

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-09256-RS
ADDRESS: 164 LITTLE PARK ROAD

JUNE 1985

FOR

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT OFFICE

ALBUQUERQUE OPERATIONS OFFICE

DEPARTMENT OF ENERGY

BY

BENDIX FIELD ENGINEERING CORPORATION
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DATE

June 24, 1985

REA09256:REA-509

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-09256-RS, is a single-family residence located at 164 Little Park Road, Grand Junction, Colorado.

The purpose of this assessment is to evaluate the extent of uranium millsite contamination at this property. This assessment includes recommended remedial action, estimated volume of material to be removed, and estimated cost of the proposed action.

1.2 Evaluation and Recommendation

The action recommended is the removal of contaminated material and restoration of the property to its original condition. The identified residual radioactive material found on this property is tailings; the estimated volume is: exterior, 107 cu. yd.; interior, 0 cu. yd.

Estimated cost to perform remedial action, including dislocation when applicable, is \$16,426. Remedial action on this property will take approximately 21 days to complete.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 164 Little Park Road, Grand Junction, Colorado

Zoning: Residential

Lot Size: Approximately 163,350 sf (3.84 acres)

Legal Description: Lot 33 BLM Small Tracts Section 33 1S 1W or SW4 SE4 NE4 NW4 Section 33 (T1SR1W), Ute Meridian, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 3.5 miles west of the State of Colorado Tailings Repository. Appendix Figure 2.1 shows the property location relative to its surroundings.

Utilities: Utility locations are shown in Appendix Figure 2.2.

Electrical:	Underground and overhead
Gas:	Underground
Telephone:	Underground and overhead
Sewer:	Underground
Water:	Underground
Cable TV:	Underground

Bordering Properties:

North:	Little Park Road
South:	Single-family residence
East:	Single-family residence
West:	Little Park Road

2.2 Existing Facilities and Structures

Primary Structure:

Type:	Single-story residence
Size:	Approximately 2,730 sf
Construction Date:	1963
Construction:	Hand-laid stone in concrete and adobe
Foundation:	Hand-laid stone in concrete
Footing Depth:	Not determined
Basement:	None
Crawl Space:	None
Condition:	Good

Other Structures:

Type:	Garage
Size:	Approximately 530 sf
Construction:	Hand-laid stone in concrete and adobe
Foundation:	Hand-laid stone in concrete
Condition:	Good

General Remarks:

Structures, utilities, landscaping, and other special features of this property are included in Appendix Figure 2.2.

Historical Data:

Although the structure is not over 50 years old, it has numerous architectural qualities which should be brought to the attention of the Colorado Historic Preservation Office.

Alterations to Structure: None

Architectural Significance: Hand built sandstone and adobe with heavy timber beams and flagstone floors. The site also has flagstone walkways and is landscaped with natural vegetation. Builder: Ken Johnson.

3.0 RADIOLOGIC SURVEY

3.1 Introduction

Radiologic data were collected by Bendix at DOE ID No. GJ-09256-RS on March 18, 1985. Data collection methods were performed in accordance with procedures fully described in the Radiologic Support Operations Procedures Manual GJ-07(84) (Bendix Field Engineering Corporation, 1984). These data were evaluated to determine the areal and vertical extent of uranium mill tailings contamination at this property as well as any other contaminated material that may have originated from the millsite.

A review of historical information from the files of the Colorado Department of Health (CDH) and the inclusion data from Oak Ridge National Laboratory (ORNL) was conducted. These records indicate contamination west of the primary structure, under and around a flagstone deck, and north of the primary structure, under and around a flagstone patio. Remedial action by GJRAP was performed on this property in 1978 wherein tailings were removed from beneath the entire floor of the primary structure and within three feet of the primary structure on the north and west sides.

The Bendix radiologic survey was designed to investigate the entire property, with emphasis on previously identified areas of contamination. Conclusions based upon data analyses are discussed in Section 3.5, Extent of Contamination. Photocopies of the Official Survey Report, Memo of Understanding, team leader notes, and deconvolution graphs are included in the Appendix (Section 6.0).

3.2 Gamma Exposure-Rate Surveys

3.2.1 Exterior Findings

Background Readings: 9 to 15 uR/h
Highest Outside Gamma Reading (HOG): 633 uR/h

Exterior radium-concentration measurements are presented in Appendix Table 3.1. Grid-point survey results and walking scan ranges are shown in Appendix Figure 3.1. Appendix Figure 3.2 presents the ranges of elevated gamma readings and indicates areas of possible contamination.

3.2.2 Interior Findings

Background Readings: 11 to 14 uR/h
Highest Inside Gamma Reading (HIG): 14 uR/h

Interior gamma exposure-rate measurements are summarized in Appendix Table 3.2. Appendix Figures 3.3a and 3.3b show interior exposure rates and locations of these measurements.

3.3 Boreholes, Soil Samples, and Other Measurements

Areas which displayed elevated gamma levels were further investigated; these areas are shown in Appendix Figure 3.4. Data from these investigations are included in Appendix Table 3.1.

3.4 Radon/Radon Daughter Concentration (RDC)

Determined by CDH: 0.017 gross working level (WL). No additional RDC measurements were taken by Bendix.

3.5 Extent of Contamination

Appendix Figure 3.5 shows identified areas and estimated depths of contamination on this property, based on assessments of all measurements taken. As noted in this figure, areas recommended for remedial action that contain identified residual radioactive materials are:

- (AREA A) Beneath the flagstone patio, north of the primary structure, the soil is contaminated to a depth of 39 inches from the patio surface (approximately 600 sf).
- (AREA B) Contamination in the soil adjacent to the flagstone patio is 12 inches deep (approximately 270 sf).
- (AREA C) Near the raised flagstone walkway, east of the primary structure, a contaminated deposit extends to a depth of 6 inches (approximately 20 sf).
- (AREA D) A portion of the raised flagstone walkway is contaminated to a depth of 12 inches (approximately 25 sf).
- (AREA E) From the surface of a flagstone walkway, east of the garage, the depth of contamination is 6 inches (approximately 20 sf).
- (AREA F) A trench containing several utility lines, between the garage and the primary structure, is contaminated to an estimated depth of 52 inches (approximately 129 sf).
- (AREA G) The soil west of the primary structure is contaminated to a 6-inch depth (approximately 60 sf).
- (AREA H) In the planter, adjacent to the flagstone deck, contamination extends to a depth of 3 inches (approximately 18 sf).
- (AREA I) West of the primary structure, under a flagstone deck, the soil is contaminated to a depth of 12 inches from the surface of the deck (approximately 245 sf).
- (AREA J) The depth of contamination under a flagstone deck, north of the swimming pool, is 6 inches (approximately 204 sf).

(AREA K) North of Area A, the soil is contaminated to a depth of 9 inches (approximately 60 sf).

(AREAS REQUIRING FURTHER INVESTIGATION DURING REMEDIAL ACTION)

Area A should be monitored closely during remedial action. The actual depth of the utility trench (AREA F) was never determined, because of the number of lines in the trench and the inability to dig below them. Extra precaution should be taken in this area.

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-09256-RS, includes removal of all areas identified as containing radioactive material (as discussed in Section 3.5 and shown in Appendix Figure 3.5) and transport of removed material to the disposal site.

After remedial action is completed, the areas involved will be restored to original condition in accordance with the Bendix drawings, Vicinity Properties General Construction Specification (Bendix Field Engineering Corporation, 1984), and Statement of Work for Construction Subcontractor.

Dislocation of the occupants will not be required for this remedial action.

4.2 Evaluation of Recommended Remedial Action

Volume calculations of the areas included for remedial action are presented in Appendix Table 4.1. Cost estimates are presented in Appendix Table 4.2.

Estimated cost of remedial action is \$16,426.

This remedial action will result in removal of the identified residual radioactive materials.

There is no owner preference with respect to remedial action and no legal or other complications are foreseen at this time.

5.0 REFERENCES

ARIX, A Professional Corporation, Procedures Manual for the Grand Junction Remedial Action Program, for Colorado Department of Health, Radiation Control Division, and the U.S. Department of Energy, 1983.

Bendix Field Engineering Corporation, Procedures Manual Radiologic Support Operations Grand Junction Vicinity Properties, (GJ-07), for U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico, 1984.

Bendix Field Engineering Corporation, Engineering, Construction, and Land Support Manual Grand Junction Vicinity Properties Project, (GJ-08), for U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico, 1984.

Bendix Field Engineering Corporation, Grand Junction Vicinity Properties Operating Manual, (GJ-16) for U.S. Department of Energy, Nuclear Energy Programs, Division of Remedial Action Projects, UMTRA, 1984.

Bendix Field Engineering Corporation, Vicinity Properties General Construction Specification, for U.S. Department of Energy, Nuclear Energy Programs, Division of Remedial Action Projects, UMTRA, 1984.

Bendix Field Engineering Corporation, Environmental Assessment of Preliminary Cleanup Activities at Offsite Properties Contaminated by Tailings from the Grand Junction Inactive Uranium Millsite, (GJ-04), for U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations, Albuquerque, New Mexico, 1983.

U.S. Department of Energy, Programmatic Memorandum of Agreement (DOE No. DE-GM04-84AL28460) between the U.S. Department of Energy, the Advisory Council on Historic Preservation, and the Colorado State Historic Preservation Officer, for UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico, 1984.

U.S. Department of Energy, Vicinity Properties Management and Implementation Manual, for UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico, 1984.

U.S. Environmental Protection Agency, Standards for Remedial Action at Inactive Uranium Processing Sites (40 CFR Part 192), Washington, D.C., 1983.

6.0 APPENDIX

This Appendix contains the following:

Appendix Tables:

Table 3.1	Radium Concentrations at Exterior Locations
Table 3.2	Summary of Interior Gamma Exposure Rates
Table 4.1	Area and Volume Calculations
Table 4.2	Estimated Cost of Decontamination and Restoration

Appendix Figures:

Figure 2.1	Vicinity Map
Figure 2.2a	Site Plan
Figure 2.2b	Site Plan
Figure 3.1	Exterior Grid-Point Exposure Rates
Figure 3.2	Exterior Gamma Scan
Figure 3.3a	Interior Gamma Exposure Rates - Residence
Figure 3.3b	Interior Gamma Exposure Rates - Garage and Shed
Figure 3.4	Exterior Sample Locations
Figure 3.5	Estimated Extent of Contamination

Official Survey Report

Memo of Understanding

Team Leader Notes

Deconvolution Graphs (Apparent Radium-226 Concentration)

Radium Concentrations at Exterior Locations

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
1	188480	00-06	SS			4.3	Ditch by road
2	200510	00-06	SS			5.6	
3	204529	00-06	SS			4.6	Shaley soil
4	210525	00-06	SS			5.2	Hillside by road
5	394433	03	TC	1.6		*	DC = 0 inches
		06	TC	1.7		*	
		09	TC	1.6		*	
		12	TC	1.5		*	
		15	TC	1.4		*	
		18	TC	1.5		*	
		21	TC	1.7		*	
		24	TC	2.0		*	
		27	TC	2.5		*	
		30	TC	3.1		*	
		33	TC	3.5		*	
		36	TC	3.8		*	
		39	TC	3.8		*	
		42	TC	3.7		*	
		45	TC	3.5		*	
		48	TC	3.8		*	
		51	TC	4.0		*	
54	TC	4.2		*			
57	TC	4.3		*			
6	399427	03	TC	1.4		*	Leach field DC = 0 inches
		06	TC	1.3		*	
		09	TC	1.3		*	
		12	TC	1.1		*	
		15	TC	1.1		*	
		18	TC	1.2		*	
		21	TC	1.4		*	
		24	TC	1.8		*	
		27	TC	2.3		*	
		30	TC	3.4		*	
		33	TC	3.9		*	
		36	TC	4.0		*	
		39	TC	4.2		*	
		42	TC	4.2		*	
		45	TC	4.1		*	
		48	TC	4.1		*	

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
7	405419	03	TC	1.6		*	DC = 0 inches
		06	TC	1.6		*	
		09	TC	1.6		*	
		12	TC	1.6		*	
		15	TC	1.8		*	
		18	TC	1.9		*	
		21	TC	2.3		*	
		24	TC	2.9		*	
		27	TC	3.4		*	
		30	TC	3.6		*	
		33	TC	3.7		*	
		36	TC	3.8		*	
		39	TC	3.6		*	
		42	TC	3.7		*	
		45	TC	3.8		*	
		48	TC	3.9		*	
8	409430	03	TC	1.6		*	Leach field DC = 0 inches
		06	TC	1.6		*	
		09	TC	1.5		*	
		12	TC	1.3		*	
		15	TC	1.2		*	
		18	TC	1.0		*	
		21	TC	<1.0		*	
		24	TC	<1.0		*	
		27	TC	<1.0		*	
		30	TC	<1.0		*	
		33	TC	1.0		*	
		36	TC	1.1		*	
		39	TC	1.2		*	
		42	TC	1.5		*	
		45	TC	1.9		*	
		48	TC	2.3		*	
		51	TC	2.7		*	
9	410390	00	DS	<1.0		*	Background Sandy soil DC = 0 inches
		00-06	SS			1.6	
		03	TC	2.1		*	
		06	TC	2.1		*	
		09	TC	2.2		*	
		12	TC	2.3		*	
		15	TC	2.4		*	

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
9	410390	18	TC	2.4		*	
		21	TC	2.4		*	
		24	TC	2.2		*	
		27	TC	2.3		*	
10	410450	03	TC	1.6		*	DC = 0 inches
		06	TC	1.6		*	
		09	TC	1.5		*	
		12	TC	1.4		*	
		15	TC	1.4		*	
		18	TC	1.4		*	
		21	TC	1.4		*	
		24	TC	1.4		*	
		27	TC	1.4		*	
		30	TC	1.4		*	
		33	TC	1.5		*	
		36	TC	1.7		*	
		39	TC	2.0		*	
		42	TC	2.6		*	
		45	TC	3.3		*	
		48	TC	3.5		*	
11	440330	03	TC	1.1		*	DC = 0 inches
		06	TC	1.4		*	
		09	TC	1.3		*	
		12	TC	1.1		*	
		15	TC	2.5		*	
		18	TC	2.9		*	
		21	TC	2.6		*	
		24	TC	2.6		*	
12	460400	27	TC	2.6		*	Dry shaley soil Septic tank DC = 0 inches
		30	TC	2.7		*	
		42-46	SS			2.8	
		03	TC	2.8		*	
		06	TC	2.7		*	
		09	TC	2.4		*	
		12	TC	2.4		*	
		15	TC	2.4		*	
		18	TC	2.7		*	
		21	TC	3.2		*	
		24	TC	3.7		*	

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
12	460400	27	TC	4.4		*	
		30	TC	4.9		*	
		33	TC	5.1		*	
		36	TC	5.3		*	
		39	TC	5.4		*	
		42	TC	5.3		*	
13	468452	00	DS	18.6		*	Top of flagstone
		03	DS	43.4		*	Below flagstone
		07	DS	<1.0		*	The elevated soil
		13	DS	1.8		*	sample is due to
		07-13	SS			5.8	slough
14	471367	00	DS	<1.0		*	Gas line
		12	DS	<1.0			
15	483446	03	TC	15.1		*	Flagstone deck
		06	TC	11.9		*	West of house
		09	TC	8.1		*	
		12	TC	6.1		*	DC = 12 inches
		15	TC	5.2		*	Based on the
		18	TC	5.1		*	deconvolution graph
		21	TC	5.3		*	
		24	TC	5.6		*	
		27	TC	5.8		*	
		30	TC	5.9		*	
		33	TC	5.6		*	
		36	TC	5.5		*	
		39	TC	5.4		*	
		42	TC	5.2		*	
		45	TC	5.0		*	
		48	TC	4.8		*	
		51	TC	4.5		*	
16	485443	03	TC	26.0		*	Flagstone deck
		06	TC	20.8		*	West of house
		09	TC	14.0		*	
		12	TC	9.8		*	DC = 12 inches
		15	TC	7.8		*	Based on the
		18	TC	6.8		*	deconvolution graph
		21	TC	6.3		*	
		24	TC	5.8		*	
		27	TC	5.9		*	

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
17	490500	03	TC	7.1		*	DC = 9 inches
		06	TC	6.2		*	Based on the
		09	TC	4.7		*	deconvolution graph
		12	TC	3.6		*	
		15	TC	3.0		*	
		18	TC	2.6		*	
		21	TC	2.4		*	
		24	TC	2.2		*	
18	492422	00	DS	2.8		*	
		03	DS	2.0		*	
19	496378	00	DS	3.7		*	Top of flagstone
		02	DS	7.8		*	Below sandstone
		06	DS	2.1		*	
		00-06	SS			22.2	Sandy soil under flagstone
20	496417	00	DS	7.7		*	Top of flagstone
		01	DS	11.7		*	Below flagstone
		06	DS	3.9		*	
		12	DS	3.0		*	
		16	DS	3.3		*	
		40-46	SS			19.9	Below water lines under flagstone walk
21	497492	00	DS	68.8		*	North patio
		02	DS	134.5		*	Below flagstone
		06	DS	9.9		*	
		12	DS	<1.0		*	
		18	DS	2.8		*	
		12-18	SS			7.8	
22	498493	00	DS	136.7		*	Top of flagstone
		03	DS	277.7		*	Under flagstone
23	500417	00	DS	<1.0		*	
		06	DS	5.7		*	
		03	TC	7.8		*	
		06	TC	8.9		*	
		09	TC	9.3		*	
		12	TC	9.1		*	

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
23	500417	15	TC	8.8		*	
		18	TC	8.2		*	
		21	TC	8.2		*	
		24	TC	9.4		*	
		27	TC	11.2		*	
		30	TC	12.4		*	
		33	TC	11.4		*	
		36	TC	8.9		*	
		39	TC	7.7		*	
		42	TC	7.2		*	
		45	TC	7.3		*	DC = 52 inches
		48	TC	7.6		*	Based on the
		51	TC	7.6		*	estimated depth to
		54	TC	7.8		*	the bottom of the
		57	TC	7.7		*	utility trench
24	500419	00	DS	2.8		*	Next to tree
		06	DS	<1.0		*	
		12	DS	2.6		*	
25	500490	00	DS	33.9		*	
		06	DS	6.9		*	
		12	DS	3.7		*	
		03	TC	7.8		*	
		06	TC	8.9		*	
		09	TC	9.3		*	
		12	TC	9.1		*	
		15	TC	8.8		*	
		18	TC	8.2		*	
		21	TC	8.2		*	
		24	TC	9.4		*	
		27	TC	11.2		*	
		30	TC	12.4		*	
		33	TC	11.4		*	
		36	TC	8.9		*	
		39	TC	7.7		*	DC = 39 inches
		42	TC	7.2		*	Based on the
		45	TC	7.3		*	deconvolution graph
		48	TC	7.6		*	
		51	TC	7.6		*	
		54	TC	7.8		*	
		57	TC	7.7		*	

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
26	500500	03	TC	4.1		*	East yard
		06	TC	3.7		*	Auger refusal
		09	TC	3.5		*	
		12	TC	3.3		*	DC = 0 inches
		15	TC	3.2		*	
		18	TC	3.1		*	
		21	TC	3.1		*	
27	506492	03	TC	45.2		*	Edge of patio
		06	TC	28.3		*	
		09	TC	17.1		*	
		12	TC	10.9		*	DC = 12 inches
		15	TC	8.1		*	Based on the
		18	TC	6.5		*	deconvolution graph
		21	TC	5.7		*	
		24	TC	4.7		*	
		27	TC	3.8		*	
		30	TC	3.3		*	
		33	TC	3.1		*	
		36	TC	3.1		*	
		39	TC	3.2		*	
		42	TC	3.6		*	
28	508487	03	TC	79.5		*	Auger refusal
		06	TC	73.5		*	
		09	TC	48.0		*	
		12	TC	28.5		*	DC = 12 inches
		15	TC	18.8		*	Based on the
		18	TC	13.4		*	deconvolution graph
		21	TC	10.9		*	
		24	TC	9.2		*	
		27	TC	8.6		*	
29	509484	03	TC	108.1		*	Auger refusal
		06	TC	114.2		*	
		09	TC	82.4		*	DC = 12 inches
		12	TC	49.1		*	Based on the
		15	TC	29.2		*	deconvolution graph
		18	TC	17.3		*	
		21	TC	10.3		*	
		24	TC	6.8		*	
		27	TC	5.6		*	
		30	TC	5.1		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-09256-RS

164 Little Park Road

Page 8 of 10

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
29	509484	33	TC	5.5		*	
		36	TC	5.7		*	
30	510490	03	TC	5.8		*	
		06	TC	4.9		*	
		09	TC	3.8		*	
		12	TC	3.4		*	
		15	TC	3.0		*	
		18	TC	2.7		*	
		21	TC	2.7		*	
		24	TC	2.7		*	
		27	TC	2.8		*	
		30	TC	2.8		*	
		33	TC	2.5		*	
		36	TC	2.3		*	
		39	TC	2.1		*	
		42	TC	1.9		*	
		45	TC	1.8		*	
		48	TC	1.8		*	
31	511412	00	DS	<1.0		*	
		12	DS	<1.0		*	
		24	DS	<1.0		*	
		36	DS	<1.0		*	
		48	DS	1.5		*	
		60	DS	1.8		*	
		63	DS	2.0		*	
32	511481	00	DS	63.4		*	
		06	DS	18.9		*	
		12	DS	19.2		*	
		15	DS	3.6		*	
33	511487	03	TC	13.7		*	
		06	TC	12.7		*	
		09	TC	9.2		*	
		12	TC	6.3		*	
		15	TC	4.4		*	
		18	TC	3.3		*	
		21	TC	2.7		*	
		24	TC	2.5		*	
		27	TC	2.2		*	
		30	TC	1.8		*	

DC = 9 inches
Based on the
deconvolution graph

DC = 12 inches
Based on the
deconvolution graph

Radium Concentrations at Exterior Locations

DOE ID #GJ-09256-RS

164 Little Park Road

Page 9 of 10

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
34	514412	00	DS	<1.0		*	
		12	DS	<1.0		*	
		26	DS	2.5		*	
35	517410	00	DS	<1.0		*	
		12	DS	<1.0		*	
		26	DS	<1.0		*	Gas line
36	520500	03	TC	2.3		*	
		06	TC	2.6		*	
		09	TC	2.8		*	DC = 0 inches
		12	TC	3.1		*	
		15	TC	3.2		*	
		18	TC	3.3		*	
		21	TC	3.2		*	
37	523405	03	TC	2.1		*	
		06	TC	2.1		*	Auger refusal
		09	TC	2.2		*	
		12	TC	2.1		*	DC = 0 inches
		15	TC	2.1		*	
		18	TC	2.2		*	
		21	TC	2.2		*	
38	523452	00	DS	9.5		*	On flagstone
		06	DS	18.3		*	Under flagstone
		12	DS	1.5		*	
39	528459	00	DS	5.1		*	
		06	DS	<1.0		*	
40	540480	03	TC	2.4		*	
		06	TC	2.7		*	
		09	TC	2.8		*	DC = 0 inches
		12	TC	2.8		*	
		15	TC	2.7		*	
		18	TC	2.6		*	
		21	TC	2.4		*	
		24	TC	2.1		*	
		27	TC	1.9		*	
		30	TC	1.8		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-09256-RS

164 Little Park Road

Page 10 of 10

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
40	540480	33	TC	1.8		*	
		36	TC	1.8		*	
		39	TC	1.8		*	

Measurement GB = GAD-6 Borehole
Types: GS = GAD-6 Surface
DS = Delta Scintillometer
TC = Total Count Borehole
SS = Soil Sample
BH = Combined GAD-6 and
Total Count Borehole

Notes: DC = Depth of Contamination
* = No Soil Sample Taken
[n] = Reading Taken n-Inches
Above Floor or Ground
Date of Survey = 03-19-85
Team Leader = JDG

Location *	Number of Readings Taken at Waist Level	Range at Waist Level (uR/h)	Mean at Waist Level (uR/h)	Number of Readings Taken at Surface	Range at Surface (uR/h)	Mean Surface (uR/h)
-----	-----	-----	-----	-----	-----	-----
PRIMARY STRUCTURE	*	*	*	*	11-14	*
GARAGE	*	*	*	*	11-14	*
WOOD AND WIRE SHED	04	10-12	11	04	10-13	12
-----	-----	-----	-----	-----	-----	-----

* The CDH and ORNL data indicated the absence of interior contamination at this property. This information was investigated by performing a walking gamma scan. These areas and the ranges of gamma measurements are shown in Appendix Figures 3.3a and 3.3b. Exposure rates in the wood and wire shed are shown in Appendix Figure 3.3b.

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-09256-RS

Page 1 of 2

<u>AREA</u>	<u>CALCULATIONS(ft)</u>	<u>SF</u>	<u>DEPTH(ft)</u>	<u>CF</u>	<u>CUBIC YARDS</u>
EXTERIOR					
Flagstone and Grout					
A	30 x 20 =	600	x 0.3 =	180	
D	5 x 5 =	25	x 0.3 =	8	
E	5 x 4 =	20	x 0.3 =	6	
F	43 x 3 =	129	x 0.3 =	39	
I	35 x 7 =	245	x 0.3 =	74	
J	17 x 12 =	204	x 0.3 =	61	
Volume of Flagstone and Grout				368 =	368/27 = 14
Contaminated Fill					
A	30 x 20 =	600	x 2.95 =	1,770	
B	27 x 10 =	270	x 1.0 =	270	
C	4 x 5 =	20	x 0.5 =	10	
D	5 x 5 =	25	x 0.7 =	18	
E	5 x 4 =	20	x 0.2 =	10	
F	43 x 3 =	129	x 4.03 =	520	
G	15 x 4 =	60	x 0.5 =	30	
H	2 x 9 =	18	x 0.3 =	5	
I	35 x 7 =	245	x 0.7 =	172	

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-09256-RS

Page 2 of 2

<u>AREA</u>	<u>CALCULATIONS(ft)</u>	<u>SF</u>	<u>DEPTH(ft)</u>	<u>CF</u>	<u>CUBIC YARDS</u>
J	17 x 12 =	204	x 0.2 =	41	
K	15 x 4 =	60	x 0.8 =	48	
Volume of Fill				= <u>2,894</u> = 2,894/27 =	107
TOTAL VOLUME - EXTERIOR					= 107

See Appendix Figure 3.5 For Areas

=====

EXTERIOR

Remove flagstone walk 1,223 sf @ \$3.25/sf	\$ 3,975
---	----------

Remove identified residual radioactive material 50 cy @ \$44/cy (manual-open)	2,200
57 cy @ \$14.50/cy (machine-open)	827

Replace roadbase 107 cy @ \$11.50/cy	1,231
---	-------

Replace flagstone walk 1,223 sf @ \$2.75/sf	3,363
--	-------

Replace vegetation \$100/lot	100
---------------------------------	-----

	TOTAL EXTERIOR \$ 11,696
--	--------------------------

	TOTAL INTERIOR 0
--	------------------

	ACCESS CONTROL 250
--	--------------------

	SUBTOTAL \$ 11,946
--	--------------------

CONTINGENCY @ 10%	1,195
-------------------	-------

	SUBTOTAL \$ 13,141
--	--------------------

CONTRACTOR OVERHEAD & PROFIT @ 25%	3,285
------------------------------------	-------

	GRAND TOTAL \$ 16,426
--	-----------------------

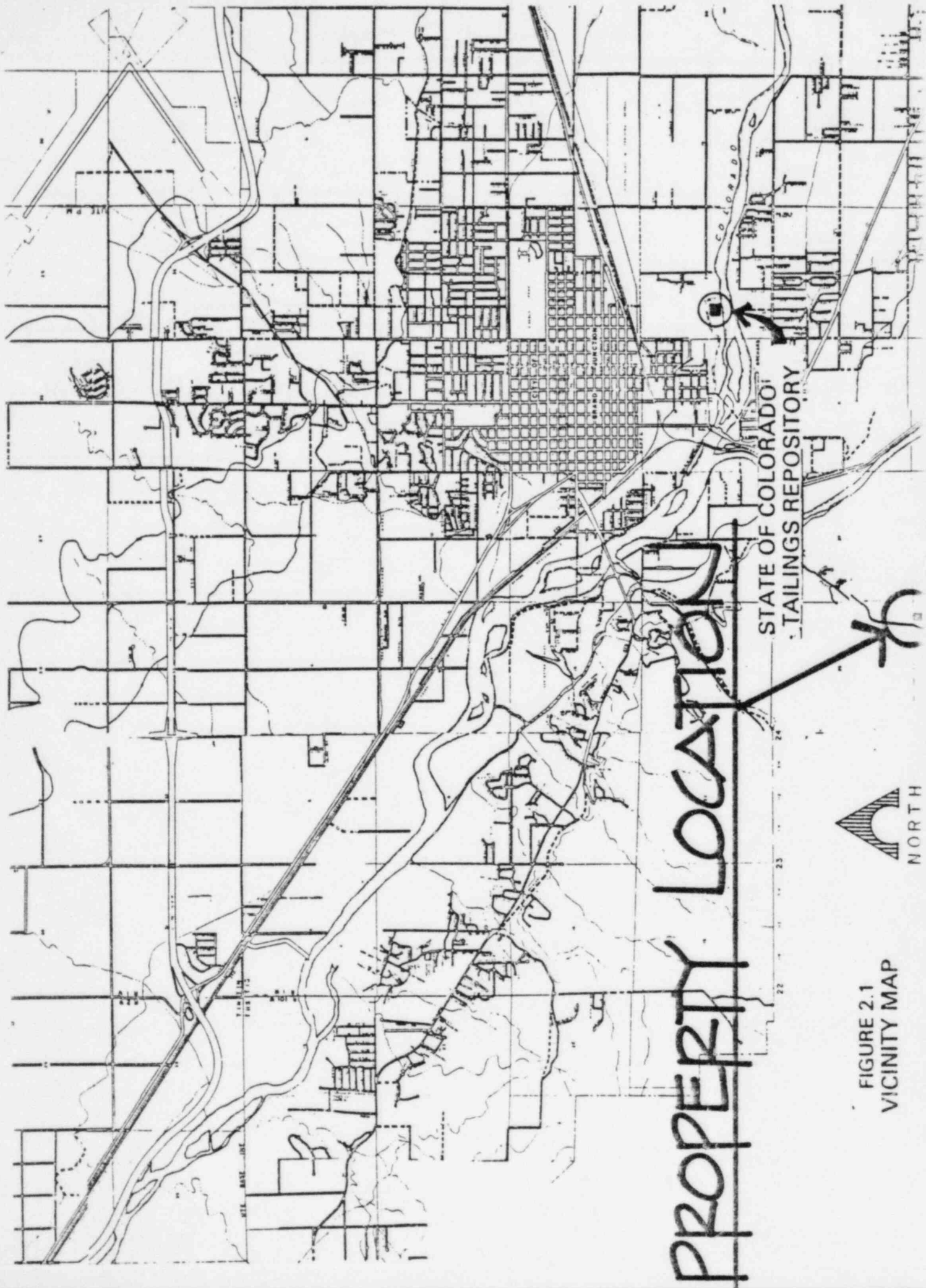
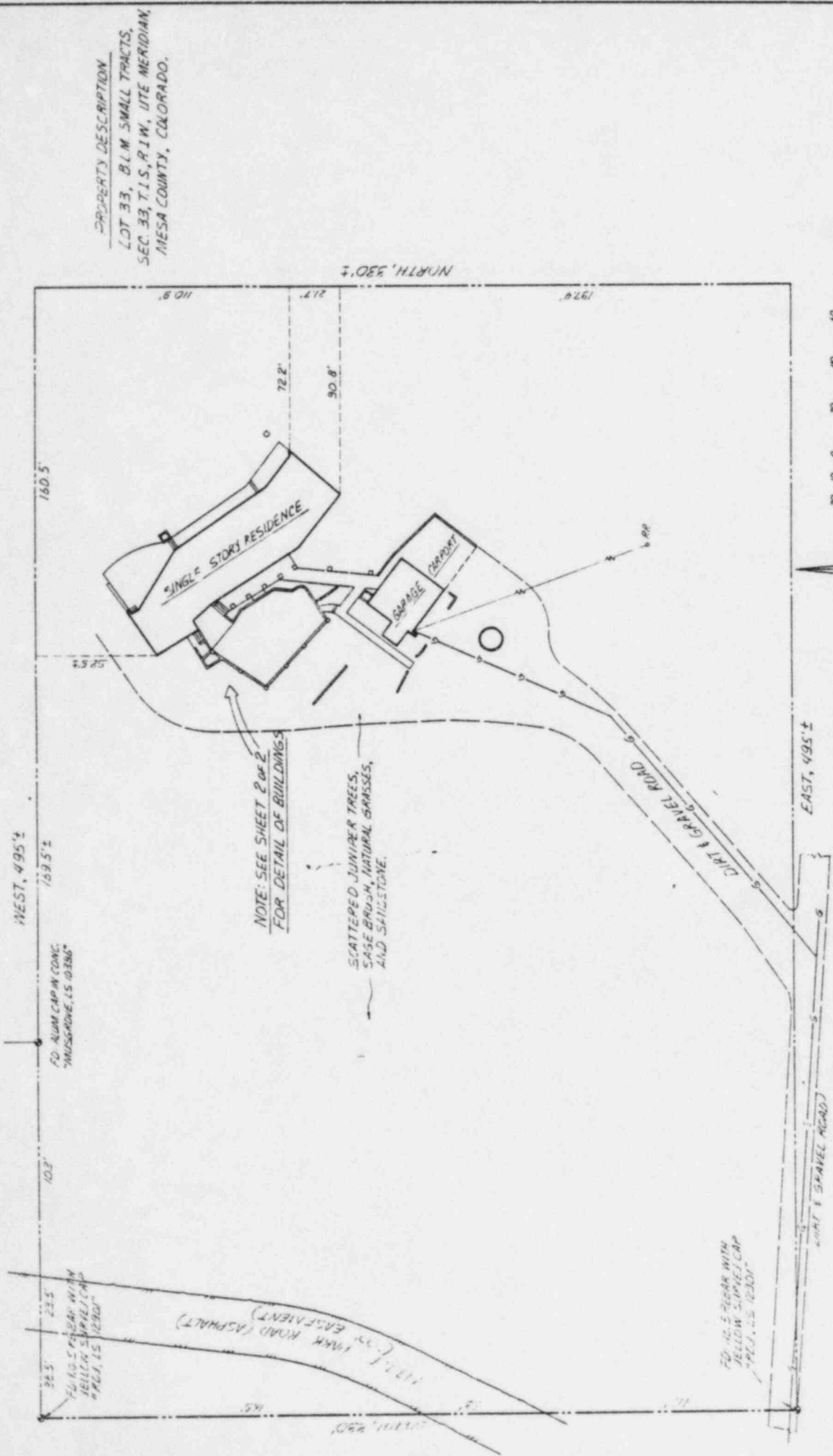
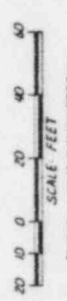


FIGURE 2.1
VICINITY MAP



PROPERTY DESCRIPTION
 LOT 33, BLM SMALL TRACTS,
 SEC. 33, T.1S., R.1W., UTE MERIDIAN,
 HESA COUNTY, COLORADO.

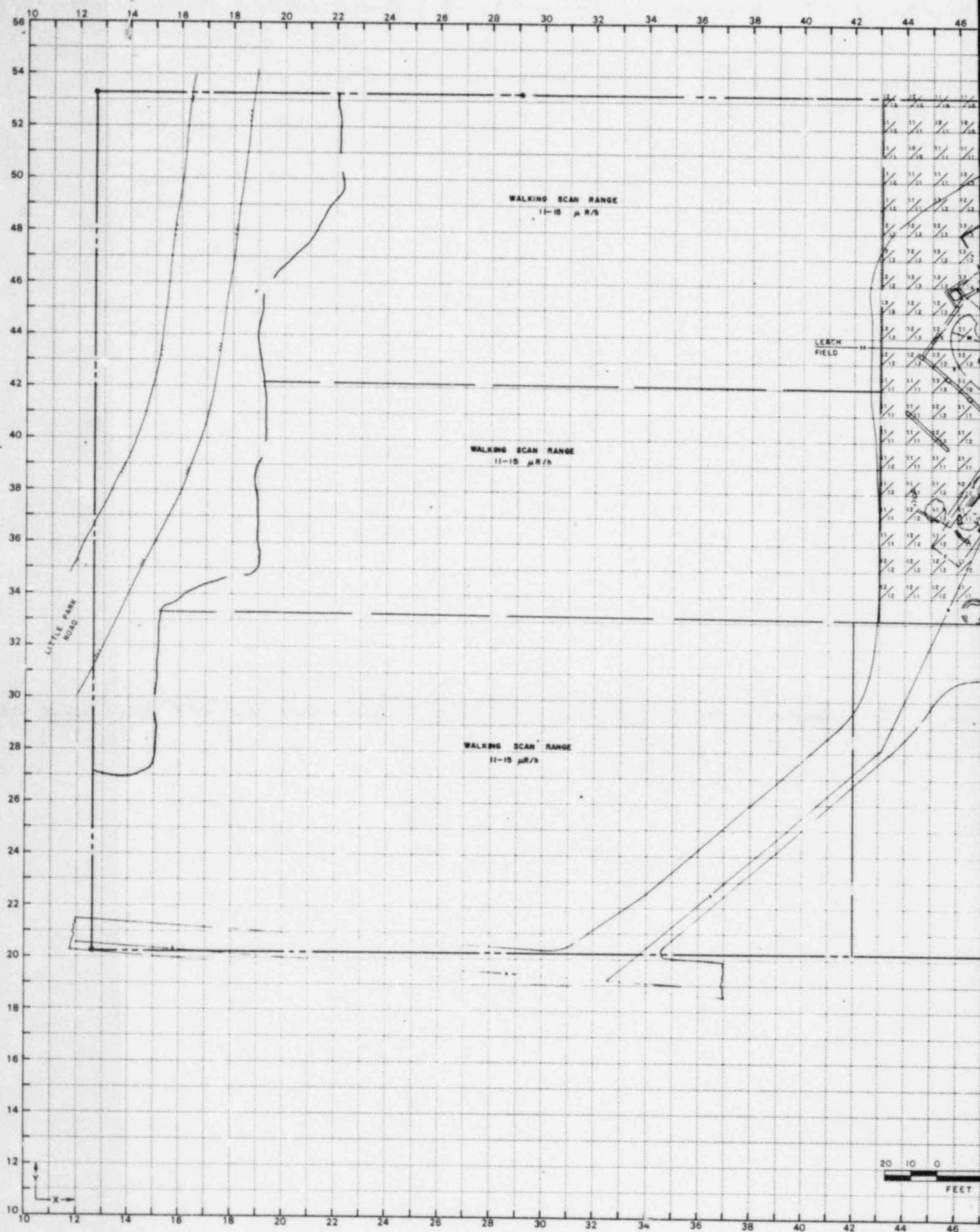


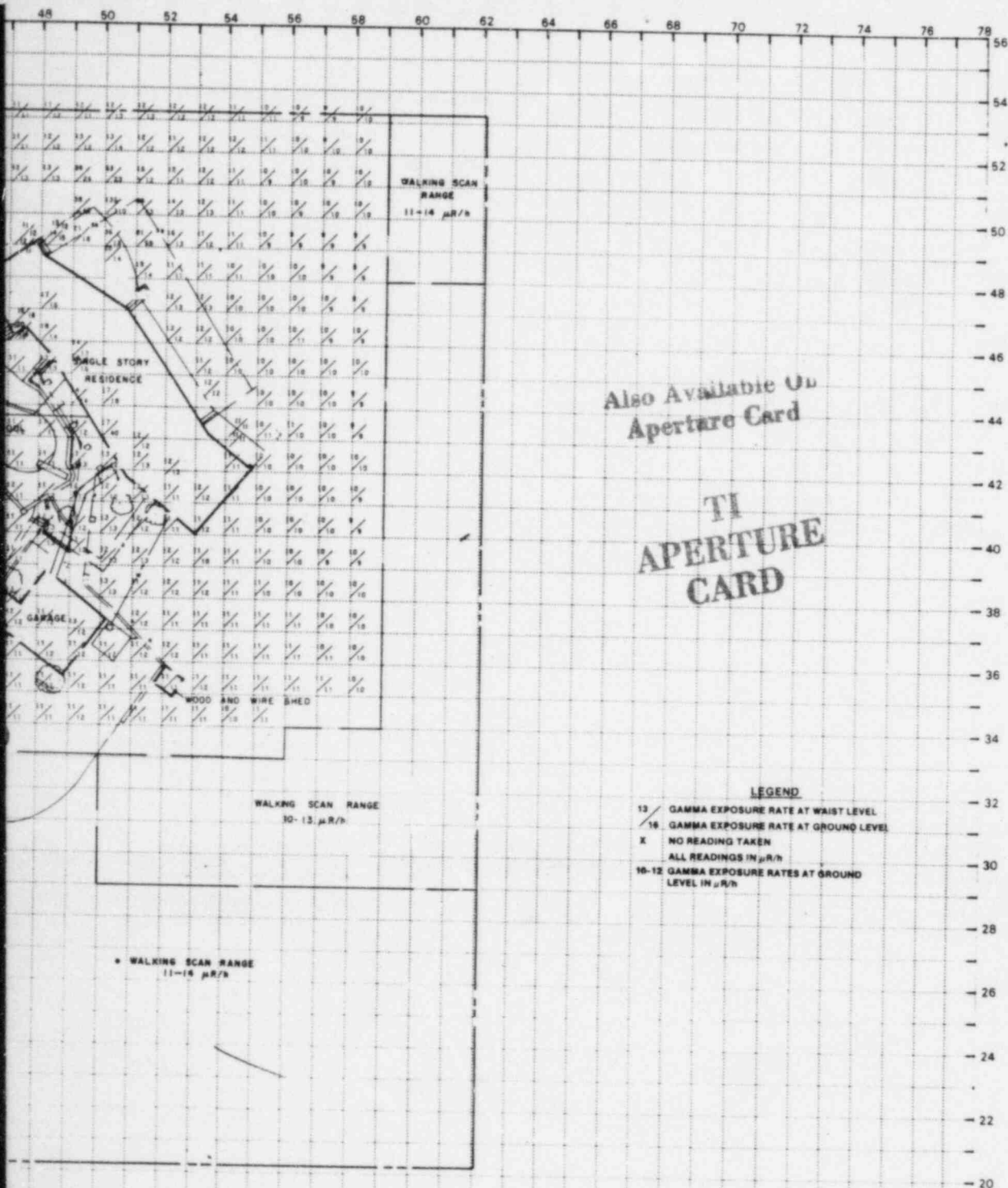
This drawing is prepared for the U.S. Department of Energy and is not to be used for any other purpose without the written consent of the U.S. Department of Energy. It is the property of the U.S. Department of Energy and is loaned to you for your information only. It is not to be reproduced or distributed without the written consent of the U.S. Department of Energy.

FIGURE 2.2a SITE PLAN

U.S. DEPARTMENT OF ENERGY	FILE NO. 67-09256-RS
PROJECT: 164 LITTLE PARK ROAD	PROJECT NO. 67-09256-RS
LOCATION: GRAND JUNCTION, COLORADO	DATE: 1/1/85
BY: W.H.L./J.E.S.	SCALE: 1" = 20'
CHECKED BY: J.D.S./J.E.S.	SHEET: 1 OF 2

TAY. SCHED. NO. 2945-332-00-023





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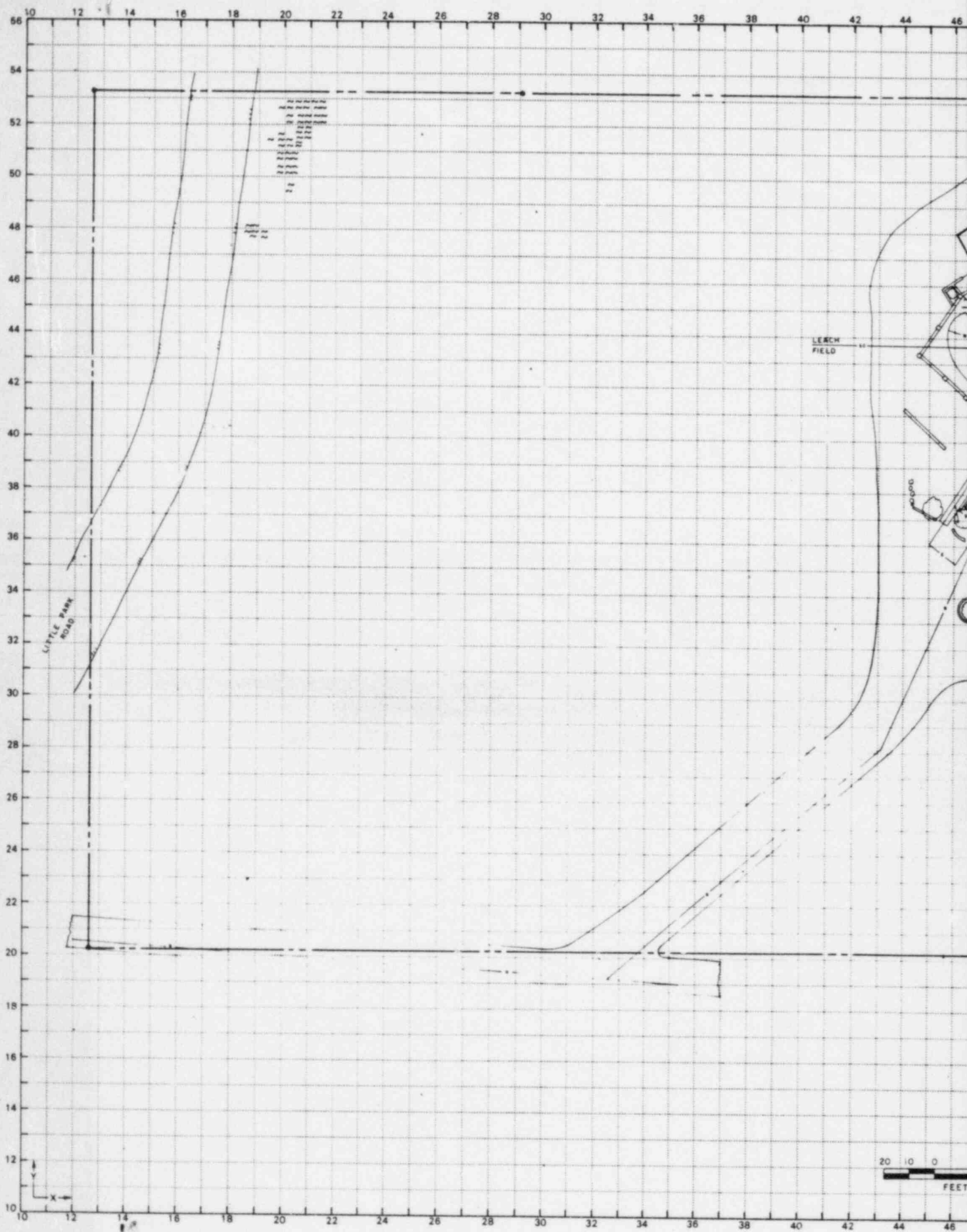
- 13 / GAMMA EXPOSURE RATE AT WAIST LEVEL
- 16 / GAMMA EXPOSURE RATE AT GROUND LEVEL
- X NO READING TAKEN
- ALL READINGS IN $\mu\text{R/h}$
- 10-12 GAMMA EXPOSURE RATES AT GROUND LEVEL IN $\mu\text{R/h}$

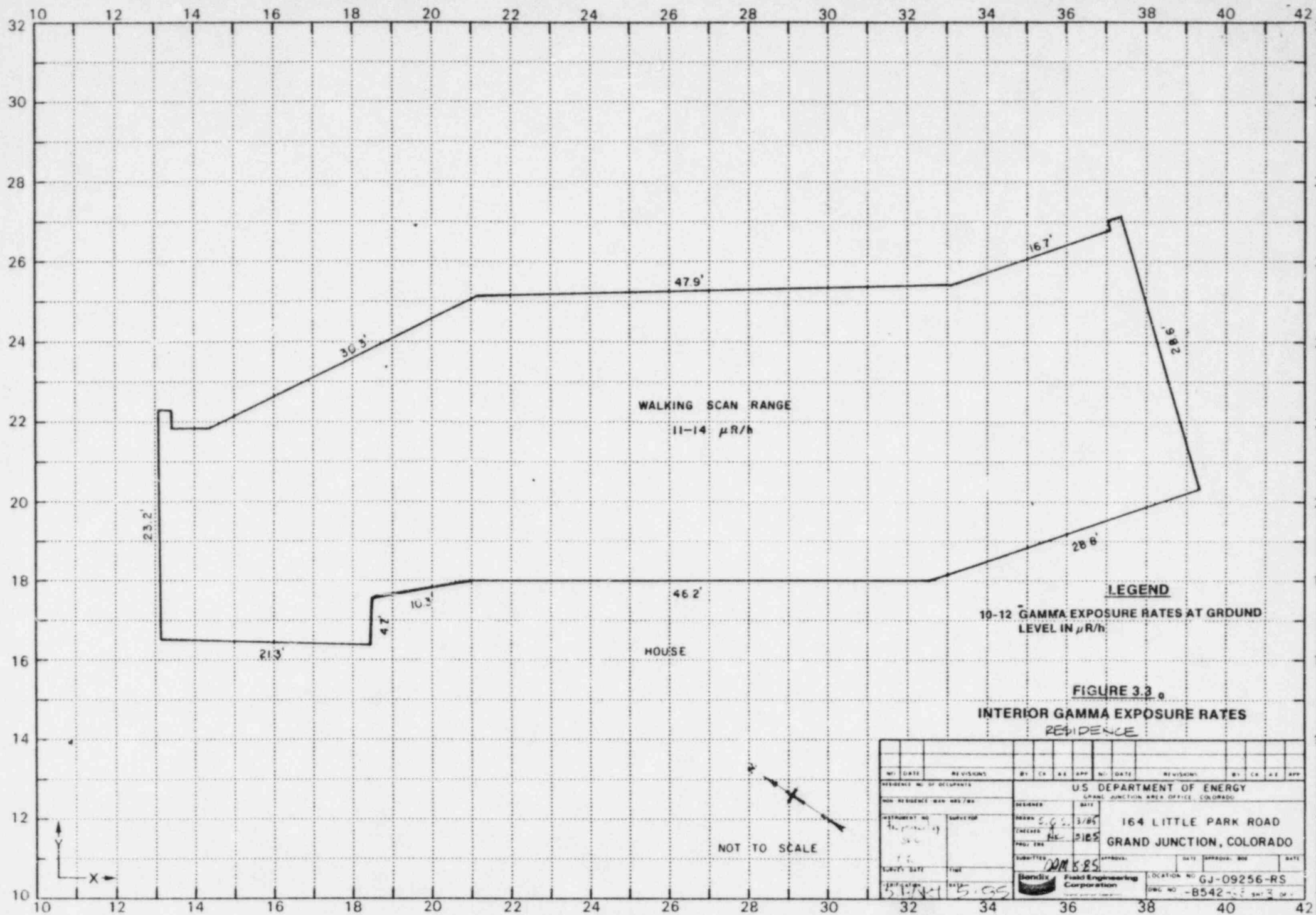
FIGURE 3.1
EXTERIOR GRID-POINT EXPOSURE RATES

This drawing, prepared for the Uranium Mill Tailings Remedial Action Project, is for the sole use of the U.S. Department of Energy and its contractors. It is not to be reprinted or an improvement without prior and in writing to be submitted for the establishment of funds, building, or other future improvement work.

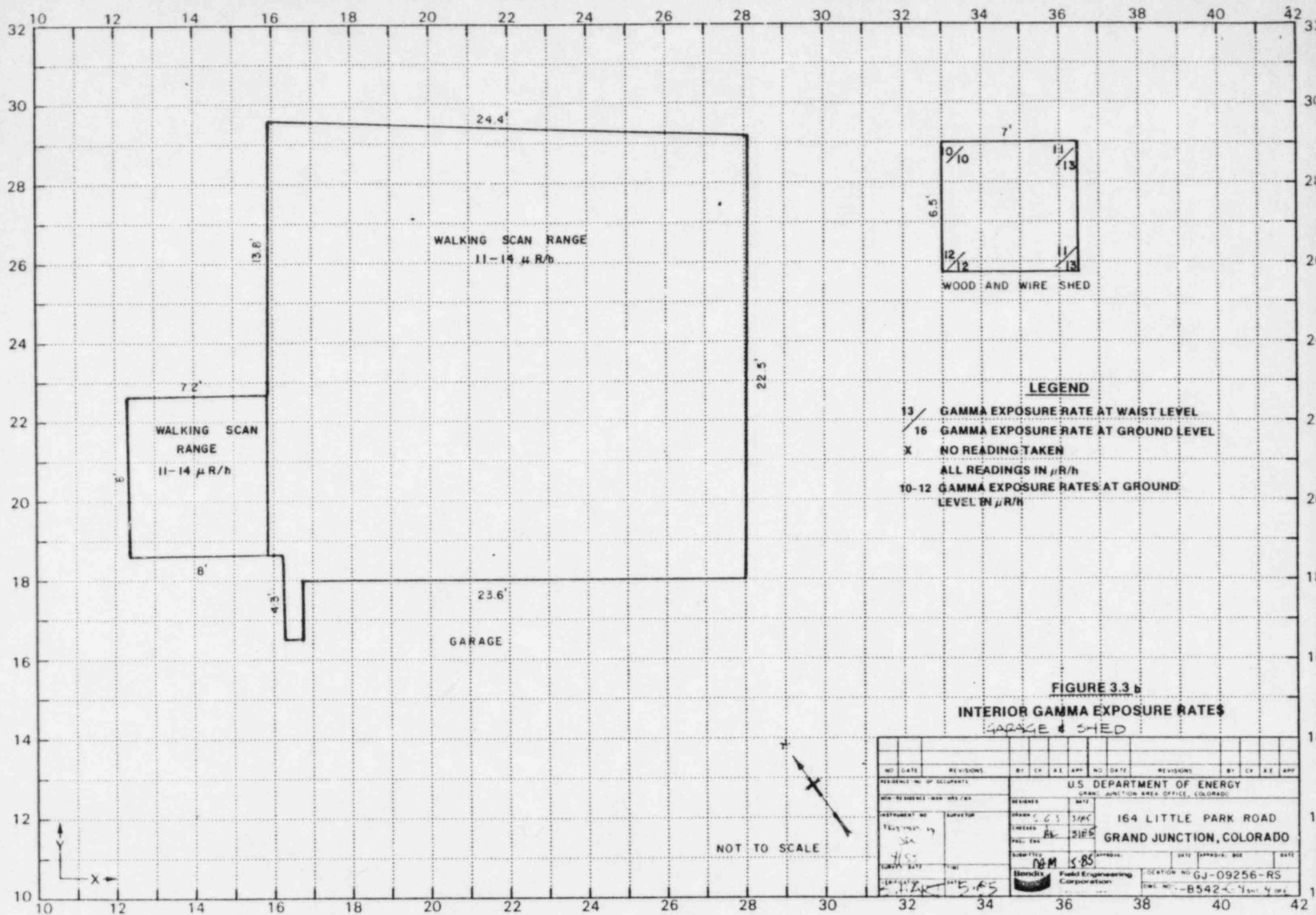
NO. DATE REVISIONS		BY CR A.E. APP	NO. DATE REVISIONS		BY CR A.E. APP
U.S. DEPARTMENT OF ENERGY GRAND JUNCTION AREA OFFICE, COLORADO					
DESIGNED BY S.G.S. 1/85		CHECKED BY S.G.S. 1/85		DATE 1/85	
SUBMITTED BY S.G.S. 1/85		APPROVED BY S.G.S. 1/85		DATE 1/85	
PROJECT NO. 306		LOCATION NO. GJ-09256-RS		SHEET NO. 3-0542-G1	
CONTRACT NO. 3-0542-G1		SHEET NO. 3-0542-G1		SHEET NO. 3-0542-G1	

8507150429-01

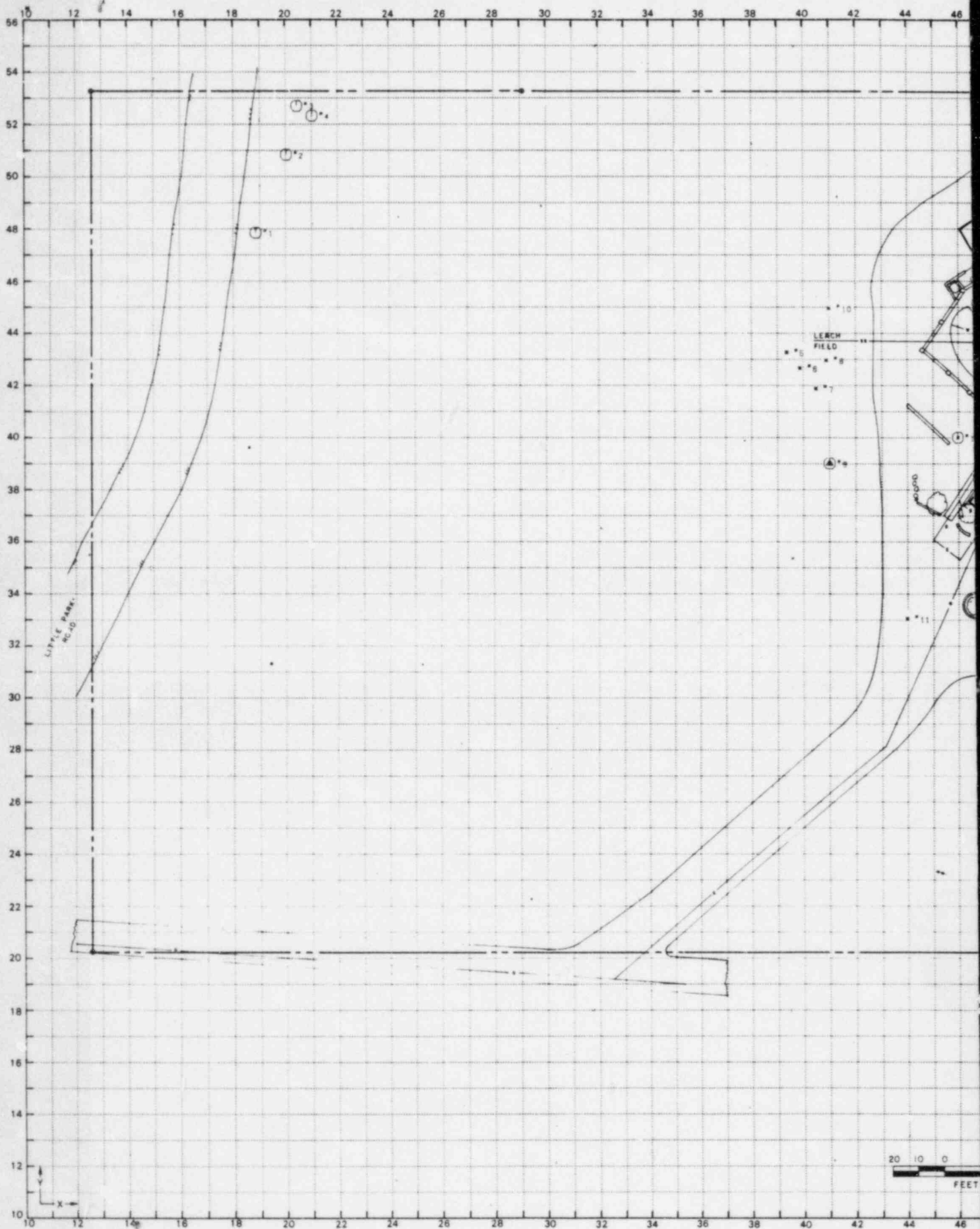


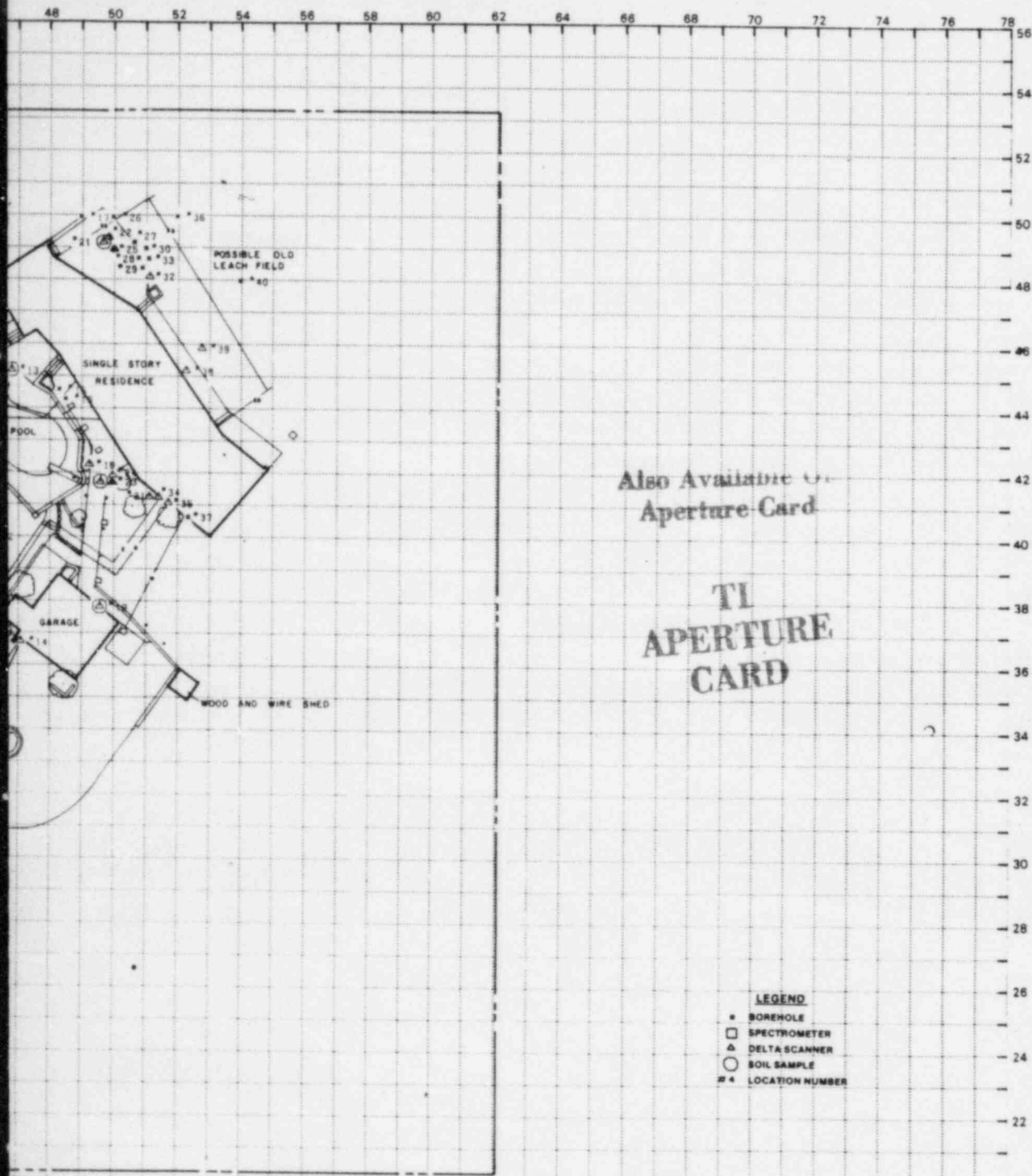


NO.	DATE	REVISIONS	BY	CH	AE	APP	NO.	DATE	REVISIONS	BY	CH	AE	APP
RESIDENCE NO. OF OCCUPANTS													
NON-RESIDENCE MAN NO. / NO.													
<div style="display: flex; justify-content: space-between;"> <div> <p>DESIGNER</p> <p>DATE</p> </div> <div> <p>DESIGNED</p> <p>DATE</p> </div> </div>													
<div style="display: flex; justify-content: space-between;"> <div> <p>ESTIMATE NO.</p> <p>DATE</p> </div> <div> <p>SURVEY NO.</p> <p>DATE</p> </div> </div>													
<div style="display: flex; justify-content: space-between;"> <div> <p>SURVEY DATE</p> <p>TIME</p> </div> <div> <p>SUBMITTER</p> <p>DATE</p> </div> </div>													
<div style="display: flex; justify-content: space-between;"> <div> <p>CERTIFICATION</p> <p>DATE</p> </div> <div> <p>APPROVAL</p> <p>DATE</p> </div> </div>													
<div style="display: flex; justify-content: space-between;"> <div> <p>U.S. DEPARTMENT OF ENERGY</p> <p>GRAND JUNCTION AREA OFFICE, COLORADO</p> </div> <div> <p>164 LITTLE PARK ROAD</p> <p>GRAND JUNCTION, COLORADO</p> </div> </div>													
<div style="display: flex; justify-content: space-between;"> <div> <p>LOCATION NO.</p> <p>DATE</p> </div> <div> <p>APPROVAL NO.</p> <p>DATE</p> </div> </div>													
<div style="display: flex; justify-content: space-between;"> <div> <p>OWC NO.</p> <p>DATE</p> </div> <div> <p>OWC NO.</p> <p>DATE</p> </div> </div>													



NO. DATE		REVISIONS		BY	CHK	APP	NO.	DATE	REVISIONS		BY	CHK	APP	NO.	DATE
RESIDENTIAL NO. OF OCCUPANTS															
U.S. DEPARTMENT OF ENERGY GRAND JUNCTION AREA OFFICE, COLORADO															
164 LITTLE PARK ROAD GRAND JUNCTION, COLORADO															
INSTRUMENT NO.		SURVEYOR		DESIGNED		DATE		CHECKED		DATE		APPROVED		DATE	
4150		JAN 19		G. S.		3/85		J. E.		3/85		R. M.		5/85	
CERT. NO.		DATE		SUBMITTED		APPROVED		DATE		APPROVED		DATE		DATE	
5-12-85		5-85		5-85		5-85		5-85		5-85		5-85		5-85	
LOCATION NO. GJ-09256-RS															
DOW. NO. -B542-4-7-85															





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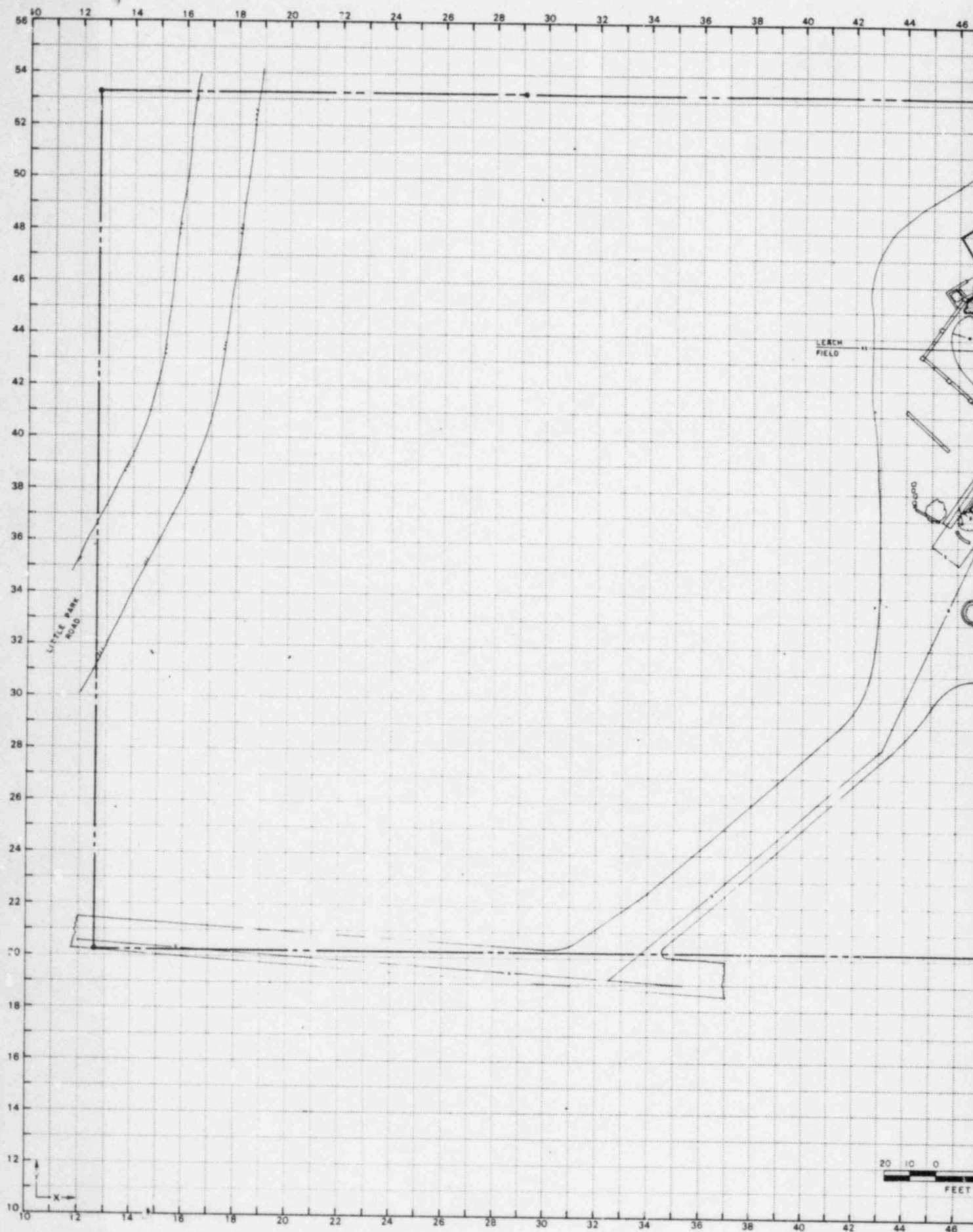
LEGEND

- BOREHOLE
- SPECTROMETER
- △ DELTA SCANNER
- SOIL SAMPLE
- # LOCATION NUMBER

FIGURE 3.4
EXTERIOR SAMPLE LOCATIONS

NO. DATE REVISIONS BY CK AE APP NO. DATE REVISIONS BY CK AE APP		U.S. DEPARTMENT OF ENERGY GRAND JUNCTION AREA OFFICE, COLORADO	
DESIGNED BY J. C. C.		164 LITTLE PARK ROAD GRAND JUNCTION, COLORADO	
CHECKED BY J. C. C.		DATE 1/85	
DRAWN BY J. C. C.		DATE 1/85	
APPROVED BY J. C. C.		DATE 1/85	
Bentley Field Engineering Corporation		LOCATION NO. GJ-09256-RS	
DATE 1/4/85		DWS NO. 3-0542-GS SH 3 OF 6	

8507150429-03



3/85

DOE ID NO. GJ 09256-RS

Date 5/1/85

U.S. DEPARTMENT OF ENERGY
URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT
GRAND JUNCTION VICINITY PROPERTIES

Official Survey Report

Property Address 164 Little Park Road
Property Owner James Temple
Address of Owner (if different from above) _____
Report Prepared By James D. Garcia

I. PRESENCE/ABSENCE OF RESIDUAL RADIOACTIVE MATERIALS

1 1 No evidence of residual radioactive material on surveyed property.

1XXX 1 Residual radioactive materials found at the following locations:

1XXX 1 In open areas.

1XXX 1 Under or around exterior improvements.

1XXX 1 Under or around a typically nonoccupied structure.

1XXX 1 Under or around a typically occupied structure.

II. RESULTS OF RADIOLOGIC ASSESSMENT

1 1 Levels of radiation from residual radioactive materials, if any, do not exceed EPA Standards and no action is required under the Uranium Mill Tailings Remedial Action Project.

1XXX 1 Levels of radiation from residual radioactive materials exceed EPA Standards such that Remedial Action is recommended and will be accomplished, with your consent, as soon as budget and schedule permit.

cc:

G. A. Franz, III, GJ/CDH

J. Themelis, Mgr. UMTRA Proj. Off.

HIG = 14 uR/h
HOG = 633 uR/h

April 30, 1985

Colorado Department of Health
222 South 6th Street
Grand Junction, CO 81501

ATTN: Jon Luellen

Dear Jon:

The following comments are in order in regard to the Technical Review held on April 9, 1985 for DOE ID No. GJ-09256-RS (164 Little Park Road):

1. Sample Location #19 will be labelled on the final copy of Figure 3.4.
2. The RDC level information has been corrected on all background data to read 0.017 gross working level.
3. It will be noted in the final REA that the areas you have pointed out have already had remedial action performed on them. Attempts were made to locate the sewer line without success. An attempt will be made to locate it during remedial action.
4. The elevated readings at grid point 500490 were due to slimes found in this area.
5. There is no septic tank or abandoned cistern located near grid point 500490.
6. The depths of contamination in boreholes #28 and #29 have been called according to current Bendix procedure.

Thank you for your time and comments. If you have any questions, please call me at 242-8621, ext. 475.

Very truly yours,

James D. Garcia
RAD Technician

ALLIED Bendix
Aerospace

Bendix Field Engineering Corporation
Grand Junction Operations
Grand Junction, Colorado 81501

DATE: April 25, 1985
TO: Files
FROM: James D. Garcia
SUBJECT: Team Leader Notes - GJ-09256-RS

Address: 164 Little Park Road

Owner: Norman James and C.M. Temple

Telephone: 242-8556

Team Members

J.D. Garcia (Team Leader)	S. Larsen
S. Southern	D. Martz
M. Dexter	N. Wallace
C. Adams	B. Beltz
K. Cary	P. Hardy

Instruments

Total Count - C-3573, C-1062, C-3959
Scintillometer - C-1205, C-1127, C-3510, C-1128, C-1185, C-1149,
Delta - C-3935, C-3937
Downhole Spectrometer - C-0498

Date: March 18, 1985

This property is very hard to grid with all of the obstructions, and the nature of the terrain. I took until 2:00 to grid the area around the house. We will walk scan the rest of the property tomorrow.

Team Leader Notes
James D. Garcia
GJ-09256-RS
April 25, 1985
Page 2

At about 2:00 P.M. Robert Beltz slipped and fell off of a section of the deck. He fell into a pile of rocks. He said that his stomach and side hurt so I had him rest. We filled out an incident report and I sent him back to the compound. He said he was well enough to drive himself so I sent him back alone.

In several locations we had problems with our auger holes caving in. For some reason the background readings in this area are extremely low.

Date: March 19, 1985

Team Members

J.D. Garcia (Team Leader)
D. Martz
K. Cary

Instruments

Scintillometer - C-3510
Delta - C-3935
Total Count - C-1062

Dave Martz took several delta readings around the primary structure. While doing a walk scan west of the primary structure Kent Cary began getting elevated readings along the barr ditch next to Little Park Road. It seems to be some sort of natural radiation. We gridded the area taking in all of the ditch that is on this property. We located a small area of contamination and will be taking soil samples to explain what it is.

At approximately 4:00, while augering I hit a water line. The water line wasn't shown on the map. I shut off the water and called the compound to request a plumber. I spoke to David Dille and he contacted Dave Mackler for me. We dug up the area around the leak and waited for the plumber. The plumber arrived at about 5:00 P.M. and repaired the leak.

Team Leader Notes
James D. Garcia
GJ-09256-RS
April 25, 1985
Page 3

Date: March 20, 1985

I was unable to return to repair the damage done to the area around the water line so Kent Cary went back to insulate the water lines and rebury the lines. He also replaced the flagstones in the sidewalk.

Date: March 22, 1985

I will try to contact Mr. Temple to see if I can take a few more readings on Saturday.

Date: March 23, 1985

Team Members

J.D. Garcia (Team Leader)
R. Vialpando
D. Martz

Instruments

Delta - C-3943
Total Count - C-4006

I took delta readings at the planter west of the primary structure, and also east of the main structure on the flagstone walkway and off of it a little way.

I augered and logged a hole near the septic tank. I also took a soil sample from the hole because of the elevated readings I was getting in the hole. I believe the material down the length of the hole is natural.

Mr. Temple said that there is a trench going from the garage to the house that contains several water lines and electrical lines. I have had it drawn onto the map for reference.

While the water line was uncovered for repairs I took a soil sample at 40 to 46 inches because I believe they filled the trench with tailing sand to pack around the utility lines.

The soil sample results from along Little Park Road show that the elevated readings were not from tailings, also the results from the soil sample taken in the utility trench do show contamination at 40 to 46 inches.

Sent to CDH on 4/3/85 awaiting Technical Review.

Technical Review on 4/9/85 with Jon Luellen, he was wondering about the sewer line. When the remedial action was performed he said that they found high readings where the sewer line was located. The sewer line on the map is incorrect, I believe by what Mr. Temple told me.

Date: April 12, 1985

I called Mr. Temple and asked him about the sewer line and he told me it was located in a different place. He is going to try to locate some maps that show where the actual sewer line is located.

Date: April 18, 1985

I spoke with Mr. Temple and he showed me some photographs he had kept from when remedial action was performed.

Mr. Temple also stated that the low point of his sewer system is in the bathroom in his garage, he illustrated for me where he thinks the sewer line is. I will go and try to locate the sewer line in this location. He doesn't want anymore auger holes so we will have to dig to locate the sewer line.

Team Leader Notes
James D. Garcia
GJ-09256-RS
April 25, 1985
Page 5

Mr. Temple said he would be home to show me where exactly he thinks the line goes on Thursday, 25 April.

Date: April 25, 1985

Team Members

J.D. Garcia (Team Leader)
D. Dow

Instruments

C-3941

At the location Mr. Temple showed me. We attempted to locate the sewer line with no success. Dan Dow and myself performed delta readings at one foot intervals until we couldn't dig any further because of obstructions.

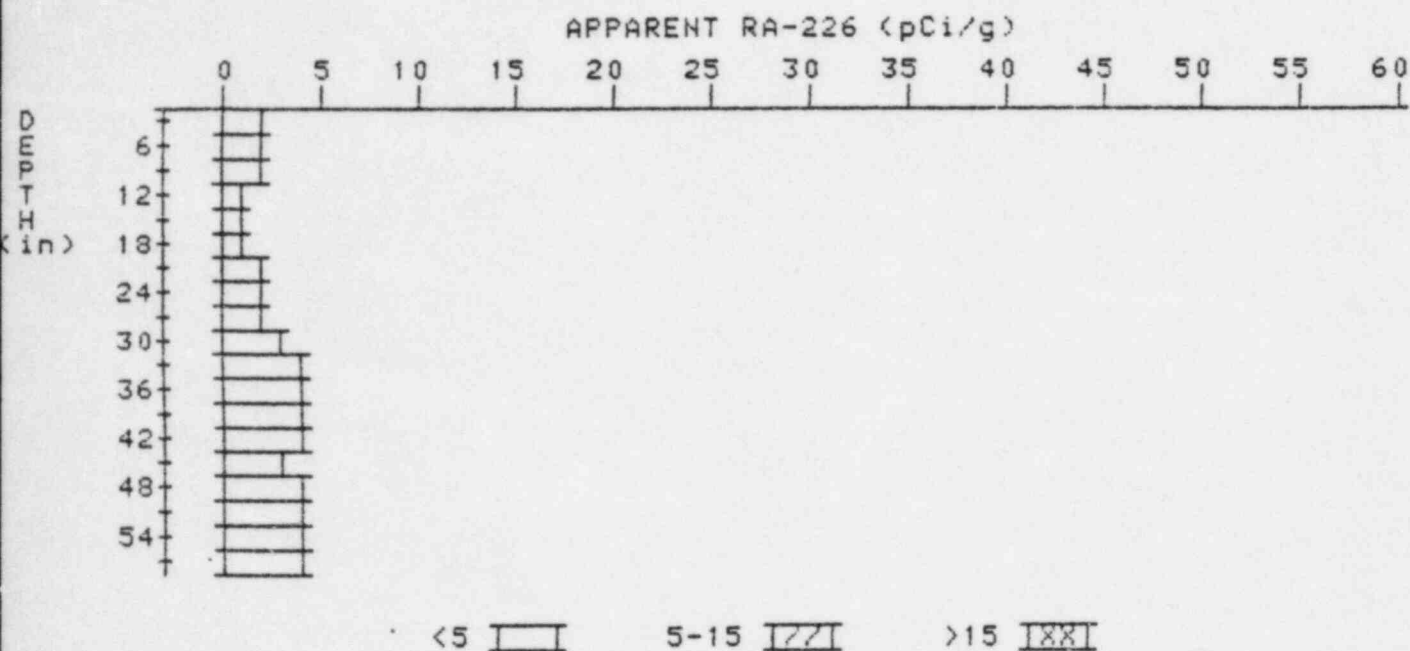
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

5

PROPERTY NUMBER: GJ-09236-R3

HOLE NUMBER: 5

LOCATION: 394433

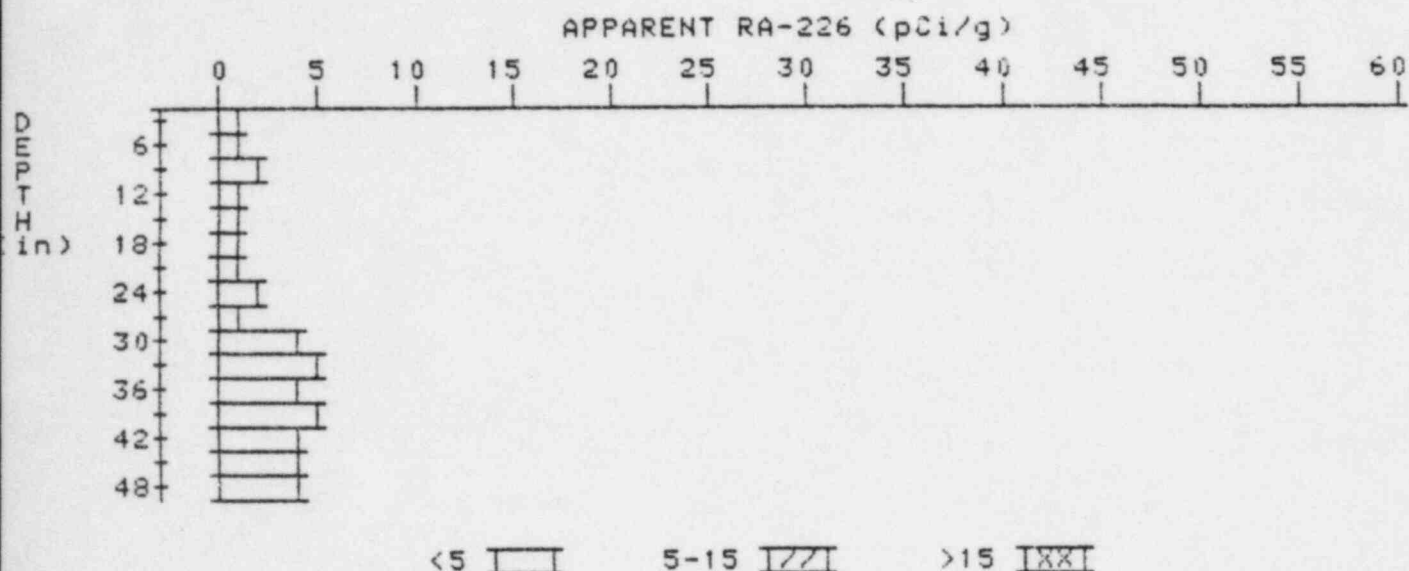


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	1.6	1.6
6	1.7	2.1
9	1.6	1.6
12	1.5	1.5
15	1.4	1.0
18	1.5	1.3
21	1.7	1.5
24	2.0	1.6
27	2.5	2.3
30	3.1	3.5
33	3.5	3.7
36	3.8	4.3
39	3.8	4.0
42	3.7	3.9
45	3.5	2.6
48	3.8	4.0
51	4.0	4.0
54	4.2	4.4

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

6

PROPERTY NUMBER: GJ-09256-RS
HOLE NUMBER: 6
LOCATION: 399427

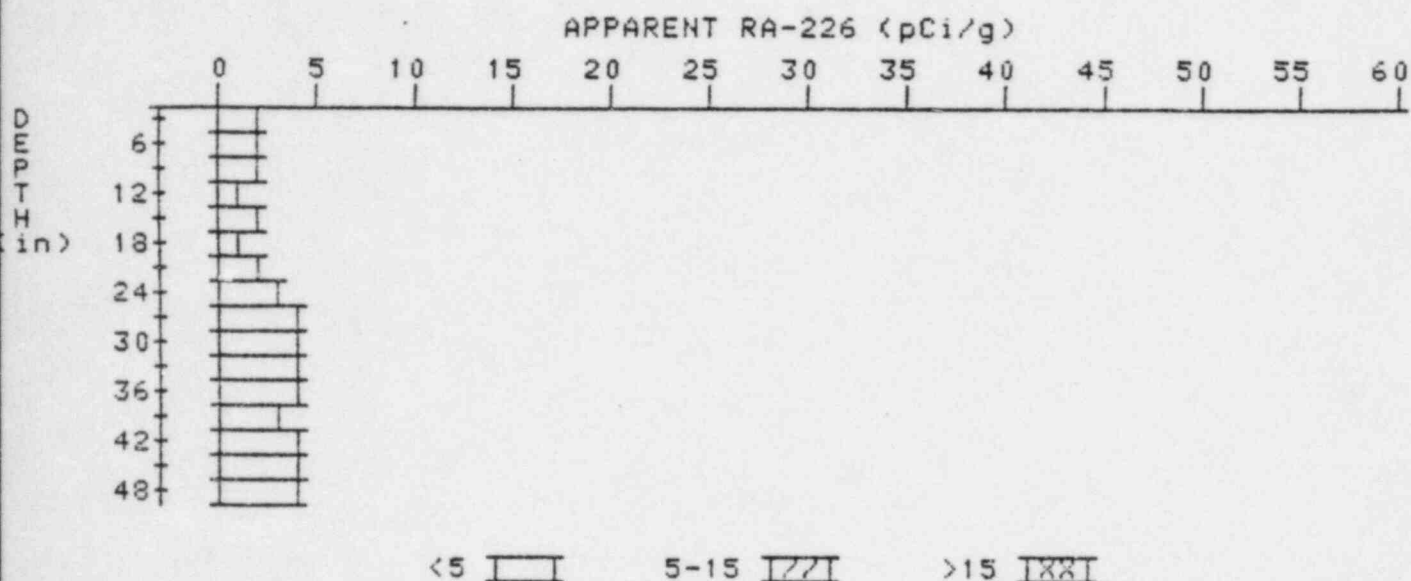


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	1.4	1.4
6	1.3	1.1
9	1.3	1.7
12	1.1	.7
15	1.1	.9
18	1.2	1.0
21	1.4	1.0
24	1.8	1.6
27	2.3	1.2
30	3.4	4.5
33	3.9	4.6
36	4.0	3.8
39	4.2	4.6
42	4.2	4.4
45	4.1	3.9
48	4.1	4.1

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

7

PROPERTY NUMBER: GJ-09256-RS
HOLE NUMBER: 7
LOCATION: 405419

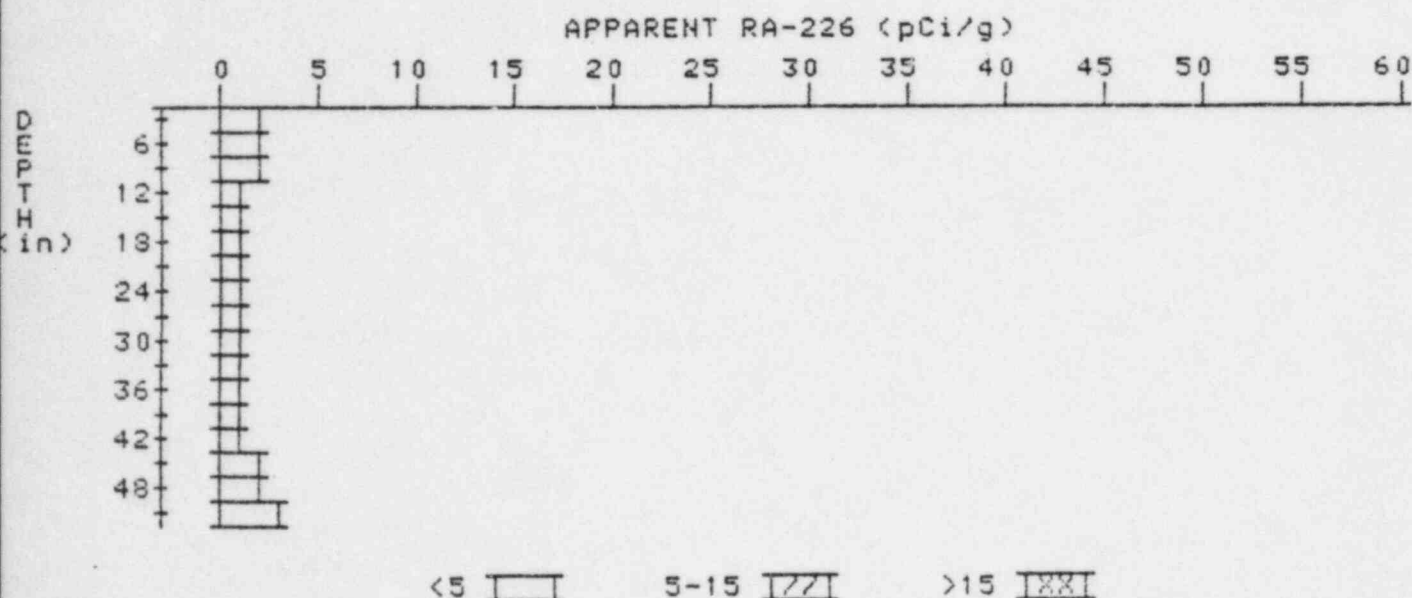


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	1.6	1.6
6	1.6	1.6
9	1.6	1.6
12	1.6	1.2
15	1.8	2.0
18	1.9	1.4
21	2.3	1.9
24	2.9	3.1
27	3.4	3.9
30	3.6	3.8
33	3.7	3.7
36	3.8	4.3
39	3.6	3.1
42	3.7	3.7
45	3.8	3.8
48	3.9	3.9

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

8

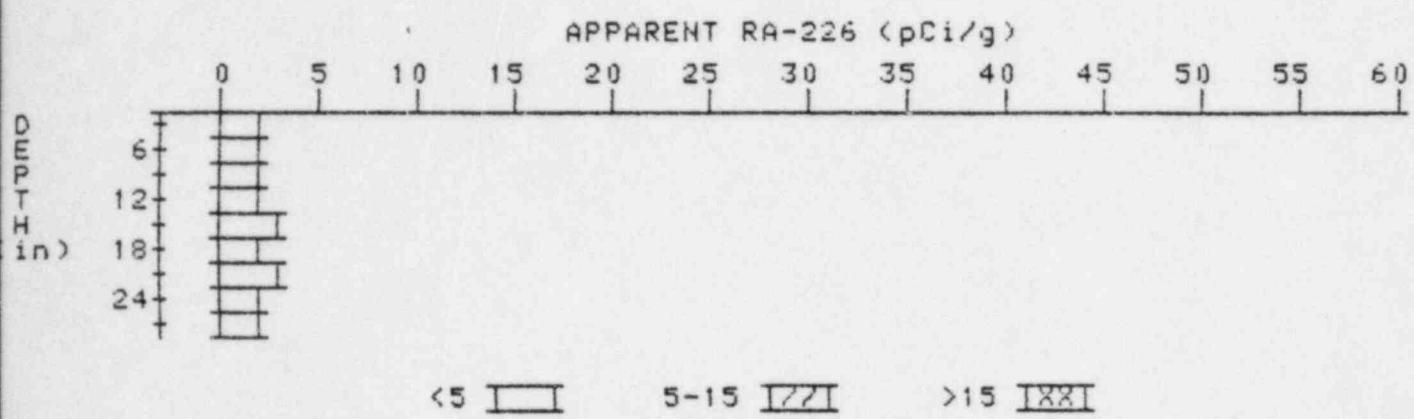
PROPERTY NUMBER: GJ-09256-RS
HOLE NUMBER: 8
LOCATION: 409430



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	1.6	1.6
6	1.6	1.8
9	1.5	1.7
12	1.3	1.1
15	1.2	1.4
18	1.0	.8
21	.9	.7
24	.9	.9
27	.9	.9
30	.9	.7
33	1.0	1.0
36	1.1	1.1
39	1.2	.8
42	1.5	1.3
45	1.9	1.9
48	2.3	2.3
51	2.7	2.7

APPARENT RADIUM-226 CONCENTRATION 9 DECONVOLUTION GRAPH

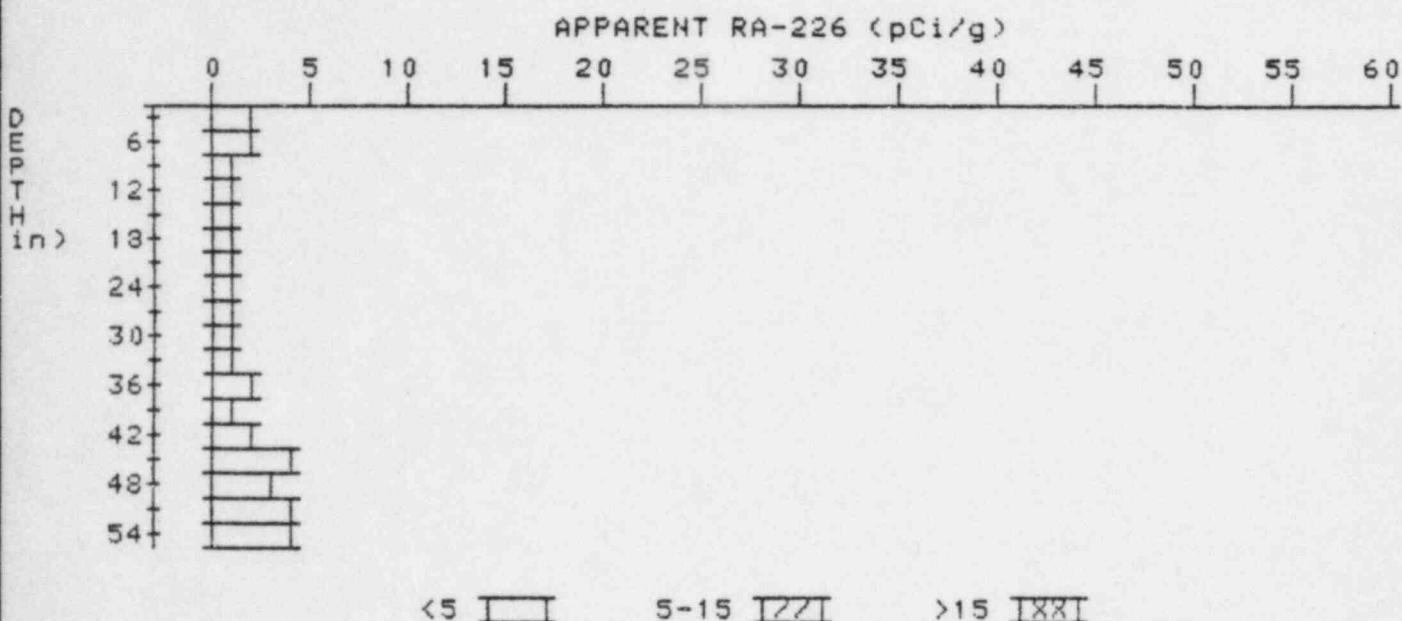
PROPERTY NUMBER: GJ-09236-RS
HOLE NUMBER: 9
LOCATION: 410390



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.1	2.1
6	2.1	1.9
9	2.2	2.2
12	2.3	2.3
15	2.4	2.6
18	2.4	2.4
21	2.4	2.8
24	2.2	1.7
27	2.3	2.3

APPARENT RADIUM-226 CONCENTRATION 10 DECONVOLUTION GRAPH

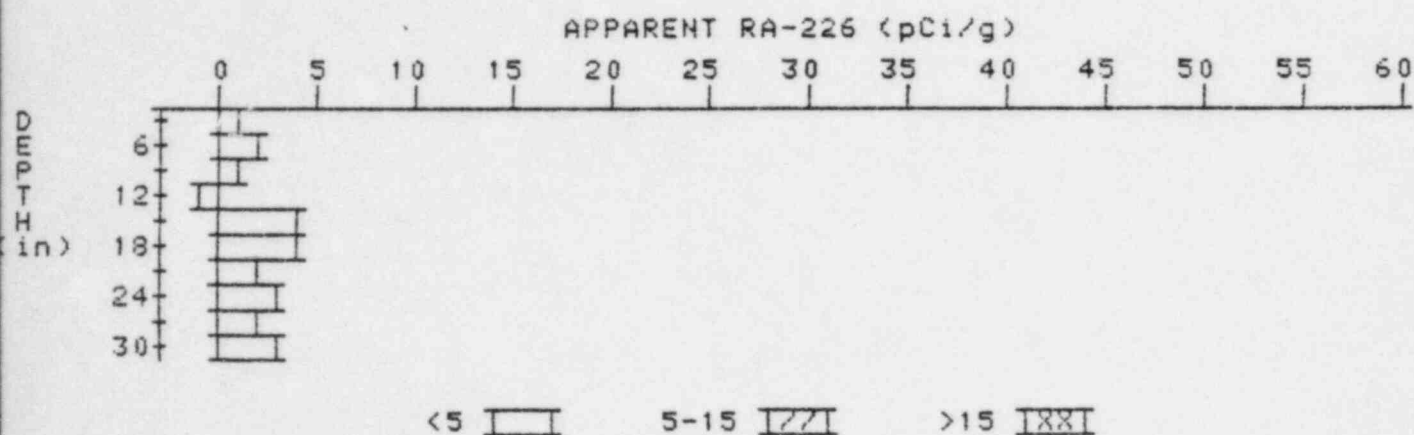
PROPERTY NUMBER: GJ-09256-RS
HOLE NUMBER: 10
LOCATION: 410450



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	1.6	1.6
6	1.6	1.8
9	1.5	1.5
12	1.4	1.2
15	1.4	1.4
18	1.4	1.4
21	1.4	1.4
24	1.4	1.4
27	1.4	1.4
30	1.4	1.2
33	1.5	1.3
36	1.7	1.5
39	2.0	1.5
42	2.6	2.4
45	3.3	4.2
48	3.5	3.1
51	3.9	4.1
54	4.2	4.2

APPARENT RADIUM-226 CONCENTRATION 11 DECONVOLUTION GRAPH

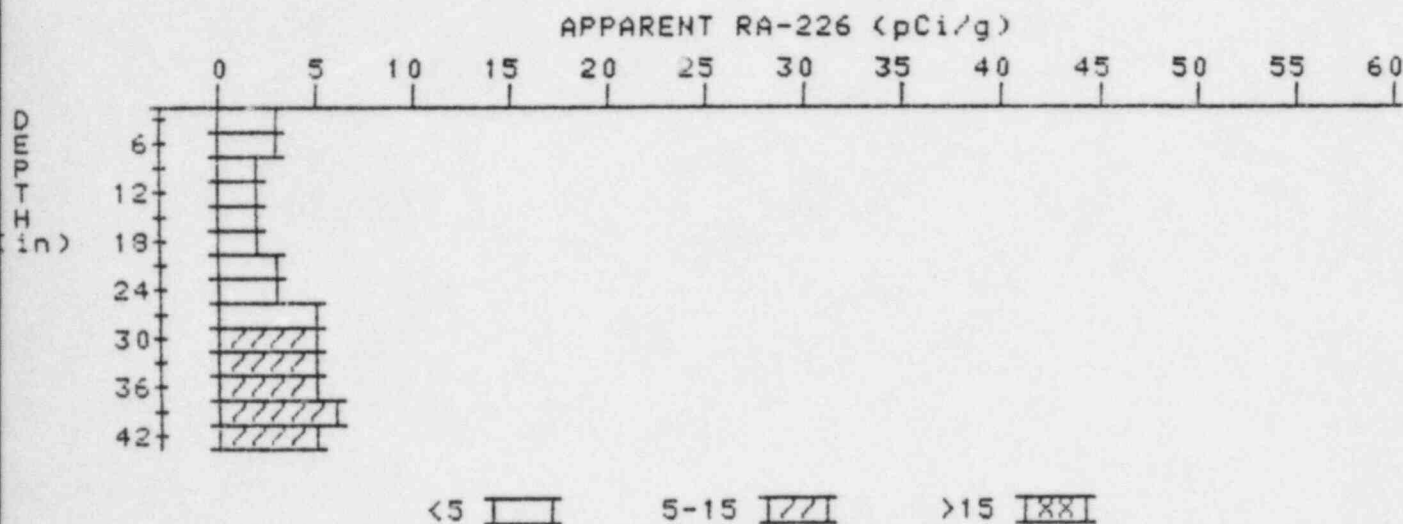
PROPERTY NUMBER: GJ-09256-RS
HOLE NUMBER: 11
LOCATION: 440330



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	1.1	1.1
6	1.4	2.1
9	1.3	1.5
12	1.1	-1.7
15	2.5	4.3
18	2.9	4.1
21	2.6	2.1
24	2.6	2.6
27	2.6	2.4
30	2.7	2.7

APPARENT RADIUM-226 CONCENTRATION 12 DECONVOLUTION GRAPH

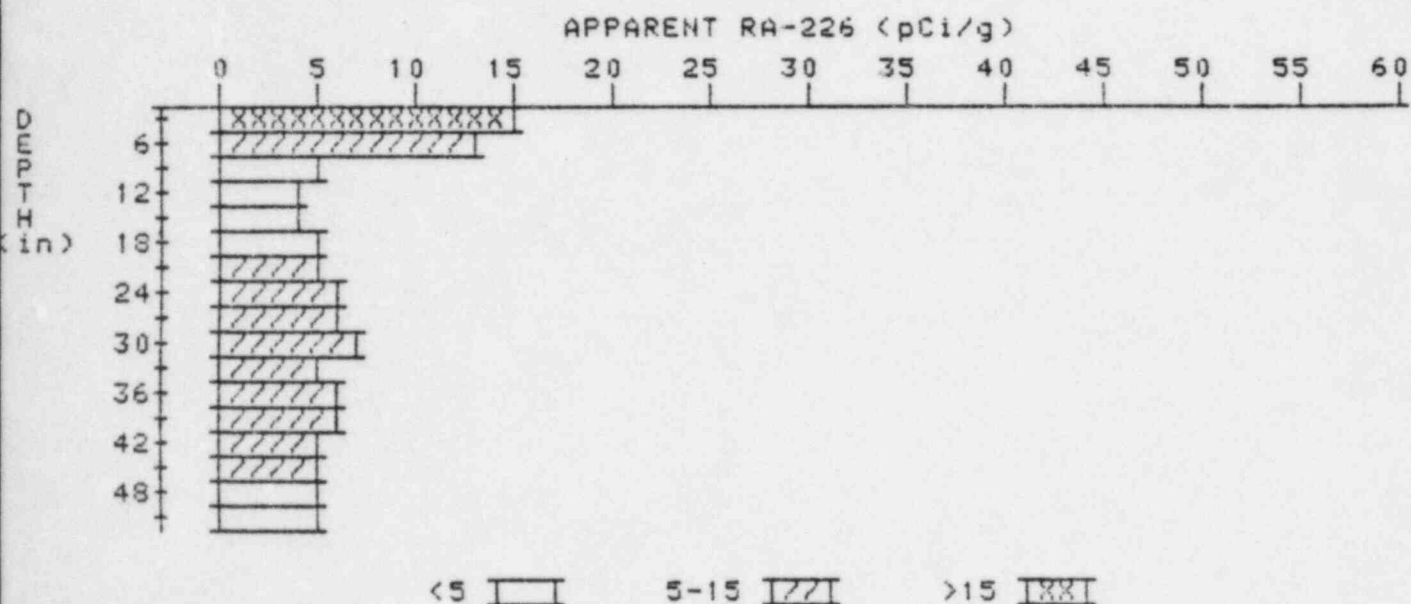
PROPERTY NUMBER: GJ-09236-RS
HOLE NUMBER: 12
LOCATION: 460400



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.8	2.8
6	2.7	3.1
9	2.4	1.9
12	2.4	2.4
15	2.4	1.9
18	2.7	2.3
21	3.2	3.2
24	3.7	3.3
27	4.4	4.8
30	4.9	5.4
33	5.1	5.1
36	5.3	5.5
39	5.4	5.8
42	5.3	5.3

APPARENT RADIUM-226 CONCENTRATION 15 DECONVOLUTION GRAPH

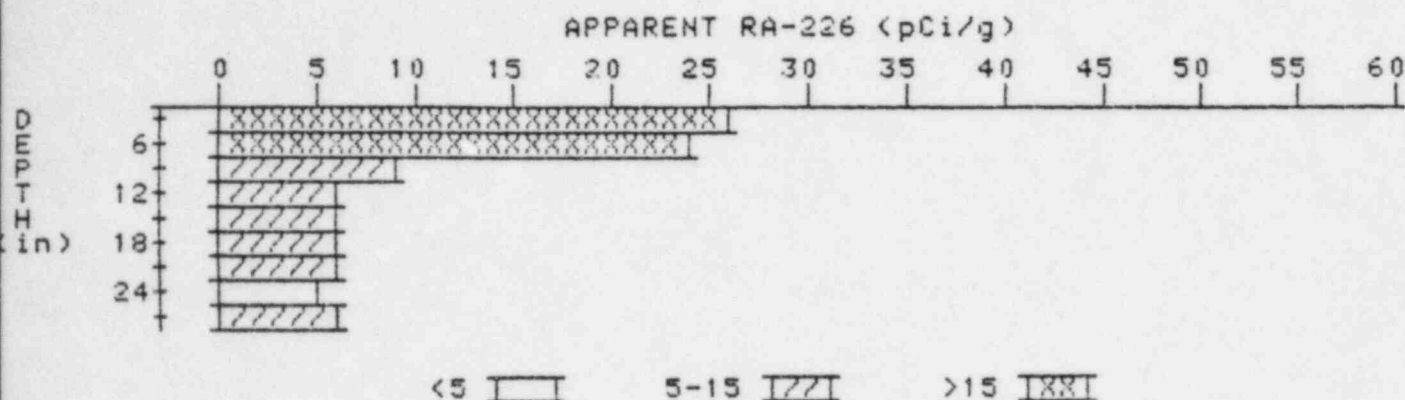
PROPERTY NUMBER: GJ-09256-R3
HOLE NUMBER: 15
LOCATION: 483446



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	15.1	15.1
6	11.9	13.0
9	8.1	4.9
12	6.1	4.1
15	5.2	3.8
18	5.1	4.6
21	5.3	5.1
24	5.6	5.8
27	5.8	6.0
30	5.9	6.6
33	5.6	5.2
36	5.5	5.5
39	5.4	5.6
42	5.2	5.2
45	5.0	5.0
48	4.8	5.0
51	4.5	4.5

APPARENT RADIUM-226 CONCENTRATION 16 DECONVOLUTION GRAPH

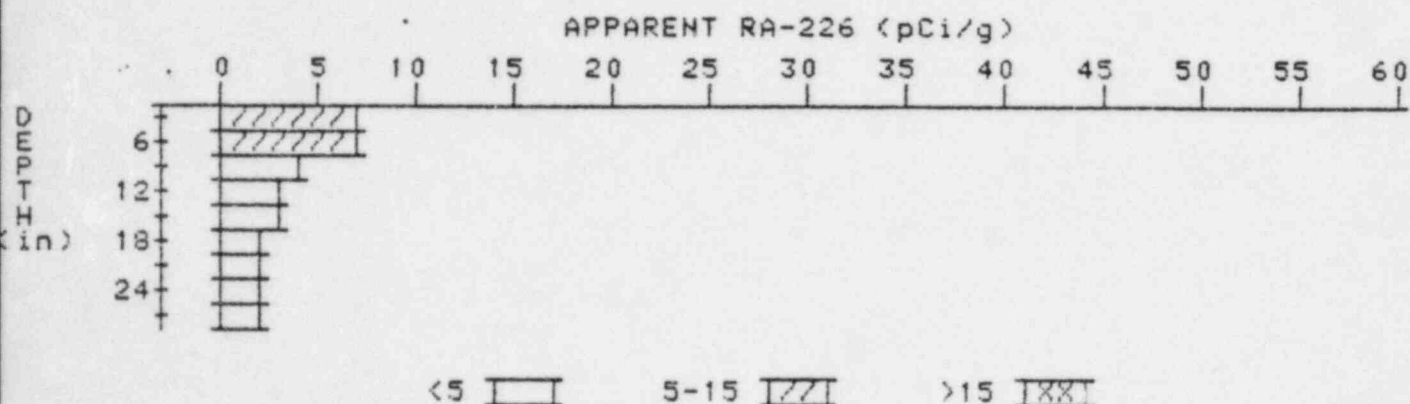
PROPERTY NUMBER: GJ-09256-RS
HOLE NUMBER: 16
LOCATION: 485443



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	26.0	26.0
6	20.8	23.6
9	14.0	9.4
12	9.8	5.9
15	7.3	6.0
18	6.8	5.9
21	6.3	6.3
24	5.8	4.7
27	5.9	5.9

APPARENT RADIUM-226 CONCENTRATION 17 DECONVOLUTION GRAPH

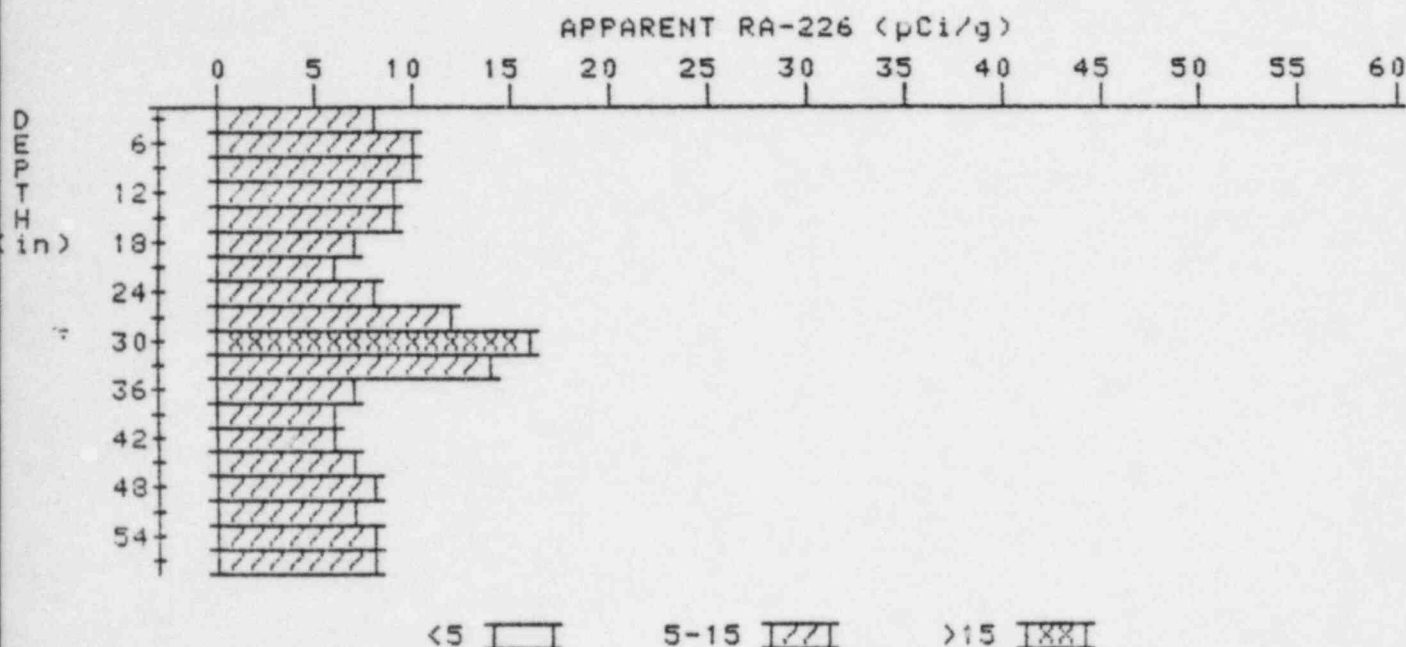
PROPERTY NUMBER: GJ-09256-RS
HOLE NUMBER: 17
LOCATION: 490500



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	7.1	7.1
6	6.2	7.3
9	4.7	4.0
12	3.6	2.7
15	3.0	2.6
18	2.6	2.2
21	2.4	2.4
24	2.2	1.8
27	2.2	2.2

APPARENT RADIUM-226 CONCENTRATION 23 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-09256-RS
HOLE NUMBER: 23
LOCATION: 500417

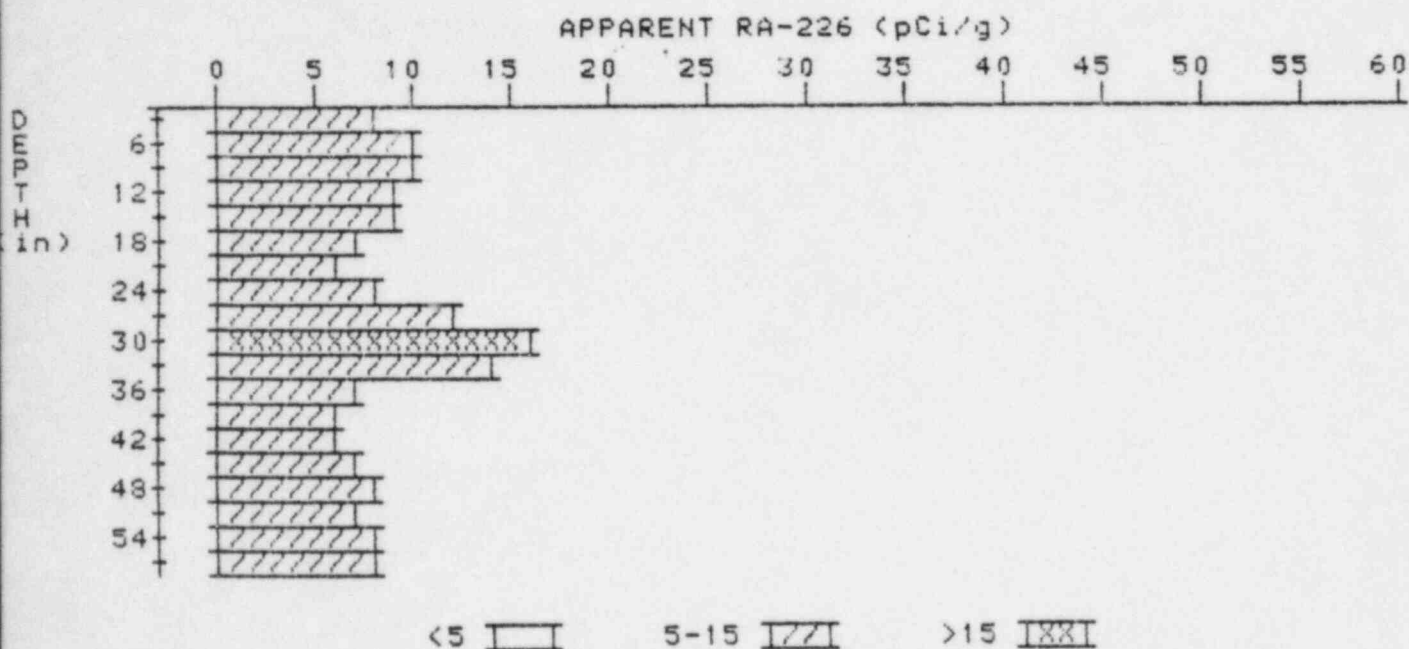


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	7.8	7.8
6	8.9	10.1
9	9.3	10.4
12	9.1	9.3
15	8.8	9.3
18	8.2	7.1
21	8.2	6.1
24	9.4	8.3
27	11.2	12.3
30	12.4	16.3
33	11.4	14.1
36	8.9	6.6
39	7.7	6.5
42	7.2	6.1
45	7.3	6.9
48	7.6	8.1
51	7.6	7.2
54	7.8	8.3

APPARENT RADIUM-226 CONCENTRATION 25

DECONVOLUTION GRAPH

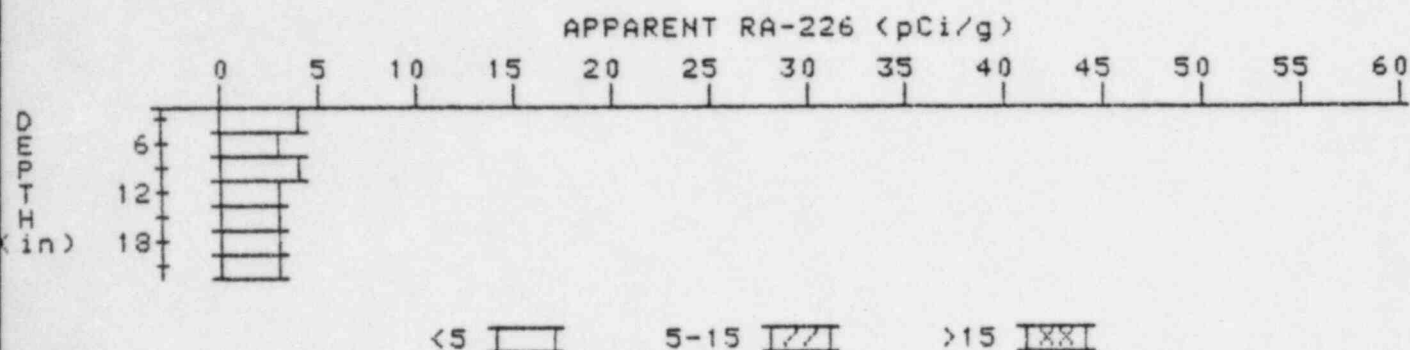
PROPERTY NUMBER: GJ-09256-RS
HOLE NUMBER: 25
LOCATION: 500490



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	7.8	7.8
6	8.9	10.1
9	9.3	10.4
12	9.1	9.3
15	8.8	9.3
18	8.2	7.1
21	8.2	6.1
24	9.4	8.3
27	11.2	12.3
30	12.4	16.3
33	11.4	14.1
36	8.9	6.6
39	7.7	6.5
42	7.2	6.1
45	7.3	6.9
48	7.6	8.1
51	7.6	7.2
54	7.8	8.3

APPARENT RADIUM-226 CONCENTRATION 26 DECONVOLUTION GRAPH

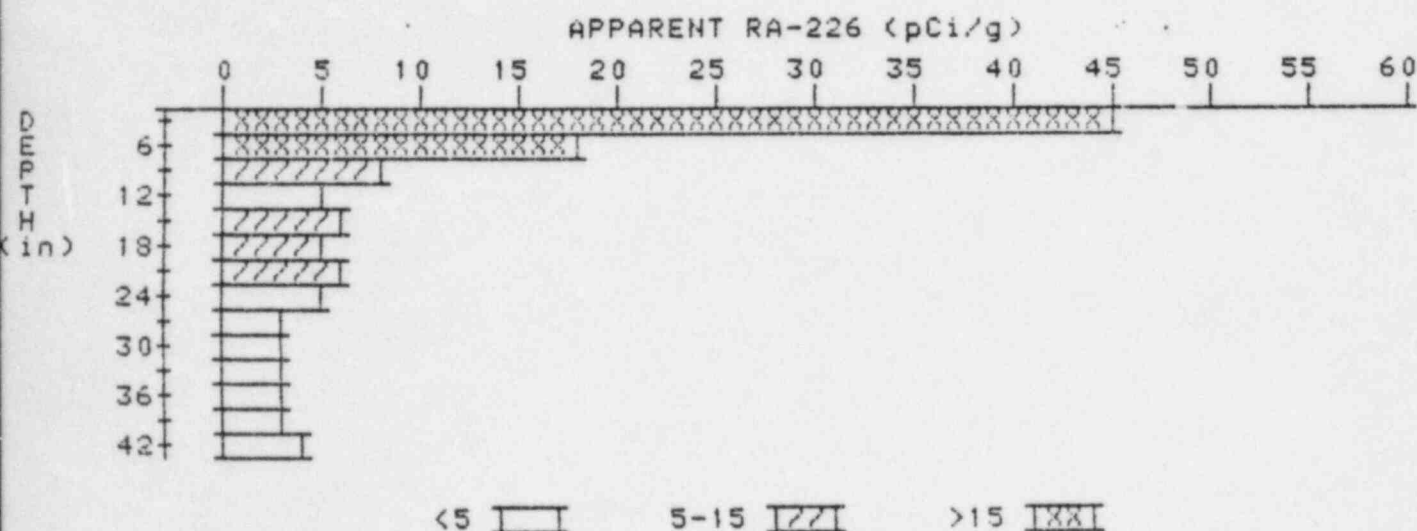
PROPERTY NUMBER: GJ-09256-RS
HOLE NUMBER: 26
LOCATION: 500500



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
=====	=====	=====
3	4.1	4.1
6	3.7	3.3
9	3.5	3.5
12	3.3	3.1
15	3.2	3.2
18	3.1	2.9
21	3.1	3.1

APPARENT RADIUM-226 CONCENTRATION 27 DECONVOLUTION GRAPH

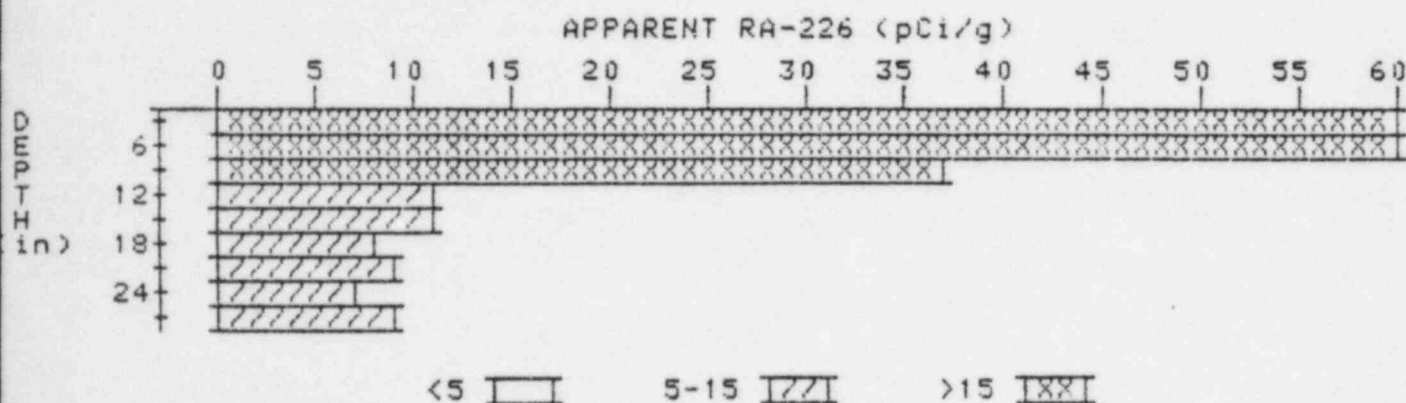
PROPERTY NUMBER: GJ-09256-RS
HOLE NUMBER: 27
LOCATION: 506492



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	45.2	45.2
6	28.3	18.2
9	17.1	8.2
12	10.9	4.9
15	8.1	6.0
18	6.5	5.1
21	5.7	6.1
24	4.7	4.5
27	3.8	3.1
30	3.3	2.8
33	3.1	2.7
36	3.1	2.9
39	3.2	2.7
42	3.6	3.6

APPARENT RADIUM-226 CONCENTRATION 28 DECONVOLUTION GRAPH

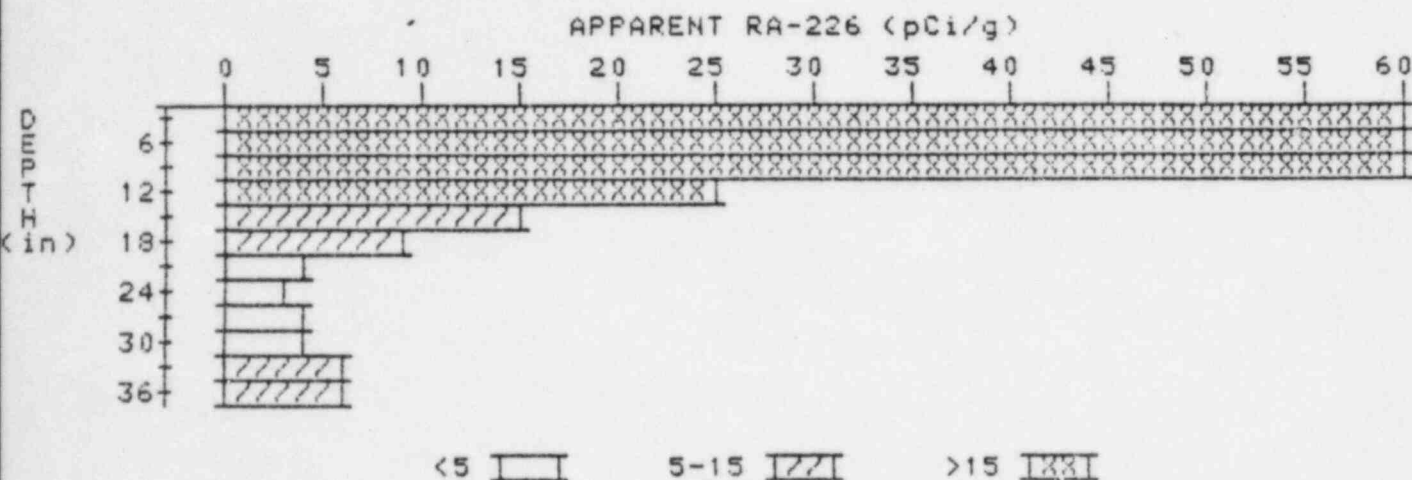
PROPERTY NUMBER: GJ-09256-RS
HOLE NUMBER: 28
LOCATION: 508487



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	79.5	79.5
6	73.8	109.5
9	48.0	36.8
12	28.5	11.1
15	18.8	11.2
18	13.4	8.2
21	10.9	9.5
24	9.2	7.2
27	8.6	8.6

APPARENT RADIUM-226 CONCENTRATION 29 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-09256-R3
HOLE NUMBER: 29
LOCATION: 509484



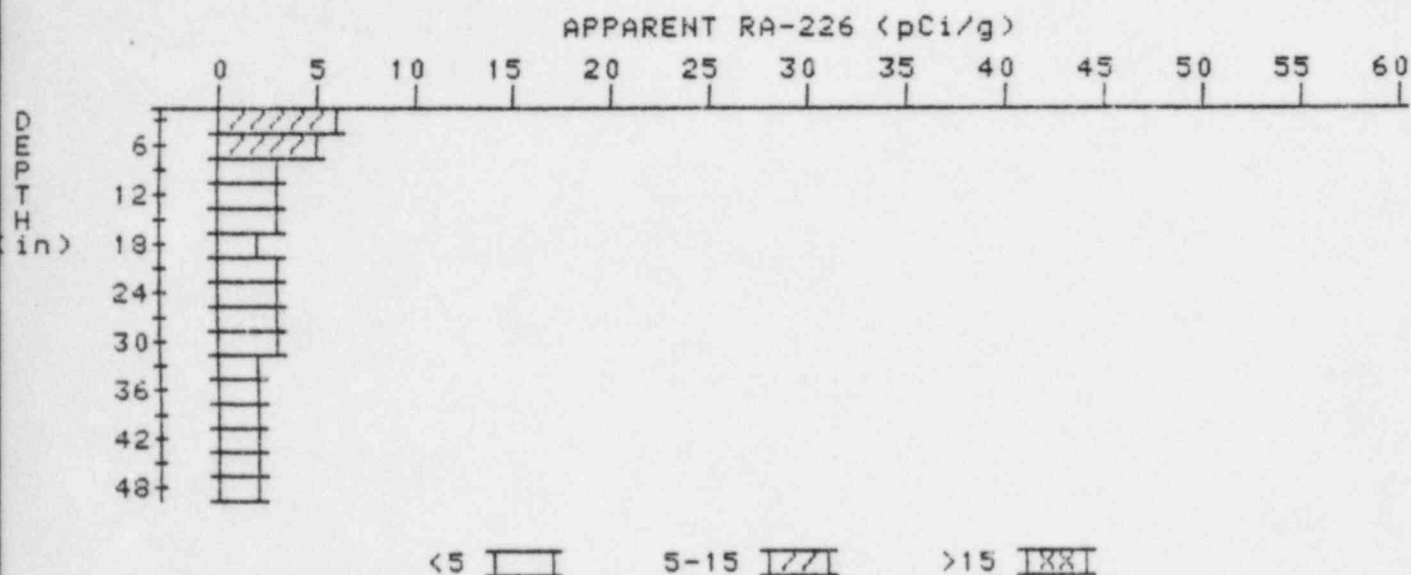
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	108.1	108.1
6	114.2	181.6
9	82.4	85.1
12	49.1	25.3
15	29.2	15.0
18	17.3	8.6
21	10.3	4.1
24	6.8	2.7
27	5.6	4.4
30	5.1	3.5
33	5.5	5.9
36	5.7	5.7

APPARENT RADIUM-226 CONCENTRATION 30 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-09236-RS

HOLE NUMBER: 30

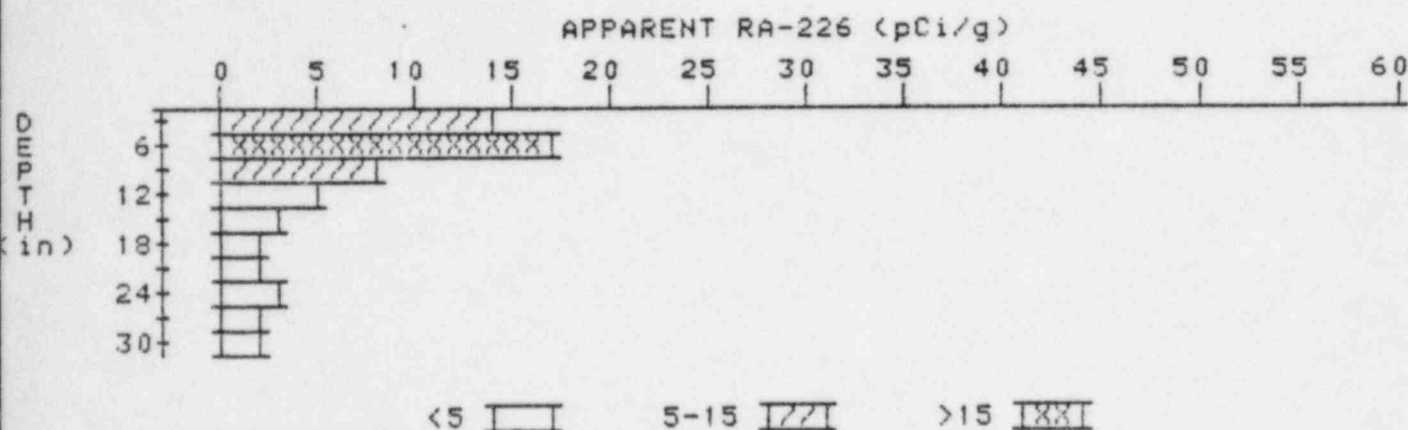
LOCATION: 510490



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.8	5.8
6	4.9	5.3
9	3.8	2.6
12	3.4	3.4
15	3.0	2.8
18	2.7	2.2
21	2.7	2.7
24	2.7	2.5
27	2.8	3.0
30	2.8	3.3
33	2.5	2.3
36	2.3	2.3
39	2.1	2.1
42	1.9	1.7
45	1.8	1.6
48	1.8	1.8

APPARENT RADIUM-226 CONCENTRATION 33 DECONVOLUTION GRAPH

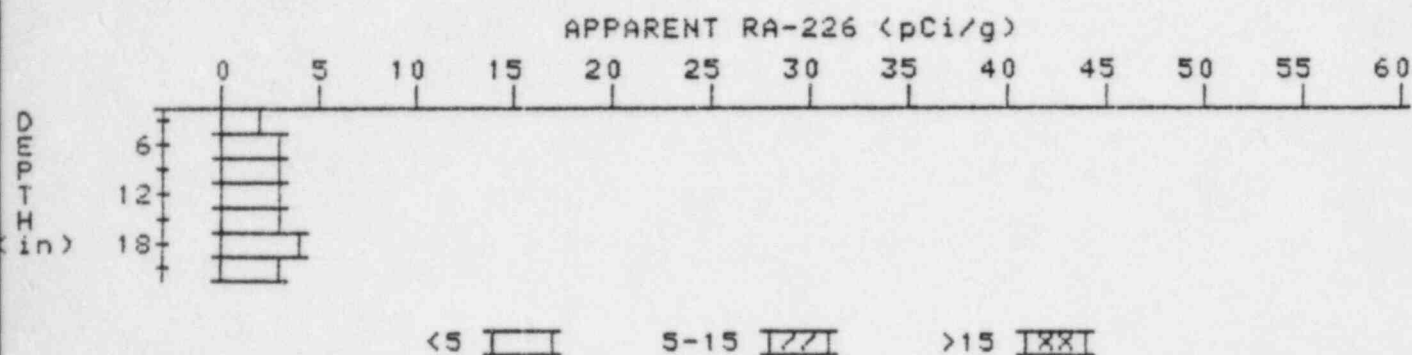
PROPERTY NUMBER: GJ-09256-R3
HOLE NUMBER: 33
LOCATION: 511487



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	13.7	13.7
6	12.7	17.1
9	9.2	8.1
12	6.3	4.5
15	4.4	3.0
18	3.3	2.4
21	2.7	2.0
24	2.5	2.7
27	2.2	2.4
30	1.3	1.3

APPARENT RADIUM-226 CONCENTRATION 36 DECONVOLUTION GRAPH

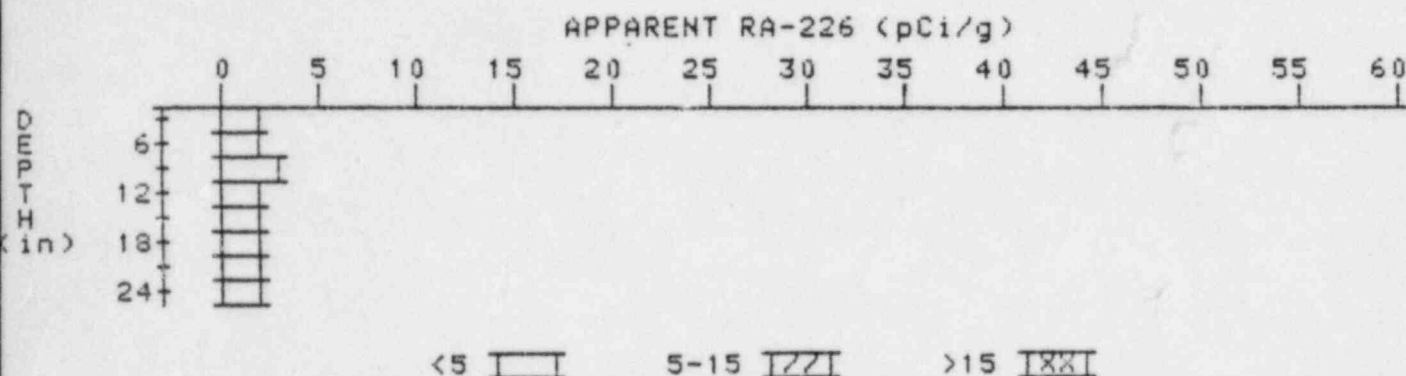
PROPERTY NUMBER: GJ-09236-RS
HOLE NUMBER: 36
LOCATION: 5-1500



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
=====	=====	=====
3	2.3	2.3
6	2.6	2.8
9	2.8	2.6
12	3.1	3.5
15	3.2	3.2
18	3.3	3.7
21	3.2	3.2

APPARENT RADIUM-226 CONCENTRATION 37 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-09256-RS
HOLE NUMBER: 37
LOCATION: 523405



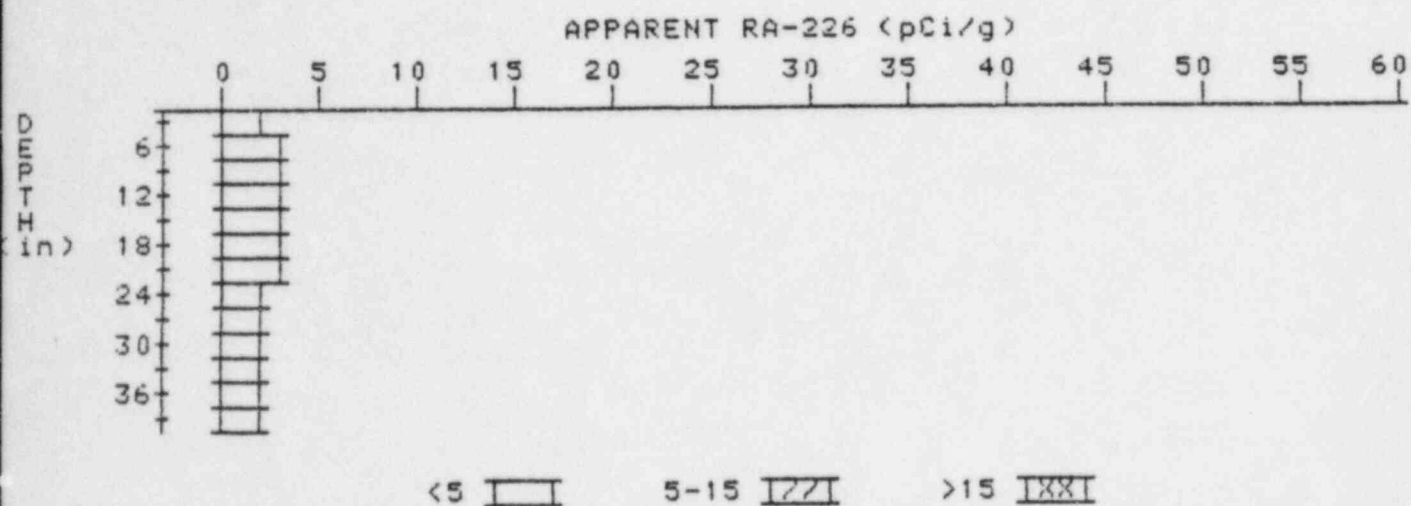
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.1	2.1
6	2.1	1.9
9	2.2	2.6
12	2.1	1.9
15	2.1	1.9
18	2.2	2.4
21	2.2	2.0
24	2.3	2.3

APPARENT RADIUM-226 CONCENTRATION 40 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-09256-RS

HOLE NUMBER: 40

LOCATION: 540480



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.4	2.4
6	2.7	3.1
9	2.8	3.0
12	2.8	3.0
15	2.7	2.7
18	2.6	2.8
21	2.4	2.6
24	2.1	1.9
27	1.9	1.7
30	1.8	1.6
33	1.8	1.8
36	1.8	1.8
39	1.8	1.8