

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-01126-RS
ADDRESS: 1635 ELM AVENUE

JULY 1985

FOR

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT OFFICE

ALBUQUERQUE OPERATIONS OFFICE

DEPARTMENT OF ENERGY

BY

BENDIX FIELD ENGINEERING CORPORATION
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APPROVED BY

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DATE

July 16, 1985

REA01126:REA-511

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PDR WASTE PDR
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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-01126-RS, is a single-family residence located at 1635 Elm Avenue, 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, 14 cu. yd.; interior, 0 cu. yd.

Estimated cost to perform remedial action, including dislocation when applicable, is \$1,463. Remedial action on this property will take approximately 8 days to complete.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 1635 Elm Avenue, Grand Junction, Colorado

Zoning: Residential (RSF-8)

Lot Size: Approximately 10,515 sf (0.24 acre)

Legal Description: Lot 2, Block 1, Parkplace Heights Subdivision, City of Grand Junction, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 2 miles north 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:	Overhead
Gas:	Underground
Telephone:	Overhead
Sewer:	Underground
Water:	Underground
Cable TV:	Overhead

Bordering Properties:

North:	Elm Avenue
South:	Alley
East:	Single-family residence
West:	Single-family residence

2.2 Existing Facilities and Structures

Primary Structure:

Type:	Single-story residence with attic space
Size:	Approximately 1,533 sf
Construction Date:	Not determined - house moved to site
Construction:	Wood-frame
Foundation:	Concrete stemwall on spread footing and monolithic concrete slab-on-grade
Footing Depth:	Approximately 26" to bottom of footing from grade
Basement:	None
Crawl Space:	Yes - except addition on west side of residence
Condition:	Good

Other Structures:

Type:	Metal shed
Size:	Approximately 82 sf
Construction:	Prefabricated metal
Foundation:	Concrete slab-on-grade
Condition:	Good

Type:	Wood shed
Size:	Approximately 95 sf
Construction:	Wood-frame
Foundation:	Mudsill
Condition:	Fair

General Remarks:

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

Historical Data:

This structure is not over 50 years old. Therefore, it does not meet the eligibility criteria for consideration of inclusion on the National Register of Historic Places.

3.0 RADIOLOGIC SURVEY

3.1 Introduction

Radiologic data were collected by Bendix at DOE ID No. GJ-01126-RS on June 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, southwest, and southeast of the primary structure, and a small isolated deposit by the sheds.

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, team leader notes, deconvolution graphs, and Exterior Gamma Scan map are included in the Appendix (Section 6.0).

3.2 Gamma Exposure-Rate Surveys

3.2.1 Exterior Findings

Background Readings: 15 to 17 uR/h
Highest Outside Gamma Reading (HOG): 224 uR/h

Exterior radium-concentration measurements are presented in Appendix Table 3.1. Grid-point survey results are shown in Appendix Figure 3.1.

3.2.2 Interior Findings

Background Readings: 13 to 18 uR/h
Highest Inside Gamma Reading (HIG): 18 uR/h

Interior gamma exposure-rate measurements are summarized in Appendix Table 3.2.

3.3 Boreholes, Soil Samples, and Other Measurements

Areas which displayed elevated gamma levels were further investigated; these areas are shown in Appendix Figure 3.2. Data from these investigations are included in Appendix Table 3.1.

3.4 Radon/Radon Daughter Concentration (RDC)

The working level was not assessed by CDH. No RDC measurements were taken by Bendix..

3.5 Extent of Contamination

Appendix Figure 3.3 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) Surface Material: Lawn
 Direction From Primary Structure: North
 Other Directions: Adjacent to sidewalk
 Total Depth of Contamination: 6 inches
 Other (height or thickness): Included in total depth
 Comments: None
 Approximate Square Footage: 90
- (Area B) Surface Material: Soil
 Direction From Primary Structure: North
 Other Directions: Along north foundation
 Total Depth of Contamination: 9 inches
 Other (height or thickness): Included in total depth
 Comments: Shrubs are in this area.
 Approximate Square Footage: 48
- (Area C) Surface Material: Flagstone
 Direction From Primary Structure: Northwest
 Other Directions: None
 Total Depth of Contamination: 6 inches
 Other (height or thickness): 2-inch-thick flagstone
 Comments: The flagstone moves easily.
 Approximate Square Footage: 45
- (Area D) Surface Material: Soil
 Direction From Primary Structure: West
 Other Directions: Along driveway
 Total Depth of Contamination: 12 inches
 Other (height or thickness): Included in total depth
 Comments: None
 Approximate Square Footage: 24
- (Area E) Surface Material: Soil
 Direction From Primary Structure: West
 Other Directions: Along the west foundation and west of the sidewalk
 Total Depth of Contamination: 6 inches
 Other (height or thickness): Included in total depth
 Comments: None
 Approximate Square Footage: 78

- (Area F) Surface Material: Concrete
Direction From Primary Structure: West
Other Directions: None
Total Depth of Contamination: 9 inches
Other (height or thickness): 4-inch-thick concrete
Comments: The contamination is beneath the sidewalk.
Approximate Square Footage: 39
- (Area G) Surface Material: Lawn
Direction From Primary Structure: Southwest
Other Directions: None
Total Depth of Contamination: 6 inches
Other (height or thickness): Included in total depth
Comments: None
Approximate Square Footage: 185
- (Area H) Surface Material: Flagstone
Direction From Primary Structure: South
Other Directions: Along south foundation
Total Depth of Contamination: 6 inches
Other (height or thickness): 2-inch-thick flagstone
Comments: The flagstone moves easily.
Approximate Square Footage: 120
- (Area I) Surface Material: Soil
Direction From Primary Structure: Southeast
Other Directions: None
Total Depth of Contamination: 6 inches
Other (height or thickness): Included in total depth
Comments: Large shrubs are in this area.
Approximate Square Footage: 88

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-01126-RS, includes removal of all areas identified as containing radioactive material (as discussed in Section 3.5 and shown in Appendix Figure 3.3) 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 \$1,463.

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

The owner would prefer to leave the lilac bush located in Area I. The bush can be trimmed for access. 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 2.2	Site Plan
Figure 3.1	Exterior Grid-Point Exposure Rates
Figure 3.2	Exterior Sample Locations
Figure 3.3	Estimated Extent of Contamination

Official Survey Report

Team Leader Notes

Deconvolution Graphs (Apparent Radium-226 Concentration)

Exterior Gamma Scan Map

Radium Concentrations at Exterior Locations

DOE ID #GJ-01126-RS

1635 Elm Avenue

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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	162248	03	TC	4.7		*	Water line DC = 6 inches Based on all available data
		06	TC	5.0		*	
		09	TC	4.8		*	
		12	TC	4.5		*	
		15	TC	4.4		*	
		18	TC	4.4		*	
		21	TC	4.3		*	
		24	TC	4.1		*	
		27	TC	3.9		*	
		30	TC	3.8		*	
		33	TC	3.8		*	
		36	TC	3.8		*	
		39	TC	3.7		*	
		42	TC	3.6		*	
		45	TC	3.6		*	
		48	TC	3.6		*	
		51	TC	3.6		*	
		54	TC	3.7		*	
		57	TC	3.7		*	
		60	TC	3.8		*	
		63	TC	3.7		*	
		66	TC	3.8		*	
2	162251	00	DS	3.2		*	
		06	DS	1.9		*	
3	163240	00	DS	5.1		*	East of driveway DC = 6 inches Based on all available data
		03	TC	4.0		*	
		06	TC	3.6		*	
		09	TC	3.5		*	
		12	TC	3.4		*	
		15	TC	3.4		*	
		18	TC	3.5		*	
		21	TC	3.4		*	
		24	TC	3.4		*	
		27	TC	3.3		*	
		30	TC	3.3		*	
		33	TC	3.3		*	
		36	TC	3.4		*	
4	168258	00	DS	1.9		*	Gas line
		06	DS	1.8		*	
		18	DS	1.2		*	

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.		
5	169241	00	DS	12.8		*	North of primary structure
		03	TC	7.6		*	
		06	TC	6.3		*	
		09	TC	5.0		*	DC = 9 inches Based on the deconvolution graph
		12	TC	4.1		*	
		15	TC	3.8		*	
		18	TC	3.7		*	
		21	TC	3.5		*	
		24	TC	3.5		*	
		27	TC	3.5		*	
		30	TC	3.4		*	
		33	TC	3.4		*	
		36	TC	3.5		*	
		39	TC	3.5		*	
		42	TC	3.4		*	
		45	TC	3.4		*	
		48	TC	3.4		*	
		51	TC	3.4		*	
		54	TC	3.4		*	
		57	TC	3.5		*	
		60	TC	3.5		*	
6	169270	03	TC	3.3		*	North of primary structure
		06	TC	3.5		*	
		09	TC	3.5		*	
		12	TC	3.6		*	DC = 0 inches
		15	TC	3.7		*	
		18	TC	3.7		*	
		21	TC	3.7		*	
		24	TC	3.7		*	
		27	TC	3.7		*	
		30	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.		
6	169270	33	TC	3.7		*	
		36	TC	3.8		*	
		39	TC	3.8		*	
		42	TC	3.8		*	
		45	TC	3.9		*	
		48	TC	3.9		*	
		51	TC	3.9		*	
		54	TC	3.8		*	
		57	TC	3.7		*	
		60	TC	3.6		*	
		63	TC	3.7		*	
		66	TC	3.7		*	
7	175226	03	TC	3.1		*	Driveway
		06	TC	3.3		*	
		09	TC	3.3		*	DC = 0 inches
		12	TC	3.4		*	
		15	TC	3.4		*	
		18	TC	3.4		*	
		21	TC	3.4		*	
		24	TC	3.3		*	
		27	TC	3.4		*	
		30	TC	3.4		*	
		33	TC	3.5		*	
		36	TC	3.5		*	
8	181221	00	DS	2.6		*	West property line
		06	DS	4.2		*	
		12	DS	<1.0		*	
9	185281	03	TC	3.4		*	East of primary structure
		06	TC	3.4		*	
		09	TC	3.4		*	
		12	TC	3.4		*	DC = 0 inches
		15	TC	3.3		*	
		18	TC	3.2		*	
		21	TC	3.2		*	
		24	TC	3.2		*	
		27	TC	3.2		*	
		30	TC	3.3		*	
		33	TC	3.4		*	
		36	TC	3.4		*	
		39	TC	3.5		*	

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.		
9	185281	42	TC	3.5		*	
		45	TC	3.5		*	
		48	TC	3.6		*	
		51	TC	3.5		*	
		54	TC	3.4		*	
		57	TC	3.4		*	
		60	TC	3.4		*	
		63	TC	3.4		*	
		66	TC	3.4		*	
10	191231	03	TC	5.1		*	Sidewalk
		06	TC	4.9		*	
		09	TC	4.4		*	DC = 9 inches
		12	TC	4.1		*	Based on the
		15	TC	3.9		*	deconvolution graph
		18	TC	3.9		*	
		21	TC	3.9		*	
		24	TC	3.8		*	
		27	TC	3.7		*	
		30	TC	3.7		*	
		33	TC	3.7		*	
		36	TC	3.7		*	
11	193232	00	DS	60.3		*	West of primary
		06	DS	1.7		*	structure
12	194223	00	DS	4.4		*	West of primary
		03	TC	5.5		*	structure
		06	TC	4.9		*	
		09	TC	4.5		*	DC = 6 inches
		12	TC	4.2		*	Based on the
		15	TC	4.1		*	deconvolution graph
		18	TC	4.0		*	
		21	TC	3.9		*	
		24	TC	3.8		*	
		27	TC	3.7		*	
		30	TC	3.7		*	
13	198249	00	DS	5.3		*	Southwest corner of
		06	DS	<1.0		*	primary structure
14	199231	00	DS	6.7		*	
		06	DS	3.0		*	
		12	DS	1.2		*	

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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.		
15	209270	00	DS	1.4		*	DC = 0 inches
		03	TC	2.9		*	
		06	TC	3.1		*	
		09	TC	3.2		*	
		12	TC	3.2		*	
		15	TC	3.3		*	
		18	TC	3.3		*	
		21	TC	3.2		*	
		24	TC	3.2		*	
		27	TC	3.1		*	
		30	TC	3.0		*	
		33	TC	3.0		*	
16	213260	03	TC	2.9		*	Sewer line DC = 0 inches
		06	TC	3.1		*	
		09	TC	3.2		*	
		12	TC	3.4		*	
		15	TC	3.4		*	
		18	TC	3.5		*	
		21	TC	3.4		*	
		24	TC	3.4		*	
		27	TC	3.3		*	
		30	TC	3.3		*	
		33	TC	3.4		*	
		36	TC	3.4		*	
		39	TC	3.3		*	
		42	TC	3.3		*	
		45	TC	3.3		*	
		48	TC	3.2		*	
17	215225	00	DS	1.8		*	West fence line
		06	DS	<1.0		*	
18	217284	00	DS	4.9		*	
		06	DS	1.4		*	
19	236286	00	DS	1.5		*	Southeast of primary structure
		06	DS	1.3		*	
20	270260	00	DS	<1.0		*	Background DC = 0 inches
		03	TC	3.1		*	
		06	TC	3.4		*	
		09	TC	3.5		*	
		12	TC	3.6		*	

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.		
20	270260	15	TC	3.6		*	
		18	TC	3.6		*	
		21	TC	3.5		*	
		24	TC	3.6		*	
		27	TC	3.5		*	

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 = 06-18-85
Team Leader = BMM

Table 3.2

Summary of Interior Gamma Exposure Rates

DOE ID No. GJ-01126-RS

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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)
BASEMENT	*	*	*	*	14-18	*
GROUND FLOOR	*	*	*	*	13-18	*
METAL SHED	*	*	*	*	14-17	*
WOODEN SHED	*	*	*	*	14-16	*

* A walking gamma scan was performed to confirm the absence of interior contamination at this location.

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-01126-RS

<u>AREA</u>	<u>CALCULATIONS(ft)</u>	<u>SF</u>	<u>DEPTH(ft)</u>	<u>CF</u>	<u>CUBIC YARDS</u>
EXTERIOR					
Concrete and Flagstone					
C	9 x 5 =	45	x 0.2 =	9	
F	13 x 3 =	39	x 0.3 =	12	
H	4 x 3 =	12	x 0.2 =	2	
Volume of Concrete and Flagstone				23	= 23/27 = 1
Contaminated Fill					
A	18 x 5 =	90	x 0.5 =	45	
B	4 x 12 =	48	x 0.8 =	38	
C	9 x 5 =	45	x 0.3 =	14	
D	6 x 4 =	24	x 1.0 =	24	
E	7 x 9 =	63			
	5 x 3 =	15			
		78	x 0.5 =	39	
F	13 x 3 =	39	x 0.5 =	20	
G	17 x 8 =	136			
	7 x 7 =	49			
		185	x 0.5 =	93	
H	5 x 20 =	100			
	5 x 4 =	20			
		120	x 0.3 =	36	

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-01126-RS

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<u>AREA</u>	<u>CALCULATIONS(ft)</u>	<u>SF</u>	<u>DEPTH(ft)</u>	<u>CF</u>	<u>CUBIC YARDS</u>
I	10 x 6 =	60			
	7 x 4 =	28			
		<u>88</u>	x 0.5 =	44	
	Volume of Fill			<u>353</u> =	353/27 = 13
	TOTAL VOLUME - EXTERIOR				<u>14</u>

See Appendix Figure 3.3 For Areas

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Table 4.2
Estimated Cost of Decontamination and Restoration
DOE ID No. GJ-01126-RS

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EXTERIOR

Remove concrete and flagstone/replace with concrete walks
88 sf @ \$3/sf \$ 264

Remove identified residual radioactive material
8 cy @ \$14.50/cy (machine-open) 116
5 cy @ \$44/cy (manual-open) 220

Replace areas with topsoil
7 cy @ \$9.50/cy 67

Replace areas with gravel
5 cy @ \$13.50/cy 68

Replace areas with compacted roadbase
1 cy @ \$11.50/cy 12

Replace areas with sod
150 sf @ \$.35/sf 53

TOTAL EXTERIOR \$ 800

TOTAL INTERIOR 0

ACCESS CONTROL 150

SUBTOTAL \$ 950

CONTINGENCY @ 10% 95

SUBTOTAL \$ 1,045

CONTRACTOR OVERHEAD & PROFIT @ 40% 418

GRAND TOTAL \$ 1,463

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REA01126/REA-511/LAJ

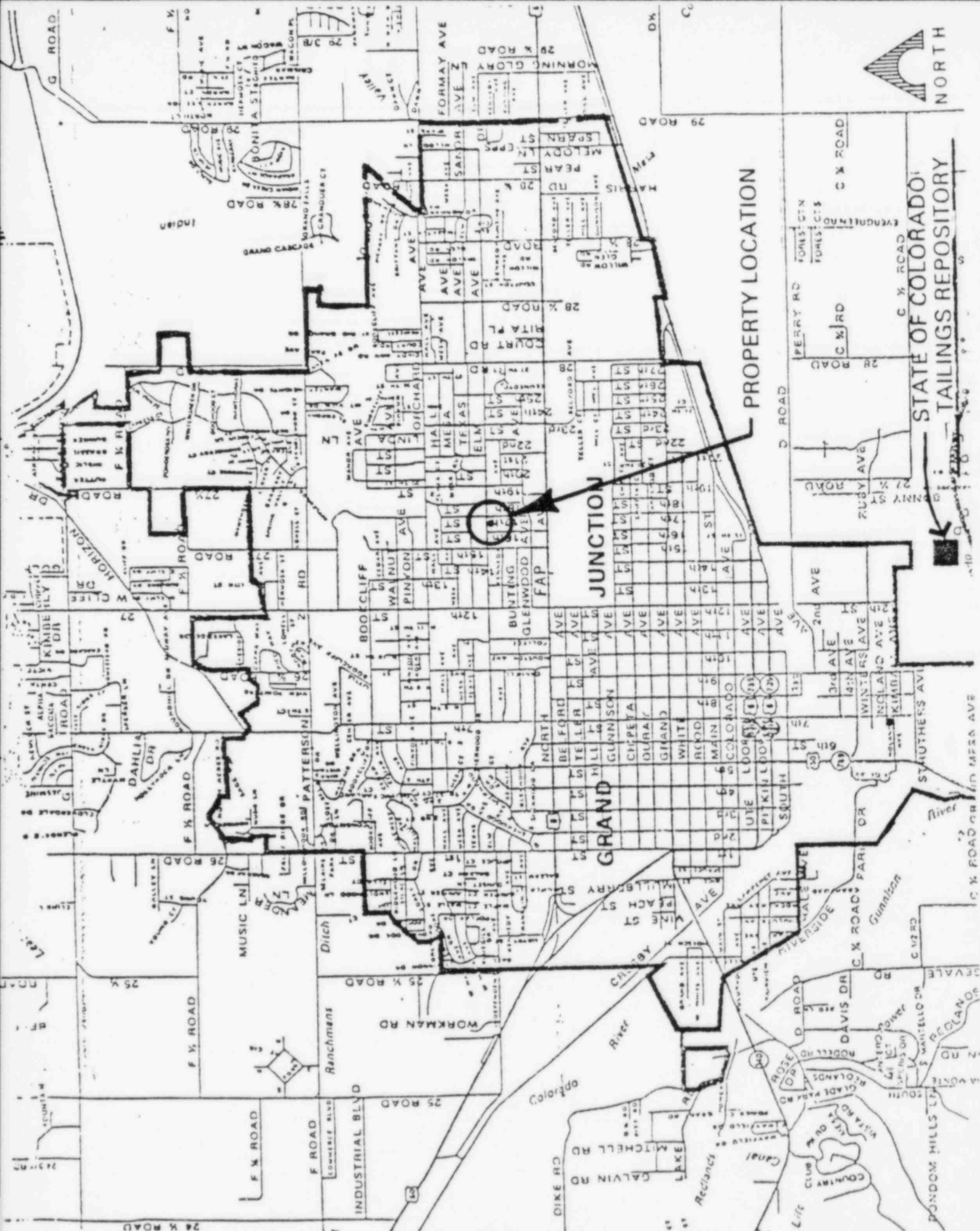


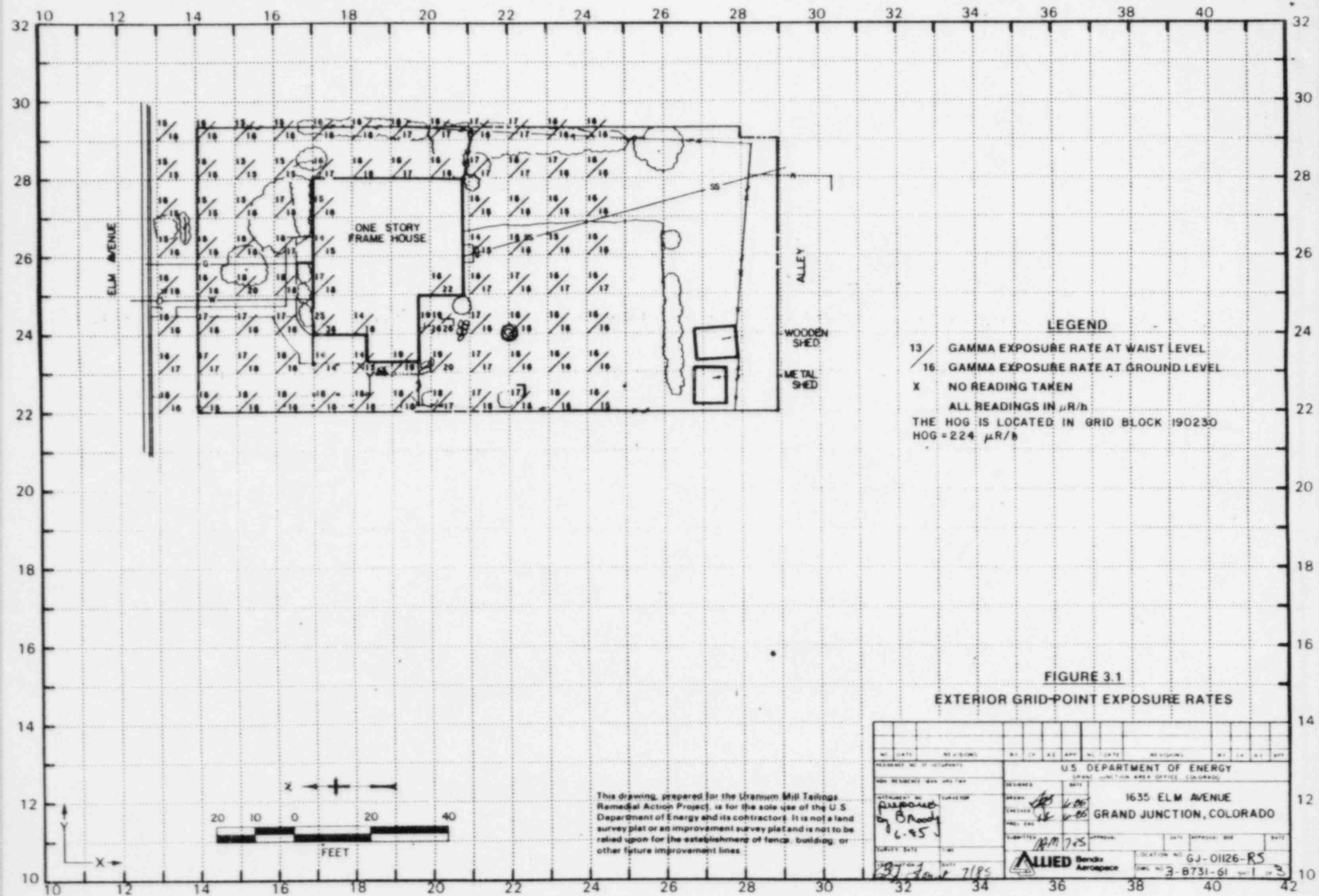
FIGURE 2.1
VICINITY MAP

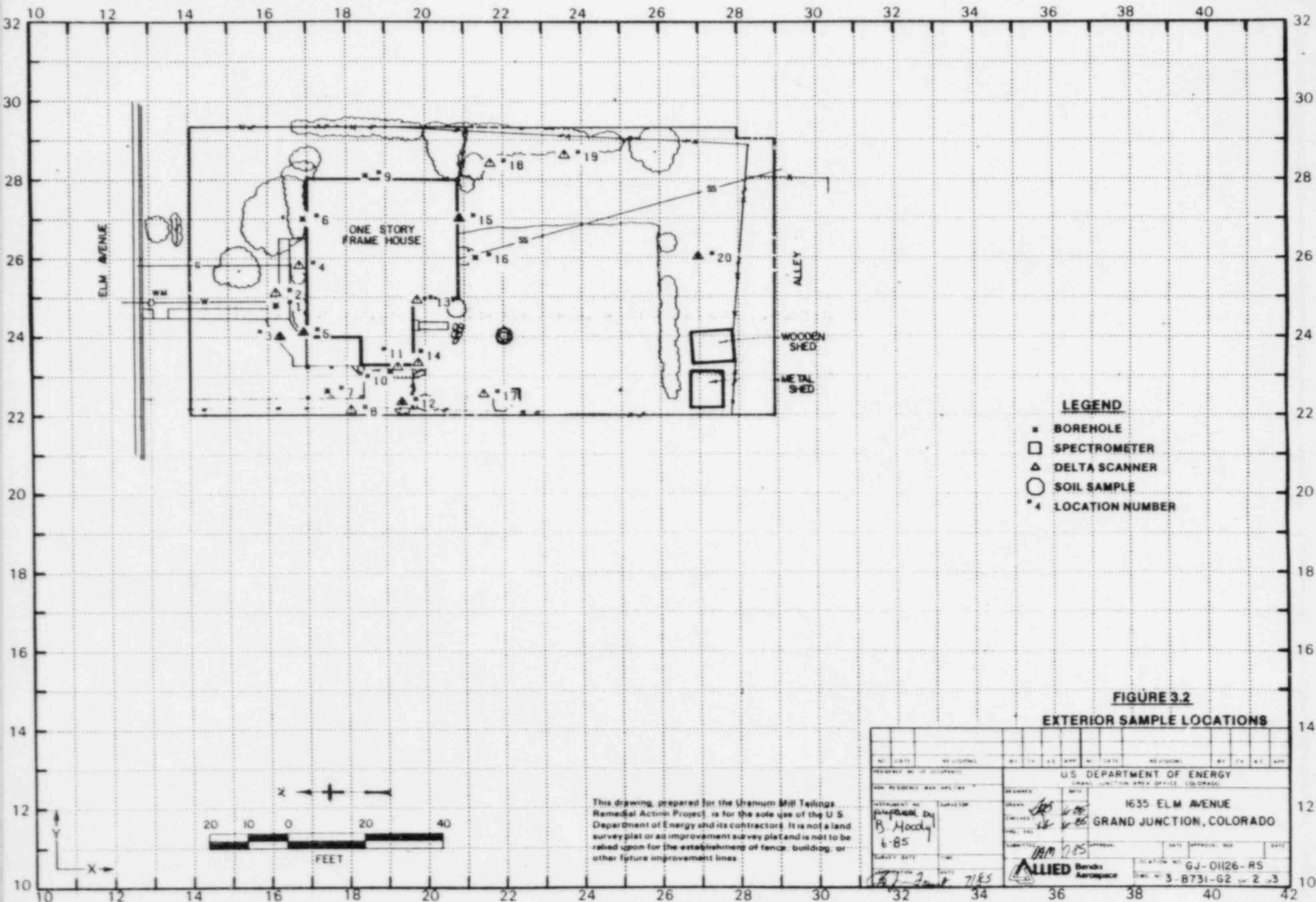
Hand-drawn site plan for a residential property. The plan shows a 'ONE STORY FRAME HOUSE' with a 'HOUSE GARDEN' and a 'WOODEN SHED'. It also includes a 'METAL SHED', a 'WIRELESS' area, and a 'UTILITY EASEMENT'. The plan is divided into sections with dimensions and labels like 'PLAT=1400'', 'PLAT=70.1', and 'PLAT=150.0'. The property is bordered by 'ALLEY (DIRT)' and 'WEDS'. The plan includes various features like 'BUSHES AND TREES', 'GRASS', 'HEDGE', 'TREES', 'WIRELESS', 'UTILITY EASEMENT', 'WOODEN SHED', 'METAL SHED', 'HOUSE GARDEN', 'HOUSE', 'WIRELESS', 'WEDS', 'ALLEY (DIRT)', 'PLAT=1400'', 'PLAT=70.1', and 'PLAT=150.0'.

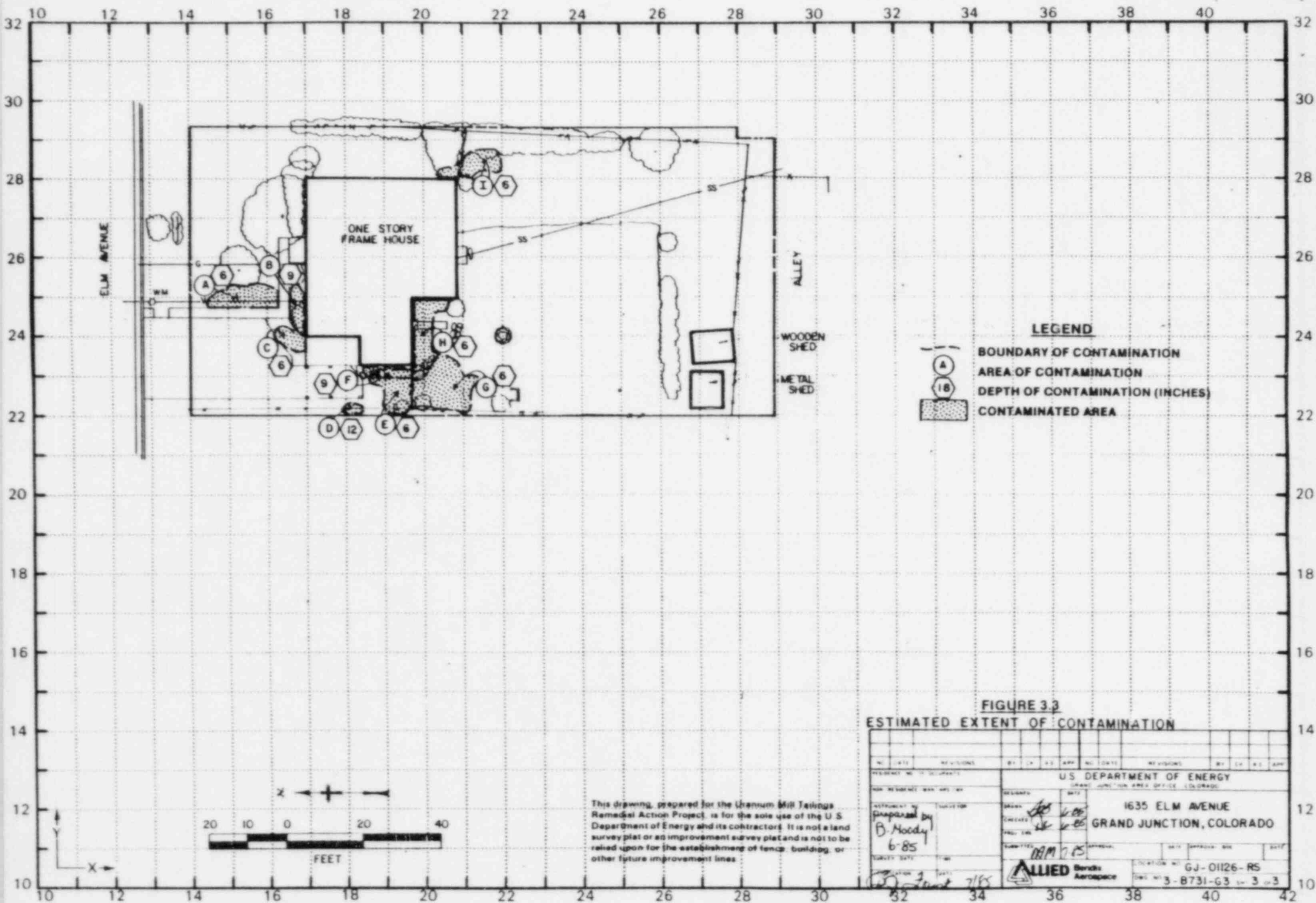
FIGURE 2.2 SITE PLAN

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION PROJECT OFFICE, COLORADO	DOE TO NO GJ01126RS
ADDRESS 1635 ELM AVENUE GRAND JUNCTION, COLORADO	ALBEDO ALBEDO
SURV WHIL61389	Ready To Ship / Expedited Grand Junction, CO 81405
DRAWING NO 3.C131.F1	DATE 10/16/85 SHEET 1 OF 1

This drawing, prepared for the Uranium Mill Tailings Remedial Action Project, is for the site use of the U.S. Department of Energy and its contractor. It is not a land survey plat or an improvement survey plat and is not to be relied upon for the establishment of fence, building, or other future improvement lines.







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

Official Survey Report

Property Address 1635 Elm Avenue
Property Owner Daniel Morgan
Address of Owner (if different from above) _____
Report Prepared By Brenda Moody

I. PRESENCE/ABSENCE OF RESIDUAL RADIOACTIVE MATERIALS

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

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

1 XXXX 1 In open areas.

1 1 Under or around exterior improvements.

1 1 Under or around a typically nonoccupied structure.

1 XXXX 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.

1 XXXX 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/CDE

J. Themelis, Mgr. UMTRA Proj. Off.

HIG = 18 uR/h
HOG = 224 uR/h

ALLIED Bendix
Aerospace

Bendix Field Engineering Corporation
Grand Junction Operations
Grand Junction, Colorado

Date: June 18, 1985

To: Files

From: Brenda Moody

Subject: Team Leader Notes - GJ-01126-RS

Address: 1635 Elm Avenue

Owner: Daniel Morgan

Occupancy: 1

Team Members

B. Moody (Team Leader
S. Southern
M. Johnson
G. Larsen

D. Clay
D. Bell
D. Dow

Instruments

See Equipment Summary Sheet

Oak Ridge National Laboratory (ORNL) and Colorado Department of Health (CDH) data indicates contamination on the west, southeast, and north sides of the primary structure. An area in the southwest yard was also noted. The interior was essentially background, with a reading that measured 172 uR/h, from a fossil bone.

CDH indicates a building permit survey was performed on October 15, 1974. Mr. Morgan informed me that the removal of tailings was performed before his carport was built. A borehole was performed on the carport, it indicated no contamination.

Team Leader Notes
Brenda Moody
GJ-01126-RS
June 18, 1985
Page 2

A walking scan was performed on the entire property and elevated readings are shown on the gamma scan map. These readings were investigated with boreholes and delta scanners.

The gas line (Location 168258), water line (Location 162248), and sewer line (Location 213260) were investigated. Contamination was found only on the surface, above the water line. Mr. Morgan said the water line had been replaced two years ago.

The interior walking scan was essentially background, with the findings of a bone which read 1300 cps. Also in the basement, a rock collection of approximately 20 boxes was found. We were unable to determine which rocks are ore. The owner did not want these boxes removed.

No injuries occurred.

All personnel were alpha scanned.

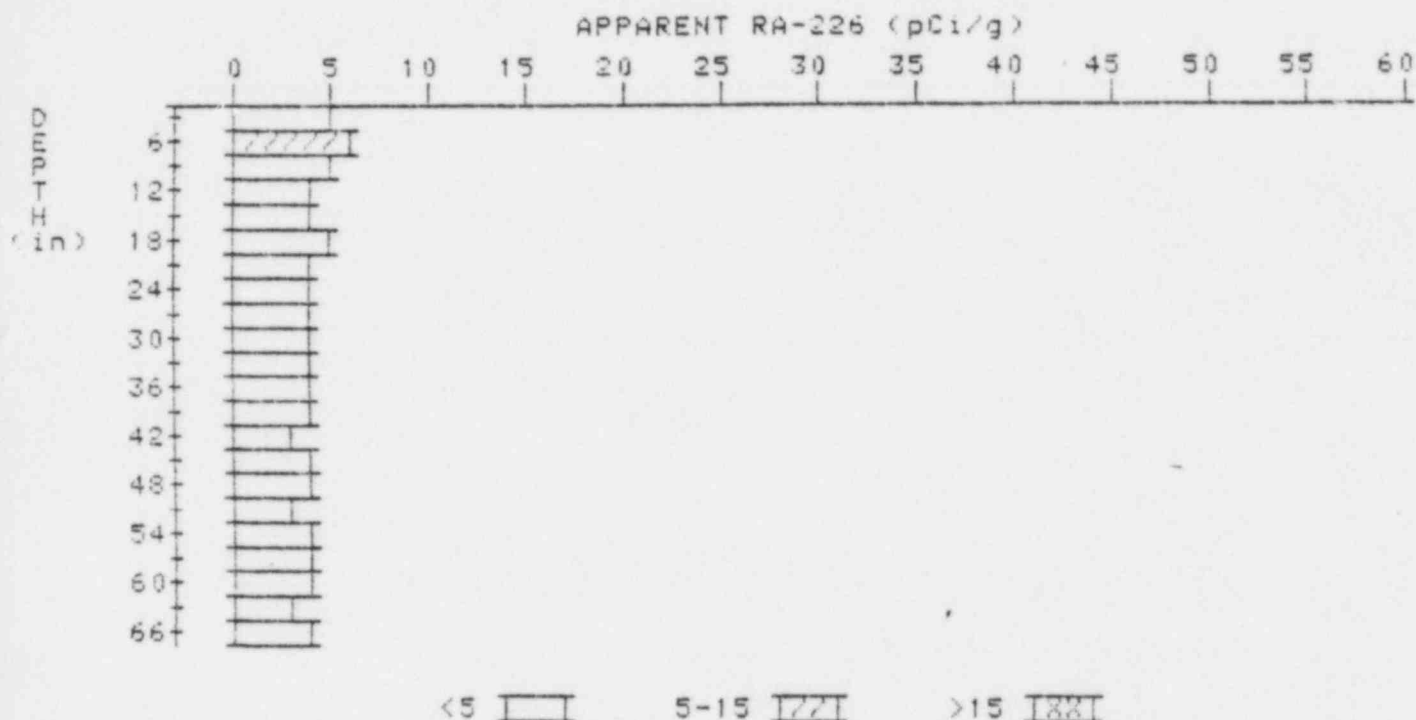
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

1

PROPERTY NUMBER: GJ-01126-RS

HOLE NUMBER: 1

LOCATION: 162248



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.7	4.7
6	5.0	5.9
9	4.9	5.0
12	4.5	4.1
15	4.4	4.2
18	4.4	4.6
21	4.3	4.5
24	4.1	4.1
27	3.9	3.7
30	3.8	3.6
33	3.8	3.8
36	3.8	4.0
39	3.7	3.7
42	3.6	3.4
45	3.6	3.6
48	3.6	3.6

51
54
57
60
63
66

3.6
3.7
3.7
3.8
3.7
3.8

3.4
3.9
3.5
4.2
3.3
3.8

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

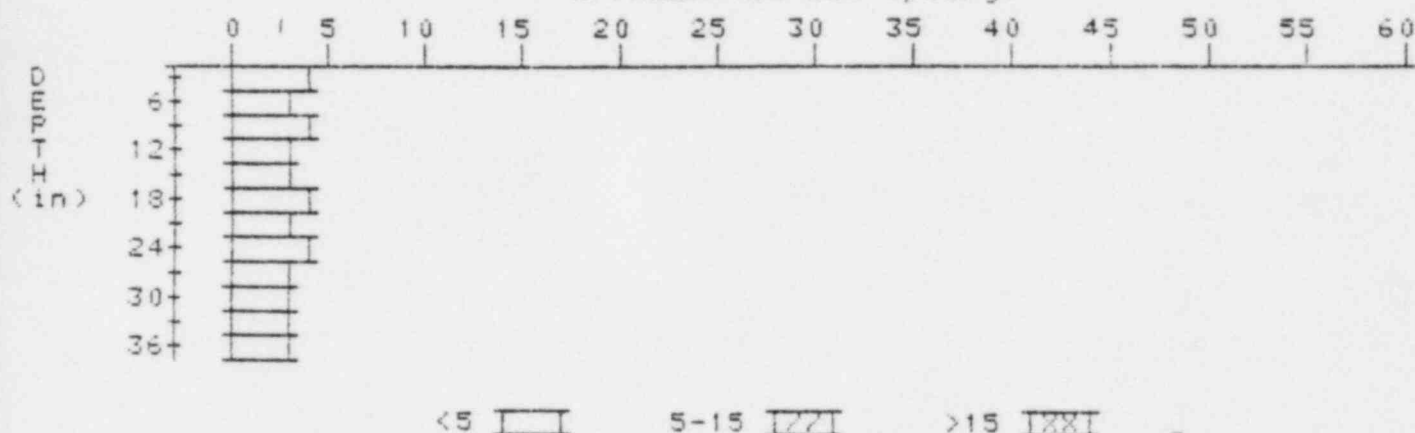
3

PROPERTY NUMBER: GJ-01126-RS

HOLE NUMBER: 3

LOCATION: 163240

APPARENT RA-226 (pCi/g)



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.0	4.0
6	3.6	3.1
9	3.5	3.5
12	3.4	3.2
15	3.4	3.2
18	3.5	3.9
21	3.4	3.2
24	3.4	3.6
27	3.3	3.1
30	3.3	3.3
33	3.3	3.1
36	3.4	3.4

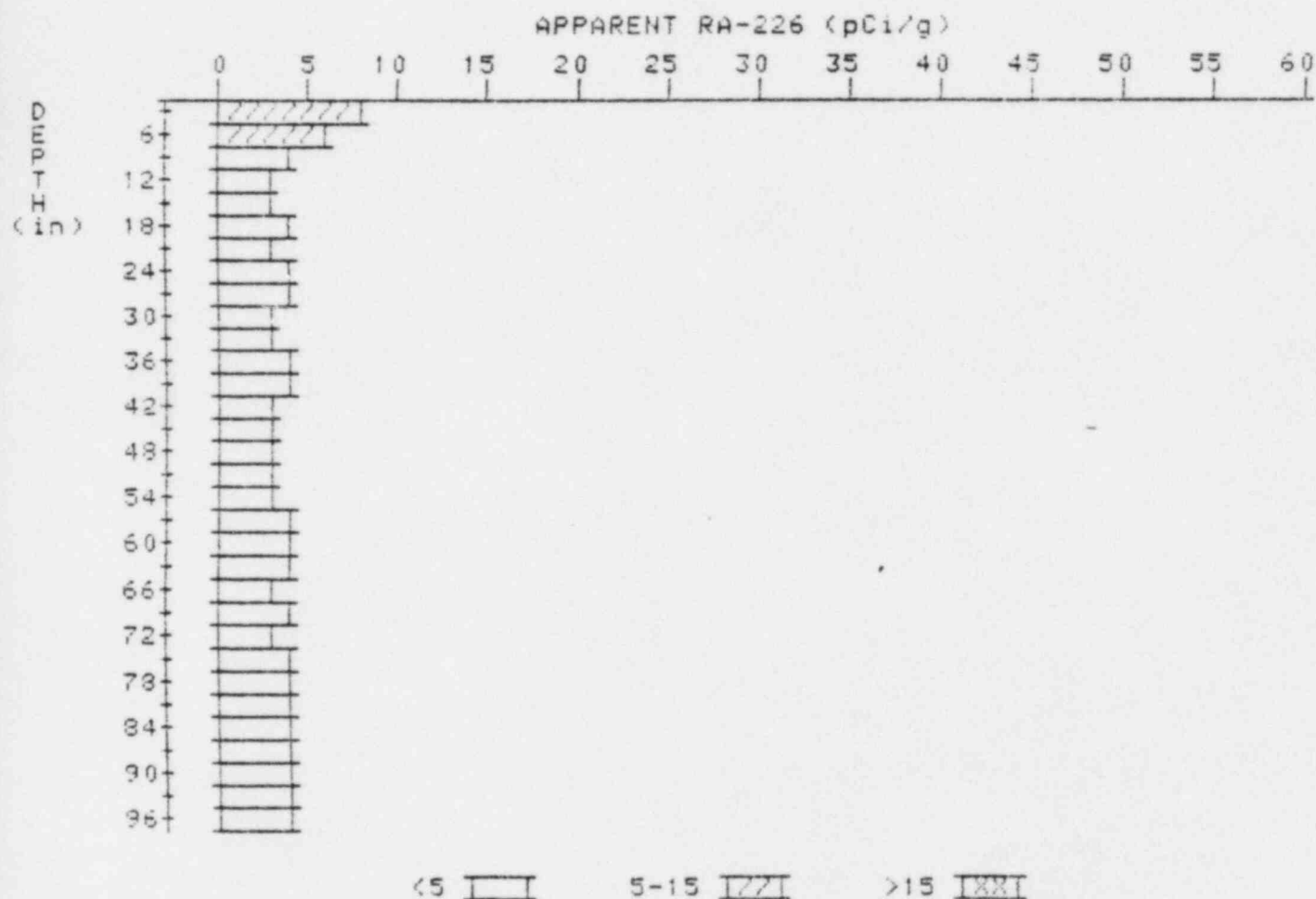
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

5

PROPERTY NUMBER: GJ-01126-RS

HOLE NUMBER: 5

LOCATION: 169241



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	7.6	7.6
6	6.3	6.3
9	5.0	4.3
12	4.1	3.0
15	3.8	3.4
18	3.7	3.9
21	3.5	3.1
24	3.5	3.5
27	3.5	3.7

30
33
36
39
42
45
48
51
54
57
60
63
66
69
72
75
78
81
84
87
90
93
96

3.4
3.4
3.5
3.5
3.4
3.4
3.4
3.4
3.4
3.5
3.5
3.4
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3.6
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4.0
4.0

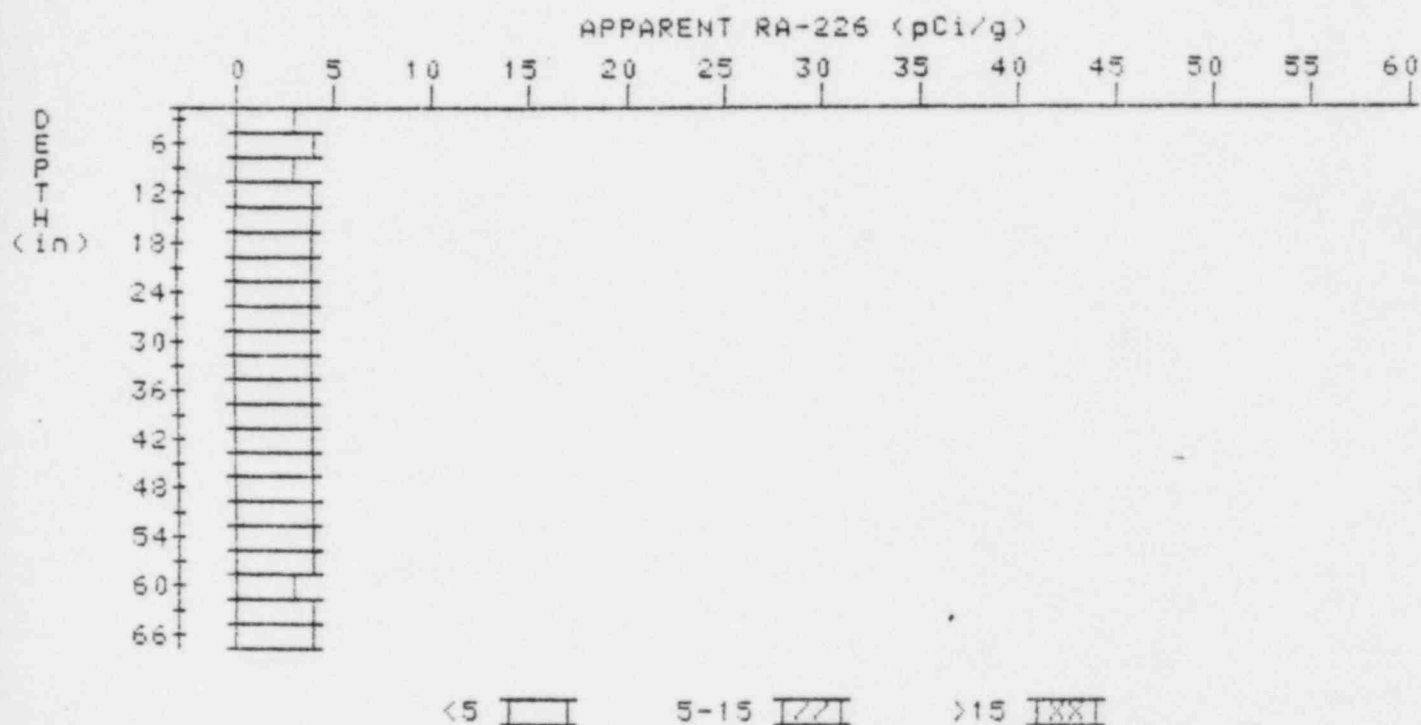
3.2
3.2
3.7
3.7
3.2
3.4
3.4
3.4
3.2
3.7
3.5
3.7
3.0
3.5
3.4
4.2
3.6
4.1
3.7
4.2
4.0
4.0
4.0

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-01126-RS

HOLE NUMBER: 6

LOCATION: 169270



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.3	3.3
6	3.5	3.9
9	3.5	3.3
12	3.6	3.6
15	3.7	3.9
18	3.7	3.7
21	3.7	3.7
24	3.7	3.7
27	3.7	3.7
30	3.7	3.7
33	3.7	3.5
36	3.8	4.0
39	3.8	3.8
42	3.8	3.6
45	3.9	4.1
48	3.9	3.9

51	3.9	4.1
54	3.8	3.8
57	3.7	3.7
60	3.6	3.2
63	3.7	3.9
66	3.7	3.7

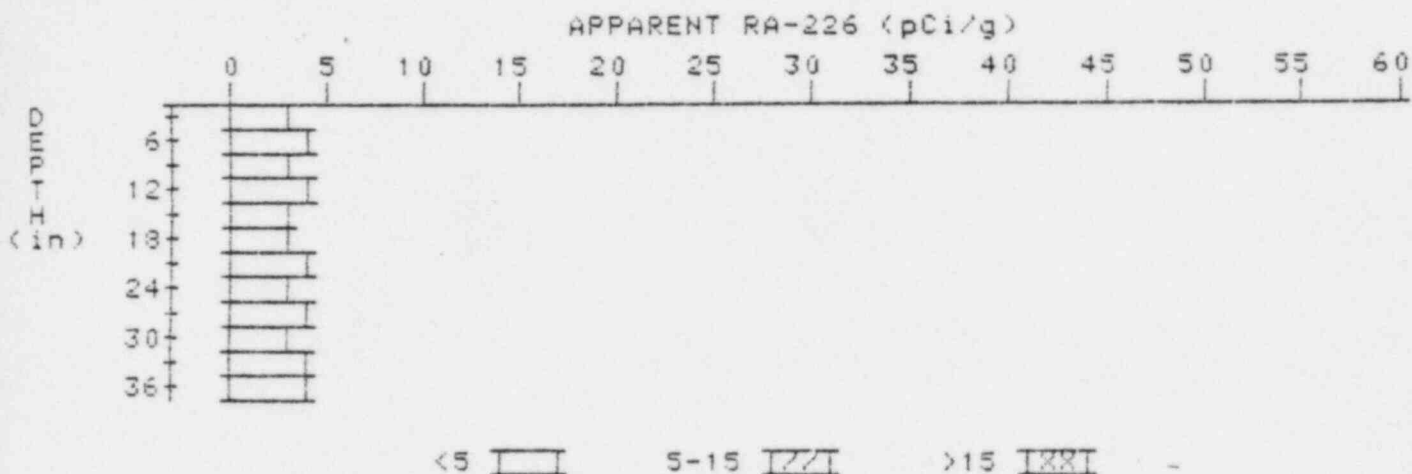
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

7

PROPERTY NUMBER: GJ-01126-RS

HOLE NUMBER: 7

LOCATION: 175226



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.1	3.1
6	3.3	3.7
9	3.3	3.1
12	3.4	3.6
15	3.4	3.4
18	3.4	3.4
21	3.4	3.6
24	3.3	2.9
27	3.4	3.6
30	3.4	3.2
33	3.5	3.7
36	3.5	3.5

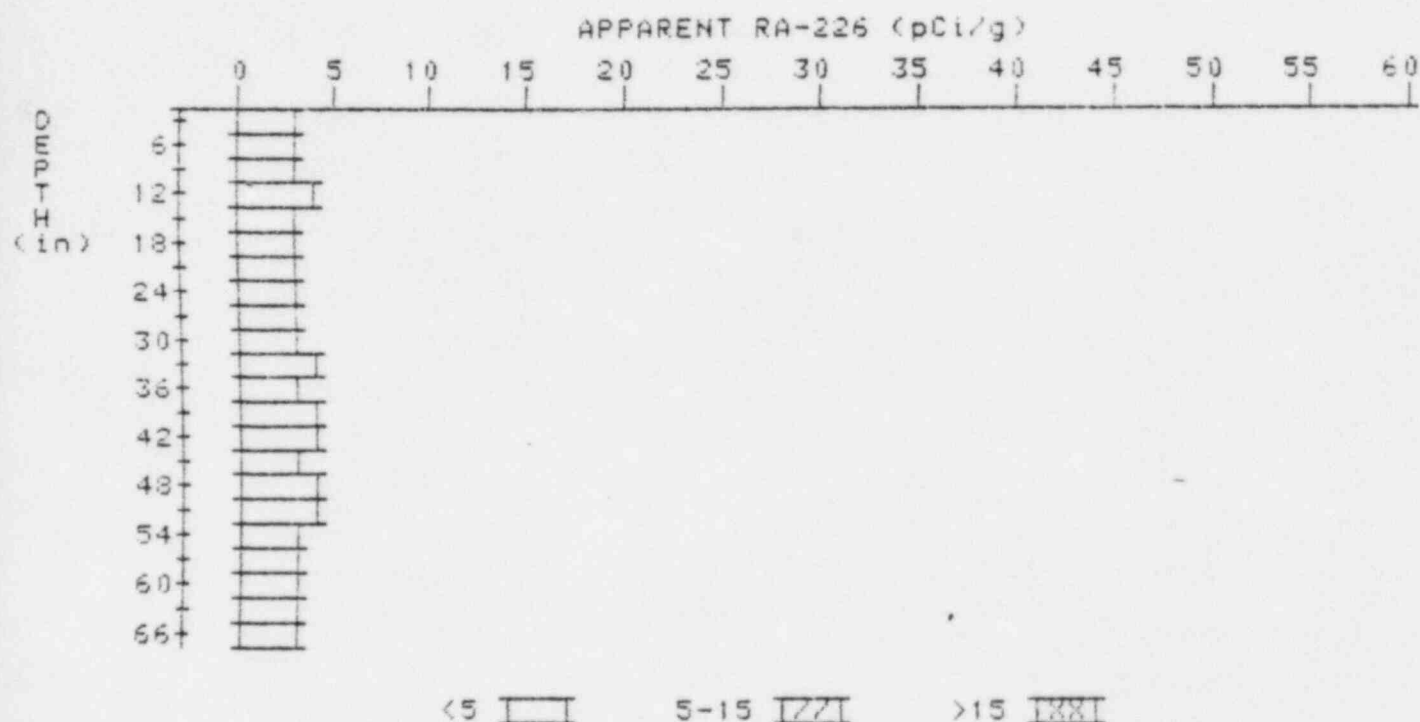
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

9

PROPERTY NUMBER: GJ-01126-RS

HOLE NUMBER: 9

LOCATION: 185281



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.4	3.4
6	3.4	3.4
9	3.4	3.4
12	3.4	3.6
15	3.3	3.3
18	3.2	3.0
21	3.2	3.2
24	3.2	3.2
27	3.2	3.0
30	3.3	3.3
33	3.4	3.6
36	3.4	3.2
39	3.5	3.7
42	3.5	3.5
45	3.5	3.3
48	3.6	4.0

51
54
57
60
63
66

3.5
3.4
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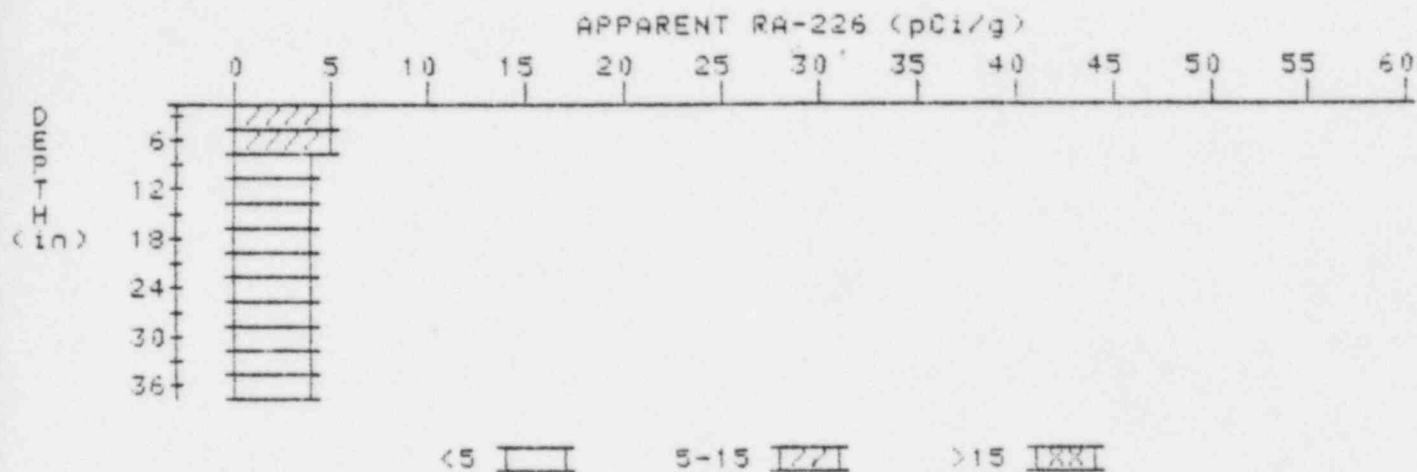
APPARENT RADIUM-226 CONCENTRATION 10

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-01126-RS

HOLE NUMBER: 10

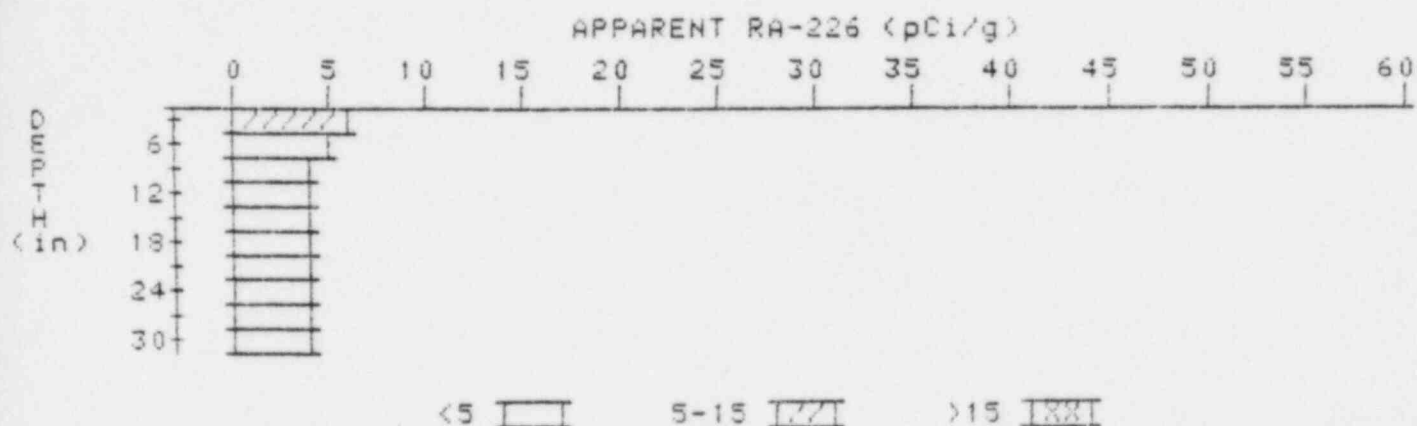
LOCATION: 191231



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.1	5.1
6	4.9	5.4
9	4.4	4.0
12	4.1	3.9
15	3.9	3.5
18	3.9	3.9
21	3.9	4.1
24	3.8	3.8
27	3.7	3.5
30	3.7	3.7
33	3.7	3.7
36	3.7	3.7

APPARENT RADIUM-226 CONCENTRATION 12 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-01126-R3
HOLE NUMBER: 12
LOCATION: 194223



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.5	5.5
6	4.9	4.5
9	4.5	4.3
12	4.2	3.9
15	4.1	4.1
18	4.0	4.0
21	3.9	3.9
24	3.8	3.8
27	3.7	3.5
30	3.7	3.7

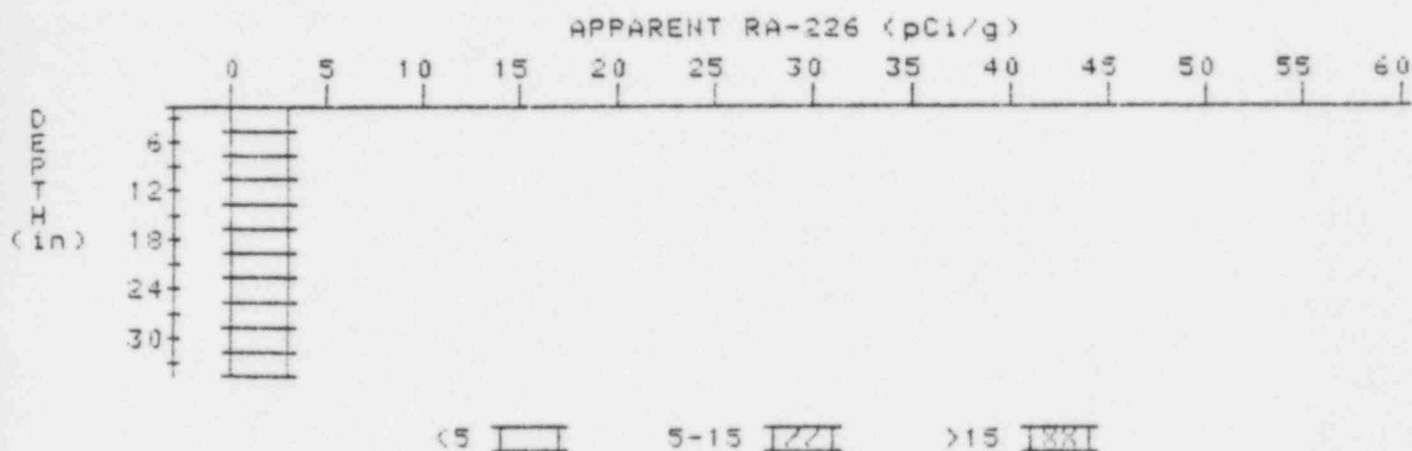
APPARENT RADIUM-226 CONCENTRATION 15

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-01126-RS

HOLE NUMBER: 15

LOCATION: 209270



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.9	2.9
6	3.1	3.3
9	3.2	3.4
12	3.2	3.0
15	3.3	3.5
18	3.3	3.5
21	3.2	3.0
24	3.2	3.4
27	3.1	3.1
30	3.0	2.8
33	3.0	3.0

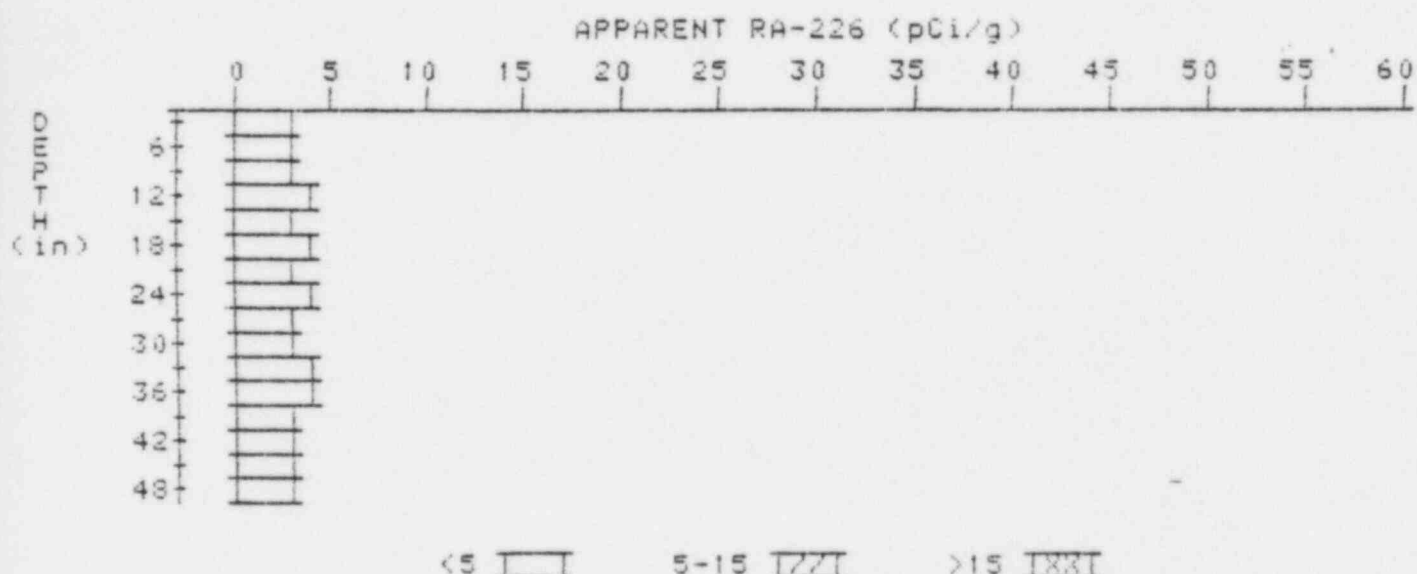
APPARENT RADIUM-226 CONCENTRATION 16

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-01126-R3

HOLE NUMBER: 16

LOCATION: 213260



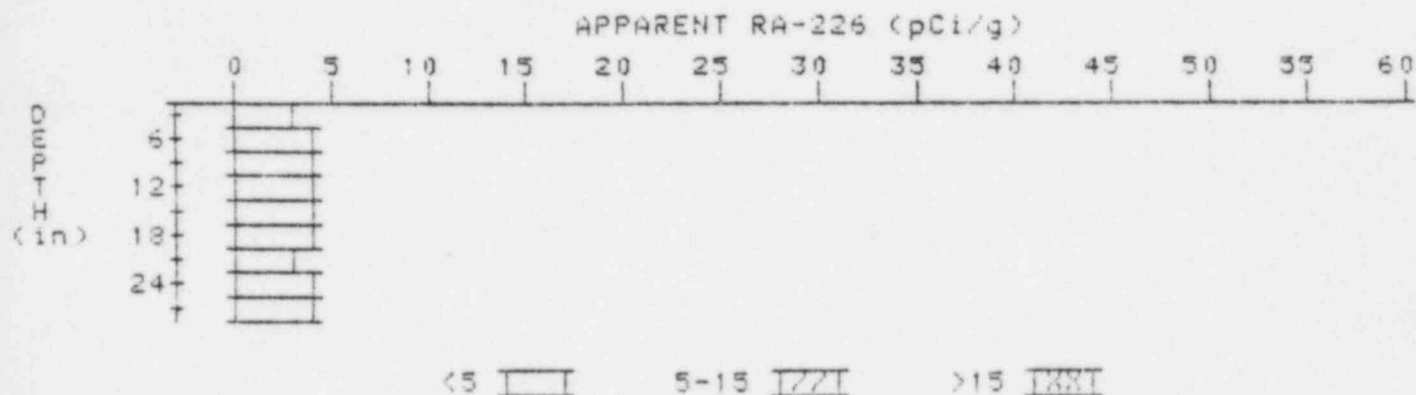
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.9	2.9
6	3.1	3.3
9	3.2	3.0
12	3.4	3.8
15	3.4	3.2
18	3.5	3.9
21	3.4	3.2
24	3.4	3.6
27	3.3	3.1
30	3.3	3.1
33	3.4	3.6
36	3.4	3.6
39	3.3	3.1
42	3.3	3.3
45	3.3	3.8
48	3.2	3.2

APPARENT RADIUM-226 CONCENTRATION 20 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-01126-RS

HOLE NUMBER: 20

LOCATION: 270260



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.1	3.1
6	3.4	3.8
9	3.5	3.5
12	3.6	3.8
15	3.6	3.6
18	3.6	3.8
21	3.5	3.1
24	3.6	4.0
27	3.5	3.5

