

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-00154-CS
ADDRESS: 1121 NORTH AVENUE

AUGUST 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

August 27, 1985

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-00154-CS, is a commercial rental building located at 1121 North 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, 28 cu. yd.; interior, 66 cu. yd.

Estimated cost to perform remedial action, including dislocation when applicable, is \$31,116. Remedial action on this property will take approximately 14 days to complete.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 1121 North Avenue, Grand Junction, Colorado

Zoning: Commercial (C-1)

Lot Size: Approximately 7,250 sf (0.17 acres)

Legal Description: Lots 5 and 6, Block 1, 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:	North Avenue
South:	Alley
East:	Commercial rental unit
West:	Kentucky Fried Chicken

2.2 Existing Facilities and Structures

Primary Structure:

Type:	Single-story, commercial rental building
Size:	Approximately 1,531 sf
Construction Date:	1965
Construction:	Cinder block and brick
Foundation:	Concrete stemwall on spread footing
Footing Depth:	Varies; approximately 12" to 16" to bottom of footing from grade
Basement:	None
Crawl Space:	None
Condition:	Good, except that the masonry wall on the north has some cracks

Other Structures: None

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-00154-CS on May 21, 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) was conducted. These records indicate contamination associated with the interior of the primary structure and the adjacent sidewalk.

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: 13 to 16 uR/h
Highest Outside Gamma Reading (HOG): 148 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: none
Highest Inside Gamma Reading (HIG): 150 uR/h

Interior radium-concentration measurements are presented in Appendix Table 3.2. Interior gamma exposure-rate measurements are summarized in Appendix Table 3.3. Appendix Figure 3.2 shows 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 Figures 3.2 and 3.3. Data from these investigations are included in Appendix Tables 3.1 and 3.2.

3.4 Radon/Radon Daughter Concentration (RDC)

Determined by CDH: 0.900 (gross) working level (WL). No additional RDC measurements were taken by Bendix.

3.5 Extent of Contamination

Appendix Figures 3.4a and 3.4b show identified areas and estimated depth of contamination on this property, based on assessments of all measurements taken. As noted in these figures, areas recommended for remedial action that contain identified residual radioactive materials are:

- (AREA A) The floor of the primary structure is underlaid by tailings. The floor is a 4-inch-thick concrete pad. The total depth of contamination is 15 inches, based on the visible tailings/soil interface under the floor (approximately 1,364 sf).
- (AREA B) The sidewalk adjacent to the primary structure on the north and east is underlaid by contamination. The total depth of contamination is estimated at 15 inches, based on the footing depth (approximately 358 sf).
- (AREA C) The asphalt parking area south of the primary structure is underlaid by contamination to a total depth of 12 inches (approximately 184 sf).
- (AREA D) Five small concrete pads adjacent to the south side of the primary structure are underlaid by contamination. The total depth of contamination is estimated at 12 inches, based on data collected in Area C (approximately 46 sf).

(AREAS REQUIRING FURTHER INVESTIGATION DURING REMEDIAL ACTION)

The elevated gamma levels observed in Areas B, C, and D may be due to secondary radiation from the tailings under the primary structure. These areas should be investigated after removal of Area A. Slightly elevated gamma levels were also observed along the west side of the primary structure, on the adjacent property. This area should be investigated after remedial action.

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-00154-CS, includes removal of all areas identified as containing radioactive material (as discussed in Section 3.5 and shown in Appendix Figures 3.4a and 3.4b) 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 be required for this remedial action. Dislocation cost estimates are presented in Appendix Table 4.3.

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 \$24,278.
Estimated cost of dislocation is \$6,838.

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 Office, 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	Radium Concentrations at Interior Locations
Table 3.3	Summary of Interior Gamma Exposure Rates
Table 4.1	Area and Volume Calculations
Table 4.2	Estimated Cost of Decontamination and Restoration
Table 4.3	Dislocation Estimated Cost Summary

Appendix Figures:

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

Official Survey Report

Team Leader Notes

Deconvolution Graphs (Apparent Radium-226 Concentration)

Exterior Gamma Scan

Radium Concentrations at Exterior Locations

DOE ID #GJ-00154-CS

1121 North 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.		
5	160250	00	DS	<1.0		*	60 feet north of primary structure
		03	TC	2.8		*	
		06	TC	3.2		*	
		09	TC	3.5		*	DC = 0 inches
		12	TC	3.5		*	
		15	TC	3.4		*	
		18	TC	3.3		*	
		21	TC	3.3		*	
		24	TC	3.4		*	
		27	TC	3.4		*	
		30	TC	3.5		*	
		33	TC	3.5		*	
		36	TC	3.4		*	
		39	TC	3.3		*	
		42	TC	3.3		*	
6	180250	00	DS	<1.0		*	40 feet north of primary structure
		03	TC	2.9		*	
		06	TC	3.2		*	
		09	TC	3.4		*	Auger refusal at 18 inches, hit rock
		12	TC	3.4		*	
		15	TC	3.4		*	
		18	TC	3.4		*	DC = 0 inches
7	185265	00	DS	1.0		*	North parking area Background location
		03	TC	2.9		*	
		06	BH	3.4	1.9	*	
		09	TC	3.7		*	DC = 0 inches
		12	TC	3.6		*	
		15	TC	3.5		*	
		18	BH	3.4	1.7	*	
		21	TC	3.5		*	
		24	TC	3.4		*	
		27	TC	3.4		*	
		30	TC	3.3		*	
		33	TC	3.3		*	
		36	TC	3.3		*	
		39	TC	3.2		*	
		42	TC	3.2		*	
8	195275	00	DS	<1.0		*	North of primary structure

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	200235	00	DS	<1.0		*	Water line DC = 0 inches
		03	TC	2.9		*	
		06	TC	3.2		*	
		09	TC	3.6		*	
		12	TC	3.6		*	
		15	TC	3.6		*	
		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		*	
		39	TC	3.5		*	
		42	TC	3.4		*	
10	200250	00	DS	<1.0		*	20 feet north of primary structure DC = 0 inches
		03	TC	3.3		*	
		06	TC	3.3		*	
		09	TC	3.3		*	
		12	TC	3.2		*	
		15	TC	3.2		*	
		18	TC	3.2		*	
		21	TC	3.3		*	
		24	TC	3.3		*	
		27	TC	3.3		*	
		30	TC	3.6		*	
		33	TC	3.3		*	
		36	TC	3.1		*	
		39	TC	2.9		*	
11	205275	00	DS	<1.0		*	North parking area
12	219261	00	DS	1.2		*	8 inches out from north foundation Hit footing at 15 inches DC = 15 inches Based on footing depth
		03	TC	4.2		*	
		06	BH	4.6	2.5	*	
		09	BH	5.1	2.6	*	
		12	TC	5.2		*	
		15	TC	4.9		*	
13	235230	00	DS	1.6		*	West side of primary structure DC = 0 inches
		03	TC	4.3		*	
		06	TC	4.7		*	

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.		
		09	TC	5.1		*	
		12	TC	5.4		*	Elevated readings due to shine from interior
		15	TC	5.7		*	
		18	TC	6.0		*	
		21	TC	6.2		*	
		24	TC	6.5		*	
		27	TC	6.7		*	
		30	TC	6.9		*	
		33	TC	7.3		*	
		36	TC	7.7		*	
		39	TC	7.4		*	
		42	TC	7.2		*	
		45	TC	6.9		*	
		48	TC	6.3		*	
		51	TC	5.8		*	
		54	TC	5.3		*	
		57	TC	4.9		*	
		60	TC	4.5		*	
		63	TC	4.2		*	
		66	TC	4.0		*	
		69	TC	3.8		*	
		72	TC	3.7		*	
14	240278	00	DS	1.2		*	East of primary structure on sidewalk
15	240280	00	DS	<1.0		*	East of primary structure on asphalt DC = 0 inches
		06	TC	3.5		*	
		09	TC	4.1		*	
		12	TC	4.3		*	
		15	TC	4.2		*	
		18	TC	4.2		*	
		21	TC	4.1		*	
		24	TC	4.1		*	
		27	TC	4.0		*	
		30	TC	4.0		*	
		33	TC	3.9		*	
		36	TC	3.7		*	
		39	TC	3.7		*	
		42	TC	3.6		*	
		45	TC	3.5		*	
16	253252	00	DS	7.0		*	Next to gas meter

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.		
17	254252	03	TC	15.6		*	Sewer line
		06	TC	21.4		*	
		09	TC	12.4		*	
		12	TC	8.5		*	Auger hit sewer line at 51 inches
		15	TC	6.5		*	
		18	TC	5.6		*	
		21	TC	5.1		*	DC = 12 inches Based on footing depth
		24	TC	4.9		*	
		27	TC	4.8		*	
		30	TC	4.6		*	
		33	TC	4.6		*	
		36	TC	4.6		*	
		39	TC	4.5		*	
		42	TC	4.4		*	
		45	TC	4.4		*	
		48	TC	4.4		*	
		51	TC	4.5		*	
18	260272	00	DS	1.2		*	Sewer line
		03	TC	3.4		*	
		06	TC	4.0		*	
		09	TC	4.6		*	DC = 0 inches
		12	TC	4.6		*	
		15	TC	4.5		*	
		18	TC	4.5		*	
		21	TC	4.2		*	
		24	TC	4.1		*	
		27	TC	4.1		*	
		30	TC	4.0		*	
		33	TC	3.9		*	
		36	TC	3.8		*	
		39	TC	3.7		*	
		42	TC	3.6		*	
19	269264	00	DS	<1.0		*	Gas line
		03	TC	3.4		*	
		06	TC	3.8		*	DC = 0 inches
		09	TC	3.8		*	
		12	TC	3.7		*	
		15	TC	3.6		*	
		18	TC	3.5		*	
		21	TC	3.4		*	
		24	TC	3.6		*	
		27	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.		
19	269264	30	TC	3.5		*	
		33	TC	3.4		*	
		36	TC	3.4		*	
20	270237	00	DS	1.0		*	Sewer line
		03	TC	3.1		*	
		06	TC	3.3		*	
		09	TC	3.4		*	
		12	TC	3.6		*	
		15	TC	3.6		*	
		18	TC	3.7		*	
		21	TC	3.7		*	
		24	TC	3.6		*	
		27	TC	3.7		*	
		30	TC	3.7		*	DC = 0 inches
		33	TC	3.6		*	
		36	TC	3.6		*	
		39	TC	3.4		*	
21	270255	00	DS	<1.0		*	Sewer line
		03	TC	3.1		*	
		06	TC	3.5		*	
		09	TC	3.7		*	DC = 0 inches
		12	TC	4.1		*	
		15	TC	4.3		*	
		18	TC	4.1		*	
		21	TC	4.0		*	
		24	TC	3.8		*	
		27	TC	3.8		*	
		30	TC	3.8		*	
		33	TC	3.8		*	
		36	TC	4.0		*	
		39	TC	4.1		*	
		42	TC	4.2		*	

Measurement Type: GB = GAD-6 Borehole
 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 = 05-21-85
 Team Leader = CRK

Radium Concentrations at Interior 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		00	DS	71.6		*	East shop, bathroom
2		00	DS	66.1		*	East shop
3		00	DS	43.3		*	Middle shop, bathroom
4		00	DS	52.7		*	Middle shop, beside hole in floor Visible tailings/sand interface at total depth of 14 inches

Measurement Type: GB = GAD-6 Borehole
 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 = 05-21-85
 Team Leader = CRK

Table 3.3
Summary of Interior Gamma Exposure Rates

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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)
ROOM A	13	41-103	73	13	58-150	101
ROOM B	1	84-84	84	1	119-119	119
ROOM C	1	51-51	51	1	81-81	81
ROOM D	1	56-56	56	1	103-103	103
ROOM E	1	70-70	70	1	119-119	119
ROOM F	7	44-77	60	7	57-130	98
ROOM G	6	38-69	53	6	41-107	76

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*Exposure Rates and Room Locations Shown in Appendix Figure 3.2

Table 4.1
Area and Volume Calculations
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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>
INTERIOR					
Concrete					
A	31 x 14	=	434		
	31 x 15	=	465		
	31 x 15	=	465		
			1,364	x 0.3 =	409
	Volume of Concrete			= 409	= 409/27 = 15
Contaminated Fill					
A	31 x 14	=	434		
	31 x 15	=	465		
	31 x 15	=	465		
			1,364	x 1.0 =	1,364
	Volume of Contaminated Fill			= 1,364	= 1,364/27 = 51
	TOTAL VOLUME - INTERIOR				= 66

EXTERIOR

Concrete

B	50 x 5	=	250		
	36 x 3	=	108		
			358	x 0.3 =	107
*	33 x 3	=	99	x 1.0 =	99

Table 4.1
Area and Volume Calculations
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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>
D	12 x 3 =	36			
	5 x 2 =	10			
**	4 x 1 =	4			
		<hr/>			
		50	x 0.3 =	15	
				<hr/>	
	Volume of Concrete			= 221	= 221/27 = 8
Asphalt					
C	46 x 4 =	184	x 0.2 =	37	
				<hr/>	
	Volume of Asphalt			= 37	= 37/27 = 1
Contaminated Fill					
B	50 x 5 =	250			
	36 x 3 =	108			
		<hr/>			
		358	x 1.0 =	358	
C	46 x 4 =	184	x 0.8 =	147	
				<hr/>	
	Volume of Contaminated Fill			= 505	= 505/27 = 19
					<hr/>
	TOTAL VOLUME - EXTERIOR				= 28

* This area is the exterior concrete wall that must be removed to gain access to Area B.

** This area is the valley pan that must be removed to gain access to Area C.

See Appendix Figures 3.4a and 3.4b For Areas

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INTERIOR

Remove concrete floor		
1,364 sf @ \$2/sf	\$	2,728
Remove identified residual radioactive material		
51 cy @ \$44/cy (manual - open)		2,244
Remove floor coverings and base		
1,364 sf @ \$1/sf		1,364
Undermine and shore walls		
100 lf @ \$3/lf		300
Remove, store, and replace personal property		200
Remove, store, and replace hot-water heaters and bathroom fixtures		600
Replace floor coverings and base		
60 sf @ \$2/sf (sheet vinyl)		120
415 sf @ \$1.50/sf (V.A.T.)		623
813 sf @ \$1.25/sf (carpet)		1,016
76 sf @ \$8/sf (glazed tile)		608
Radon vent system		
152 lf @ \$2.50/lf		380
Clean or replace underfloor water and waste pipes		300
Replace concrete floor		
1,364 sf @ \$2/sf		2,728
Replace area with 3/4" washed rock		
51 cy @ \$15/cy		765
General cleanup and repair		250
		<hr/>
	TOTAL INTERIOR	\$ 14,226

EXTERIOR

Remove concrete sidewalks and slabs		
408 sf @ \$1.48/sf	\$	604
Remove concrete wall		
Lump sum		124

Table 4.2
Estimated Cost of Decontamination and Restoration
DOE ID No. GJ-00154-CS Page 2 of 2

Remove identified residual radioactive material 19 cy @ \$14.50/cy (machine-open)	\$ 276
Remove asphalt 184 sf @ \$.60/sf	110
Replace area with roadbase 19 cy @ \$11.50/cy	219
Replace concrete sidewalks and slabs 408 sf @ \$1.50/sf	612
Replace concrete wall 4 cy @ \$175/cy	700
Replace asphalt 184 sf @ \$1.50/sf	276
Saw-cut asphalt 21 lf @ \$.44/lf	9
Patch asphalt	100
Paint edge of sidewalk, etc.	50
Clean or replace underground utility lines	100
<hr/>	
TOTAL EXTERIOR	\$ 3,180
TOTAL INTERIOR	14,226
ACCESS CONTROL	250
SUBTOTAL	<u>\$ 17,656</u>
CONTINGENCY @ 10%	1,766
SUBTOTAL	<u>\$ 19,422</u>
CONTRACTOR OVERHEAD & PROFIT @ 25%	4,856
GRAND TOTAL	<u>\$ 24,278</u>

=====

VG082285
REA00154/REA-KL018/LMR

Table 4.3
Dislocation Estimated Cost Summary
(Commercial)

Page 1 of 2

DOE ID No. : GJ-00154-CS
Address : 1121 North Avenue, Grand Junction, Colorado 81501

=====

Duration of Dislocation : Construction Schedule 2 weeks.
Move out and move back 2 weeks.
Total: 4 weeks.

Building Rental Cost : Size 1,000 sf
Cost/sf/month \$0.60.
Cost \$600.00 x
1 month.

TOTAL \$ 600

Building Modification Costs : Itemized as follows:
Plumbing rough-in
\$250.00 x 4/comb-out stations
Electrical rough-in
\$100.00 x 4/comb-out stations
Chase for plumbing and electrical
\$15.00 x 20/lf
Disconnect and reconnect
\$600.00 x 4/comb-out stations
Minor repairs @ \$200.00

TOTAL \$ 4,300

Utility Cost : Water: Included in lease
Sewer: Included in lease
Gas and electric:
Initiate/terminate service \$23.00.
Usage per month \$100.00 x
1 month.

TOTAL \$ 123

Telephone Transfer Cost : Transfer service (one time only)
\$185.00.
Cost of phone extensions: None

TOTAL \$ 185

Moving Expenses : Packing and unpacking
\$250.00 each way.

TOTAL \$ 500

Table 4.3
Dislocation Estimated Cost Summary
(Commercial)

Page 2 of 2

DOE ID No. : GJ-00154-CS
Address : 1121 North Avenue, Grand Junction, Colorado 81501

=====

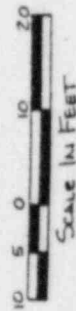
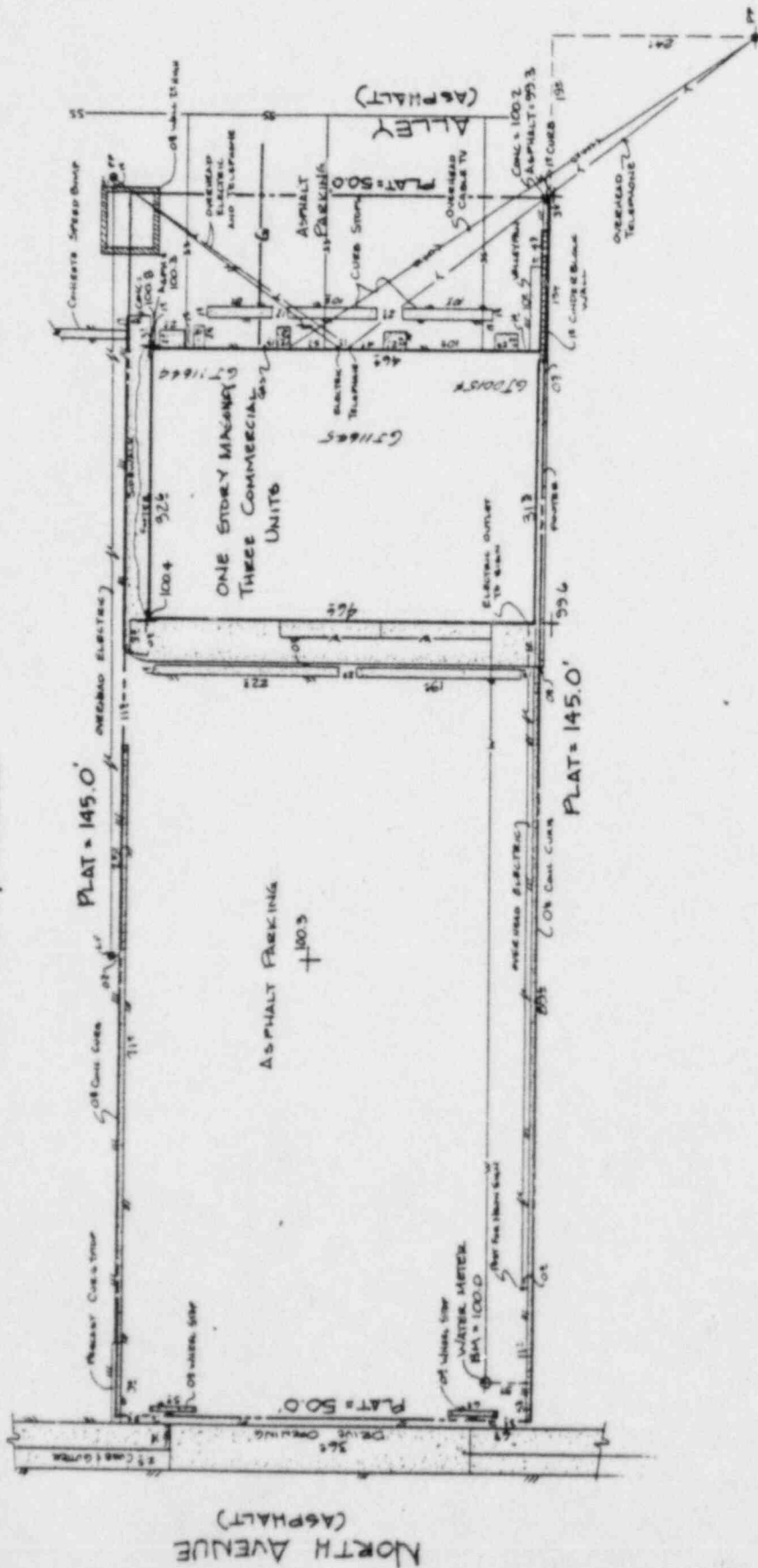
Storage Cost	: None	TOTAL	\$	0
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Advertising Expenses	: Signs - \$200.00			
	Newspaper ads - \$930.00	TOTAL	\$	1,130

Special Dislocation Items	: None	TOTAL	\$	0
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ESTIMATED TOTAL COST FOR DISLOCATION			\$	6,838
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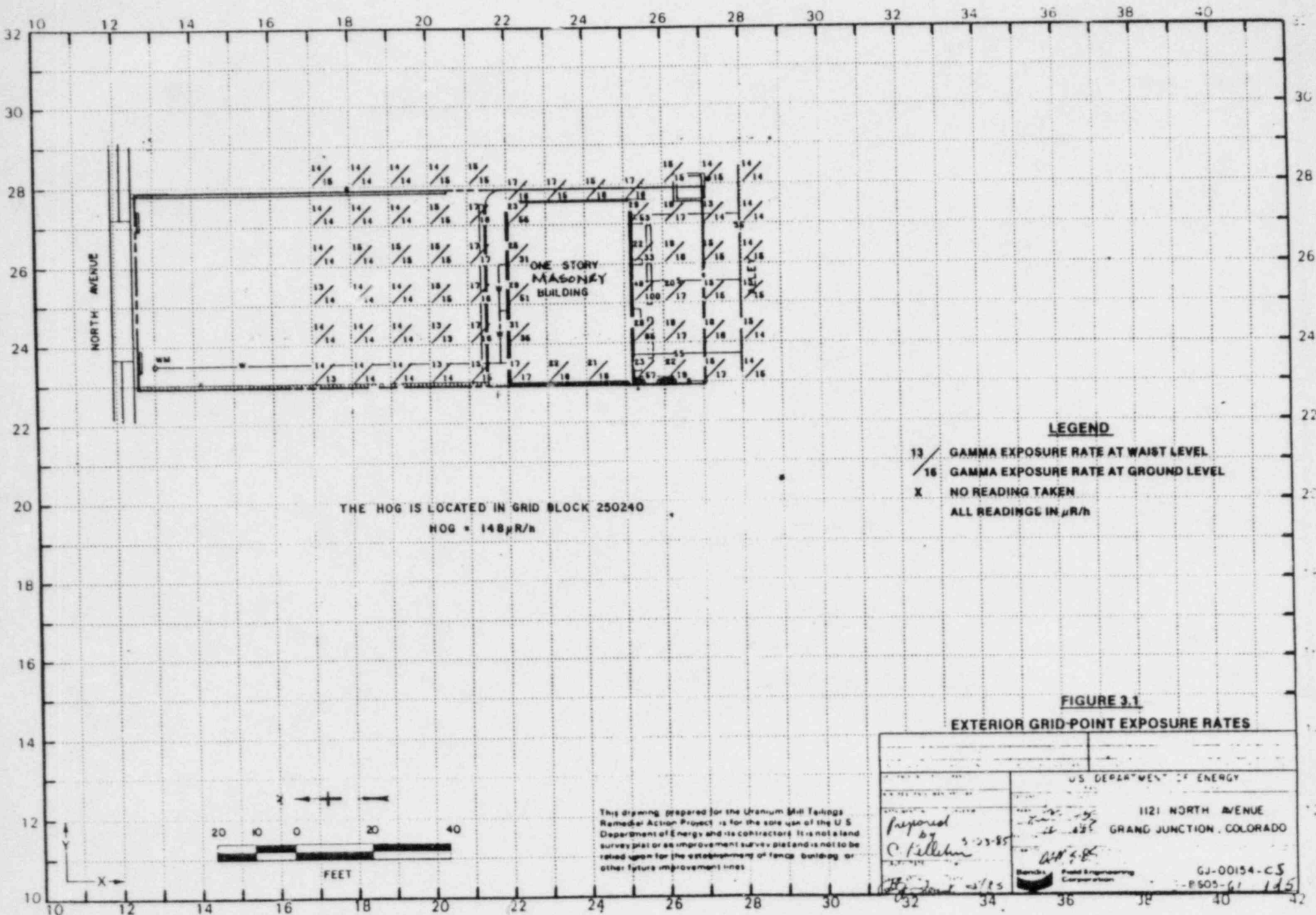
LOTS 5 AND 6 BLOCK 1,
CITY OF GRAND JUNCTION,
MESA COUNTY, COLORADO.

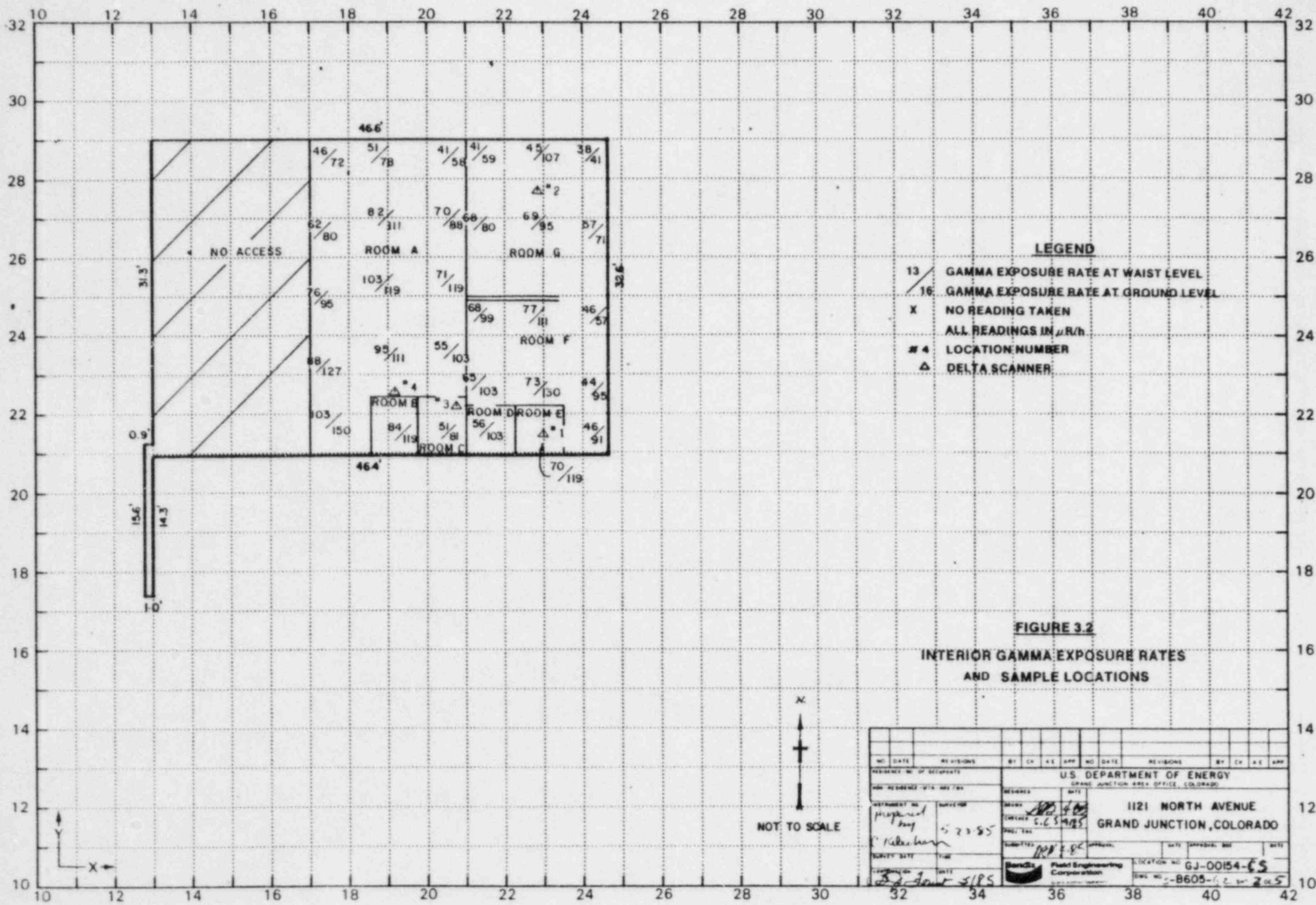


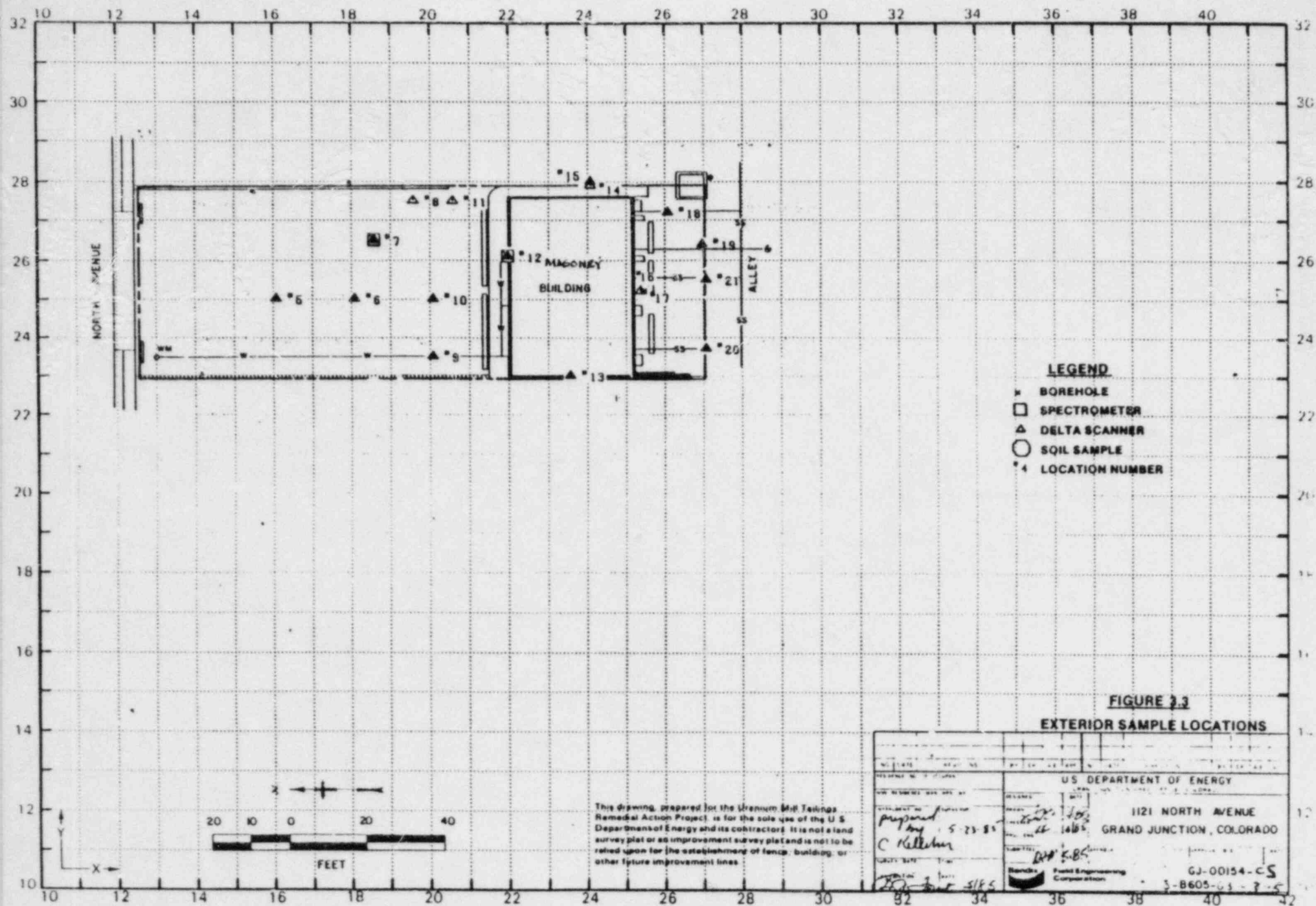
This drawing, prepared for the Union Mill Tailings Remedial Action Project, is for the site use of the U.S. Department of Energy and its contractors. It is not a legal survey plan or a legal document and should not be relied upon for the establishment of title, including, or other future improvements thereto.

FIGURE 2.2 SITE PLAN

U.S. DEPARTMENT OF ENERGY	DOE 40 40
GRAND JUNCTION PROJECT OFFICE, COLORADO	GJ00154.CS
ADDRESS 1121 NORTH AVENUE	ALB
GRAND JUNCTION, COLORADO	
SURV WHL 4-4-85	DRAW 85K 4-5-85
FOR EXAMINATION	DATE 11/16/64







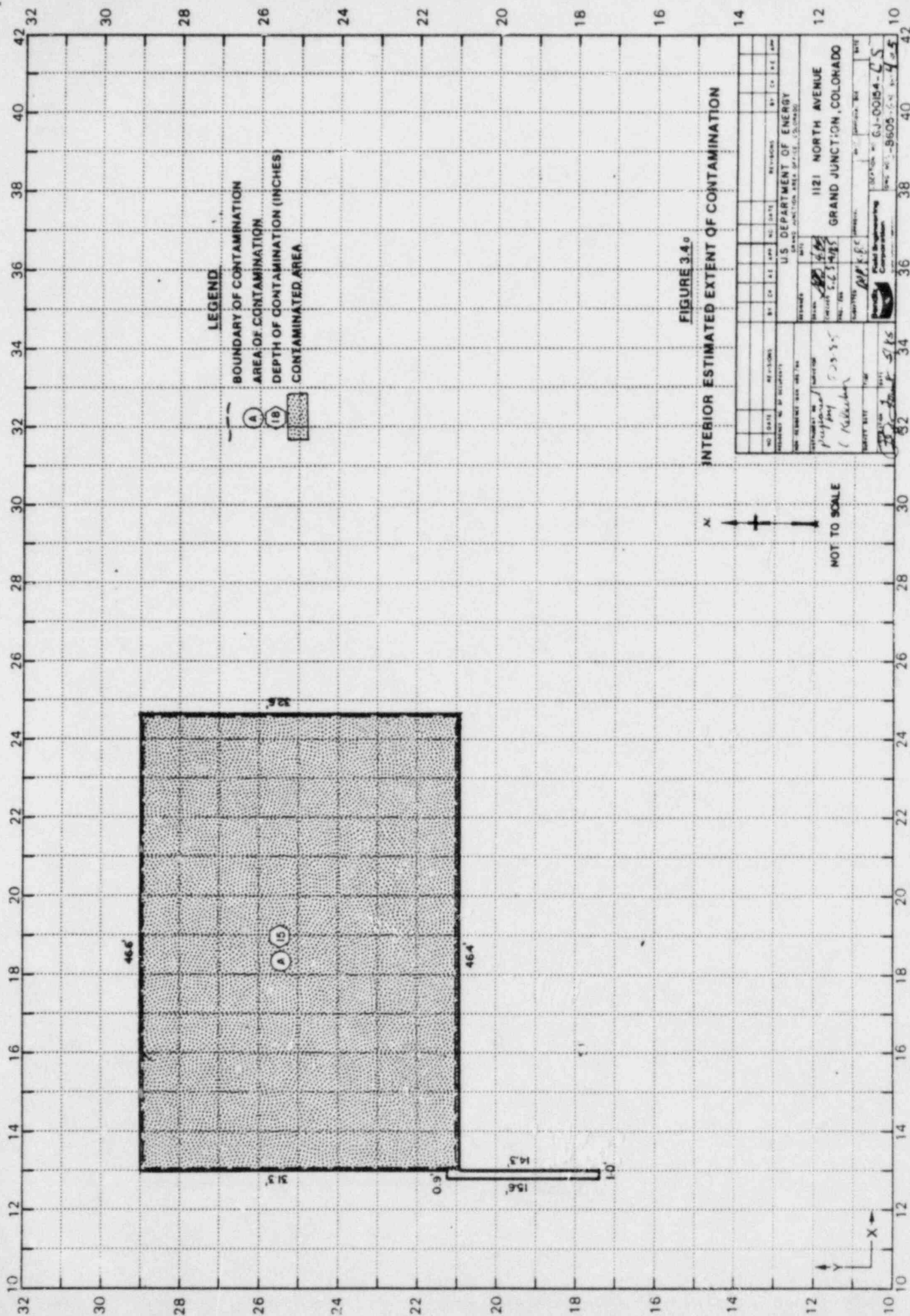
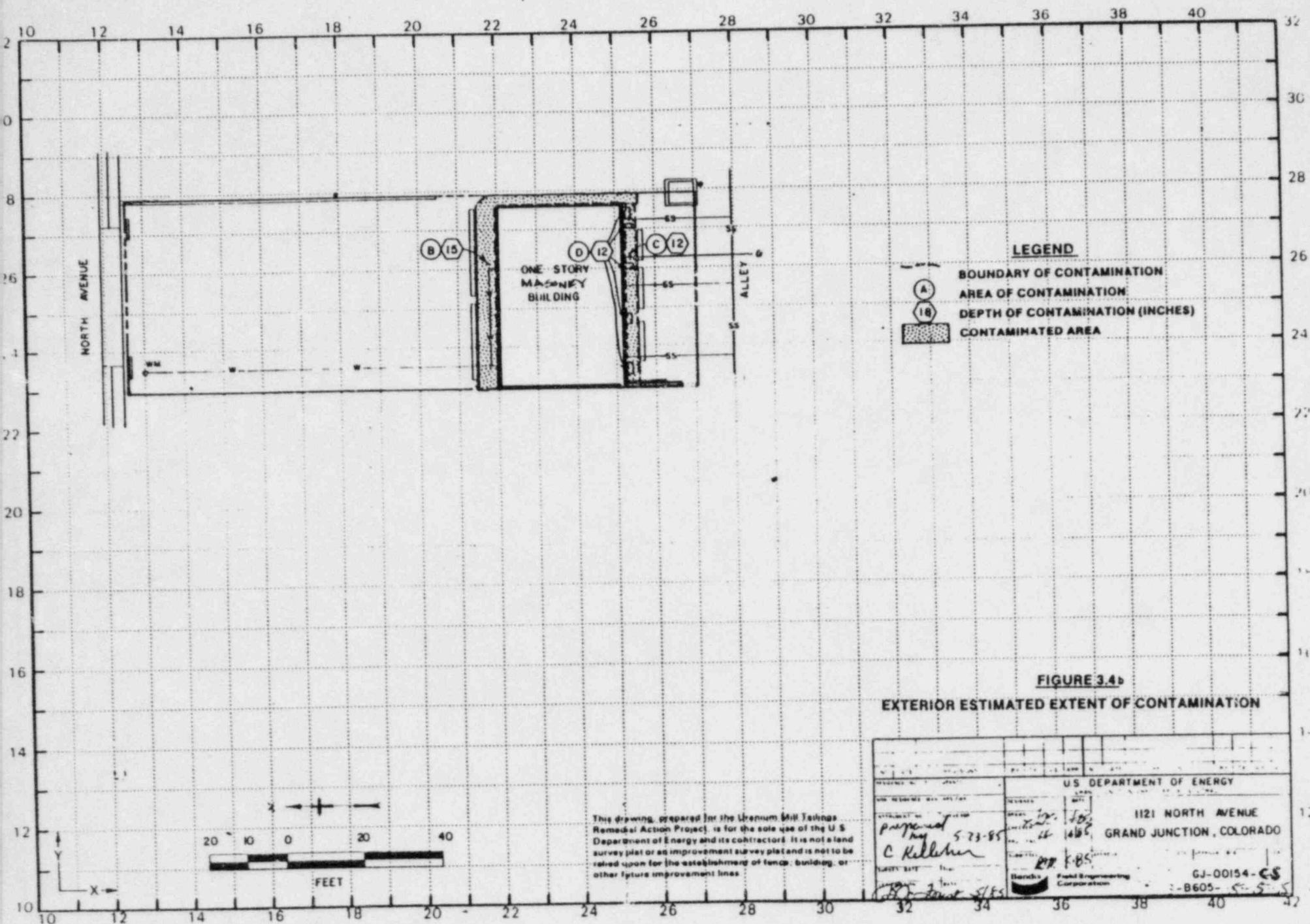


FIGURE 3.40

INTERIOR ESTIMATED EXTENT OF CONTAMINATION

[illegible]



3/85

DOE ID NO. GJ-00154-CS

Date 5-23-85

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

Official Survey Report

Property Address 1121 North Avenue

Property Owner H. J. Bellio and M. J. Bellio

Address of Owner (if different from above) 2980 214 Road, Silt, Co 81652

Report Prepared By Cathy Kelleher

I. PRESENCE/ABSENCE OF RESIDUAL RADIOACTIVE MATERIALS

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

1xxxx1 Residual radioactive materials found at the following locations:

1 1 In open areas.

1xxxx1 Under or around exterior improvements.

1 1 Under or around a typically nonoccupied structure.

1xxxx1 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.

1xxxx1 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 = 150 uR/h
HOG = 148 uR/h

MEMORANDUM

ALLIED Bendix
Aerospace

Bendix Field Engineering Corporation
Grand Junction Operations
Grand Junction, Colorado

Date: May 21, 1985

To: Files

From: Cathy Kelleher

Subject: Team Leader Notes - GJ-00154-CS

Address: 1121 North Avenue

Owner: John Bellio

Weather: Warm, high cloudiness.

Team Members

C. Kelleher (Team Leader)
V. Young
D. Bell
A. Raabe

M. Dexter
P. Hardy
M. Gilfillan

Instruments

See Equipment Summary Sheet

The building is a 30- by 47-foot cinderblock structure with concrete reinforcement walls along the east and west sides. The forms for the east wall had slumped and created an irregular thickened edge several feet thick at the base.

There was no Oak Ridge National Laboratory (ORNL) data. Colorado Department of Health (CDH) data indicates an average gamma exposure rate of 74 uR/h throughout the building. We were able to confirm this in the two shops on the east side of the building. However, the west shop was vacant and locked and we were unable to survey it.

Exterior readings indicate this area is similar to the other sections.

Team Leader Notes
Cathy Kelleher
GJ-00154-CS
May 21, 1985
Page 2

Inside the middle building a square hole had been cut in the floor to provide access to a water line. This hole was covered by a linoleum and steel sheet. We removed the sheet and the sand in the hole read 3000 to 3500 cps. We removed sand by hand until we reached a tailings/soil interface at 14 inches. The concrete pad was 4-inches thick.

A core was done through the sidewalk north of the building. The core was 5-inches thick. When checked with a scintillometer it did not appear to be contaminated. The hole augered through the sidewalk, hit the concrete footing at 16 inches. The hole augered against the south side of the building, hit the footing at 12 inches. The lot slopes from south to north. At Location 180250 was an auger refusal because a large rock was in the hole.

Utilities

Gas Line: The gas line was not shown on the maps but was marked by Public Service. We augered a hole over the trench through the asphalt to investigate it. The hole was augered away from the building to avoid shine from the building.

Sewer Line: There were three sewer lines augered. They were also augered away from the building to avoid shine. There is one sewer for each shop.

Water Line: The water line was augered away from the building to avoid shine. The water meter pit was checked with the scintillometer, which read 130 to 135 cps.

The telephone and electrical lines were overhead.

A lower ended scan was done, down to 130 cps to try to characterize any low level tailings which might be shielded by asphalt or concrete.

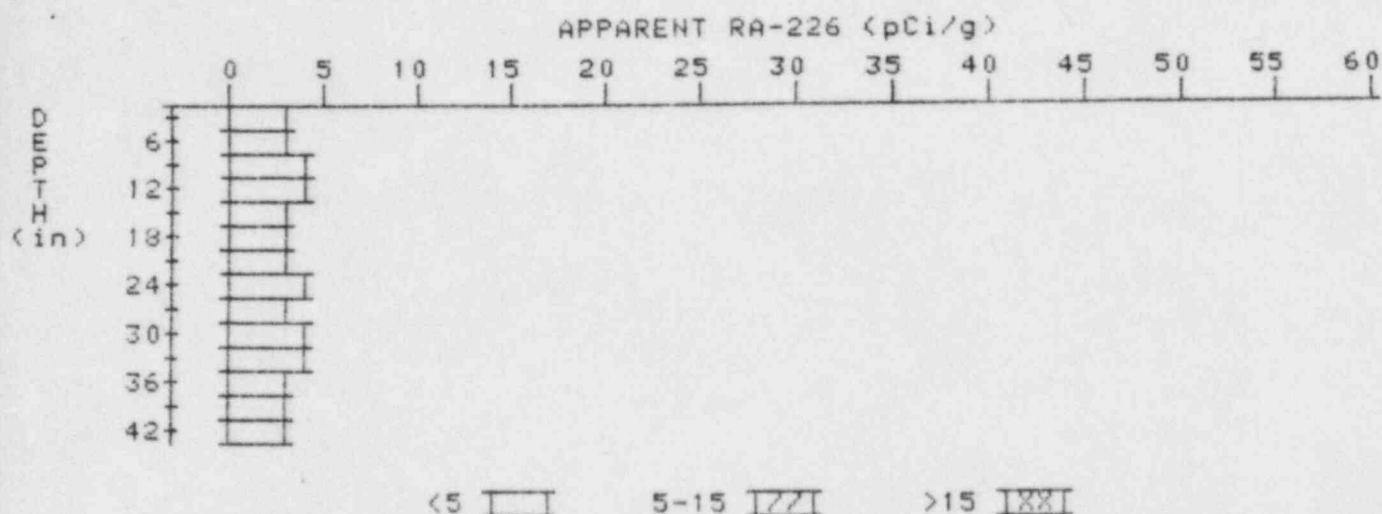
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

5

PROPERTY NUMBER: GJ-00154-CC

HOLE NUMBER: 5

LOCATION: 160250



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.8	2.8
6	3.2	3.4
9	3.5	4.0
12	3.5	3.7
15	3.4	3.4
18	3.3	3.1
21	3.3	3.1
24	3.4	3.6
27	3.4	3.2
30	3.5	3.7
33	3.5	3.7
36	3.4	3.4
39	3.3	3.1
42	3.3	3.3

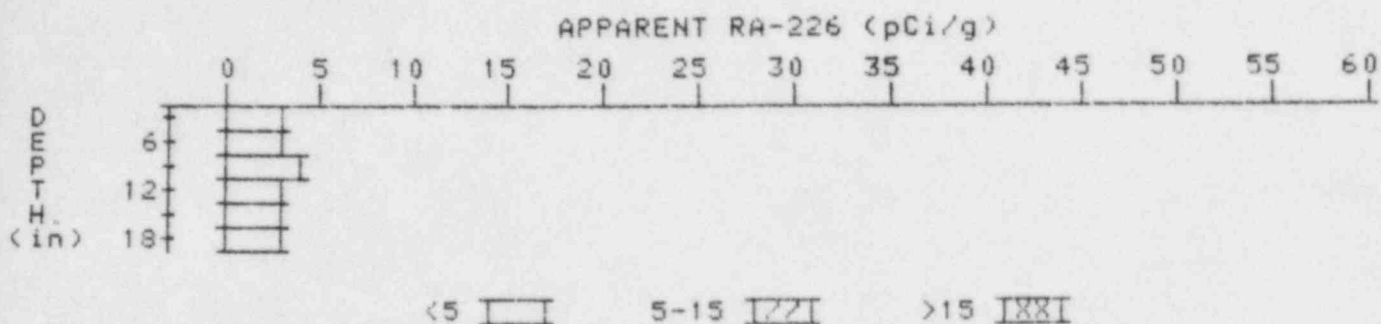
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

6

PROPERTY NUMBER: GJ-00154-CC

HOLE NUMBER: 6

LOCATION: 180250



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.9	2.9
6	3.2	3.4
9	3.4	3.8
12	3.4	3.4
15	3.4	3.4
18	3.4	3.4

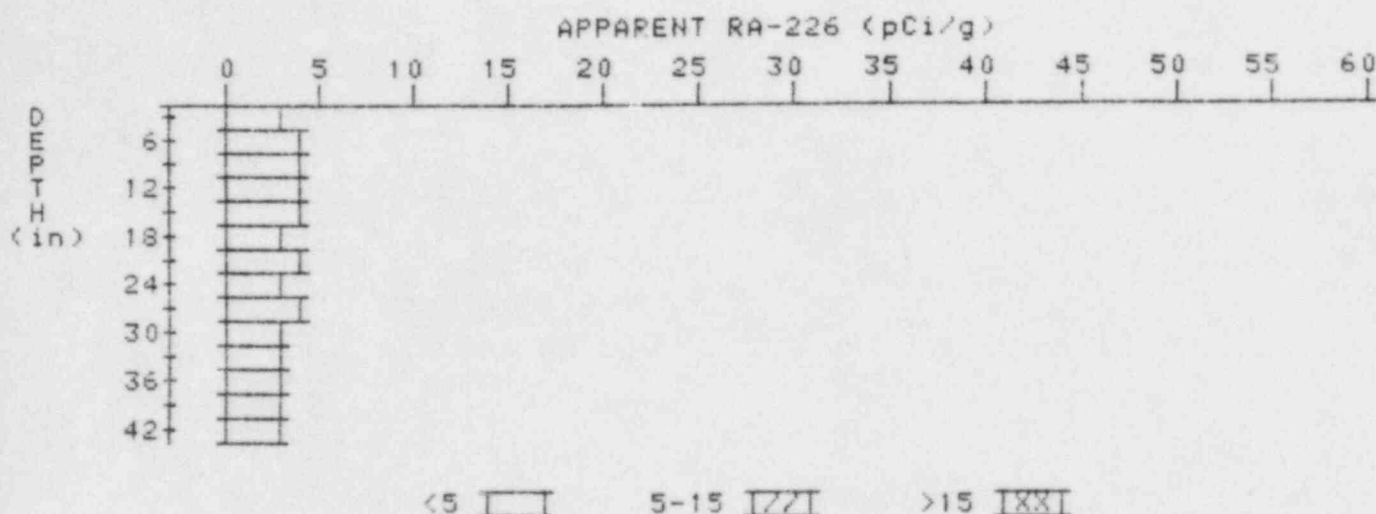
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

7

PROPERTY NUMBER: GJ-00154-CC

HOLE NUMBER: 7

LOCATION: 185265



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.9	2.9
6	3.4	3.8
9	3.7	4.4
12	3.6	3.6
15	3.5	3.5
18	3.4	3.0
21	3.5	3.9
24	3.4	3.2
27	3.4	3.6
30	3.3	3.1
33	3.3	3.3
36	3.3	3.5
39	3.2	3.0
42	3.2	3.2

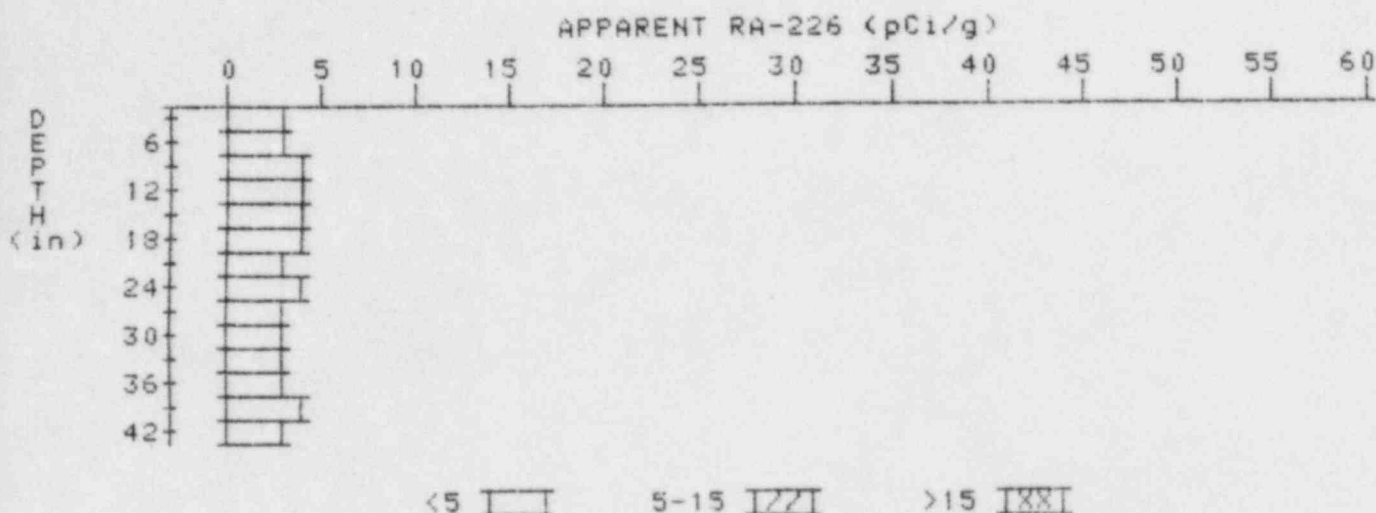
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

9

PROPERTY NUMBER: GJ-00154-CC

HOLE NUMBER: 9

LOCATION: 200235



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.9	2.9
6	3.2	3.0
9	3.6	4.3
12	3.6	3.6
15	3.6	3.8
18	3.5	3.5
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
39	3.5	3.9
42	3.4	3.4

APPARENT RADIUM-226 CONCENTRATION 10

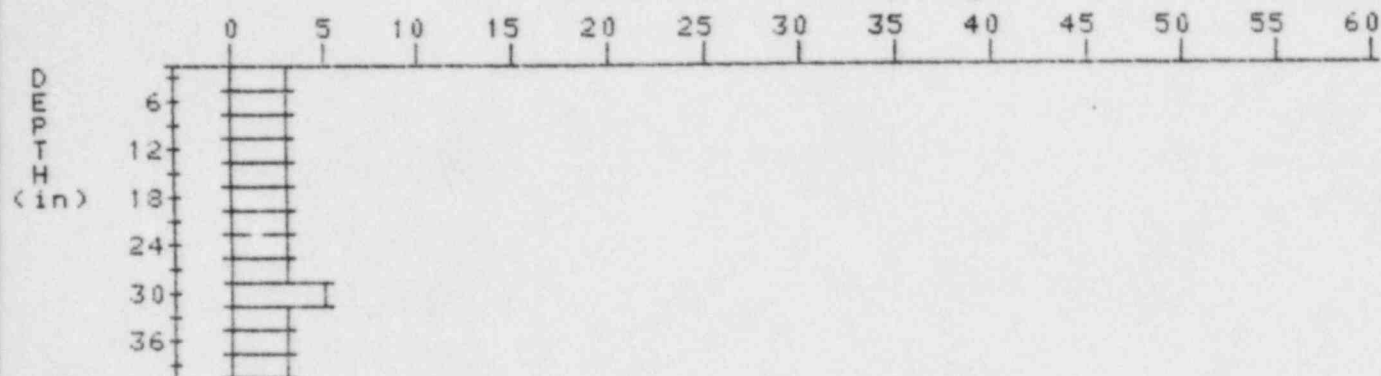
DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-00154-CC

HOLE NUMBER: 10

LOCATION: 200250

APPARENT RA-226 (pCi/g)



<5

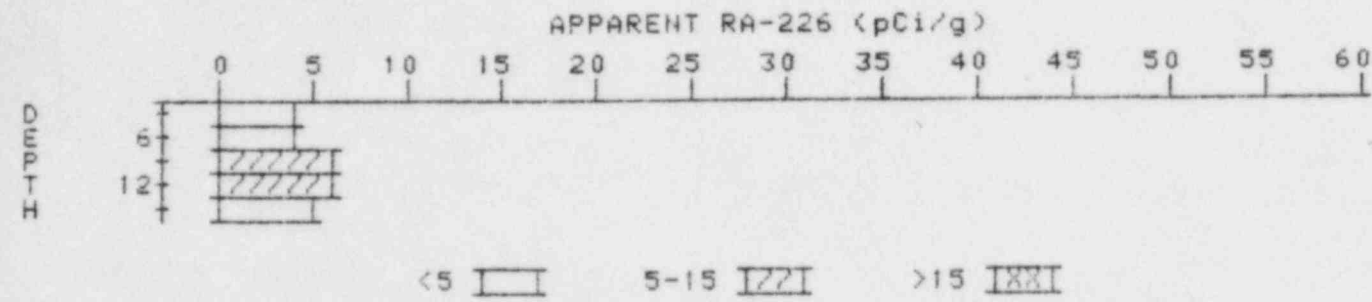
5-15

>15

Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.3	3.3
6	3.3	3.3
9	3.3	3.5
12	3.2	3.0
15	3.2	3.2
18	3.2	3.0
21	3.3	3.5
24	3.3	3.3
27	3.3	2.8
30	3.6	4.7
33	3.3	3.1
36	3.1	3.1
39	2.9	2.9

APPARENT RADIUM-226 CONCENTRATION 12 DECONVOLUTION GRAPH

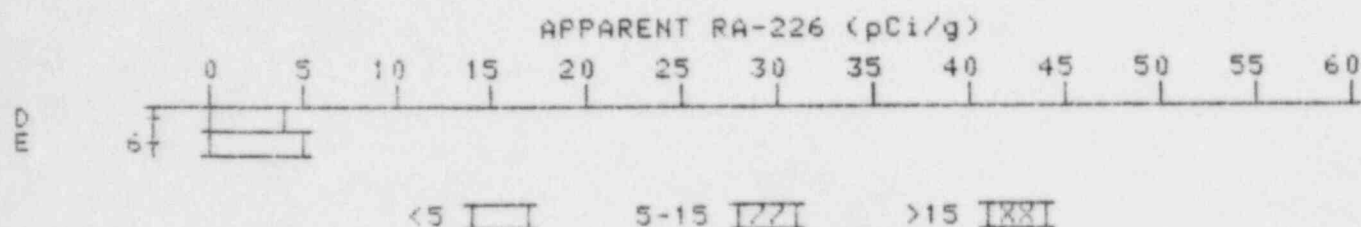
PROPERTY NUMBER: GJ-00154-CC
HOLE NUMBER: 12
LOCATION: 219261



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.2	4.2
6	4.6	4.4
9	5.1	5.8
12	5.2	5.9
15	4.9	4.9

APPARENT RADIUM-226 CONCENTRATION 13 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-00154-CC
HOLE NUMBER: 13
LOCATION: 235230



Depth (in)	Apparent Radium-226 (pCi/g)	Apparent Radium-226 (pCi/g)
	Undeconvolved	Deconvolved
3	4.3	4.3
6	4.7	4.7

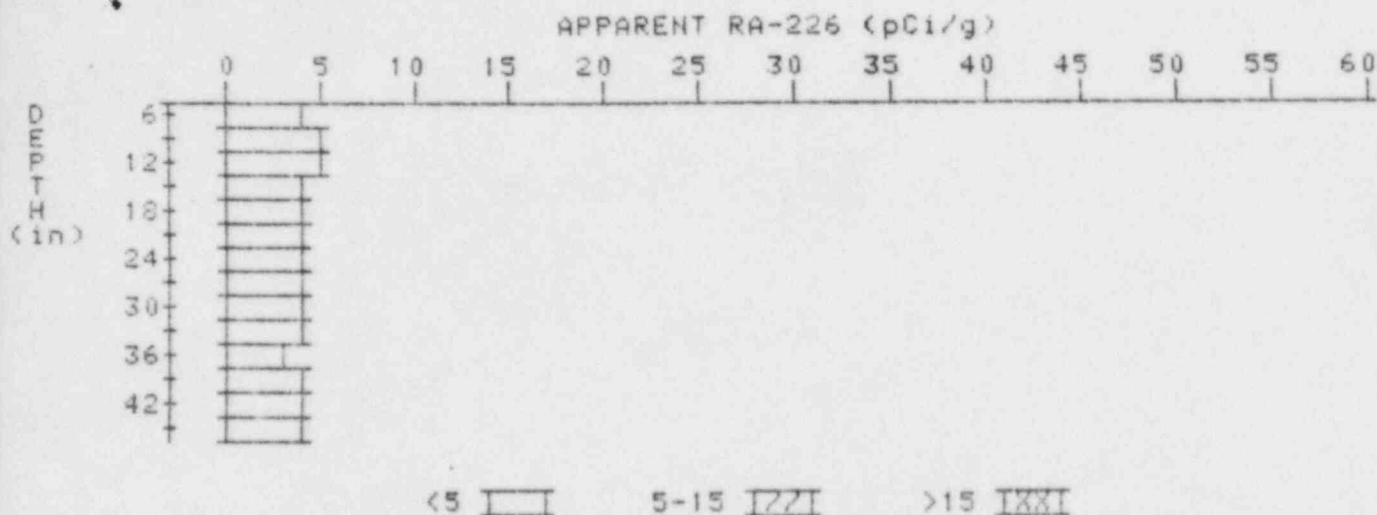
APPARENT RADIUM-226 CONCENTRATION 15

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-00154-CC

HOLE NUMBER: 15

LOCATION: 240280



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
6	3.5	3.5
9	4.1	4.8
12	4.3	4.8
15	4.2	4.0
18	4.2	4.4
21	4.1	3.9
24	4.1	4.3
27	4.0	3.8
30	4.0	4.2
33	3.9	4.1
36	3.7	3.3
39	3.7	3.9
42	3.6	3.6
45	3.5	3.5

APPARENT RADIUM-226 CONCENTRATION 17

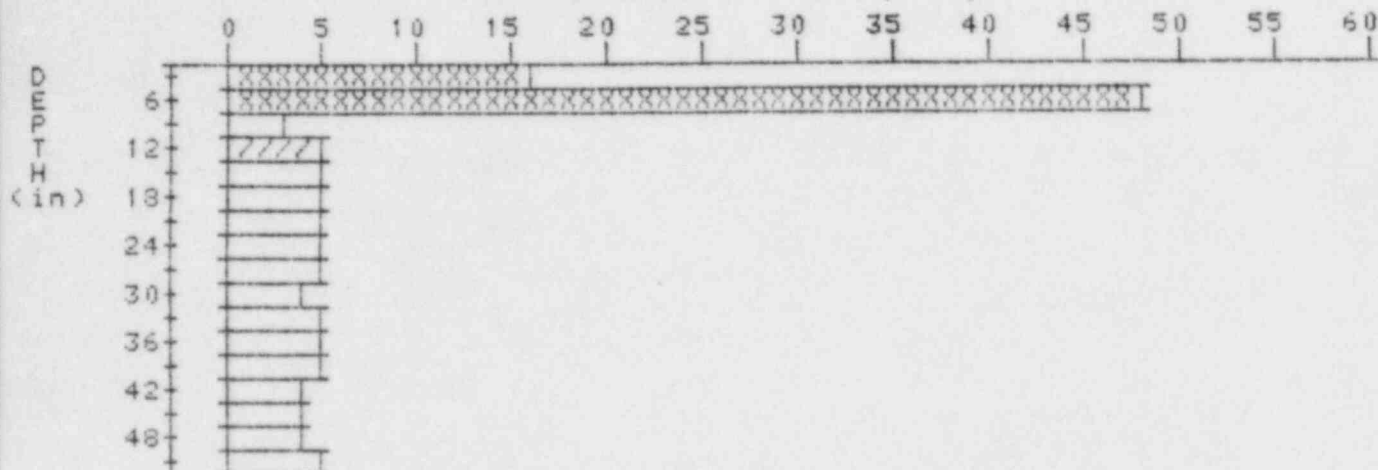
DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-00154-CC

HOLE NUMBER: 17

LOCATION: 254252

APPARENT RA-226 (pCi/g)



<5

5-15

>15

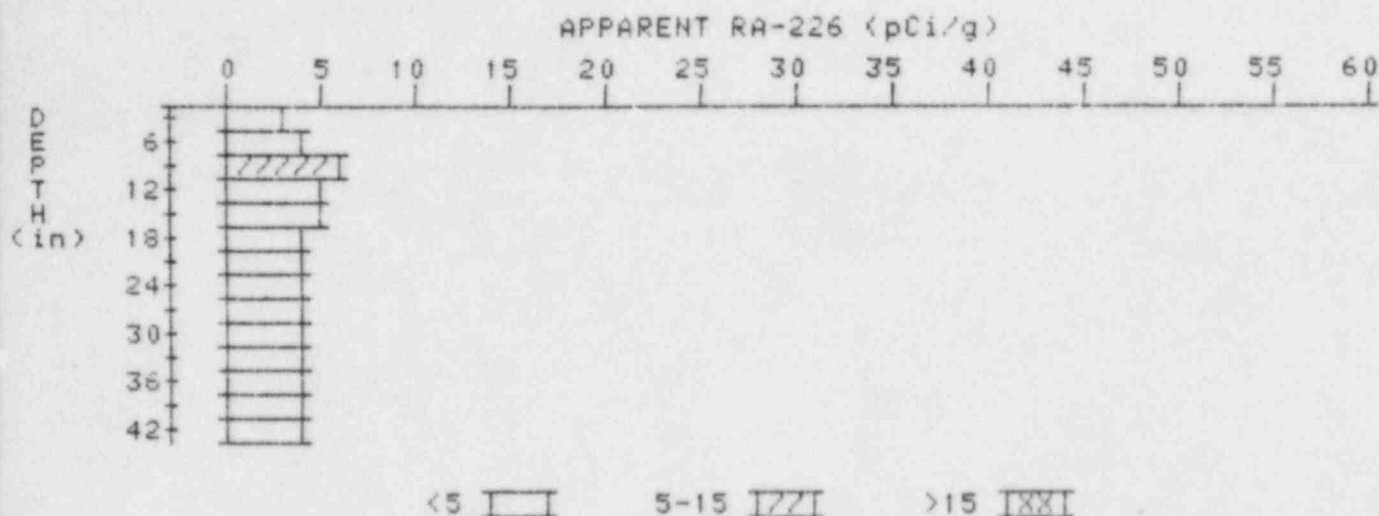
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	15.6	15.6
6	21.4	47.7
9	12.4	3.3
12	8.5	5.1
15	6.5	4.5
18	5.6	4.9
21	5.1	4.6
24	4.9	4.7
27	4.8	5.0
30	4.6	4.2
33	4.6	4.6
36	4.6	4.8
39	4.5	4.5
42	4.4	4.2
45	4.4	4.4
48	4.4	4.2
51	4.5	4.5

APPARENT RADIUM-226 CONCENTRATION 18 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-00154-CC

HOLE NUMBER: 18

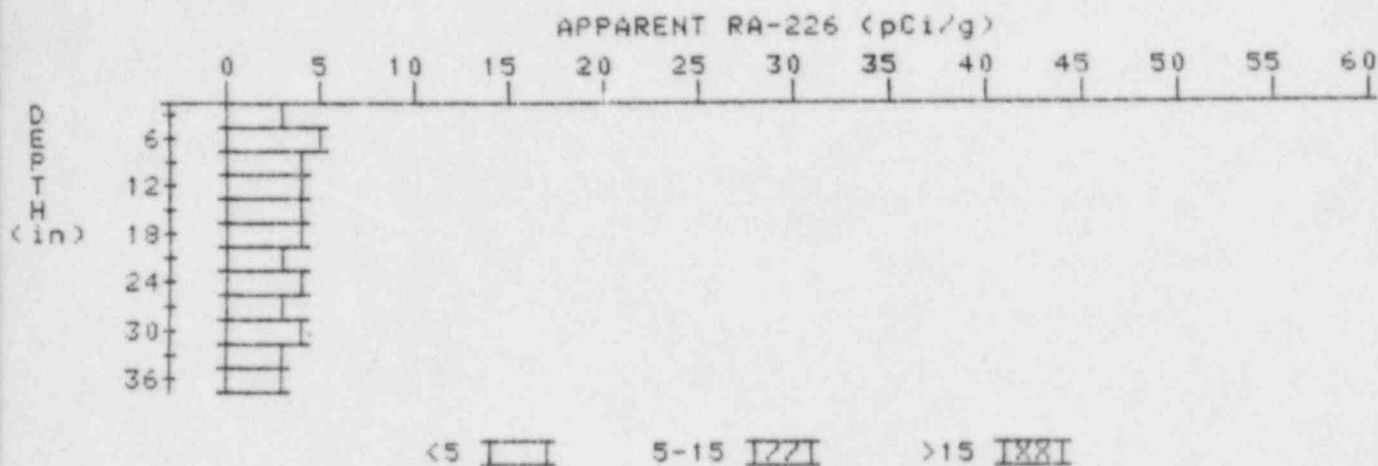
LOCATION: 260272



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.4	3.4
6	4.0	4.0
9	4.6	5.7
12	4.6	4.8
15	4.5	4.7
18	4.3	4.1
21	4.2	4.2
24	4.1	3.9
27	4.1	4.3
30	4.0	4.0
33	3.9	3.9
36	3.8	3.8
39	3.7	3.7
42	3.6	3.6

APPARENT RADIUM-226 CONCENTRATION 19 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-00154-CC
HOLE NUMBER: 19
LOCATION: 269264



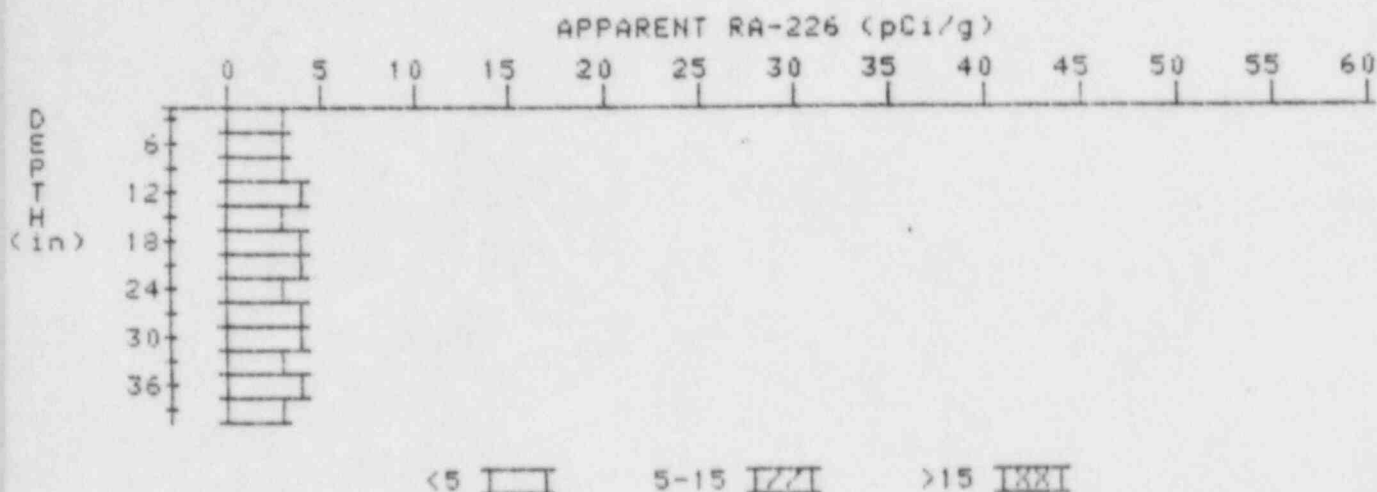
Depth (in)	Apparent Radium-226 (pCi/g)	Apparent Radium-226 (pCi/g)
	Undeconvolved	Deconvolved
3	3.4	3.4
6	3.8	4.5
9	3.8	4.0
12	3.7	3.7
15	3.6	3.6
18	3.5	3.5
21	3.4	2.9
24	3.6	4.1
27	3.5	3.3
30	3.5	3.7
33	3.4	3.2
36	3.4	3.4

APPARENT RADIUM-226 CONCENTRATION 20 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-00154-CC

HOLE NUMBER: 20

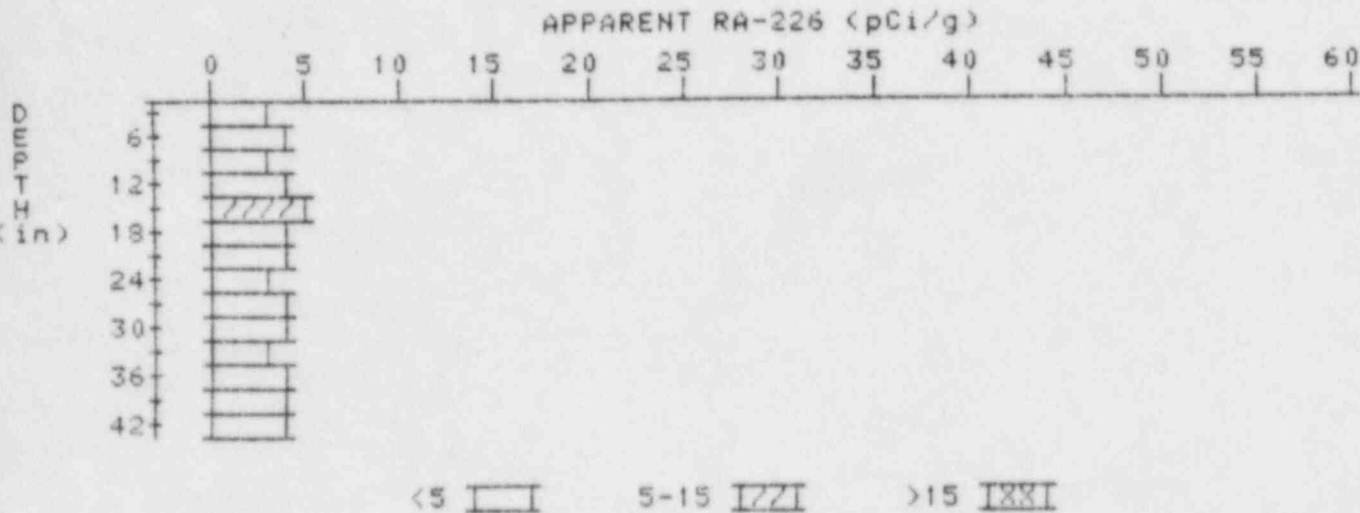
LOCATION: 270237



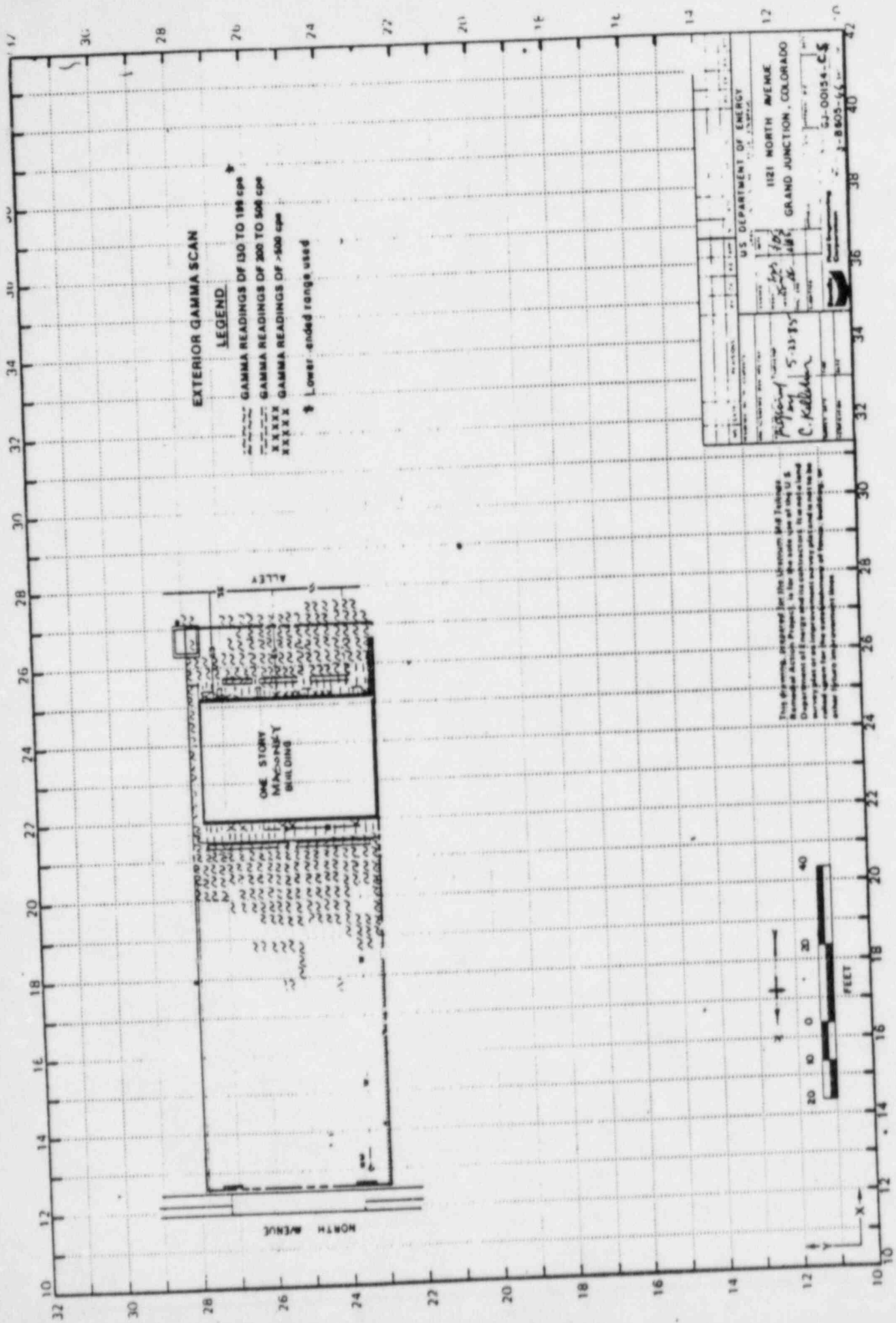
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.1	3.1
6	3.3	3.5
9	3.4	3.2
12	3.6	4.0
15	3.6	3.4
18	3.7	3.9
21	3.7	3.9
24	3.6	3.2
27	3.7	3.9
30	3.7	3.9
33	3.6	3.4
36	3.6	4.0
39	3.4	3.4

APPARENT RADIUM-226 CONCENTRATION 21 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-00154-CC
HOLE NUMBER: 21
LOCATION: 270255



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.1	3.1
6	3.5	3.9
9	3.7	3.3
12	4.1	4.5
15	4.3	5.0
18	4.1	3.9
21	4.0	4.2
24	3.8	3.4
27	3.8	3.8
30	3.8	3.8
33	3.8	3.4
36	4.0	4.2
39	4.1	4.1
42	4.2	4.2



U.S. DEPARTMENT OF ENERGY
1121 NORTH AVENUE
GRAND JUNCTION, COLORADO

Project 5-13-85
C. Kellison

1121 NORTH AVENUE
GRAND JUNCTION, COLORADO
GJ-00154-C-5
3-8803-66

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