

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-03566-RS  
ADDRESS: 1436 NORTH 23RD STREET

AUGUST 1985

FOR

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT OFFICE

ALBUQUERQUE OPERATIONS OFFICE

DEPARTMENT OF ENERGY

BY

BENDIX FIELD ENGINEERING CORPORATION  
P.O. Box 1569  
Grand Junction, Colorado 81502

APPROVED BY

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M. TUCKER  
DOE PROJECT ENGINEER

DATE

*August 5, 1985*

REA03566:REA-GE006

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PDR WASTE PDR  
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## **1.0 EXECUTIVE SUMMARY**

### **1.1 Introduction**

The location, DOE ID No. GJ-03566-RS, is a single-family residence located at 1436 North 23rd 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, 28 cu. yd.; interior, 0 cu. yd.

Estimated cost to perform remedial action, including dislocation when applicable, is \$6,443. Remedial action on this property will take approximately 15 days to complete.

## 2.0 PROPERTY DESCRIPTION

### 2.1 General Description

Address: 1436 North 23rd Street, Grand Junction, Colorado

Zoning: Residential (RFS-8)

Lot Size: Approximately 10,593.5 sf (0.24 acre)

Legal Description: Beginning 20.0 feet east and 520.0 feet north of the southwest corner of the NW 1/4 SE 1/4 SE 1/4 of Section 12, T.1S., R.1W., U.M.; thence east 211.87 feet, thence north 50.0 feet, thence west 211.87 feet, thence south to the beginning, City of Grand Junction, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 3.5 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:	Single-family residence
South:	Single-family residence
East:	Single-family residence
West:	North 23rd Street

### 2.2 Existing Facilities and Structures

Primary Structure:

Type:	One-story, single-family residence
Size:	Approximately 1,380 sf
Construction Date:	1945
Construction:	Wood-frame
Foundation:	Concrete stem walls and spread footing
Footing Depth:	Approximately 18" to bottom of footing from grade
Basement:	None
Crawl Space:	Full under original structure; inaccessible
Condition:	Fair

Other Structures:

Type:	Carport
Size:	Approximately 246 sf
Construction:	Wood-frame
Foundation:	Concrete slab-on-grade
Condition:	Fair

Type:	Shed
Size:	Approximately 90 sf
Construction:	Metal
Foundation:	Concrete slab-on-grade
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-03566-RS on May 22, 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 in the carport, patio, and several small areas in the east yard.

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 15 uR/h  
Highest Outside Gamma Reading (HOG): 59 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: 14 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.

#### **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 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 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) The two brick and mortar planters, which abut the west side of the primary structure, are contaminated. The height of the planters is 30 inches (approximately 20 sf).
- (AREA B) The soil under a section of the 4-inch-thick concrete driveway, south of the primary structure, is contaminated. The total depth of contamination is 12 inches (approximately 324 sf).
- (AREA C) The soil under a portion of the 4-inch-thick concrete patio, which abuts the primary structure, is contaminated to a total depth of 12 inches. The patio is covered by indoor/outdoor carpet (approximately 190 sf).
- (AREA D) A small portion of soil, east of the primary structure, is contaminated. The depth of contamination is 12 inches (approximately 25 sf).
- (AREA E) Several deposits, east of the primary structure, are contaminated to a depth of 6 inches (approximately 192 sf).

#### **4.0 RECOMMENDED REMEDIAL ACTION**

##### **4.1 Decontamination and Restoration**

The recommended remedial action for this property, DOE ID No. GJ-03566-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 \$6,443.

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

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



## 5.0 REFERENCES

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

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

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

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

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

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

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

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

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

## 6.0 APPENDIX

This Appendix contains the following:

Appendix Tables:

Table 3.1	Radium Concentrations at Exterior Locations
Table 3.2	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	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-03566-RS

1436 North 23rd Street

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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	161254	00	DS	1.9		*	Front yard
		06	DS	<1.0		*	South planter
6	161259	00	DS	1.4		*	Gas line
		12	DS	1.3		*	Top of gas line
7	161271	00	DS	2.0		*	Front yard
		06	DS	1.5		*	North planter
8	162255	[19]	GS		18.0	*	South planter
9	162270	[19]	GS		17.5	*	North planter
10	163250	03	TC	4.8		*	Water line
		06	TC	4.7		*	DC = 0 inches
		09	TC	4.5		*	
		12	TC	4.2		*	
		15	TC	4.1		*	
		18	TC	4.0		*	
		21	TC	4.0		*	
		24	TC	3.9		*	
		27	TC	3.9		*	
		30	TC	3.8		*	
		33	TC	3.8		*	
		36	TC	3.9		*	
		39	TC	3.8		*	
		42	TC	3.7		*	
		45	TC	3.5		*	
		48	TC	3.5		*	
		51	TC	3.6		*	
		54	TC	3.5		*	
		57	TC	3.5		*	
		60	TC	3.5		*	
		63	TC	3.5		*	
11	167247	00	DS	12.5		*	Northwest side of carport
12	180240	00	DS	19.8		*	Carport

## Radium Concentrations at Exterior Locations

DOE ID #GJ-03566-RS

1436 North 23rd Street

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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.		
13	190240	03	TC	71.8		*	Carport
		06	BH	63.9	64.7	*	DC = 12 inches
		09	TC	35.6		*	Based on the
		12	BH	19.9	16.4	*	deconvolution graph
		15	TC	10.7		*	
		18	BH	7.8	5.9	*	
		21	TC	6.4		*	
		24	TC	5.8		*	
		27	TC	5.1		*	
		30	BH	4.8	2.6	*	
		33	TC	4.6		*	
		36	TC	4.5		*	
		39	TC	4.4		*	
		42	TC	4.3		*	
		45	TC	4.1		*	
		48	TC	3.9		*	
		51	TC	3.9		*	
		54	TC	3.8		*	
		57	TC	3.8		*	
		60	TC	3.8		*	
14	190258	03	TC	28.2		*	Patio
		06	BH	35.4	42.8	*	DC = 12 inches
		09	TC	23.2		*	Based on the
		12	BH	13.9	12.8	*	deconvolution graph
		15	TC	9.3		*	
		18	TC	6.9		*	
		21	TC	5.7		*	
		24	BH	5.1	3.2	*	
		27	TC	4.7		*	
		30	TC	4.6		*	
		33	TC	4.3		*	
		36	TC	4.3		*	
		39	TC	4.6		*	
		42	TC	4.2		*	
		45	TC	3.9		*	
15	193250	00	DC	11.0		*	Enclosed patio
16	194246	00	DS	18.5		*	East side of carport
17	196260	00	DS	6.5		*	Enclosed patio
18	196264	[36]	GS		3.0	*	Chimney

## 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	221272	03	TC	2.6		*	Sewer line DC = 0 inches
		06	TC	2.8		*	
		09	TC	3.0		*	
		12	TC	3.1		*	
		15	TC	3.2		*	
		18	TC	3.1		*	
		21	TC	3.1		*	
		24	TC	3.2		*	
		27	TC	3.1		*	
		30	TC	3.0		*	
		33	TC	3.0		*	
		36	TC	3.0		*	
		39	TC	3.0		*	
		42	TC	3.0		*	
		45	TC	2.9		*	
		48	TC	3.0		*	
		51	TC	2.9		*	
		54	TC	3.0		*	
		57	TC	3.1		*	
		60	TC	3.1		*	
		63	TC	3.1		*	
		66	TC	3.1		*	
20	230260	00	DS	<1.0		*	Background DC = 0 inches
		00	GS		<1.0	*	
		03	TC	2.4		*	
		06	BH	2.9	1.4	*	
		09	TC	3.0		*	
		12	BH	3.2	2.0	*	
		15	TC	3.3		*	
		18	BH	3.3	<1.0	*	
		21	TC	3.3		*	
		24	BH	3.2	1.6	*	
		27	TC	3.2		*	
		30	BH	3.2	1.6	*	
		33	TC	3.1		*	
		36	TC	3.1		*	
21	260239	03	TC	3.4		*	Unknown utility line DC = 0 inches
		06	TC	3.6		*	
		09	TC	3.7		*	
		12	TC	3.7		*	
		15	TC	3.7		*	

## Radium Concentrations at Exterior Locations

DOE ID #GJ-03566-RS

1436 North 23rd Street

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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.		
21	260239	18	TC	3.7		*	
		21	TC	3.6		*	
		24	TC	3.6		*	
		27	TC	3.5		*	
		30	TC	3.6		*	
		33	TC	3.7		*	
		36	TC	3.6		*	
		39	TC	3.5		*	
		42	TC	3.6		*	
		45	TC	3.5		*	
		48	TC	3.5		*	
		51	TC	3.6		*	
		54	TC	3.6		*	
		57	TC	3.6		*	
		60	TC	3.6		*	
		63	TC	3.6		*	
22	284264	00	DS	7.0		*	Northeast of shed
		06	DS	1.4		*	
23	284268	00	DS	8.0		*	Backyard
		06	DS	6.6		*	
		12	DS	2.6		*	
24	284273	00	DS	10.8		*	Backyard
		06	DS	1.8		*	
25	284277	00	DS	5.0		*	Backyard
		06	DS	2.6		*	
26	285240	00	DS	7.5		*	Backyard
		06	DS	<1.0		*	
27	285249	00	DS	5.7		*	Backyard
		06	DS	2.6		*	
28	285255	00	DS	4.0		*	Backyard
		06	DS	<1.0		*	
29	293250	00	DS	2.9		*	Backyard
		06	DS	1.3		*	
30	293257	00	DS	3.5		*	Backyard
		06	DS	2.4		*	

## Radium Concentrations at Exterior Locations

DOE ID #GJ-03566-RS

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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.		
31	296259	00	DS	2.8		*	
		06	DS	1.5		*	Backyard
32	315286	00	DS	4.2		*	Northeast part of
		06	DS	1.3		*	backyard
33	320281	00	DS	3.3		*	Northeast part of
		06	DS	1.9		*	backyard

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 = 05-22-85  
 Team Leader = TRU

## Radium Concentrations at Interior Locations

DOE ID #GJ-03566-RS

1436 North 23rd Street

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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	1.7		*	Living room
2		00	DS	1.1		*	Kitchen
3		00	DS	2.4		*	Bedroom next to patio
4		00	DS	1.6		*	Bedroom next to patio

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 = 05-22-85  
 Team Leader = TRU



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)
CRAWL SPACE	00	-	-	17	16-17	17
ROOM A	06	14-17	15	06	15-24	17
ROOM B	05	14-17	16	05	15-25	18
ROOM C	05	15-22	18	05	15-27	19
GROUND FLOOR	*	*	*	*	14-17	*
SHED	*	*	*	*	14-15	*

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\* The historical data indicate the absence of interior contamination at this property. This information was investigated by performing a walking gamma scan on the ground floor of the primary structure and in the shed.

Table 4.1  
Area and Volume Calculations  
DOE ID No. GJ-03566-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>
EXTERIOR					
Concrete					
A	(2)2 x 5 =	20	x 2.5 =	50	
B	35 x 12 =	420	x 0.3 =	126	
C	18 x 18 =	324	x 0.3 =	97	
Volume of Concrete =		273	= 273/27 =		10
Contaminated Fill					
B	27 x 12 =	324	x 0.7 =	227	
C	10 x 19 =	190	x 0.7 =	133	
D	5 x 5 =	25	x 1.0 =	25	
E	5 x 23 =	115			
	5 x 7 =	35			
	8 x 3 =	24			
	6 x 3 =	18			
		192	x 0.5 =	96	
Volume of Contaminated Fill			= 481 =	481/27 =	18
TOTAL VOLUME - EXTERIOR					28

See Appendix Figure 3.3 For Areas

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Table 4.2  
Estimated Cost of Decontamination and Restoration  
DOE ID No. GJ-03566-RS Page 1 of 1

EXTERIOR

Remove identified residual radioactive material (manual) 18 cy @ \$44/cy	\$ 792
Replace roadbase 13 cy @ \$11.50/cy	150
Replace topsoil 5 cy @ \$9.50/cy	48
Remove and replace concrete *744 sf @ \$3/sf	2,232
Remove and replace indoor/outdoor carpet 36 sy @ \$9.50/sy	342
Remove and replace brick planters 2 ea @ \$150/ea	300
Replace flowers Lump sum	20
Shore roof Lump sum	100
	<hr/>
TOTAL EXTERIOR	\$ 3,984
TOTAL INTERIOR	0
ACCESS CONTROL	200
	<hr/>
SUBTOTAL	\$ 4,184
CONTINGENCY @ 10%	418
	<hr/>
SUBTOTAL	\$ 4,602
CONTRACTOR OVERHEAD & PROFIT @ 40%	1,841
	<hr/>
GRAND TOTAL	\$ 6,443

\*This volume excludes area A which is a brick planter

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FHW080185  
REA03566/GE006

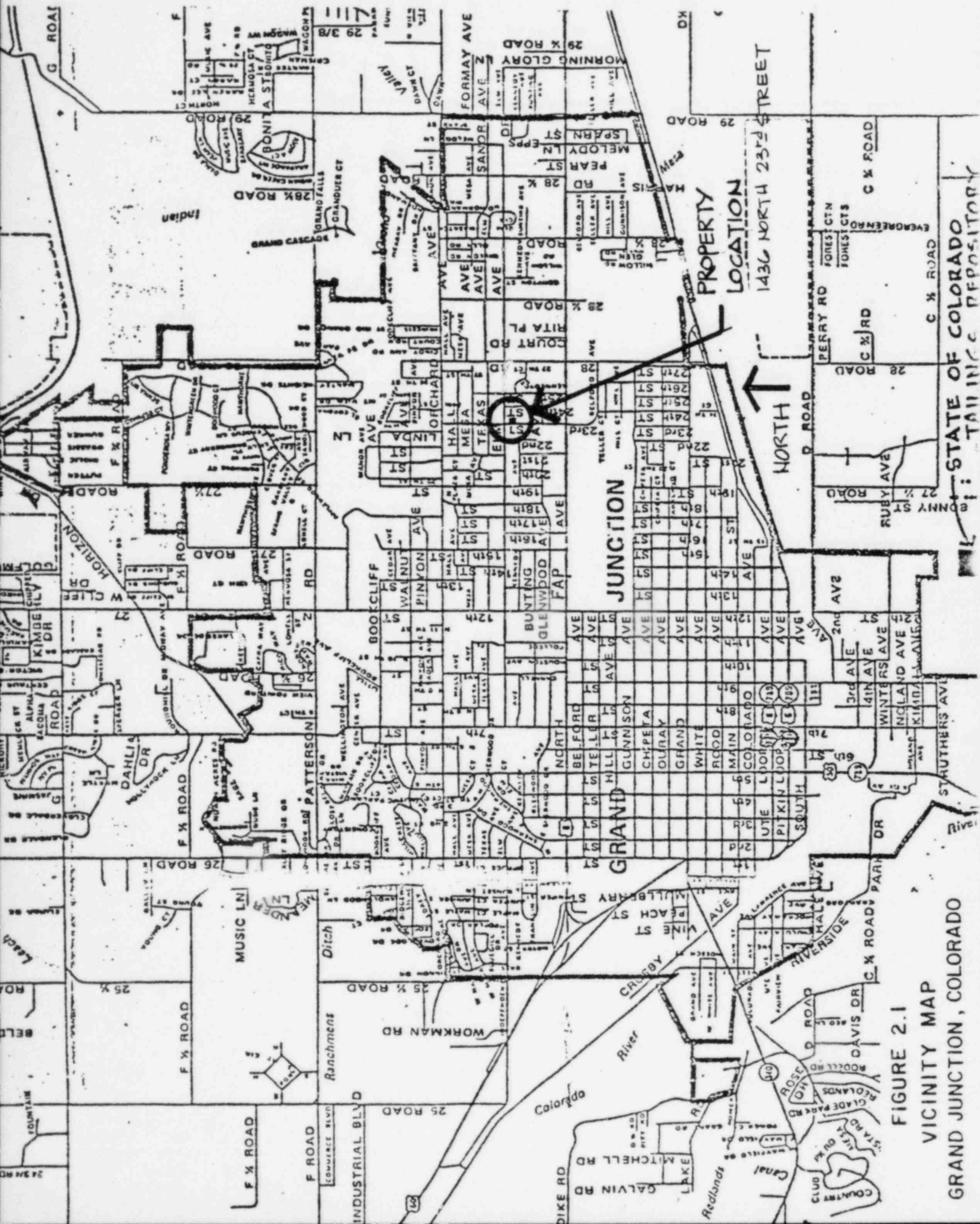


FIGURE 2.1

VICINITY MAP

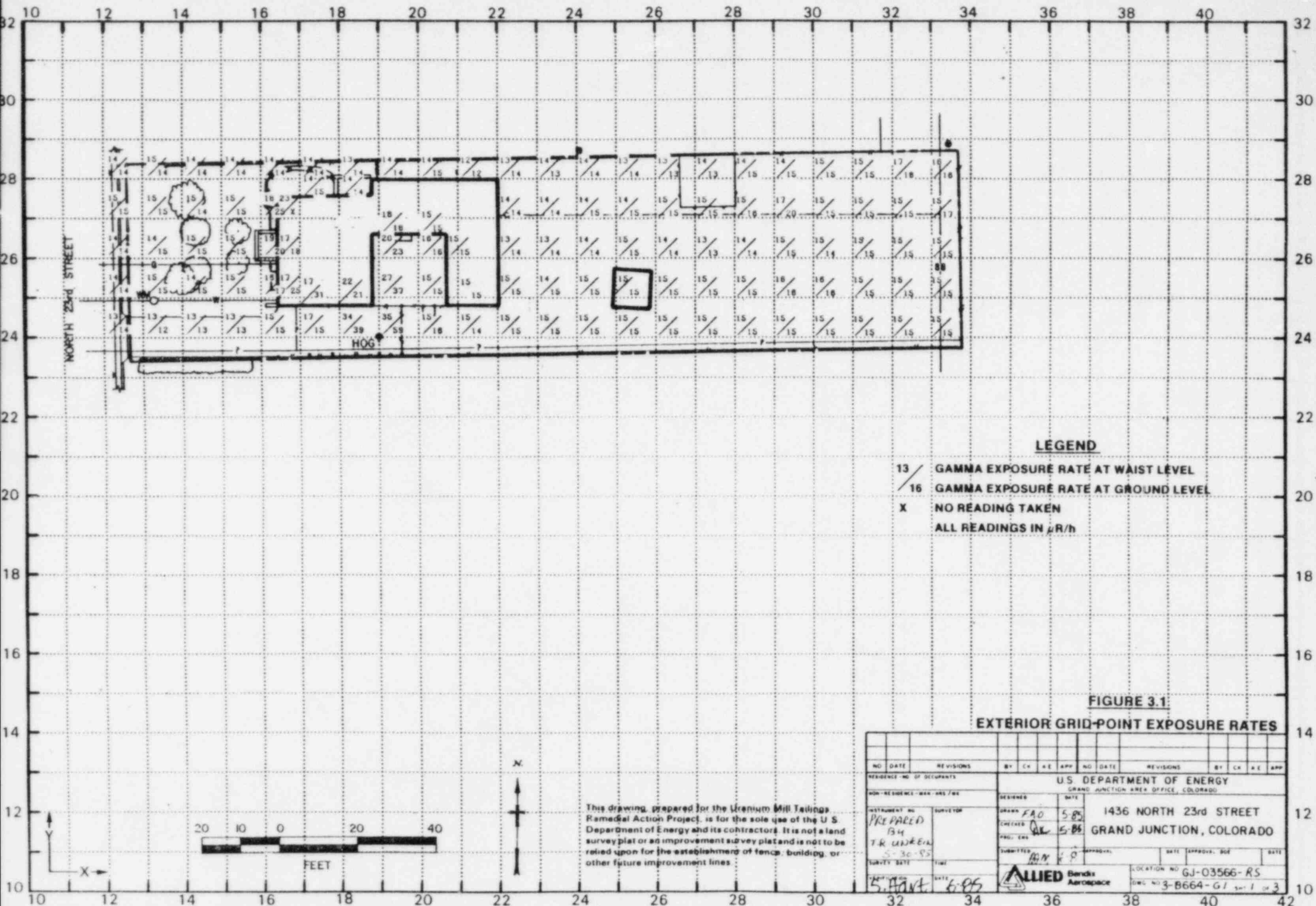
GRAND JUNCTION, COLORADO

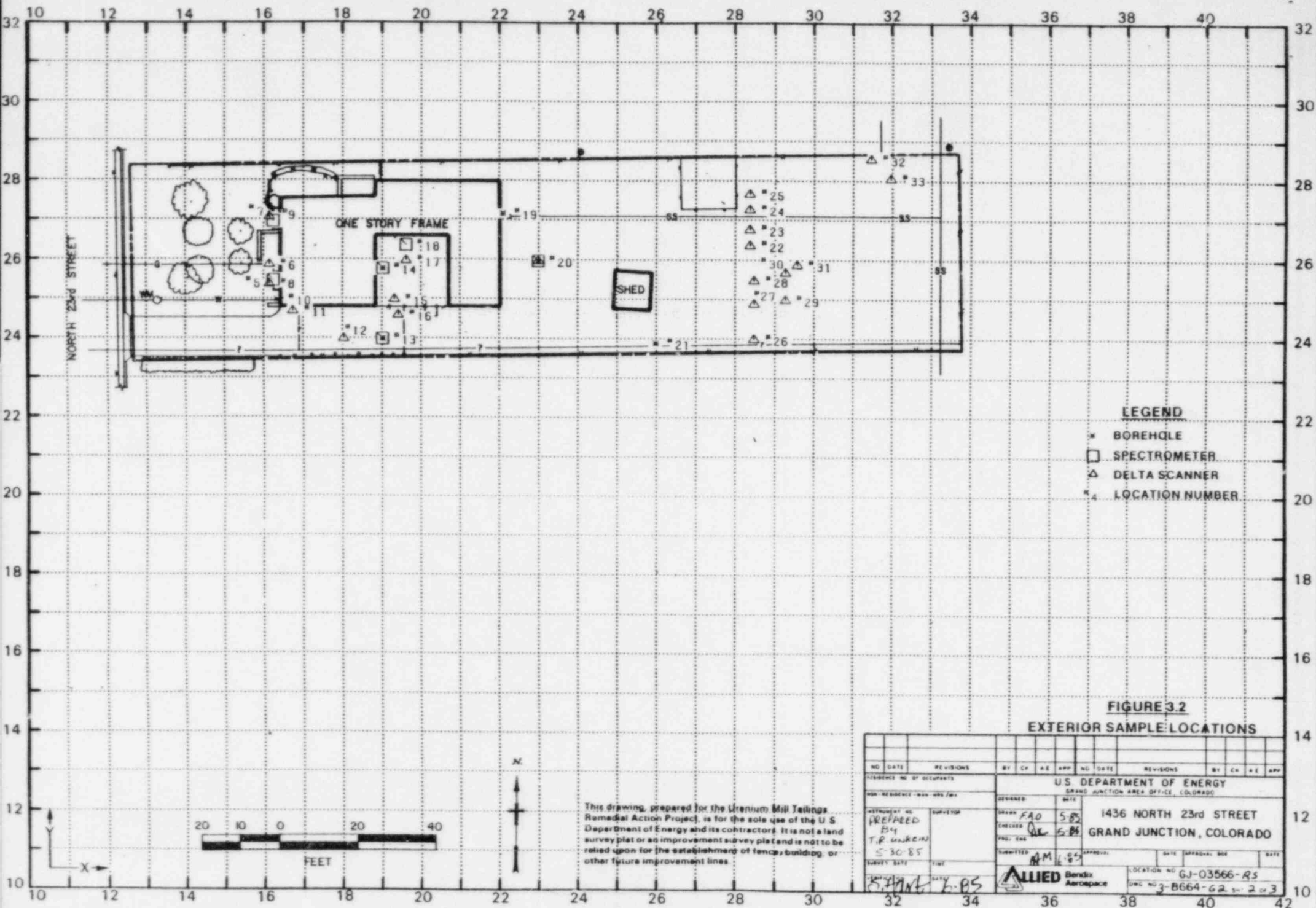
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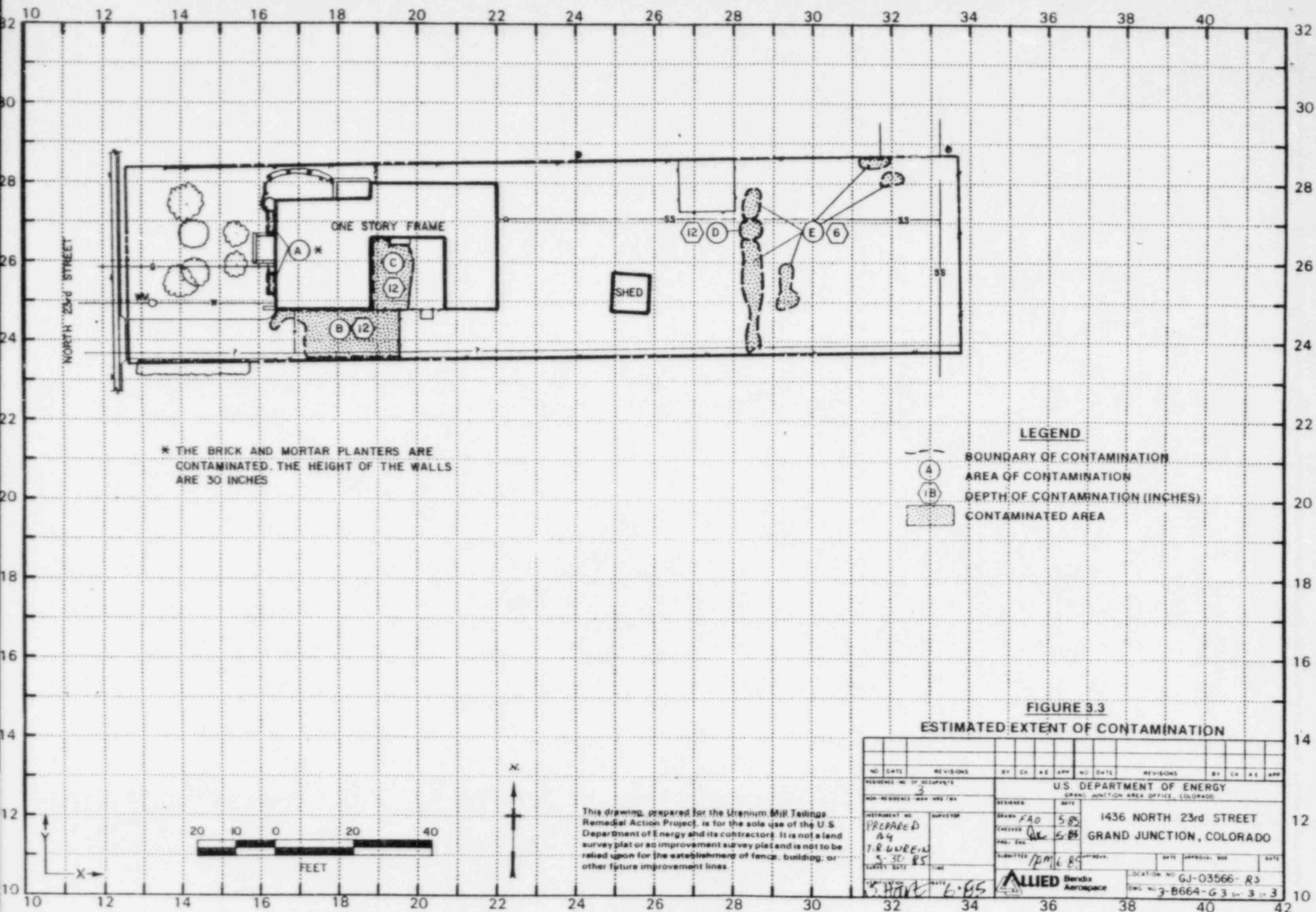
FIGURE 2.2 SITE PLAN

U.S. DEPARTMENT OF ENERGY  
OFFICE OF THE ASSISTANT SECRETARY FOR ENERGY DELIVERY  
1436 NORTH 2<sup>ND</sup> STREET  
GRAND JUNCTION, COLORADO  
406 8 9 80  
3 564











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

Official Survey Report

Property Address 1436 North 23rd Street

Property Owner B. & P. Bacon

Address of Owner (if different from above) Same

Report Prepared By T.R. Unrein

I. PRESENCE/ABSENCE OF RESIDUAL RADIOACTIVE MATERIALS

☐ No evidence of residual radioactive material on surveyed property.

☒ Residual radioactive materials found at the following locations:

☐ In open areas.

☒ Under or around exterior improvements.

☐ Under or around a typically nonoccupied structure.

☒ Under or around a typically occupied structure.

II. RESULTS OF RADIOLOGIC ASSESSMENT

☐ 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.

☒ 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 = 59 uR/h

ALLIED Bendix  
Aerospace

Bendix Field Engineering Corporation  
Grand Junction Operations  
Grand Junction, Colorado

Date: May 22, 1985  
To: Files  
From: Thomas R. Unrein  
Subject: Team Leader Notes - GJ-03566-RS

Address: 1436 North 23rd Street

Owner: B. and P. Bacon

Team Members

T. Unrein (Team Leader)	P. Hardy
N. Wallace	R. Herman
V. Young	L. Kula

Instruments

Crutch Scintillometer - C-3502, C-1205, C-1208, C-1149, C-1168  
Delta Scintillometer - C-3943, C-3938  
Total Count - C-4006, C-1062  
Downhole Spectrometer - C-0498  
Surface Spectrometer - C-1372

Team members arrived at the property at 7:45 A.M. I talked with the owner and he informed me that the house has been in his family since it was built in the 1940's. The add-on portion of the house was built in the late 1970's (including the fireplace). He thought the patio brick planter and a portion of the driveway were added on in the 1960's.

We removed a piece of rock ore from the flower bed, re-scanned it, and it showed clean.

The elevated readings in the interior are shine (secondary radiation) from the brick planters and the patio. The delta tests confirmed this.

Team Leader Notes  
Thomas R. Unrein  
GJ-03566-RS  
May 22, 1985  
Page 2

I believe the unknown utility line is probably an abandoned sewer line.

The crawl space underneath the older portion of the house was inaccessible.

We completed the survey at 2:30 P.M.

All team members were frisked and returned to the office.

# APPARENT RADIUM-226 CONCENTRATION 10 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-03566-R3  
HOLE NUMBER: 10  
LOCATION: 163250



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.8	4.8
6	4.7	4.9
9	4.5	4.7
12	4.2	3.8
15	4.1	4.1
18	4.0	3.8
21	4.0	4.2
24	3.9	3.7
27	3.9	4.1
30	3.8	3.6
33	3.8	3.6
36	3.9	4.3
39	3.8	3.8
42	3.7	3.9
45	3.5	3.1
48	3.3	3.3
51	3.6	4.0

54  
57  
60  
63

3.5  
3.5  
3.5  
3.5

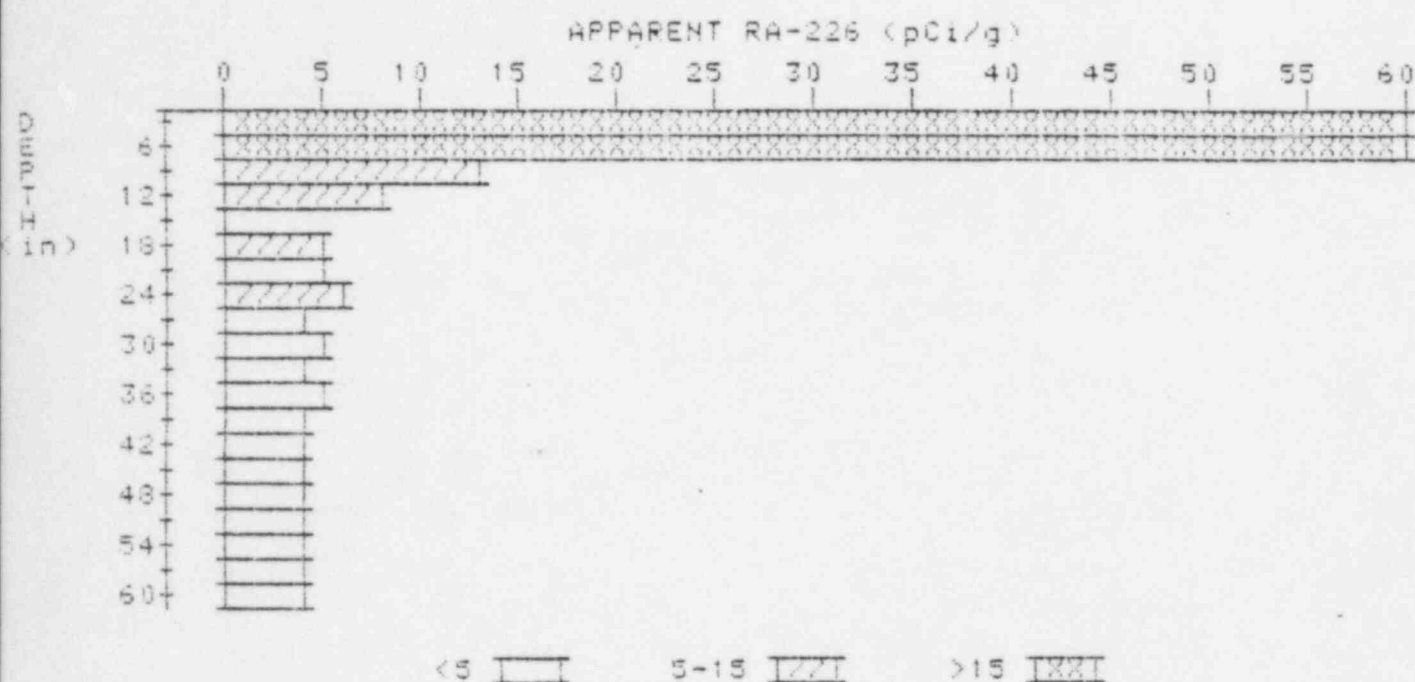
3.3  
3.5  
3.5  
3.5

# APPARENT RADIUM-226 CONCENTRATION 13 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-03566-RS

HOLE NUMBER: 13

LOCATION: 190240



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	71.8	71.8
6	63.9	100.2
9	35.6	13.2
12	19.9	8.3
15	10.7	4.5
18	7.8	5.1
21	6.4	5.0
24	5.8	6.0
27	5.1	4.4
30	4.8	4.6
33	4.6	4.4
36	4.5	4.5
39	4.4	4.4
42	4.3	4.5
45	4.1	4.1
48	3.9	3.8
51	3.9	4.1
54	3.8	3.6

37  
60

3.8  
3.8

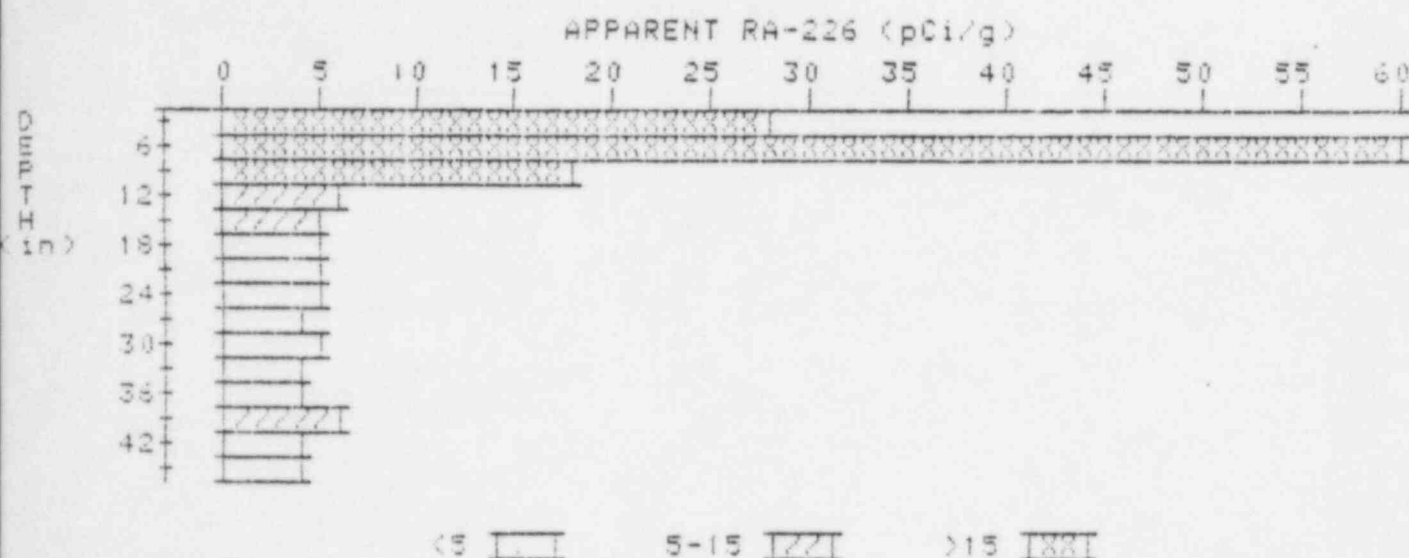
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3.8

# APPARENT RADIUM-226 CONCENTRATION 14 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-03566-R3

HOLE NUMBER: 14

LOCATION: 190258



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	28.2	28.2
6	35.4	69.9
9	23.2	18.0
12	13.9	5.5
15	9.3	5.4
18	6.9	4.8
21	5.7	4.6
24	5.1	4.7
27	4.7	4.2
30	4.6	5.0
33	4.3	3.8
36	4.3	3.8
39	4.6	5.8
42	4.2	4.0
45	3.9	3.9

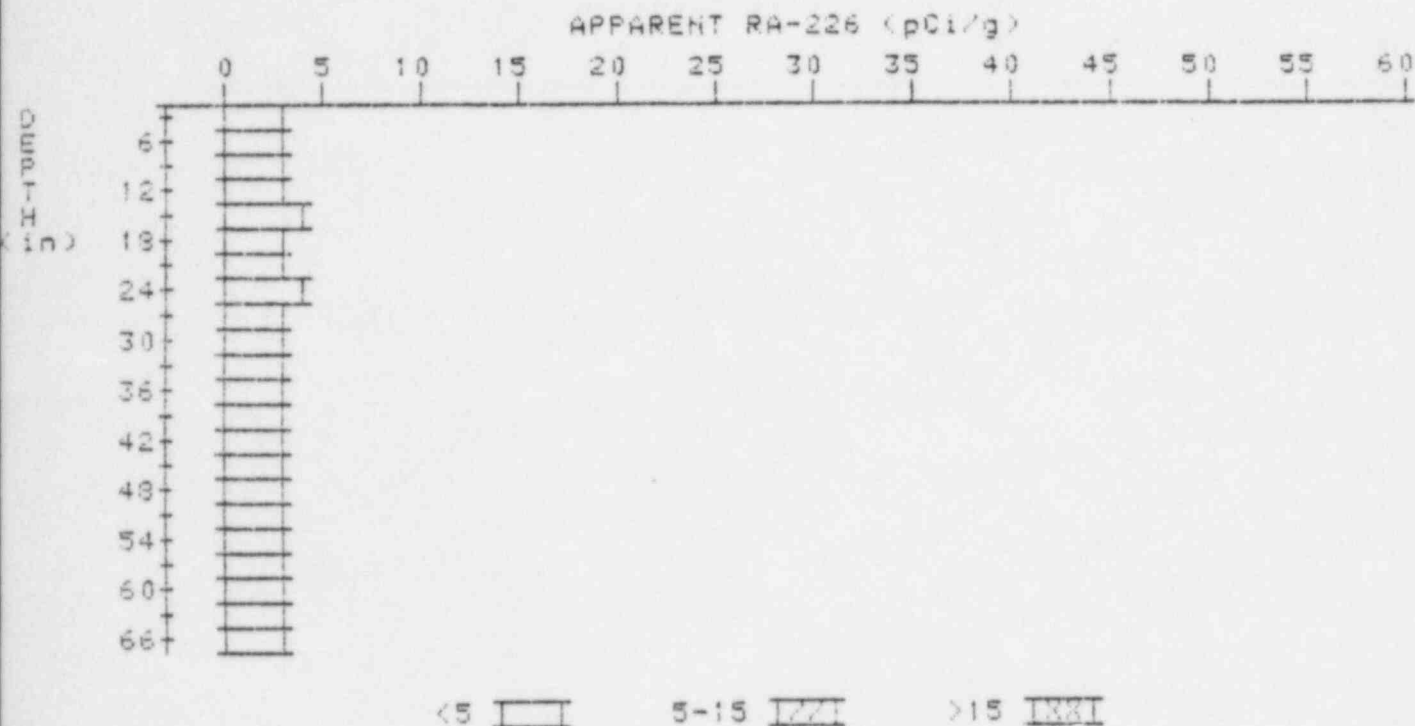


# APPARENT RADIUM-226 CONCENTRATION 19 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-03366-R3

HOLE NUMBER: 19

LOCATION: 221272

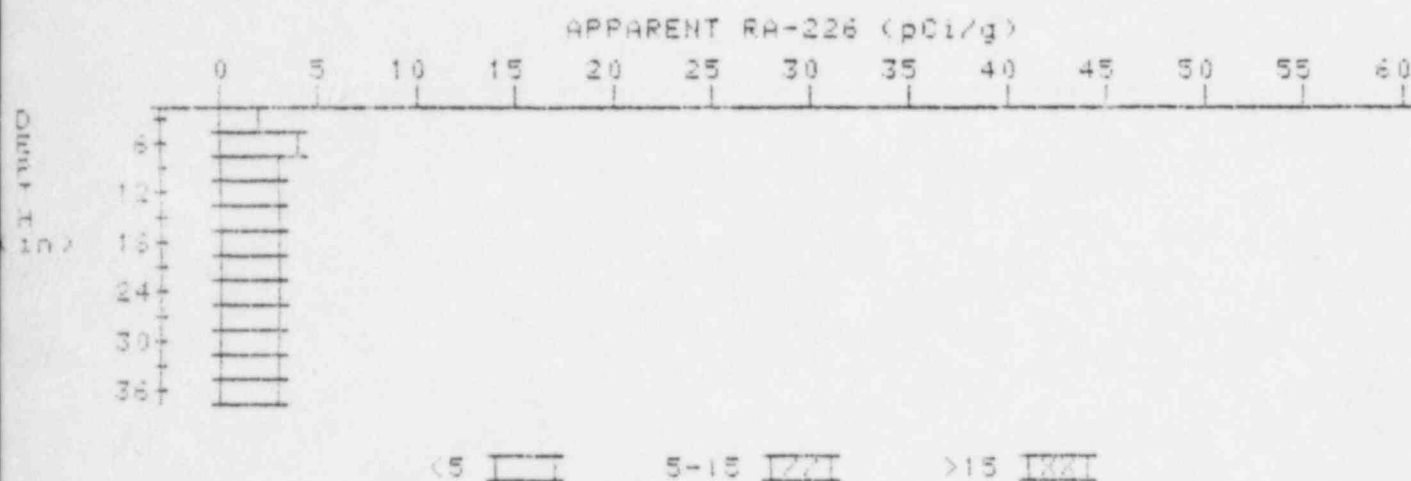


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.6	2.6
6	2.8	2.8
9	3.0	3.2
12	3.1	3.1
15	3.2	3.6
18	3.1	2.9
21	3.1	2.9
24	3.2	3.6
27	3.1	3.1
30	3.0	2.9
33	3.0	3.0
36	3.0	3.0
39	3.0	3.0
42	3.0	3.2
45	2.9	2.6
48	3.0	3.4

51	2.9	2.5
54	3.0	3.0
57	3.1	3.3
60	3.1	3.1
63	3.1	3.1
66	3.1	3.1

# APPARENT RADIUM-226 CONCENTRATION 20 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-03566-RS  
HOLE NUMBER: 20  
LOCATION: 230260



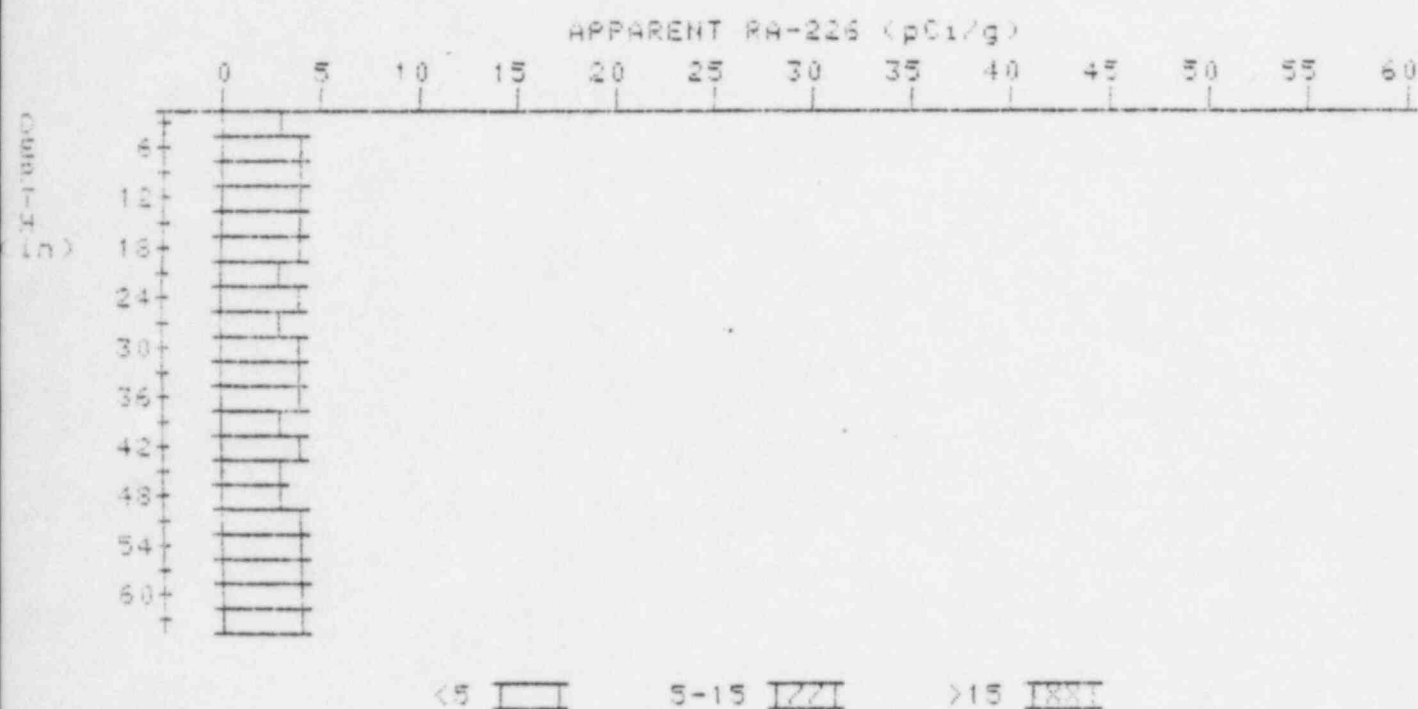
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.4	2.4
6	2.9	3.6
9	3.0	2.8
12	3.2	3.4
15	3.3	3.5
18	3.3	3.3
21	3.3	3.5
24	3.2	3.0
27	3.2	3.2
30	3.2	3.4
33	3.1	2.9
36	3.1	3.1

# APPARENT RADIUM-226 CONCENTRATION 21 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-03566-R3

HOLE NUMBER: 21

LOCATION: 260239



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.4	3.4
6	3.6	3.8
9	3.7	3.9
12	3.7	3.7
15	3.7	3.7
18	3.7	3.9
21	3.6	3.4
24	3.6	3.8
27	3.8	3.1
30	3.6	3.6
33	3.7	4.1
36	3.8	3.6
39	3.8	3.1
42	3.8	4.0
45	3.8	3.3
48	3.8	3.3
51	3.8	3.8

54  
57  
60  
63

3.6  
3.6  
3.6  
3.6

3.6  
3.6  
3.6  
3.6

