTIONS			
REASON FOR SHIPMENT		For reclamation per Purchase Order [illegible]		TOTAL	

WARNING: It is a Federal offense to knowingly or unknowingly violate hazardous materials shipping regulations!

IF NOT SURE, PUT A "?"

COMPLETE ALL OF THE FOLLOWING. IF ANSWER IS YES, DESCRIBE ABOVE

RADIOACTIVITY None

EXPLOSIVES A No B No C No

COMBUSTIBLE LIQUID No

BLASTING AGENT No

COMPRESSED GASES — NON-FLAMMABLE No

ETIOLOGICAL AGENTS No

IF SHIPMENT IS COLLECT, PLEASE CALL VENDOR FOR SHIPPING INSTRUCTIONS.

U. OF C. LABORATORY P.O. No.

CONSIGNEE'S P.O. #

FOLLOW UP

LOAN HOW LONG RETURN OF LOAN

REPAIR OTHER PERMANENT TRANSFER

COMPLETE THE FOLLOWING:

PHONE

PERSON

GROUP OR STOCKROOM

SITE BLDG. ROOM NO.

PICK UP DATE TIME

DELIVERY DATE REQUIRED

VALUE

AUTHORIZED GROUP SIGNATURE

PROPERTY REPRESENTATIVE

PROPERTY MANAGEMENT GROUP MAT - 2

PROCUREMENT

S.M. NO.	DATE	NO. PKGS.	WT.	DIMENSIONS	PACKED BY

COPY NO. 4 AUTHOR REQUEST

SHIPPING REQUEST

SR 18055

(P.O. Box for Address) (Entire Form To Be Completed by Author, Except Where Indicated)

DATE 4/2/84

Consignee Professional X-Ray Services Telephone: [illegible]

Street Address 150 Pino Road, NW

City / State Albuquerque, New Mexico Zip Code 87114

ITEM	QUAN.	DESCRIPTION	PROPERTY NO. OR STOCK NO.	UNIT COST	TOTAL COST
1	5 gal	Silver Hypo Solution Fixer (M-4)			
2	45 gal	Silver Hypo Solution Fixer (m-4)			
		NOTE: This is a confirmation Shipper			
		(Reference: Receipt #0428 & #0429)			
		REQUESTED ROUTING			

SPECIAL INSTRUCTIONS

REASON FOR SHIPMENT For reclamation per Purchase Order 2 LR3-C7042-1 TOTAL

WARNING: It is a Federal offense to knowingly or unknowingly violate hazardous materials shipping regulations.

IF SHIPMENT IS COLLECT, PLEASE CALL VENDOR FOR SHIPPING INSTRUCTIONS.

U. OF C. LABORATORY P.O. No. _____

CONSIGNEE'S P.O. # _____

[illegible] FOLLOW UP _____

LOAN _____ HOW LONG _____ RETURN OF LOAN _____

REPAIR _____ OTHER _____ PERMANENT TRANSFER _____

IF NOT SURE, PUT A "?"

COMPLETE ALL OF THE FOLLOWING. IF ANWER IS YES, DESCRIBE ABOVE

RADIOACTIVITY None

EXPLOSIVES A No B NO C NO

COMBUSTIBLE LIQUID No

EXTINGUISHING AGENT No

COMPRESSED GASES – NON-FLAMMABLE No

ETIOLOGICAL AGENTS No

COMPLETE THE FOLLOWING:

PERSON _____ PHONE _____ GROUP OR STOCKROOM _____

SITE _____ BLDG. _____ ROOM NO. _____

PICK UP DATE _____ TIME _____ DELIVERY DATE REQUIRED _____

VALUE _____

AUTHORIZED GROUP SIGNATURE _____

PROPERTY REPRESENTATIVE _____

PROPERTY MANAGEMENT GROUP MAT - 2 _____

PROCUREMENT _____

S.M. NO.	DATE	NO. PKGS.	WT.	DIMENSIONS	PACKED BY

SHIPPING REQUEST

SR 04316D

(Entire Form To Be Completed By Author, Except Where Indicated)

DATE 6/21/84

X-RAY SALES & SERVICE

Street Address [illegible]

City/State Albuquerque, New Mexico Zip Code 87105

ITEM	QUAN.	DESCRIPTION	PROPERTY NO. OR STOCK NO.	UNIT COST	TOTAL COST
1	45 Gal	Silver Hypo Solution Fixer (M-4)			
2	1 ea	Cartridge (SN 04-35477) (M-7)			
		NOTE: This is a confirmation Shipper			
		(Reference: Receipt #0440 & #0441)			
REASON FOR SHIPMENT		Reclamation purposes, per Purchase Order 2-LR4-24518-1		TOTAL	

WARNING: It is a Federal offense to knowingly or unknowingly violate hazardous materials shipping regulations.

U. OF C. LABORATORY P.O. No.

CONSIGNEE'S P.O. #

PREPAID COLLECT FOLLOW UP

LOAN HOW LONG RETURN OF LOAN

REPAIR OTHER PERMANENT TRANSFER

COMPLETE ALL OF THE FOLLOWING. IF ANSWER IS YES, DESCRIBE ABOVE

RADIOACTIVITY None

EXPLOSIVES A No B No C No

COMBUSTIBLE LIQUID No

COMPRESSED GASES - NON-FLAMMABLE No

ETIOLOGICAL AGENTS No

POISON A No B No

MAGNETIZED MATERIAL No

PHONE

PERSON

GROUP OR STOCKROOM

SITE BLDG. ROOM NO.

PICK UP DATE TIME

DELIVERY DATE REQUIRED

ACCOUNT CODE

VALUE

AUTHORIZED GROUP SIGNATURE

PROPERTY REPRESENTATIVE

PROPERTY MANAGEMENT GROUP MAT-2

PROCUREMENT

S.M. NO.	DATE	NO. PKGS.	WT.	DIMENSIONS	PACKED BY

SHIPPING REQUEST

SR 18056

(Address) (Entire Form To Be Completed By Author, Except Where Indicated)

DATE 6/12/84

Professional X-Ray Services

Telephone: 898-2222

Street Address 130 Diers Road, NE

City / State Albuquerque, New Mexico

Zip Code 87114

ITEM	QUAN.	DESCRIPTION	PROPERTY NO. OR STOCK NO.	UNIT COST	TOTAL COST
1	2 ea	CARTRIDGES, (SN 37221 & 37213) (IS-7)			
2	1 ea	CARTRIDGE, (SN A11733) (HX-3)			
3	10 gal	Silver Hypo Solution Fixer (M-4)			
		NOTE: This is a confirmation Shipper			
		(Reference: Receipt #0434, #0435 & #0436)			
		REQUESTED ROUTING			
		SPECIAL INSTRUCTIONS			
REASON FOR SHIPMENT		Reclamation purposes, per Purchase Order # LR3-C7942-1		TOTAL	

WARNING: It is a Federal offense to knowingly or unknowingly violate hazardous materials shipping regulations.

IF SHIPMENT IS COLLECT, PLEASE CALL VENDOR FOR SHIPPING INSTRUCTIONS.

U. OF C. LABORATORY P.O. No.

CONSIGNEE'S P.O. #

PREPAID COLLECT FOLLOW UP

LOAN HOW LONG RETURN OF LOAN

REPAIR OTHER PERMANENT TRANSFER

IF NOT SURE, PUT A "?"

COMPLETE ALL OF THE FOLLOWING. IF ANSWER IS YES DESCRIBE ABOVE

RADIOACTIVITY None

EXPLOSIVES A No B No C No

COMBUSTIBLE LIQUID No

BLASTING AGENT No

POISON No

COMPRESSED GASES – NON-FLAMMABLE No

BIOLOGICAL AGENTS No

COMPLETE THE FOLLOWING:

PHONE

PERSON (AUTHORIZATION NEEDED)

GROUP OR STOCKROOM

SITE BLDG. ROOM NO.

PICK UP DATE TIME

DELIVERY DATE REQUIRED

VALUE

MAY-2 None

AUTHORIZED GROUP SIGNATURE

PROPERTY REPRESENTATIVE

PROPERTY MANAGEMENT GROUP MAT - 2

PROCUREMENT

S.M. NO.	DATE	NO. PKGS.	WT.	DIMENSIONS	PACKED BY

SHIPPING REQUEST

SR 04322

(Entire Form To Be Completed By Author, Except Where Indicated)

DATE 3/25/85

Consignee X-RAY SALES & SERVICE

Street Address 1641 Isleta, SW

City/State Albuquerque, New Mexico Zip Code 87105

ITEM	QUAN.	DESCRIPTION	PROPERTY NO. OR STOCK NO.	UNIT COST	TOTAL COST
1	33 gal	SILVER HYPO-SOLUTION FIXER (MAT-4)			
2	17 gal	SILVER HYPO-SOLUTION FIXER (MAT-5)			
		NOTE: This is a confirmation Shipper			
		(Reference: Receipt #0871 & #0872)			
REASON FOR SHIPMENT		Reclamation purposes, per Purchase Order 2 LR3-C7942-1		TOTAL	

WARNING: It is a Federal offense to knowingly or unknowingly violate hazardous materials shipping regulations.

COMPLETE ALL OF THE FOLLOWING, IF ANSWER IS YES, DESCRIBE ABOVE

RADIOACTIVITY No

EXPLOSIVES A No B No C No

COMBUSTIBLE LIQUID No

POISON A No B No

COMPRESSED GASES – NON-FLAMMABLE No

ETIOLOGICAL AGENTS No

MAGNETIZED MATERIAL No

U. OF C. LABORATORY P.O. No.

CONSIGNEE'S P.O. #

PREPAID COLLECT FOLLOW UP

LOAN HOW LONG RETURN OF LOAN

REPAIR OTHER PERMANENT TRANSFER X

(FOR INFORMATION ONLY)

PHONE

PERSON

GROUP OR STOCKROOM

SITE BLDG. ROOM NO.

PICK UP DATE TIME

DELIVERY DATE REQUIRED

VALUE

MAT-2 5000

AUTHORIZED GROUP SIGNATURE

PROPERTY REPRESENTATIVE

PROPERTY MANAGEMENT GROUP MAT - 2

PROCUREMENT

S.M. NO.	DATE	NO. PKGS.	WT.	DIMENSIONS	PACKED BY

SHIPPING MEMO NO. SM[redacted]B

Date 03/25/85

FROM: **UNIVERSITY OF CALIFORNIA** 04322D
LOS ALAMOS NATIONAL LABORATORY
Box 990 LAB MAT-2
Los Alamos, New Mexico 87545

Consignor's Order No. 2L33-C7042-1

Consignee's Order No.

Shipping Request No. 04322D

Ship by CONFIRMING
CARRIER

CREDIT

Group Name	Account Code	Program No.	Stockroom
MAT-2	6202		

TO: X-RAY SALES & SERVICE
1641 ISLETA SW

Money Waybill ☐ Prepaid ☐ Collect ☐

Waybill No.

Evaluation [illegible] No. of Pkgs.

Total Wt.

ITEM NO.	QUANTITY	DESCRIPTION	P/N	UNIT COST	TOTAL COST
1	33GAL	SILVER HYPO-SOLUTION FIXER			
2	17GAL	SILVER HYPO-SOLUTION FIXER			
	[illegible]	[illegible]	[illegible]A		

Reason for shipping [illegible]

Authorized by CHRIS JARAMILLO Packed by Date Shipped 04/15/85

SHIPPING REQUEST

SR 04317

(Shipping Form To Be Completed by Author, Except Where Indicated)

DATE

Consignee

Street Address

City/State

Zip Code

ITEM	QUAN.	DESCRIPTION	PROPERTY NO. OR STOCK NO.	UNIT COST	TOTAL COST
		NOTE: This is a confirmation Shipper			
		(reference: Receipt #0833, #0834, #0835			
				TOTAL	

REASON FOR SHIPMENT

WARNING: It is a Federal offense to knowingly or unknowingly violate hazardous materials shipping regulations.

U. OF C. LABORATORY P.O. No.

CONSIGNEE'S P.O. #

PREPAID COLLECT FOLLOW UP

LOAN HOW LONG RETURN OF LOAN

REPAIR OTHER PERMANENT TRANSFER

COMPLETE ALL OF THE FOLLOWING. IF ANSWER IS YES, DESCRIBE ABOVE

RADIOACTIVITY None

EXPLOSIVES A No B No C No

COMBUSTIBLE LIQUID No

POISON A No B No

COMPRESSED GASES – NON-FLAMMABLE No

ETIOLOGICAL AGENTS No

MAGNETIZED MATERIAL No

PHONE

PERSON

GROUP OR STOCKROOM

SITE BLDG.

ROOM NO.

PICK UP DATE TIME

DELIVERY DATE REQUIRED

VALUE

AUTHORIZED GROUP SIGNATURE

PROPERTY REPRESENTATIVE

PROPERTY MANAGEMENT GROUP MAT - 2

PROCUREMENT

S.M. NO.	DATE	NO. PKGS.	WT.	DIMENSIONS	PACKED BY

This form must be typed. Reproduce a copy for your files.

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

SHIPPING MANIFEST NUMBER № 1465

Date	January 28, 1987
Laboratory Reference No	2-LR5-U5098-1
Consignee's Reference No.	2-LR5-U5098-1
☐ PPD ☐ Collect	
Delivery Date Requested	CONFIRMATION ONLY
Carrier	
Pro Number	
No. of Pieces / Weight	
Kind of Packages	

Frank Galvez	Telephone Number (505) 667- 8349	
MAT-2	Mail Stop P274	Return Material Authorization No.

TO: X-Ray Sales and Services
P. O. Box 12521
Albuquerque, New Mexico 87195

ALL PACKAGES AND CORRESPONDENCE MUST BE IDENTIFIED WITH LABORATORY REFERENCE NUMBER

ITEM NO.	QUANTITY	COMPLETE DESCRIPTION	P/N	TOTAL VALUE
1	1 ea.	Ag RECLAIMER CARTRIDGE #B-21275 (C-1) Temporary receipt #T-1446 was not received by MAT-2, Receipt # 0975 received 12/27/87.		

Reason for Shipment: SILVER RECOVERY CONFIRMATION ONLY

TOTAL VALUE: $10.00

Attention ACT-1: Money is now due the Laboratory as a result of this transaction ☒ Yes ☐ No

WARNING: IT IS A FEDERAL OFFENSE TO VIOLATE SHIPPING REGULATIONS FOR HAZARDOUS MATERIALS, WASTES, OR SUBSTANCES.

☐ Radioactive
☐ Blasting Agent
☐ Explosives ☐A ☐B ☐C
☐ Combustible Liquid
☒ Poison ☐A ☐B
☐ Flammable Liquid
☐ Flammable Solid
☐ Oxidizer
☒ Corrosive
☐ Flammable Gas
☐ Nonflammable Gas
☐ Etiologic Agent
☐ Magnetized Material
☐ Organic Peroxide
☐ Irritant
☐ Hazardous Waste
☐ Hazardous Substance

Security Classification of This Document: UNCLASS
Security Classification of This Material: UNCLASS

ATTENTION TRAFFIC: ☐ **RUSH** - Priority shipping service required
(This will incur additional shipping and freight charges.)

☐ Loan How long?	☐ Repair ☐ Return of Loan	☐ Permanent Transfer ☐ Other:	Account Code 6202	Program Code W622

Pick-up Date	From	Group	Site	Building	Room No.	Telephone
						667-8349

Authorized Signature	Buyer Signature	Packed By	Date Shipped
Frank Galvez			9/11/86

Form Number 1118 (1-86)

PACKING MANIFEST

ST - 2609

[redacted]

This form must be typed. Reproduce a copy for your files.

SHIPPING MANIFEST NUMBER № 1472

Date	March 2, 1987
Laboratory Reference No.	2-LR5-U5098-1
Consignee's Reference No.	2-LR5-U5098-1
☐ PPD ☐ Collect	
Delivery Date Requested	CONFIRMATION ONLY
Carrier	
Pro Number	
No. of Pieces	Weight
Kind of Packages	

From		Telephone Number
Frank Galvez		(505) 667- 8349
Group: MAT-2	Mail Stop: P274	Return Material Authorization No.

TO:

X-Ray Sales and Service
P. O. Box 12521
Albuquerque, New Mexico 87195

ALL PACKAGES AND CORRESPONDENCE MUST BE IDENTIFIED WITH LABORATORY REFERENCE NUMBER

ITEM NO.	QUANTITY	COMPLETE DESCRIPTION	P/N	TOTAL VALUE
1	53 Gal.	53 gallons silver hypo solution (10 gal. MAT-4 & 43 gal. M-8) (Recpts 0977 & 0978)		

Reason for Shipment: SILVER RECOVERY CONFIRMATION ONLY

TOTAL VALUE: $10.00

Attention ACT-1: Money is now due the Laboratory as a result of this transaction ☒ Yes ☐ No

WARNING: IT IS A FEDERAL OFFENSE TO VIOLATE SHIPPING REGULATIONS FOR HAZARDOUS MATERIALS, WASTES, OR SUBSTANCES.

☐ Radioactive
☐ Blasting Agent
☐ Explosives ☐A ☐B ☐C
☐ Combustible Liquid
☒ Poison ☐A ☐B
☐ Flammable Liquid
☐ Flammable Solid
☐ Oxidizer
☒ Corrosive
☐ Flammable Gas
☐ Nonflammable Gas
☐ Etiologic Agent
☐ Magnetized Material
☐ Organic Peroxide
☐ Irritant
☐ Hazardous Waste
☐ Hazardous Substance

Security Classification of This Document: NONE
Security Classification of This Material: NONE

ATTENTION TRAFFIC: ☐ **RUSH** - Priority shipping service required
(This will incur additional shipping and freight charges.)

☐ Loan How long?	☐ Repair ☐ Return of Loan	☐ Permanent Transfer ☒ Other:	Account Code 6202		Program Code W623	
Pick-up Date 2/25/87	From	Group	Site	Building	Room No.	Telephone 8349
Authorized Signature [signature]		Buyer Signature		Packed By		Date Shipped 2/25/87

Form Number 1118 (1-86)

SHIPPING MANIFEST

ST-3403

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

This form must be typed. Reproduce a copy for your files.

SHIPPING MANIFEST NUMBER № 1466

Date	January 28, 1987
Laboratory Reference No	2-LR5-U5098-1
Consignee's Reference No	2-LR5-U5098-1
☐ PPD ☐ Collect	
Delivery Date Requested	CONFIRMATION ONLY
Carrier	
Pro Number	
No. of Pieces / Weight	
Kind of Packages	

Frank Galvez		Telephone Number (505) 667- 8349
Group: MAT-2	Mail Stop: P274	Return Material Authorization No.

TO:

X-Ray Sales and Services
P. O. Box 12521
Albuquerque, New Mexico 87195

ALL PACKAGES AND CORRESPONDENCE MUST BE IDENTIFIED WITH LABORATORY REFERENCE NUMBER

ITEM NO.	QUANTITY	COMPLETE DESCRIPTION	P/N	TOTAL VALUE
1	1 ea.	Ag RECLAIMER CARTRIDGE #DA-41130 (HSE-1) (Rcpt. 0976)		

Reason for Shipment: SILVER RECOVERY CONFIRMATION ONLY

TOTAL VALUE: $10.00

Attention ACT-1: Money is now due the Laboratory as a result of this transaction ☒ Yes ☐ No

WARNING: IT IS A FEDERAL OFFENSE TO VIOLATE SHIPPING REGULATIONS FOR HAZARDOUS MATERIALS, WASTES, OR SUBSTANCES.

☐ Radioactive
☐ Blasting Agent
☐ Explosives ☐A ☐B ☐C
☐ Combustible Liquid
☒ Poison ☐A ☐B
Flammable Liquid
Flammable Solid
☐ Oxidizer
☒ Corrosive
☐ Flammable Gas
☐ Nonflammable Gas
☐ Etiologic Agent
☐ Magnetized Material
☐ Organic Peroxide
☐ Irritant
☐ Hazardous Waste
☐ Hazardous Substance

Security Classification of This Document: NONE
Security Classification of This Material: NONE

ATTENTION TRAFFIC: ☐ **RUSH** - Priority shipping service required
(This will incur additional shipping and freight charges.)

☐ Loan How long?	☐ Repair ☐ Return of Loan	☐ Permanent Transfer ☒ Other:	Account Code: 6202	Program Code: W622

Pick-up Date	From	Group	Site	Building	Room No.	Telephone
1/27/87						8349

Authorized Signature	Buyer Signature	Packed By	Date Shipped
Frank Galvez			1/27/87

Form Number 1115 (1/86) PACKING MANIFEST ST-2594

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

This form must be typed. Reproduce a copy for your files.

SHIPPING MANIFEST NUMBER № 1463

Date	December 30, 1986
Laboratory Reference No.	2-LR5-U5098-1
Consignee's Reference No.	2-LR5-U5098-1
☐ PPD ☐ Collect	
Delivery Date Requested	CONFIRMATION
Carrier	
Pro Number	
No. of Pieces / Weight	
Kind of Packages	

Frank Galvez	Telephone Number (505) 667- 8349	
Group MAT-2 / Mail Stop P274	Return Material Authorization No.	

TO:

X-Ray Sales and Services
P. O. Box 12521
Albuquerque, New Mexico 87195

ALL PACKAGES AND CORRESPONDENCE MUST BE IDENTIFIED WITH LABORATORY REFERENCE NUMBER

ITEM NO.	QUANTITY	COMPLETE DESCRIPTION	P/N	TOTAL VALUE
1	1 ea.	Ag RECLAIMER CARTRIDGE #B-22630 (WX-3) (Rcpt. 0948)		
2	44 gal.	FIXER (Silver Recovery) (Rcpt. 0947)		

Reason for Shipment: SILVER RECOVERY CONFIRMATION ONLY

TOTAL VALUE: $10.00

Attention ACT-1: Money is now due the Laboratory as a result of this transaction XX Yes ☐ No

WARNING: IT IS A FEDERAL OFFENSE TO VIOLATE SHIPPING REGULATIONS FOR HAZARDOUS MATERIALS, WASTES, OR SUBSTANCES.

☐ Radioactive
☐ Blasting Agent
☐ Explosives ☐A ☐B ☐C
☐ Combustible Liquid
XX Poison ☐A ☐B
☐ Flammable Liquid
☐ Flammable Solid
☐ Oxidizer
XX Corrosive
☐ Flammable Gas
☐ Nonflammable Gas
☐ Etiologic Agent
☐ Magnetized Material
☐ Organic Peroxide
☐ Irritant
☐ Hazardous Waste
☐ Hazardous Substance

Security Classification of This Document: UNCLASS.
Security Classification of This Material: UNCLASS.

ATTENTION TRAFFIC: ☐ **RUSH** - Priority shipping service required
(This will incur additional shipping and freight charges.)

☐ Loan How long?	☐ Repair ☐ Return of Loan	☐ Permanent Transfer ☐ Other:	Account Code 6202	Program Code W622

Pick-up Date	From	Group	Site	Building	Room No.	Telephone
Dec. 30, 86						8349

Authorized Signature	Buyer Signature	Packed By	Date Shipped
Frank Galvez			12/30/86

Form Number 1118 (1/86) PACKING MANIFEST ST-2609

Laboratory
Mexico 87545

This form must be typed. Reproduce a copy for your files.

SHIPPING MANIFEST NUMBER № 1480

Date	June 19, 1987
Laboratory Reference No.	2-LR5-U5098-1
Consignee's Reference No.	
☐ PPD ☐ Collect	confirmation
Delivery Date Requested	
Carrier	
Pro Number	
No. of Pieces / Weight	
Kind of Packages	

Frank Calvez	Telephone Number (505) 667- 8349
MAT-2 Mail Stop P274	Return Material Authorization No.

TO: X-Ray Sales and Services
P. O. Box 12521
Albuquerque, New Mexico 87195

ALL PACKAGES AND CORRESPONDENCE MUST BE IDENTIFIED WITH LABORATORY REFERENCE NUMBER

ITEM NO.	QUANTITY	COMPLETE DESCRIPTION	P/N	TOTAL VALUE
1	3 ea.	Ag RECLAIMER CARTRIDGES (A12344, B22635, and DA42678, IS-9, Rcpt. 0987)		

Reason for Shipment: SILVER RECOVERY CONFIRMATION ONLY

TOTAL VALUE: $10.00

Attention ACT-1: Money is now due the Laboratory as a result of this transaction ☒ Yes ☐ No

WARNING: IT IS A FEDERAL OFFENSE TO VIOLATE SHIPPING REGULATIONS FOR HAZARDOUS MATERIALS, WASTES, OR SUBSTANCES.

☐ Radioactive
☐ Blasting Agent
☐ Explosives ☐A ☐B ☐C
☐ Combustible Liquid
☒ Poison ☐A ☐B
☐ Flammable Liquid
Flammable Solid
☐ Oxidizer
☒ Corrosive
☐ Flammable Gas
☐ Nonflammable Gas
☐ Etiologic Agent
☐ Magnetized Material
☐ Organic Peroxide
☐ Irritant
☐ Hazardous Waste
☐ Hazardous Substance

Security Classification of This Document: Unclass.
Security Classification of This Material: Unclass.

ATTENTION TRAFFIC: ☐ **RUSH** - Priority shipping service required
(This will incur additional shipping and freight charges.)

☐ Loan How long?	☐ Repair ☐ Return of Loan	☐ Permanent Transfer ☐ Other:	Account Code 6202	Program Code	
Pick-up Date 6/	From	Group	Site	Building	Room No.	Telephone
Authorized Signature 18/87		Buyer Signature		Packed By	Date Shipped 6/18/87

Form Number 1113 (1/86)

PACKING MANIFEST

ST-2907

...os
...National Laboratory
...os, New Mexico 87545

This form must be typed. Reproduce a copy for your files.

SHIPPING MANIFEST NUMBER № 1479

Date	June 1, 1987
Laboratory Reference No.	2- LR5-U5098-1
Consignee's Reference No.	
☐ PPD ☐ Collect	
Delivery Date Requested	CONFIRMATION
Carrier	
Pro Number	
No. of Pieces / Weight	
Kind of Packages	

From: Frank Galvez
Telephone Number: (505) 667- 8349
Group: MAT-2
Mail Stop: P274
Return Material Authorization No.:

TO: X-Ray Sales and Service
P. O. Box 12521
Albuquerque, New Mexico 87195

ALL PACKAGES AND CORRESPONDENCE MUST BE IDENTIFIED WITH LABORATORY REFERENCE NUMBER

ITEM NO.	QUANTITY	COMPLETE DESCRIPTION	P/N	TOTAL VALUE
1.	5 gal.	FIXER (Silver Hypo) (MST-3, RCPT.#0980)		
2.	5 gal.	FIXER (Silver Hypo) (MAT-4, Rcpt.#0981)		
3.	54 gal.	FIXER (Silver Hypo) (M-8, Rcpt. 0982)		
4.	1 ea.	Ag RECLAIMER CARTRIDGE ##A12348 (WX-3, Rcpt.#0983)		
5.	15 gal.	FIXER (Silver Hypo) (M-4, Rcpt.#0984)		
6.	75 gal.	FIXER (Silver Hypo) (LS-3, Rcpt.#0985)		

Reason for Shipment: SILVER RECOVERY CONFIRMATION ONLY

TOTAL VALUE: $10.00

Attention ACT-1: Money is now due the Laboratory as a result of this transaction ☒ Yes ☐ No

WARNING: IT IS A FEDERAL OFFENSE TO VIOLATE SHIPPING REGULATIONS FOR HAZARDOUS MATERIALS, WASTES, OR SUBSTANCES.

☐ Radioactive
☐ Blasting Agent
☐ Explosives ☐A ☐B ☐C
☐ Combustible Liquid
☒ Poison ☐A ☐B
☐ Flammable Liquid
☐ Flammable Solid
☐ Oxidizer
☒ Corrosive
☐ Flammable Gas
☐ Nonflammable Gas
☐ Etiologic Agent
☐ Magnetized Material
☐ Organic Peroxide
☐ Irritant
☐ Hazardous Waste
☐ Hazardous Substance

Security Classification of This Document: Unclass.
Security Classification of This Material: Unclass.

ATTENTION TRAFFIC: ☐ **RUSH** - Priority shipping service required
(This will incur additional shipping and freight charges.)

☐ Loan How long?	☐ Repair ☐ Return of Loan	☐ Permanent Transfer ☐ Other:	Account Code 6202	Program Code W623

Pick-up Date	From	Group	Site	Building	Room No.	Telephone
May 29, 1987						8349

Authorized Signature	Buyer Signature	Packed By	Date Shipped
Frank Galvez			5/29/87

Form Number 118 (1.86)

PACKING MANIFEST

ST-2609

SHIPPING MEMO NO. SM 29704D

Date 7/24/86

FROM: **UNIVERSITY OF CALIFORNIA**
LOS ALAMOS NATIONAL LABORATORY
Box 990 Requestor
Los Alamos, New Mexico 87545

Consignor's Order No. 2-LR5-U5098-1

Consignee's Order No.

Shipping Request No. 29704D

Ship by CONFIRMATION ONLY
CARRIER

CREDIT

Group Name	Account Code	Program No
MAT-2	6202	W622

TO: X-RAY SALES AND SERVICE
PO BOX 12521
ALBUQUERQUE, NM 87195

Prepaid ☐ Collect ☐

Freight Bill

Evaluation $10.00 No. of Pkgs.

Total Wt.

ITEM NO.	QUANTITY	DESCRIPTION	P/N	UNIT COST	TOTAL COST
1	2ea	AG RECLAIMER CARTRAGES SN DA-37220 & B-22626 (IS-9)			This copy for shipping purposes only Cost to be furnished by Los Alamos National Laboratory Accounting Department
2	1ea	AG RECLAIMER CARTRAGE SN A-11793 (WX-3)			
3	27 gallons	FIXER (SILVER RECOVERY) (M-3)			
		PERMANENT TRANSFER	LMS		

Reason for shipping SILVER RECOVERY

FOR CONFIRMATION ONLY

Authorized by JOE ROYBOL Packed by Date Shipped 7/25/86

FOR PROPER IDENTIFICATION & CREDIT ALL PACKAGES & CORRESPONDENCE MUST BE IDENTIFIED WITH LANL P.O. NUMBER. SUB-VENDORS MUST BE ADVISED OF THIS PROCEDURE

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

This form must be typed. Reproduce a copy for your files.

SHIPPING MANIFEST NUMBER № 1460

Date	November 24, 1986
Laboratory Reference No.	2-LR5-U5098-1
Consignee's Reference No.	2-LR5-U5098-1
☐ PPD ☐ Collect	
Delivery Date Requested	CONFIRMATION
Carrier	
Pro Number	
No. of Pieces / Weight	
Kind of Packages	

From: Frank Galvez
Telephone Number: (505) 667- 8349
Group: MAT-2
Mail Stop: P274
Return Material Authorization No.:

TO: X-Ray Sales and Services
P.O. Box 12521
Albuquerque, New Mexico 87195

ALL PACKAGES AND CORRESPONDENCE MUST BE IDENTIFIED WITH LABORATORY REFERENCE NUMBER

ITEM NO.	QUANTITY	COMPLETE DESCRIPTION	P/N	TOTAL VALUE
1	8 ea.	Ag RECLAIMER CARTRIDGES:		
		Receipt No. / Cartridge No. / Group		
		0968 / A-10861 / M-4		
		0969 / B-22637 / WX-3		
		0970 / DA-26097 / WX-3		
		" / DA-26088 / WX-3		
		" / DA-34327 / WX-3		
		0971 / DA-42681 / HSE-2		
		0972 / DA-41131 / IS-9		
		" / DA-11789 / IS-9		
2	71 3/4 Gal.	FIXER (Silver Recovery) (Rcpt. 0966 6½ gal. MAT-4 & Rcpt. 0968 65¼ gal. M-4)		

Reason for Shipment: silver recovery CONFIRMATION ONLY

TOTAL VALUE: $10.00

Attention ACT-1: Money is now due the Laboratory as a result of this transaction ☒ Yes ☐ No

WARNING: IT IS A FEDERAL OFFENSE TO VIOLATE SHIPPING REGULATIONS FOR HAZARDOUS MATERIALS, WASTES, OR SUBSTANCES.

☐ Radioactive ☐ Oxidizer ☐ Irritant
☐ Blasting Agent ☒ Corrosive ☐ Hazardous Waste
☐ Explosives ☐A ☐B ☐C ☐ Flammable Gas ☐ Hazardous Substance
☐ Combustible Liquid ☐ Nonflammable Gas
☒ Poison ☐A ☐B ☐ Etiologic Agent
☐ Flammable Liquid ☐ Magnetized Material
Flammable Solid ☐ Organic Peroxide

Security Classification of This Document: UNCLASS.
Security Classification of This Material: UNCLASS.

ATTENTION TRAFFIC: ☐ **RUSH** - Priority shipping service required
(This will incur additional shipping and freight charges.)

☐ Loan How long? ☐ Repair ☐ Return of Loan ☐ Permanent Transfer ☐ Other:

Account Code	Program Code
6202	W622

Pick-up Date	From	Group	Site	Building	Room No.	Telephone
Nov. 20, 1986						8349

Authorized Signature: Frank Galvez
Buyer Signature:
Packed By:
Date Shipped:

Form Number 1118 (1-85)

PACKING MANIFEST

ST-2609

[redacted]ional Laboratory
[redacted], New Mexico 87545

This form must be typed. Reproduce a copy for your files.

SHIPPING MANIFEST NUMBER № 1454

Date	October 10, 1986
Laboratory Reference No.	2-LR5-U5098-1
Consignee's Reference No.	2-LR5-U5098-1
☐ PPD ☐ Collect	
Delivery Date Requested	
Carrier	
Pro Number	
No. of Pieces / Weight	
Kind of Packages	

Frank Galvez	Telephone Number (505) 667- 8349	
Group MAT-2	Mail Stop P274	Return Material Authorization No. N/A

TO:

X-RAY Sales and Service
P. O. Box 12521
Albuquerque, New Mexico ~~XXXX~~ 87195

ALL PACKAGES AND CORRESPONDENCE MUST BE IDENTIFIED WITH LABORATORY REFERENCE NUMBER

ITEM NO.	QUANTITY	COMPLETE DESCRIPTION	P/N	TOTAL VALUE
1	1 ea.	AG RECLAIMER CARTEAGE SN DA-35474 (M-7)		
2	38 gal.	FIXER (Silver Recovery) (M-8)		

Reason for Shipment: SILVER RECOVERY CONFORMATION ONLY

TOTAL VALUE: $10.00

Attention ACT-1: Money is now due the Laboratory as a result of this transaction ☒ Yes ☐ No

WARNING: IT IS A FEDERAL OFFENSE TO VIOLATE SHIPPING REGULATIONS FOR HAZARDOUS MATERIALS, WASTES, OR SUBSTANCES.

- ☐ Radioactive
- ☐ Blasting Agent
- ☐ Explosives ☐A ☐B ☐C
- ☐ Combustible Liquid
- ☒ Poison ☐A ☐B
- ☐ Flammable Liquid
- ☐ Flammable Solid
- ☐ Oxidizer
- ☒ Corrosive
- ☐ Flammable Gas
- ☐ Nonflammable Gas
- ☐ Etiologic Agent
- ☐ Magnetized Material
- ☐ Organic Peroxide
- ☐ Irritant
- ☐ Hazardous Waste
- ☐ Hazardous Substance

Security Classification of This Document: Unclass

Security Classification of This Material: unclass

ATTENTION TRAFFIC: ☐ **RUSH** - Priority shipping service required
(This will incur additional shipping and freight charges.)

☐ Loan / Borrowing?	☐ Repair	☐ Permanent Transfer	Account Code 6202	Program Code W622	
	☐ Return of Loan	☐ Other:			

Pick-up Date	From	Group	Site	Building	Room No.	Telephone
		MAT-2				8349

Authorized Signature	Buyer Signature	Packed By	Date Shipped

Form Number 1118 (1/86) ST-2609

PACKING MANIFEST

COPY NO 4 AUTHOR REQUEST

SHIPPING REQUEST

SR 04325

(Entire Form To Be Completed By Author, Except Where Indicated)

DATE 9/6/85

X-RAY SALES & SERVICE

Address 1641 Lafayette, SW

City/State Albuquerque, New Mexico Zip Code 87105

ITEM	QUAN.	DESCRIPTION	PROPERTY NO. OR STOCK NO.	UNIT COST	TOTAL COST
1	5 ea	CARTRIDGES (DA37212, DA34320, DA41130, DA30194, DA26093)	(IS-9)		
2	17 gal	SILVER HYPOSOLUTION FIXER	(IS-9)		
3	1 ea	CARTRIDGE (N12345)	(MX-3)		
		NOTE: This is a confirmation Shipper			
		(Reference: Receipt #0944 & #0945)			
				TOTAL	

REASON FOR SHIPMENT For Reclamation purposes, per Purchase Order #2 LP3-C7942-1

WARNING: It is a Federal offense to knowingly or unknowingly violate hazardous materials shipping regulations.

COMPLETE ALL OF THE FOLLOWING. IF ANSWER IS YES, DESCRIBE ABOVE

RADIOACTIVITY None

EXPLOSIVES A no B no no COMPRESSED GASES --

COMBUSTIBLE LIQUID no NON-FLAMMABLE no

U. OF C. LABORATORY P.O. No.

CONSIGNEE'S P.O. #

PAID COLLECT FOLLOW UP

LOAN HOW LONG RETURN OF LOAN

REPAIR OTHER PERMANENT TRANSFER

DISTRIBUTION ONLY

PHONE

PERSON GROUP OR STOCKROOM

BLDG. ROOM NO.

PICK UP TIME DELIVERY DATE REQUIRED

ACCOUNT CODE VALUE 300

MAT-2 6203

AUTHORIZED GROUP SIGNATURE

PROPERTY REPRESENTATIVE

PROPERTY MANAGEMENT GROUP MAT-2

PROCUREMENT

S.M. NO	DATE	NO. PKGS.	WT.	DIMENSIONS	PACKED BY

SHIPPING REQUEST

SR 29752D

(Entire Form To Be Completed By Author, Except Where Indicated)

DATE 10/21/85

...AY SALES & SERVICE

...ress 1641 Isleta, SW

...ate Albuquerque, New Mexico Zip Code 87105

ITEM	QUAN.	DESCRIPTION	PROPERTY NO. OR STOCK NO.	UNIT COST	TOTAL COST
1	25 gal	SILVER HYPOSOLUTION FIXER (M-4)			
2	10 gal	SILVER HYPOSOLUTION FIXER (MAT-5)			
		NOTE: ~~This is confirmation Shipper~~ Reference: Receipt #183			
REASON FOR SHIPMENT		Reclamation Purposes		TOTAL	

Copy

OCT 31 9 51 AM '85

WARNING: It is a Federal offense to knowingly or unknowingly violate hazardous materials shipping regulations.

U. OF C. LABORATORY P.O. No. _____

CONSIGNEE'S P.O. # _____

PREPAID _____ COLLECT _____ FOLLOW UP _____

LOAN _____ HOW LONG _____ RETURN OF LOAN _____

REPAIR _____ OTHER _____ PERMANENT TRANSFER _____

COMPLETE ALL OF THE FOLLOWING, IF ANSWER IS YES, DESCRIBE ABOVE

RADIOACTIVITY _____

EXPLOSIVES A ____ B ____ C ____

COMBUSTIBLE LIQUID _____

POISON A ____ B _____

FLAMMABLE LIQUID _____

FLAMMABLE SOLID _____

OXIDIZER _____

CORROSIVE LIQUID _____

COMPRESSED GASES _____

FLAMMABLE _____

COMPRESSED GASES – NON-FLAMMABLE _____

ETIOLOGICAL AGENTS _____

MAGNETIZED MATERIAL _____

IRRITATING MATERIAL _____

ORGANIC PEROXIDE _____

SECURITY CLASSIFICATION OF MATERIAL _____

SECURITY CLASSIFICATION OF THIS SR _____

PICK UP ABOVE MATERIAL FROM: (CONFIRMATION ONLY)

PERSON _____ PHONE _____

GROUP OR STOCKROOM _____

SITE _____ BLDG. _____ ROOM NO. _____

PICK UP DATE _____ TIME _____ DELIVERY DATE REQUIRED _____

CREDIT

GROUP NAME	ACCOUNT CODE
MAT-2	6202

VALUE $200

PROGRAM NO. _____

APPROVED

AUTHORIZED GROUP SIGNATURE _____

PROPERTY REPRESENTATIVE _____

PROPERTY MANAGEMENT GROUP MAT - 2 _____

PROCUREMENT _____

INFORMATION BELOW TO BE COMPLETED BY GROUP MAT - 4 ONLY

S.M. NO.	DATE	NO. PKGS.	WT.	DIMENSIONS	PACKED BY
29752D	10/21/85				

SHIPPING REQUEST

SR 29754

DATE 2/5/86

Consignee X-RAY SALES AND SERVICE

Street Address 1641 Isleta, SW

City/State Albuquerque, New Mexico Zip Code 87105

ITEM	QUAN.	DESCRIPTION	PROPERTY NO. OR STOCK NO.	UNIT COST	TOTAL COST
1	2 ea	CARTRIDGES (A12036, A12034) (WX-3)			
2	1 ea	CARTRIDGE (A38113) (HSE-2)			
3	4 ea	CARTRIDGES (DA41132,DA37216,DA30608,DA41140) (IS-9)			
4	10 gals	SILVER HYPOSOLUTION FIXER (IS-9)			
5	50 gals	SILVER HYPOSOLUTION FIXER (M-4)			
		NOTE: This is a Confirmation Shipper			
				TOTAL	

REASON FOR SHIPMENT Reclamation purposes

WARNING: It is a Federal offense to knowingly or unknowingly violate hazardous material laws or DOT regulations.

COMPLETE ALL OF THE FOLLOWING IF ANSWERS YES, DESCRIBE ABOVE

RADIOACTIVITY

EXPLOSIVES

COMPRESSED GASES

COMBUSTIBLE LIQUIDS

NON-FLAMMABLE

BIOLOGICAL AGENTS

MAGNETIZED MATERIAL

U. OF C. LABORATORY P.O. No.

CONSIGNEE'S P.O. #

FOLLOW UP

LOAN HOW LONG RETURN OF LOAN

REPAIR OTHER PERMANENT TRANSFER

(CONFIRMATION ONLY)

PHONE

PERSON

GROUP OR STOCKROOM

SITE BLDG. ROOM NO.

PICK UP DATE TIME

DELIVERY DATE REQUIRED

VALUE

AUTHORIZED GROUP SIGNATURE

PROPERTY REPRESENTATIVE

PROPERTY MANAGEMENT GROUP MAT-2

PROCUREMENT

MAT-2

S.M. NO.	DATE	NO. PKGS.	WT.	DIMENSIONS	PACKED BY

SHIPPING MEMO NO. SM 297430 Date 7/11/86

FROM: **UNIVERSITY OF CALIFORNIA**
LOS ALAMOS NATIONAL LABORATORY
Box 990 LAB MAT-2
Los Alamos, New Mexico 87545

Consignor's Order No. _____

Consignee's Order No. _____

Shipping Request No. 297430

Ship by CONFIRMATION ONLY
CARRIER

CREDIT

Group Name	Account Code	Program No.	Stockroom
MAT-2	6202	W622	

TO:
X-RAY SALES & SERIVCE
PO BOX 12521
ALBUQUERQUE, NM 87195

Money Waybill ☐ Prepaid ☐ Collect ☐

Waybill No. _____

Evaluation _____ No. of Pkgs. _____

Total Wt. _____

ITEM NO.	QUANTITY	DESCRIPTION	P/N	UNIT COST	TOTAL COST
1	48 GALLON	FIXER (SILVER RECOVERY)			
		PERMANENT TRANSER	W-3		

Reason for shipping SILVER RECOVERY

Authorized by JOE ROYBAL Packed by _____ Date Shipped 7/14/86

DO
HONE

SHIPPING MEMO NO. SM 29702D

Date 6-25-86

UNIVERSITY OF CALIFORNIA
LOS ALAMOS NATIONAL LABORATORY
Requestor
Los Alamos, New Mexico 87545
CREDIT

Consignor's Order No. 2-LR5-U5098-1

Consignee's Order No.

Shipping Request No. 29702D

Ship by Confirming
CARRIER

Group Name	Account Code	Program No.
MAT-2	6202	W622

TO: X-Ray Sales and Service
P.O. Box 12521
Albuquerque, NM 87195

Prepaid ☐ Collect ☐

Freight Bill

Evaluation $10 No. of Pkgs.

Total Wt.

ITEM NO.	QUANTITY	DESCRIPTION	P/N	UNIT COST	TOTAL COST
1	90 gal	Fixer (Silver recovery)			This copy for shipping purposes only. Cost to be furnished by Los Alamos National Laboratory Accounting Department.
		Confirmation only			
		Permanent Transfer	JFT		

Reason for shipping Silver recovery

Authorized by Joe A. Roybal Packed by Date Shipped 6-25-86

00
NONE

FOR PROPER IDENTIFICATION & CREDIT ALL PACKAGES & CORRESPONDENCE MUST BE IDENTIFIED WITH LANL P.O. NUMBER. SUB-VENDORS MUST BE ADVISED OF THIS PROCEDURE.

SHIPPING GROUP MAT-14

ENCLOSURE #2B
ADMINISTRATIVE INSTRUMENTS

Laboratory Support Division
P.O. Box 50
Los Alamos, NM 87544-0050

Pan Am World Services, Inc.

THRU: Joe J. Lopez, Manager PHSE

TO: Anthony Drypolcher, HSE-8, K490

FROM: Tom Holm-Hansen, PENV, 7-0104 THH

DATE: July 22, 1987 **MEMO NO.** THH87-93

SUBJECT: RESPONSE TO EPA/EID RCRA INSPECTION OF JULY 15

The recent EPA/EID inspection of July 15 pointed out that Safety-Kleen solvents were leaving Pan Am facilities without hazardous waste manifests. Since Pan Am-operated facilities are under DOE's EPA hazardous waste generator permit, this was found to be a violation of RCRA by EPA's inspector, Mr. Mike Michaud.

This deficiency was corrected the following day (July 16) as indicated by the enclosed correspondence. Overall, Pan Am has taken the following steps to ensure regulatory compliance with the transportation and recycling of Safety-Kleen solvents:

- o no Safety-Kleen solvents will leave Pan Am facilities without a hazardous waste manifest bearing DOE's hazardous waste generator number
- o Safety-Kleen will mail a completed manifest to Pan Am once the shipment reaches Safety-Kleen's recycling facility
- o these manifests will be kept on file by Pan Am's Environmental Protection Branch
- o copies of the manifests will be forwarded to LANL HSE-7 and HSE-8 - Karen Balo does not want copies of our manifests, and I have told her and Jim White we will keep the manifests on file here - Tom

If you require any additional information please feel free to contact me.

cc:
Jim White, HSE-8, K490
Karen Balo, HSE-7, E518
Doris Garvey, ADS-ECMO, A122
M.R. Heineman, HSE-3, K489
S.J. Calanni, PMGR
Jack Nuckels, OMDO
file
reading file

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO: Anthony Drypolcher, HSE-8, MS K490

DATE: January 29, 1988

THRU: Carl Huth, MAT-DO, MS P274
Jim Jorgensen, MAT-14, MS P274

MAIL STOP/TELEPHONE: P274/5-1664

FROM: John Ramsey JR

SYMBOL: MAT-14/A1795

SUBJECT: SHIPPING MANIFESTS FOR RECYCLABLE MATERIALS

The matter of hazardous waste manifest requirements for certain types of recyclable material, namely precious metals, has been brought to the attention of this office. It is our understanding that all shipping manifests for this type of material are to be referred to HSE-7 for processing in compliance with applicable governing regulations.

All shipping manifests that we receive for material that is readily identifiable as recyclable will henceforth be forwarded directly on to HSE-7 with no other action taken by us. HSE-7 will make the final determination as to the applicability of regulations regarding manifest requirements.

We believe that the success of this procedure will depend upon appropriate wording in the REASON FOR SHIPMENT block of the shipping manifest, and we recommend that the words "recyclable," or "for reclamation of precious metal," be included.

We understand that this matter has already been discussed and approved by David McInroy of HSE-8 and Benny Duran of MAT-2.

JR/yme

cy: Don Bryson, MAT-DO, MS P274
Newby Ellington, MAT-DO, MS P274
Eppie Trujillo, MAT-DO, MS P274
Benny Duran, MAT-2, MS P274
Shirley O'Rourke, MAT-14, MS P274
Tom Houston, MAT-14, MS P274
Lorraine Segura, MAT-14, MS P274
Karen Balo, HSE-7, MS J592
David McInroy, HSE-8, MS K490
Distribution Office File

ENCLOSURE #3A
REQUEST FOR GROUNDWATER MONITORING WAIVER

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

DEC 15 1987

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Michael Burkhart, Director
N. M. Environmental Improvement Division
P. O. Box 968
Santa Fe, NM 87504-0968

Dear Mr. Burkhart:

REQUEST FOR GROUNDWATER MONITORING WAIVER

The Department of Energy (DOE) hereby requests a waiver of the requirements for monitoring groundwater pursuant to the New Mexico Hazardous Waste Management Regulations (HWMR-3) Section 206.C.1.a.(3). The waiver would apply to the area surrounding the landfill (Area P) and surface impoundment at the Technical Area (TA) 16 burning ground. We are requesting this waiver based on the absence of free-flowing groundwater within the upper 200 feet beneath the two units. We realize groundwater does exist at much great depths (approximately 1000 feet) but hydrologic conditions in this upper zone indicate no migration of contaminants to groundwater at depth has or will occur (see Enclosure #1, "Site Geology and Hydrology of TA 16, Area P").

Substantial efforts to sample the groundwater beneath the site have been attempted with no success. We have recently drilled seventeen boreholes in the area to characterize the subsurface (see enclosure #2 for drilling logs). Four holes were completed as RCRA groundwater monitoring wells (P-87-03, 04, 06, and 08) at the limit of the waste management area, three downgradient and one upgradient (suspected). They have been screened partially in the alluvium and partially in the underlying tuff to intercept any liquid that might travel along the interface between the two materials. Four additional holes were completed as wells (P-87-01, 05, 07, 09) to detect the presence and exchange of groundwater in the alluvium between the canyon creek and the landfill (see Enclosure #3 for borehole completion logs). Gravimetric moisture data was collected during drilling operations and indicates the occurrence of saturated conditions beneath the units is unlikely (see enclosure #4 for gravimetric moisture curves). To date, no free-flowing groundwater has been observed in any of the seventeen boreholes.

Three boreholes were also completed around the landfill as neutron moisture access holes (P-87-13, 14, 16A) as was one at the TA-16 surface impoundment (P-87-00), and one (P-87-12A, 200 feet deep) towards the end of the mesa (see Enclosure #3). An additional neutron moisture access hole is planned

for the area between the canyon creek and the landfill. Borehole P-87-10 will also be finished as a neutron moisture access hole when additional completion materials arrive. Data collection from these holes will be available in the spring of 1988.

We are currently generating additional information for the area to further substantiate the groundwater waiver request. Laboratory data on porosity, permeability, and hydraulic conductivity is being collected from core samples to further define the unsaturated zone characteristics beneath the site. This information will be available to the New Mexico Environmental Improvement Division in late February 1988. In addition, surface water and sediment sampling and analysis from the canyon creek is being scheduled for next month. A water balance evaluation will be initiated in January and continue for six months.

Extensive studies related to saturated zone characteristics of the main aquifer have already been performed and support both our waiver for TA-54 and this waiver request. Information on the water supply wells in the area also applies to the existing waiver and the TA-16 request.

Should you have any questions regarding this matter, please call Mr. James Phoenix of my staff at 667-5288.

Sincerely,

Original Signed by
H. E. Valencia

Harold E. Valencia
Area Manager

7974A

Enclosures (4)

cc w/Enclosures:
P. Anderson, EID Legal
J. Highland, EPA, (6EFF), Dallas, Texas
A. Davis, 6H, Dallas, Texas

bcc w/Enclosures:
A. Tiedman, LANL, ADS, MS A120
J. Aragon, LANL, HSE-DO, MS K491
T. Gunderson (HSE8-87-1323-1, 12/7), LANL, HSE-8, MS K490

ENCLOSURE #3B
"SITE GEOLOGY AND HYDROLOGY OF TECHNICAL AREA 16 AREA P"

SITE GEOLOGY AND HYDROLOGY OF TECHNICAL AREA 16, AREA P

by

Fred Brown, William Purtymun, Alan Stoker, and Alice Barr

ABSTRACT

Two distinct units of the Quaternary Upper Bandelier Tuff were encountered during a geological investigation of Technical Area 16, Area P, at Los Alamos National Laboratory, Los Alamos, New Mexico. Unit 3, the uppermost unit encountered, consists of four distinct ashflows, and is characterized by a high degree of welding and low-moisture content. Unit 2, the lowermost unit encountered, is densely welded, and noticeably impeded drilling operations. The Water Canyon Fault Zone, which lies approximately 500 ft to the east of Area P, exhibits 10 to 15 ft of displacement in the subsurface with little surface expression apparent. No evidence for the existence of groundwater was detected.

I. INTRODUCTION

Technical Area 16, Area P (TA-16, Area P), at Los Alamos National Laboratory (LANL) has been used since the 1950s as an industrial landfill, and is regulated under the New Mexico Environmental Improvement Division's Hazardous Waste Management Regulations due to barium residues in excess of the Extraction Procedure (EP) toxicity limits. LANL desires to permanently close the landfill, and in an effort to address closure and postclosure requirements required by RCRA (Resource Conservation and Recovery Act), a geological site investigation was conducted by the LANL Environmental Surveillance Group (HSE-8) during the summer of 1987.

II. REGIONAL GEOLOGY

The regional geology of Los Alamos has been previously reported in detail (i.e., Smith and Bailey, 1966; Purtymun, 1974; Gardner and Goff, 1986). In summary, Los Alamos National Laboratory is located on the eastern flank of the Jemez Mountains, an area dominated by volcanic deposits associated with the formation and collapse of the Valle and Toledo Calderas. Eruptive activity culminated with the deposition of a large volume (about 400 km^3) of Quaternary Bandelier Tuff, a rhyolitic tuff ranging in thickness from 30 to 1000 ft. The Bandelier Tuff is composed of a series of ashfall and ashflow tuffs unconformably resting on Chino Mesa Basalt and Puye Conglomerate of the Santa Fe Group. Depth

to the main aquifer in the vicinity of Area P is about 1230 ft (Purtymun, 1984) (Fig. 1).

Deposits of Bandelier Tuff form broad plateaus that encircle the Jemez Mountains and dip gently away from the Valle Caldera. The plateau on the eastern side of the Jemez Mountains, the Pajarito Plateau, consists of a series of east to southeast trending mesas separated by deeply incised canyons. The Bandelier Tuff itself consists of upper (Tshirege) and lower (Otowi) members, each containing a prominent ashfall bed at the base. Generally, the upper (Tshirege) member is the more densely welded of the two, and welding tends to increase with proximity to caldera sources (Bailey et al., 1969; Gardner et al., 1986).

Four fault zones have been recognized in the Pajarito Plateau: Pajarito, Water Canyon, Guaje Mt., and Rendija Canyon Fault Zones (Dransfield and Gardner, 1985). The Water Canyon Fault Zone, which extends through TA-16, trends roughly north to northeast with about 30 to 100 ft of down-to-the-east displacement. Approximately 10 to 15 ft of displacement can be seen in the subsurface adjacent to Area P, with little or no surface expression apparent.

III. GEOLOGY OF AREA P

Area P lies near the eastern margin of the Jemez Mountains, in the saddle of a short east-west trending mesa. The Water Canyon Fault Zone cuts through the tuff approximately 500 ft to the east. To the north, the Canon de Valle has cut through the fault scarp, draining an area on the west of the Sierra de los Valles flanks. To the south is a small unnamed canyon containing intermittent discharge from local outfalls. The main technical centers of TA-16 are located west of Area P (Fig. 2).

The mesa is capped by approximately 800 ft of Bandelier Tuff (Purtymun, 1968). Five distinct units, composed of groups of ashflows, have been recognized in the Tshirege Member of the Bandelier Tuff (Griggs, 1964; Smith and Bailey, 1966), of which two units were encountered during drilling operations at Area P (Brown, 1987). In addition, scattered outcrops of El Cajete Pumice occur in the area.

In order to establish the shallow subsurface geology of Area P, a series of 17 boreholes (numbered P-0 through P-16) was drilled in the summer of 1987. Drilling was done with a CME-55 rotary drilling rig and 4-inch conventional auger. Continuous auger cuttings were retrieved for lithologic logging and moisture analysis, and one set of continuous core was recovered using 6-inch hollow stem auger and split-spoon core barrels.

Borehole logging of lithology was done on the basis of four characteristics: (1) color (Goddard et al., 1984), (2) degree of welding, (3) shape and abundance of pumice lapilli, and (4) distribution of lithic fragments. Four distinct types of welding were recognized during drilling operations:

1. Nonwelded: high porosity, low cohesion of glassy fragments and crumbly texture. In core samples, this can be recognized by disaggregation and little or no flattening of pumice lapilli.

2. Moderately welded: less porosity, moderate cohesion, brittle texture and slight deformation of glassy fragments. In core samples, this texture crumbles easily in the hand and contains some noticeably flattened pumice lapilli.

3. Welded: low porosity, good cohesion, brittle texture and noticeable deformation of glassy fragments. This texture normally requires a hammer to break, and the majority of pumice fragments are noticeably flattened.

4. Densely welded: texture noticeably impedes or halts drilling, with little or no penetration; poor core recovery.

Two major lithologic units have been recognized at Area P (person. comm., W. Purtymun, 1987). Unit 3, the uppermost unit encountered during drilling operations, consists of four individual ashflows that appear to have cooled contemporaneously, forming a single compound unit. These ashflows are herein designated as Subunits 3a, 3b,

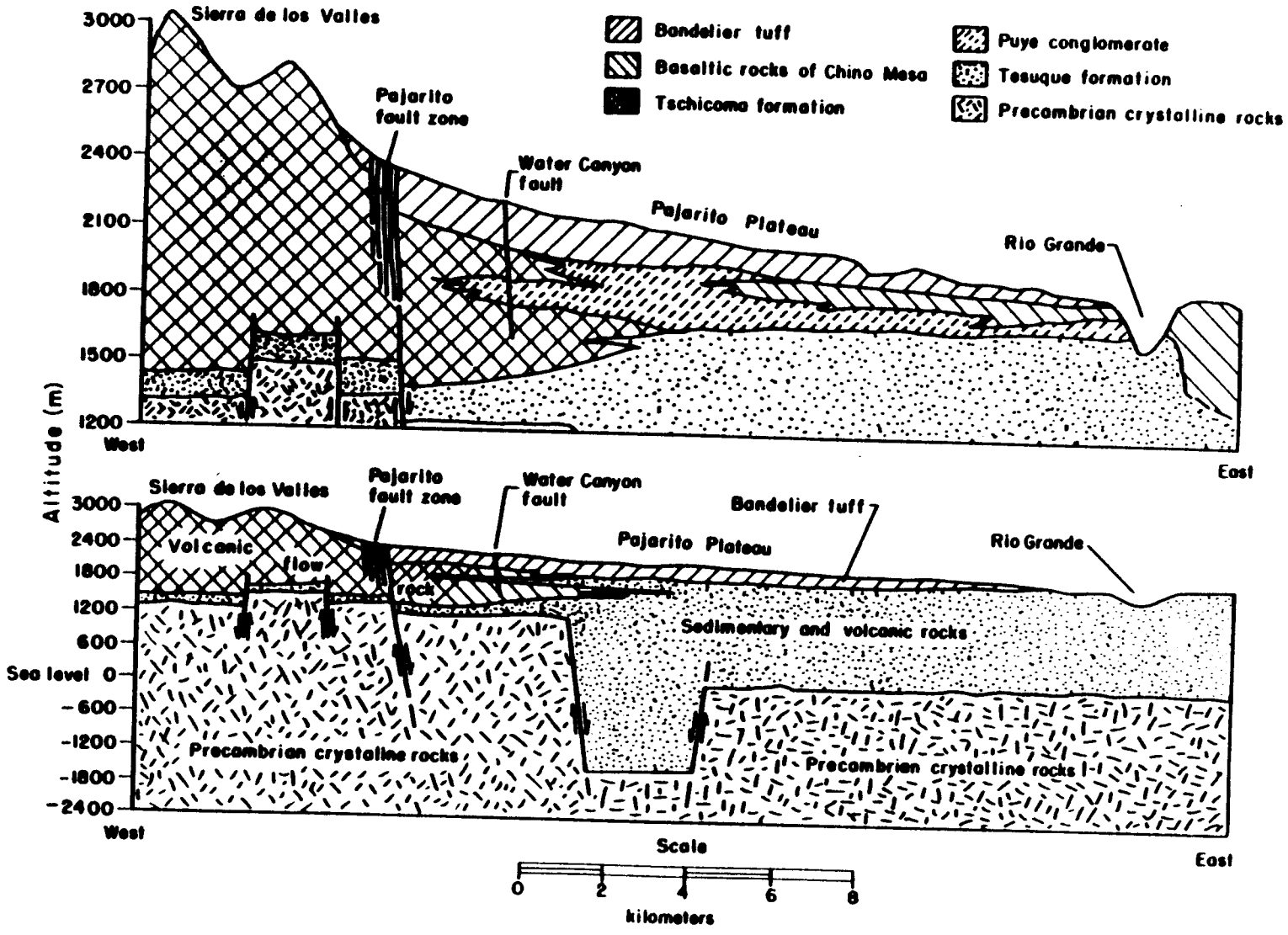


Figure 1. Geologic cross section through the Pajarito Plateau.

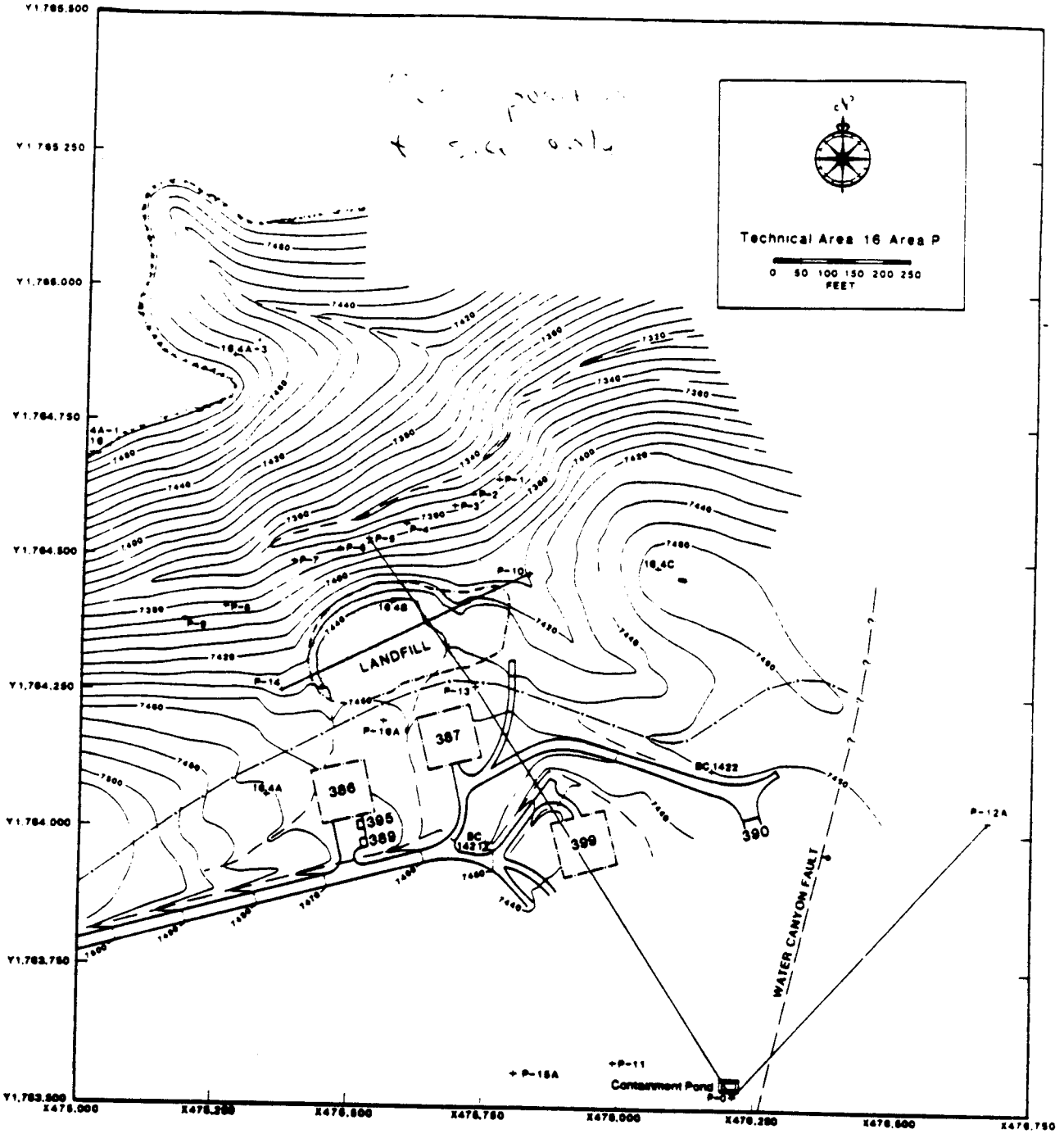


Figure 2. Site map of Technical Area 16, Area P. Boreholes are marked with crosses, numbered P-O through P-16A. Additional crosses are surveyer's marks.

3c, and 3d (bottom to top). Unit 3 rests conformably above Unit 2, the lowermost unit encountered. In general, the Bandelier Tuff dips 2 to 5° towards the east; in the vicinity of Area P dip is negligible, and the units are essentially horizontal and of uniform thickness.

> Subunit 3a consists of a welded dark yellowish brown tuff, with rare pumice lapilli (slightly flattened), and abundant pebble-sized red porphyritic quartz latite and grey rhyolite lithic fragments. The ratio of quartz latite to rhyolite increases towards the base of the subunit. The contact between Subunit 3a and Unit 2 tends to be densely welded. East of the Water Canyon Fault this unit appears to be non-welded.
>
> Subunit 3b consists of a welded pale yellowish brown tuff, with common grey and red pumice lapilli, (noticeably flattened), and rare pebble-sized rhyolite lithic fragments. This unit weathers to a dark brown, and contains abundant clayey pumice lapilli to the northwest.
>
> Subunit 3c consists of a moderately welded brownish grey to yellowish brown tuff, with common grey pumice lapilli (noticeably flattened), and rare pebble-sized rhyolite lithic fragments. Clay-filled vertical fractures are common throughout this subunit. The contact between 3c and 3d tends to be densely welded.
>
> Subunit 3d outcrops along the higher rim of the saddle, and consists of a moderately welded yellowish brown tuff, with rare pebble-sized rhyolite lithic fragments and common grey pumice lapilli. Subunit 3d is overlain by scattered deposits of El Cajete Pumice.

Locally, Unit 2 consists of a welded to densely welded tuff, light grey to pinkish grey in color, with common pumice lapilli and pebble-sized rhyolite fragments. Due to dense welding, the drill bit was only able to penetrate the upper 5 to 10 ft of Unit 2 (Fig. 3).

IV. *IN SITU* MOISTURE CONTENT

Hydrologic characteristics of tuff depend primarily on the degree of welding, with porosity and hydraulic conductivity decreasing as the degree of welding increases. At Los Alamos, saturated hydraulic conductivity for a moderately welded tuff ranges from 0.1 to 1.7 ft/day, and for a welded tuff ranges from 0.009 to 0.26 ft/day (Abeele et al., 1981). Samples of tuff recovered during drilling operations at Area P were not saturated.

Gravimetric moisture determinations were conducted to obtain a direct measurement of *in situ* water content of the tuff. Samples were taken from drill cuttings every 5 or 10 ft, and moisture determinations were made by weighing samples immediately after collection and after oven-drying 24 hrs at 105°C.

Although gravimetric moisture determinations are relatively easy to perform, care must be taken to ensure that the heat produced by drilling does not bias the samples collected. In the few cases where drill cuttings were noticeably warm to the touch, or water vapor was noticed coming from the borehole, samples were not collected for analysis. Care was also taken to maintain the drying oven at 105°C to ensure that no structural water was driven off.

Table I provides a summary of gravimetric data collected for Unit 3, and indicates a low overall moisture content for Area P. Although a range of 1.9 to 24.7% is considered low, this value slightly exceeds the gravimetric moisture content determined for technical areas further to the east [5-11% for TA-33 (Abrahams, 1963), 2-20% for TA-54 (Kearl et al., 1986)]. This higher range may be due to increased

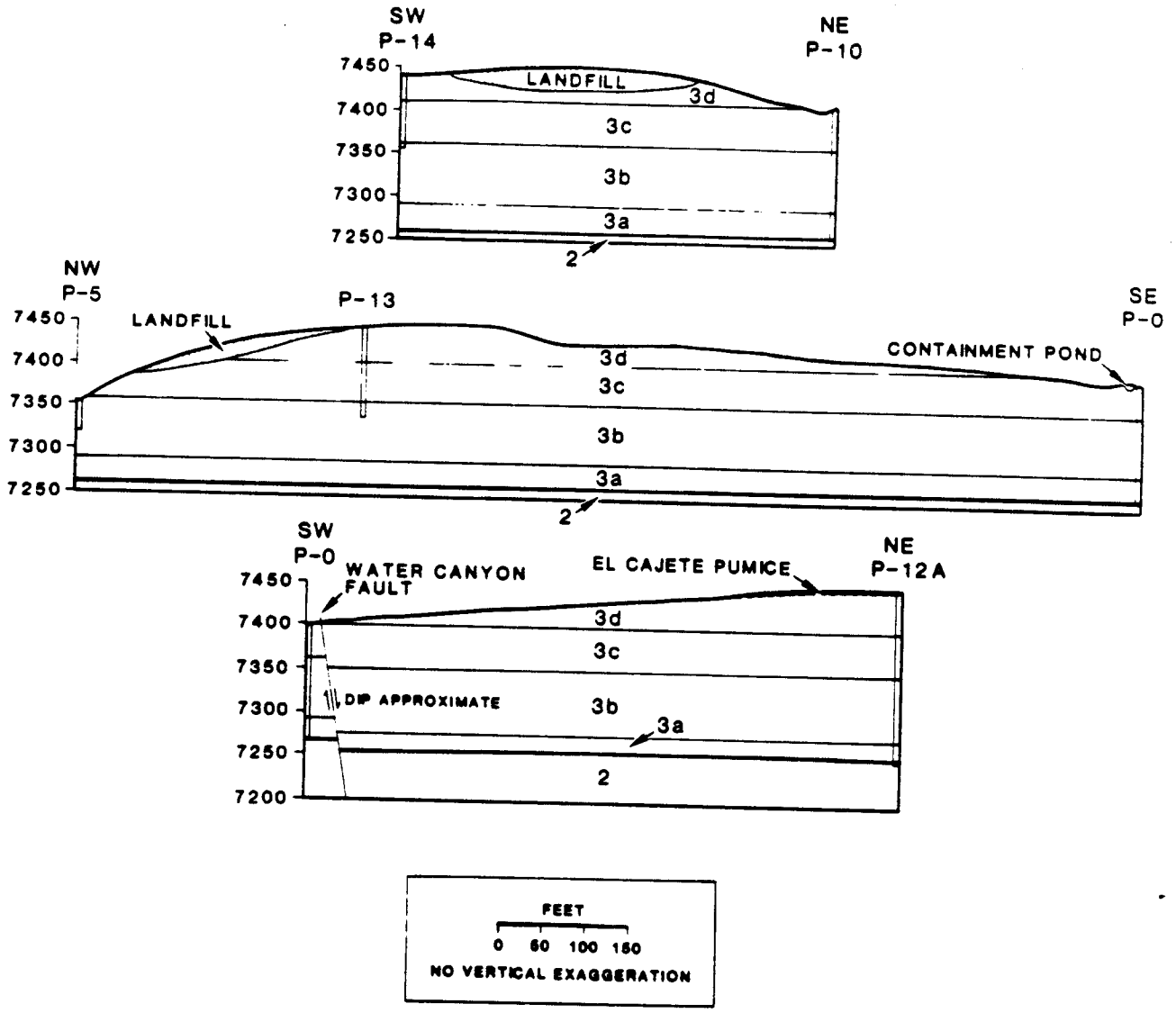


Figure 3. Geologic cross sections through Area P. Section lines are shown in Figure 2.

rainfall at TA-16, the result of orographic effects caused by the adjacent Jemez Mountains.

The energy relationship with moisture content for the Tshirege Member of the Bandelier Tuff was derived for volumetric moisture content by Abrahams (1963). Volumetric values can be converted to gravimetric values by dividing volumetric values by the average bulk density of the tuff. Repeated neutron and gamma probe calibration runs have established an average bulk density for the Tshirege Member of 1.4 g/cm^3. In addition, the density of 10 random samples was obtained after drying by weighing crushed tuff of a known volume. Average density for the 10 samples was 1.47 g/cm^3, with a standard deviation of 0.12.

Table I. Average Gravimetric Moisture Content. STD = Standard Deviation

Unit	Mean (%)	STD	Range (%)
3d	5.2	3.6	2.2-17.7
3c	6.1	3.5	1.9-24.7
3b	5.7	2.1	2.3-11.4
3a	3.8	1.4	2.3-5.8
Total Unit	5.8	3.0	1.9-24.7

TA-16, Area P, lies in the vadose zone of the Bandelier Tuff, a zone defined by Everett et al. (1984) as existing beneath the topsoil and above the water table, in which moisture in pore spaces coexists with air or in which geological materials are unsaturated. Based on the results of Abrahams (1963), saturation of the Tshirege Member of the Bandelier Tuff, and thus groundwater, occurs when gravimetric moisture content is about 29%. When moisture content is below 7%, there is no movement of water; between 7 to 21% moisture is redistributed by diffusion; between 21 to 29% moisture distribution is by gravity and capillarity, and above 29% movement is by gravity drainage (Fig. 4). Table I suggests that the primary mechanism for moisture distribution at Area P is diffusion.

In summary, the shallow geology of TA-16, Area P, consists of two distinct units. The upper Unit 3 consists of four ashflows that appear to form a single compound unit. The lower Unit 2, a separate compound unit, is densely welded in the vicinity of Area P, and noticeably impeded drilling operations. There is no evidence of groundwater at Area P. The results of this investigation will be incorporated in the LANL landfill closure plan for Area P.

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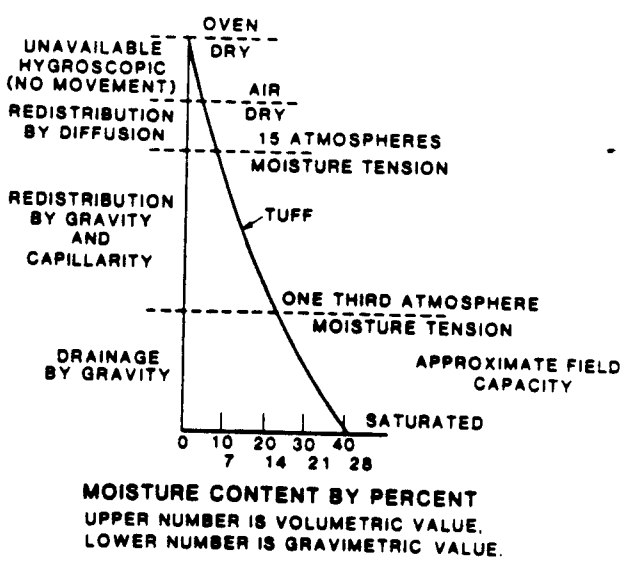

Figure 4. Energy relationship with moisture content of Bandelier Tuff (modified from Abrahams, 1963).

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ENCLOSURE 2

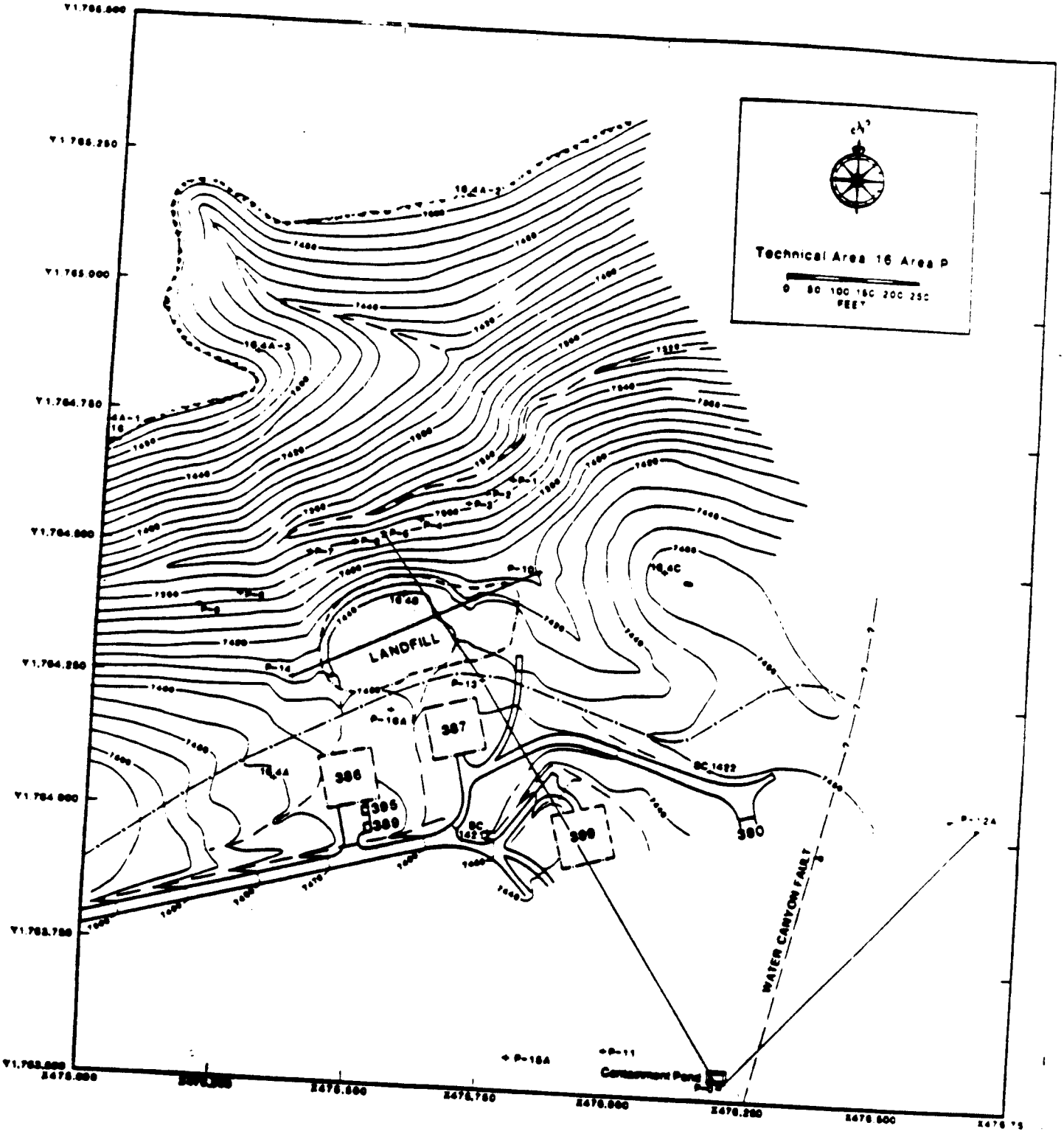


Figure D2. Site map of Technical Area 16 Area P. Boreholes are numbered P-0 through P-16A, and marked with crosses.

BOREHOLE: P-87-00
GEOLOGIST: Fred Brown
DATE DRILLED: 21 JULY 1987
ELEVATION: 7399 ft
LOCATION: 476215,1763523
TOTAL DEPTH: 135 ft
DISPOSITION: Aluminum Casing

DEPTH	DESCRIPTION
0-3	Fill/Top Soil (sandy loam)
3-40	Unit 3c. Light brownish grey tuff Moderately welded Rare rhyolite lithic fragments Common grey pumice lapilli
40	Contact is strongly welded
40-110	Unit 3b. Pale yellowish brown tuff Moderately welded Rare rhyolite fragments Abundant grey pumice lapilli Fracture noted at 45 ft
110	Contact is strongly welded
110-135	Unit 3a. Dark yellowish brown tuff Welded Abundant rhyolite/latite lithic fragments Rare pumice lapilli
135	Unit 2. Densely welded tuff halts drilling

BOREHOLE: P-87-01
GEOLOGIST: Fred Brown
DATE DRILLED: 29 JULY 1987
ELEVATION: 7344 ft
LOCATION: 475756,1764645
TOTAL DEPTH: 35 ft
DISPOSITION: PVC Casing

DEPTH	DESCRIPTION
0-4	Top Soil (sandy loam)
5-10	Unit 3b. Dark yellowish brown tuff Welded Rare rhyolite lithic fragments Rare pumice lapilli
10-35	Unit 3b. Pale yellowish brown tuff Moderately welded Rare rhyolite lithic fragments Rare pumice lapilli

BOREHOLE: P-87-02
GEOLOGIST: Fred Brown
DATE DRILLED: 23 JULY 1987
ELEVATION: 7341 ft
LOCATION: 475708, 1764617
TOTAL DEPTH: 10 ft
DISPOSITION: Filled In

DEPTH	DESCRIPTION
0-3	Top Soil (sandy loam)
3-10	Unit 3b. Dark yellowish brown tuff Moderately welded Rare rhyolite lithic fragments Rare pumice lapilli

BOREHOLE: P-87-03
GEOLOGIST: Fred Brown
DATE DRILLED: 23 JULY 1987
ELEVATION: 7342 ft
LOCATION: 475676, 1764596
TOTAL DEPTH: 9 ft
DISPOSITION: Teflon Casing

DEPTH	DESCRIPTION
0-3	Top Soil, boulders and cobbles
3-9	Unit 3b. Dark yellowish brown tuff Moderately welded Rare rhyolite lithic fragments Rare pumice lapilli

BOREHOLE: P-87-04
GEOLOGIST: Fred Brown
DATE DRILLED: 28 JULY 1987
ELEVATION: 7348 ft
LOCATION: 475588, 1764562
TOTAL DEPTH: 10 ft
DISPOSITION: Teflon Casing

DEPTH	DESCRIPTION
0-4	Top Soil (sandy loam)
4-10	Unit 3b. Dark yellowish brown tuff Welded Rare rhyolite lithic fragments Rare pumice lapilli

BOREHOLE: P-87-05
GEOLOGIST: Fred Brown
DATE DRILLED: 29 JULY 1987
ELEVATION: 7353 ft
LOCATION: 475520, 1764532
TOTAL DEPTH: 35 ft
DISPOSITION: PVC Casing

DEPTH	DESCRIPTION
0-3	Top Soil (sandy loam)
3-15	Unit 3b. Dark yellowish brown tuff Welded Rare rhyolite lithic fragments Rare pumice lapilli
15-35	Unit 3b. Orange pink tuff Moderately welded Rare rhyolite lithic fragments Rare grey pumice lapilli

BOREHOLE: P-87-06
GEOLOGIST: Fred Brown
DATE DRILLED: 28 JULY 1987
ELEVATION: 7352 ft
LOCATION: 475467, 1764514
TOTAL DEPTH: 10 ft
DISPOSITION: Teflon Casing

DEPTH	DESCRIPTION
0-4	Top Soil (sandy loam)
4-10	Unit 3b. Pale yellowish brown tuff Welded Rare rhyolite lithic fragments Rare pumice lapilli

BOREHOLE: P-87-07
GEOLOGIST: Fred Brown
DATE DRILLED: 29 JULY 1987
ELEVATION: 7356
LOCATION: 475381, 1764491
TOTAL DEPTH: 35 ft
DISPOSITION: PVC Casing

DEPTH	DESCRIPTION
0-2	Top Soil (sandy loam)
2-5	Unit 3b. Pale yellowish brown tuff Welded Rare rhyolite lithic fragments Rare pumice lapilli
5-6	Weathered dark reddish brown clay
6-35	Unit 3b. Pale yellowish brown tuff Moderately welded Common rhyolite lithic fragments Rare pumice lapilli

BOREHOLE: P-87-08
GEOLOGIST: Fred Brown
DATE DRILLED: 28 JULY 1987
ELEVATION: 7370 ft
LOCATION: 475257, 1764405
TOTAL DEPTH: 10 ft
DISPOSITION: Teflon Casing

DEPTH	DESCRIPTION
0-3	Top Soil (sandy loam)
3-10	Unit 3c. Dark yellowish brown tuff Welded Rare rhyolite lithic fragments Rare pumice lapilli

BOREHOLE: P-87-09
GEOLOGIST: Fred Brown
DATE DRILLED: 29 JULY 1987
ELEVATION: 7376 ft
LOCATION: 475183, 1764381
TOTAL DEPTH: 35 ft
DISPOSITION: PVC Casing

DEPTH	DESCRIPTION
0-3	Top Soil (sandy loam)
3-15	Unit 3c. Moderate brown tuff Moderately welded Rare rhyolite lithic fragments Common grey pumice lapilli
15-33	Unit 3b. Greyish brown tuff Welded Abundant rhyolite/latite lithic fragments Common red-brown pumice lapilli
33-35	Unit 3b. Pale brown tuff and clay Moderately welded Rare rhyolite lithic fragments Abundant clayey pumice lapilli

BOREHOLE: P-87-10
GEOLOGIST: Fred Brown
DATE DRILLED: 30 JULY 1987
ELEVATION: 7411 ft
LOCATION: 475814, 1764473
TOTAL DEPTH: 150 ft
DISPOSITION: Aluminum Casing

DEPTH	DESCRIPTION
0-3	Fill/Top Soil (sandy loam)
3-5	Unit 3c. Dark yellowish brown tuff Welded Rare rhyolite lithic fragments Common red pumice lapilli
5-50	Unit 3c. Pale yellowish brown tuff Moderately welded Rare rhyolite lithic fragments Common grey pumice lapilli
50	Contact is strongly welded
50-120	Unit 3b. Pale yellowish brown tuff Moderately welded Rare rhyolite lithic fragments Common red pumice lapilli
120-150	Unit 3a. Dark yellowish brown tuff Moderately welded Abundant latite lithic fragments Rare grey-red pumice lapilli
150	Unit 2. Pale yellowish brown tuff Densely welded Rare rhyolite lithic fragments Rare pumice lapilli

BOREHOLE: P-87-11
GEOLOGIST: Fred Brown
DATE DRILLED: 27 AUGUST 1987
ELEVATION: 7409 ft
LOCATION: 475991, 1763584
TOTAL DEPTH: 70 ft
DISPOSITION: Uncased

DEPTH	DESCRIPTION
0-2	Top Soil (sandy loam)
2-35	Unit 3c. Dark yellowish brown tuff Moderately welded Rare rhyolite lithic fragments Common red pumice lapilli
35-45	Unit 3c. Pale yellowish brown tuff Slightly welded Rare rhyolite lithic fragments Rare pumice lapilli
45-50	Unit 3c. Dark yellowish brown tuff Moderately welded Rare rhyolite lithic fragments Rare pumice lapilli
50-70	Unit 3b. Pale yellowish brown tuff Densely welded Rare rhyolite lithic fragments Rare pumice lapilli

BOREHOLE: P-87-12A
GEOLOGIST: Fred Brown
DATE DRILLED: 26 August 1987
ELEVATION: 7448 ft
LOCATION: 476664, 1764036
TOTAL DEPTH: 200 ft
DISPOSITION: Aluminum Casing

DEPTH	DESCRIPTION
0-1	El Cajete Pumice
1-3	Pumice/Top Soil (sandy loam)
3-5	Clay
5-50	Unit 3d. Greyish pink tuff Slightly welded Rare rhyolite lithic fragments Rare pumice lapilli
50	Contact moderately welded Abundant brown pumice lapilli
50-102	Unit 3c. Light brown tuff Moderately welded Rare rhyolite lithic fragments Rare pumice lapilli
102	Contact moderately welded Abundant rhyolite/latite lithic fragments Common grey pumice lapilli
102-173	Unit 3b. Pale yellowish brown tuff Slightly welded Rare rhyolite lithic fragments Common reddish pumice lapilli
173	Contact slightly welded Abundant rhyolite lithic fragments Rare pumice lapilli
173-195	Unit 3a. Pale yellowish brown tuff Non-welded Abundant rhyolite/latite lithic fragments Rare pumice lapilli
195-200	Unit 2. Dark yellowish brown tuff Densely welded Abundant rhyolite lithic fragments Rare pumice lapilli

BOREHOLE: P-86-13
GEOLOGIST: William Purtymun
DATE DRILLED: 3 OCTOBER 1986
ELEVATION: 7445 ft
LOCATION: 475720, 1764264
TOTAL DEPTH: 103 ft
DISPOSITION: Aluminum Casing

DEPTH	DESCRIPTION
0-38	Unit 3d. Light brown tuff Moderately welded Rare rhyolite/latite lithic fragments Rare pumice lapilli
38	Contact strongly welded Common rhyolite/latite lithic fragments
38-84	Unit 3c. Grey tuff Moderately welded Rare rhyolite lithic fragments Rare pumice lapilli
84-103	Unit 3b. Light grey tuff Moderately welded Rare rhyolite lithic fragments Rare pumice lapilli

BOREHOLE: P-87-14
GEOLOGIST: Fred Brown
DATE DRILLED: 28 AUGUST 1987
ELEVATION: 7437 ft
LOCATION: 475365, 1764251
TOTAL DEPTH: 85 ft
DISPOSITION: Aluminum Casing

DEPTH	DESCRIPTION
0-4	Fill/Top Soil (sandy loam)
4-30	Unit 3d. Pale yellowish brown tuff Moderately welded Rare rhyolite lithic fragments Common grey pumice lapilli
30	Contact is strongly welded Abundant rhyolite lithic fragments Common grey pumice lapilli
30-35	Unit 3c. Pale yellowish brown tuff Moderately welded Rare rhyolite lithic fragments Rare pumice lapilli
35-75	Unit 3c. Dark yellowish brown tuff and clay Welded Rare rhyolite lithic fragments Abundant clayey pumice lapilli
75-85	Unit 3b. Pale yellowish brown pumice Densely welded Rare rhyolite lithic fragments Common grey pumice lapilli

BOREHOLE: P-87-15
GEOLOGIST: Fred Brown
DATE DRILLED: 27 AUGUST 1987
ELEVATION: 7413 ft
LOCATION: 475803, 1763520
TOTAL DEPTH: 70 ft
DISPOSITION: Uncased

DEPTH	DESCRIPTION
0-1	El Cajete Pumice
1-3	Pumice/Top Soil (sandy loam)
3-4	Dark yellowish brown clay
4-40	Unit 3c. Dark yellowish brown tuff Moderately welded Rare rhyolite lithic fragments Common red-grey pumice lapilli
40-50	Unit 3c. Pale yellowish brown tuff Slightly welded Rare rhyolite lithic fragments Rare pumice lapilli
50-55	Unit 3c. Dark yellowish brown tuff Moderately welded Rare rhyolite lithic fragments Common red-grey pumice lapilli
55-70	Unit 3b. Dark yellowish brown tuff Densely welded Rare rhyolite lithic fragments Rare pumice lapilli

BOREHOLE: P-87-16A
GEOLOGIST: Fred Brown
DATE DRILLED: 4 SEPTEMBER 1987
ELEVATION: 7452 ft
LOCATION: 475550, 1764200
TOTAL DEPTH: 105 ft
DISPOSITION: Aluminum Casing

DEPTH	DESCRIPTION
0-5	Fill/Dark Brown Clay
5-7	Top Soil (sandy loam)
7-15	Unit 3d. Pale yellowish brown tuff Slightly welded Rare rhyolite lithic fragments Rare pumice lapilli Vertical fracture at 9-12 ft
15-26	Unit 3d. Greyish orange pink tuff Moderately welded Rare rhyolite lithic fragments Oxidation halo surrounds rhyolite lithic fragments Rare brown pumice lapilli Vertical fracture 19-22 ft
26-31	Extensive clay-filled vertical fractures
31-42	Unit 3d. Greyish orange pink tuff Moderately welded Common oxidized rhyolite lithic fragments Common grey pumice lapilli
42-46	Unit 3c. Pale red tuff Welded Common oxidized rhyolite lithic fragments Common grey pumice lapilli Clay-filled vertical fracture (width to .5 in)
46-50	Unit 3c. Pale yellowish brown tuff Welded Common oxidized rhyolite lithic fragments Common grey pumice lapilli
50-60	Densly welded, no core recovered
60-68	Unit 3c. Greyish red tuff Welded Rare rhyolite lithic fragments Common large (to 2 in) pumice lapilli

68-74	Unit 3c. Pale brown tuff Moderately welded Rare rhyolite lithic fragments Rare clayey pumice lapilli
74-81	Unit 3c. Pale yellowish brown tuff Moderately welded Rare rhyolite lithic fragments Rare pumice lapilli Clay-filled vertical fracture (width to .75 in)
81-87	Unit 3c. Pale yellowish brown tuff Welded Rare rhyolite lithic fragments Rare pumice lapilli
87-105	Unit 3b. Densly welded, no core recovered

ENCLOSURE 3

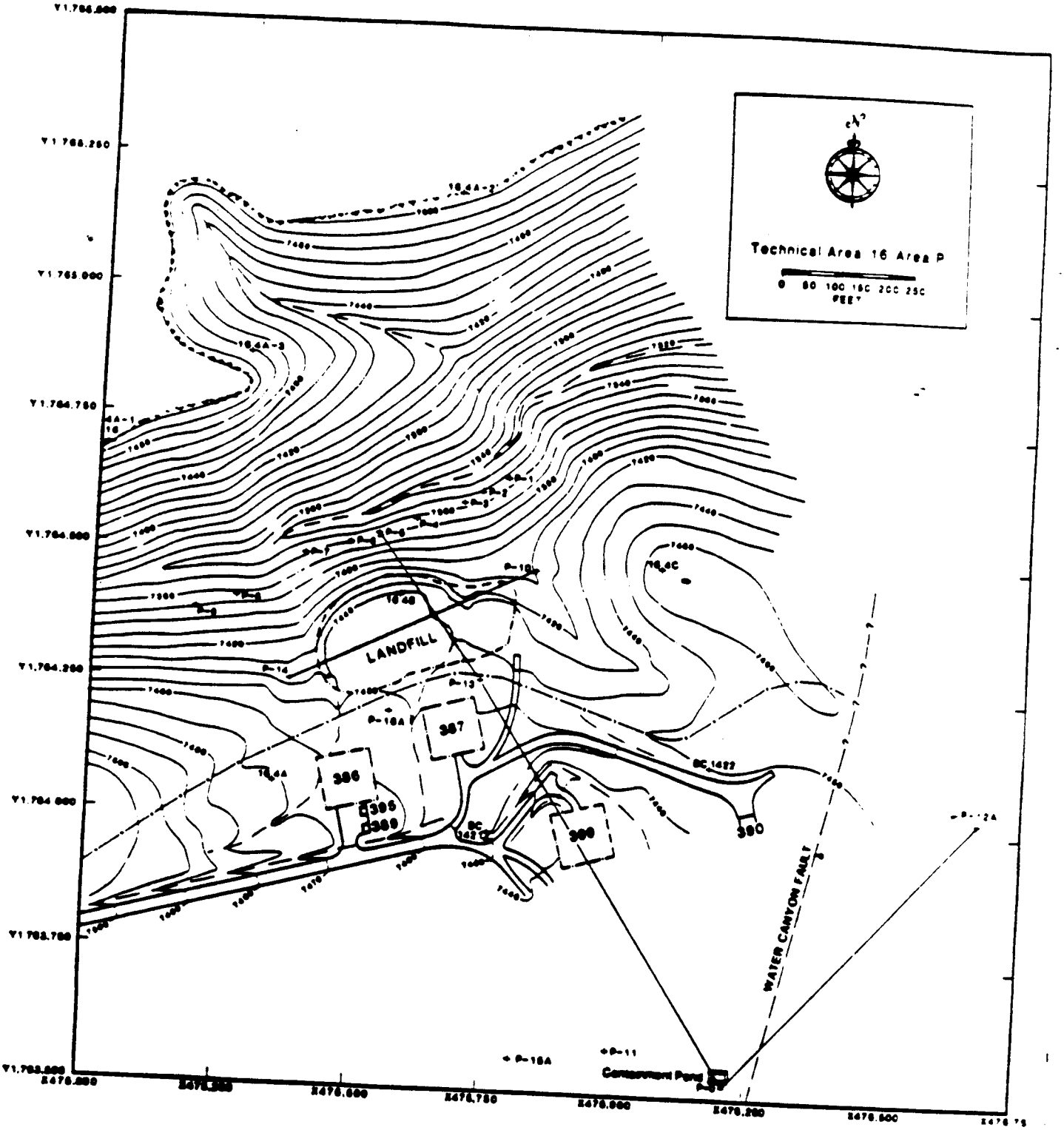


Figure D2. Site map of Technical Area 16 Area P. Boreholes are numbered P-0 through P-16A, and marked with crosses.

WELL COMPLETION DIAGRAM

P-87-00
(ALUMINUM)

```
                T|  |<---------- 0
                T|  | TOP SOIL
                T|  |<---------- 3
                T|  |
                T|  | TUFF (3c)
                T|  |
                T|  |<---------- 40
                T|  |
                T|  |
                T|  | TUFF (3b)
                T|  |
                T|  |
                T|  |
                T|  |<---------- 110
120 --------->T|  |
                |X| TUFF (3a)
                |X|
                - <---------- 135
```

SCREEN	=
CAVED-IN	X
BACKFILLED TUFF	T
CEMENT	C
BENTONITE	B
SILICA SAND	S

(NOT TO SCALE)

WELL COMPLETION DIAGRAM

P-87-01
(PVC)

```
                C|  |<---------- 0
                C|  | TOP SOIL
                C|  |<---------- 4
                C|  |
13 ---------->C|  |
                B|  |
15 ---------->B|  |
                S|=|
                S|=|
                S|=| TUFF (3b)
                S|=|
                S|=|
                S|=|
                S|=|
                S|=|
                S|=|
                S|=|
                  - <---------- 35
```

SCREEN	=
CAVED-IN	X
BACKFILLED TUFF	T
CEMENT	C
BENTONITE	B
SILICA SAND	S

(NOT TO SCALE)

WELL COMPLETION DIAGRAM

P-87-03
(TEFLON)

```
                C|  |<--------- 0
1 --------->C|  |
                B|  |  TOP SOIL
2 --------->B|  |
                S|=|
                S|=|
                S|=|<--------- 3
                S|=|
                S|=|
                S|=|
                S|=|
                S|=|  TUFF (3b)
                S|=|
                S|=|
7 --------->S|=|
                |X|
                |X|
                 - <--------- 9
```

SCREEN	=
CAVED-IN	X
BACKFILLED TUFF	T
CEMENT	C
BENTONITE	B
SILICA SAND	S

(NOT TO SCALE)

WELL COMPLETION DIAGRAM

P-87-04
(TEFLON)

```
                C|  |<---------- 0
1 ---------->C|  |
                B|  |  TOP SOIL
3 ---------->B|  |
               S|=|
               S|=|
               S|=|<---------- 4
               S|=|
               S|=|
               S|=|
               S|=|
               S|=|  TUFF (3b)
               S|=|
               S|=|
8 ---------->S|=|
               |X|
               |X|
                - <---------- 10
```

SCREEN	=
CAVED-IN	X
BACKFILLED TUFF	T
CEMENT	C
BENTONITE	B
SILICA SAND	S

(NOT TO SCALE)

WELL COMPLETION DIAGRAM

P-87-05
(PVC)

```
                C|  |<---------- 0
                C|  | TOP SOIL
                C|  |<---------- 3
                C|  |
13 ---------->C|  |
                B|  |
15 ---------->B|  |
               S|=|
               S|=|
               S|=| TUFF (3b)
               S|=|
               S|=|
               S|=|
               S|=|
               S|=|
               S|=|
               S|=|
                 - <---------- 35
```

SCREEN	=
CAVED-IN	X
BACKFILLED TUFF	T
CEMENT	C
BENTONITE	B
SILICA SAND	S

(NOT TO SCALE)

WELL COMPLETION DIAGRAM

P-87-06
(TEFLON)

```
                C|  |<---------- 0
1 ---------->C|  |
                B|  |
2 ---------->B|  | TOP SOIL
                S|=|
                S|=|
                S|=|<---------- 4
                S|=|
                S|=|
                S|=|
                S|=|
                S|=| TUFF (3b)
                S|=|
                S|=|
7 ---------->S|=|
                |X|
                |X|
                 - <---------- 10
```

SCREEN	=
CAVED-IN	X
BACKFILLED TUFF	T
CEMENT	C
BENTONITE	B
SILICA SAND	S

(NOT TO SCALE)

WELL COMPLETION DIAGRAM

P-87-07
(PVC)

```
                C|  |<--------- 0
                C|  | TOP SOIL
                C|  |<--------- 2
                C|  |
13 --------->C|  |
                B|  |
15 --------->B|  |
                S|=|
                S|=|
                S|=| TUFF (3b)
                S|=|
                S|=|
                S|=|
                S|=|
                S|=|
                S|=|
                S|=|
                  - <--------- 35
```

SCREEN	=
CAVED-IN	X
BACKFILLED TUFF	T
CEMENT	C
BENTONITE	B
SILICA SAND	S

(NOT TO SCALE)

WELL COMPLETION DIAGRAM

P-87-08
(TEFLON)

```
                C|  |<--------- 0
1 --------->C|  |
                B|  | TOP SOIL
2 --------->B|  |
                S|=|
                S|=|
                S|=|<--------- 3
                S|=|
                S|=|
                S|=|
                S|=|
                S|=| TUFF (3c)
                S|=|
                S|=|
7 --------->S|=|
                |X|
                |X|
                 - <--------- 10
```

SCREEN	=
CAVED-IN	X
BACKFILLED TUFF	T
CEMENT	C
BENTONITE	B
SILICA SAND	S

(NOT TO SCALE)

WELL COMPLETION DIAGRAM

P-87-09
(PVC)

```
                C|  |<--------- 0
                C|  | TOP SOIL
                C|  |<--------- 3
                C|  |
13 --------->C|  | TUFF (3c)
                B|  |
15 --------->B|  |<--------- 15
                S|=|
                S|=|
                S|=|
                S|=|
                S|=| TUFF (3b)
                S|=|
                S|=|
                S|=|
                S|=|
                S|=|
                  - <--------- 35
```

SCREEN	=
CAVED-IN	X
BACKFILLED TUFF	T
CEMENT	C
BENTONITE	B
SILICA SAND	S

(NOT TO SCALE)

WELL COMPLETION DIAGRAM

P-87-10
(UNCASED)

```
| |<--------- 0
| | TOP SOIL
| |<--------- 3
| |
| |
| | TUFF (3c)
| |
| |
| |<--------- 50
| |
| | TUFF (3b)
| |
| |
| |<--------- 120
| |
| | TUFF (3a)
| |
 - <--------- 150
```

SCREEN	=
CAVED-IN	X
BACKFILLED TUFF	T
CEMENT	C
BENTONITE	B
SILICA SAND	S

(NOT TO SCALE)

WELL COMPLETION DIAGRAM

P-87-12A
(ALUMINUM)

```
                T|  |<--------- 0
                T|  | TOP SOIL
                T|  |<--------- 3
                T|  | TUFF (3d)
                T|  |
                T|  |<--------- 50
                T|  |
                T|  | TUFF (3C)
                T|  |
                T|  |<--------- 102
                T|  |
171 --------->T|  | TUFF (3b)
                |X|
                |X|<--------- 173
                |X| TUFF (3a)
                |X|<--------- 195
                |X| TUFF (2)
                 - <--------- 200
```

SCREEN	=
CAVED-IN	X
BACKFILLED TUFF	T
CEMENT	C
BENTONITE	B
SILICA SAND	S

(NOT TO SCALE)

WELL COMPLETION DIAGRAM

P-87-13
(ALUMINUM)

```
                T|  |<--------- 0
                T|  |
                T|  |
                T|  | TUFF (3d)
                T|  |
                T|  |
                T|  |<--------- 38
                T|  |
                T|  |
                T|  | TUFF (3c)
                T|  |
                T|  |
                T|  |<--------- 84
92 --------->T|  |
                |X| TUFF (3b)
                |X|
                |X|
                 - <--------- 103
```

SCREEN	=
CAVED-IN	X
BACKFILLED TUFF	T
CEMENT	C
BENTONITE	B
SILICA SAND	S

(NOT TO SCALE)

WELL COMPLETION DIAGRAM

P-87-14
(ALUMINUM)

```
                T|  |<--------- 0
                T|  | TOP SOIL
                T|  |<--------- 4
                T|  |
                T|  | TUFF (3d)
                T|  |
                T|  |<--------- 30
                T|  |
                T|  |
                T|  |
                T|  | TUFF (3c)
                T|  |
                T|  |
                T|  |
79 --------->T|  |<--------- 75
                |X| TUFF (3b)
                |X|
                 - <--------- 85
```

SCREEN	=
CAVED-IN	X
BACKFILLED TUFF	T
CEMENT	C
BENTONITE	B
SILICA SAND	S

(NOT TO SCALE)

WELL COMPLETION DIAGRAM

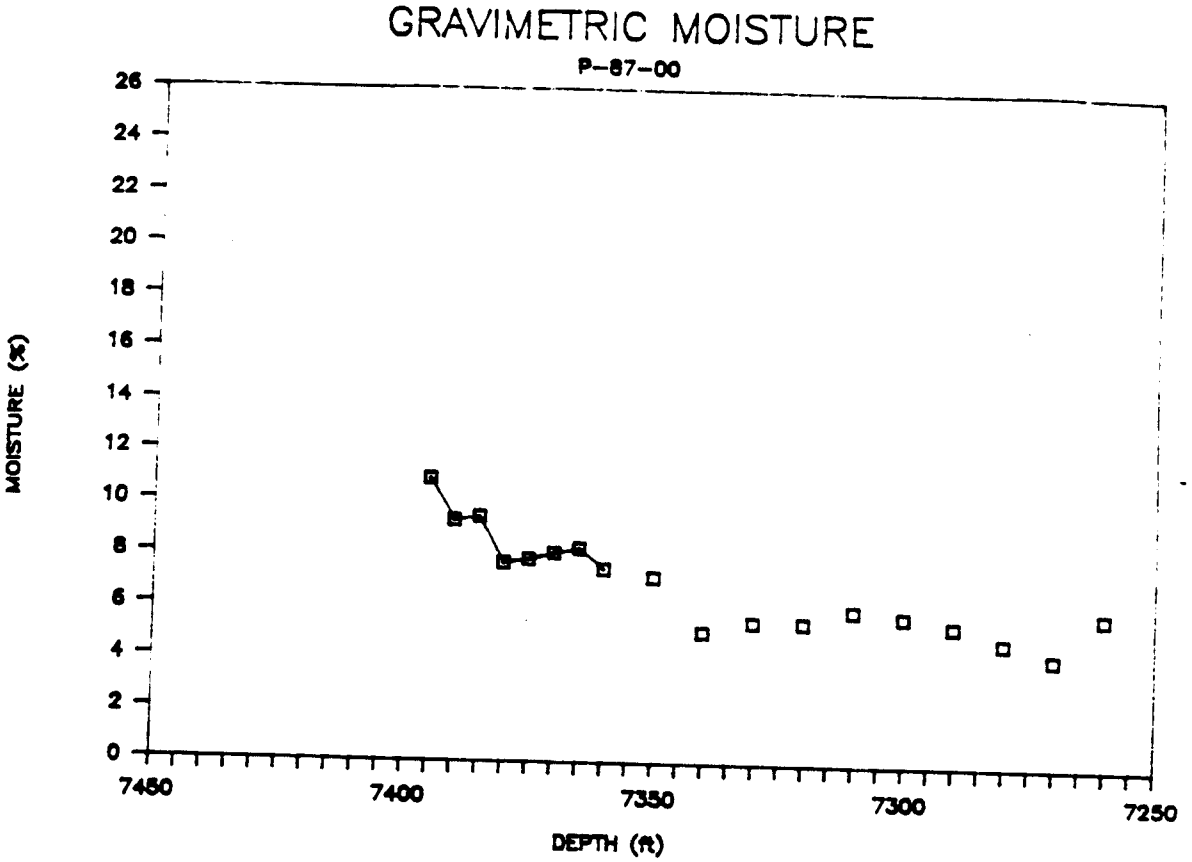
P-87-16A
(ALUMINUM)

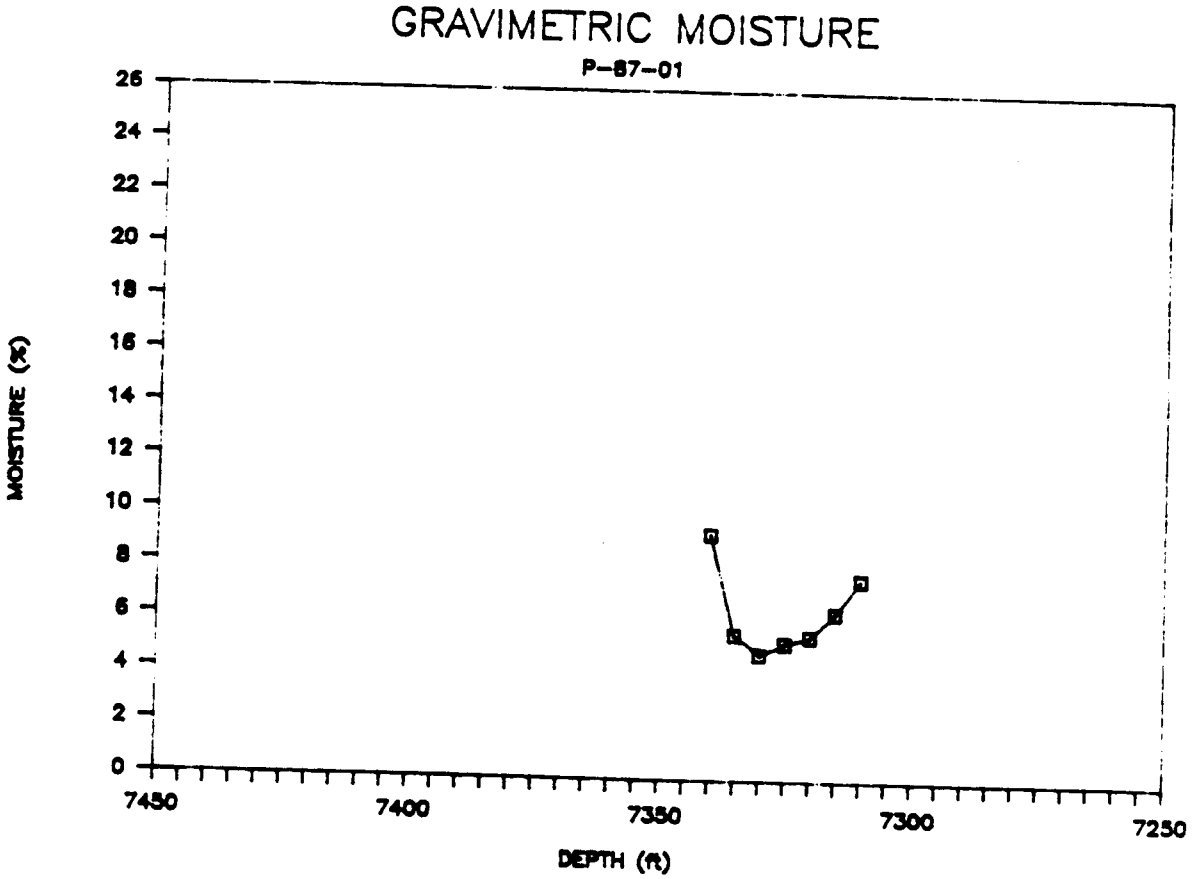
```
                T|  |<---------- 0
                T|  | TOP SOIL
                T|  |<---------- 7
                T|  |
                T|  | TUFF (3d)
                T|  |
                T|  |
                T|  |<--------- 42
                T|  |
                T|  |
                T|  | TUFF (3c)
                T|  |
                T|  |
                T|  |<---------- 87
8 ---------->T|  |
              |X| TUFF (3b)
              |X|
               - <---------- 105
```

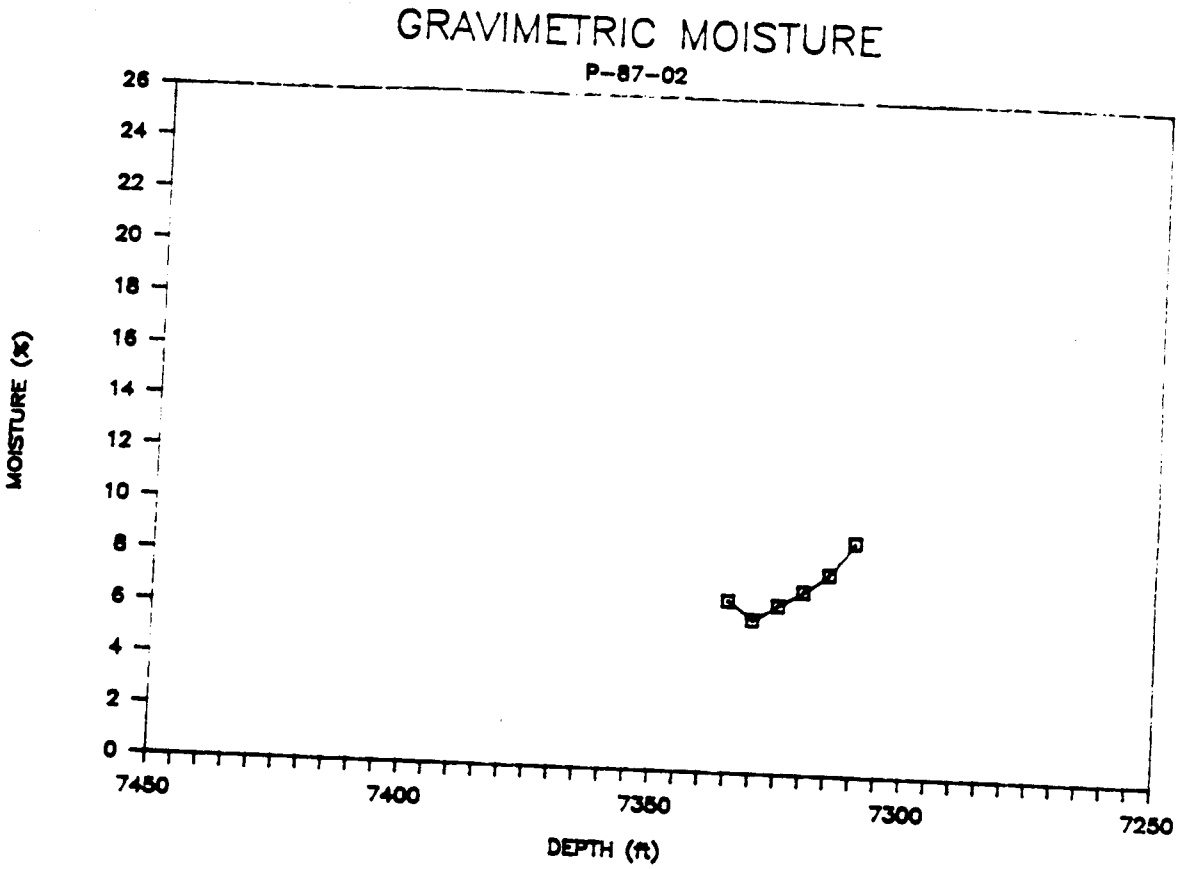
SCREEN	=
CAVED-IN	X
BACKFILLED TUFF	T
CEMENT	C
BENTONITE	B
SILICA SAND	S

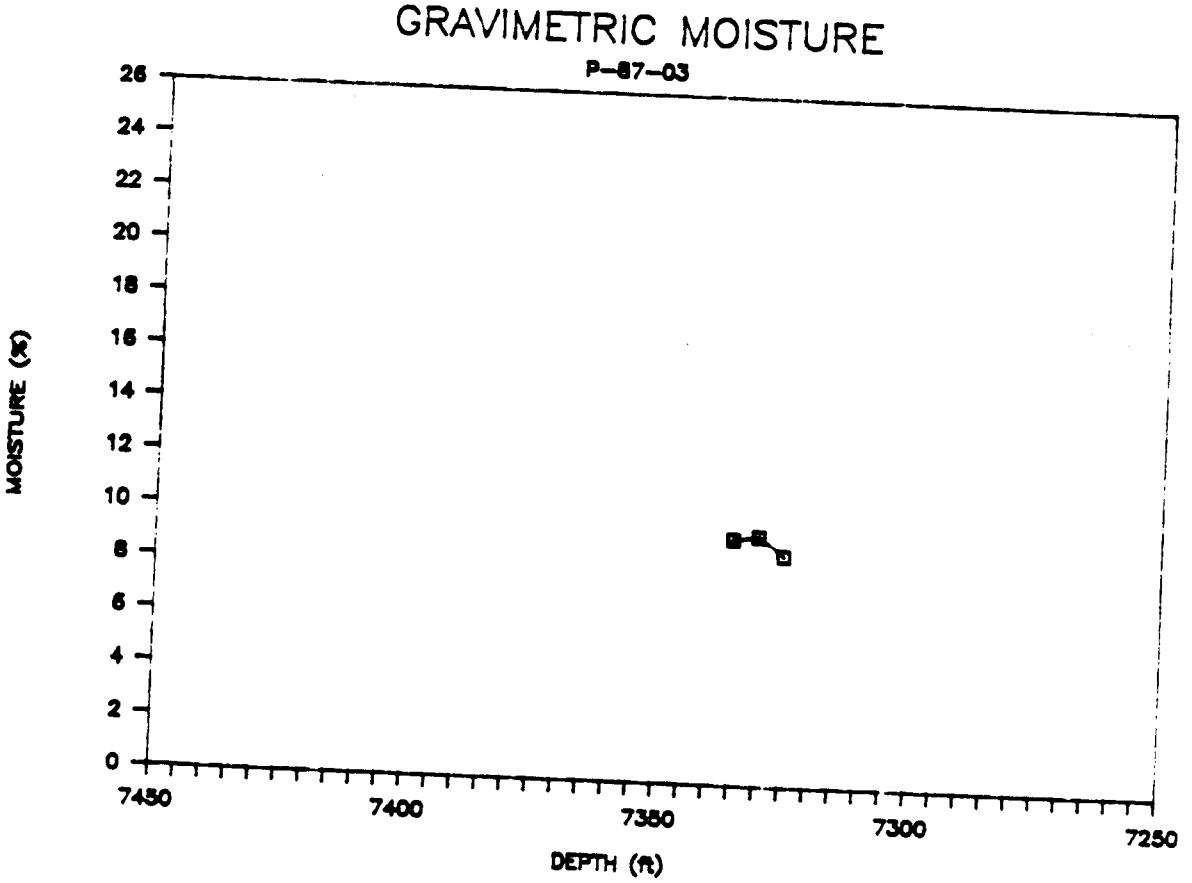
(NOT TO SCALE)

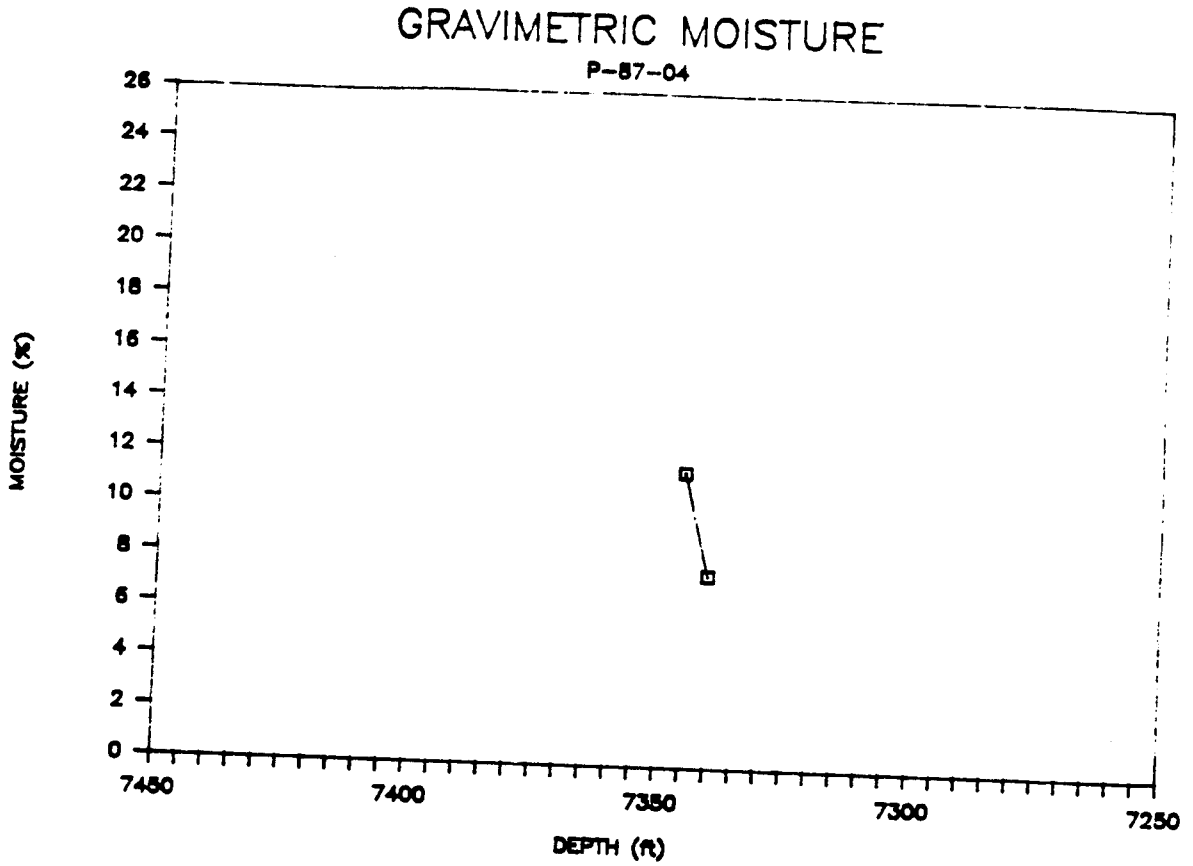
ENCLOSURE 4

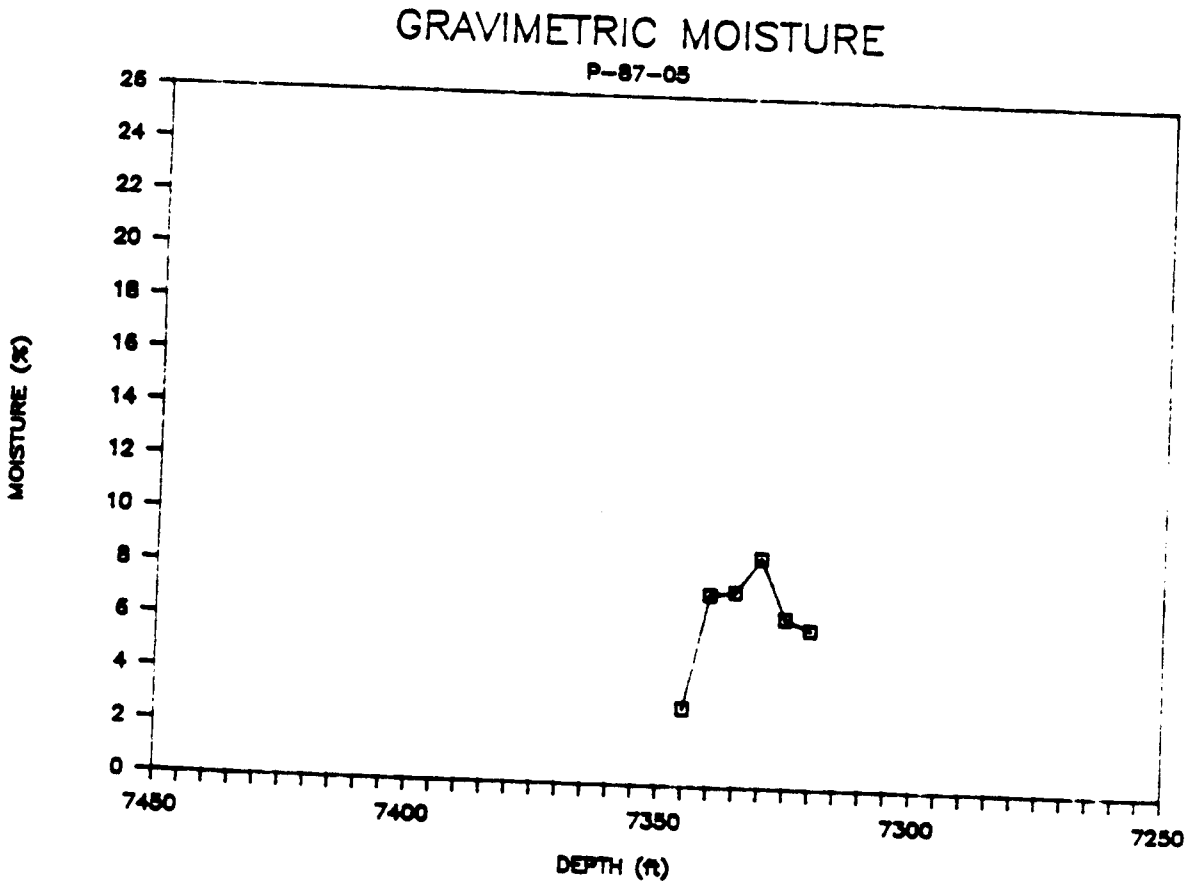

GRAVIMETRIC MOISTURE
P-87-00
MOISTURE (%)
26
24
22
20
18
16
14
12
10
8
6
4
2
0
7450
7400
7350
7300
7250
DEPTH (ft)

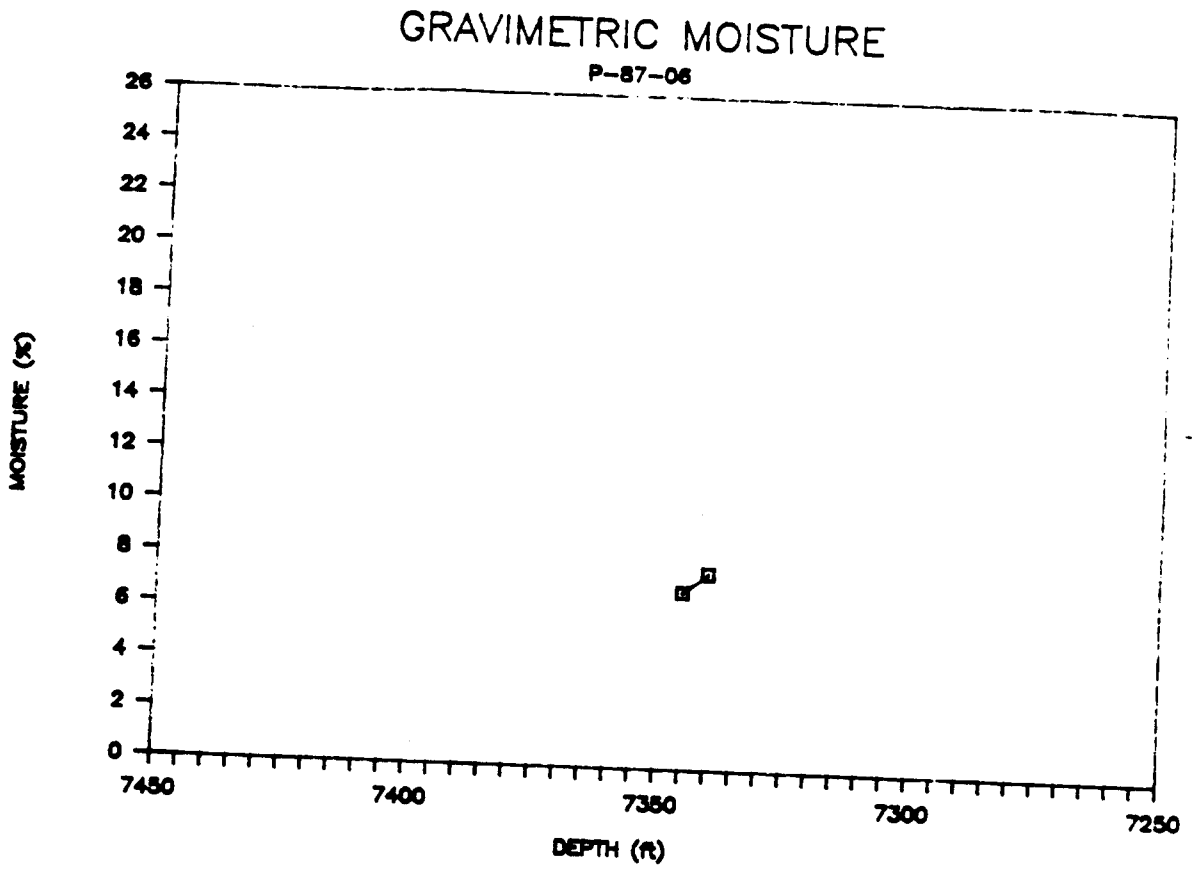

GRAVIMETRIC MOISTURE
P-87-01
MOISTURE (%)
26
24
22
20
18
16
14
12
10
8
6
4
2
0
7450
7400
7350
7300
7250
DEPTH (ft)

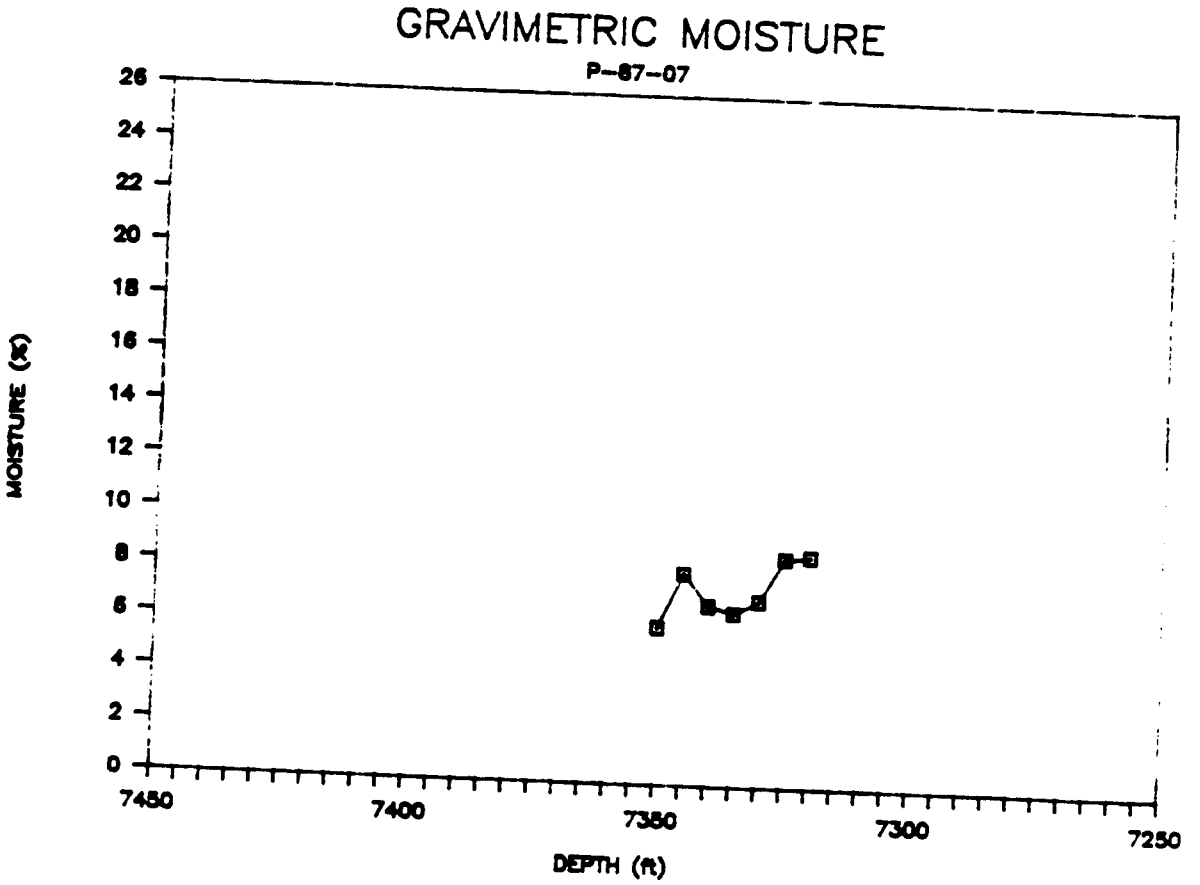

GRAVIMETRIC MOISTURE
P-87-02
MOISTURE (%)
26
24
22
20
18
16
14
12
10
8
6
4
2
0
7450
7400
7350
7300
7250
DEPTH (ft)

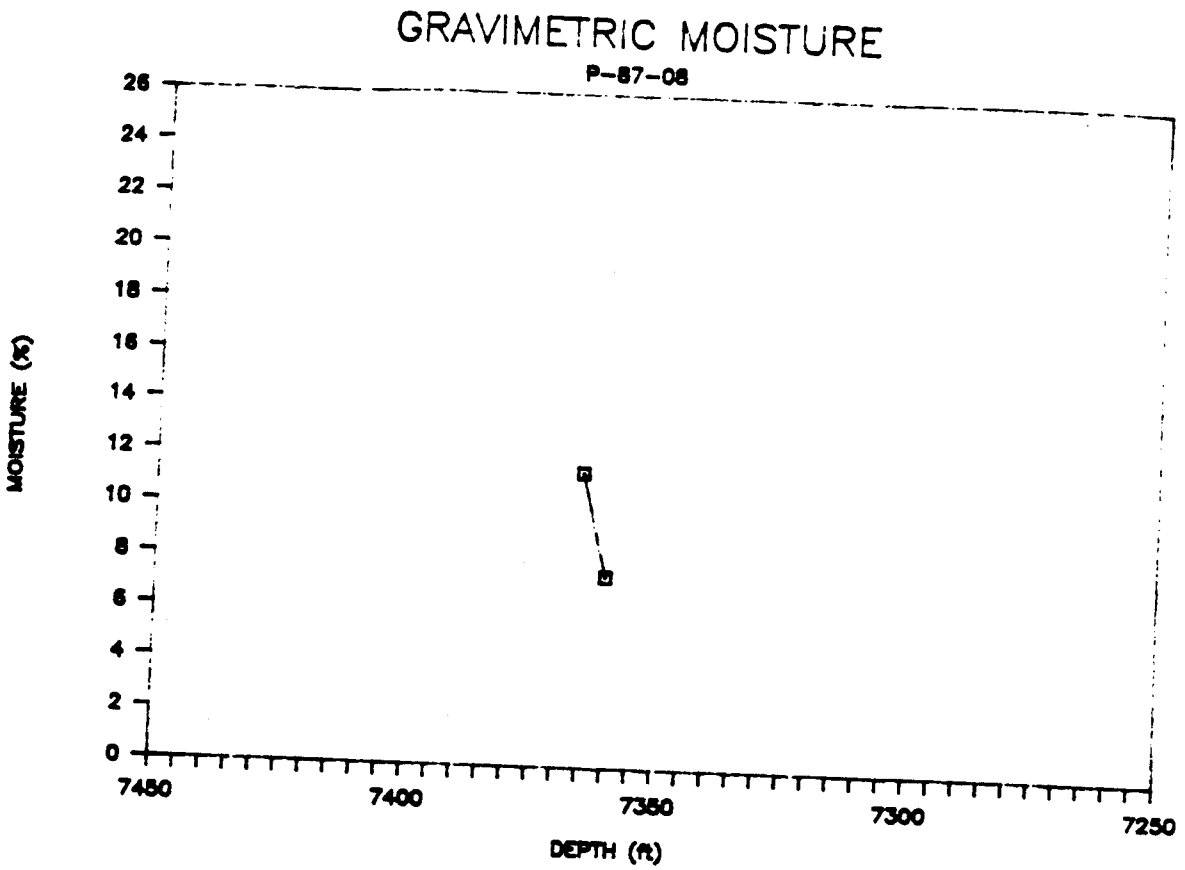

GRAVIMETRIC MOISTURE
P-87-03
MOISTURE (%)
26
24
22
20
18
16
14
12
10
8
6
4
2
0
7450
7400
7350
7300
7250
DEPTH (ft)

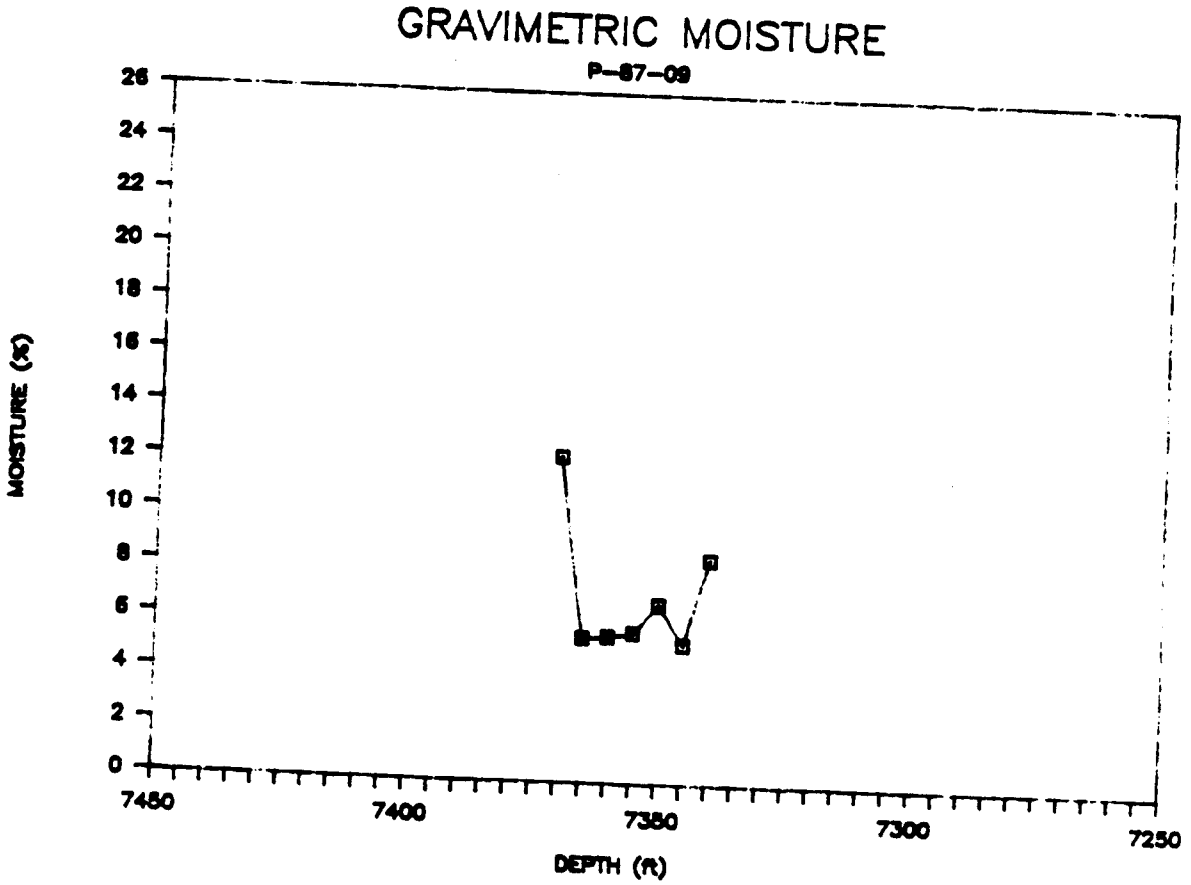

GRAVIMETRIC MOISTURE
P-87-04
MOISTURE (%)
26
24
22
20
18
16
14
12
10
8
6
4
2
0
7450
7400
7350
7300
7250
DEPTH (ft)

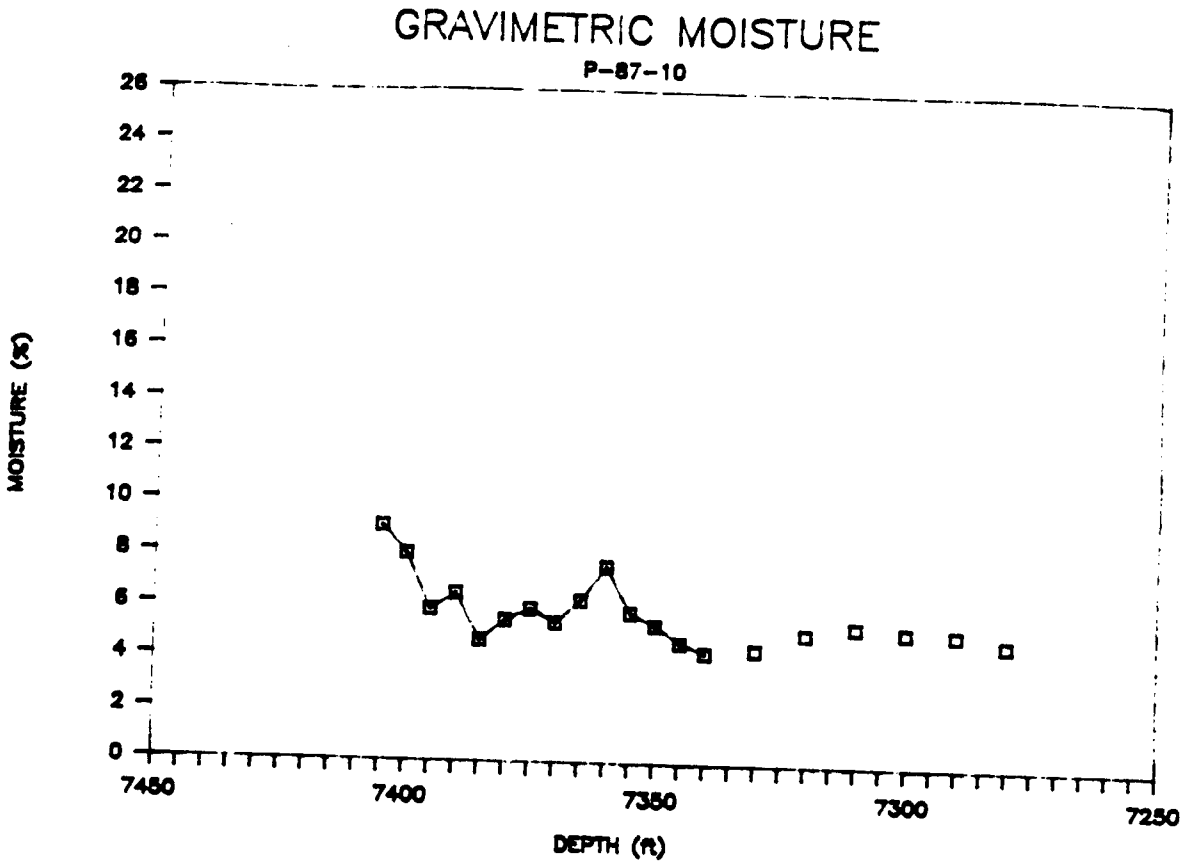

GRAVIMETRIC MOISTURE
P-87-05
MOISTURE (%)
26
24
22
20
18
16
14
12
10
8
6
4
2
0
7450
7400
7350
7300
7250
DEPTH (ft)

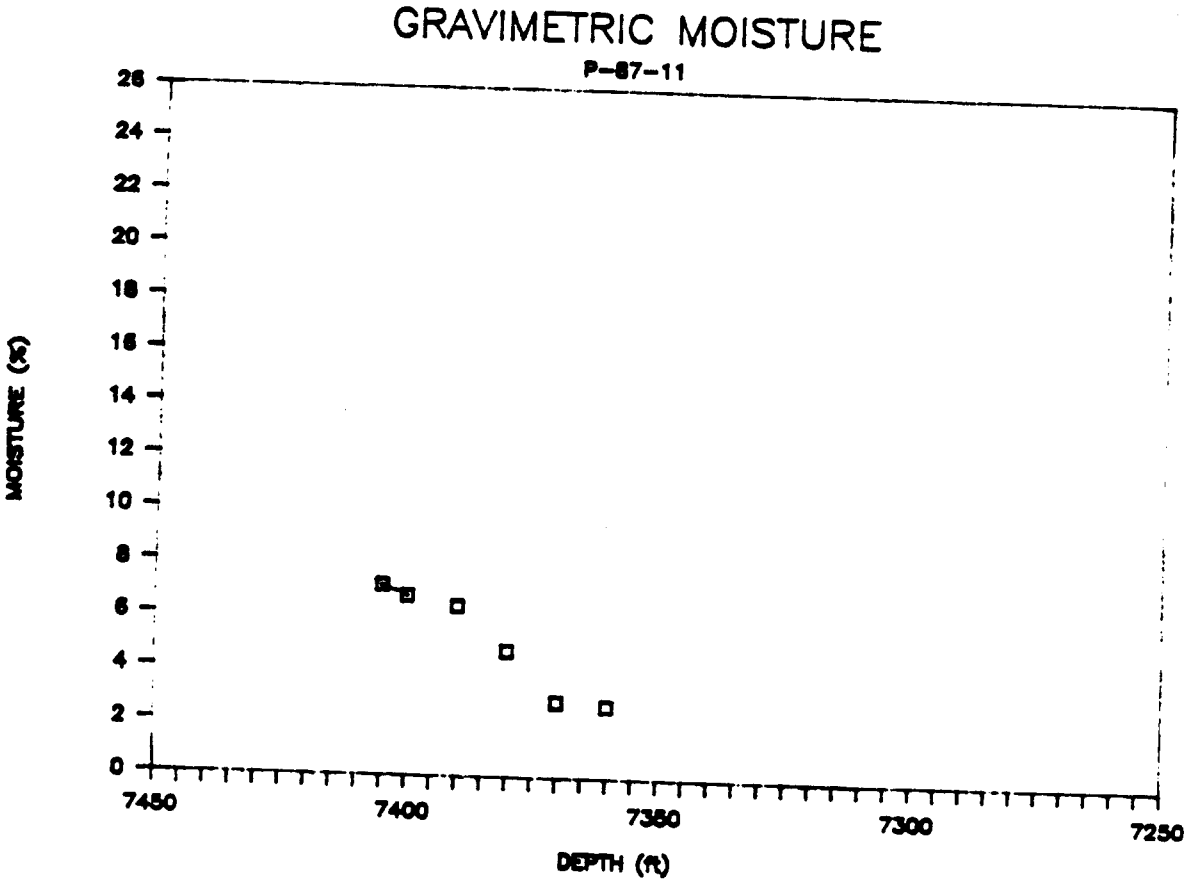

GRAVIMETRIC MOISTURE
P-87-06
MOISTURE (%)
26
24
22
20
18
16
14
12
10
8
6
4
2
0
7450
7400
7350
7300
7250
DEPTH (ft)

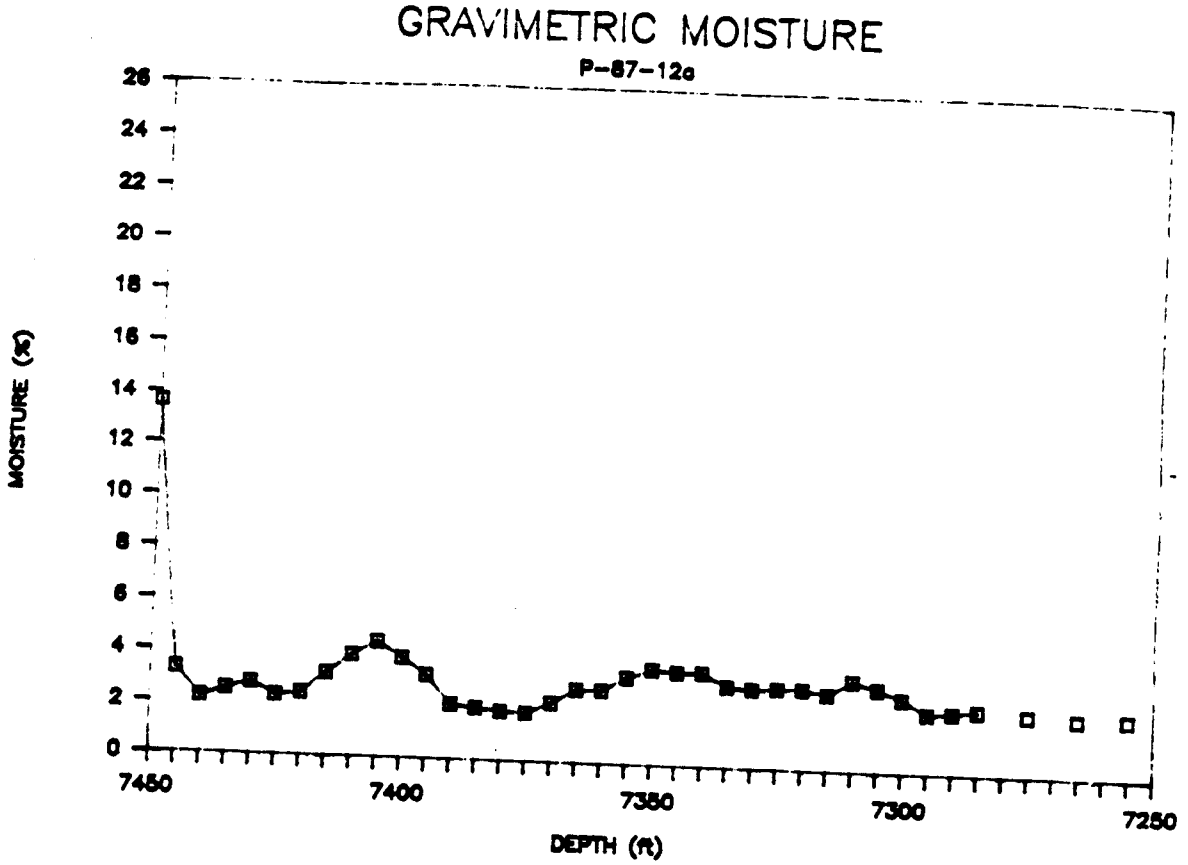

GRAVIMETRIC MOISTURE
P-87-07
MOISTURE (%)
26
24
22
20
18
16
14
12
10
8
6
4
2
0
7450
7400
7350
7300
7250
DEPTH (ft)

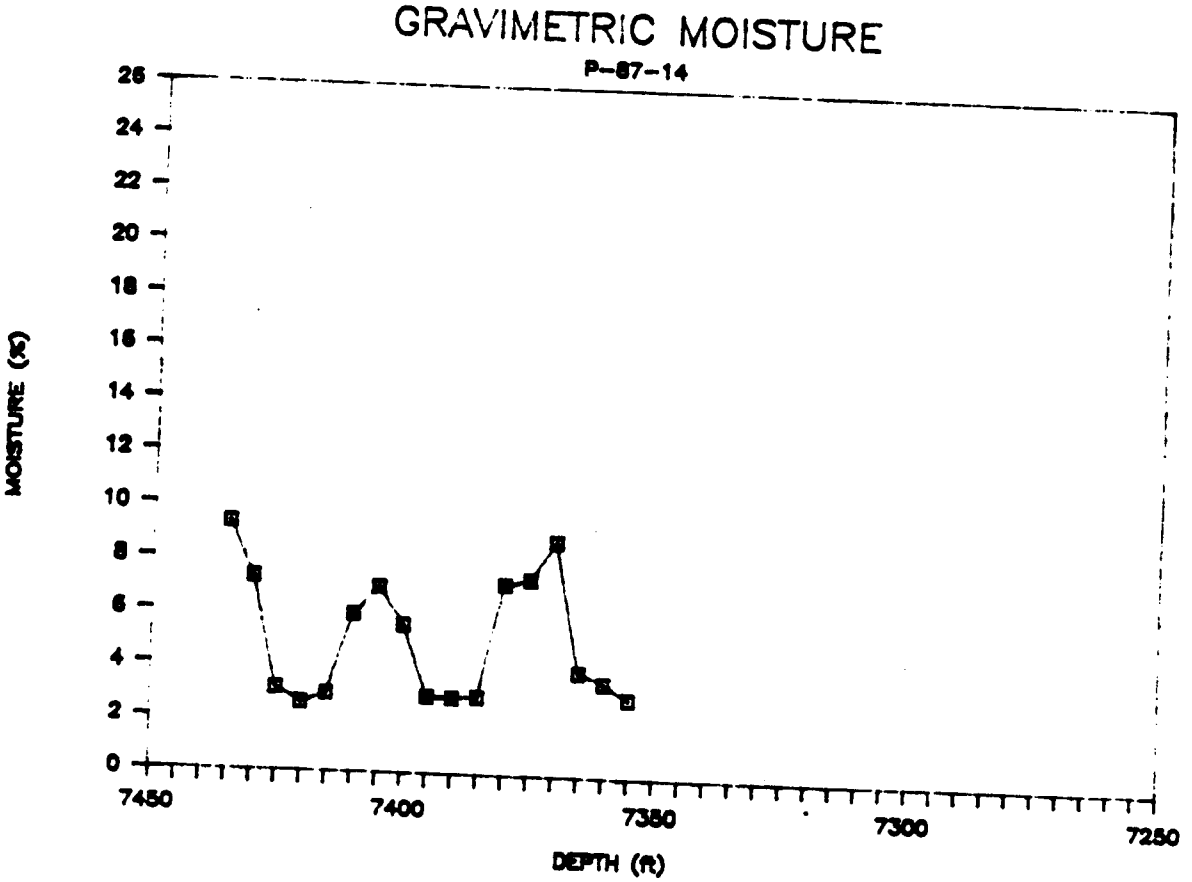

GRAVIMETRIC MOISTURE
P-87-08
MOISTURE (%)
26
24
22
20
18
16
14
12
10
8
6
4
2
0
7450
7400
7350
7300
7250
DEPTH (ft)

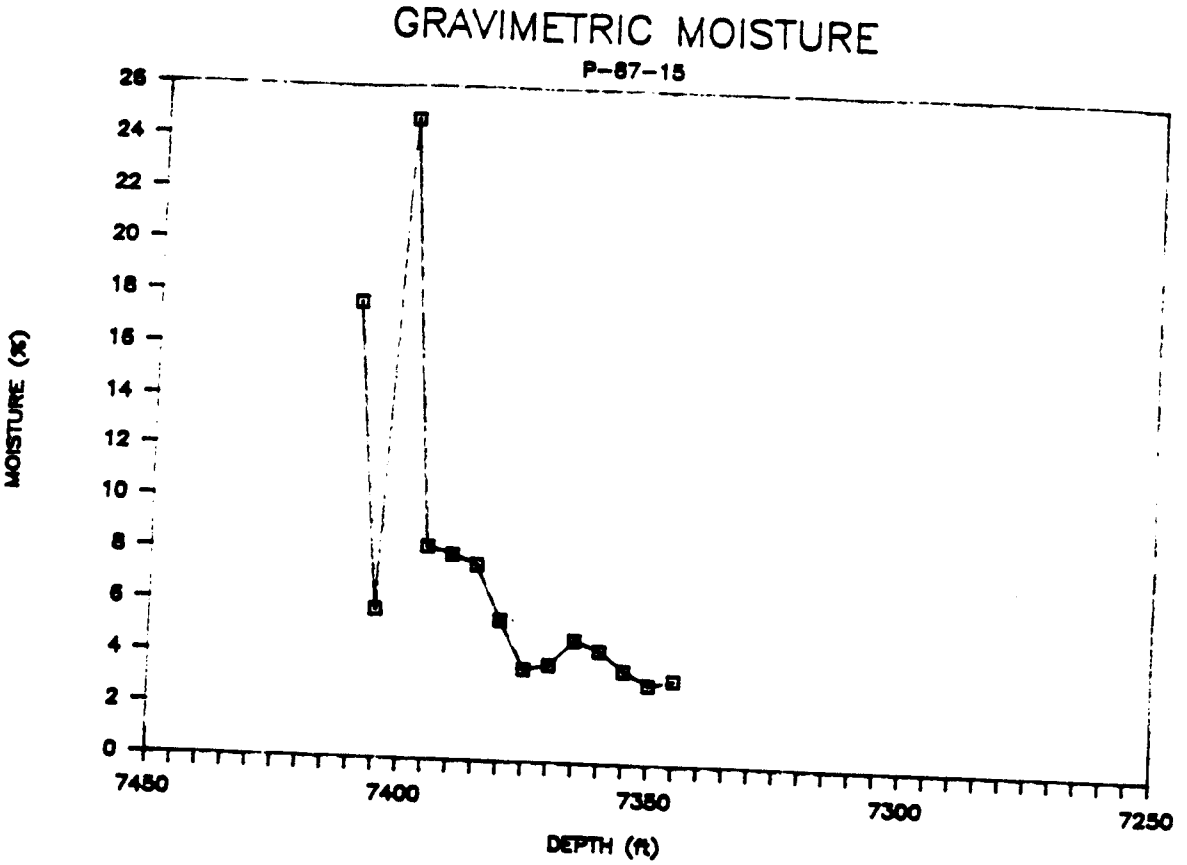

GRAVIMETRIC MOISTURE
P-87-09
MOISTURE (%)
26
24
22
20
18
16
14
12
10
8
6
4
2
0
7450
7400
7350
7300
7250
DEPTH (ft)


GRAVIMETRIC MOISTURE
P-87-10
MOISTURE (%)
26
24
22
20
18
16
14
12
10
8
6
4
2
0
7450
7400
7350
7300
7250
DEPTH (ft)


GRAVIMETRIC MOISTURE
P-87-11
MOISTURE (%)
26
24
22
20
18
16
14
12
10
8
6
4
2
0
7450
7400
7350
7300
7250
DEPTH (ft)


GRAVIMETRIC MOISTURE
P-87-12a
MOISTURE (%)
26
24
22
20
18
16
14
12
10
8
6
4
2
0
7450
7400
7350
7300
7250
DEPTH (ft)


GRAVIMETRIC MOISTURE
P-87-14
MOISTURE (%)
26
24
22
20
18
16
14
12
10
8
6
4
2
0
7450
7400
7350
7300
7250
DEPTH (ft)


GRAVIMETRIC MOISTURE
P-87-15
MOISTURE (%)
26
24
22
20
18
16
14
12
10
8
6
4
2
0
7450
7400
7350
7300
7250
DEPTH (ft)

ENCLOSURE #3C
SURFACE WATER AND SEDIMENT SAMPLING RESULTS
and
D.B. STEVENS REPORT OF SOIL HYDRAULIC PROPERTIES

Reconnaissance Sampling of Technical Area 16, Area P

7 December 1987

Fred Brown, William Purtymun, Steve McLinn

Weather clear and cool; Canon de Valle stream running about 1 cfs. No water in drainage channels.

SAMPLES

87.08755: soil/sediments

87.08756: soil/sediments

87.08757: water

87.08758: stream sediments

87.08759: water

87.08760: stream sediments

87.08761: sediments from drainage channel

87.08762: stream sediments

87.08763: water

87.08764: water

87.08765: stream sediments

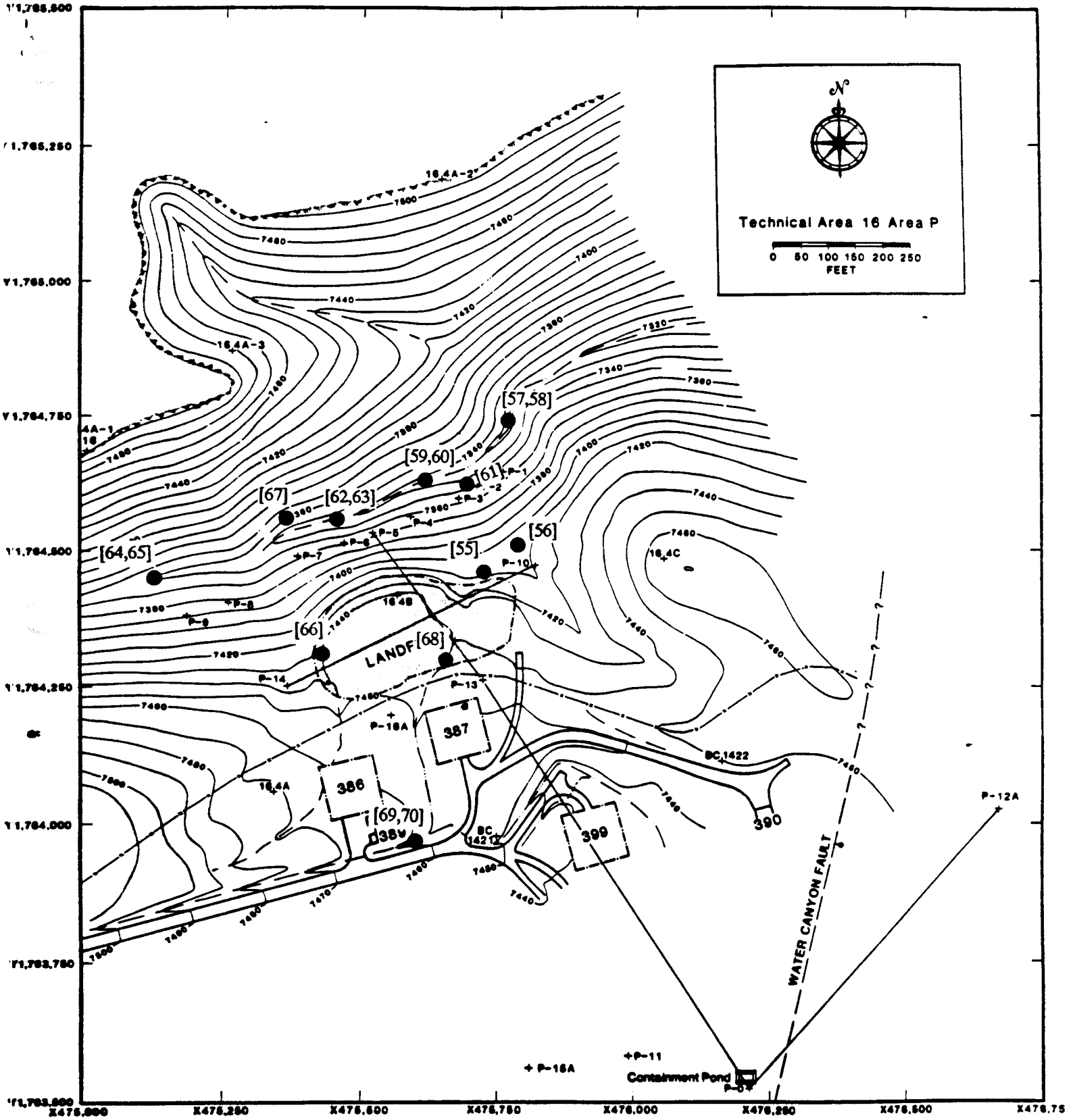
87.08766: soil/sediments from drainage channel

87.08767: sediments from drainage channel

87.08768: sediments from drainage channel

87.08769: sediments from drainage channel

87.08770: snowmelt in drainage channel


Technical Area 16 Area P
0 50 100 150 200 250
FEET
N
[57,58]
[59,60]
[61]
[67]
[62,63]
[64,65]
[55]
[56]
[66]
[68]
[69,70]
LANDF
387
386
389
399
390
BC 1422
BC 1421
P-12A
P-16A
P-11
Containment Pond
WATER CANYON FAULT
16.4A-2
16.4A-3
16.4A
16.4B
16.4C
X475,000
X475,250
X475,500
X475,750
X476,000
X476,250
X476,500

Area P

HSE-9 ANALYTICAL RESULTS

AG 15-Dec-1987 WDP

SAMPLE NUMBER	REQ NUM		RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
87.08755	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08756	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08757	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08758	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08759	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08760	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08761	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08762	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08763	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08764	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08765	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08766	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08767	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08768	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08769	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08770	06191	<	0.0500	0.0500	MG/L	12/15/87	

THESE DATA MEET ESTABLISHED HSE9 GROUP QUALITY ASSURANCE STANDARDS

ANALYST	DATE	SECTION LEADER	DATE	QUALITY ASSURANCE
MEB	12-15-87			mag 12/16/87

HSE-9 ANALYTICAL RESULTS

BA 15-Dec-1987 WDF

SAMPLE NUMBER	REQ NUM		RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
87.08755S/S	06191		0.6000	0.5000	MG/L	12/15/87	
87.08756S/S	06191	<	0.5000	0.5000	MG/L	12/15/87	
87.08757W	06191		3.5000	0.5000	MG/L	12/15/87	
87.08758SS	06191	<	0.5000	0.5000	MG/L	12/15/87	
87.08759W	06191		3.5000	0.5000	MG/L	12/15/87	
87.08760SS	06191		2.7000	0.5000	MG/L	12/15/87	
87.08761S	06191	<	0.5000	0.5000	MG/L	12/15/87	
87.08762SS	06191		2.1000	0.5000	MG/L	12/15/87	
87.08763W	06191		3.5000	0.5000	MG/L	12/15/87	
87.08764W	06191		3.3000	0.5000	MG/L	12/15/87	
87.08765SS	06191		2.7000	0.5000	MG/L	12/15/87	
87.08766SS	06191	<	0.5000	0.5000	MG/L	12/15/87	
87.08767S	06191		0.9000	0.5000	MG/L	12/15/87	
87.08768S	06191		2.7000	0.5000	MG/L	12/15/87	
87.08769S	06191		1.3000	0.5000	MG/L	12/15/87	
87.08770 Snow	06191	<	0.5000	0.5000	MG/L	12/15/87	

THESE DATA MEET ESTABLISHED HSE9 GROUP QUALITY ASSURANCE STANDARDS

ANALYST	DATE	SECTION LEADER	DATE	QUALITY ASSURANCE	D
MGB	12-15-87			mag 12/16/87	

```
         J   000   BBBB         888   4  4   55555
         J  0   0  B   B       8   8  4  4   5
         J  0   0  B   B       8   8  4  4   555
         J  0   0  BBBB         888   44444     5
     J   J  0   0  B   B       8   8     4      5
     J   J  0   0  B   B       8   8     4   5  5
      JJJ    000   BBBB         888      4    555
```

Job RESULT (845) queued to TTA0 on 15-DEC-1987 10:06 by user BELL, UIC [BELL], under account at priority 100, started on printer _TTA0: on 15-DEC-1987 10:06 from queue TTA0.

3333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333
33333333333333333333333333333333333333 Digital Equipment Corporation - VAX/VMS Version V4.5 3333333333333333333333333333333333
3333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333333

****

HSE-9 ANALYTICAL RESULTS

CR 15-Dec-1987 WNP

****

SAMPLE NUMBER	REQ NUM		RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
87.08755	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08756	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08757	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08758	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08759	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08760	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08761	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08762	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08763	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08764	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08765	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08766	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08767	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08768	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08769	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08770	06191	<	0.0500	0.0500	MG/L	12/15/87	

THESE DATA MEET ESTABLISHED HSE9 GROUP QUALITY ASSURANCE STANDARDS

MHB 12-15-87 mag 12/16/87

ANALYST DATE SECTION LEADER DATE QUALITY ASSURANCE D

```
       J  000   BBBB        888   4  4   4  4
       J 0   0  B   B      8   8  4  4   4  4
       J 0   0  B   B      8   8  4  4   4  4
       J 0   0  BBBB        888   44444  44444
   J   J 0   0  B   B      8   8     4      4
   J   J 0   0  B   B      8   8     4      4
    JJJ   000   BBBB        888      4      4
```

Job RESULT (844) queued to TTA0 on 15-DEC-1987 10:05 by user BELL, UIC [BELL], under account at priority 100, started on printer _TTA0: on 15-DEC-1987 10:06 from queue TTA0.

2222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222
22222222222222222222222222222222222222 Digital Equipment Corporation - VAX/VMS Version V4.5 22222222222222222222222222222222222222
2222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222222

****

HSE-9 ANALYTICAL RESULTS

PR 15-Dec-1987 WDF

****

SAMPLE NUMBER	REQ NUM		RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
87.08755	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08756	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08757	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08758	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08759	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08760	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08761	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08762	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08763	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08764	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08765	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08766	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08767	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08768	06191		0.1300	0.0500	MG/L	12/15/87	
87.08769	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08770	06191	<	0.0500	0.0500	MG/L	12/15/87	

THESE DATA MEET ESTABLISHED HSE9 GROUP QUALITY ASSURANCE STANDARDS

MOB 12-15-87 mag 12/16/87

ANALYST DATE SECTION LEADER DATE QUALITY ASSURANCE D

```
       J   000   BBBB        888   4 4    000
       J  0   0  B   B      8   8  4 4   0   0
       J  0   0  B   B      8   8  4 4   0  00
       J  0   0  BBBB        888   44444 0 0 0
   J   J  0   0  B   B      8   8     4  00  0
   J   J  0   0  B   B      8   8     4  0   0
    JJJ    000   BBBB        888      4   000
```

Job RESULT (840) queued to TTA0 on 15-DEC-1987 10:05 by user BELL, UIC [BELL], under account at priority 100, started on printer _TTA0: on 15-DEC-1987 10:05 from queue TTA0.

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111111111111111111111111111111111111111 Digital Equipment Corporation - VAX/VMS Version V4.5 111111111111111111111111111111111111
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HSE-9 ANALYTICAL RESULTS

AS 15-Dec-1987 WDP

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SAMPLE NUMBER	REQ NUM		RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
87.08755	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08756	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08757	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08758	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08759	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08760	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08761	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08762	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08763	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08764	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08765	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08766	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08767	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08768	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08769	06191	<	0.0500	0.0500	MG/L	12/15/87	
87.08770	06191	<	0.0500	0.0500	MG/L	12/15/87	

THESE DATA MEET ESTABLISHED HSE9 GROUP QUALITY ASSURANCE STANDARDS

MWB		12-15-87		mag 12/16/87	
ANALYST	DATE	SECTION LEADER	DATE	QUALITY ASSURANCE	D/

HSE-9 ANALYTICAL RESULTS

HG 15-Dec-1987 WDP

SAMPLE NUMBER	REQ NUM		RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
87.08755	06191	<	0.0010	0.0010	MG/L	12/15/87	
87.08756	06191	<	0.0010	0.0010	MG/L	12/15/87	
87.08757	06191	<	0.0010	0.0010	MG/L	12/15/87	
87.08758	06191	<	0.0010	0.0010	MG/L	12/15/87	
87.08759	06191	<	0.0010	0.0010	MG/L	12/15/87	
87.08760	06191	<	0.0010	0.0010	MG/L	12/15/87	
87.08761	06191	<	0.0010	0.0010	MG/L	12/15/87	
87.08762	06191	<	0.0010	0.0010	MG/L	12/15/87	
87.08763	06191	<	0.0010	0.0010	MG/L	12/15/87	
87.08764	06191	<	0.0010	0.0010	MG/L	12/15/87	
87.08765	06191	<	0.0010	0.0010	MG/L	12/15/87	
87.08766	06191	<	0.0010	0.0010	MG/L	12/15/87	
87.08767	06191	<	0.0010	0.0010	MG/L	12/15/87	
87.08768	06191	<	0.0010	0.0010	MG/L	12/15/87	
87.08769	06191	<	0.0010	0.0010	MG/L	12/15/87	
87.08770	06191	<	0.0010	0.0010	MG/L	12/15/87	

THESE DATA MEET ESTABLISHED HSE9 GROUP QUALITY ASSURANCE STANDARDS

ANALYST	DATE	SECTION LEADER	DATE	QUALITY ASSURANCE	D
MGB	12-15-87			mag 12/16/87	

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      J    000    BBBB         888    333    888
       J  0   0  B   B        8   8  3   3  8   8
       J  0   0  B   B        8   8      3  8   8
       J  0   0  BBBB          888      3    888
   J   J  0   0  B   B        8   8      3  8   8
   J   J  0   0  B   B        8   8  3   3  8   8
    JJJ    000   BBBB          888    333    888
```

Job RESULT (838) queued to TTA0 on 15-DEC-1987 10:04 by user BELL, UIC [BELL], under account at priority 100, started on printer _TTA0: on 15-DEC-1987 10:04 from queue TTA0.

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HSE-9 ANALYTICAL RESULTS

SE 15-Dec-1987 WDF

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SAMPLE NUMBER	REQ NUM		RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
87.08755	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08756	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08757	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08758	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08759	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08760	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08761	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08762	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08763	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08764	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08765	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08766	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08767	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08768	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08769	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08770	06191	<	0.0100	0.0100	MG/L	12/15/87	

THESE DATA MEET ESTABLISHED HSE9 GROUP QUALITY ASSURANCE STANDARDS

ANALYST	DATE	SECTION LEADER	DATE	QUALITY ASSURANCE	D
		12-15-87		mag 12/16/87	

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HSE-9 ANALYTICAL RESULTS

CD 15-Dec-1987 WDF

****

SAMPLE NUMBER	REQ NUM		RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
87.08755	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08756	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08757	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08758	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08759	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08760	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08761	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08762	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08763	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08764	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08765	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08766	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08767	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08768	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08769	06191	<	0.0100	0.0100	MG/L	12/15/87	
87.08770	06191	<	0.0100	0.0100	MG/L	12/15/87	

THESE DATA MEET ESTABLISHED HSE9 GROUP QUALITY ASSURANCE STANDARDS

ANALYST	DATE	SECTION LEADER	DATE	QUALITY ASSURANCE
MLB	12-15-87			mag 12/16/87

DANIEL B. STEPHENS & ASSOCIATES, INC.
CONSULTANTS IN GROUND-WATER HYDROLOGY

• GROUND-WATER CONTAMINATION • UNSATURATED ZONE INVESTIGATIONS • WATER SUPPLY DEVELOPMENT •

January 5, 1988

Mr. Fred Brown
Hydrogeologist
Los Alamos National Laboratory
Group HSE-8
Los Alamos, NM 87545

Subject: Results of Testing for Hydraulic Properties of Welded Tuff

Dear Mr. Brown:

Please find enclosed the final data report on laboratory analyses for hydraulic properties of 10 cores of welded tuff. This report constitutes completion of the analyses requested.

We are continuing our own in-house research on unsaturated hydraulic conductivity using the additional cores that you provided us. I will report to you the results of the investigation when they have been completed.

We would like to point out that the porosity values we have reported are those computed from degree of saturation to water, and therefore represent the effective porosity to that fluid.

Daniel B. Stephens & Associates, Inc. cannot verify that samples are representative of the formation from which they were collected, and we do not assume any responsibility for interpretations or analyses based on this data.

We are very grateful to provide this service to Los Alamos National Laboratory. Please do not hesitate to call us if you have any questions.

Sincerely yours,

Daniel B. Stephens & Associates, Inc.

Warren B. Cox
Laboratory Manager

WBC:bdf
Enclosure

P.O. BOX 740 SOCORRO, NEW MEXICO 87801 (505) 835-3162

DANIEL B. STEPHENS & ASSOCIATES, INC.

CONSULTANTS IN GROUND-WATER HYDROLOGY SOCORRO, NEW MEXICO

FINAL DATA REPORT ON LABORATORY ANALYSES OF SOIL HYDRAULIC PROPERTIES OF WELDED TUFFS AT LOS ALAMOS NATIONAL LABORATORY

PREPARED FOR

LOS ALAMOS NATIONAL LABORATORY

JANUARY, 1988

Final Data Report on Laboratory Analyses

Of

Soil Hydraulic Properties

Of

Welded Tuffs

At

Los Alamos National Laboratory

Prepared For

Los Alamos National Laboratory

January, 1988

DANIEL B. STEPHENS & ASSOCIATES, INC.

LIST OF TABLES

1. Summary of Tests Performed

2. Unit Conventions

3. Summary of Sample Characteristics

4. Summary of Saturated Hydraulic Conductivity Tests

5. Summary of Moisture Retention Characteristics

6. Summary of Initial Moisture Content, Dry Bulk Density and Porosity

7. Summary of Unsaturated Hydraulic Parameters

SCOPE OF WORK

Scope of Work

Daniel B. Stephens & Associates, Inc. (DBS) was requested by Los Alamos National Laboratory of Los Alamos, New Mexico, to perform laboratory analyses for properties of soil, as outlined in written communication of September 9, 1987. The scope of work included the following laboratory tests on 10 cores:

1. Sample Preparation
2. Saturated Hydraulic Conductivity
3. Moisture Retention (main drainage curve), Hanging Column Method, 2 points
4. Moisture Retention (main drainage curve), Pressure Plate Method, 4 points
5. Initial Moisture Content, Bulk Density and Porosity
6. Unsaturated Hydraulic Conductivity

In execution of the foregoing request, DBS has performed the work as summarized below and in Table 1.

The cores of welded tuff were cut by hand to fit soil retaining rings in which all tests were performed. Descriptions of the sample characteristics are presented in Table 3. Laboratory analyses to determine the hydraulic properties of the ten samples are summarized in Tables 4-7. The sample reference numbers were taken as those marked on the outside of each individual sample bag.

Included in this data report are summary tables, graphs where presentation in this form was required, and raw laboratory data. The Principles and Methods section describes the basic principles of the analyses and methods of calculation. All calculation results are expressed in metric units according to Table 2.

Table 1. Summary of Tests Performed

Sample Number	Hydraulic Conductivity		Moisture Retention		Initial Moisture Content	Porosity	Dry Bulk Density
	Saturated	Unsaturated	Hanging Column	Pressure Plate			
7-8	X	X	X	X	X	X	X
11-12	X	X	X	X	X	X	X
16-17	X	X	X	X	X	X	X
21-22	X	X	X	X	X	X	X
25-26	X	X	X	X	X	X	X
35-36	X	X	X	X	X	X	X
42-43	X	X	X	X	X	X	X
61-62	X	X	X	X	X	X	X
75-76	X	X	X	X	X	X	X
80-81	X	X	X	X	X	X	X

Table 2. Unit Conventions

Hydraulic Conductivity: cm/sec

Moisture Content: % volume

Bulk Density: g/cc

Porosity: dimensionless (cm^3/cm^3)

Note: Unless otherwise stated, lengths are in units of centimeters, and masses are in units of grams.

SAMPLE CHARACTERISTICS

Table 3. Summary of Sample Characteristics

Sample No.	Depth (ft)	Color	Texture	Comments
7-8	Unknown	Reddish Brown	Volcanic Ash	Contained Olivine Crystals
11-12	Unknown	Reddish Brown	Volcanic Ash	Contained Olivine Crystals
16-17	Unknown	Reddish Brown	Volcanic Ash	Contained Olivine Crystals
21-22	Unknown	Reddish Brown	Volcanic Ash	Contained Olivine Crystals
25-26	Unknown	Reddish Brown	Volcanic Ash	Contained Olivine Crystals
35-36	Unknown	Reddish Brown	Volcanic Ash	Contained Olivine Crystals
42-43	Unknown	Reddish Brown	Volcanic Ash	Contained Olivine Crystals
61-62	Unknown	Reddish Brown	Volcanic Ash	Contained Olivine Crystals
75-76	Unknown	Reddish Brown	Volcanic Ash	Contained Olivine Crystals and a small area of clay at one end
80-81	Unknown	Reddish Brown	Volcanic Ash	Contained Olivine Crystals

SATURATED HYDRAULIC CONDUCTIVITY

Table 4. Summary of Saturated Hydraulic Conductivity Tests

Sample No.	K_s (cm/sec)
7-8	1.58E-04
11-12	2.84E-04
16-17	2.78E-04
21-22	2.00E-04
25-26	9.18E-05
35-36	2.25E-05
42-43	8.57E-05
61-62	5.15E-04
75-76	2.28E-04
80-81	4.41E-05

FALLING HEAD TEST DATA

JOB NAME: Los Alamos
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 7-8
RING NUMBER: 14
DEPTH: unknown
TYPE OF WATER USED: 0.01N CaCl2 SOLUTION
SAMPLE X-SECTION AREA: 22.060 (sq. cm)
STANDPIPE X-SECTION AREA: 0.785 (sq. cm)
SAMPLE LENGTH: 3.0 (cm)

DATE (1987)	TIME (DAY)	DEL T (SEC)	TEMP (C)	RESERVOIR HEAD(CM)	SAMPLE HEAD(CM)	K SAT (CM/SEC)	K SAT @ 20 C (CM/SEC)
TEST # 1:							
11/5	0.00		19.0	0.0	70.5		
11/5	0.00	705	19.0	0.0	24.8	1.58E-04	1.61E-04
TEST # 2:							
11/5	0.00		19.0	0.0	70.5		
11/5	0.00	590	19.0	0.0	30.4	1.52E-04	1.55E-04

AVERAGE K SAT: 1.58E-04 (CM/SEC)

COMMENTS:

LABORATORY ANALYSIS BY: S. Stoller
CALCULATIONS MADE BY: S. Stoller
CHECKED BY: W. Cox

FALLING HEAD TEST DATA

JOB NAME: Los Alamos
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 11-12
RING NUMBER: 22
DEPTH: unknown
TYPE OF WATER USED: 0.01N CaCl2 SOLUTION
SAMPLE X-SECTION AREA: 22.060 (sq. cm)
STANDPIPE X-SECTION AREA: 0.785 (sq. cm)
SAMPLE LENGTH: 3.0 (cm)

DATE (1987)	TIME (DAY)	DEL T (SEC)	TEMP (C)	RESERVOIR HEAD(CM)	SAMPLE HEAD(CM)	K SAT (CM/SEC)	K SAT @ 20 C (CM/SEC)
TEST # 1:							
11/10	839:33		15.0	0.0	74.6		
11/10	845:39	423	15.0	0.0	29.4	2.35E-04	2.59E-04
TEST # 2:							
11/10	854:11		15.0	0.0	74.6		
11/10	900:20	369	15.0	0.0	28.3	2.80E-04	3.09E-04

AVERAGE K SAT: 2.84E-04 (CM/SEC)

COMMENTS:

LABORATORY ANALYSIS BY: S. Stoller
CALCULATIONS MADE BY: S. Stoller
CHECKED BY: W. Cox

FALLING HEAD TEST DATA

JOB NAME: Los Alamos
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 16-17
RING NUMBER: 2
DEPTH: unknown
TYPE OF WATER USED: 0.01N CaCl2 SOLUTION
SAMPLE X-SECTION AREA: 22.060 (sq. cm)
STANDPIPE X-SECTION AREA: 0.785 (sq. cm)
SAMPLE LENGTH: 3.0 (cm)

DATE (1987)	TIME (DAY)	DEL T (SEC)	TEMP (C)	RESERVOIR HEAD(CM)	SAMPLE HEAD(CM)	K SAT (CM/SEC)	K SAT @ 20 C (CM/SEC)
TEST # 1:							
11/5	0.00		19.0	0.0	69.8		
11/5	0.00	302	19.0	0.0	32.7	2.68E-04	2.73E-04
TEST # 2:							
11/5	0.00		19.0	0.0	69.8		
11/5	0.00	276	19.0	0.0	34.0	2.78E-04	2.83E-04

AVERAGE K SAT: 2.78E-04 (CM/SEC)

COMMENTS:

LABORATORY ANALYSIS BY: S. Stoller
CALCULATIONS MADE BY: S. Stoller
CHECKED BY: W. Cox

FALLING HEAD TEST DATA

JOB NAME: Los Alamos
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 21-22
RING NUMBER: F
DEPTH: unknown
TYPE OF WATER USED: 0.01N CaCl2 SOLUTION
SAMPLE X-SECTION AREA: 22.060 (sq. cm)
STANDPIPE X-SECTION AREA: 0.785 (sq. cm)
SAMPLE LENGTH: 3.0 (cm)

DATE (1987)	TIME (DAY)	DEL T (SEC)	TEMP (C)	RESERVOIR HEAD(CM)	SAMPLE HEAD(CM)	K SAT (CM/SEC)	K SAT @ 20 C (CM/SEC)
TEST # 1:							
11/5	0.00		19.0	0.0	76.1		
11/5	0.00	364	19.0	0.0	38.7	1.98E-04	2.02E-04
TEST # 2:							
11/5	0.00		19.0	0.0	76.1		
11/5	0.00	497	19.0	0.0	30.7	1.95E-04	1.99E-04

AVERAGE K SAT: 2.00E-04 (CM/SEC)

COMMENTS:

LABORATORY ANALYSIS BY: S. Stoller
CALCULATIONS MADE BY: S. Stoller
CHECKED BY: W. Cox

FALLING HEAD TEST DATA

JOB NAME: Los Alamos
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 25-26
RING NUMBER: C
DEPTH: unknown
TYPE OF WATER USED: 0.01N CaCl2 SOLUTION
SAMPLE X-SECTION AREA: 22.060 (sq. cm)
STANDPIPE X-SECTION AREA: 0.785 (sq. cm)
SAMPLE LENGTH: 3.0 (cm)

DATE (1987)	TIME (DAY)	DEL T (SEC)	TEMP (C)	RESERVOIR HEAD(CM)	SAMPLE HEAD(CM)	K SAT (CM/SEC)	K SAT @ 20 C (CM/SEC)
TEST # 1:							
11/5	0.00		19.0	0.0	76.5		
11/5	0.00	1116	19.0	0.0	29.6	9.08E-05	9.25E-05
TEST # 2:							
11/5	0.00		19.0	0.0	76.5		
11/5	0.00	736	19.0	0.0	41.3	8.94E-05	9.11E-05

AVERAGE K SAT: 9.18E-05 (CM/SEC)

COMMENTS:

LABORATORY ANALYSIS BY: S. Stoller
CALCULATIONS MADE BY: S. Stoller
CHECKED BY: W. Cox

FALLING HEAD TEST DATA

JOB NAME: Los Alamos
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 35-36
RING NUMBER: G
DEPTH: unknown
TYPE OF WATER USED: 0.01N CaCl2 SOLUTION
SAMPLE X-SECTION AREA: 22.060 (sq. cm)
STANDPIPE X-SECTION AREA: 0.785 (sq. cm)
SAMPLE LENGTH: 3.0 (cm)

DATE (1987)	TIME (DAY)	DEL T (SEC)	TEMP (C)	RESERVOIR HEAD(CM)	SAMPLE HEAD(CM)	K SAT (CM/SEC)	K SAT @ 20 C (CM/SEC)
TEST # 1:							
11/10	845:16		15.0	0.0	70.7		
11/10	941:03	3347	15.0	0.0	36.9	2.07E-05	2.29E-05
TEST # 2:							
11/10	942:22		15.0	0.0	70.7		
11/10	1110:48	5306	15.0	0.0	26.1	2.00E-05	2.21E-05

AVERAGE K SAT: 2.25E-05 (CM/SEC)

COMMENTS:

LABORATORY ANALYSIS BY: S. Stoller
CALCULATIONS MADE BY: S. Stoller
CHECKED BY: W. Cox

FALLING HEAD TEST DATA

JOB NAME: Los Alamos
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 42-43
RING NUMBER: 4
DEPTH: unknown
TYPE OF WATER USED: 0.01N CaCl2 SOLUTION
SAMPLE X-SECTION AREA: 22.060 (sq. cm)
STANDPIPE X-SECTION AREA: 0.785 (sq. cm)
SAMPLE LENGTH: 3.0 (cm)

DATE (1987)	TIME (DAY)	DEL T (SEC)	TEMP (C)	RESERVOIR HEAD(CM)	SAMPLE HEAD(CM)	K SAT (CM/SEC)	K SAT @ 20 C (CM/SEC)
TEST # 1:							
11/10	841:17		15.0	0.0	76.5		
11/10	904:42	1405	15.0	0.0	29.6	7.21E-05	7.96E-05
TEST # 2:							
11/10	905:46		15.0	0.0	76.5		
11/10	923:33	1067	15.0	0.0	33.3	8.32E-05	9.18E-05

AVERAGE K SAT: 8.57E-05 (CM/SEC)

COMMENTS:

LABORATORY ANALYSIS BY: S. Stoller
CALCULATIONS MADE BY: S. Stoller
CHECKED BY: W. Cox

FALLING HEAD TEST DATA

JOB NAME: Los Alamos
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 61-62
RING NUMBER: A4
DEPTH: unknown
TYPE OF WATER USED: 0.01N CaCl2 SOLUTION
SAMPLE X-SECTION AREA: 22.060 (sq. cm)
STANDPIPE X-SECTION AREA: 0.785 (sq. cm)
SAMPLE LENGTH: 3.0 (cm)

DATE (1987)	TIME (DAY)	DEL T (SEC)	TEMP (C)	RESERVOIR HEAD(CM)	SAMPLE HEAD(CM)	K SAT (CM/SEC)	K SAT @ 20 C (CM/SEC)
TEST # 1:							
11/10	840:53		15.0	0.0	79.8		
11/10	844:18	265	15.0	0.0	28.8	4.11E-04	4.53E-04
TEST # 2:							
11/10	855:36		15.0	0.0	79.8		
11/10	859:14	218	15.0	0.0	27.4	5.23E-04	5.78E-04

AVERAGE K SAT: 5.15E-04 (CM/SEC)

COMMENTS:

LABORATORY ANALYSIS BY: S. Stoller
CALCULATIONS MADE BY: S. Stoller
CHECKED BY: W. Cox

FALLING HEAD TEST DATA

JOB NAME: Los Alamos
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 75-76
RING NUMBER: 19
DEPTH: unknown
TYPE OF WATER USED: 0.01N CaCl2 SOLUTION
SAMPLE X-SECTION AREA: 22.060 (sq. cm)
STANDPIPE X-SECTION AREA: 0.785 (sq. cm)
SAMPLE LENGTH: 3.0 (cm)

DATE (1987)	TIME (DAY)	DEL T (SEC)	TEMP (C)	RESERVOIR HEAD(CM)	SAMPLE HEAD(CM)	K SAT (CM/SEC)	K SAT @ 20 C (CM/SEC)
TEST # 1:							
11/10	840:27		15.0	0.0	76.1		
11/10	849:03	576	15.0	0.0	26.8	1.93E-04	2.13E-04
TEST # 2:							
11/10	855:03		15.0	0.0	76.1		
11/10	903:29	506	15.0	0.0	26.8	2.20E-04	2.43E-04

AVERAGE K SAT: 2.28E-04 (CM/SEC)

COMMENTS:

LABORATORY ANALYSIS BY: S. Stoller
CALCULATIONS MADE BY: S. Stoller
CHECKED BY: W. Cox

FALLING HEAD TEST DATA

JOB NAME: Los Alamos
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 80-81
RING NUMBER: 18
DEPTH: unknown
TYPE OF WATER USED: 0.01N CaCl2 SOLUTION
SAMPLE X-SECTION AREA: 22.060 (sq. cm)
STANDPIPE X-SECTION AREA: 0.785 (sq. cm)
SAMPLE LENGTH: 3.0 (cm)

DATE (1987)	TIME (DAY)	DEL T (SEC)	TEMP (C)	RESERVOIR HEAD(CM)	SAMPLE HEAD(CM)	K SAT (CM/SEC)	K SAT @ 20 C (CM/SEC)
TEST # 1:							
11/10	840:02		15.0	0.0	74.9		
11/10	921:11	2469	15.0	0.0	27.4	4.35E-05	4.80E-05
TEST # 2:							
11/10	923:49		15.0	0.0	74.0		
11/10	1015:03	3074	15.0	0.0	25.9	3.65E-05	4.02E-05

AVERAGE K SAT: 4.41E-05 (CM/SEC)

COMMENTS:

LABORATORY ANALYSIS BY: S. Stoller
CALCULATIONS MADE BY: S. Stoller
CHECKED BY: W. Cox

MOISTURE RETENTION

Table 5. Summary of Moisture Retention Characteristics

Sample No.	Pressure Head (cm of water)	Moisture Content (cm^3/cm^3)
7-8	-0.0	51.8
	-100.0	49.4
	-195.0	49.0
	-1019.8	15.0
	-3059.4	13.9
	-5099.0	12.5
	-15297.0	8.3
11-12	-0.0	56.1
	-98.0	53.3
	-198.0	52.7
	-1019.8	37.6
	-3059.4	29.3
	-5099.0	26.1
	-15297.0	19.9
16-17	-0.0	54.9
	-101.0	53.6
	-199.0	52.9
	-1019.8	42.2
	-3059.4	29.2
	-5099.0	26.0
	-15297.0	20.4
21-22	-0.0	56.2
	-97.0	56.1
	-1019.8	28.1
	-3059.4	22.8
	-5099.0	19.5
	-15297.0	12.4
25-26	-0.0	52.0
	-98.5	51.4
	-1019.8	23.3
	-3059.4	21.3
	-5099.0	16.6
	-15297.0	10.0

Table 5. Summary of Moisture Retention Characteristics (continued)

Sample No.	Pressure Head (cm of water)	Moisture Content (% vol)
35-36	-0.0	42.8
	-205.0	41.4
	-1019.8	30.2
	-3059.4	14.2
	-5099.0	13.4
	-15297.0	9.4
42-43	-0.0	42.3
	-100.5	42.3
	-209.0	42.2
	-1019.8	33.5
	-3059.4	30.5
	-5099.0	28.9
	-15297.0	22.8
61-62	-0.0	36.4
	-95.5	34.8
	-202.0	32.6
	-1019.8	19.3
	-3059.4	11.2
	-5099.0	10.4
	-15297.0	7.9
75-76	-0.0	41.6
	-95.0	37.9
	-199.0	33.1
	-1019.8	24.0
	-3059.4	12.5
	-5099.0	11.6
	-15297.0	8.3
80-81	-0.0	34.6
	-1019.8	27.5
	-3059.4	18.3
	-5099.0	17.1
	-15297.0	10.7

MOISTURE RETENTION DATA - HANGING COLUMN
(PORE SIZE DISTRIBUTION)

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 7-8
RING NUMBER: 14
DEPTH: unknown
SAMPLE VOLUME: 66.18 (cc)
SATURATED WEIGHT AT 0 CM TENSION
(WITH CAP AND RING): 189.1 (g)
TARE RING: 72.1 (g)
TARE CAP: 0.0 (g)
DRY WEIGHT OF SAMPLE: 82.7 (g)
SATURATED MOISTURE CONTENT: 51.8 (% vol)
INITIAL VOLUME OF WATER IN SAMPLE: 34.3 (cc)

DATE (1987)	TIME	SUCTION (CM)	BURET VOL (CC)	CHANGE VOL (CC)	CHANGES VOL (CC)	MOISTURE CONTENT(% VOL) DRYING	WETTING
11/23	1025	0.0	37.1	--	--	51.8	0.0
11/25	800	100.0	35.5	1.6	1.6	49.4	0.0
11/30	810	195.0	35.2	0.3	1.9	49.0	0.0

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATION MADE BY: S. Stoller
CHECKED BY: W. Cox

MOISTURE RETENTION DATA - 15 BAR PRESSURE PLATE
(PORE SIZE DISTRIBUTION)

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 7-8
RING NUMBER: 14
DEPTH: unknown
SAMPLE VOLUME: 66.18 (cc)
SATURATED WEIGHT AT 0 CM TENSION
(WITH CAP AND RING): 189.1 (g)
TARE RING: 72.1 (g)
TARE CAP: 0.0 (g)
DRY WEIGHT OF SAMPLE: 82.7 (g)
SATURATED MOISTURE CONTENT: 51.8 (% vol)
INITIAL VOLUME OF WATER IN SAMPLE: 30.1 (cc)
WEIGHT FROM HANGING COLUMN, W/O CAP: 184.9 (g)
FINAL TENSION ON HANGING COLUMN: 195.0 (cm)

DATE (1987)	TIME	PRESSURE (BAR)	WEIGHT W/RING(G)	CHANGE WT (G)	CHANGES WT (G)	MOISTURE CONTENT (% VOL)
11/30	845	0.0	184.9	--	--	--
12/2	735	1.0	164.7	20.2	20.2	15.0
12/6	830	3.0	164.0	0.7	20.9	13.9
12/8	840	5.0	163.1	0.9	21.8	12.5
12/13	1655	15.0	160.3	2.8	24.6	8.3

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATION MADE BY: S. Stoller
CHECKED BY: W. Cox

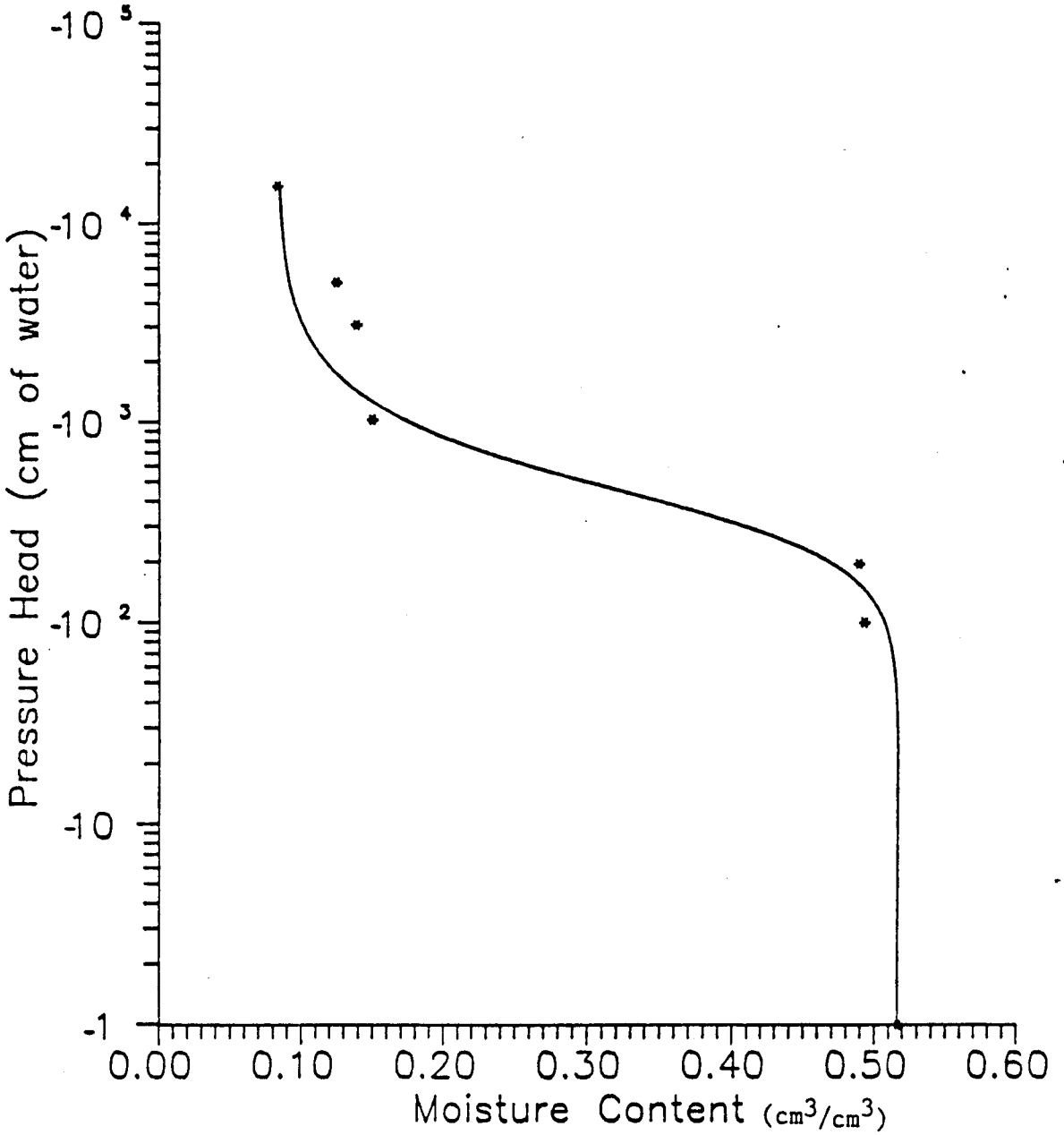

FIGURE NUMBER:	Pressure Head (cm of water) vs. Moisture Content (cm^3/cm^3), Sample No. 7-8.				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR:	PROJECT NO:	DATE:	PLOTTED BY:	CHECKED BY:	
Los Alamos	87-L-070	1/4/88	SLS	WBC	

MOISTURE RETENTION DATA - HANGING COLUMN
(PORE SIZE DISTRIBUTION)

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 11-12
RING NUMBER: 22
DEPTH: unknown
SAMPLE VOLUME: 66.18 (cc)
SATURATED WEIGHT AT 0 CM TENSION
(WITH CAP AND RING): 193.6 (g)
TARE RING: 73.3 (g)
TARE CAP: 0.0 (g)
DRY WEIGHT OF SAMPLE: 83.2 (g)
SATURATED MOISTURE CONTENT: 56.1 (% vol)
INITIAL VOLUME OF WATER IN SAMPLE: 37.1 (cc)

DATE (1987)	TIME	SUCTION (CM)	BURET VOL (CC)	CHANGE VOL (CC)	CHANGES VOL (CC)	MOISTURE CONTENT(% VOL) DRYING	WETTING
11/23	1025	0.0	36.4	--	--	56.1	0.0
11/25	800	98.0	34.6	1.8	1.8	53.3	0.0
11/30	810	198.0	34.2	0.4	2.2	52.7	0.0

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATION MADE BY: S. Stoller
CHECKED BY: W. Cox

MOISTURE RETENTION DATA - 15 BAR PRESSURE PLATE
(PORE SIZE DISTRIBUTION)

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 11-12
RING NUMBER: 22
DEPTH: unknown
SAMPLE VOLUME: 66.18 (cc)
SATURATED WEIGHT AT 0 CM TENSION
(WITH CAP AND RING): 193.6 (g)
TARE RING: 73.3 (g)
TARE CAP: 0.0 (g)
DRY WEIGHT OF SAMPLE: 83.2 (g)
SATURATED MOISTURE CONTENT: 56.1 (% vol)
INITIAL VOLUME OF WATER IN SAMPLE: 32.6 (cc)
WEIGHT FROM HANGING COLUMN, W/O CAP: 189.1 (g)
FINAL TENSION ON HANGING COLUMN: 198.0 (cm)

DATE (1987)	TIME	PRESSURE (BAR)	WEIGHT W/RING(G)	CHANGE WT (G)	CHANGES WT (G)	MOISTURE CONTENT (% VOL)
11/30	845	0.0	189.1	--	--	--
12/2	740	1.0	181.4	7.7	7.7	37.6
12/6	830	3.0	175.9	5.5	13.2	29.3
12/8	840	5.0	173.8	2.1	15.3	26.1
12/13	1700	15.0	169.7	4.1	19.4	19.9

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATION MADE BY: S. Stoller
CHECKED BY: W. Cox

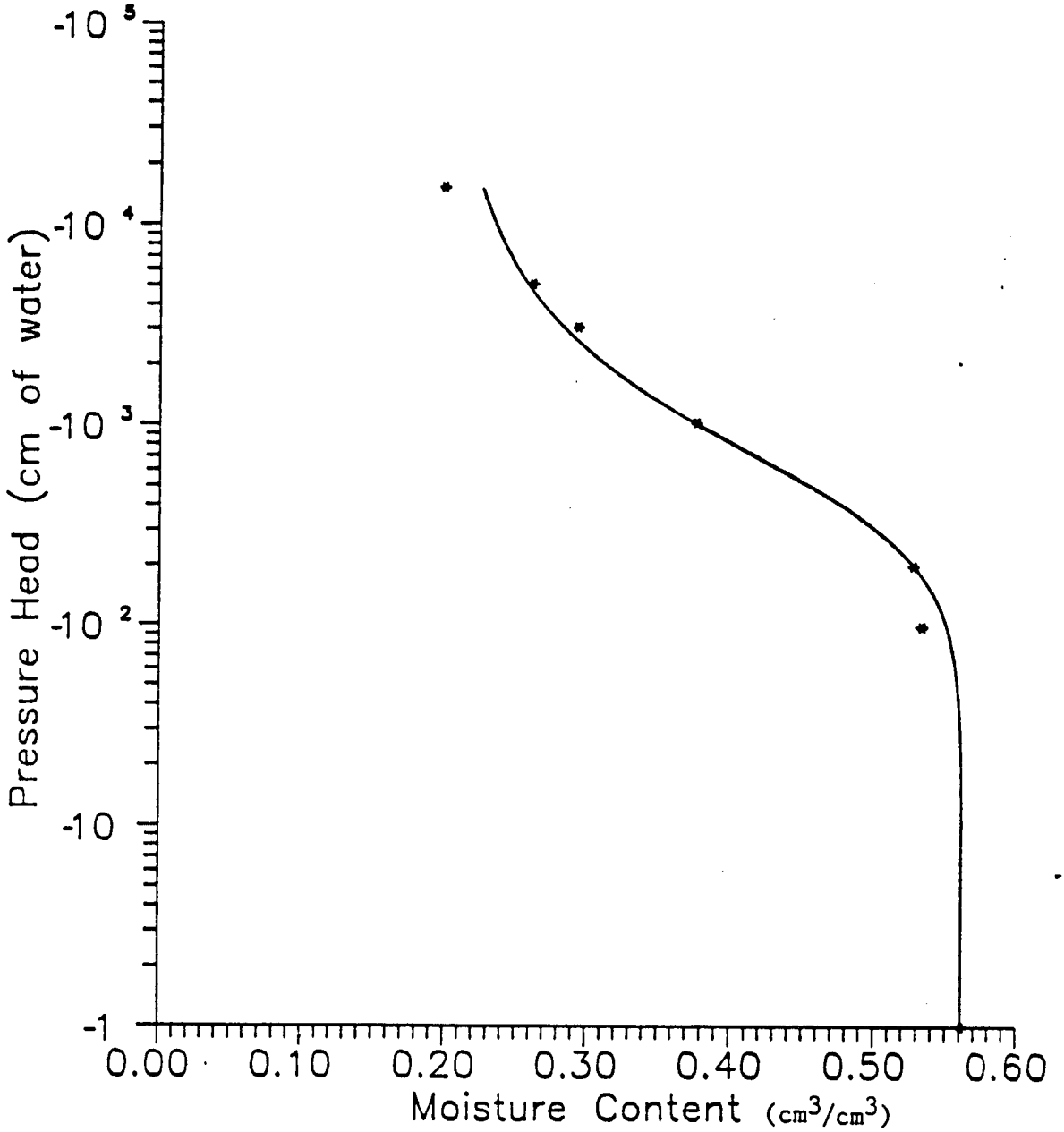

FIGURE NUMBER:	Pressure Head (cm of water) vs. Moisture Content (cm^3/cm^3), Sample No. 11-12				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

MOISTURE RETENTION DATA - HANGING COLUMN
(PORE SIZE DISTRIBUTION)

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 16-17
RING NUMBER: 2
DEPTH: unknown
SAMPLE VOLUME: 66.18 (cc)
SATURATED WEIGHT AT 0 CM TENSION
(WITH CAP AND RING): 193.6 (g)
TARE RING: 73.1 (g)
TARE CAP: 0.0 (g)
DRY WEIGHT OF SAMPLE: 84.2 (g)
SATURATED MOISTURE CONTENT: 54.9 (% vol)
INITIAL VOLUME OF WATER IN SAMPLE: 36.3 (cc)

DATE (1987)	TIME	SUCTION (CM)	BURET VOL (CC)	CHANGE VOL (CC)	CHANGES VOL (CC)	MOISTURE CONTENT(% VOL) DRYING	WETTING
11/23	1025	0.0	33.7	--	--	54.9	0.0
11/25	800	101.0	32.9	0.8	0.8	53.6	0.0
11/30	810	199.0	32.4	0.5	1.3	52.9	0.0

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATION MADE BY: S. Stoller
CHECKED BY: W. Cox

MOISTURE RETENTION DATA - 15 BAR PRESSURE PLATE
(PORE SIZE DISTRIBUTION)

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 16-17
RING NUMBER: 2
DEPTH: unknown
SAMPLE VOLUME: 66.18 (cc)
SATURATED WEIGHT AT 0 CM TENSION
(WITH CAP AND RING): 193.6 (g)
TARE RING: 73.1 (g)
TARE CAP: 0.0 (g)
DRY WEIGHT OF SAMPLE: 84.2 (g)
SATURATED MOISTURE CONTENT: 54.9 (% vol)
INITIAL VOLUME OF WATER IN SAMPLE: 33.4 (cc)
WEIGHT FROM HANGING COLUMN, W/O CAP: 190.7 (g)
FINAL TENSION ON HANGING COLUMN: 199.0 (cm)

DATE (1987)	TIME	PRESSURE (BAR)	WEIGHT W/RING(G)	CHANGE WT (G)	CHANGES WT (G)	MOISTURE CONTENT (% VOL)
11/30	845	0.0	190.7	--	--	--
12/2	740	1.0	185.2	5.5	5.5	42.2
12/6	830	3.0	176.6	8.6	14.1	29.2
12/8	840	5.0	174.5	2.1	16.2	26.0
12/13	1700	15.0	170.8	3.7	19.9	20.4

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATION MADE BY: S. Stoller
CHECKED BY: W. Cox

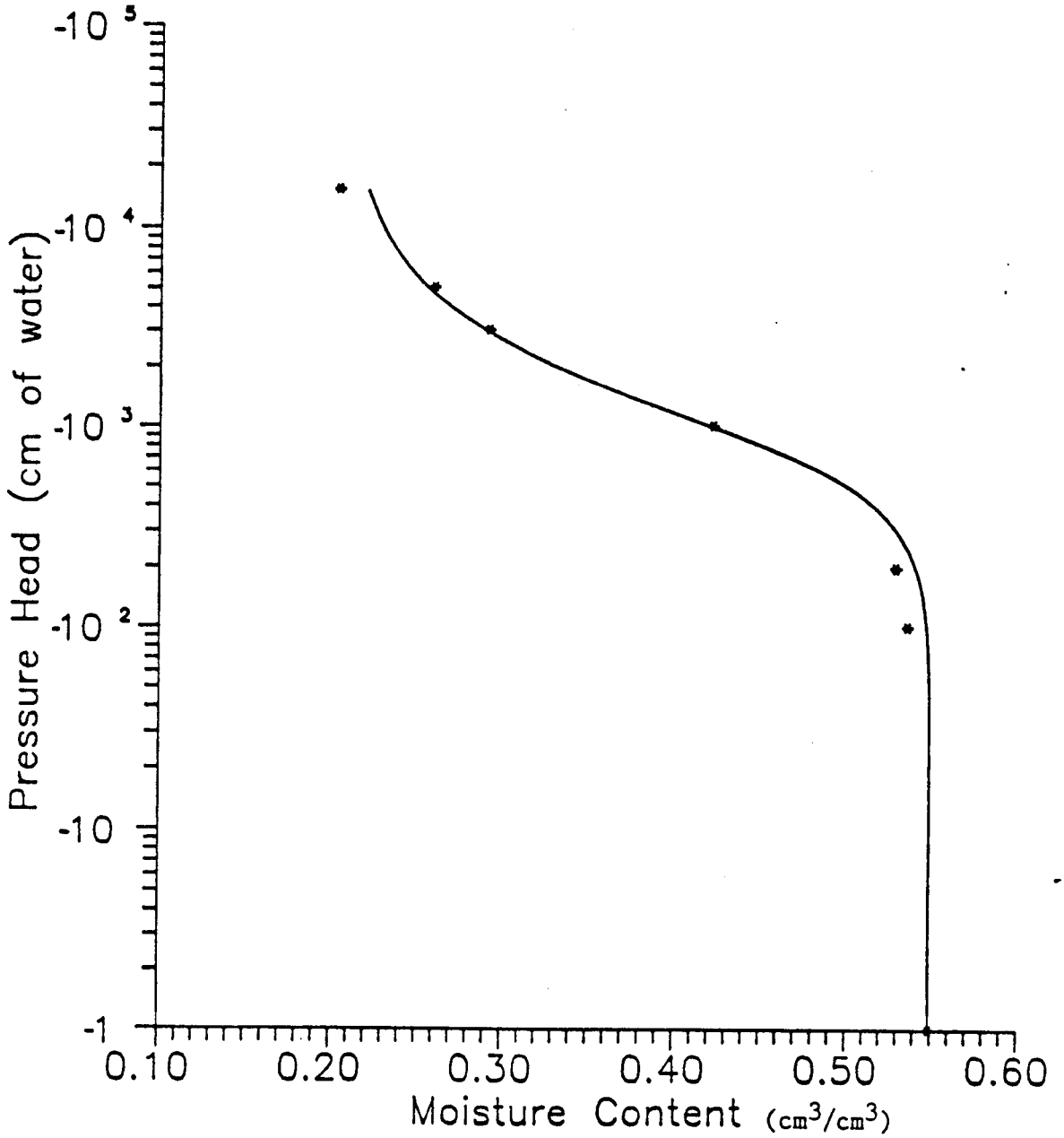

FIGURE NUMBER:	Pressure Head (cm of water) vs. Moisture Content (cm^3/cm^3), Sample No. 16-17				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

MOISTURE RETENTION DATA - HANGING COLUMN
(PORE SIZE DISTRIBUTION)

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 21-22
RING NUMBER: F
DEPTH: unknown
SAMPLE VOLUME: 66.18 (cc)
SATURATED WEIGHT AT 0 CM TENSION
(WITH CAP AND RING): 194.0 (g)
TARE RING: 73.8 (g)
TARE CAP: 0.0 (g)
DRY WEIGHT OF SAMPLE: 83.0 (g)
SATURATED MOISTURE CONTENT: 56.2 (% vol)
INITIAL VOLUME OF WATER IN SAMPLE: 37.2 (cc)

DATE (1987)	TIME	SUCTION (CM)	BURET VOL (CC)	CHANGE VOL (CC)	CHANGES VOL (CC)	MOISTURE CONTENT(% VOL) DRYING	WETTING
11/23	1025	0.0	34.5	--	--	56.2	0.0
11/25	800	97.0	34.4	0.1	0.1	56.1	0.0
11/30	810	198.0	37.6	-3.2	-3.1	60.9	0.0

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATION MADE BY: S. Stoller
CHECKED BY: W. Cox

MOISTURE RETENTION DATA - 15 BAR PRESSURE PLATE
(PORE SIZE DISTRIBUTION)

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 21-22
RING NUMBER: F
DEPTH: unknown
SAMPLE VOLUME: 66.18 (cc)
SATURATED WEIGHT AT 0 CM TENSION
(WITH CAP AND RING): 194.0 (g)
TARE RING: 73.8 (g)
TARE CAP: 0.0 (g)
DRY WEIGHT OF SAMPLE: 83.0 (g)
SATURATED MOISTURE CONTENT: 56.2 (% vol)
INITIAL VOLUME OF WATER IN SAMPLE: 32.7 (cc)
WEIGHT FROM HANGING COLUMN, W/O CAP: 189.5 (g)
FINAL TENSION ON HANGING COLUMN: 198.0 (cm)

DATE (1987)	TIME	PRESSURE (BAR)	WEIGHT W/RING(G)	CHANGE WT (G)	CHANGES WT (G)	MOISTURE CONTENT (% VOL)
11/30	845	0.0	189.5	--	--	--
12/2	740	1.0	175.4	14.1	14.1	28.1
12/6	830	3.0	171.9	3.5	17.6	22.8
12/8	840	5.0	169.7	2.2	19.8	19.5
12/13	1710	15.0	165.0	4.7	24.5	12.4

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATION MADE BY: S. Stoller
CHECKED BY: W. Cox

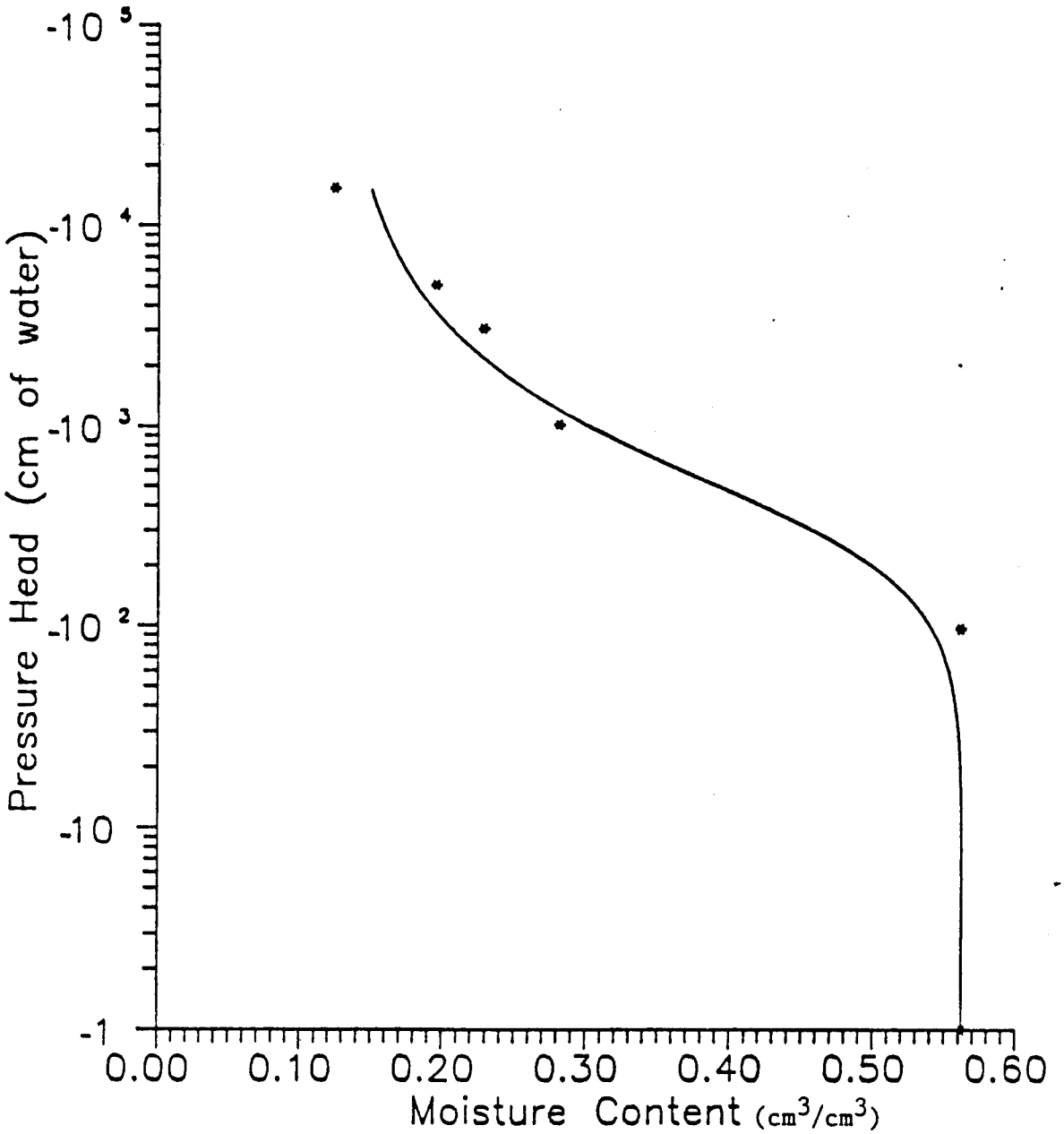

FIGURE NUMBER:	Pressure Head (cm of water) vs. Moisture Content (cm^3/cm^3), Sample No. 21-22				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

MOISTURE RETENTION DATA - HANGING COLUMN
(PORE SIZE DISTRIBUTION)

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 25-26
RING NUMBER: C
DEPTH: unknown
SAMPLE VOLUME: 66.18 (cc)
SATURATED WEIGHT AT 0 CM TENSION
(WITH CAP AND RING): 198.3 (g)
TARE RING: 72.8 (g)
TARE CAP: 0.0 (g)
DRY WEIGHT OF SAMPLE: 91.1 (g)
SATURATED MOISTURE CONTENT: 52.0 (% vol)
INITIAL VOLUME OF WATER IN SAMPLE: 34.4 (cc)

DATE (1987)	TIME	SUCTION (CM)	BURET VOL (CC)	CHANGE VOL (CC)	CHANGES VOL (CC)	MOISTURE CONTENT(% VOL) DRYING	WETTING
11/23	1025	0.0	35.6	--	--	52.0	0.0
11/25	800	98.5	35.2	0.4	0.4	51.4	0.0
11/30	810	203.0	36.5	-1.3	-0.9	53.3	0.0

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATION MADE BY: S. Stoller
CHECKED BY: W. Cox

MOISTURE RETENTION DATA - 15 BAR PRESSURE PLATE
(PORE SIZE DISTRIBUTION)

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 25-26
RING NUMBER: C
DEPTH: unknown
SAMPLE VOLUME: 66.18 (cc)
SATURATED WEIGHT AT 0 CM TENSION
(WITH CAP AND RING): 198.3 (g)
TARE RING: 72.8 (g)
TARE CAP: 0.0 (g)
DRY WEIGHT OF SAMPLE: 91.1 (g)
SATURATED MOISTURE CONTENT: 52.0 (% vol)
INITIAL VOLUME OF WATER IN SAMPLE: 30.9 (cc)
WEIGHT FROM HANGING COLUMN, W/O CAP: 194.8 (g)
FINAL TENSION ON HANGING COLUMN: 203.0 (cm)

DATE (1987)	TIME	PRESSURE (BAR)	WEIGHT W/RING(G)	CHANGE WT (G)	CHANGES WT (G)	MOISTURE CONTENT (% VOL)
11/30	845	0.0	194.8	--	--	--
12/2	740	1.0	179.3	15.5	15.5	23.3
12/6	830	3.0	178.0	1.3	16.8	21.3
12/8	840	5.0	174.9	3.1	19.9	16.6
12/13	1710	15.0	170.5	4.4	24.3	10.0

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATION MADE BY: S. Stoller
CHECKED BY: W. Cox

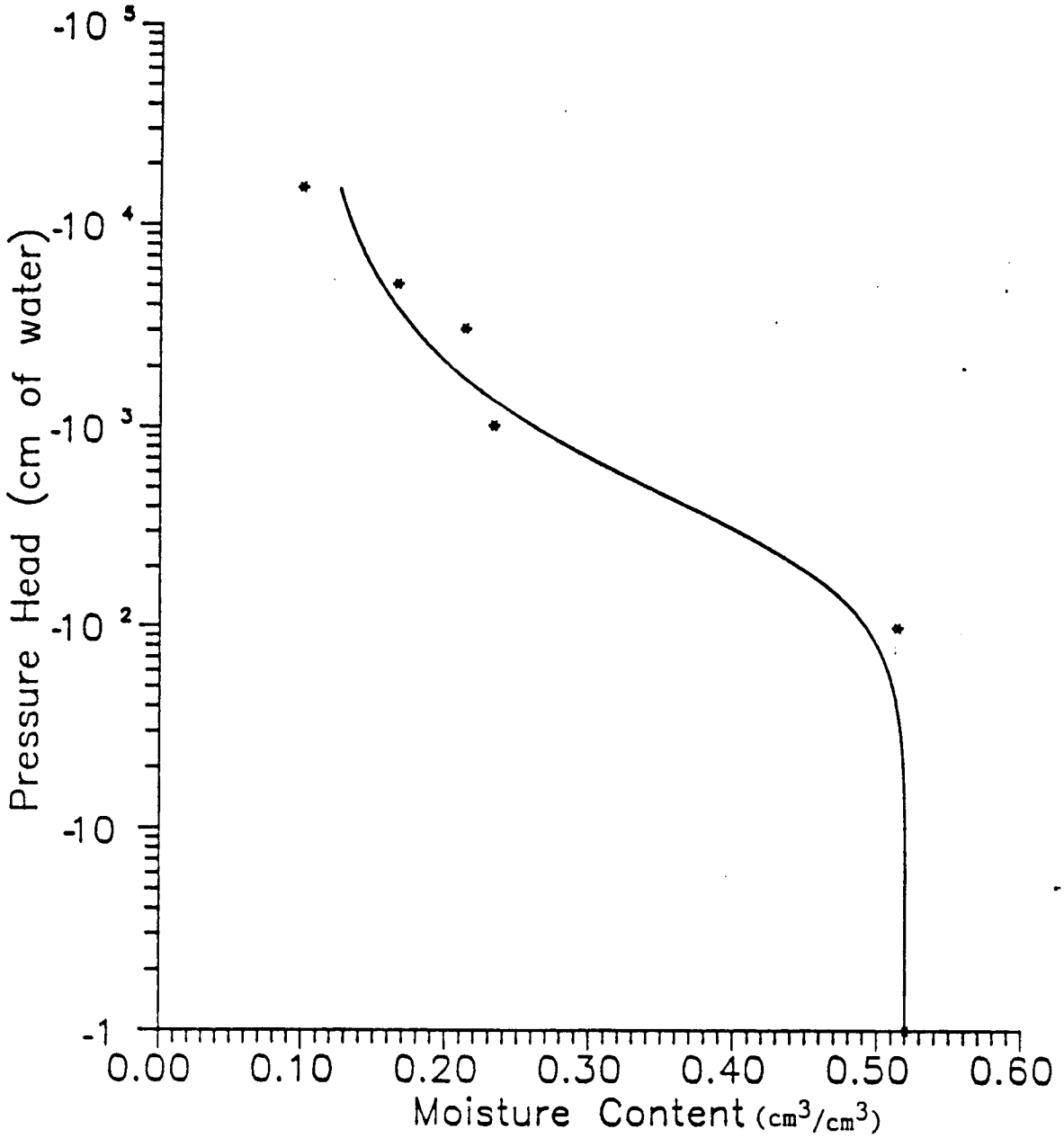

FIGURE NUMBER:	Pressure Head (cm of water) vs. Moisture Content (cm^3/cm^3), Sample No. 25-26				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

MOISTURE RETENTION DATA - HANGING COLUMN
(PORE SIZE DISTRIBUTION)

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 35-36
RING NUMBER: G
DEPTH: unknown
SAMPLE VOLUME: 66.18 (cc)
SATURATED WEIGHT AT 0 CM TENSION
(WITH CAP AND RING): 208.4 (g)
TARE RING: 73.3 (g)
TARE CAP: 0.0 (g)
DRY WEIGHT OF SAMPLE: 106.8 (g)
SATURATED MOISTURE CONTENT: 42.8 (% vol)
INITIAL VOLUME OF WATER IN SAMPLE: 28.3 (cc)

DATE (1987)	TIME	SUCTION (CM)	BURET VOL (CC)	CHANGE VOL (CC)	CHANGES VOL (CC)	MOISTURE CONTENT(% VOL) DRYING	WETTING
11/24	1120	0.0	33.0	--	--	42.8	0.0
11/28	1125	96.0	32.1	0.9	0.9	41.4	0.0
11/30	810	205.0	32.1	0.0	0.9	41.4	0.0

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATION MADE BY: S. Stoller
CHECKED BY: W. Cox

MOISTURE RETENTION DATA - 15 BAR PRESSURE PLATE
(PORE SIZE DISTRIBUTION)

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 35-36
RING NUMBER: G
DEPTH: unknown
SAMPLE VOLUME: 66.18 (cc)
SATURATED WEIGHT AT 0 CM TENSION
(WITH CAP AND RING): 208.4 (g)
TARE RING: 73.3 (g)
TARE CAP: 0.0 (g)
DRY WEIGHT OF SAMPLE: 106.8 (g)
SATURATED MOISTURE CONTENT: 42.8 (% vol)
INITIAL VOLUME OF WATER IN SAMPLE: 27.0 (cc)
WEIGHT FROM HANGING COLUMN, W/O CAP: 207.1 (g)
FINAL TENSION ON HANGING COLUMN: 205.0 (cm)

DATE (1987)	TIME	PRESSURE (BAR)	WEIGHT W/RING(G)	CHANGE WT (G)	CHANGES WT (G)	MOISTURE CONTENT (% VOL)
11/30	845	0.0	207.1	--	--	--
12/2	740	1.0	200.1	7.0	7.0	30.2
12/6	830	3.0	189.5	10.6	17.6	14.2
12/8	840	5.0	189.0	0.5	18.1	13.4
12/13	1715	15.0	186.3	2.7	20.8	9.4

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATION MADE BY: S. Stoller
CHECKED BY: W. Cox

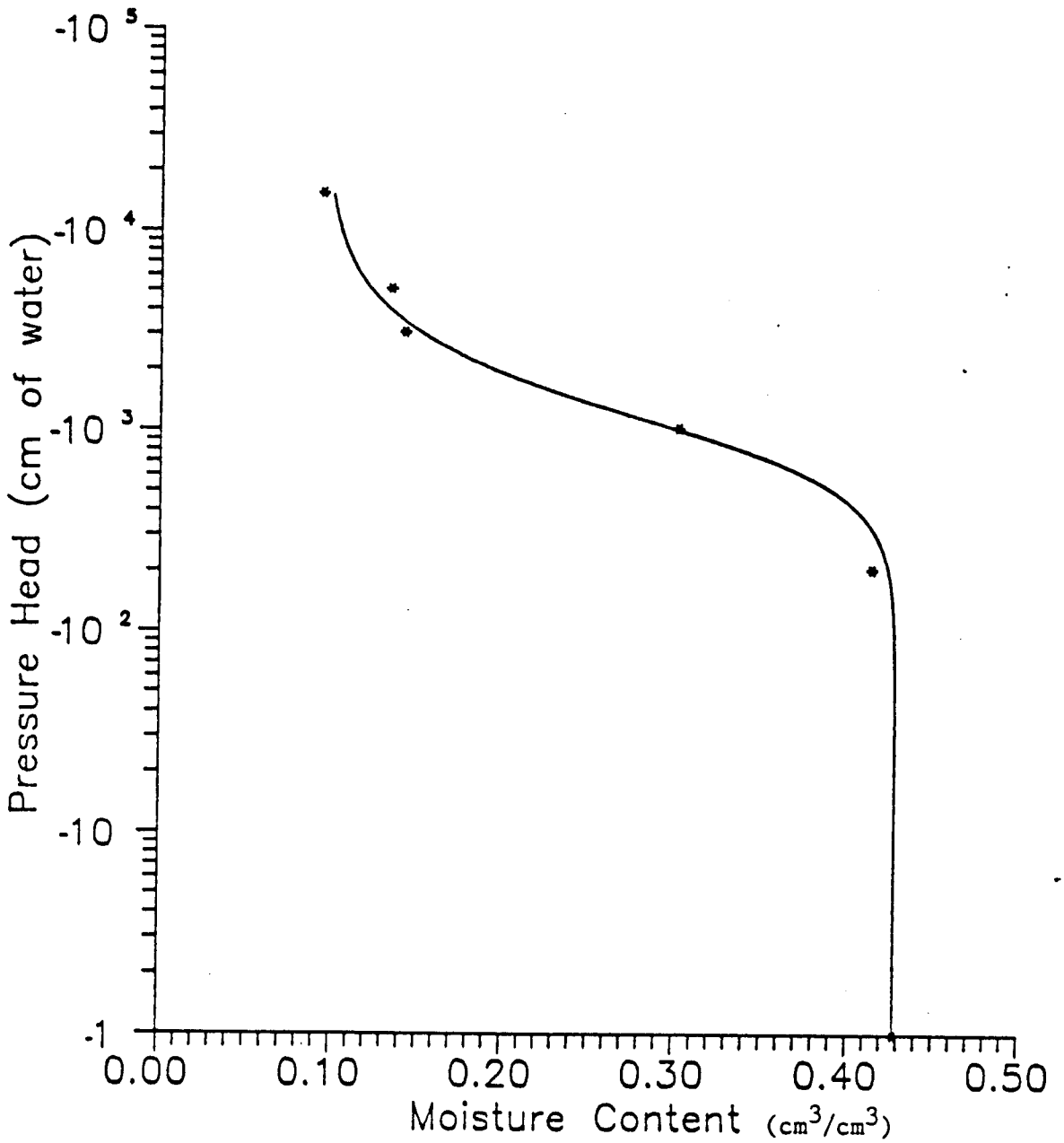

FIGURE NUMBER:	Pressure Head (cm of water) vs. Moisture Content (cm^3/cm^3), Sample No. 35-36				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

MOISTURE RETENTION DATA - HANGING COLUMN
(PORE SIZE DISTRIBUTION)

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 42-43
RING NUMBER: 4
DEPTH: unknown
SAMPLE VOLUME: 66.18 (cc)
SATURATED WEIGHT AT 0 CM TENSION
(WITH CAP AND RING): 208.0 (g)
TARE RING: 72.6 (g)
TARE CAP: 0.0 (g)
DRY WEIGHT OF SAMPLE: 107.4 (g)
SATURATED MOISTURE CONTENT: 42.3 (% vol)
INITIAL VOLUME OF WATER IN SAMPLE: 28.0 (cc)

DATE (1987)	TIME	SUCTION (CM)	BURET VOL (CC)	CHANGE VOL (CC)	CHANGES VOL (CC)	MOISTURE CONTENT(% VOL) DRYING	WETTING
11/24	1120	0.0	32.7	--	--	42.3	0.0
11/28	1125	100.5	32.7	0.0	0.0	42.3	0.0
11/30	810	209.0	32.6	0.1	0.1	42.2	0.0

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATION MADE BY: S. Stoller
CHECKED BY: W. Cox

MOISTURE RETENTION DATA - 15 BAR PRESSURE PLATE
(PORE SIZE DISTRIBUTION)

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 42-43
RING NUMBER: 4
DEPTH: unknown
SAMPLE VOLUME: 66.18 (cc)
SATURATED WEIGHT AT 0 CM TENSION
(WITH CAP AND RING): 208.0 (g)
TARE RING: 72.6 (g)
TARE CAP: 0.0 (g)
DRY WEIGHT OF SAMPLE: 107.4 (g)
SATURATED MOISTURE CONTENT: 42.3 (% vol)
INITIAL VOLUME OF WATER IN SAMPLE: 26.4 (cc)
WEIGHT FROM HANGING COLUMN, W/O CAP: 206.4 (g)
FINAL TENSION ON HANGING COLUMN: 209.0 (cm)

DATE (1987)	TIME	PRESSURE (BAR)	WEIGHT W/RING(G)	CHANGE WT (G)	CHANGES WT (G)	MOISTURE CONTENT (% VOL)
11/30	845	0.0	206.4	--	--	--
12/2	740	1.0	202.2	4.2	4.2	33.5
12/6	830	3.0	200.2	2.0	6.2	30.5
12/8	840	5.0	199.1	1.1	7.3	28.9
12/13	1720	15.0	195.1	4.0	11.3	22.8

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATION MADE BY: S. Stoller
CHECKED BY: W. Cox

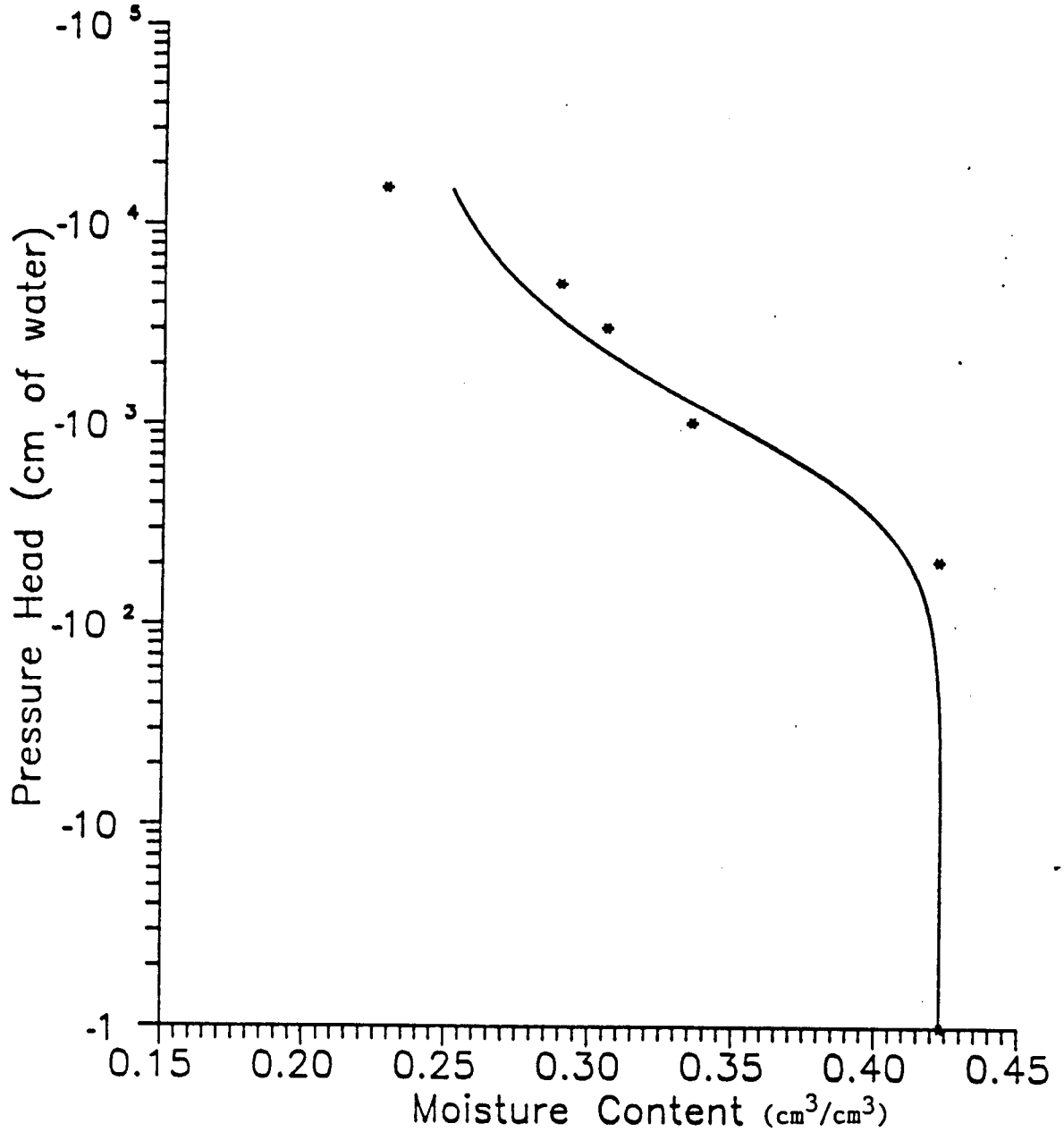

FIGURE NUMBER:	Pressure Head (cm of water) vs. Moisture Content (cm^3/cm^3), Sample No. 42-43				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

MOISTURE RETENTION DATA - HANGING COLUMN
(PORE SIZE DISTRIBUTION)

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 61-62
RING NUMBER: A4
DEPTH: unknown
SAMPLE VOLUME: 66.18 (cc)
SATURATED WEIGHT AT 0 CM TENSION
(WITH CAP AND RING): 210.1 (g)
TARE RING: 73.4 (g)
TARE CAP: 0.0 (g)
DRY WEIGHT OF SAMPLE: 112.6 (g)
SATURATED MOISTURE CONTENT: 36.4 (% vol)
INITIAL VOLUME OF WATER IN SAMPLE: 24.1 (cc)

DATE (1987)	TIME	SUCTION (CM)	BURET VOL (CC)	CHANGE VOL (CC)	CHANGES VOL (CC)	MOISTURE CONTENT(% VOL) DRYING	WETTING
11/24	1120	0.0	36.1	--	--	36.4	0.0
11/28	1125	95.5	35.0	1.1	1.1	34.8	0.0
11/30	810	202.0	33.6	1.4	2.5	32.6	0.0

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATION MADE BY: S. Stoller
CHECKED BY: W. Cox

MOISTURE RETENTION DATA - 15 BAR PRESSURE PLATE
(PORE SIZE DISTRIBUTION)

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 61-6Z
RING NUMBER: A4
DEPTH: unknown
SAMPLE VOLUME: 66.18 (cc)
SATURATED WEIGHT AT 0 CM TENSION
(WITH CAP AND RING): 210.1 (g)
TARE RING: 73.4 (g)
TARE CAP: 0.0 (g)
DRY WEIGHT OF SAMPLE: 112.6 (g)
SATURATED MOISTURE CONTENT: 36.4 (% vol)
INITIAL VOLUME OF WATER IN SAMPLE: 20.8 (cc)
WEIGHT FROM HANGING COLUMN, W/O CAP: 206.8 (g)
FINAL TENSION ON HANGING COLUMN: 202.0 (cm)

DATE (1987)	TIME	PRESSURE (BAR)	WEIGHT W/RING(G)	CHANGE WT (G)	CHANGES WT (G)	MOISTURE CONTENT (% VOL)
11/30	845	0.0	206.8	--	--	--
12/2	740	1.0	198.8	8.0	8.0	19.3
12/6	830	3.0	193.4	5.4	13.4	11.2
12/8	840	5.0	192.9	0.5	13.9	10.4
12/13	1720	15.0	191.2	1.7	15.6	7.9

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATION MADE BY: S. Stoller
CHECKED BY: W. Cox

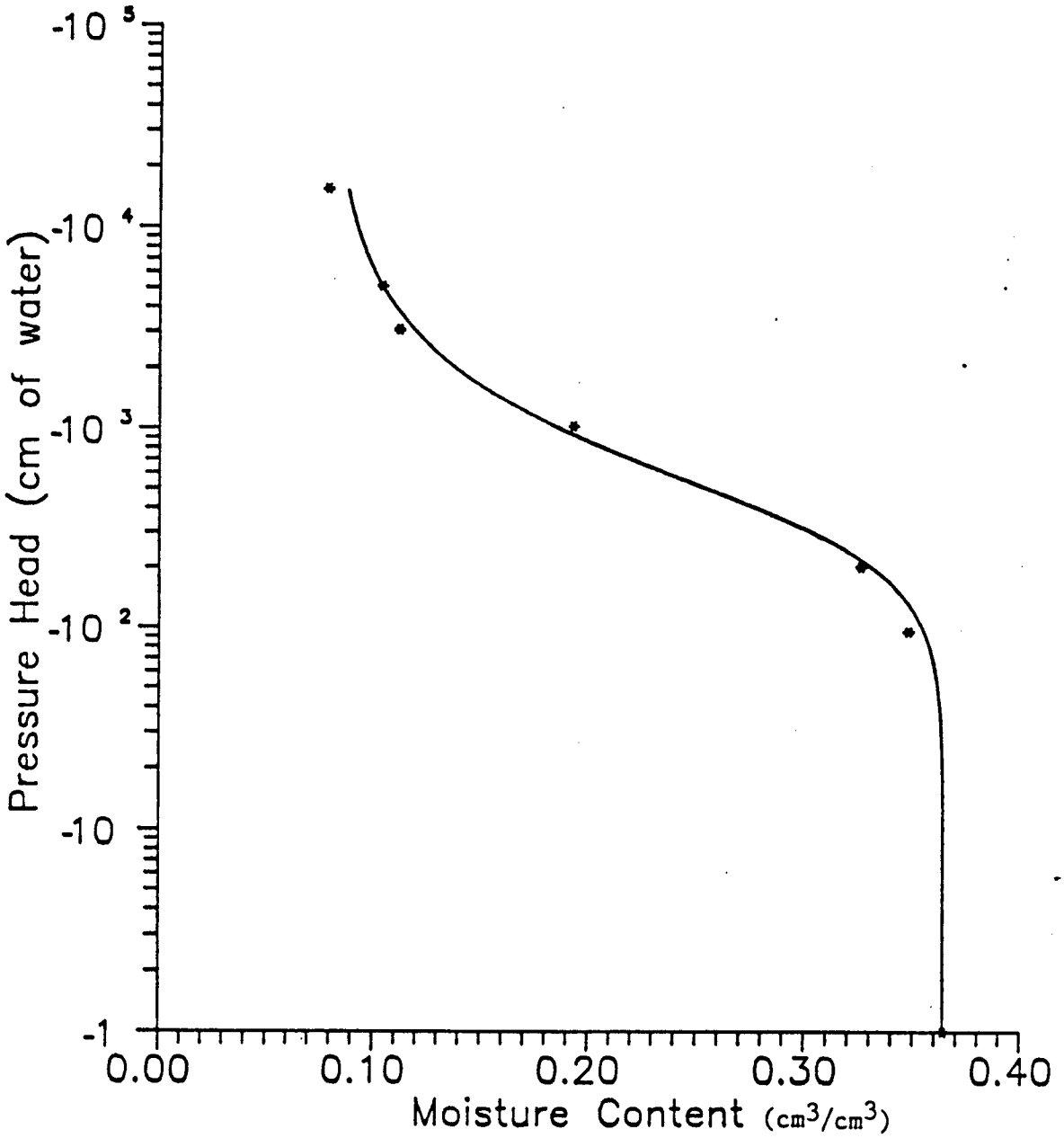

FIGURE NUMBER:	Pressure Head (cm of water) vs. Moisture Content (cm^3/cm^3), Sample No. 61-62				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

MOISTURE RETENTION DATA - HANGING COLUMN
(PORE SIZE DISTRIBUTION)

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 75-76
RING NUMBER: 19
DEPTH: unknown
SAMPLE VOLUME: 66.18 (cc)
SATURATED WEIGHT AT 0 CM TENSION
(WITH CAP AND RING): 204.5 (g)
TARE RING: 73.4 (g)
TARE CAP: 0.0 (g)
DRY WEIGHT OF SAMPLE: 103.6 (g)
SATURATED MOISTURE CONTENT: 41.6 (% vol)
INITIAL VOLUME OF WATER IN SAMPLE: 27.5 (cc)

DATE (1987)	TIME	SUCTION (CM)	BURET VOL (CC)	CHANGE VOL (CC)	CHANGES VOL (CC)	MOISTURE CONTENT(% VOL) DRYING	WETTING
11/24	1120	0.0	34.4	--	--	41.6	0.0
11/28	1125	95.0	32.0	2.4	2.4	37.9	0.0
11/30	810	199.0	28.8	3.2	5.6	33.1	0.0

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATION MADE BY: S. Stoller
CHECKED BY: W. Cox

MOISTURE RETENTION DATA - 15 BAR PRESSURE PLATE
(PORE SIZE DISTRIBUTION)

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 75-76
RING NUMBER: 19
DEPTH: unknown
SAMPLE VOLUME: 66.18 (cc)
SATURATED WEIGHT AT 0 CM TENSION
(WITH CAP AND RING): 204.5 (g)
TARE RING: 73.4 (g)
TARE CAP: 0.0 (g)
DRY WEIGHT OF SAMPLE: 103.6 (g)
SATURATED MOISTURE CONTENT: 41.6 (% vol)
INITIAL VOLUME OF WATER IN SAMPLE: 21.9 (cc)
WEIGHT FROM HANGING COLUMN, W/O CAP: 198.9 (g)
FINAL TENSION ON HANGING COLUMN: 199.0 (cm)

DATE (1987)	TIME	PRESSURE (BAR)	WEIGHT W/RING(G)	CHANGE WT (G)	CHANGES WT (G)	MOISTURE CONTENT (% VOL)
11/30	845	0.0	198.9	--	--	--
12/2	740	1.0	192.9	6.0	6.0	24.0
12/6	830	3.0	185.3	7.6	13.6	12.5
12/8	840	5.0	184.7	0.6	14.2	11.6
12/13	1725	15.0	182.5	2.2	16.4	8.3

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATION MADE BY: S. Stoller
CHECKED BY: W. Cox

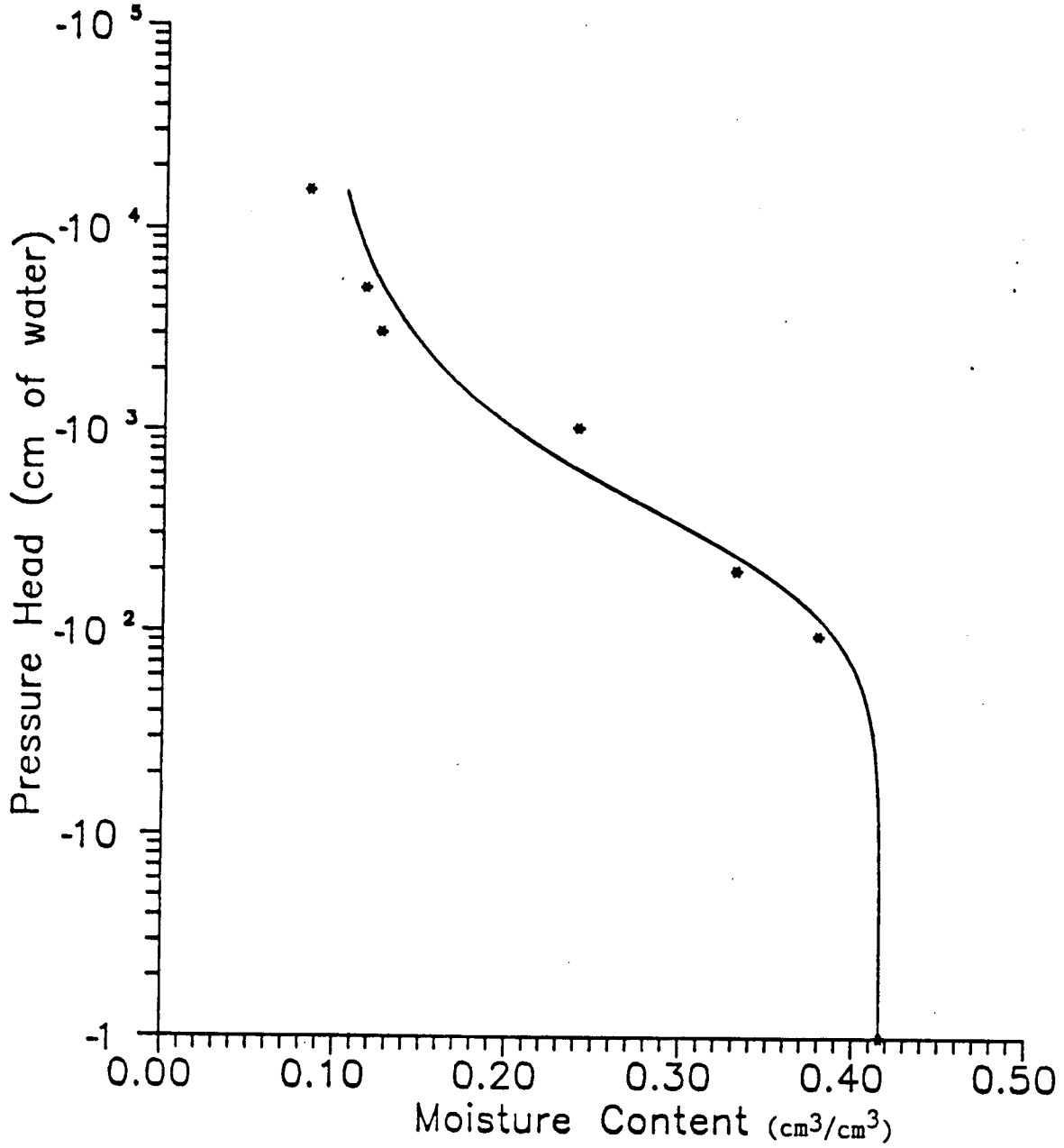

FIGURE NUMBER:	Pressure Head (cm of water) vs. Moisture Content (cm^3/cm^3), Sample No. 75-76				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

MOISTURE RETENTION DATA - HANGING COLUMN
(PORE SIZE DISTRIBUTION)

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 80-81
RING NUMBER: 18
DEPTH: unknown
SAMPLE VOLUME: 66.18 (cc)
SATURATED WEIGHT AT 0 CM TENSION
(WITH CAP AND RING): 215.1 (g)
TARE RING: 73.1 (g)
TARE CAP: 0.0 (g)
DRY WEIGHT OF SAMPLE: 119.1 (g)
SATURATED MOISTURE CONTENT: 34.6 (% vol)
INITIAL VOLUME OF WATER IN SAMPLE: 22.9 (cc)

DATE (1987)	TIME	SUCTION (CM)	BURET VOL (CC)	CHANGE VOL (CC)	CHANGES VOL (CC)	MOISTURE CONTENT(% VOL) DRYING	WETTING
11/24	1120	0.0	34.0	--	--	34.6	0.0
11/28	1125	98.5	34.1	-0.1	-0.1	34.8	0.0
11/30	810	205.0	38.1	-4.0	-4.1	40.8	0.0

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATION MADE BY: S. Stoller
CHECKED BY: W. Cox

MOISTURE RETENTION DATA - 15 BAR PRESSURE PLATE
(PORE SIZE DISTRIBUTION)

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 80-81
RING NUMBER: 18
DEPTH: unknown
SAMPLE VOLUME: 66.18 (cc)
SATURATED WEIGHT AT 0 CM TENSION
(WITH CAP AND RING): 215.1 (g)
TARE RING: 73.1 (g)
TARE CAP: 0.0 (g)
DRY WEIGHT OF SAMPLE: 119.1 (g)
SATURATED MOISTURE CONTENT: 34.6 (% vol)
INITIAL VOLUME OF WATER IN SAMPLE: 21.4 (cc)
WEIGHT FROM HANGING COLUMN, W/O CAP: 213.6 (g)
FINAL TENSION ON HANGING COLUMN: 205.0 (cm)

DATE (1987)	TIME	PRESSURE (BAR)	WEIGHT W/RING(G)	CHANGE WT (G)	CHANGES WT (G)	MOISTURE CONTENT (% VOL)
11/30	845	0.0	213.6	--	--	--
12/2	740	1.0	210.4	3.2	3.2	27.5
12/6	830	3.0	204.3	6.1	9.3	18.3
12/8	840	5.0	203.5	0.8	10.1	17.1
12/13	1725	15.0	199.3	4.2	14.3	10.7

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATION MADE BY: S. Stoller
CHECKED BY: W. Cox

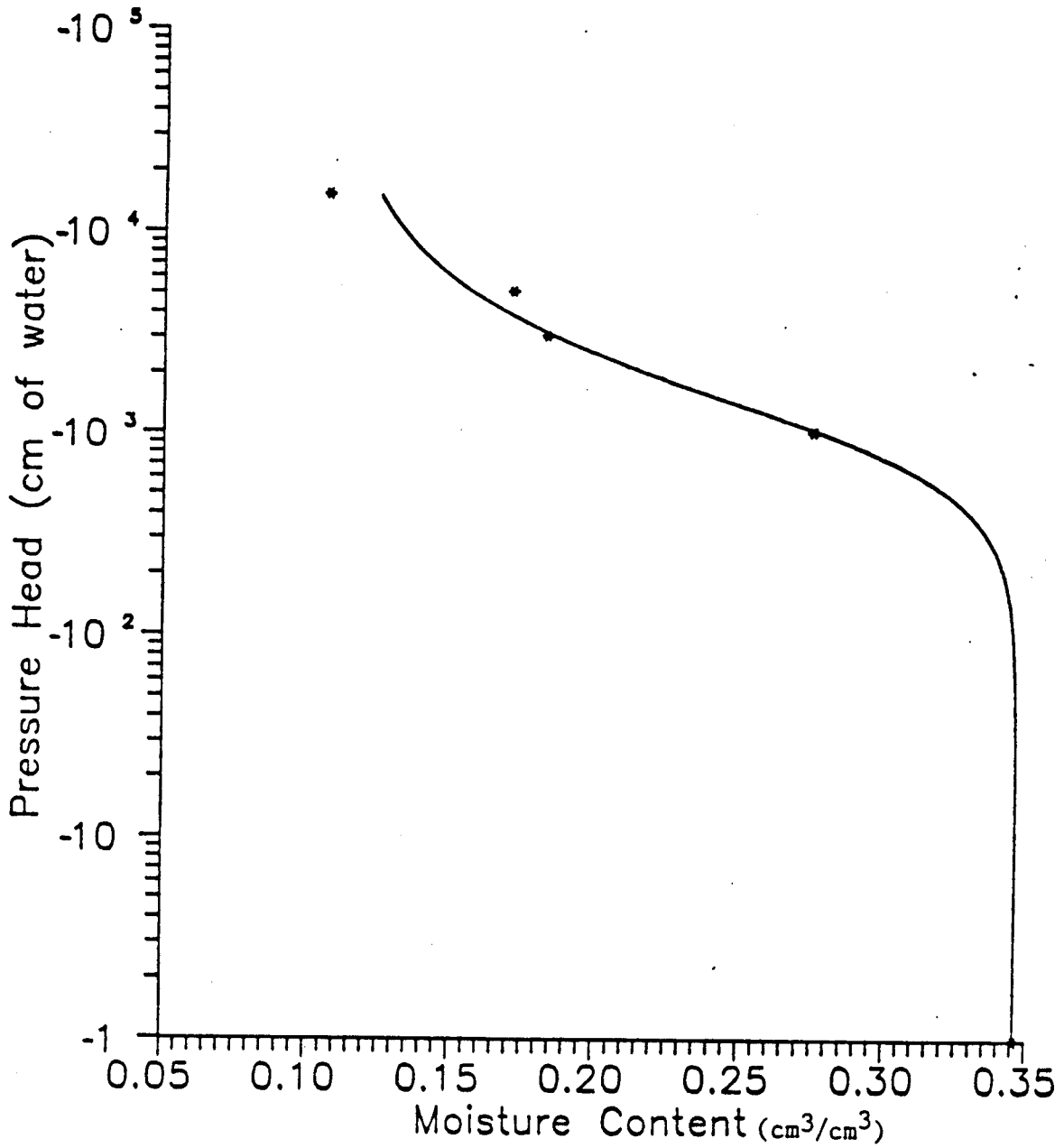

FIGURE NUMBER:	Pressure Head (cm of water) vs. Moisture Content (cm^3/cm^3), Sample No. 80-81				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

INITIAL MOISTURE CONTENT, DRY BULK DENSITY AND POROSITY

Table 6. Summary of Initial Moisture Content, Dry Bulk Density and Porosity

Sample No.	Initial Moisture Content Gravimetric (g/g)	Initial Moisture Content Volumetric (cm^3/cm^3)	Dry Bulk Density (g/cc)	Porosity* (% vol)
7-8	28.30	35.36	1.25	51.8
11-12	14.90	18.74	1.26	56.1
16-17	17.46	22.21	1.27	54.9
21-22	15.90	19.95	1.25	56.2
25-26	13.94	19.19	1.38	52.0
35-36	14.51	23.42	1.61	42.8
42-43	22.53	36.57	1.62	42.3
61-62	11.55	19.64	1.70	36.4
75-76	14.77	23.12	1.57	41.6
80-81	11.17	20.10	1.80	34.6

*Taken as saturated moisture content

DATA FOR INITIAL MOISTURE CONTENT,
BULK DENSITY, AND POROSITY

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 11-12
RING NUMBER: 22
DEPTH: unknown

FIELD WIEGHT OF SAMPLE (W/CAP AND RING): 168.9 (g)
TARE WEIGHT, RING: 73.3 (g)
TARE WEIGHT, PAN: 0.0 (g)
SAMPLE VOLUME: 66.18 (cc)
DATE AND TIME INTO OVEN: 12/13/87 1700
DATE AND TIME OUT OF OVEN: 12/17/87 940

DRY WEIGHT OF SAMPLE: 83.2 (g)
DRY BULK DENSITY: 1.26 (g/cc)
PARTICLE DENSITY: 2.65 (g/cc)
(METHOD: ASSUME MEAN PARTICLE DENSITY = 2.65 g/cc)

CALCULATED POROSITY: 52.56 (% vol)

INITIAL MOISTURE CONTENT (VOLUMETRIC): 18.74 (% vol)

INITIAL MOISTURE CONTENT (GRAVIMETRIC): 14.90 (%)

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATIONS MADE BY: S. Stoller
CHECKED BY: W. Cox

DATA FOR INITIAL MOISTURE CONTENT,
BULK DENSITY, AND POROSITY

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 16-17
RING NUMBER: 2
DEPTH: unknown

FIELD WIEGHT OF SAMPLE (W/CAP AND RING): 172.0 (g)
TARE WEIGHT, RING: 73.1 (g)
TARE WEIGHT, PAN: 0.0 (g)
SAMPLE VOLUME: 66.18 (cc)
DATE AND TIME INTO OVEN: 12/13/87 1700
DATE AND TIME OUT OF OVEN: 12/17/87 940

DRY WEIGHT OF SAMPLE: 84.2 (g)
DRY BULK DENSITY: 1.27 (g/cc)
PARTICLE DENSITY: 2.65 (g/cc)
(METHOD: ASSUME MEAN PARTICLE DENSITY = 2.65 g/cc)

CALCULATED POROSITY: 51.99 (% vol)

INITIAL MOISTURE CONTENT (VOLUMETRIC): 22.21 (% vol)

INITIAL MOISTURE CONTENT (GRAVIMETRIC): 17.46 (%)

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATIONS MADE BY: S. Stoller
CHECKED BY: W. Cox

DATA FOR INITIAL MOISTURE CONTENT,
BULK DENSITY, AND POROSITY

JOB NAME:	LOS ALAMOS
JOB NUMBER:	87-L-070
SAMPLE NUMBER:	21-22
RING NUMBER:	F
DEPTH:	unknown

FIELD WIEGHT OF SAMPLE (W/CAP AND RING):	170.0 (g)
TARE WEIGHT, RING:	73.8 (g)
TARE WEIGHT, PAN:	0.0 (g)
SAMPLE VOLUME:	66.18 (cc)
DATE AND TIME INTO OVEN:	12/13/87 1700
DATE AND TIME OUT OF OVEN:	12/17/87 940
DRY WEIGHT OF SAMPLE:	83.0 (g)
DRY BULK DENSITY:	1.25 (g/cc)
PARTICLE DENSITY:	2.65 (g/cc)

(METHOD: ASSUME MEAN PARTICLE DENSITY = 2.65 g/cc)

CALCULATED POROSITY:	52.67 (% vol)
INITIAL MOISTURE CONTENT (VOLUMETRIC):	19.95 (% vol)
INITIAL MOISTURE CONTENT (GRAVIMETRIC):	15.90 (%)

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY:	S. Stoller
CALCULATIONS MADE BY:	S. Stoller
CHECKED BY:	W. Cox

DATA FOR INITIAL MOISTURE CONTENT,
BULK DENSITY, AND POROSITY

JOB NAME: LOS ALAMOS
JOB NUMBER: 87-L-070
SAMPLE NUMBER: 25-26
RING NUMBER: C
DEPTH: unknown

FIELD WIEGHT OF SAMPLE (W/CAP AND RING): 176.6 (g)
TARE WEIGHT, RING: 72.8 (g)
TARE WEIGHT, PAN: 0.0 (g)
SAMPLE VOLUME: 66.18 (cc)
DATE AND TIME INTO OVEN: 12/13/87 1700
DATE AND TIME OUT OF OVEN: 12/17/87 940

DRY WEIGHT OF SAMPLE: 91.1 (g)
DRY BULK DENSITY: 1.38 (g/cc)
PARTICLE DENSITY: 2.65 (g/cc)
(METHOD: ASSUME MEAN PARTICLE DENSITY = 2.65 g/cc)

CALCULATED POROSITY: 48.05 (% vol)

INITIAL MOISTURE CONTENT (VOLUMETRIC): 19.19 (% vol)

INITIAL MOISTURE CONTENT (GRAVIMETRIC): 13.94 (%)

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY: S. Stoller
CALCULATIONS MADE BY: S. Stoller
CHECKED BY: W. Cox

DATA FOR INITIAL MOISTURE CONTENT,
BULK DENSITY, AND POROSITY

JOB NAME:	LOS ALAMOS
JOB NUMBER:	87-L-070
SAMPLE NUMBER:	35-36
RING NUMBER:	G
DEPTH:	unknown

FIELD WIEGHT OF SAMPLE (W/CAP AND RING):	195.6 (g)
TARE WEIGHT, RING:	73.3 (g)
TARE WEIGHT, PAN:	0.0 (g)
SAMPLE VOLUME:	66.18 (cc)
DATE AND TIME INTO OVEN:	12/13/87 1700
DATE AND TIME OUT OF OVEN:	12/17/87 940
DRY WEIGHT OF SAMPLE:	106.8 (g)
DRY BULK DENSITY:	1.61 (g/cc)
PARTICLE DENSITY:	2.65 (g/cc)
(METHOD: ASSUME MEAN PARTICLE DENSITY = 2.65 g/cc)	
CALCULATED POROSITY:	39.10 (% vol)
INITIAL MOISTURE CONTENT (VOLUMETRIC):	23.42 (% vol)
INITIAL MOISTURE CONTENT (GRAVIMETRIC):	14.51 (%)

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY:	S. Stoller
CALCULATIONS MADE BY:	S. Stoller
CHECKED BY:	W. Cox

DATA FOR INITIAL MOISTURE CONTENT,
BULK DENSITY, AND POROSITY

JOB NAME:	LOS ALAMOS
JOB NUMBER:	87-L-070
SAMPLE NUMBER:	42-43
RING NUMBER:	4
DEPTH:	unknown

FIELD WIEGHT OF SAMPLE (W/CAP AND RING):	204.2 (g)
TARE WEIGHT, RING:	72.6 (g)
TARE WEIGHT, PAN:	0.0 (g)
SAMPLE VOLUME:	66.18 (cc)
DATE AND TIME INTO OVEN:	12/13/87 1700
DATE AND TIME OUT OF OVEN:	12/17/87 940
DRY WEIGHT OF SAMPLE:	107.4 (g)
DRY BULK DENSITY:	1.62 (g/cc)
PARTICLE DENSITY:	2.65 (g/cc)
(METHOD: ASSUME MEAN PARTICLE DENSITY = 2.65 g/cc)	
CALCULATED POROSITY:	38.76 (% vol)
INITIAL MOISTURE CONTENT (VOLUMETRIC):	36.57 (% vol)
INITIAL MOISTURE CONTENT (GRAVIMETRIC):	22.53 (%)

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY:	S. Stoller
CALCULATIONS MADE BY:	S. Stoller
CHECKED BY:	W. Cox

DATA FOR INITIAL MOISTURE CONTENT,
BULK DENSITY, AND POROSITY

JOB NAME:	LOS ALAMOS
JOB NUMBER:	87-L-070
SAMPLE NUMBER:	61-62
RING NUMBER:	A4
DEPTH:	unknown

FIELD WIEGHT OF SAMPLE (W/CAP AND RING):	199.0 (g)
TARE WEIGHT, RING:	73.4 (g)
TARE WEIGHT, PAN:	0.0 (g)
SAMPLE VOLUME:	66.18 (cc)
DATE AND TIME INTO OVEN:	12/13/87 1700
DATE AND TIME OUT OF OVEN:	12/17/87 940
DRY WEIGHT OF SAMPLE:	112.6 (g)
DRY BULK DENSITY:	1.70 (g/cc)
PARTICLE DENSITY:	2.65 (g/cc)
(METHOD: ASSUME MEAN PARTICLE DENSITY = 2.65 g/cc)	
CALCULATED POROSITY:	35.80 (% vol)
INITIAL MOISTURE CONTENT (VOLUMETRIC):	19.64 (% vol)
INITIAL MOISTURE CONTENT (GRAVIMETRIC):	11.55 (%)

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY:	S. Stoller
CALCULATIONS MADE BY:	S. Stoller
CHECKED BY:	W. Cox

DATA FOR INITIAL MOISTURE CONTENT,
BULK DENSITY, AND POROSITY

JOB NAME:	LOS ALAMOS
JOB NUMBER:	87-L-070
SAMPLE NUMBER:	75-76
RING NUMBER:	19
DEPTH:	unknown

FIELD WIEGHT OF SAMPLE (W/CAP AND RING):	192.3 (g)
TARE WEIGHT, RING:	73.4 (g)
TARE WEIGHT, PAN:	0.0 (g)
SAMPLE VOLUME:	66.18 (cc)
DATE AND TIME INTO OVEN:	12/13/87 1700
DATE AND TIME OUT OF OVEN:	12/17/87 940
DRY WEIGHT OF SAMPLE:	103.6 (g)
DRY BULK DENSITY:	1.57 (g/cc)
PARTICLE DENSITY:	2.65 (g/cc)
(METHOD: ASSUME MEAN PARTICLE DENSITY = 2.65 g/cc)	
CALCULATED POROSITY:	40.93 (% vol)
INITIAL MOISTURE CONTENT (VOLUMETRIC):	23.12 (% vol)
INITIAL MOISTURE CONTENT (GRAVIMETRIC):	14.77 (%)

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY:	S. Stoller
CALCULATIONS MADE BY:	S. Stoller
CHECKED BY:	W. Cox

DATA FOR INITIAL MOISTURE CONTENT,
BULK DENSITY, AND POROSITY

JOB NAME:	LOS ALAMOS
JOB NUMBER:	87-L-070
SAMPLE NUMBER:	80-81
RING NUMBER:	18
DEPTH:	unknown

FIELD WIEGHT OF SAMPLE (W/CAP AND RING):	205.5 (g)
TARE WEIGHT, RING:	73.1 (g)
TARE WEIGHT, PAN:	0.0 (g)
SAMPLE VOLUME:	66.18 (cc)
DATE AND TIME INTO OVEN:	12/13/87 1700
DATE AND TIME OUT OF OVEN:	12/17/87 940
DRY WEIGHT OF SAMPLE:	119.1 (g)
DRY BULK DENSITY:	1.80 (g/cc)
PARTICLE DENSITY:	2.65 (g/cc)

(METHOD: ASSUME MEAN PARTICLE DENSITY = 2.65 g/cc)

CALCULATED POROSITY:	32.09 (% vol)
INITIAL MOISTURE CONTENT (VOLUMETRIC):	20.10 (% vol)
INITIAL MOISTURE CONTENT (GRAVIMETRIC):	11.17 (%)

COMMENTS:

LABORATORY ANALYSIS PERFORMED BY:	S. Stoller
CALCULATIONS MADE BY:	S. Stoller
CHECKED BY:	W. Cox

UNSATURATED HYDRAULIC PROPERTIES

Table 7. Summary of Parameters for Calculating Unsaturated Hydraulic Conductivity

Sample No.	α (cm^{-1})	N (dimension-less)	θ_r (cm^3/cm^3)	θ_s (cm^3/cm^3)	K_s (cm/sec)
7-8	0.00272	2.49734	0.083	0.518	1.58E-04
11-12	0.00231	1.73884	0.199	0.561	2.84E-04
16-17	0.00119	2.04731	0.204	0.549	2.78E-04
21-22	0.00313	1.73941	0.124	0.562	2.00E-04
25-26	0.00371	1.69308	0.100	0.520	9.18E-05
35-36	0.00108	2.44961	0.094	0.428	2.25E-05
42-43	0.00164	1.66466	0.228	0.423	8.57E-05
61-62	0.00263	1.93720	0.079	0.364	5.15E-04
75-76	0.00452	1.65070	0.083	0.416	2.28E-04
80-81	0.00098	1.96205	0.107	0.346	4.41E-05

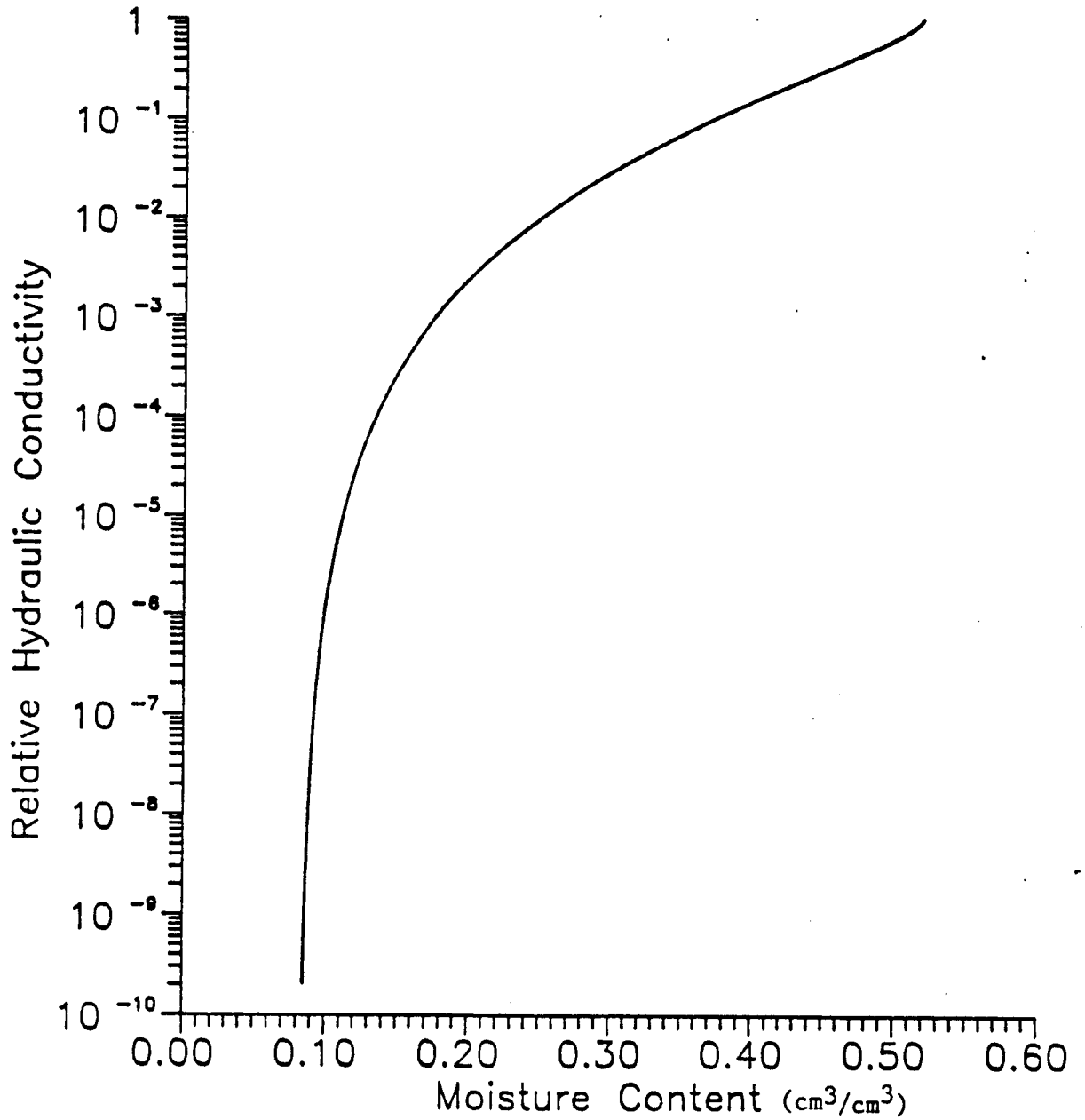

FIGURE NUMBER:	Relative Hydraulic Conductivity vs. Moisture Content (cm^3/cm^3), Sample No. 7-8				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

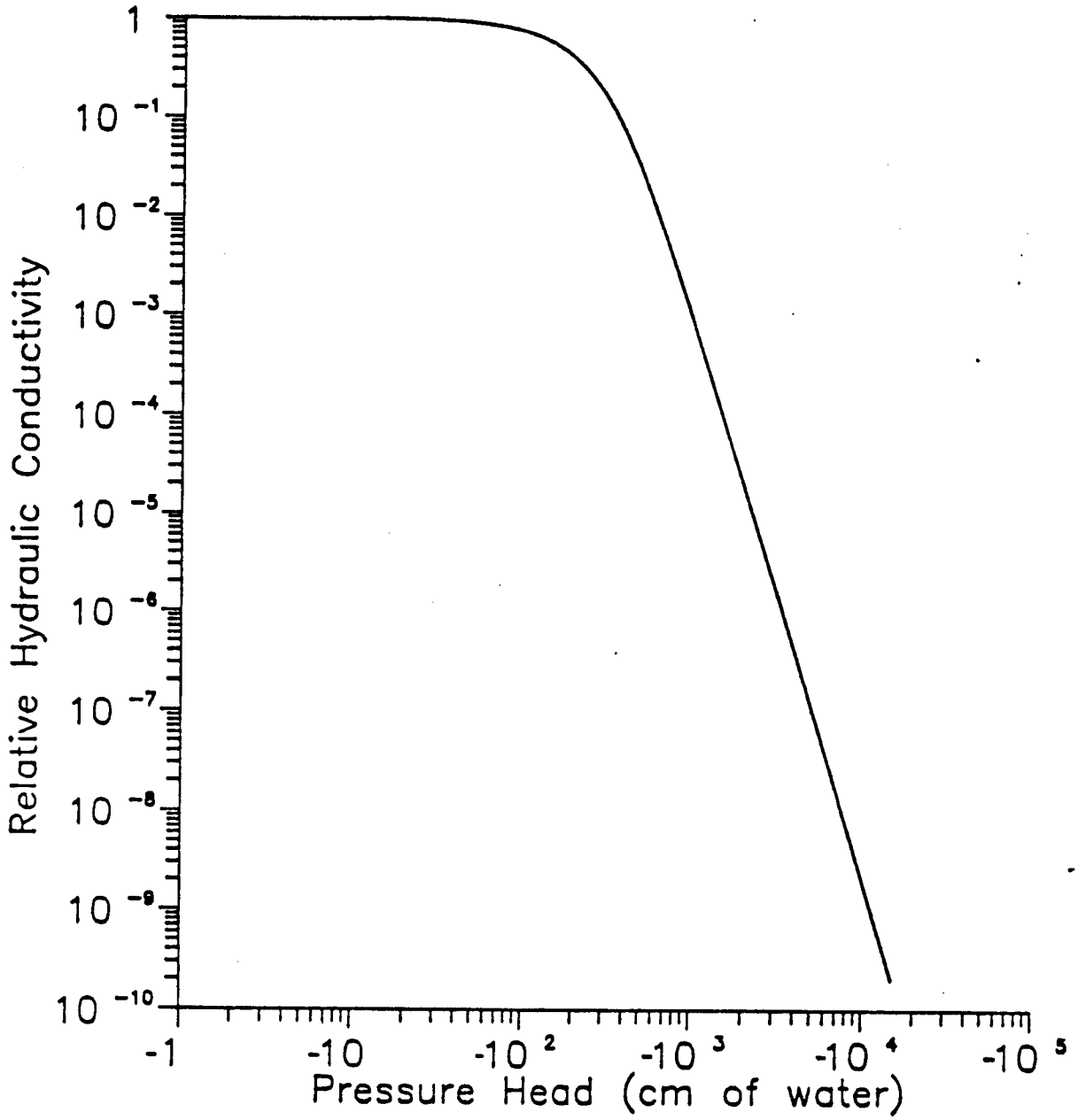

FIGURE NUMBER:	Relative Hydraulic Conductivity vs. Pressure Head (cm of water), Sample No.7-8				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

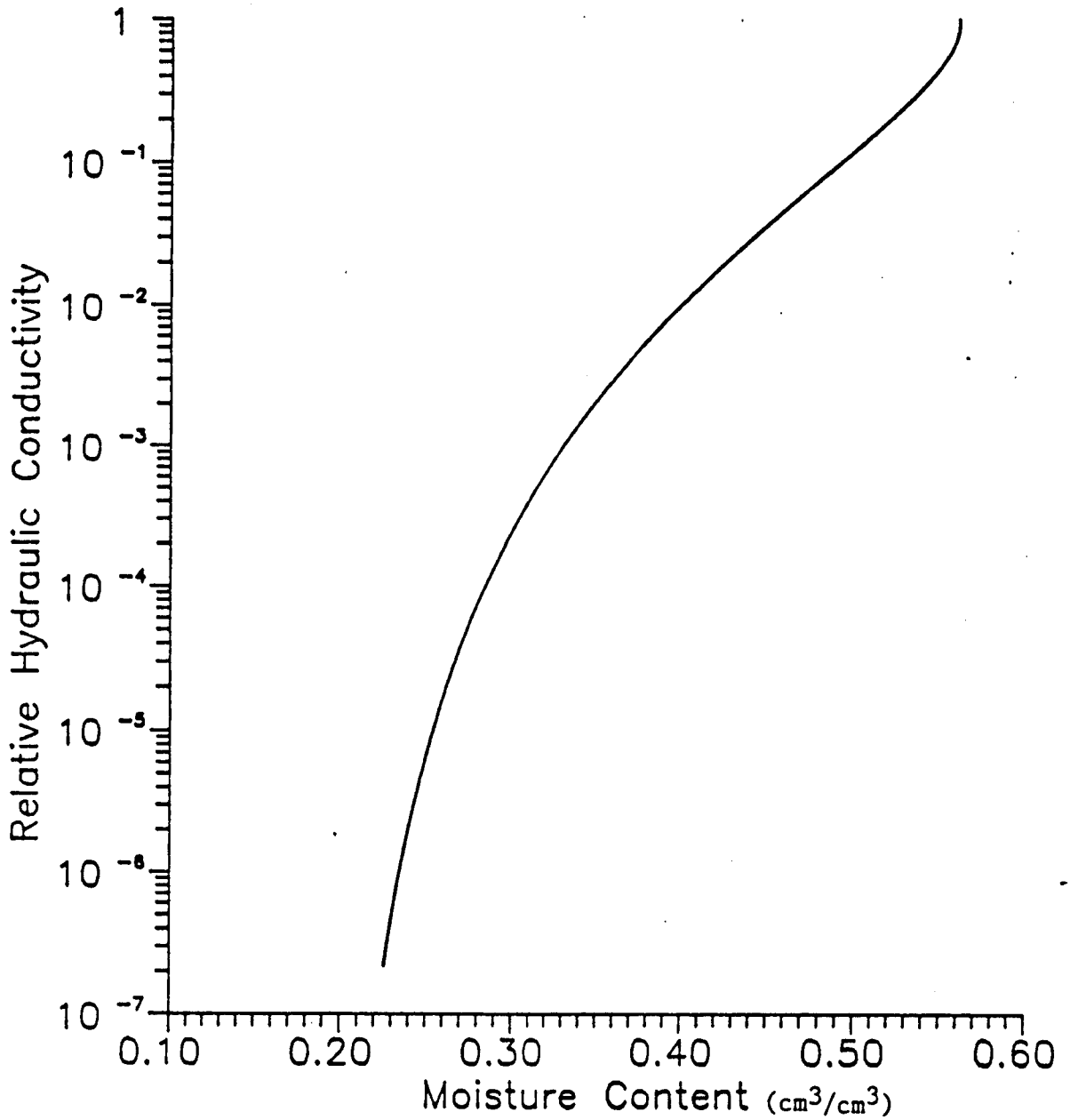

FIGURE NUMBER:	Relative Hydraulic Conductivity vs. Moisture Content (cm^3/cm^3), Sample No. 11-12				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

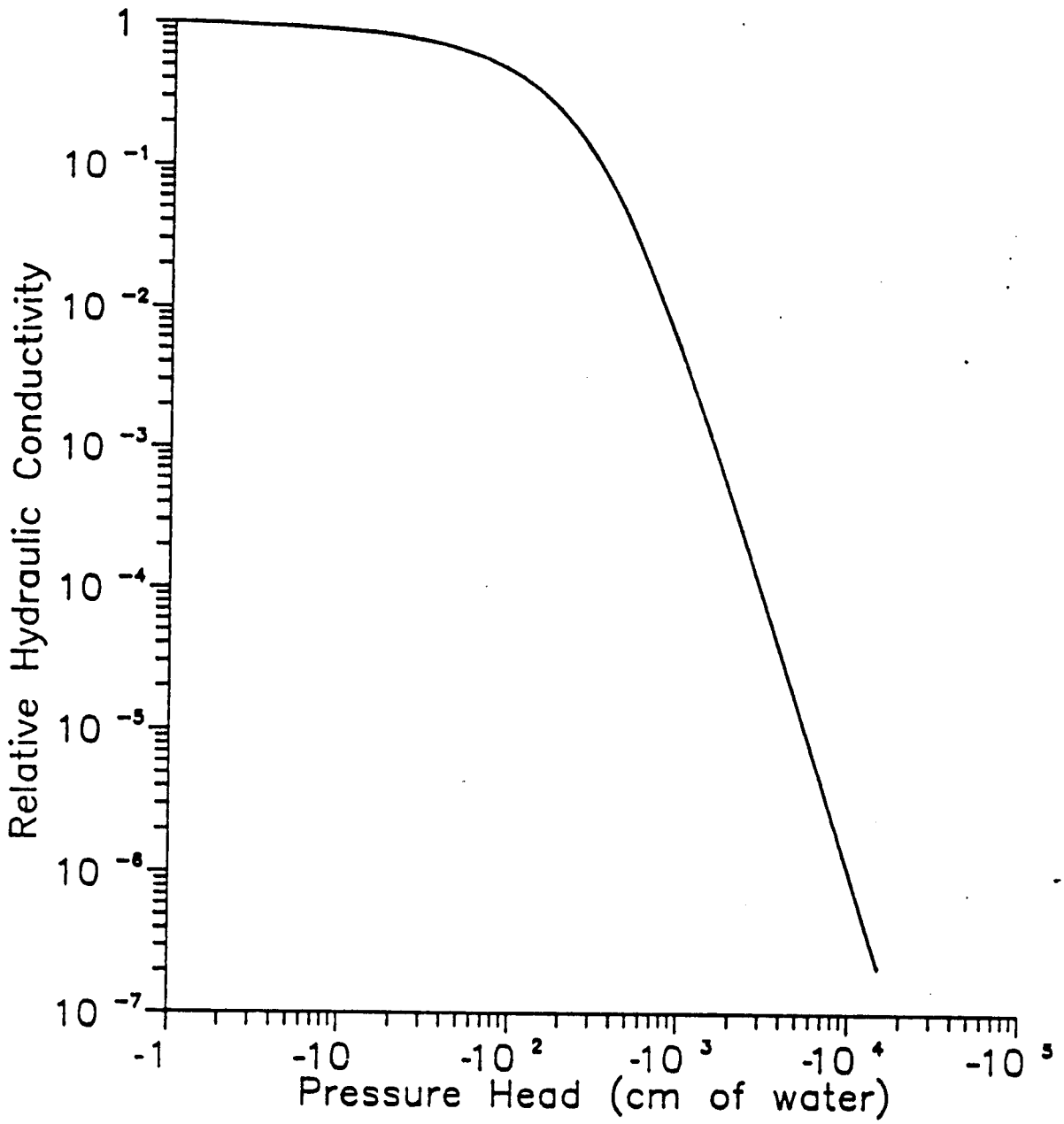

FIGURE NUMBER:	Relative Hydraulic Conductivity vs. Pressure Head (cm of water), Sample No. 11-12				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

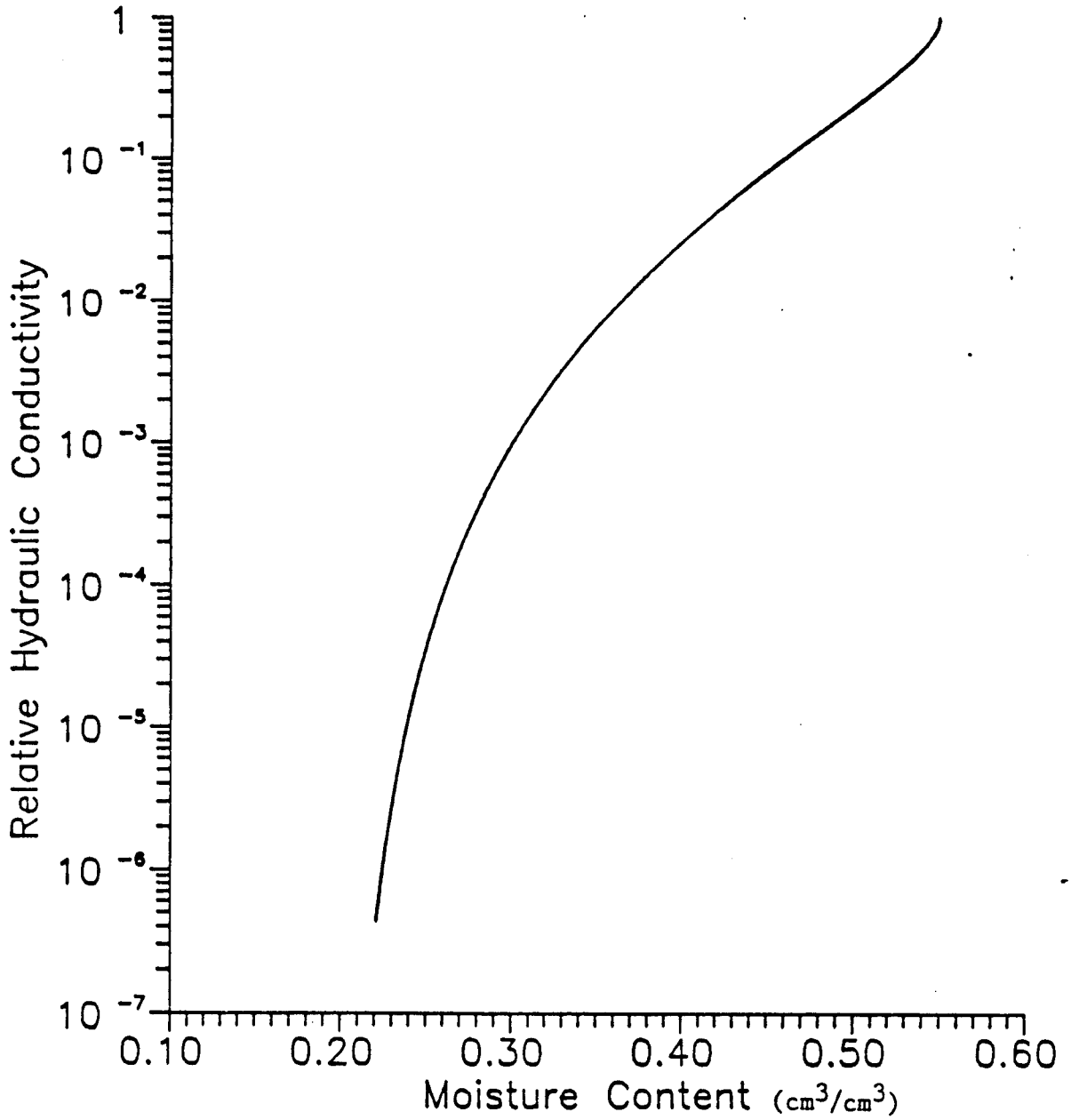

FIGURE NUMBER:	Relative Hydraulic Conductivity vs. Moisture Content (cm^3/cm^3), Sample No. 16-17				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

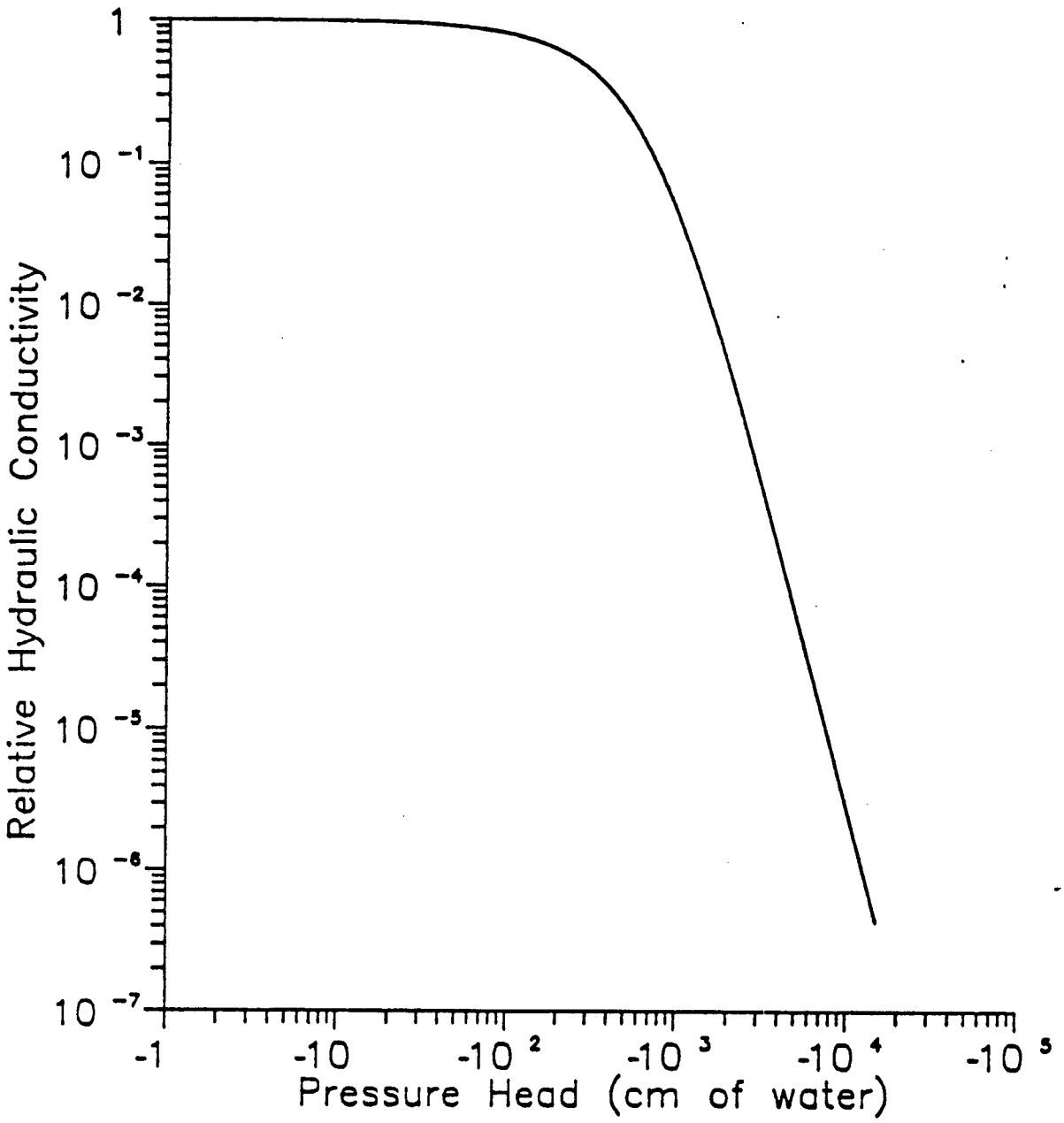

FIGURE NUMBER:	Relative Hydraulic Conductivity vs. Pressure Head (cm of water), Sample No. 16-17				DANIEL B. STEPHENS & ASSOCIATES, INC.
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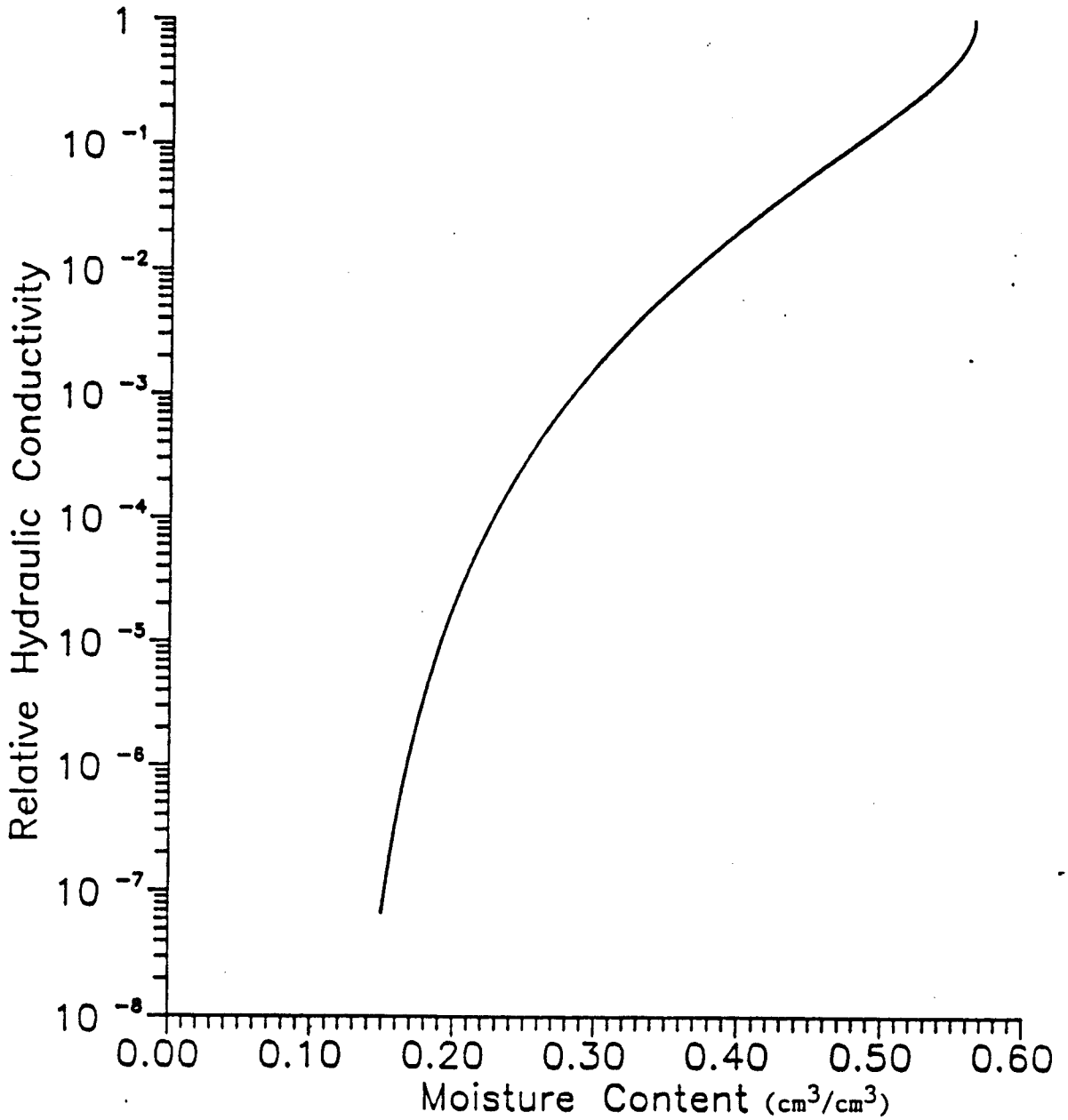

FIGURE NUMBER:	Relative Hydraulic Conductivity vs. Moisture Content (cm^3/cm^3), Sample No. 21-22				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

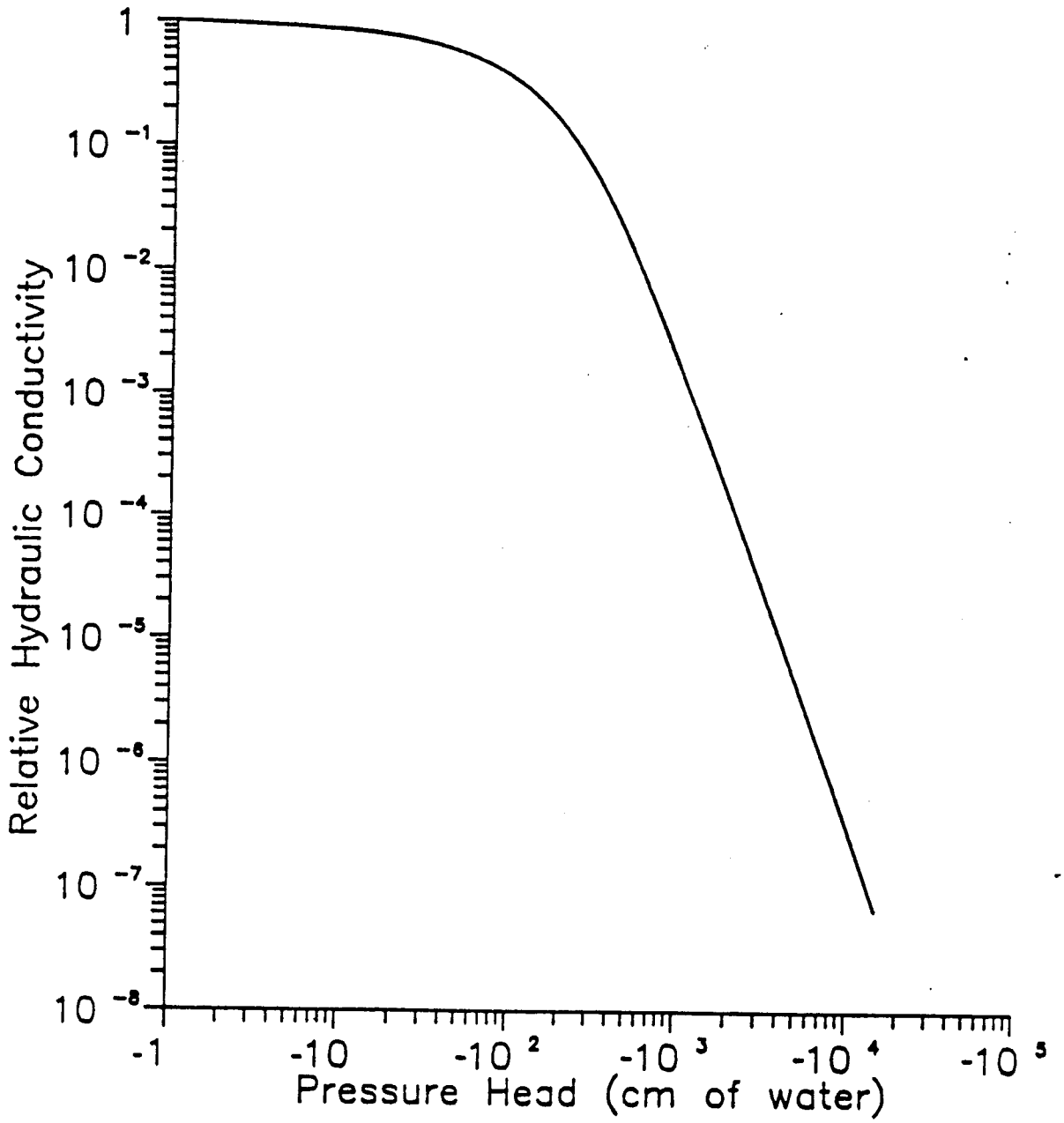

FIGURE NUMBER:	Relative Hydraulic Conductivity vs. Pressure Head (cm of water), Sample No. 21-22				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

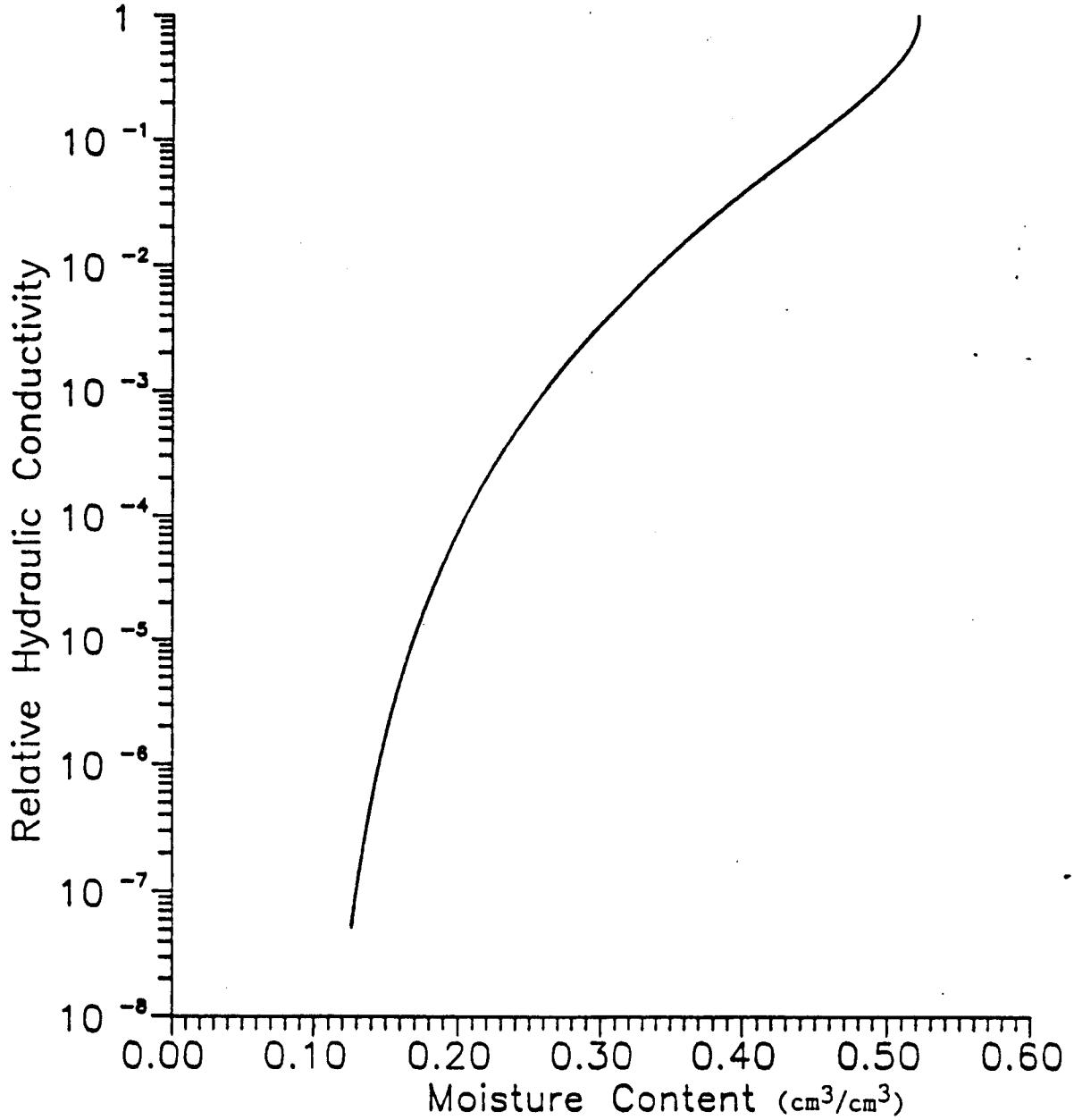

FIGURE NUMBER:	Relative Hydraulic Conductivity vs. Moisture Content (cm^3/cm^3), Sample No. 25-26				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

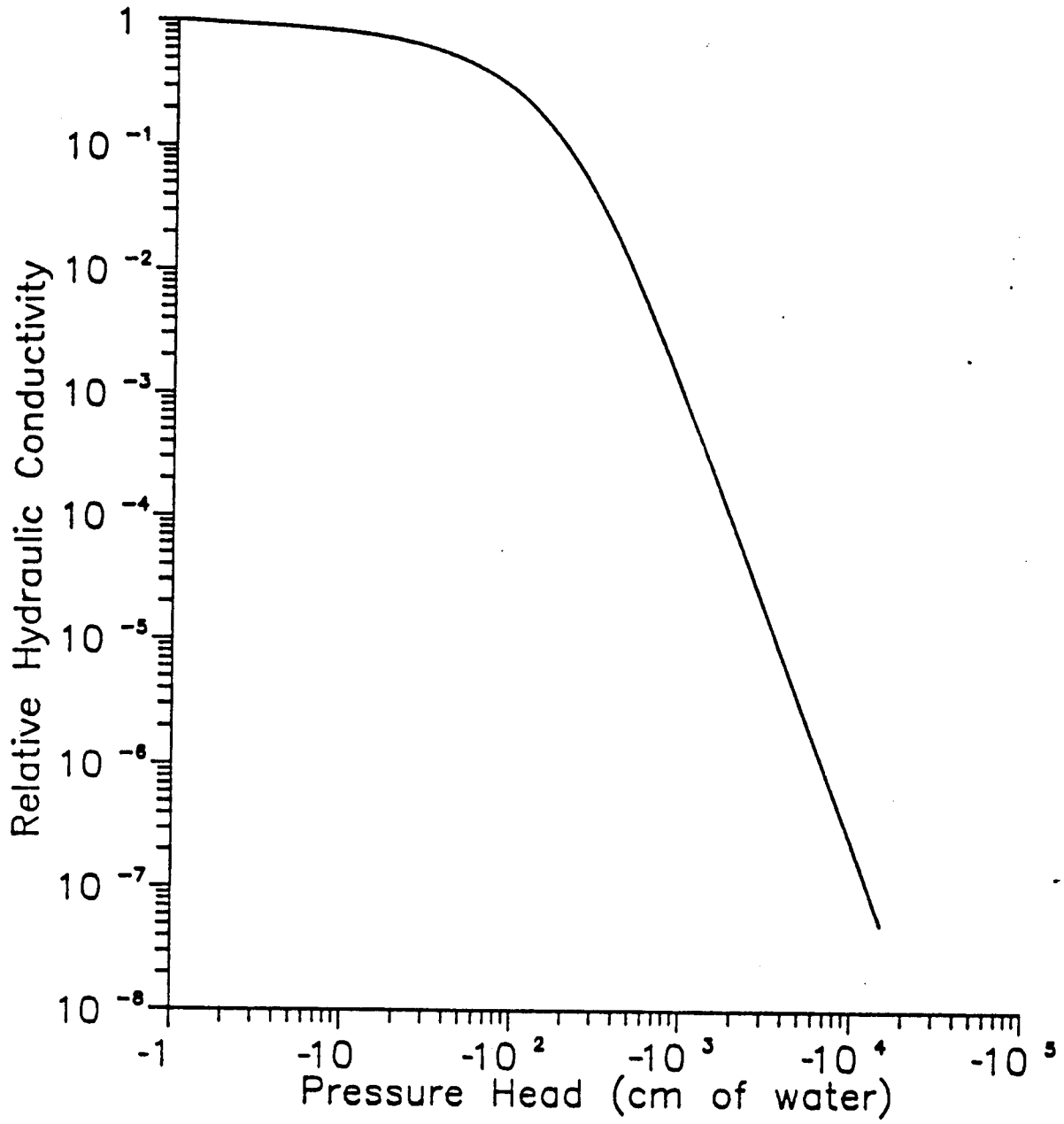

FIGURE NUMBER:	Relative Hydraulic Conductivity vs. Pressure Head (cm of water), Sample No. 25-26				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

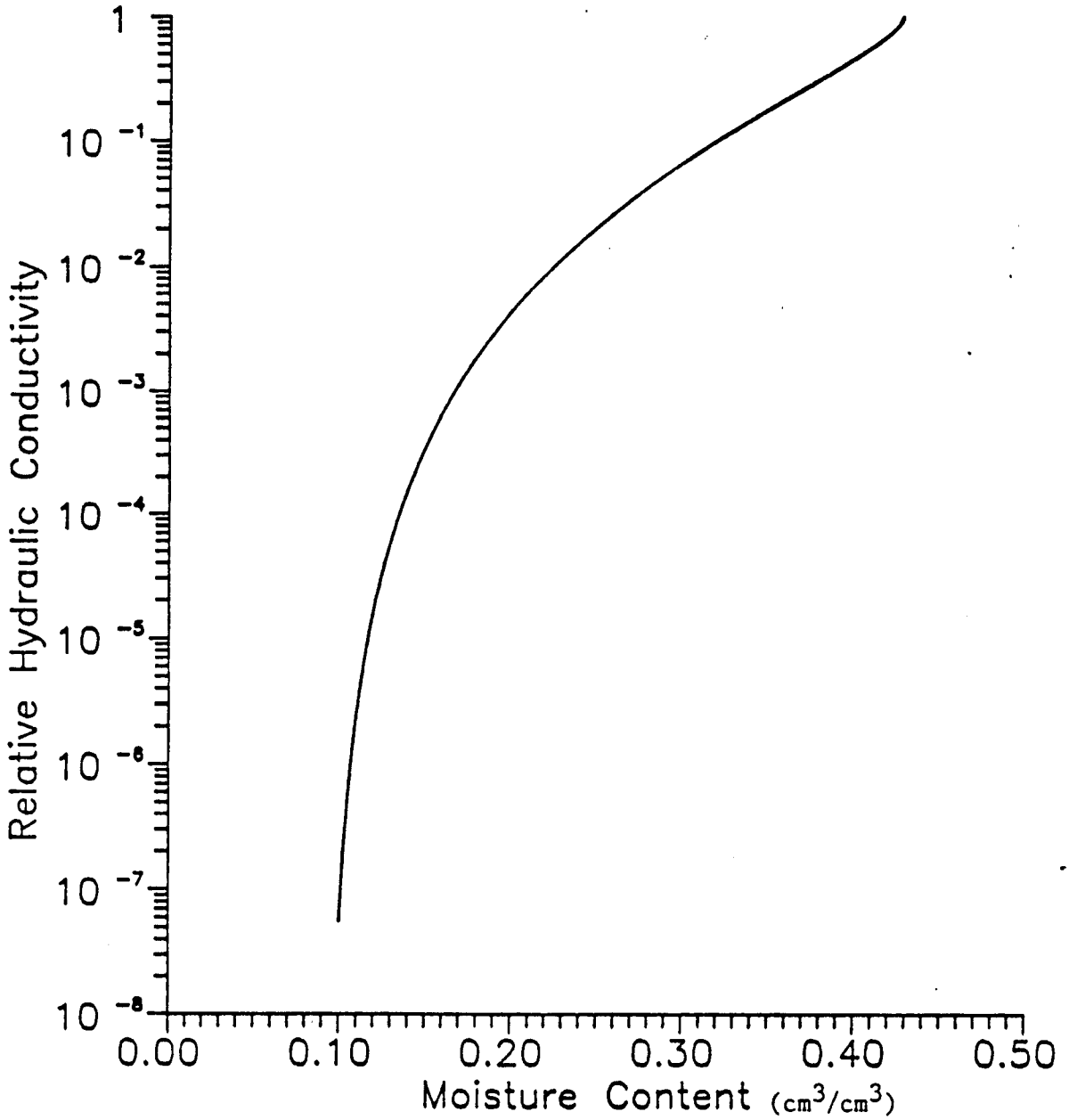

FIGURE NUMBER:	Relative Hydraulic Conductivity vs. Moisture Content (cm^3/cm^3), Sample No. 35-36				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

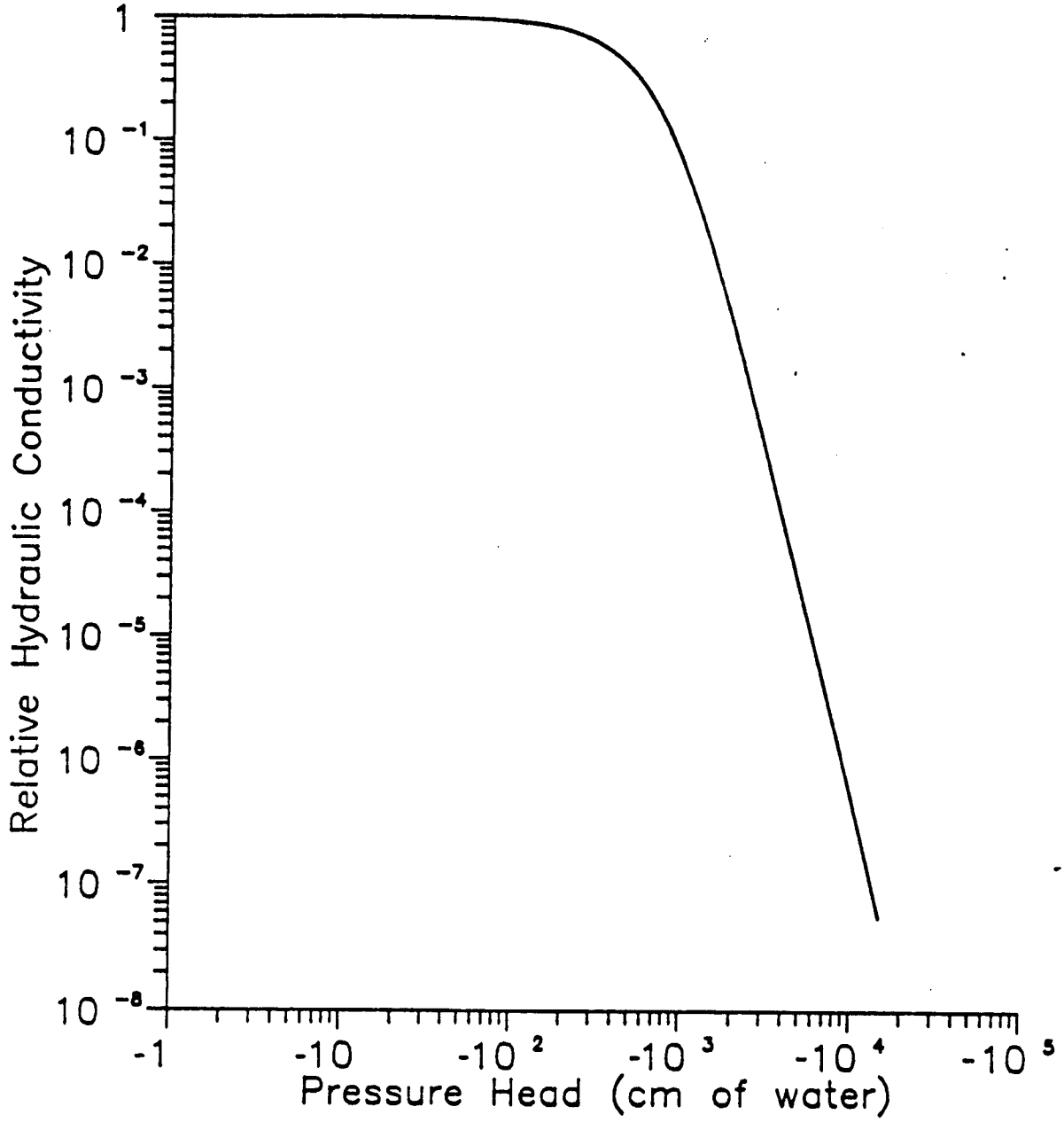

FIGURE NUMBER:	Relative Hydraulic Conductivity vs. Pressure Head (cm of water), Sample No. 35-36				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

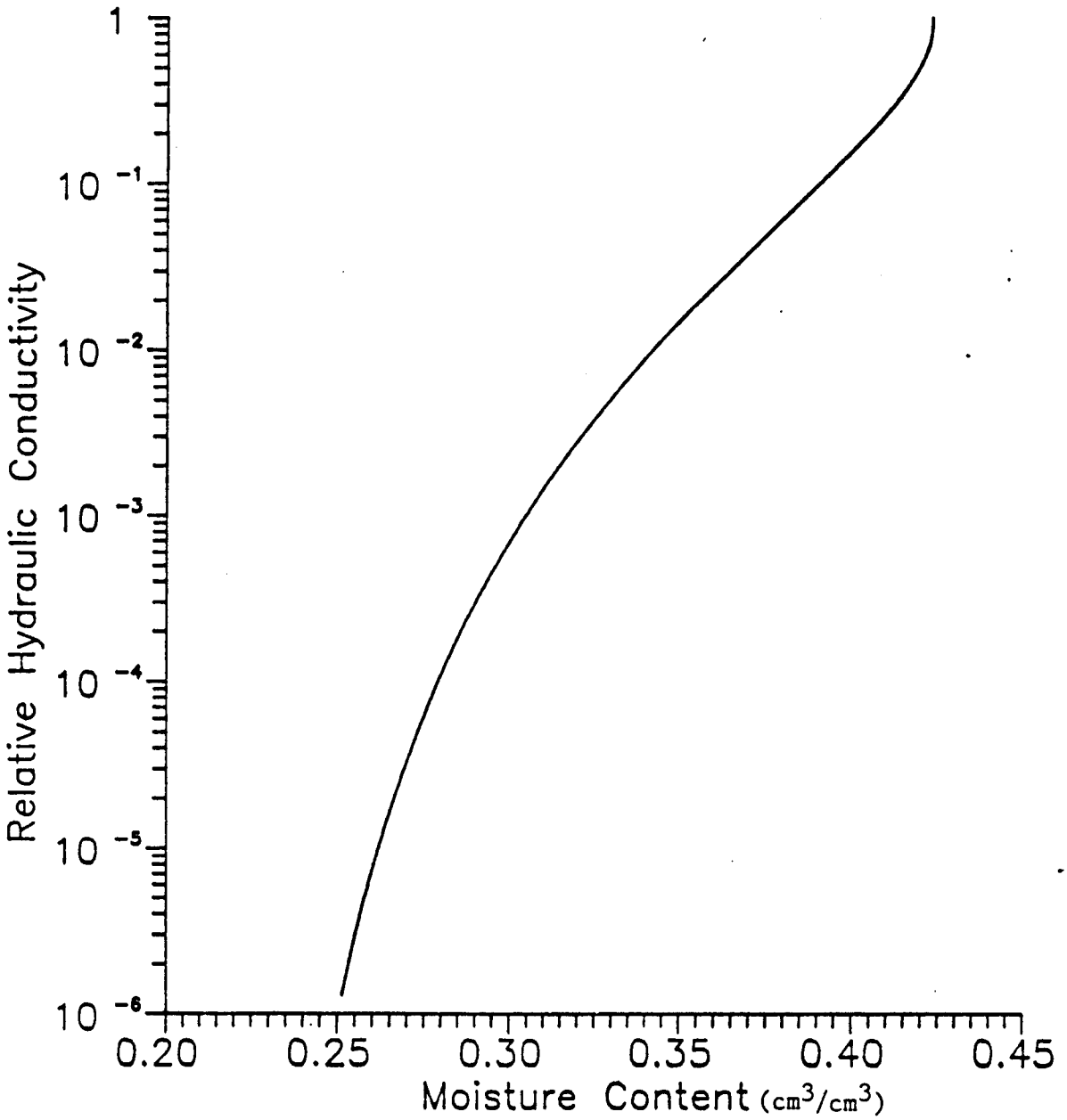

FIGURE NUMBER:	Relative Hydraulic Conductivity vs. Moisture Content (cm^3/cm^3), Sample No. 42-43				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

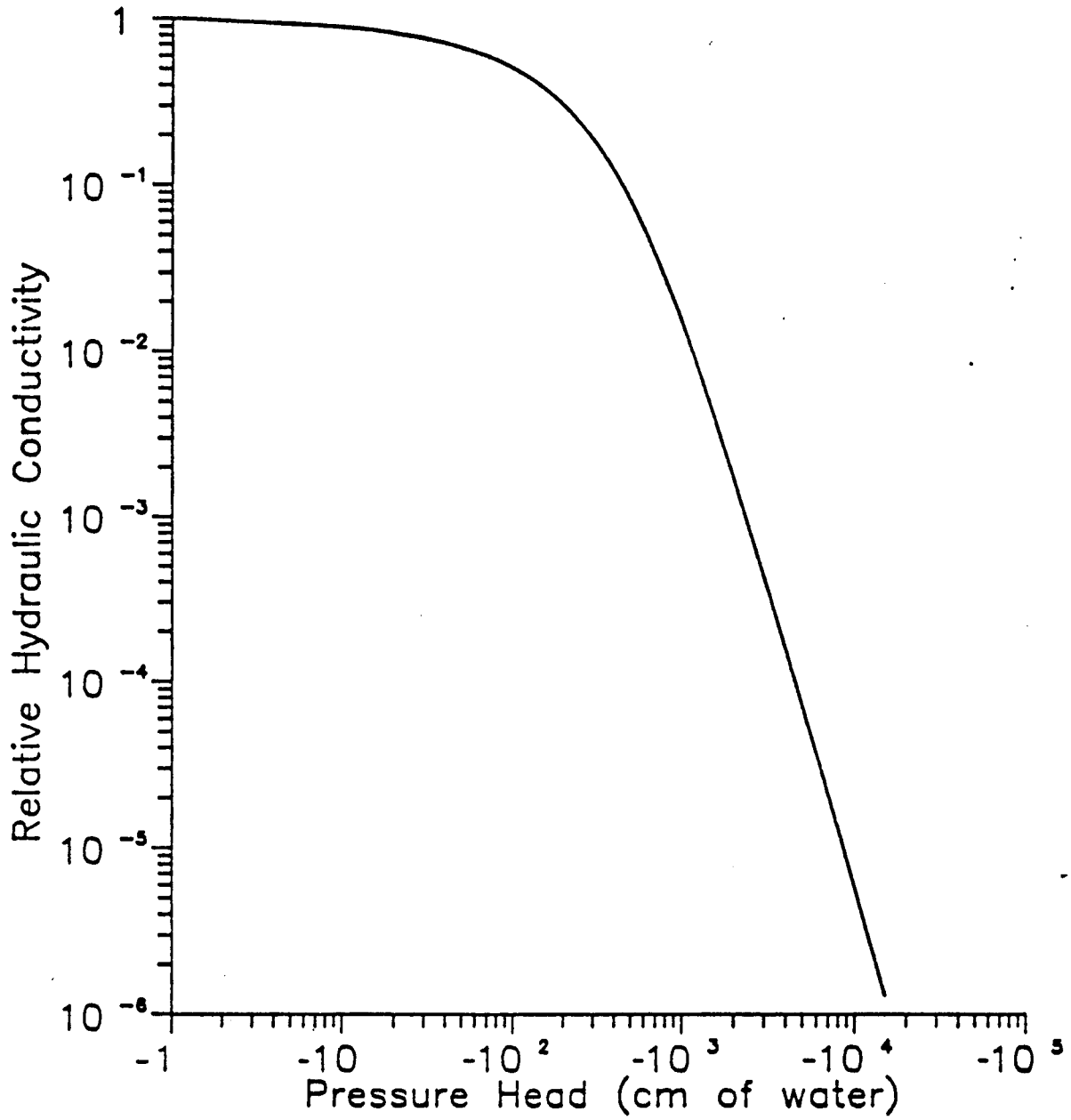

FIGURE NUMBER:	Relative Hydraulic Conductivity vs. Pressure Head (cm of water), Sample No. 42-43				DANIEL B. STEPHENS & ASSOCIATES, INC.
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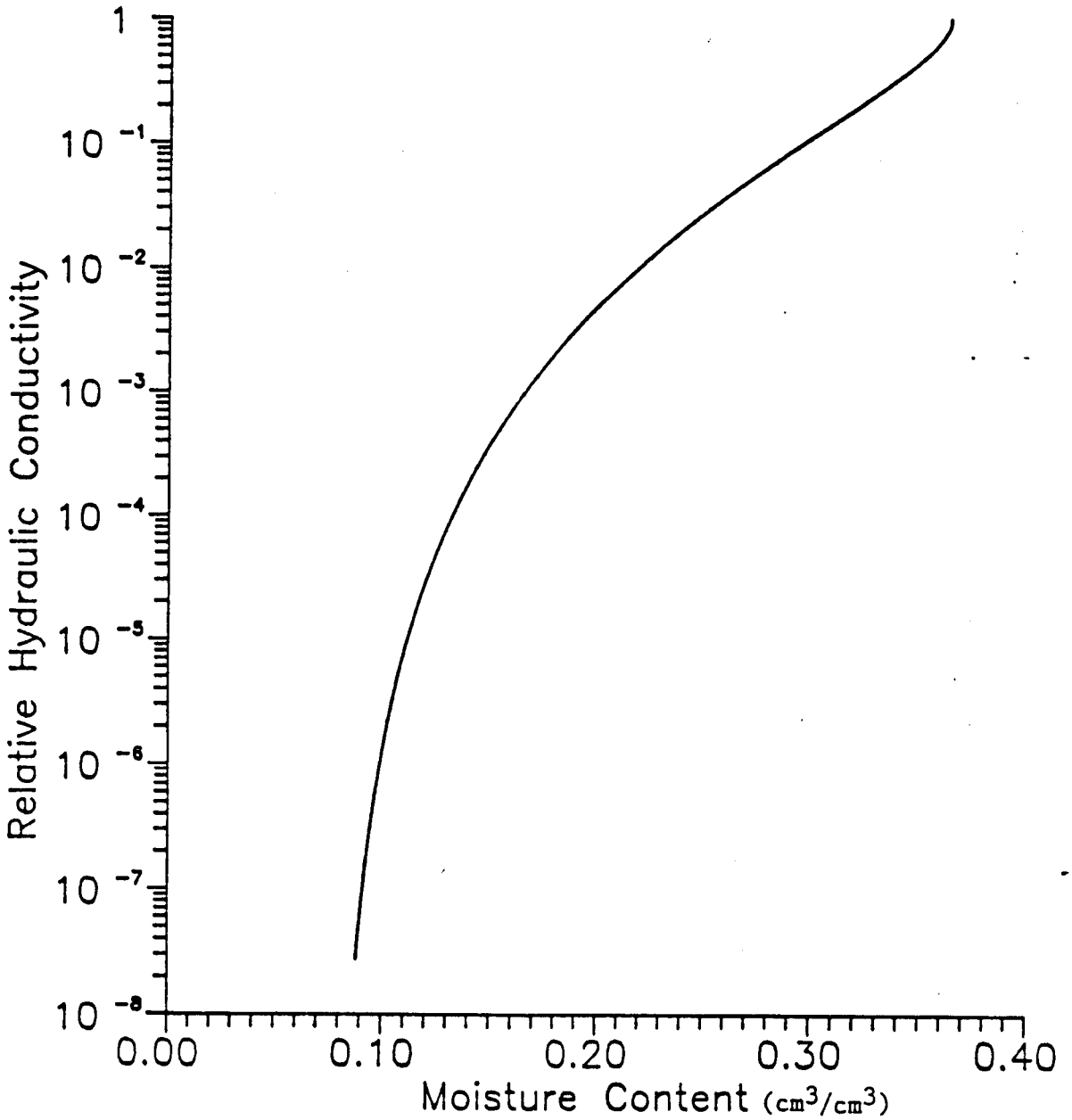

FIGURE NUMBER:	Relative Hydraulic Conductivity vs. Moisture Content (cm^3/cm^3), Sample No. 61-62				DANIEL B. STEPHENS & ASSOCIATES, INC.
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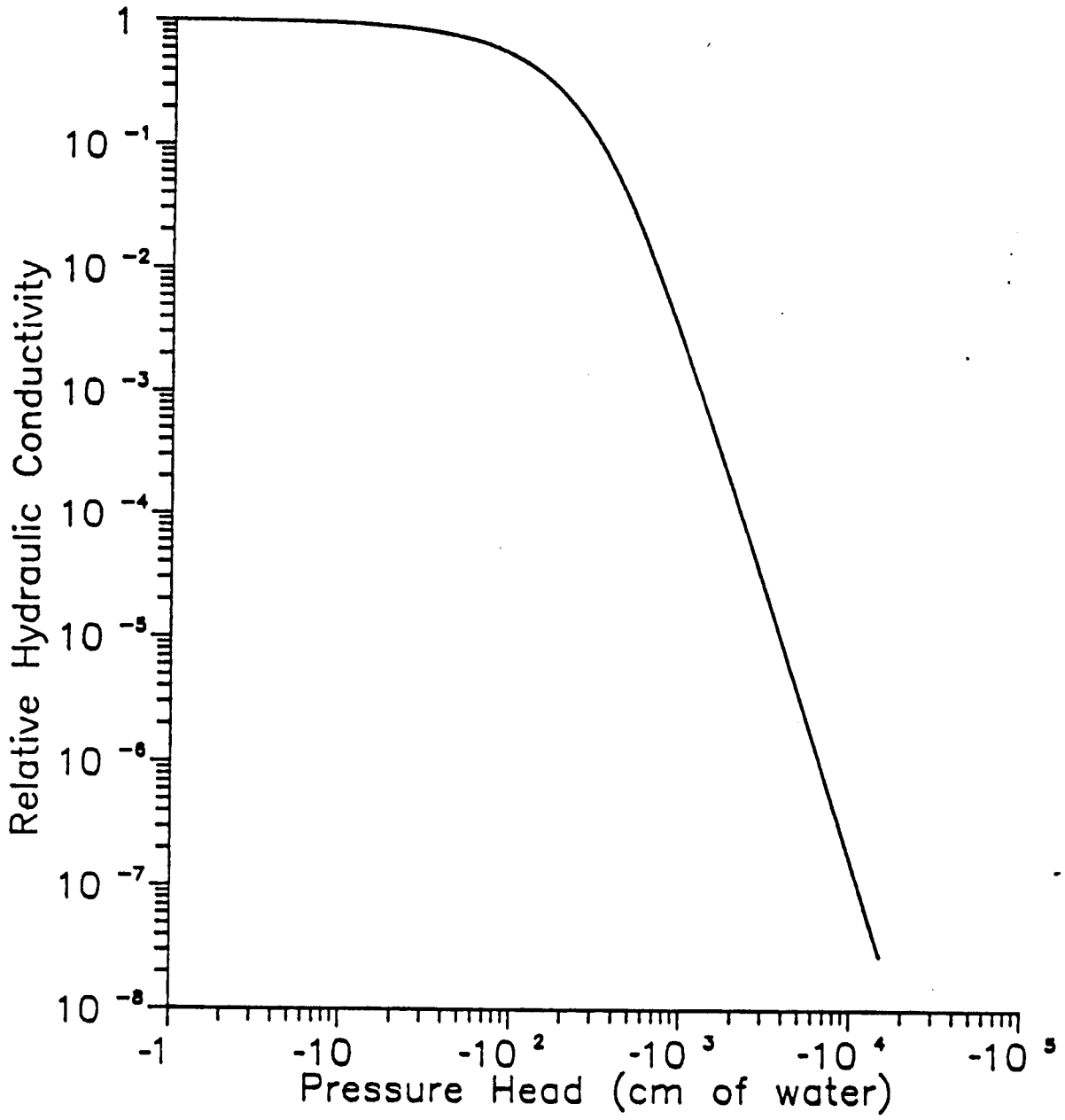

FIGURE NUMBER:	Relative Hydraulic Conductivity vs. Pressure Head (cm of water), Sample No. 61-62				DANIEL B. STEPHENS & ASSOCIATES, INC.
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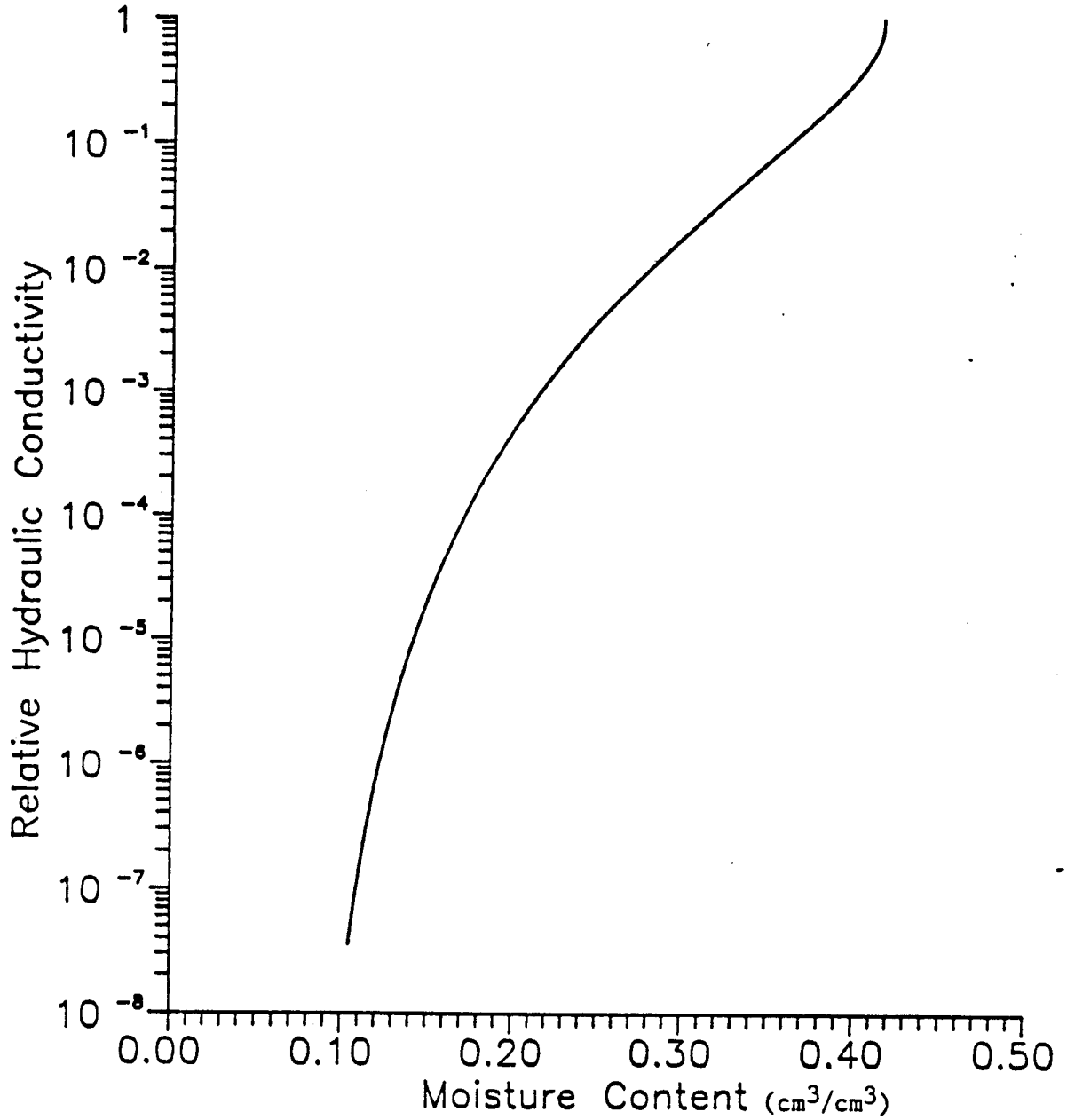

FIGURE NUMBER:	Relative Hydraulic Conductivity vs. Moisture Content (cm^3/cm^3), Sample No. 61-62				DANIEL B. STEPHENS & ASSOCIATES, INC.
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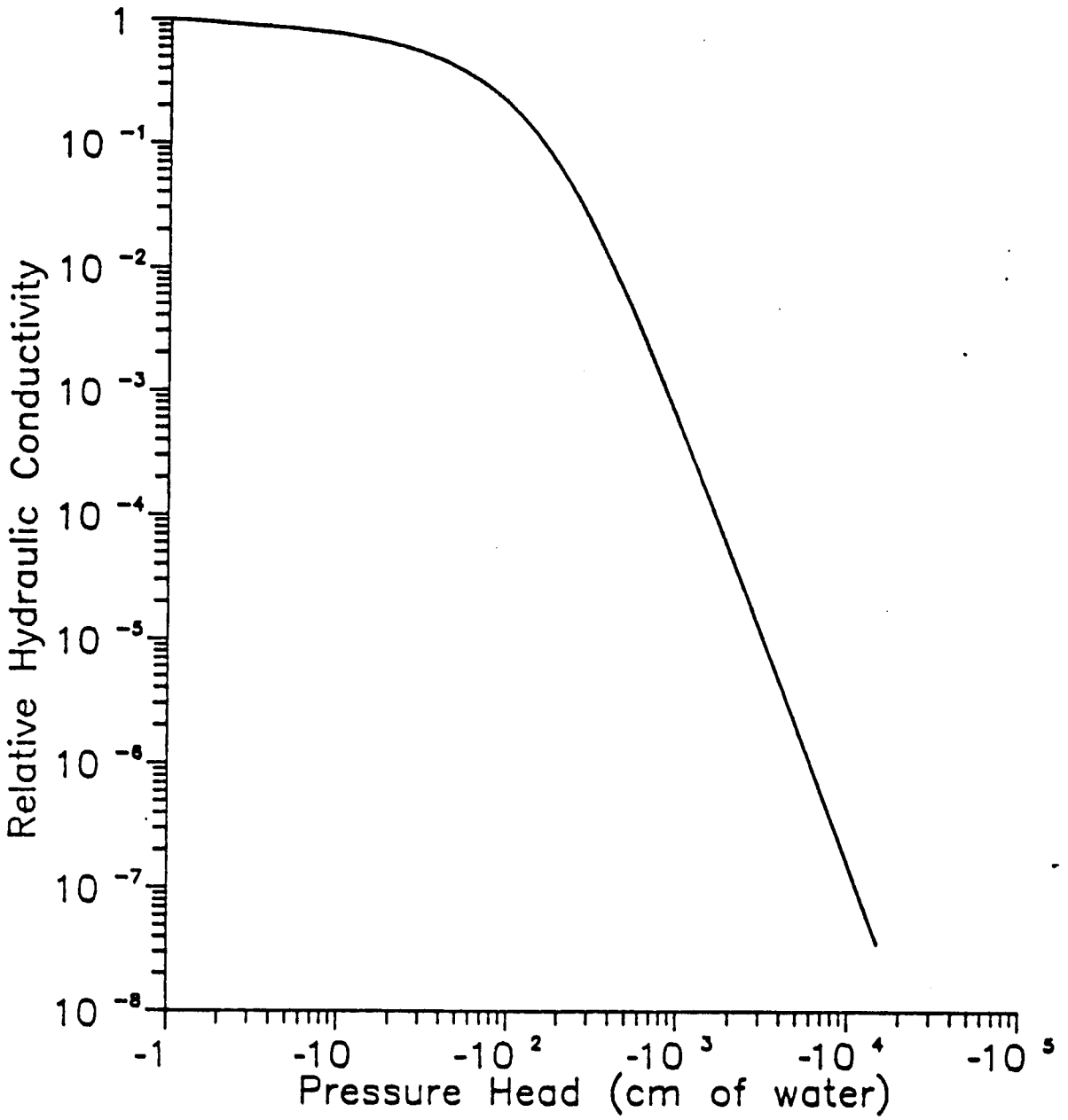


FIGURE NUMBER:	Relative Hydraulic Conductivity vs. Pressure Head (cm of water), Sample No. 75-76				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

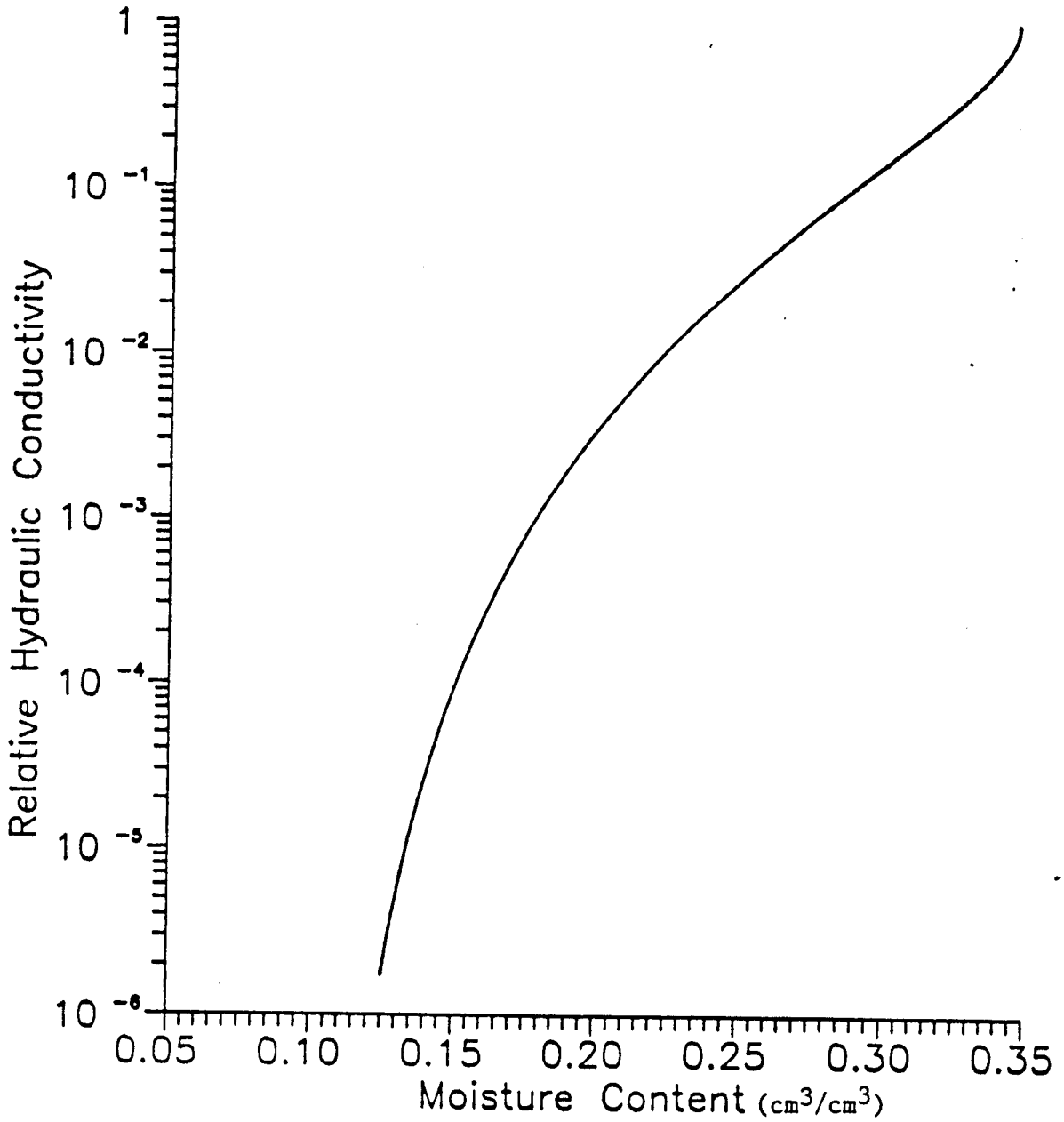


FIGURE NUMBER:	Relative Hydraulic Conductivity vs. Moisture Content (cm^3/cm^3), Sample NO. 80-81				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

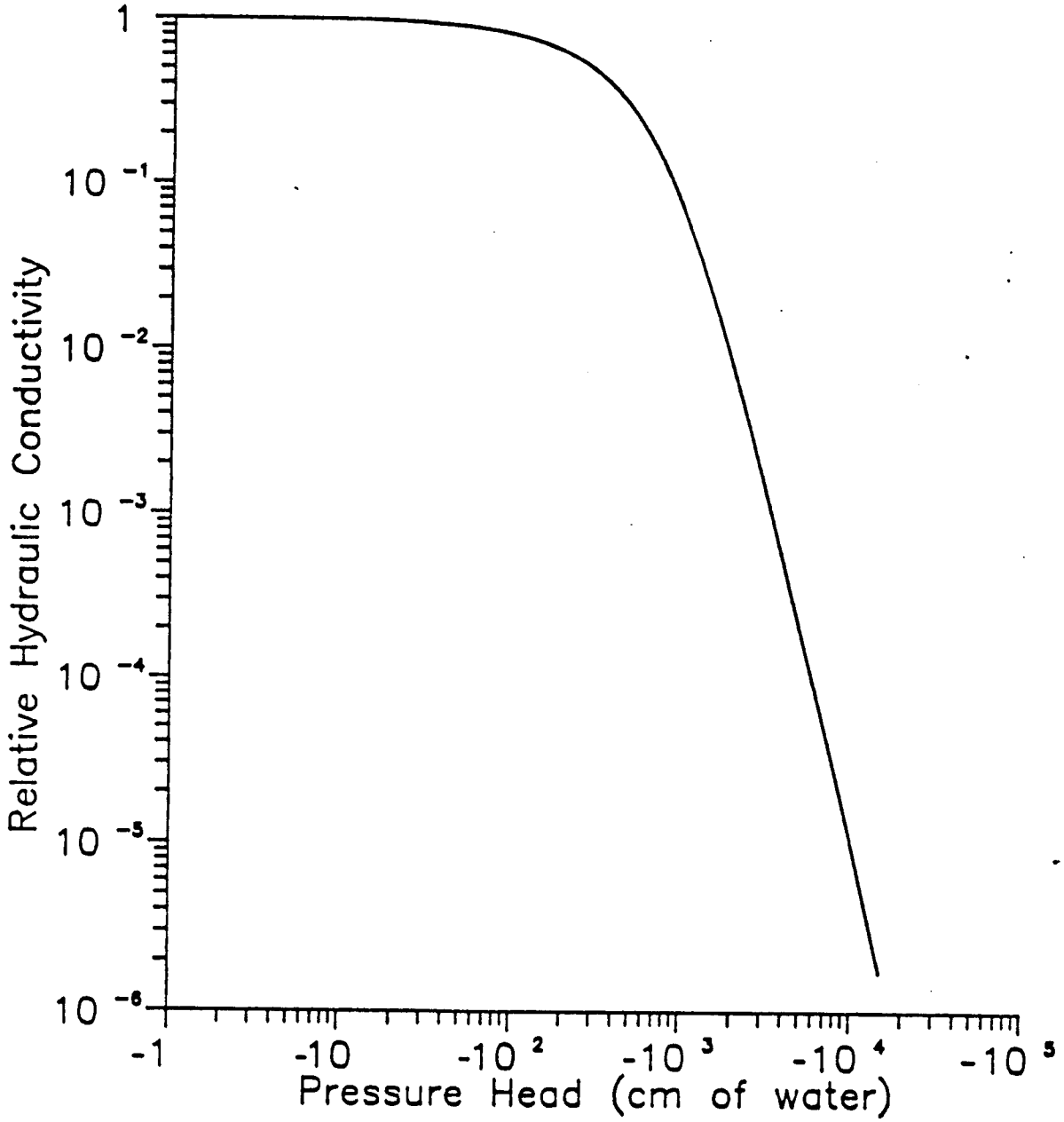


FIGURE NUMBER:	Relative Hydraulic Conductivity vs. Pressure Head (cm of water), Sample No. 80-81				DANIEL B. STEPHENS & ASSOCIATES, INC.
FOR: Los Alamos	PROJECT NO: 87-L-070	DATE: 1/4/88	PLOTTED BY: SLS	CHECKED BY: WBC	

PRINCIPLES AND METHODS

SATURATED HYDRAULIC CONDUCTIVITY

Method

The saturated hydraulic conductivity of a soil sample can be measured in two types of laboratory apparatus: a constant head permeameter or a falling head permeameter.

Constant head. The hydraulic conductivity K is defined here as the ratio of q, the volume flux of water passing through a unit cross sectional area of soil per unit time, and ($\Delta h/L$) or gradient of hydraulic head in the direction of flow, corrected to 20°C:

$$K = (q/[\Delta h/L])(V_T/V_{20}) \qquad (1)$$

where $V_{20,T}$ is the kinematic viscosity at 20°C and observed temperature, T.

A soil sample of length, L, and cross-sectional area, A, is placed in a sample holder which prevents any loss of soil or change in volume and establishes laminar unidirectional flow through the sample. A constant head differential, Δh, is then set up across the sample and maintained. Periodic readings of volumetric outflow are taken until stable values for conductivity, K are obtained. Temperature of the fluid is measured with a thermometer. Figure B-1 is a diagram of the apparatus used. A constant head system is best suited to samples with conductivities greater than 10^{-4} cm/sec.

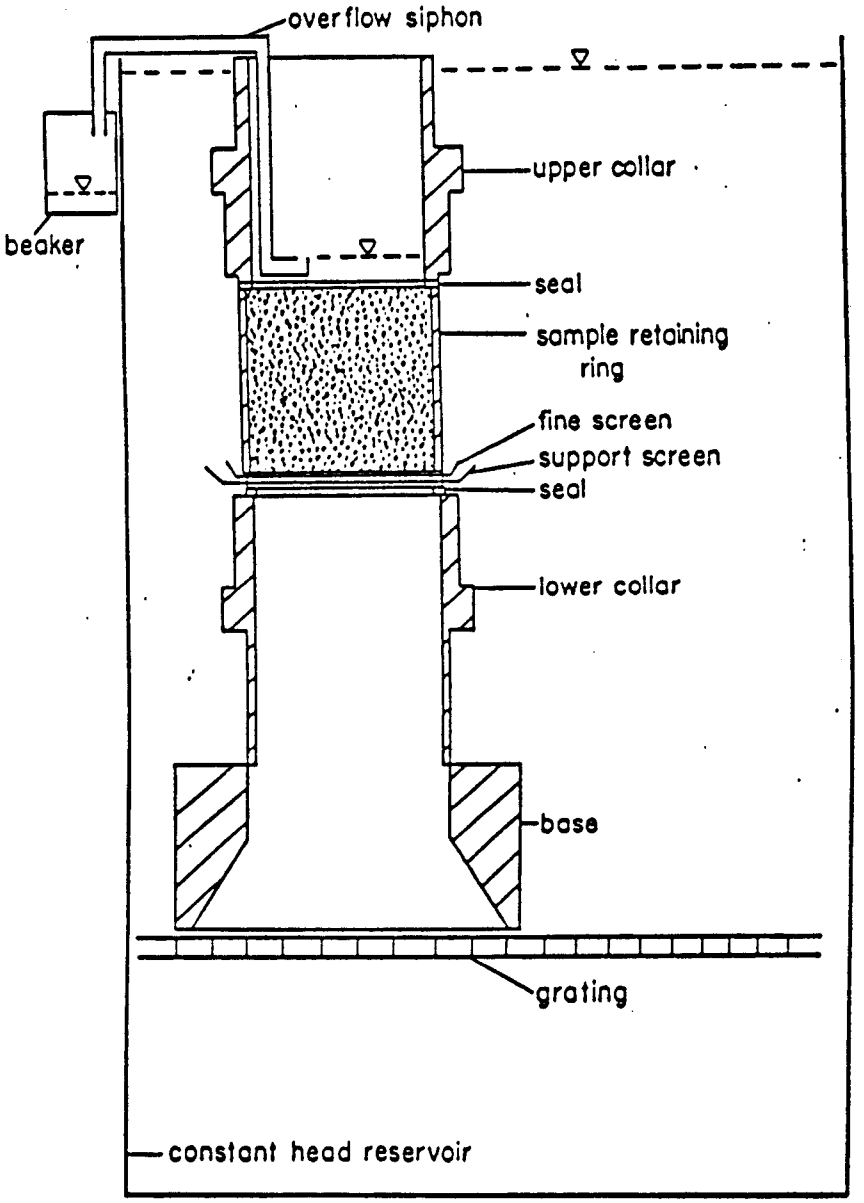


Figure B-1. Constant Head Permeameter

Falling head. A soil sample of length L and cross sectional area, A, is placed in a sample holder which has a standpipe with cross-sectional area, a. A head of H_1, is established in the standpipe above the sample, then the water level is allowed to fall to H_2 in time t. Figure B-2 is a diagram of the apparatus used. A falling head system is best suited to samples with conductivities less than 10^{-4} cm/sec. The hydraulic conductivity, is then defined as:

$$K = (a \times L/A \times t) \ \ell n \ (H_1/H_2)(V_T/V_{20}) \qquad (2)$$

Procedures:

Constant head. Cylinders containing the soil sample are covered on both ends with loose fitting caps and placed in a shallow pan containing de-aired water. The samples are allowed to wet slowly from below for 24 hours. The samples are removed from the pan, and two screens are placed over one end; a very stiff one of coarse mesh for support and a fine one of either 80 to 100 mesh to prevent any sample from being washed out. The cylinder, with screens attached, is then clamped into the sample retainer and placed in the permeameter. The level of the water in the permeameter reservoir is then slowly raised over a period of hours. When the level in the reservoir reaches to within a few centimeters above the top of the sample, a siphon is placed in the sample retainer assembly to remove water from above

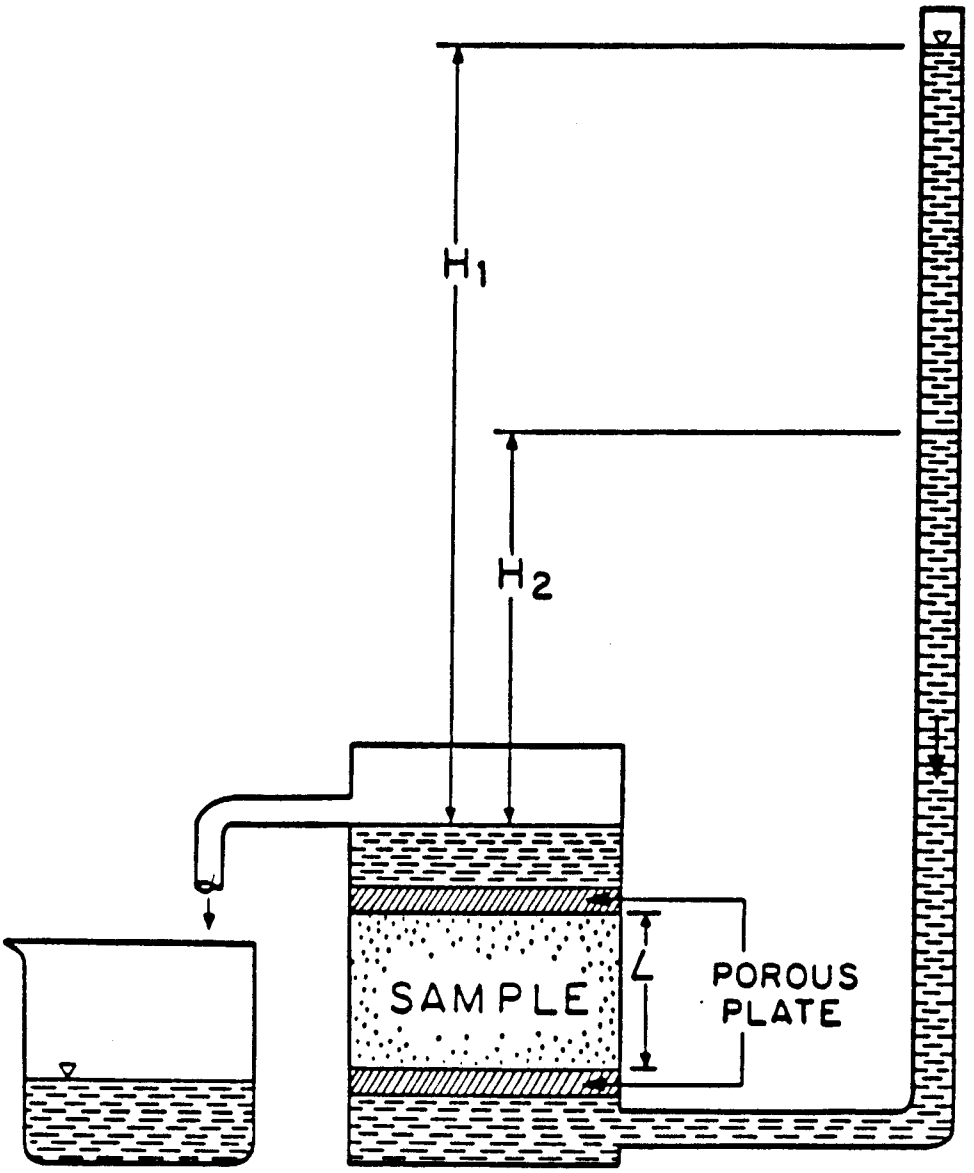


Figure B-2. Falling Head Permeameter

the sample. Water flows upward through the sample due to the hydraulic head difference across the sample. Periodic measurements of discharge and the head difference across the sample are made, and the hydraulic conductivity is calculated. A correction to 20 C is then applied for differences in kinematic viscosity. Measurement continues until the calculated hydraulic conductivity value stabilizes.

Falling head. Saturation of the sample is obtained by the same procedures described under constant head test. Screens are also attached as outlined under constant head test. The ring with screens is then placed in the falling head sample retainer and set in a constant head reservoir. Water is added to the standpipe and the difference between the water level in the standpipe and that in the constant head reservoir are recorded over time. The water level in the standpipe is allowed to fall, while the fluid level in the lower level is constant. After a period of time the difference in water levels between that in the standpipe and that in the constant head reservoir are measured and the elapsed time noted. Correction is applied for kinematic viscosity.

Calculations:

Experimental values are substituted into the appropriate equation as outlined under methods.

MOISTURE RETENTION - HANGING COLUMN

(PORE SIZE DISTRIBUTION)

Principle

Use of pore size distribution as a soil characteristic is based upon acceptance of the capillary model. This model is described by:

$$h' = 2 \cos \gamma / \rho g r \qquad (3)$$

where h' is the height to which a liquid will rise in a clean capillary tube of radius r, γ is the surface tension of the liquid, ρ is its density, and g is acceleration due to gravity. If water is extracted from an initially saturated sample of soil by a tension equal to h', the volume of water extracted is equal to the volume of pores having an effective radius greater than the radius, r. As the tension applied to the sample increases, additional water drains from progressively smaller pores.

Method

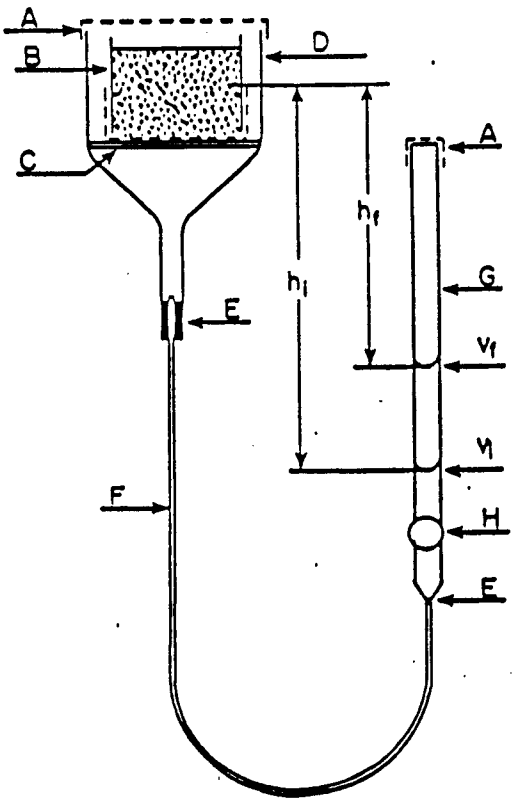
The key component of the apparatus for measuring the retention of moisture at different pressure heads or pore size distribution is a fritted glass porous plate that conducts water, but when wet the plate is impermeable to air. The fritted glass

plates have an air-entry pressure of about 300 to 400 cm of water. These plates are affixed in a glass funnel which is connected to a buret with stopcock by means of flexible tubing. A diagram of the apparatus is shown in Figure 3. A soil sample is placed on the plate and tension, h' is applied to the sample by positioning the fluid level in the buret at different levels below the center of the sample. Water flows out of the sample into the buret until equilibrium is achieved. The tension is again increased or decreased to obtain another state of equilibrium between moisture held by capillary forces in the sample and the applied tension.

Laboratory Procedure

Air is first removed from the porous plate by allowing de-aired water to pass continuously through it for 24 hours. The funnel with porous plate and the buret are supported on vertical rods by means of clamps. A saturated sample within its sample ring is then placed on the porous plate, making certain that good hydraulic contact is established between the soil particles and the plate. With the stopcock of the buret closed, the initial level of the water in the buret is recorded.

The buret is then lowered a small increment to about 10 to 15 cm below the center of the soil sample. When the stopcock is opened, the soil may begin to desaturate, and the drainage will flow into the buret. When drainage has ceased, the stopcock is



A Aluminum foil covers
B Sample in cylinder
C Fritted glass porous plate (part of D)
D Büchner funnel with porous plate
E Joints must be secure
F Flexible tubing
G Burette, least division not more than 0.1% sample volume
H Stopcock of burette
h_i cm of water suction, initial
h_f cm of water suction, final
v_i Burette reading, initial
v_f Burette reading, final

Figure B-3. Hanging Column Apparatus

closed and we record the water level in the buret and the vertical distance from the bottom of the meniscus of the water in the buret to the middle of the soil sample. The procedure is repeated in a stepwise manner until the maximum tension desired is reached. A reversal of the process is used to gather data on the wetting behavior of the sample.

Calculation

Saturated moisture content , θ_{sat} , (volume percent) is determined as follows:

$$\theta\,sat = [M\ sat - M\ dry]/[V_T \times \rho_w] \times 100 \qquad (\%\ vol) \qquad (4)$$

where M sat = mass of sample saturated, M dry = mass of sample, oven dried to a constant weight, V_T = volume of the sample, ρ_w = density of the water at temp when saturated mass was determined. The quantity $[M\ sat - M\ dry]/\rho_w$ is the volume, in cubic centimeters, of water initially contained in the sample volume. The drainage is subtracted from the initial volume of water and then divided by the sample volume to arrive at the moisture content in percent volume at the given value of tension.

$$[V_i - V_D]/V_T \times 100 = \theta_{h'} \qquad (\%\ vol) \qquad (5)$$

where V = volume of water initial, V_D = cumulative volume drained from sample, V_T = volume of sample, $\theta_{h'}$ = moisture content at the tension value h'. This gives then a paired set of values of tension, or pressure head, versus volumetric moisture content.

MOISTURE RETENTION - PRESSURE PLATE

Principle

The operation of the pressure plate moisture extractor requires maintaining a pressure difference between the liquid phase of the water in the soil and water on the opposite side of a porous plate which supports the soil sample. The sample and porous plate are sealed in a rigid container so that positive gas pressure applied above the plate causes flow to occur across the plate (Figure B-4). The porous ceramic plate is supported by a fine mesh screen which also provides a passage way for the extracted solution. The water beneath the plate is open to the atmosphere through the outflow tube. The illustration in Figure B-5 shows a magnified view of soil particles in contact with the plate inside the pressure plate extractor during an extraction run.

As soon as air pressure inside the chamber is raised above atmospheric pressure, the higher pressure inside the chamber forces excess water through the microscopic pores in the plate. Air, however, will not flow through the pores of the plate, because the plate remains saturated due to its high air-entry pressure. When the pressure in the chamber increases, water leaves the sample until the tension of the water

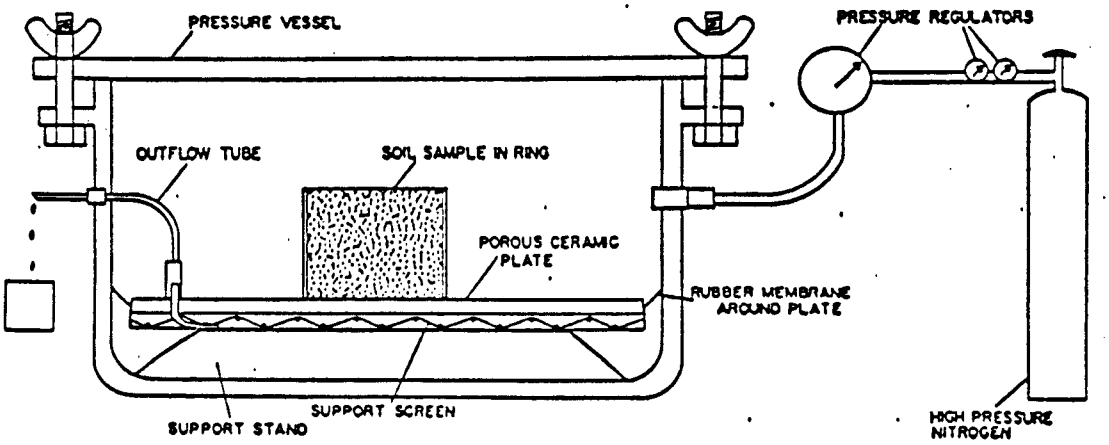


Figure B-4. Pressure Plate Extractor

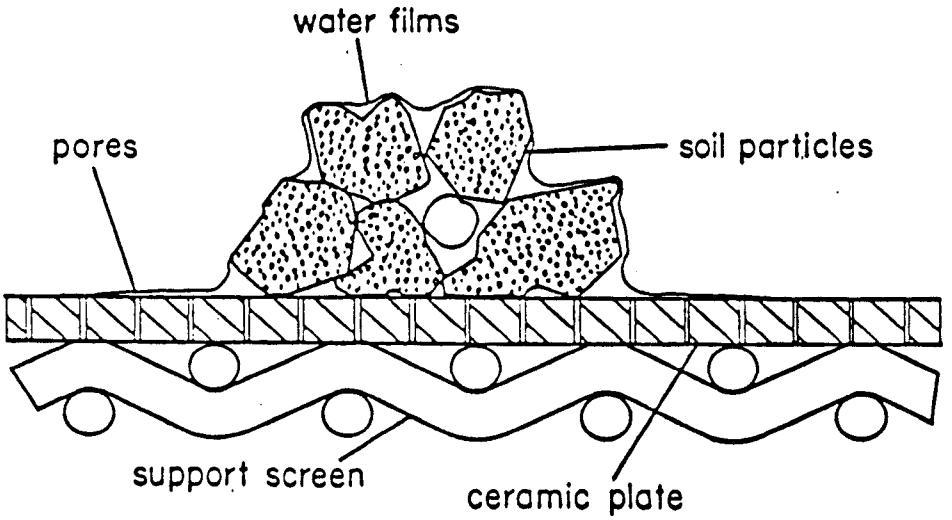


Figure B-5. Magnified View of Soil Particles

due to capillary and adsorptive forces is in equilibrium with the applied pressure.

Method

Moisture retention is obtained using a pressure plate extractor (Soil Moisture Inc., Santa Barbara, CA, Model 1500), with 1, 3 and 15 bar ceramic plates. Pressure is provided by high pressure nitrogen from cylinders.

Laboratory Procedure

The porous ceramic plate is placed is a shallow pan with deaired distilled water and allowed to stand overnight. The plate is then removed from the pan and placed in the extractor. De-aired distilled water is poured over the plate to the limit allowed by the rubber skirt, which generally just submerges the plate. The pressure plate is sealed and pressure brought to 50% of the plates maximum rated pressure. This pressure is maintained until outflow ceases. The extractor is opened and any excess water around the plate is removed.

The soil samples in their sample rings are then placed on the plate, making certain good hydraulic contact is established. The extractor is then sealed and the pressure brought to the level desired. The pressure is maintained until outflow ceases. The extractor is then opened and the samples weighed quickly on an electronic top-loading balance. Subsequently, the samples are

returned to the extractor, and the pressure is increased to the next increment.

Calculations

The decrease in mass of water in the sample during a period of applied pressure is converted to an equivalent decrease in volume of water according to:

$$V_w = \Delta m/\rho_T \qquad \text{(cc)} \qquad (6)$$

where Δm = change in mass of soil sample (g), ρ_T = density of water at temperature of experiment (g/cc), V_w = equivalent volume of water (cc).

Volumes of water calculated from equation 6 are then used to determine the moisture content at that pressure:

$$\theta_p = (V_i - \Sigma\Delta V_w)/V_T \times 100 \qquad \text{(\% vol)} \qquad (7)$$

where θ_p = moisture content at pressure p(% vol), V_i = initial volume of water in sample (cc), $\Sigma\Delta V_w$ = cumulative water volume change (cc), V_T = total volume of the sample (cc).

INITIAL MOISTURE CONTENT

Method

Core method, with oven drying.

Laboratory Procedure

The field weight of the soil sample is determined as soon as possible after the sample is removed from the packing container. The tare of the ring which holds the sample, as well as the mass of the caps for the ends of the ring, are determined. The volume of soil in the sample ring is also calculated. After all specified analyses have been performed on the sample, the sample is removed from its ring and spread in an aluminum pan. When necessary, soil aggregates are broken up by motar and pestal. Care is taken not to change the natural particle size distribution. The sample is placed in a convection oven at 110° C for at least 24 hours until dried to a constant weight.

Calculations

The initial moisture content is determined on a percent volume basis according to:

$$\theta_i = [M_i - M_f]/[V_T \times \rho] \times 100 \quad (\%vol) \qquad (8)$$

where θ_i = initial moisture content (% vol), M_i = initial mass of soil only (g), M_f = final mass of soil only (g), V_T = total

volume of sample (cc), ρ = density of pore fluid in the soil when initial mass was determined (g/cc). The density of the pore fluid initially present in the sample is assumed to be 1.0 g/cc.

BULK DENSITY

Method

Core method, with oven drying.

Laboratory Procedure

The volume of the soil sample is determined from sample geometry measurements, and the sample is dried in the oven at 110 C until no additional mass loss occurs.

Calculations

$$\rho_b = M_D/V_T \qquad (g/cc) \qquad (9)$$

where ρ_b = dry bulk density (g/cc), M_D = mass of oven dried soil sample (g), V_T = total volume of soil sample (cc).

POROSITY

Method

Calculated from bulk density and measured or assumed values of particle density.

Laboratory Procedure

Bulk density, ρ_b, is determined by oven drying, as described in the section outlining the bulk density determination. For this series of analyses particle density, ρ_s, is assumed to be 2.65 g/cc.

Calculation

$$n = [1 - (\rho_b/\rho_s)] \times 100 \qquad \text{(percent)} \qquad (10)$$

UNSATURATED HYDRAULIC CONDUCTIVITY

Method

Mualem (1976) described the theoretical basis for a procedure used to estimate unsaturated hydraulic conductivity from the soil-water release curve according to the following equations;

$$K_r = S_e^{\frac{1}{2}}\left[\int_0^{S_e} 1/h(x)dx / \int_0^1 1/h(x)\ dx\right]^2 \qquad (11)$$

where K_r = relative hydraulic conductivity, $h = h(S_e)$ is the negative pressure head, given here as a function of dimensionless moisture content:

$$S_e = \theta - \theta_r \ / \ \theta_s - \theta_r \qquad (12)$$

where subscripts s and r indicate saturated and residual values of the soil moisture (θ). The expression relating dimensionless moisture content to the pressure head, and thus the soil moisture release curve is given by:

$$S_e = [\ 1/1+(\alpha h)^n]^m \qquad m = 1 - 1/n \qquad (13)$$

where α, and n are obtained by a non-linear least squares numerical procedure applied to measured moisture retention data using the technique developed by Van Genuchten (1978).

Laboratory procedure

The data input to the computer model of Van Genuchten (1978)

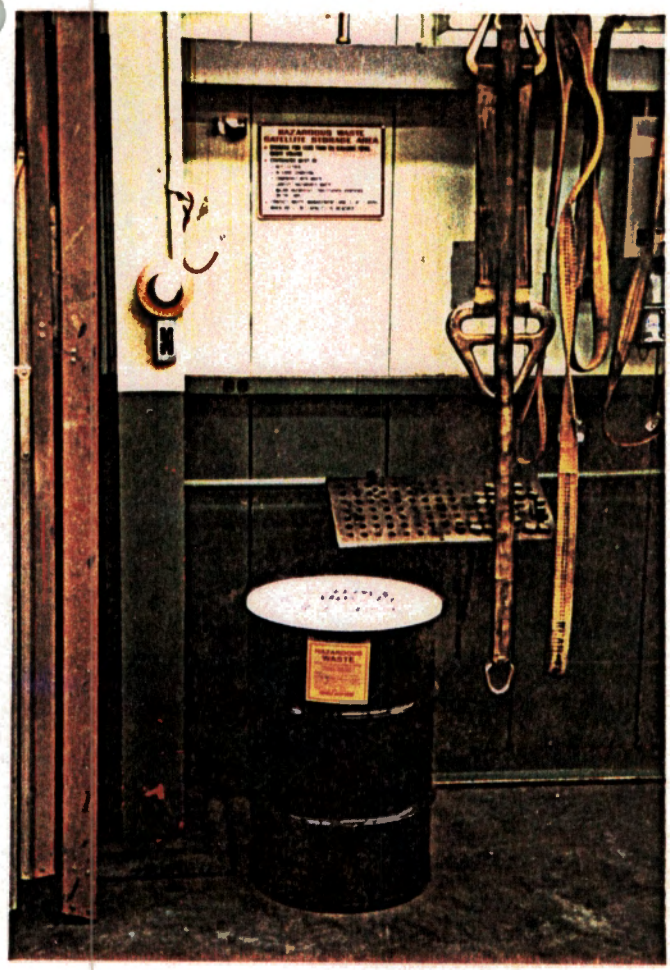
consists of the saturated moisture content, residual moisture content and values of observed pressure head versus moisture content. The residual moisture content is taken to be the moisture content at -15 bars. The paired values of observed pressure head and moisture content are obtained as described under the procedures for determining moisture retention by the hanging column and pressure plate methods. Saturated moisture content is determined through gravimetric measurements and sample geometry.

References

Mualem, Y., 1976, A New Model for Predicating the Hydraulic Conductivity of Unsaturated Porous Media, Water Resources Research, vol. 12, no. 3, p. 513-522.

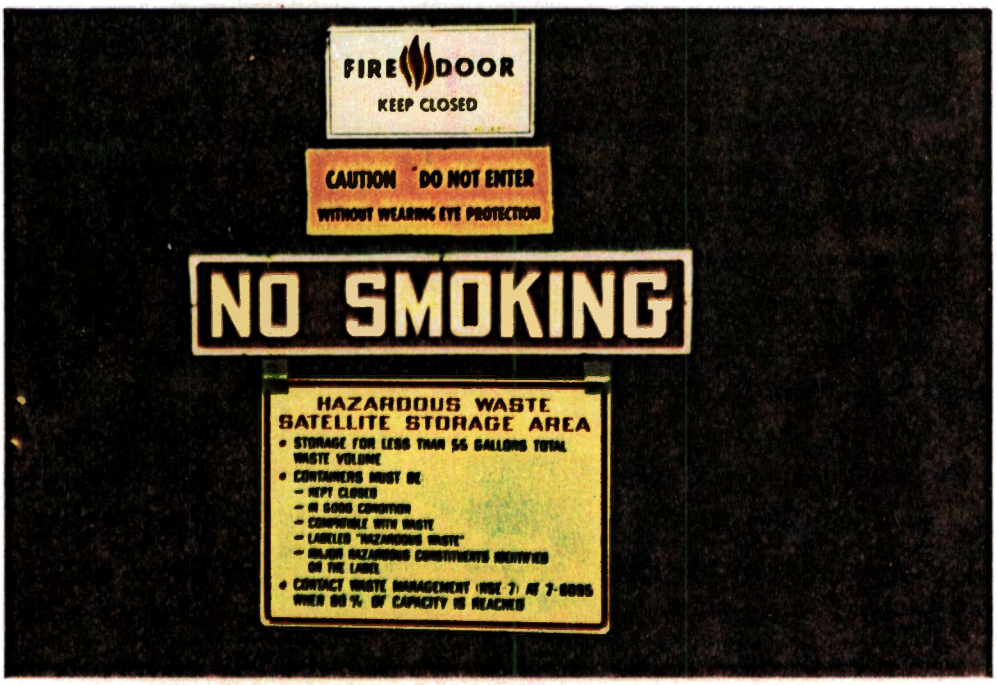
Van Genuchten, R., 1978, Calculating the Unsaturated Hydraulic Conductivity With a New Closed-Form Analytical Model, Research Report No. 78-WR-08, Princeton University, Department of Civil Engineering, September 1978, 65pp.

ENCLOSURE #4
PHOTOGRAPHS OF TA-33-39 CONTAINERS AND TA-43 DESIGNATED STORAGE AREA



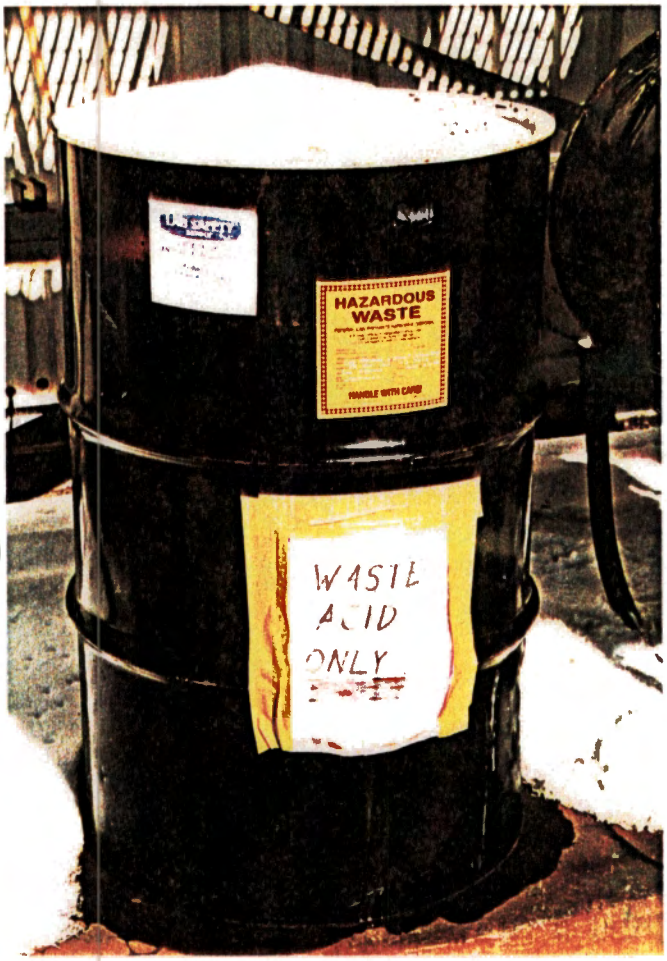
TA-33-39

TA-43-1



TA-43-1

ENCLOSURE #5
PHOTOGRAPH OF TA-53 CONTAINERS


HAZARDOUS
WASTE
WASTE
ACID
ONLY

TA-53-2

HAZARDOUS
WASTE
WASTE SOLVENT
WASTE SOLVENT
WASTE SOLVENTS

TA-53-2

ENCLOSURE #6
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ENCLOSURE #7
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ENCLOSURE #8
DECEMBER 10, 1985 AND NOVEMBER 4, 1985 LETTERS FROM EID TO DOE

TONEY ANAYA
GOVERNOR

DENISE D. FORT
DIRECTOR

HEALTH & ENVIRONMENT department

STATE OF NEW MEXICO

ENVIRONMENTAL IMPROVEMENT DIVISION
P.O. Box 968, Santa Fe, New Mexico 87504-0968
(505) 984-0020

December 10, 1985

Mr. Harold Valencia
Los Alamos Area Office
U.S. Department of Energy
Los Alamos, New Mexico 87544

Mr. Robert N. Thorn
Los Alamos National Laboratory
Mail Stop A-100
Los Alamos, New Mexico 87545

Re: Los Alamos National Laboratory
Facility Number NM0890010515

Gentlemen:

We have reviewed the materials submitted with DOE letters of November 25, 1985 in response to our Notice of Violation (NOV) dated August 26, 1985. The Waste Analysis Plan, revised November 15, 1985, adequately addresses violation 13 and no further action under our NOV is required. Please note however, that Table 3-3 of that plan inadequately addresses wastes from the Shops Department. It appears that a portion of the entry is missing.

The closure plan for TA-16 Area P, dated November 1985, meets the requirement to have a closure plan for land disposal areas. This adequately addresses the requirement of NOV item 15 and no further action is required under the NOV. Detailed technical review of the plan will be deferred until LANL formally notifies us of their intention to proceed with implementation of the plan.

LANL has now submitted acceptable responses to the NOV, subject to the closure plans technical review requirements noted above and in our letter of November 4, 1985. No further submittals are required and the NOV is closed. Thank you for your prompt responses.

Sincerely,

Jack Bellinger

for Peter H. Pache
Program Manager
Hazardous Waste Management Section

PHP:CKC:mt

cc: William Rhea, EPA Region VI
Buddy Parr, EPA Region VI

ROUTED TO: A.TIEDMAN
C.ADAMS
R.THORN

ADVANCE CY MADE FOR: R.THORN

CYS MADE FOR: J.ARAGON
T.GUNDERSON
M.MCCORKLE

269579

From: TG
cy: AD
MD.
AKS.

LOS ALAMOS

TONEY ANAYA
GOVERNOR

DENISE D. FORT
DIRECTOR

STATE OF NEW MEXICO

ENVIRONMENT department

ENVIRONMENTAL IMPROVEMENT DIVISION
P.O. Box 968, Santa Fe, New Mexico 87504-0968
(505) 984-0020

November 4, 1985

Mr. Harold Valencia
Los Alamos Area Office
U.S. Department of Energy
Los Alamos, New Mexico 87544

Mr. Robert N. Thorn
Los Alamos National Laboratory
Mail Stop A 100
Los Alamos, New Mexico 87545

RE: LOS ALAMOS NATIONAL LABORATORY
FACILITY NUMBER NM0890010515

Gentlemen:

We have reviewed your September 27, 1985 response to our Notice of Violation (NOV) dated August 26, 1985. Portions of your response are acceptable while others will require additional submittals by your organization. These are identified below. We invite you to meet with the EID to discuss a Compliance Schedule for these further submittals, otherwise we will issue a Compliance Order with a directed schedule as indicated in the NOV. Please call Mr. Peter H. Pache at 827-2924 to arrange a meeting.

The specific violation citations below refer to our August 26, 1985 NOV.

Violations 1 through 3 - Your response is acceptable.

Violations 4 through 11 - Your response is acceptable for purposes of closing the notice of violation. Each closure and post-closure plan will be reviewed for technical adequacy and individually approved by separate correspondence.

Violation 12 - Your response is acceptable.

Violation 13 - Your response does not adequately address the violation cited. The Waste Analysis Plan does not provide for representative sampling of wastes tendered for disposal as "known" nor for periodic reanalysis of these wastes.

Violation 14 - Your response is acceptable.

Violation 15 - Your response does not adequately address the violation cited. Some of the inadequacies are lack of detail of options considered and selected or not selected, no proposed ground water monitoring program was provided, the Part A submittal did not reflect the addition of TA-16 Area P and consideration of the requirements of HWMR-2 Section 206.C.9. requirements was incomplete.

Many of these deficiencies were discussed with your staff on October 22, 1985. We suggest a meeting the week of November 11, 1985 to discuss a compliance schedule for submittal of further information addressing Violations 13 and 15.

Sincerely,

Richard Perkins / RC

Richard Perkins
Acting Bureau Chief
Ground Water/Hazardous Waste Bureau

RP:CKC:mt

cc: Pat Hull, EPA Region VI
Duff Westbrook, EID Legal
Tito Madrid, EID District II

ENCLOSURE #9
PRIMARY EMERGENCY COORDINATOR

TABLE 7-5
HAZARDOUS WASTE EMERGENCY COORDINATORS

(To be notified in succession)

Primary Coordinator	Laboratory Telephone	Telephone	Home Address
1. Donald Winston, Emergency Management	7-6211	662-2453	450 Navajo Road, Los Alamos, NM
Secondary Coordinators			
1. Ralph Koenig, HSE-7 Group Leader	7-7920/4301	662-2458	971 Alamo Road, Los Alamos, NM
2. J. L. Warren, HSE-7 Section Leader	7-5398	662-9639	1082 Big Rock Loop, Los Alamos, NM
3. Jerry Buchholz Section Leader	7-4301	672-3647	316 Potrillo Drive, White Rock, NM
4. Lee Borduin Section Leader	7-7391	455-2882	Rt. 1, Box 92G, Santa Fe, NM
5. Karen Balo Section Leader	7-6095	672-1369	400 Kolleen Court, White Rock, NM
6. W. M. Sanders Section Leader	7-4301	672-1931	214 Rover, White Rock, NM
7. B. R. Myers Staff Member	7-6095	672-9509	83 Mimbres, White Rock, NM
8. D. G. Vance Staff Member	7-4301 present	None at	Rt. 14, Box 750, Santa Fe, NM
9. M. D. Salazar Staff Member	7-6095	753-4423	Rt. 2, Box 124, Espanola, NM

ENCLOSURE #10
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ENCLOSURE #11
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ENCLOSURE #12
FEBRUARY 3, 1988 LETTER FROM DOE TO EID AMENDING AREA P
CLOSURE PLAN

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

FEB 3 1988

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Michael Burkhart, Director
New Mexico Environmental Improvement Division
P. O. Box 968
Santa Fe, NM 87504-0968

Dear Mr. Burkhart:

MODIFICATIONS TO THE NOVEMBER 25, 1985 TA-16 AREA P LANDFILL CLOSURE AND POST-CLOSURE PLAN

The Department of Energy (DOE) did not choose to continue operation of the Technical Area (TA) 16 Area P landfill at Los Alamos National Laboratory (LANL) after November 8, 1985. Therefore, DOE did not apply for a Resource Conservation and Recovery Act (RCRA) permit at this site. Consequently, DOE was required under the loss of interim status provisions (40 CFR 270.10) to submit a Closure and Post-Closure Plan for this landfill. Pursuant to 40 CFR Section 265.1 (b), the DOE Closure and Post-Closure Plan dated November 25, 1985, for the Area P landfill reflected interim status standards for such activities. DOE recognizes, however, that upon receiving a RCRA operating permit, Area P post-closure (and possibly closure) activities will be subject to permitting standards (i.e., 40 CFR 264) rather than interim status standards (i.e., 40 CFR 265).

Under separate cover, the amendments are submitted with the intent that the Area P landfill fully comply with both standards. Equally important, however, is the collection of a consistent and reliable water quality data base from which critical decisions concerning potential statistically significant changes in individual water quality parameters can be made. Thus, the proposed ground-water quality monitoring program for Area P has been modified to reflect sufficient flexibility so that DOE will comply with both 40 CFR 265 and 264 requirements, even though only a single regulatory standard will be in effect at any given time.

LANL has installed several ground-water monitoring wells and neutron moisture log test holes to characterize potential ground-water movement. No ground-water has been detected in any monitoring well; hence, DOE has requested a ground-water monitoring waiver for the Area P landfill. Should recoverable amounts of ground-water appear in the future, then DOE will proceed to monitor it pursuant to the plan detailed in the enclosed

Appendix F. If, at that time, DOE is operating under a RCRA permit rather than interim status, then the required ground-water monitoring program would implement appropriate DOE responses (i.e., either detection, compliance, or corrective action monitoring) necessary to comply with permitting standards.

The enclosed modifications to the previously submitted Closure and Post-Closure Plan dated November 25, 1985, are summarized on the enclosed cover sheet. Please remove the indicated pages from the November 25, 1985 plan, and replace them with the enclosed changes as indicated. In addition, several new appendices are enclosed and should be added to the original plan; these are contained in a separately bound volume.

Finally, an independently prepared geohydrologic report is enclosed for your information. This report contains laboratory testing results from selected core samples recovered from the Area P landfill. If you have any questions, please contact Mr. James Phoenix of my staff at 667-5288.

Sincerely,

Harold E. Valencia
Area Manager

8189A

Enclosures:
As Stated

cc:
A. Davis, U. S. EPA, Region VI, Dallas, TX 75270
A. Tiedman, LANL, ADS, MS A120
T. Gunderson, LANL, HSE-DO, MS K491

ENCLOSURE #13
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ENCLOSURE #14
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ENCLOSURE #15
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ENCLOSURE #16
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ENCLOSURE #17A
ADMINISTRATIVE REQUIREMENT 10-3

Nonradioactive Chemical Waste

Introduction

This administrative requirement specifies the rules and general procedures for disposal of nonradioactive liquid and solid chemical wastes at the Laboratory, thus ensuring the protection of Laboratory personnel, the public, and the environment, as well as compliance with Federal and state regulations.

Chemical wastes commonly generated at the Laboratory include all types of laboratory research chemicals, oils, solvents, beryllium, asbestos, carcinogens, compressed gases, and other nonradioactive solid or liquid wastes contaminated with hazardous chemicals. *NOTE: High explosive wastes are a special case and are not included in this document.*

Definitions

Hazardous Chemical Waste - any chemical or mixture of chemicals that is intended for disposal and is corrosive to living tissue; is toxic, flammable, carcinogenic, teratogenic, mutagenic, or infectious; or in any way poses a present or potential hazard to human health or the environment.

Identification of Hazardous Wastes

Group leaders must ensure that the potentially hazardous waste materials in their work areas are identified and that the Industrial Hygiene Group (HSE-5) is contacted if workers could be exposed while handling, treating, or disposing of such materials.

Guidance in identifying hazardous chemicals is provided by the health physics staff (HSE-1, -10, and -11), Industrial Hygiene, and the Waste Management Group (HSE-7), as well as by the following sources:

- 40 CFR 712 (as proposed), which defines toxic substances under the terms of the Toxic Substances Control Act,
- 40 CFR 261, which defines the characteristics and provides a listing of hazardous wastes under the terms of the Resource Conservation and Recovery Act,
- 40 CFR 116, which defines hazardous substances under the terms of the Clean Water Act, and
- 40 CFR 117, which defines reportable quantities for hazardous substances under the Clean Water Act.

Determination of Appropriate Disposal Methods

Before initiating an operation that will either generate a new hazardous waste or increase the volume of existing wastes, the originating group should discuss available treatment/disposal options with Waste Management staff. In most cases, the existing waste-management facilities, technology, and manpower at the Laboratory will be able to

Packaging

Hazardous waste must be packaged in Waste Management-approved, leakproof containers to ensure its safe handling, transportation, and disposal.

Liquids Exceeding 1 Gallon. Containerized liquid exceeding 1 gallon must not be disposed of until it has been solidified; absorption on vermiculite is an acceptable pre-disposal treatment method in this case.

Small Quantities of Liquids/Solids. Liquids less than 1 gallon or solids generally will be packaged by Waste Management for disposal.

Leaks and Spills

See Administrative Requirement 9-4, "Accidental Oil, Chemical, and Airborne Releases."

Special Disposal Considerations

Drains. Never pour chemical waste down a drain without prior approval from Waste Management.

Gases. Never vent gases without prior approval from Waste Management.

Cyanides, Chromates, and Corrosive Substances. Before cyanides, chromates, and corrosive substances are disposed of, they must be treated by Waste Management to remove the hazardous properties.

Reactive Chemicals. Reactive chemicals (for example, pyrophoric or water-reactive substances) must be rendered nonreactive before disposal. This treatment must be performed with the prior approval of Waste Management. If it is determined that neither the originating group nor Waste Management can safely perform this pre-disposal treatment, Waste Management will help the operating group determine alternate disposal methods.

Oils. Waste Management must be notified before draining oil from any electrical or hydraulic system because polychlorinated biphenyls (PCBs) may be present. (See Administrative Requirement 10-4, "Polychlorinated Biphenyls.") The operating group must determine whether such oils have been contaminated with PCBs or radioactive substances. Contact Waste Management if PCB contamination is possible; contact the health physics staff if radioactive contamination is suspected. Unless the oils will be recycled, they must be packaged as described above.

Recyclable Materials

Where feasible, chemical wastes should be recycled or salvaged according to the appropriate Laboratory procedures. Those materials listed below are prime recycling candidates.

Elemental Mercury. Generally, elemental mercury must be recovered rather than disposed of. Contact the Decontamination Section (7-5420) of the Radiation Protection Group (HSE-1) for collection.

Gas Cylinders. All gas cylinders must be returned to the Liquid and Compressed Gas Processing Center (MAT-1) for retesting and refilling. To facilitate recycling operations, cylinders must remain labeled at all

Waste Management Group (HSE-7), 7-4301
Liquid Waste Section of HSE-7, 7-5834
Solid Waste Section of HSE-7, 7-5397
Regulatory Affairs Section of HSE-7, 7-7957
Chemistry Health Protection Group (HSE-10), 7-7218
Accelerator Health Protection Group (HSE-11), 7-5890

Forms HS Form 10-3A, Chemical Waste Disposal Request

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

CHEMICAL WASTE DISPOSAL REQUEST

Disposal Form Number(s)
This information is to be filled in by HSE-7 personnel

Requested by	Telephone number	Group	Date

Location: Tech Area, Building, Area/Wing, Room Number.

Number of Containers	Volume of Containers	Chemical Name	Solid(S) Liquid(L) Gas(G)	Hazards	Removed

Reviewed for disposal by

Other useful information

HS Form Number 10-3A (6/84) *Mail this form to Waste Management (HSE-7), Mail Stop E516.*

ENCLOSURE #17B
TRANSFORMER OIL CERTIFICATION

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO: Tony Grieggs, HSE-8, MS K490

DATE: January 21, 1988

THRU: Ed Higgins, AT-5 EJH, AT-5

MAIL STOP/TELEPHONE: H827/7-9722

FROM: Robert Hoeberling RFH

SYMBOL: AT-5:88-14

SUBJECT: RESPONSE TO OIL STORAGE QUESTIONS

This memo is to summarize the information regarding the ten drums of transformer oil being temporarily stored on the north side of Building MPF-14, TA-53. The oil has been removed from one of our high voltage power supplies previously in Building MPF-19, TA-53 that we have named Moby Dick. Moby has now been removed from Building MPF-19, TA-53 because of successful completion of the ion injection experiment. The transformer oil was removed from the Moby tank to facilitate moving the power supply and is temporarily stored in new, clean oil drums from MAT. The oil was certified prior to the transfer by HSE personnel to be free of PCB's. The oil has been continuously monitored while at the Laboratory to be free from solvents, etc.

The transformer oil is scheduled to be used in the 500 KV, 10 Hz pulser we are building for the Navy and our 1 MV microwave source. The drums are properly marked and project personnel, who were not present during the inspection, could have relayed this information at the time of the inspection.

Cy:
R. Hoeberling, AT-5, MS H827
AT-5 file

ENCLOSURE #18
TA-54 AREA L TANK CLOSURE PLANS

Interim Status Closure and Post-Closure Care Plan

Tech Area 54, Area L
Waste Oil Storage Tanks
Los Alamos National Laboratory
Los Alamos, New Mexico

ENCLOSURE #19
INSPECTION RECORD FORM FOR TA-54 AREA L

May 1, 1985
September 17, 1985

INSPECTION RECORD FORM
FACILITY TA-54, Area L

Inspected by Massaeuos
Type T, S, D

Date 1-26-87
Time 900

Item	Inspected for	Condition	Action/Date
DAILY - to be completed every day of operation			
Communication Equipment	Proper Functioning	OK	
Freeboard (Surface impoundment)	At least 1 ft. to prevent overflow	OK	
Treatment Tanks	Level - At least 6" of freeboard	OK	
Loading/Unloading	Spills and deterioration	OK	
Run-on/off control	Integrity, erosion and ponding	OK	
WEEKLY - to be completed on the first working day of the week.			
Storage Containers -Integrity	Open drums, leaks, corrosion, aisle space, stack height	OK	
-Labels	Present "Hazardous Waste" and and accumulation date	OK	
Safety shower and eyewash	Leaks, functioning	OK	
Hose bib	Leaks, functioning	OK	
Temporary shaft covers and railing	Damage	OK	
Metal storage shed	Floor damage, liquid accumulation	OK	
Road/Work Surfaces	Cracks	OK	
Fence	Integrity, damage	OK	
Gate Lock	Integrity, damage	OK	
Wind Sock	Damage, functioning	OK	
Pallets	Integrity, damage	OK	
Area Warning Signs	Out-of-date, damage, legibility	OK	
Treatment Tanks	Leaks, damage	OK	
Curbs/Pads (Treatment tank)	Rainwater accumulation/removal cracks, damage	OK	
Lighting	Proper functioning	OK	
Refrigerator (If wastes present)	Leaking/damaged containers	OK	
Site Inspection	Dying vegetation or other evidence of leachate migration	OK	
Leach Collection	Evidence of liquid accumulation	OK	
Tanks	Leaks, deterioration	OK	

Cy: A. Drypolcher, HSE-8, MS K490

May 1, 1985
September 17, 1985

INSPECTION RECORD FORM
FACILITY TA-54, Area L

Inspected by S. Maccam
Type T, S, D

Date 2-17-87
Time 840

Item	Inspected for	Condition	Action/Date
DAILY - to be completed every day of operation			
Communication Equipment	Proper Functioning	OK	
Freeboard (Surface impoundment)	At least 1 ft. to prevent overflow	OK	
Treatment Tanks	Level - At least 6" of free-board	OK	
Loading/Unloading	Spills and deterioration	OK	
Run-on/off control	Integrity, erosion and ponding	OK	
WEEKLY - to be completed on the first working day of the week.			
Storage Containers -Integrity	Open drums, leaks, corrosion, aisle space, stack height	OK	
-Labels	Present "Hazardous Waste" and and accumulation date	OK	
Safety shower and eyewash	Leaks, functioning	OK	
Hose bib	Leaks, functioning	OK	
Temporary shaft covers and railing	Damage	OK	
Metal storage shed	Floor damage, liquid accumula-tion	OK	
Road/Work Surfaces	Cracks	OK	
Fence	Integrity, damage	OK	
Gate Lock	Integrity, damage	OK	
Wind Sock	Damage, functioning	OK	
Pallets	Integrity, damage	OK	
Area Warning Signs	Out-of-date, damage, legibility	OK	
Treatment Tanks	Leaks, damage	OK	
Curbs/Pads (Treatment tank)	Rainwater accumulation/removal cracks, damage	OK	
Lighting	Proper functioning	OK	
Refrigerator (If wastes present)	Leaking/damaged containers	OK	
Site Inspection	Dying vegetation or other evidence of leachate migration	OK	
Leach Collection	Evidence of liquid accumulation	OK	
Tanks	Leaks, deterioration	OK	

Cy: A. Drypolcher, HSE-8, MS K490

May 1, 1985
September 17, 1985

INSPECTION RECORD FORM
FACILITY TA-54, Area L

Inspected by J. Masarcus
Type T, S, W

Date 3-16-87
Time 900

Item	Inspected for	Condition	Action/Date
DAILY - to be completed every day of operation			
Communication Equipment	Proper Functioning	OK	
Freeboard (Surface impoundment)	At least 1 ft. to prevent overflow	OK	
Treatment Tanks	Level - At least 6" of free-board	OK	
Loading/Unloading	Spills and deterioration	OK	
Run-on/off control	Integrity, erosion and ponding	OK	
WEEKLY - to be completed on the first working day of the week.			
Storage Containers -Integrity	Open drums, leaks, corrosion, aisle space, stack height	OK	
-Labels	Present "Hazardous Waste" and and accumulation date	OK	
Safety shower and eyewash	Leaks, functioning	OK	
Hose bib	Leaks, functioning	OK	
Temporary shaft covers and railing	Damage	OK	
Metal storage shed	Floor damage, liquid accumula-tion	OK	
Road/Work Surfaces	Cracks	* Should be repaired	
Fence	Integrity, damage	OK	
Gate Lock	Integrity, damage	* - need repair	
Wind Sock	Damage, functioning	OK	
Pallets	Integrity, damage	OK	
Area Warning Signs	Out-of-date, damage, legibility	OK	
Treatment Tanks	Leaks, damage	OK	
Curbs/Pads (Treatment tank)	Rainwater accumulation/removal cracks, damage	OK	
Lighting	Proper functioning	OK	
Refrigerator (If wastes present)	Leaking/damaged containers	OK	
Site Inspection	Dying vegetation or other evidence of leachate migration	OK	
Leach Collection	Evidence of liquid accumulation	OK	
Tanks	Leaks, deterioration	OK	

Cy: A. Drypolcher, HSE-8, MS K490

Inspected by
Type T. S. Mascarenas

Date
Time 4-21-87 900

Item	Inspected for	Condition	Action/Date
DAILY - to be completed every day of operation			
Communication equipment	Proper functioning	O/C	
Freeboard (Surface impoundment)	At least 1 ft. to prevent overflow	O/C	
Treatment Tanks	Level - At least 6" of freeboard	O/C	
Loading/Unloading	Spills and deterioration	O/C	
Run-on/off control	Integrity, erosion and ponding	O/C	
WEEKLY - to be completed on the first working day of the week.			
Storage Containers -Integrity	Open drums, leaks, corrosion, aisle space, stack height	O/C	
-Labels	Present "Hazardous Waste" and and accumulation date	O/C	
Safety shower and eyewash	Leaks, functioning	O/C	
Hose bib	Leaks, functioning	O/C	
Temporary shaft covers and railing	Damage	O/C	
Metal storage shed	Floor damage, liquid accumulation	O/C	
Road/Work Surfaces	Cracks	O/C	
Fence	Integrity, damage	O/C	
Gate Lock	Integrity, damage	O/C	
Wind Sock	Damage, functioning	O/C	
Pallets	Integrity, damage	O/C	
Area Warning Signs	Out-of-date, damage, legibility	O/C	
Treatment Tanks	Leaks, Damage	O/C	
Curbs/Pads (Treatment tank)	Rainwater accumulation/removal cracks, damage	O/C	
Lighting	Proper functioning	O/C	
Refrigerator (If wastes present)	Leaking/damaged containers	O/C	
Site Inspection	Dying vegetation or other evidence of leachate migration	O/C	
Leach Collection	Evidence of liquid accumulation	O/C	
Tanks	Leaks, deterioration	O/C	

Cy: A. Drypoicner, HSE-8, MS K490

May 1, 1985
September 17, 1985

INSPECTION RECORD FORM
FACILITY TA-54, Area L

Inspected by M. Lascarenas
Type T. S.

Date ~~8/30~~ 5/11/87
Time 830

Item	Inspected for	Condition	Action/Date
DAILY - to be completed every day of operation			
Communication equipment	Proper functioning	O/C	
Freeboard (Surface impoundment)	At least 1 ft. to prevent overflow	O/C	
Treatment Tanks	Level - At least 6" of freeboard	O/C	
Loading/Unloading	Spills and deterioration	OK	
Run-on/off control	Integrity, erosion and ponding	O/C	
WEEKLY - to be completed on the first working day of the week.			
Storage Containers -Integrity	Open drums, leaks, corrosion, aisle space, stack height	O/C	
-Labels	Present "Hazardous Waste" and and accumulation date	O/C * need to be repaired	
Safety shower and eyewash	Leaks, functioning	O/C	
Hose bib	Leaks, functioning	O/C	
Temporary shaft covers and railing	Damage	OK	
Metal storage shed	Floor damage, liquid accumulation	OK	
Road/Work Surfaces	Cracks	O/C	
Fence	Integrity, damage	OK	
Gate Lock	Integrity, damage	O/C	
Wind Sock	Damage, functioning	O/C	
Pallets	Integrity, damage	OK	
Area Warning Signs	Out-of-date, damage, legibility	O/C	
Treatment Tanks	Leaks, damage	O/C	
Curbs/Pads (Treatment tank)	Rainwater accumulation/removal cracks, damage	O/C	
Lighting	Proper functioning	O/C	
Refrigerator (If wastes present)	Leaking/damaged containers	O/C	
Site Inspection	Dying vegetation or other evidence of leachate migration	O/C	
Leach Collection	Evidence of liquid accumulation	O/C	
Tanks	Leaks, deterioration	O/C	

Cy: A. Drypolcher, HSE-8, MS K490

May 1, 1985
September 17, 1985

INSPECTION RECORD FORM
FACILITY TA-54, Area L

Inspected by J. Mascarenas
Type T. S.

Date 5/18/87
Time 900

Item	Inspected for	Condition	Action/Date
DAILY - to be completed every day of operation			
Communication equipment	Proper functioning	OK	
Freeboard (Surface impoundment)	At least 1 ft. to prevent overflow	OK	
Treatment Tanks	Level - At least 6" of freeboard	OK	
Loading/Unloading	Spills and deterioration	OK	
Run-on/off control	Integrity, erosion and ponding	OK	
WEEKLY - to be completed on the first working day of the week.			
Storage Containers -Integrity	Open drums, leaks, corrosion, aisle space, stack height	OK	
-Labels	Present "Hazardous Waste" and and accumulation date	OK	
Safety shower and eyewash	Leaks, functioning	one of shower needs work done	
Hose bib	Leaks, functioning	OK	
Temporary shaft covers and railing	Damage	OK	
Metal storage shed	Floor damage, liquid accumulation	OK	
Road/Work Surfaces	Cracks	OK	
Fence	Integrity, damage	OK	
Gate Lock	Integrity, damage	OK	
Wind Sock	Damage, functioning	OK	
Pallets	Integrity, damage	OK	
Area Warning Signs	Out-of-date, damage, legibility	OK	
Treatment Tanks	Leaks, damage	OK	
Curbs/Pads (Treatment tank)	Rainwater accumulation/removal cracks, damage	OK	
Lighting	Proper functioning	OK	
Refrigerator (If wastes present)	Leaking/damaged containers	OK	
Site Inspection	Dying vegetation or other evidence of leachate migration	OK	
Leach Collection	Evidence of liquid accumulation	OK	
Tanks	Leaks, deterioration	OK	

Cy: A. Drypolcher, HSE-8, MS K490

May 1, 1985
September 17, 1985

INSPECTION RECORD FORM
FACILITY TA-54, Area L

Inspected by [illegible]
Type T. S.

Date 5/26/87
Time [illegible]

Item	Inspected for	Condition	Action/Date
DAILY - to be completed every day of operation			
Communication equipment	Proper functioning	O/C	
Freeboard (Surface impoundment)	At least 1 ft. to prevent overflow	O/C	
Treatment Tanks	Level - At least 6" of freeboard	O/C	
Loading/Unloading	Spills and deterioration	O/C	
Run-on/off control	Integrity, erosion and ponding	O/C	
WEEKLY - to be completed on the first working day of the week.			
Storage Containers -Integrity	Open drums, leaks, corrosion, aisle space, stack height	O/C	
-Labels	Present "Hazardous Waste" and and accumulation date	O/C	
Safety shower and eyewash	Leaks, functioning	O/C	
Hose bib	Leaks, functioning	O/C	
Temporary shaft covers and railing	Damage	O/C	
Metal storage shed	Floor damage, liquid accumulation	O/C	
Road/Work Surfaces	Cracks	O/C	
Fence	Integrity, damage	O/C	
Gate Lock	Integrity, damage	O/C	
Wind Sock	Damage, functioning	O/C	
Pallets	Integrity, damage	O/C	
Area Warning Signs	Out-of-date, damage, legibility	O/C	
Treatment Tanks	Leaks, Damage	O/C	
Curbs/Pads (Treatment tank)	Rainwater accumulation/removal cracks, damage	O/C	
Lighting	Proper functioning	O/C	
Refrigerator (If wastes present)	Leaking/damaged containers	O/C	
Site Inspection	Dying vegetation or other evidence of leachate migration	O/C	
Leach Collection	Evidence of liquid accumulation	O/C	
Tanks	Leaks, deterioration	O/C	

Cy: A. Drypolcher, HSE-8, MS K490

FACILITY IA-3A, AREA L

Inspected by J. Massarenas
Type T. S

Date 6/1/87
Time 730

Item	Inspected for	Condition	Action/Date
DAILY - to be completed every day of operation			
Communication Equipment	Proper functioning	OK	
Freeboard (Surface impoundment)	At least 1 ft. to prevent overflow	OK	
Treatment Tanks	Level - At least 6" of freeboard	OK	
Loading/Unloading	Spills and deterioration	OK	
Run-on/off control	Integrity, erosion and ponding	OK	
WEEKLY - to be completed on the first working day of the week.			
Storage Containers -Integrity	Open drums, leaks, corrosion, aisle space, stack height	OK	
-Labels	Present "Hazardous Waste" and and accumulation date	OK	
Safety shower and eyewash	Leaks, functioning	OK	
Hose bib	Leaks, functioning	OK	
Temporary shaft covers and railing	Damage	OK	
Metal storage shed	Floor damage, liquid accumulation	OK	
Road/Work Surfaces	Cracks	OK	
Fence	Integrity, damage	OK	
Gate Lock	Integrity, damage	OK	
Wind Sock	Damage, functioning	OK	
Pallets	Integrity, damage	OK	
Area Warning Signs	Out-of-date, damage, legibility	OK	
Treatment Tanks	Leaks, damage	OK	
Curbs/Pads (Treatment tank)	Rainwater accumulation/removal cracks, damage	OK	
Lighting	Proper functioning	OK	
Refrigerator (If wastes present)	Leaking/damaged containers	OK	
Site Inspection	Dying vegetation or other evidence of leachate migration	OK	
Leach Collection	Evidence of liquid accumulation	OK	
Tanks	Leaks, deterioration	OK	

Cy: A. Drypolcher, HSE-8, MS K490

Inspected by Massiaenes
Type T. S.

Date 6/10/87
Time 1400

Item	Inspected for	Condition	Action/Date
DAILY - to be completed every day of operation			
Communication equipment	Proper functioning	OK	
Freeboard (Surface impoundment)	At least 1 ft. to prevent overflow	OK	
Treatment Tanks	Level - At least 6" of freeboard	OK	
Loading/Unloading	Spills and deterioration	OK	
Run-on/off control	Integrity, erosion and bonding	OK	
WEEKLY - to be completed on the first working day of the week.			
Storage Containers -Integrity	Open drums, leaks, corrosion, aisle space, stack height	OK	
-Labels	Present "Hazardous Waste" and and accumulation date	OK	
Safety shower and eyewash	Leaks, functioning	OK	
Hose bib	Leaks, functioning	OK	
Temporary shaft covers and railing	Damage	OK	
Metal storage shed	Floor damage, liquid accumulation	OK	
Road/Work Surfaces	Cracks	OK	
Fence	Integrity, damage	OK	
Gate Lock	Integrity, damage	OK	
Wind Sock	Damage, functioning	OK	
Pallets	Integrity, damage	OK	
Area Warning Signs	Out-of-date, damage, legibility	OK	
Treatment Tanks	Leaks, damage	OK	
Curbs/Pads (Treatment tank)	Rainwater accumulation/removal cracks, damage	OK	
Lighting	Proper functioning	OK	
Refrigerator (If wastes present)	Leaking/damaged containers	OK	
Site Inspection	Dying vegetation or other evidence of leachate migration	OK	
Leach Collection	Evidence of liquid accumulation	OK	
Tanks	Leaks, deterioration	OK	

Cy: A. Drypoicher, HSE-3, MS X490

Inspected by: Mac Caverna
Type: T. S

Time: 7:30

Item	Inspected for	Condition	Action/Date
DAILY - to be completed every day of operation			
Communication equipment	Proper functioning	OK	
Freeboard (Surface impoundment)	At least 1 ft. to prevent overflow	OK	
Treatment Tanks	Level - At least 6" of freeboard	OK	
Loading/Unloading	Spills and deterioration	OK	
Run-on/off control	Integrity, erosion and ponding	OK	
WEEKLY - to be completed on the first working day of the week.			
Storage Containers -Integrity	Open drums, leaks, corrosion, aisle space, stack height	OK	
-Labels	Present "Hazardous Waste" and and accumulation date	OK	
Safety shower and eyewash	Leaks, functioning	OK	
Hose bib	Leaks, functioning	OK	
Temporary shaft covers and railing	Damage	OK	
Metal storage shed	Floor damage, liquid accumulation	OK	
Road/Work Surfaces	Cracks	OK	
Fence	Integrity, damage	OK	
Gate Lock	Integrity, damage	OK	
Wind Sock	Damage, functioning	OK	
Pallets	Integrity, damage	OK	
Area Warning Signs	Out-of-date, damage, legibility	OK	
Treatment Tanks	Leaks, damage	OK	
Curbs/Pads (Treatment tank)	Rainwater accumulation/removal cracks, damage	OK	
Lighting	Proper functioning	OK	
Refrigerator (If wastes present)	Leaking/damaged containers	OK	
Site Inspection	Dying vegetation or other evidence of leachate migration	OK	
Leach Collection	Evidence of liquid accumulation	OK	
Tanks	Leaks, deterioration	OK	

Cy: A. Drypolcher, HSE-8, MS K490

Inspected by Hescoenas
Type T. S.

Date 12-22-07
Time 1130

Item	Inspected for	Condition	Action/Date
DAILY - to be completed every day of operation			
Communication equipment	Proper functioning	OK	
Freeboard (Surface impoundment)	At least 1 ft. to prevent overflow	OK	
Treatment Tanks	Level - At least 6" of freeboard	OK	
Loading/Unloading	Spills and deterioration	OK	
Run-on/off control	Integrity, erosion and bonding	OK	
WEEKLY - to be completed on the first working day of the week.			
Storage Containers -Integrity	Open drums, leaks, corrosion, aisle space, stack height	OK	
-Labels	Present "Hazardous Waste" and and accumulation date	OK	
Safety shower and eyewash	Leaks, functioning	OK	
Hose bib	Leaks, functioning	OK	
Temporary shaft covers and railing	Damage	OK	
Metal storage shed	Floor damage, liquid accumulation	OK	
Road/Work Surfaces	Cracks	OK	
Fence	Integrity, damage	OK	
Gate Lock	Integrity, damage	OK	
Wind Sock	Damage, functioning	OK	
Pallets	Integrity, damage	OK	
Area Warning Signs	Out-of-date, damage, legibility	OK	
Treatment Tanks	Leaks, damage	OK	
Curbs/Pads (Treatment tank)	Rainwater accumulation/removal cracks, damage	OK	
Lighting	Proper functioning	OK	
Refrigerator (If wastes present)	Leaking/damaged containers	OK	
Site Inspection	Dying vegetation or other evidence of leachate migration	OK	
Leach Collection	Evidence of liquid accumulation	OK	
Tanks	Leaks, deterioration	OK	

Cy: A. Drypolcher, HSE-8, MS K490

* Shower has been repaired.
JR

Inspected by Paul Emerson & Elmer Velasquez
Type T.S
Date [illegible]
Time [illegible]

Item	Inspected for	Condition	Action/Date
DAILY - to be completed every day of operation			
Communication equipment	Proper functioning	OK	
Freeboard (Surface impoundment)	At least 1 ft. to prevent overflow	OK	
Treatment Tanks	Level - At least 6" of freeboard	OK	
Loading/Unloading	Spills and deterioration	OK	
Run-on/off control	Integrity, erosion and ponding	OK	
WEEKLY - to be completed on the first working day of the week.			
Storage Containers -Integrity	Open drums, leaks, corrosion, aisle space, stack height		
-Labels	Present "Hazardous Waste" and and accumulation date	OK	
Safety shower and eyewash	Leaks, functioning	OK	
Hose bib	Leaks, functioning	OK	
Temporary shaft covers and railing	Damage	OK	
Metal storage shed	Floor damage, liquid accumulation	OK	
Road/Work Surfaces	Cracks	OK	
Fence	Integrity, damage	OK	
Gate Lock	Integrity, damage	CURRENTLY BEING REPAIRED	
Wind Sock	Damage, functioning	NEEDS REPAIR	
Pallets	Integrity, damage	OK	
Area Warning Signs	Out-of-date, damage, legibility	OK	
Treatment Tanks	Leaks, Damage	OK	
Curos/Pads (Treatment tank)	Rainwater accumulation/removal cracks, damage	OK	
Lignting	Proper functioning	OK	
Refrigerator (If wastes present)	Leaking/damaged containers	OK	
Site Inspection	Dying vegetation or other evidence of leachate migration	OK	
Leach Collection	Evidence of liquid accumulation	OK	
Tanks	Leaks, deterioration	OK	

Cy: A. Drypolcher, HSE-8, MS K490

FACILITY TA-54, Area L

Date 9-10-87
Time 8:00

Inspected by
Type T. S

Item	Inspected for	Condition	Action/Date
DAILY - to be completed every day of operation			
Communication equipment	Proper functioning	OK	
Freeboard (Surface impoundment)	At least 1 ft. to prevent overflow	OK	
Treatment Tanks	Level - At least 6" of freeboard	OK	
Loading/Unloading	Spills and deterioration	OK	
Run-on/off control	Integrity, erosion and ponding	OK	
WEEKLY - to be completed on the first working day of the week.			
Storage Containers -Integrity	Open drums, leaks, corrosion, aisle space, stack height	OK	
-Labels	Present "Hazardous Waste" and and accumulation date	OK	
Safety shower and eyewash	Leaks, functioning	OK	
Hose bib	Leaks, functioning	OK	
Temporary shaft covers and railing	Damage	OK	
Metal storage shed	Floor damage, liquid accumulation	OK	
Road/Work Surfaces	Cracks	OK	
Fence	Integrity, damage	OK	
Gate Lock	Integrity, damage	OK	
Wind Sock	Damage, functioning	NEEDS REPAIR	
Pallets	Integrity, damage	OK	
Area Warning Signs	Out-of-date, damage, legibility	OK	
Treatment Tanks	Leaks, damage	OK	
Curos/Pads (Treatment tank)	Rainwater accumulation/removal cracks, damage	OK	
Lighting	Proper functioning	OK	
Refrigerator (If wastes present)	Leaking/damaged containers	OK	
Site Inspection	Dying vegetation or other evidence of leachate migration	OK	
Leach Collection	Evidence of liquid accumulation	OK	
Tanks	Leaks, deterioration	OK	

Cy: A. Drypolcher, HSE-8, MS K490

INSPECTION RECORD FORM
FACILITY TA-54, Area L

Inspected by: J.E. Masdrelas
Type: T.S.

Date: 7/13-87
Time: 1:30 PM

Item	Inspected for	Condition	Action/Date
DAILY - to be completed every day of operation			
Communication equipment	Proper functioning	OK	
Freeboard (Surface impoundment)	At least 1 ft. to prevent overflow	OK	
Treatment Tanks	Level - At least 6" of freeboard	OK	
Loading/Unloading	Spills and deterioration	OK	
Run-on/off control	Integrity, erosion and bonding	OK	
WEEKLY - to be completed on the first working day of the week.			
Storage Containers -Integrity	Open drums, leaks, corrosion, aisle space, stack height	OK	
-Labels	Present "Hazardous Waste" and and accumulation date	OK	
Safety shower and eyewash	Leaks, functioning	OK	
Hose bib	Leaks, functioning	OK	
Temporary shaft covers and railing	Damage	OK	
Metal storage shed	Floor damage, liquid accumulation	OK	
Road/Work Surfaces	Cracks	OK	
Fence	Integrity, damage	OK	
Gate Lock	Integrity, damage	Need Replacement	
Wind Sock	Damage, functioning	OK	
Pallets	Integrity, damage	OK	
Area Warning Signs	Out-of-date, damage, legibility	OK	
Treatment Tanks	Leaks, Damage	OK	
Curbs/Pads (Treatment tank)	Rainwater accumulation/removal cracks, damage	OK	
Lighting	Proper functioning	OK	
Refrigerator (If wastes present)	Leaking/damaged containers	OK	
Site Inspection	Dying vegetation or other evidence of leachate migration	OK	
Leach Collection	Evidence of liquid accumulation	OK	
Tanks	Leaks, deterioration		

Cy: A. Drypolcher, HSE-8, MS K490