

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-02292-RS
ADDRESS: 2216 NORTH 21ST STREET

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 26, 1985

REA02292:REA-710

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TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 EXECUTIVE SUMMARY	1
1.1 Introduction	1
1.2 Evaluation and Recommendation	1
2.0 PROPERTY DESCRIPTION	2
2.1 General Description	2
2.2 Existing Facilities and Structures	2
3.0 RADIOLOGIC SURVEY	4
3.1 Introduction	4
3.2 Gamma Exposure-Rate Surveys	4
3.2.1 Exterior Findings	4
3.2.2 Interior Findings	4
3.3 Boreholes, Soil Samples, and Other Measurements	4
3.4 Radon/Radon Daughter Concentration	5
3.5 Extent of Contamination	5
4.0 RECOMMENDED REMEDIAL ACTION	7
4.1 Decontamination and Restoration	7
4.2 Evaluation of Recommended Remedial Action	7
5.0 REFERENCES	8
6.0 APPENDIX	9

1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-02292-RS, is a single-family residence located at 2216 North 21st Street, 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, 52 cu. yd.; interior, 0 cu. yd.

Estimated cost to perform remedial action, including dislocation when applicable, is \$4,831. Remedial action on this property will take approximately 14 days to complete.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 2216 North 21st Street, Grand Junction, Colorado

Zoning: Residential (RSF-8)

Lot Size: Approximately 7,500 sf (0.17 acres)

Legal Description: Lot 23, Sungold Park Annex, Sec. 12, T1S, R1W, U.M., City of Grand Junction, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 2 mile(s) 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:	Single-family residence
South:	Single-family residence
East:	Alley
West:	North 21st Street

2.2 Existing Facilities and Structures

Primary Structure:

Type:	Single-story residence
Size:	Approximately 1,920 sf
Construction Date:	1955
Construction:	Wood-frame
Foundation:	Concrete foundation wall and footing
Footing Depth:	Approximately 104" to bottom of footing from grade
Basement:	Yes - full
Crawl Space:	None
Condition:	Good

Other Structures:

Type:	Shed
Size:	Approximately 50 sf
Construction:	Prefabricated metal
Foundation:	None
Condition:	Good

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-02292-RS on July 8, 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 to determine areas of potential contamination identified during previous radiologic assessments of this property.

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): 65 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: 15 to 17 uR/h
Highest Inside Gamma Reading (HIG): 27 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)

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

3.5 Extent of Contamination

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

- (Area A) Surface Material: Concrete
Direction From Primary Structure: Basement
Other Directions: Bathroom
Other (height or thickness): 4 inches thick by
3 inches wide
Comment: Shower ledge
Approximate Square Footage: 2 - This area is not included
for remedial action.
- (Area B) Surface Material: Lawn
Direction From Primary Structure: Southwest
Other Directions: North and south of the driveway
Total Depth of Contamination: 6 inches
Approximate Square Footage: 48
- (Area C) Surface Material: Lawn
Direction From Primary Structure: West
Other Directions: Between the west sidewalks
Total Depth of Contamination: 12 inches
Comments: Contamination may extend slightly under the
sidewalks.
Approximate Square Footage: 88
- (Area D) Surface Material: Lawn
Direction From Primary Structure: Southwest
Other Directions: East and south of the driveway
Total Depth of Contamination: 12 inches
Comments: Contamination may extend slightly under
adjacent driveway.
Approximate Square Footage: 150
- (Area E) Surface Material: Soil
Direction From Primary Structure: South
Total Depth of Contamination: 6 inches
Comments: Two deposits
Approximate Square Footage: 50

- (Area F) Surface Material: Concrete
Direction From Primary Structure: East
Other Directions: East patio
Total Depth of Contamination: 9 inches
Other (height or thickness): 4-inch-thick concrete
Approximate Square Footage: 102
- (Area G) Surface Material: Lawn
Direction From Primary Structure: West
Other Directions: North of sidewalk
Total Depth of Contamination: 6 inches
Comments: Two deposits
Approximate Square Footage: 40
- (Area H) Surface Material: Soil
Direction From Primary Structure: North and west
Total Depth of Contamination: 6 inches
Approximate Square Footage: 84
- (Area I) Surface Material: Soil
Direction From Primary Structure: East
Other Directions: Near east property line
Total Depth of Contamination: 9 inches
Comment: Garden
Approximate Square Footage: 884
- (Area J) Surface Material: Soil
Direction From Primary Structure: East
Other Directions: In the alley
Total Depth of Contamination: .9 inches
Approximate Square Footage: 225
- (Area K) Surface Material: Soil
Direction From Primary Structure: East
Other Directions: In the alley
Total Depth of Contamination: 9 inches
Approximate Square Footage: 48
- (Area L) Surface Material: Lawn
Direction From Primary Structure: East
Other Directions: East property line
Total Depth of Contamination: Estimated at 9 inches
Comments: The depth of contamination is based on data collected from Area K.
Approximate Square Footage: 75

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-02292-RS, 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.

Remedial action will not be performed on Area A of this property because the levels of radioactivity in this area do not exceed the EPA Standards (40 CFR 192), as described below:

- (1) Indoor radon-decay products shall not exceed a working level of 0.03, nor, to the extent possible, a working level of 0.02. It is recommended that an indoor RDC measurement be completed on this property. If the RDC measurement exceeds EPA Standards, then the REA will be revised and remedial action accomplished in accordance with the Vicinity Property Management and Implementation Manual. If EPA Standards are not exceeded, then the no-action recommendation in Area A will be considered valid, and a Property Completion Report will be prepared for DOE certification.
- (2) Indoor gamma radiation shall not exceed 20 microroentgens per hour (uR/h) above background levels. (At this location the interior background readings were found to be between 15 and 17 uR/h, with the highest mean surface gamma reading at 22 uR/h.)

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 \$4,831.

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

Owner preference is to have construction done in the springtime. There are no legal or other complications 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

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 - Basement
Figure 3.3	Sample Locations
Figure 3.4a	Interior Estimated Extent of Contamination
Figure 3.5b	Exterior 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-02292-RS

2216 North 21st Street

Page 1 of 5

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
3	144230	00	DS	6.8		*	Along driveway
		06	DS	2.7		*	DC = 6 inches
4	150256	00	DS	5.7		*	West sidewalk
		06	DS	2.7		*	DC = 6 inches
5	154251	00	DS	8.0		*	West of primary structure
		03	TC	5.7		*	
		06	TC	6.6		*	
		09	TC	5.7		*	
		12	TC	4.9		*	DC = 12 inches
		15	TC	4.4		*	Based on the deconvolution graph
		18	TC	4.1		*	
		21	TC	4.0		*	
		24	TC	4.1		*	
		27	TC	4.1		*	
		30	TC	4.1		*	
		33	TC	4.1		*	
		36	TC	4.0		*	
6	160230	00	DS	7.0		*	Along driveway
		06	DS	4.7		*	
		12	DS	1.6		*	DC = 12 inches
7	162257	00	DS	6.4		*	By west steps
		06	DS	2.9		*	DC = 6 inches
8	165233	00	DS	11.1		*	East end of driveway
		03	TC	7.3		*	
		06	TC	6.4		*	
		09	TC	5.6		*	
		12	TC	4.8		*	DC = 12 inches Based on the deconvolution graph
		15	TC	4.3		*	
		18	TC	4.2		*	
		21	TC	4.2		*	
		24	TC	4.3		*	
		27	TC	4.3		*	
		30	TC	4.4		*	
		33	TC	4.5		*	
9	169243	00	DS	1.4		*	West of primary structure
		06	DS	1.4		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-02292-RS

2216 North 21st Street

Page 2 of 5

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
10	169262	03	TC	4.3		*	
		06	TC	4.7		*	By water and sewer lines
		09	TC	4.5		*	
		12	TC	4.2		*	
		15	TC	4.0		*	
		18	TC	3.9		*	DC = 6 inches Based on all available data
		21	TC	3.7		*	
		24	TC	3.7		*	
		27	TC	3.6		*	
		30	TC	3.6		*	
		33	TC	3.6		*	
		36	TC	3.7		*	
		39	TC	3.7		*	
		42	TC	3.6		*	
		45	TC	3.6		*	
		48	TC	3.6		*	
		51	TC	3.6		*	
		54	TC	3.6		*	
		57	TC	3.6		*	
		60	TC	3.7		*	
		63	TC	3.6		*	
11	169276	00	DS	3.7		*	West of primary structure DC = 6 inches
		06	DS	2.9		*	
		12	DS	1.5		*	
12	183281	00	DS	2.0		*	By gas line
		12	DS	1.2		*	
13	190233	00	DS	3.7		*	South of primary structure DC = 6 inches
		06	DS	1.4		*	
14	193281	00	DS	3.4		*	North of primary structure
		03	TC	4.5		*	
		06	TC	4.5		*	
		09	TC	4.3		*	
		12	TC	4.1		*	DC = 6 inches Based on all available data
		15	TC	4.1		*	
		18	TC	4.0		*	
		21	TC	4.0		*	
		24	TC	4.0		*	
		27	TC	4.0		*	
		30	TC	4.1		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-02292-RS

2216 North 21st Street

Page 3 of 5

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
14	193281	33	TC	4.0		*	
		36	TC	4.0		*	
		39	TC	4.0		*	
		42	TC	4.0		*	
		45	TC	4.0		*	
		48	TC	4.1		*	
		51	TC	4.0		*	
		54	TC	4.1		*	
		57	TC	4.0		*	
		60	TC	3.9		*	
		63	TC	3.9		*	
		66	TC	3.9		*	
		69	TC	3.8		*	
		72	TC	3.8		*	
		75	TC	3.8		*	
		78	TC	3.8		*	
		81	TC	3.8		*	
		84	TC	3.8		*	
15	196239	00	DS	3.3		*	South edge of patio
		06	DS	1.4		*	DC = 6 inches
16	199245	03	TC	14.9		*	On patio
		06	TC	10.1		*	East of primary
		09	TC	7.2		*	structure
		12	TC	5.4		*	
		15	TC	4.9		*	
		18	TC	4.7		*	
		21	TC	4.5		*	DC = 9 inches
		24	TC	4.5		*	Based on the
		27	TC	4.5		*	deconvolution graph
		30	TC	4.5		*	
		33	TC	4.4		*	
		36	TC	4.3		*	
		39	TC	4.2		*	
		42	TC	4.0		*	
17	201255	00	DS	<1.0		*	On flagstone
		02	DS	1.8		*	Under flagstone
18	215275	00	DS	<1.0		*	East yard
		03	TC	2.7		*	Background
		06	TC	3.1		*	
		09	TC	3.3		*	DC = 0 inches

Radium Concentrations at Exterior Locations

DOE ID #GJ-02292-RS

2216 North 21st Street

Page 4 of 5

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
18	215275	12	TC	3.4		*	
		15	TC	3.5		*	
		18	TC	3.5		*	
		21	TC	3.7		*	
		24	TC	3.7		*	
		27	TC	3.8		*	
		30	TC	4.0		*	
19	230262	00	DS	<1.0		*	East of primary structure
		03	TC	3.0		*	
		06	TC	3.4		*	
		09	TC	3.5		*	DC = 0 inches
		12	TC	3.3		*	
		15	TC	3.7		*	
		18	TC	3.8		*	
		21	TC	3.9		*	
		24	TC	3.9		*	
		27	TC	4.0		*	
		30	TC	3.9		*	
		33	TC	3.9		*	
20	232276	00	DS	1.0		*	East of primary structure
		06	DS	1.5		*	
		12	DS	<1.0		*	
21	255231	00	DS	5.5		*	
		03	TC	5.4		*	Southeast yard
		06	TC	5.5		*	
		09	TC	4.8		*	
		12	TC	4.4		*	
		15	TC	4.2		*	DC = 9 inches
		18	TC	4.1		*	Based on the
		21	TC	4.0		*	deconvolution graph
		24	TC	3.6		*	
		27	TC	3.8		*	
		30	TC	3.8		*	
		33	TC	3.7		*	
22	260248	00	DS	19.2		*	Near east property
		03	TC	14.7		*	line
		06	TC	16.3		*	DC = 12 inches
		09	TC	14.1		*	Based on the
		12	TC	10.1		*	deconvolution graph

Radium Concentrations at Exterior Locations

DOE ID #GJ-02292-RS

2216 North 21st Street

Page 5 of 5

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot.	Ct Spectr.		
22	260248	15	TC	7.6		*	
		18	TC	6.1		*	
		21	TC	5.2		*	
		24	TC	4.7		*	
		27	TC	4.3		*	
		30	TC	4.2		*	
23	270240	00	DS	6.2		*	In alley
		03	TC	6.3		*	
		06	TC	6.3		*	DC = 9 inches
		09	TC	5.4		*	Based on the
		12	TC	4.7		*	deconvolution graph
		15	TC	4.3		*	
		18	TC	4.1		*	
		21	TC	4.1		*	
		24	TC	4.1		*	
24	272264	27	TC	4.2		*	
		00	DS	4.1		*	In alley
		03	TC	5.0		*	
		06	TC	4.9		*	
		09	TC	4.5		*	DC = 9 inches
		12	TC	4.4		*	Based on the
		15	TC	4.3		*	deconvolution graph
		18	TC	4.1		*	
		21	TC	4.2		*	
		24	TC	4.1		*	
		27	TC	4.0		*	
		30	TC	4.0		*	
		33	TC	4.0		*	
		36	TC	4.0		*	
		39	TC	3.9		*	

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 = 07-88-85
Team Leader = MR

Radium Concentrations at Interior Locations

DOE ID #GJ-02292-RS

2216 North 21st Street

Page 1 of 1

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
1		[4]	DS	16.6		*	On ledge in shower
2		00	DS	1.1		*	In shower

Measurement Types: 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 = 07-08-85
Team Leader = MR

Table 3.3
Summary of Interior Gamma Exposure Rates

DOE ID No. GJ-02292-RS 2216 North 21st Street Page 1 of 1

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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	08	15-17	16	08	15-17	16
Room B	10	15-17	16	10	16-18	17
Room C	02	16-16	16	02	17-27	22
Room D	08	14-16	15	05	14-16	15
Room E	08	15-17	16	08	15-17	16
Shed	*	*	*	*	13-16	*

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* A walking gamma scan was performed to confirm the absence of interior contamination in the shed. Exposure rates and room locations are shown in Appendix Figure 3.2.

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-02292-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>
INTERIOR					
	Concrete				
A	8 x 0.3 =	2	(not included for remedial action)		
EXTERIOR					
	Concrete				
F	6 x 17 =	102	x 0.3 =	31	
	Volume of Concrete				
			=	31	= 31/27 = 1
	Contaminated Fill				
B	8 x 2 =	16			
	16 x 2 =	32			
		48	x 0.5 =	24	
C	19 x 2 =	38			
	10 x 10/2 =	50			
		88	x 1.0 =	88	
D	20 x 3 =	60			
	8 x 10 =	80			
	5 x 2 =	10			
		150	x 1.0 =	150	
E	8 x 4 =	32			
	6 x 3 =	18			
		50	x 0.5 =	25	
F	6 x 17 =	102	x 0.5 =	51	

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-02292-RS

Page 2 of 2

G	5 x	2	=	10					
	10 x	3	=	30					
				<hr/>	40	x	0.5	=	20
H	3 x	24	=	72					
	6 x	2	=	12					
				<hr/>	84	x	0.5	=	42
I	26 x	34	=	884	x	0.8	=	707	
J	5 x	5	=	25					
	11 x	16	=	176					
	3 x	8	=	24					
				<hr/>	225	x	0.8	=	180
K	8 x	6	=	48	x	0.8	=	38	
L	5 x	6	=	30					
	9 x	5	=	45					
				<hr/>	75	x	0.8	=	60
Volume of Fill					=	1,385	=	1,385/27	= 51
TOTAL VOLUME - EXTERIOR									= 52

See Appendix Figures 3.4a and 3.4b For Areas

=====

Table 4.2
Estimated Cost of Decontamination and Restoration
DOE ID No. GJ-02292-RS

Page 1 of 2

EXTERIOR

Remove/store/replace personal property items Lump Sum	\$ 200
Remove/replace concrete patio 102 sf @ \$3.50/sf	357
Remove identified residual radioactive material 8 cy @ \$44/cy (manual-open)	352
43 cy @ \$14.50/cy (machine-open)	624
Replace areas with roadbase 10 cy @ \$11.50/cy	115
Replace areas with topsoil 41 cy @ \$9.50/cy	390
Replace areas with sod 340 sf @ \$.40/sf	136
Replace trees 4 trees @ \$40/each	160
Replace shrubs, bushes, and vines 22 each @ \$30/each	660
Replace perennial plantings 65 sf @ \$3/sf	195
Cleanup, dampproofing, etc. Lump sum	100
	<hr/>
TOTAL EXTERIOR	\$ 3,289

TOTAL EXTERIOR	\$	3,289
TOTAL INTERIOR		0
ACCESS CONTROL		250
		<hr/>
SUBTOTAL	\$	3,539
CONTINGENCY @ 5%		177
		<hr/>
SUBTOTAL	\$	3,716
CONTRACTOR OVERHEAD & PROFIT @ 30%		1,115
		<hr/>
GRAND TOTAL	\$	4,831

=====

CK082285
REA02292/REA-710/AP

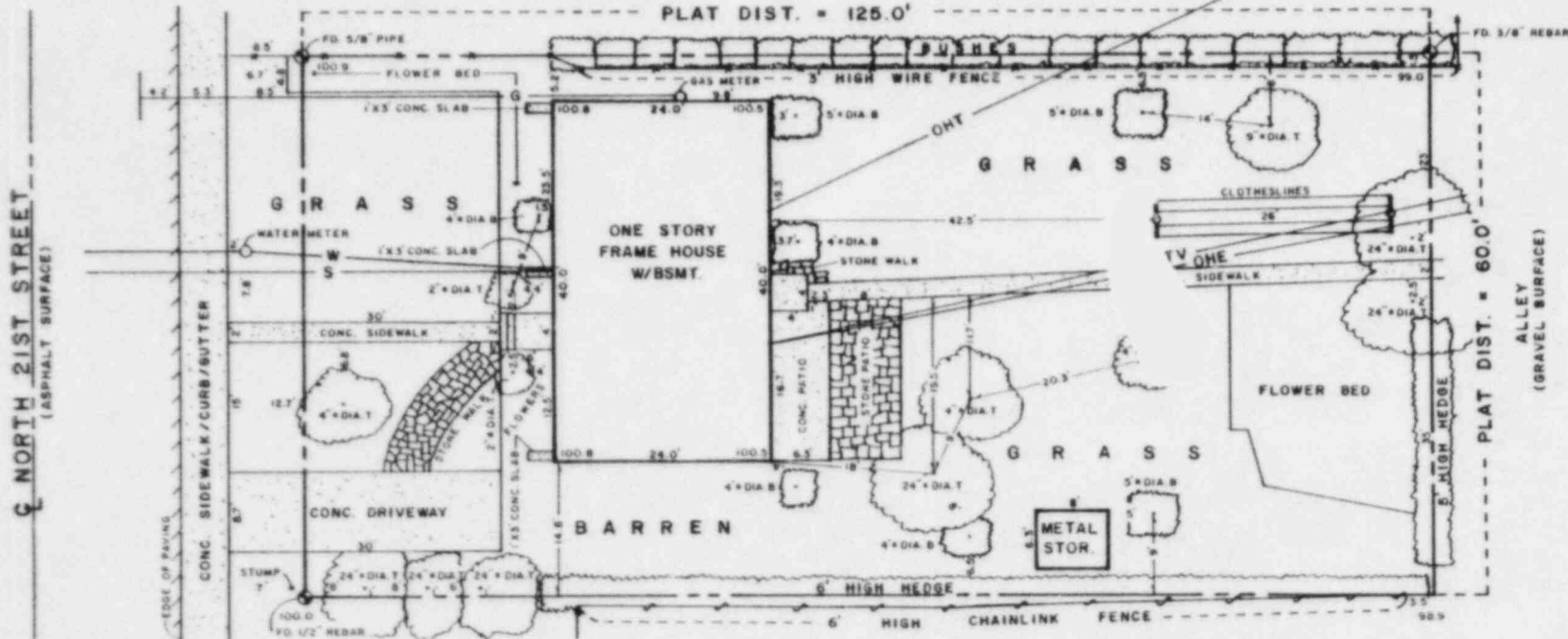


FIGURE 2.1
VICINITY MAP



LOT 23, SUNGOLD PARK ANNEX

SEC. 12, T1S, R1W, U.M.

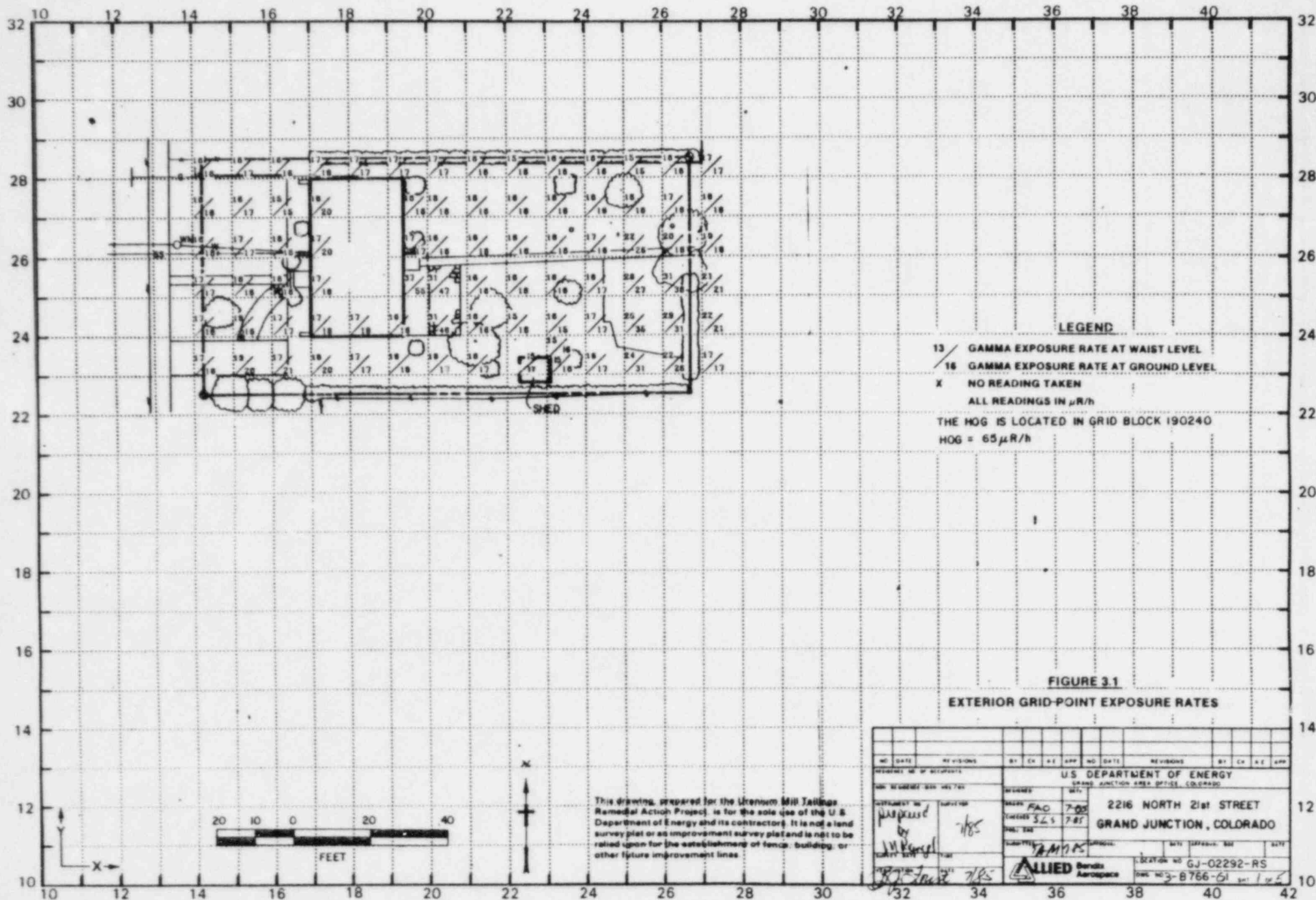


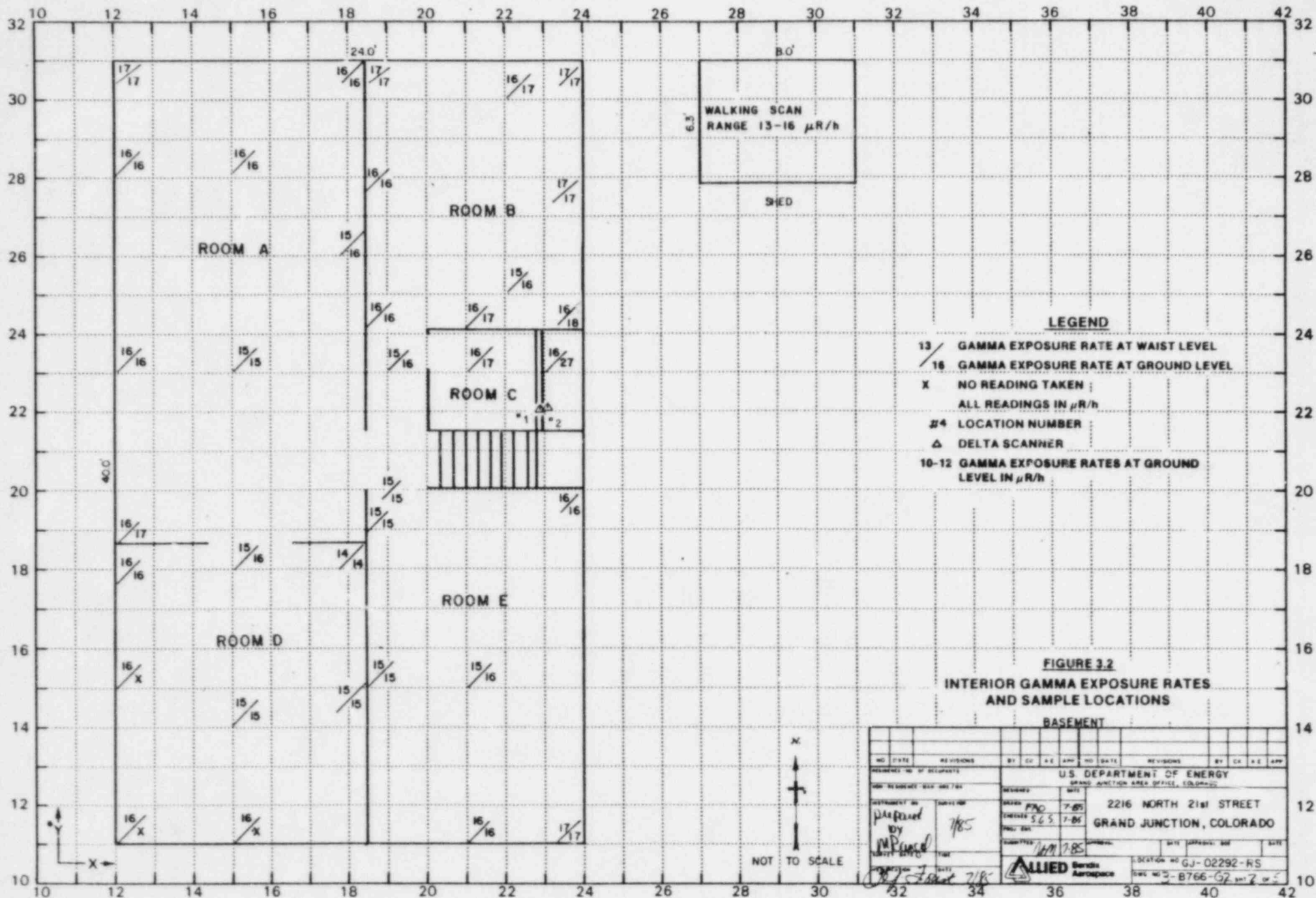
This drawing, prepared for the Uranium Mill Tailings Remedial Action Project, is for the sole use of the U.S. Department of Energy and its contractors. It is not a land survey plat or an improvement survey plat and is not to be relied upon for the establishment of fence, building, or other future improvement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

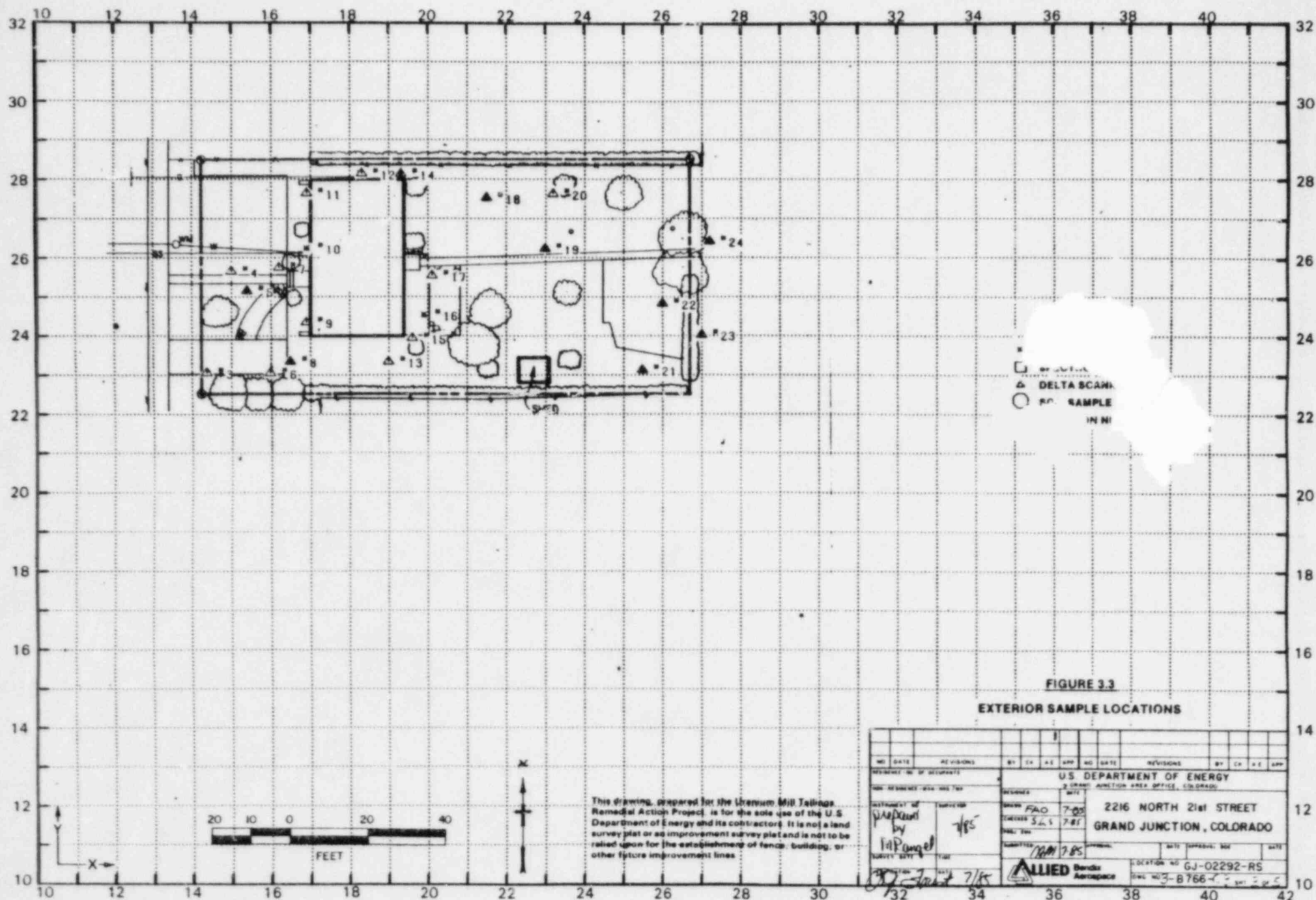
FIGURE 2.2 SITE PLAN

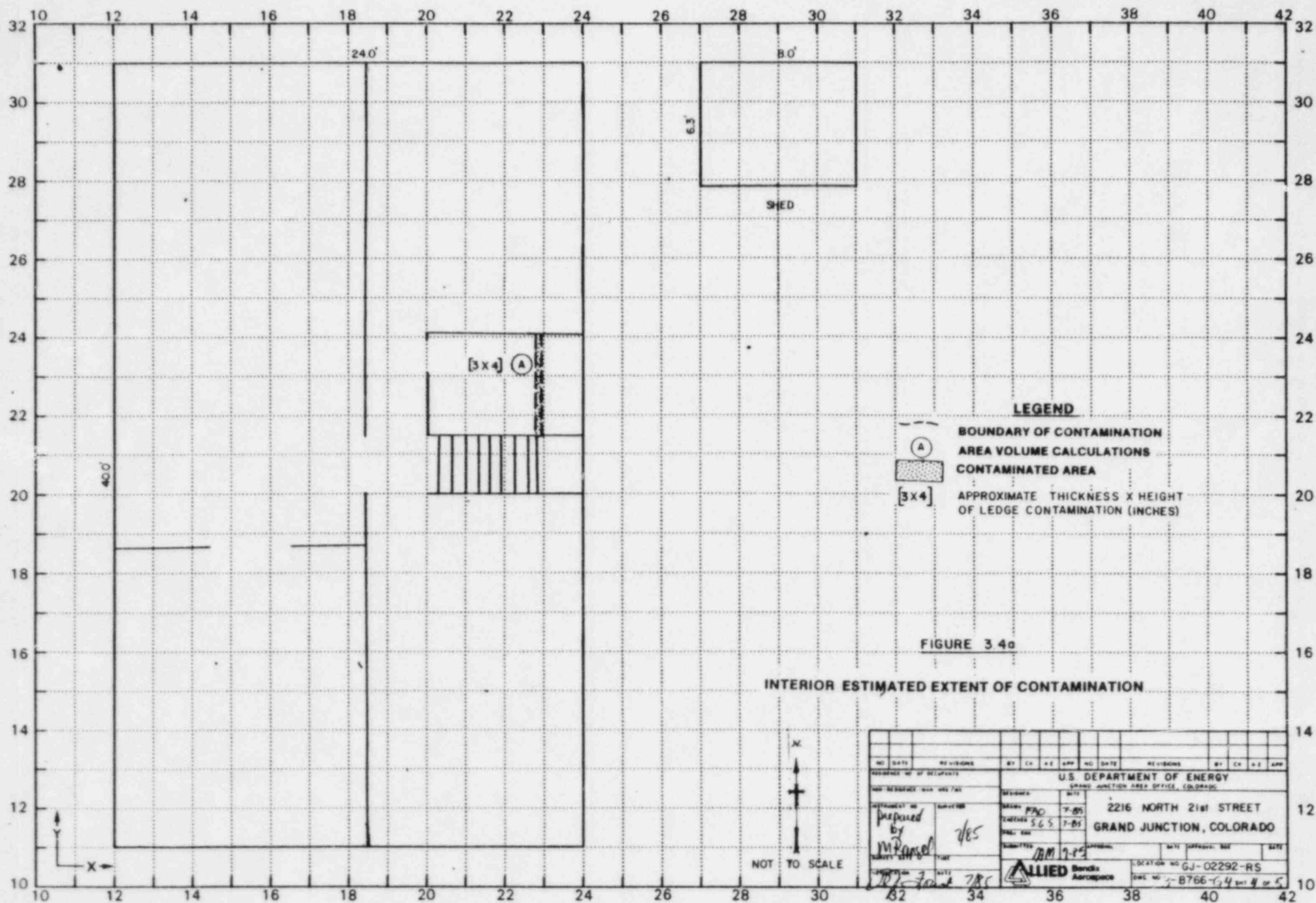
TAX SCHEDULE NO. 2945-121-18-007

U.S. DEPARTMENT OF ENERGY		DOE ID NO.
GRAND JUNCTION PROJECT OFFICE, COLORADO		GJ-02292-RS
ADDRESS 2216 NORTH 21ST ST.		
GRAND JUNCTION, CO 81501		
SURV	DRAFT	CK
LB/6.5.85	USW/6.7.85	
DRAWING NO.	3-C766-F1	SHEET 1 OF 1



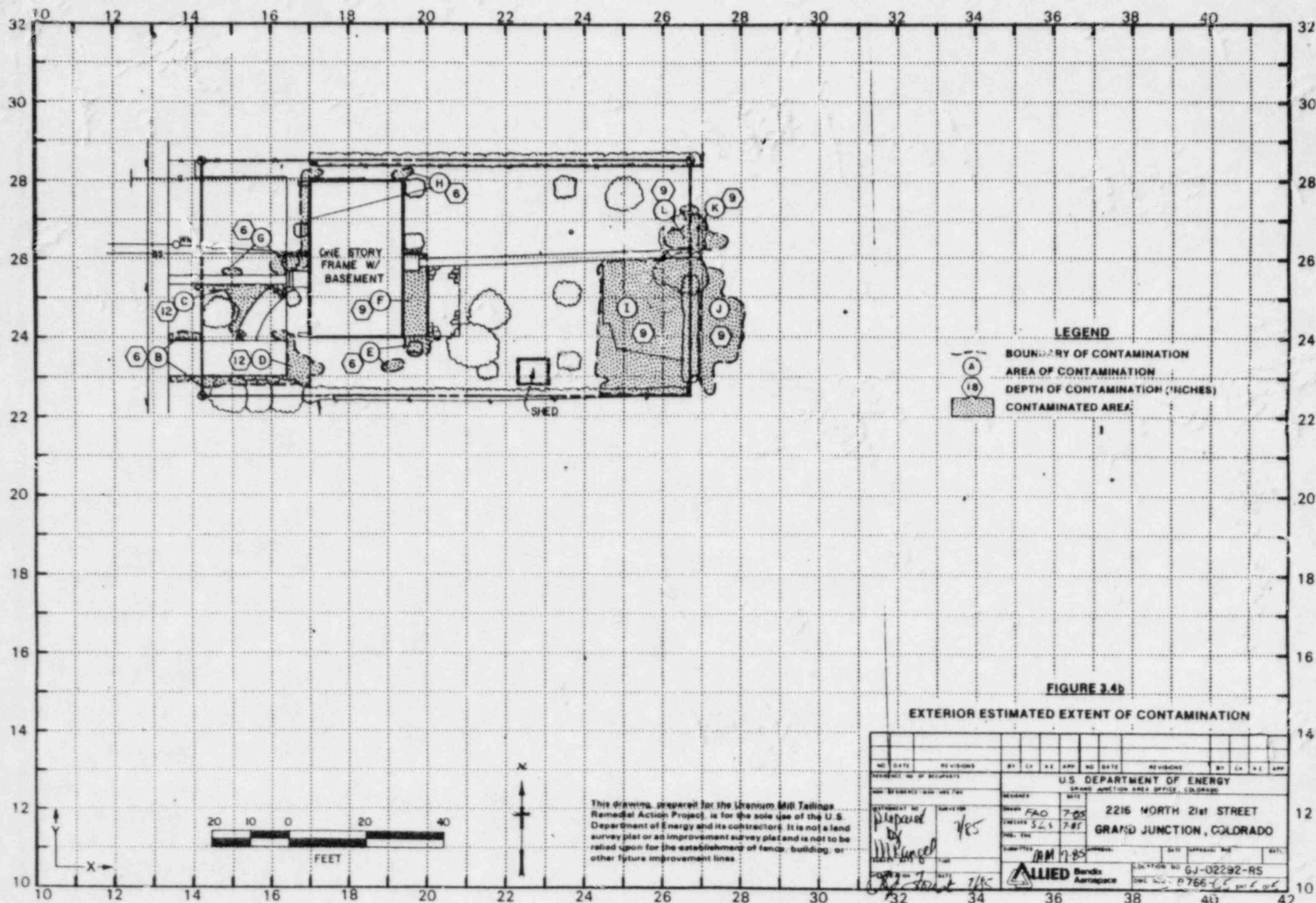






INTERIOR ESTIMATED EXTENT OF CONTAMINATION

NO	DATE	REVISIONS	BY	CH	42	APP	NO	DATE	REVISIONS	BY	CH	42	APP
ASSIGNED NO OF DELIVERIES			U.S. DEPARTMENT OF ENERGY										
HOW IN SERVICE was this			GRAND JUNCTION AREA OFFICE, COLORADO										
DISPOSITION NO PREPARED BY <i>M. Karsel</i> DATE <i>7/85</i>			MODEL <i>PAC</i>		YEAR <i>7-85</i>		2216 NORTH 21st STREET GRAND JUNCTION, COLORADO						
SURVEY DATE <i>7/85</i>			SERIAL <i>565</i>		YEAR <i>7-85</i>								
SURVEY TYPE <i>7/85</i>			TYPE <i>7-85</i>		SERIAL <i>565</i>		LOCATION NO GJ-02292-RS						
SURVEY TYPE <i>7/85</i>			TYPE <i>7-85</i>		SERIAL <i>565</i>		DOW NO 8766-14						



This drawing, prepared for the Wrentham MBR Tailings Remedial Action Project, is for the sole use of the U.S. Department of Energy and its contractors. 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.

3/85

DOE ID NO. GJ-02292-RS Date 7/23/85

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

Official Survey Report

Property Address 2216 North 21st Street

Property Owner C.R. and L. R. Cavitt

Address of Owner (if different from above) _____

Report Prepared By Mark Rangel

I. PRESENCE/ABSENCE OF RESIDUAL RADIOACTIVE MATERIALS

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

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

1 XXX 1 In open areas.

1 XXX 1 Under or around exterior improvements.

1 1 Under or around a typically nonoccupied structure.

1 XXX 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/CDH

J. Themelis, Mgr. UMTRA Proj. Off.

HIG = 27 uR/h
HOG = 65 uR/h

MEMORANDUM

ALLIED Bendix
Aerospace

Bendix Field Engineering Corporation
Grand Junction Operations
Grand Junction, Colorado

Date: July 8, 1985

To: Files

From: Mark Rangel

Subject: Team Leader Notes - GJ-02292-RS

Address: 2216 North 21st Street

Owner: C.R. and L.R. Cavitt

Occupancy: Three

Team Members

M. Rangel (Team Leader)
M. Duran
D. Beil
N. Wallace
S. Southern

L. Kula
R. Herman
H. Mattison
M. Gilfillan
J. Garcia

Instruments

See Equipment Summary sheet.

The concrete ledge in the shower stall is contaminated. No other contamination was found inside the primary structure.

There is a piece of petrified wood west of the shed.

Contamination is around the driveway but not beneath it, according to our scintillometer readings.

No problems were encountered. All team members were frisked before leaving the property.

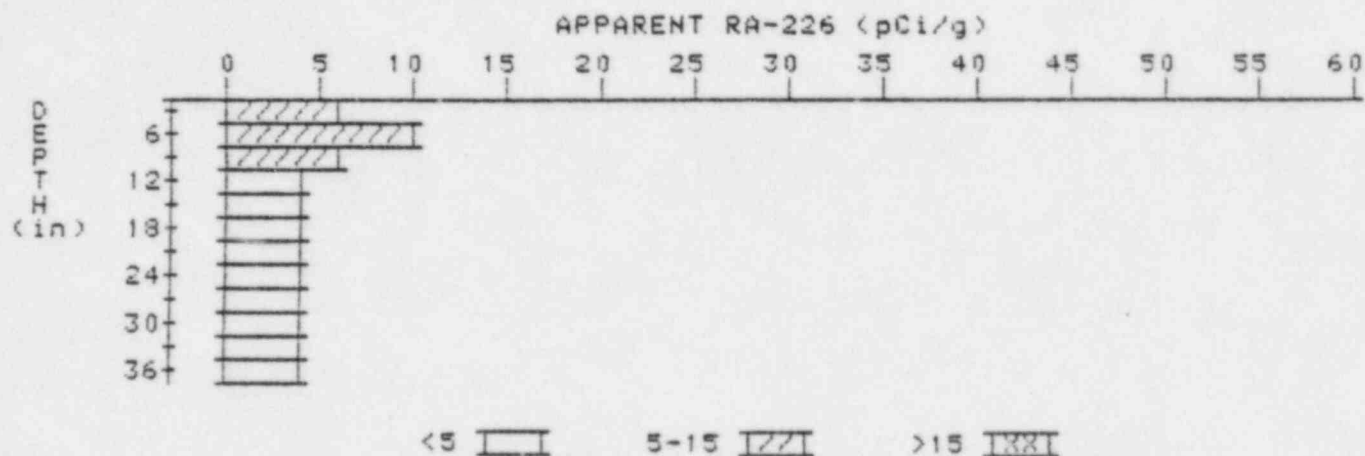
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

5

PROPERTY NUMBER: GJ-02292-RS

HOLE NUMBER: 5

LOCATION: 154251



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.7	5.7
6	6.6	9.8
9	5.7	5.5
12	4.9	4.4
15	4.4	4.0
18	4.1	3.7
21	4.0	3.6
24	4.1	4.3
27	4.1	4.1
30	4.1	4.1
33	4.1	4.3
36	4.0	4.0

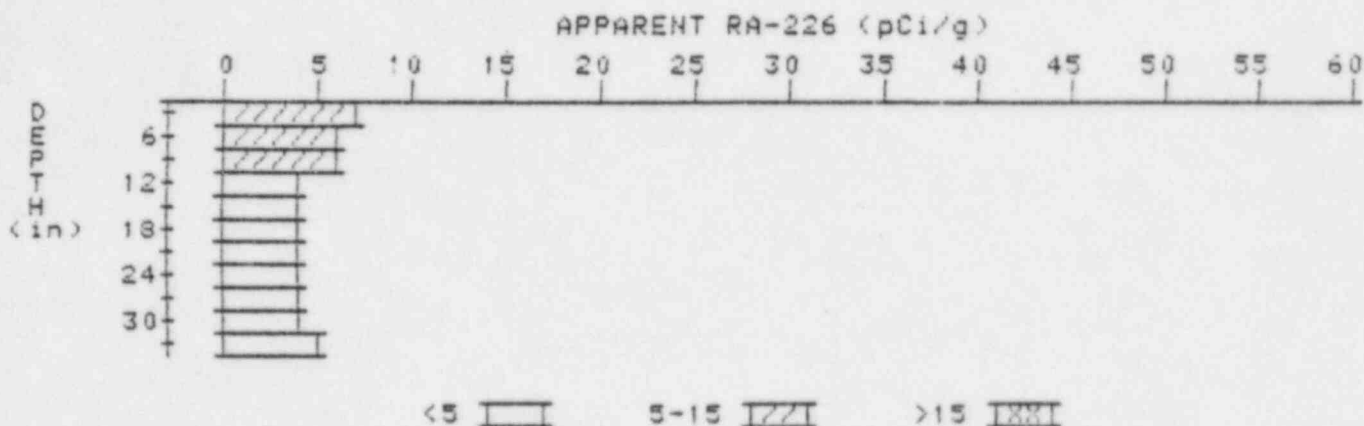
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

8

PROPERTY NUMBER: GJ-02292-RS

HOLE NUMBER: 8

LOCATION: 165233



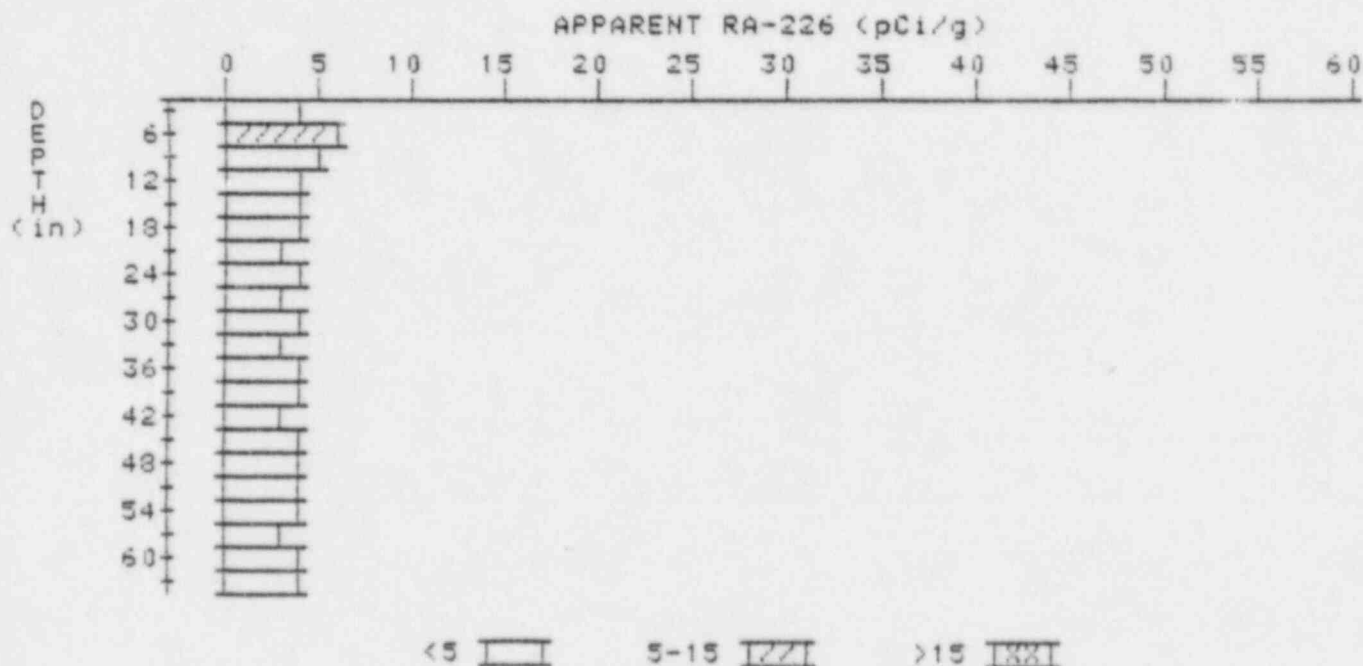
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	7.3	7.3
6	6.4	6.2
9	5.6	5.6
12	4.8	4.3
15	4.3	3.6
18	4.2	4.0
21	4.2	4.0
24	4.3	4.5
27	4.3	4.1
30	4.4	4.4
33	4.5	4.5

APPARENT RADIUM-226 CONCENTRATION 10 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-02292-RS

HOLE NUMBER: 10

LOCATION: 169262



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.3	4.3
6	4.7	5.8
9	4.5	4.7
12	4.2	4.0
15	4.0	3.8
18	3.9	4.1
21	3.7	3.3
24	3.7	3.9
27	3.6	3.4
30	3.6	3.6
33	3.6	3.4
36	3.7	3.9
39	3.7	3.9
42	3.6	3.4
45	3.6	3.6
48	3.6	3.6
51	3.6	3.6

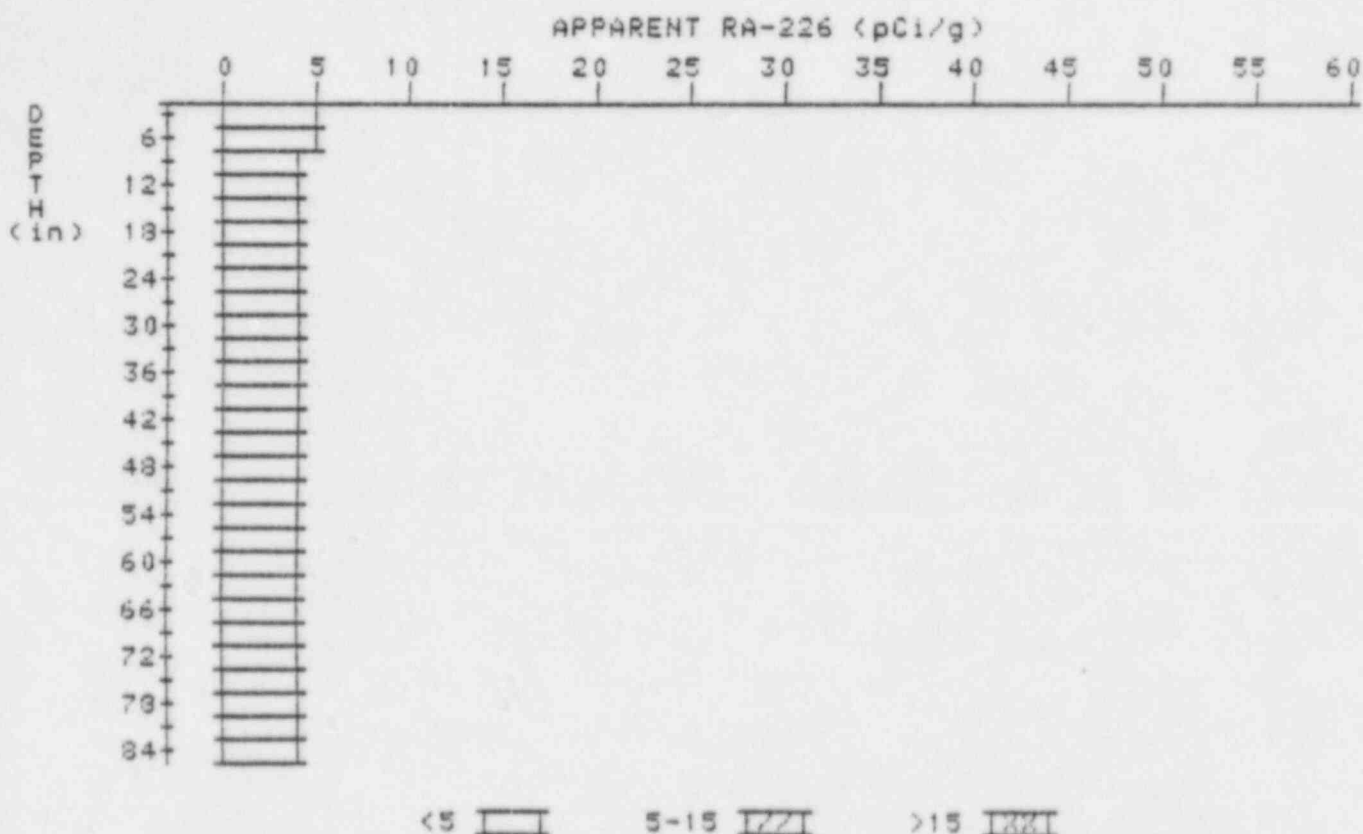
54
57
60
63

3.6
3.6
3.7
3.6

3.6
3.4
4.1
3.6

APPARENT RADIUM-226 CONCENTRATION 14 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-02292-RS
HOLE NUMBER: 14
LOCATION: 193291



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.5	4.5
6	4.5	4.9
9	4.3	4.3
12	4.1	3.7
15	4.1	4.3
18	4.0	3.8
21	4.0	4.0
24	4.0	4.0
27	4.0	3.8
30	4.1	4.5
33	4.0	3.8
36	4.0	4.0

39
42
45
48
51
54
57
60
63
66
69
72
75
78
81
84

4.0
4.0
4.0
4.1
4.0
4.1
4.0
3.9
3.9
3.9
3.8
3.8
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4.0
4.0
3.8
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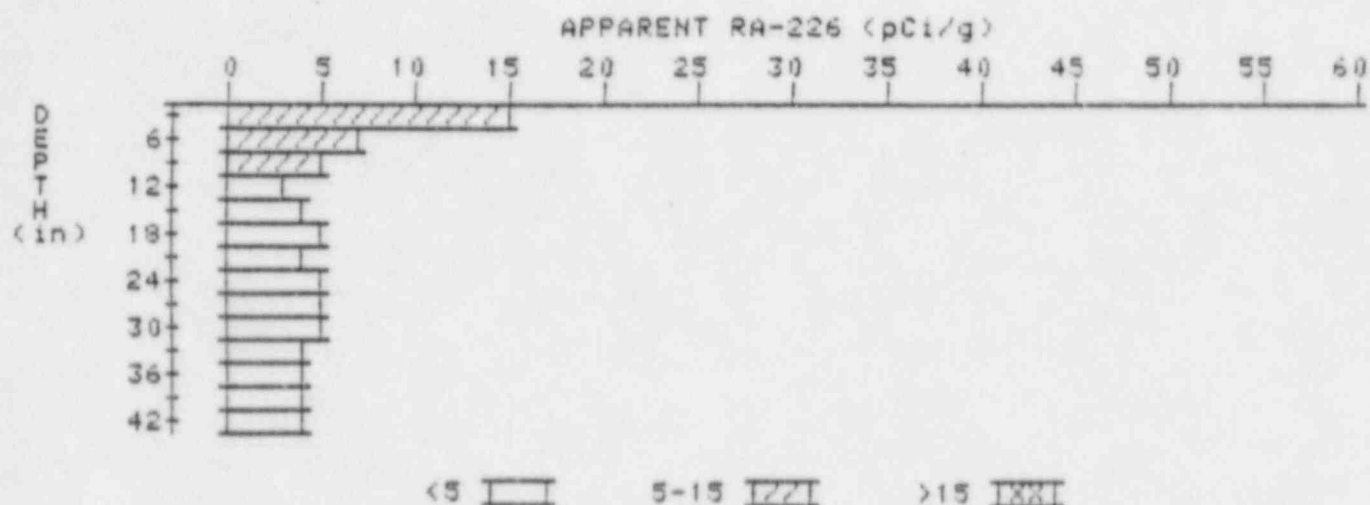
APPARENT RADIUM-226 CONCENTRATION 16

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-02292-RS

HOLE NUMBER: 16

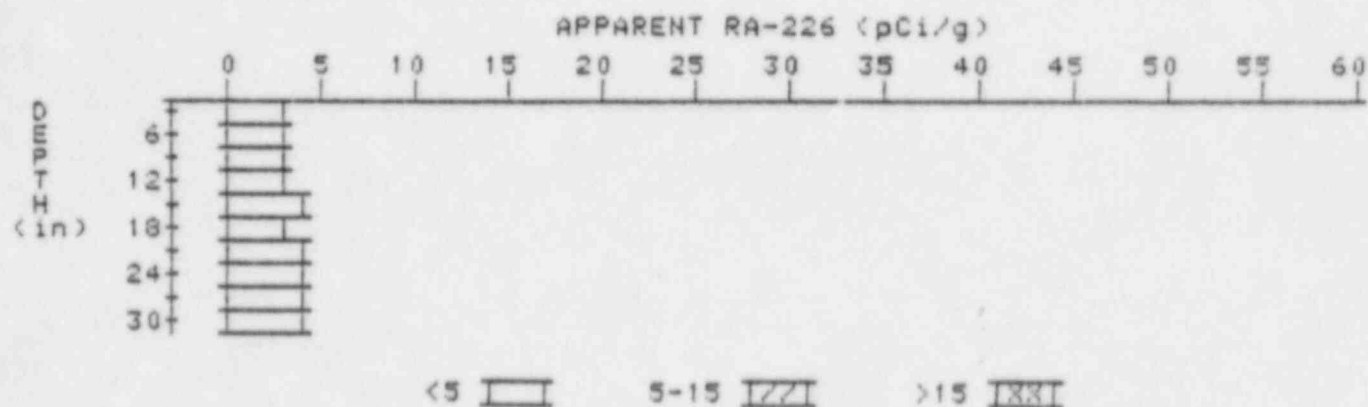
LOCATION: 199245



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	14.9	14.9
6	10.1	6.7
9	7.2	5.2
12	5.4	3.1
15	4.9	4.4
18	4.7	4.7
21	4.5	4.1
24	4.5	4.5
27	4.5	4.5
30	4.5	4.7
33	4.4	4.4
36	4.3	4.3
39	4.2	4.4
42	4.0	4.0

APPARENT RADIUM-226 CONCENTRATION 18 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-02292-RS
HOLE NUMBER: 18
LOCATION: 215275



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.7	2.7
6	3.1	3.5
9	3.3	3.5
12	3.4	3.4
15	3.5	3.7
18	3.5	3.1
21	3.7	4.1
24	3.7	3.5
27	3.9	3.6
30	4.0	4.0

APPARENT RADIUM-226 CONCENTRATION 19

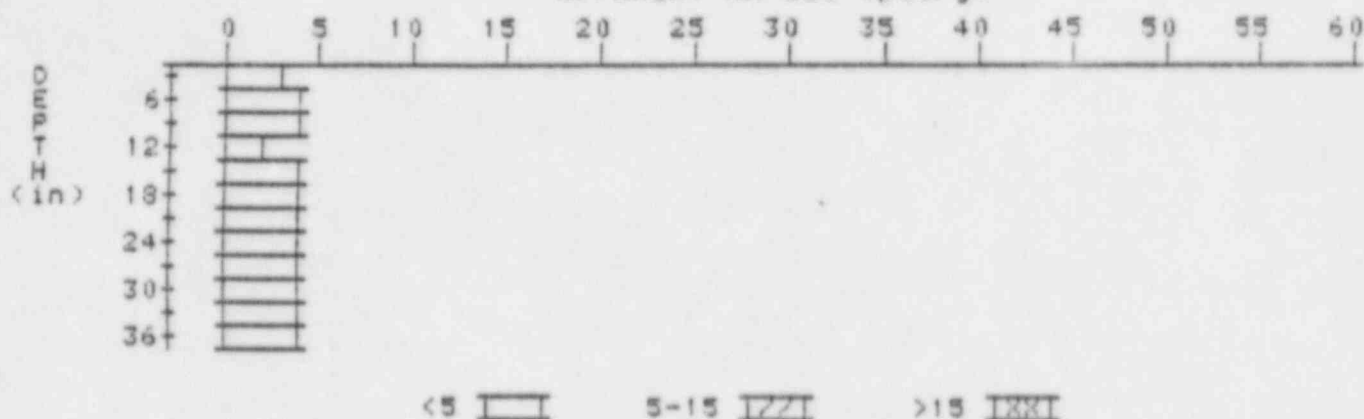
DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-02292-RS

HOLE NUMBER: 19

LOCATION: 230262

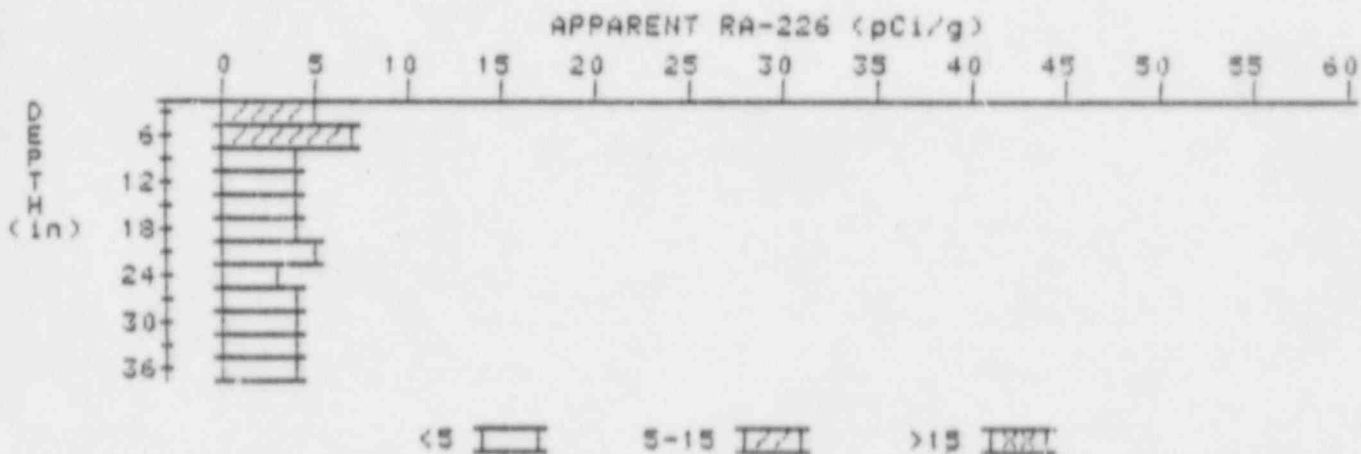
APPARENT RA-226 (pCi/g)



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.0	3.0
6	3.4	3.9
9	3.8	4.0
12	3.3	2.2
15	3.7	4.2
18	3.8	3.8
21	3.9	4.1
24	3.9	3.7
27	4.0	4.4
30	3.9	3.7
33	3.9	4.1
36	3.8	3.8

APPARENT RADIUM-226 CONCENTRATION 21 DECONVOLUTION GRAPH

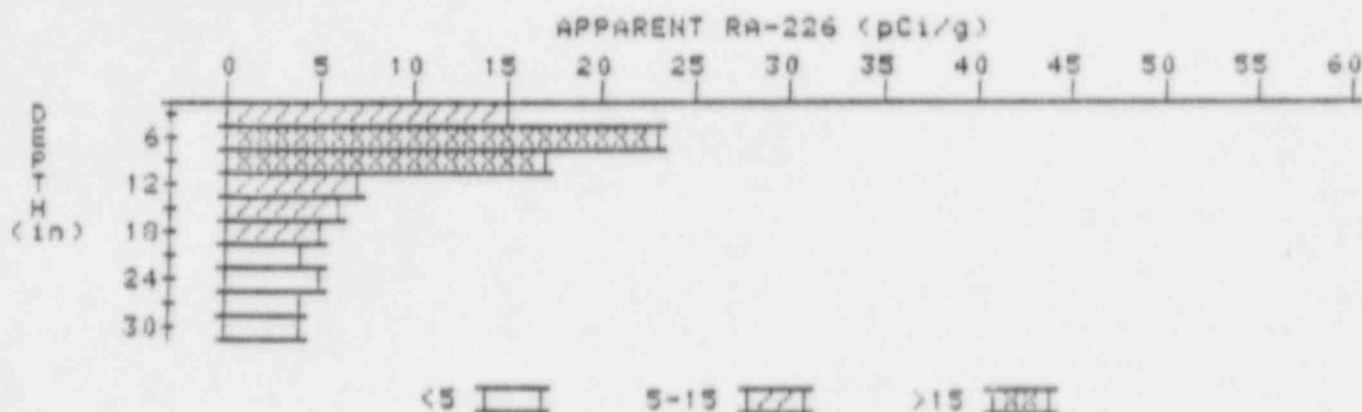
PROPERTY NUMBER: GJ-02292-RS
HOLE NUMBER: 21
LOCATION: 255231



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.4	5.4
6	5.5	6.9
9	4.8	4.3
12	4.4	4.0
15	4.2	4.0
18	4.1	4.1
21	4.0	4.5
24	3.6	2.5
27	3.8	4.2
30	3.8	4.0
33	3.7	3.8
36	3.7	3.7

APPARENT RADIUM-226 CONCENTRATION 22 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-02292-RS
HOLE NUMBER: 22
LOCATION: 260240



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	14.7	14.7
6	16.3	23.1
9	14.1	17.3
12	10.1	7.4
15	7.6	5.3
18	6.1	5.0
21	5.2	4.5
24	4.7	4.5
27	4.3	3.8
30	4.2	4.2

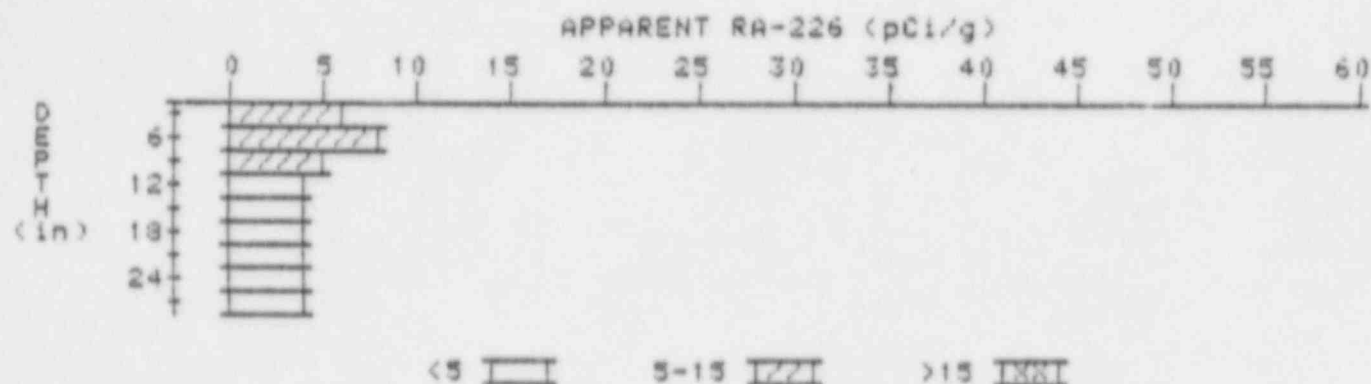
APPARENT RADIUM-226 CONCENTRATION 23

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-02292-RS

HOLE NUMBER: 23

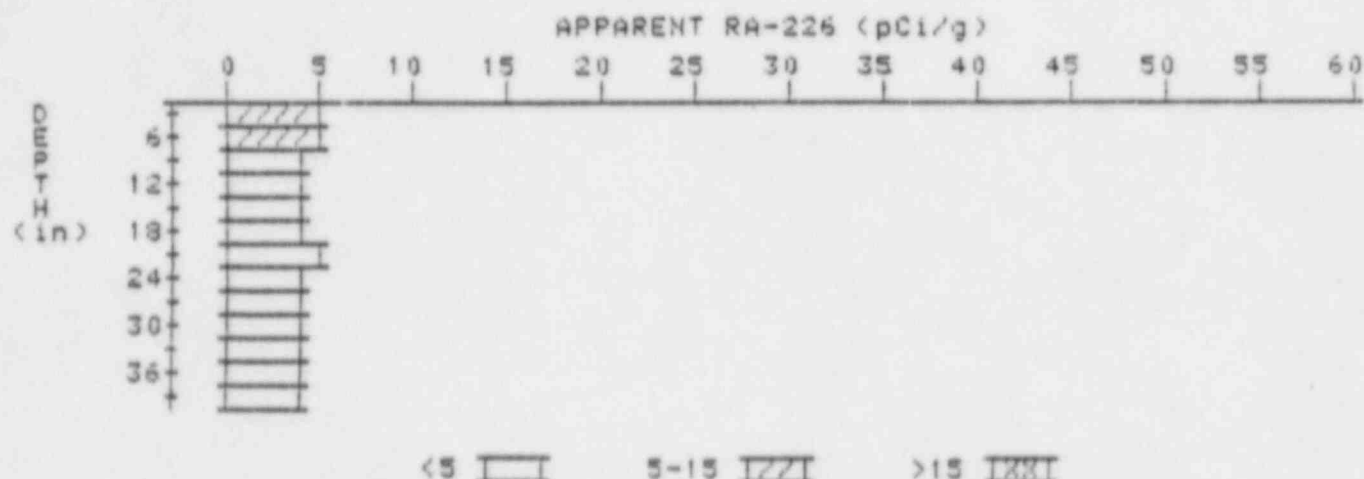
LOCATION: 270240



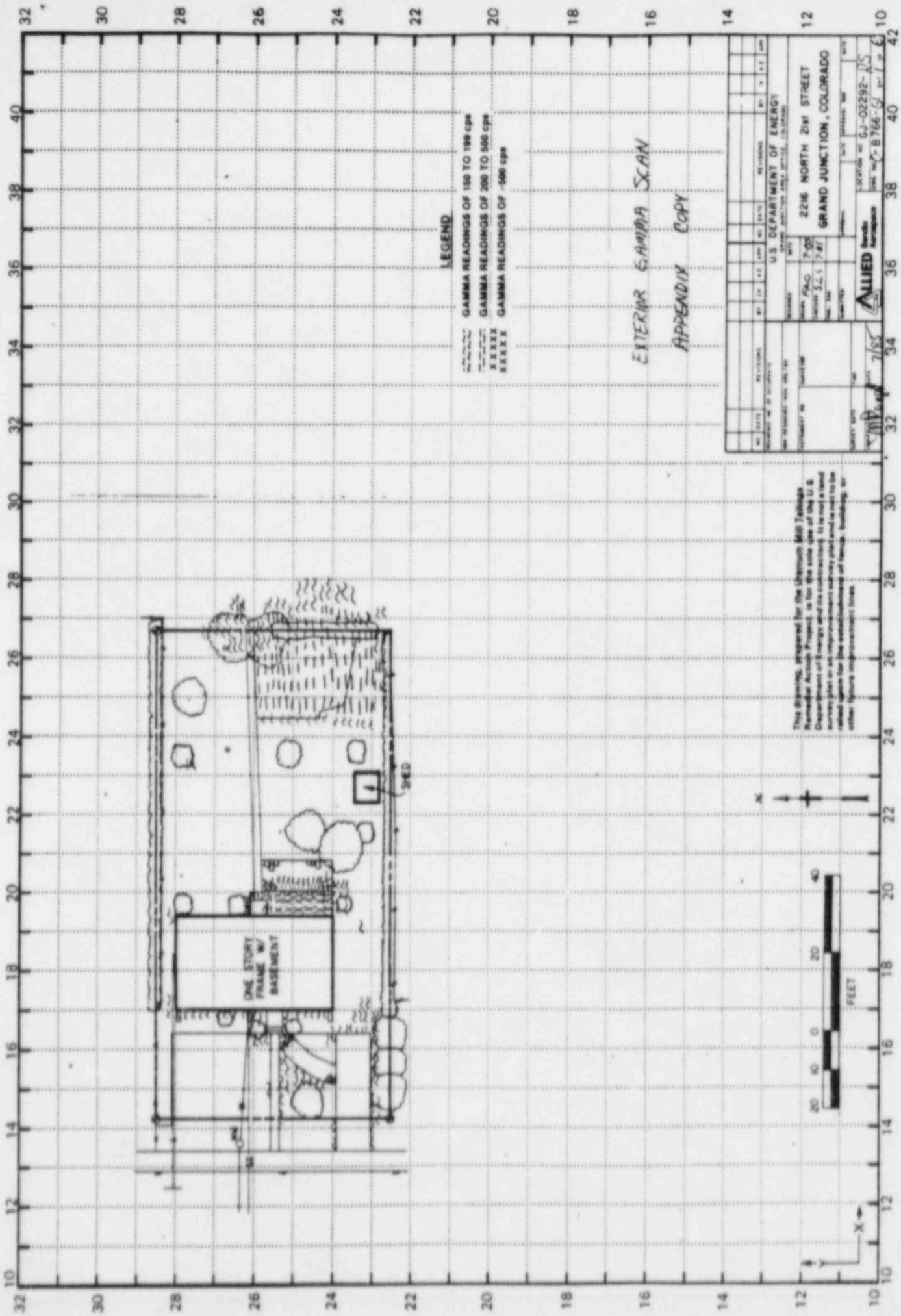
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	6.3	6.3
6	6.3	7.9
9	5.4	5.0
12	4.7	4.2
15	4.3	3.9
18	4.1	3.7
21	4.1	4.1
24	4.1	3.9
27	4.2	4.2

APPARENT RADIUM-226 CONCENTRATION 24 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-02292-RS
HOLE NUMBER: 24
LOCATION: 272264



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.0	5.0
6	4.9	5.4
9	4.5	4.0
12	4.4	4.4
15	4.3	4.5
18	4.1	3.6
21	4.2	4.6
24	4.1	4.1
27	4.0	3.9
30	4.0	4.0
33	4.0	4.0
36	4.0	4.2
39	3.9	3.9



LEGEND

- GAMMA READINGS OF 150 TO 199 cps
- - - GAMMA READINGS OF 200 TO 500 cps
- XXXXX GAMMA READINGS OF 500 cps

EXTERIOR GAMMA SCAN
APPENDIX COPY

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 a land survey plot or an engineering survey plot and is not to be relied upon for the establishment of fence, building, or other rights in government lands.

U.S. DEPARTMENT OF ENERGY									
GENERAL INVESTIGATION AREA PROJECT, COLO. 000000									
DATE	TIME	BY	NO. OF	NO. OF	NO. OF	NO. OF	NO. OF	NO. OF	NO. OF
DATE	TIME	BY	NO. OF	NO. OF	NO. OF	NO. OF	NO. OF	NO. OF	NO. OF
7-25	7:05	WAG	1	1	1	1	1	1	1
7-25	7:45	WAG	1	1	1	1	1	1	1

2216 NORTH 2ND STREET
GRAND JUNCTION, COLORADO

ALLIED
NORTH
7-25

COLO. 000000
7-25