

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-01358-RS  
ADDRESS: 1644 NORTH 15th 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

*Michael K. Tucker*

M. TUCKER  
DOE PROJECT ENGINEER

DATE

*September 3, 1985*

REA01358:REA-AAB

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PDR WASTE PDR  
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## 1.0 EXECUTIVE SUMMARY

### 1.1 Introduction

The location, DOE ID No. GJ-01358-RS, is a single-family residence located at 1644 North 15th 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, 54 cu. yd.; interior, 0 cu. yd.

Estimated cost to perform remedial action is \$6,283. Remedial action on this property will take approximately 21 days to complete.

## 2.0 PROPERTY DESCRIPTION

### 2.1 General Description

Address: 1644 North 15th Street, Grand Junction, Colorado

Zoning: Residential (RSF-8)

Lot Size: Approximately 8,125 sf (0.19 acres)

Legal Description: Lot 1 of Avalon Gardens in Grandview Subdivision, Section 12, Township 1 South, Range 1 West of Ute Meridian, City of Grand Junction, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 3 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:	Residence
South:	Residence
East:	Alley (gravel)
West:	North 15th Street

### 2.2 Existing Facilities and Structures

Primary Structure:

Type:	Single-story residence
Size:	Approximately 1,500 sf
Construction Date:	1937
Construction:	Wood-frame
Foundation:	Not investigated. Remedial action will not involve the structure.
Footing Depth:	Not investigated. Remedial action will not involve the structure.
Basement:	Yes
Crawl Space:	Yes
Condition:	Fair

Other Structures:

Type:	Shed
Size:	Approximately 50 sf
Construction:	Wood-frame
Foundation:	Wood
Condition:	Fair

General Remarks:

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

Historical Data:

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

### 3.0 RADIOLOGIC SURVEY

#### 3.1 Introduction

Radiologic data were collected by Bendix at DOE ID No. GJ-01358-RS on June 20, 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 associated with the south sidewalk, the carport, and a deposit east of the primary structure.

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: 16 to 18 uR/h  
Highest Outside Gamma Reading (HOG): 73 uR/h

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

##### 3.2.2 Interior Findings

Background Readings: 13 to 16 uR/h  
Highest Inside Gamma Reading (HIG): 16 uR/h

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

#### 3.3 Boreholes, Soil Samples, and Other Measurements

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

### 3.4 Radon/Radon Daughter Concentration (PDC)

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

### 3.5 Extent of Contamination

Appendix Figure 3.3 shows identified areas and estimated depths of contamination on this property, based on assessments of all measurements taken. As noted in this figure, areas recommended for remedial action that contain identified residual radioactive materials are:

- (Area A) Surface Material: Soil  
Direction From Primary Structure: South  
Other Directions: Along south foundation  
Total Depth of Contamination: 12 inches  
Approximate Square Footage: 32
- (Area B) Surface Material: Concrete  
Direction From Primary Structure: Southeast  
Total Depth of Contamination: 12 inches  
Other (height or thickness): 4-inch-thick concrete  
Comments: Covered carport  
Approximate Square Footage: 560
- (Area C) Surface Material: Concrete  
Direction From Primary Structure: South  
Total Depth of Contamination: 12 inches  
Other (height or thickness): 4-inch-thick concrete  
Approximate Square Footage: 51
- (Area D) Surface Material: Gravel  
Direction From Primary Structure: South and southeast  
Other Directions: In driveway  
Total Depth of Contamination: 6 inches  
Approximate Square Footage: 328
- (Area E) Surface Material: Gravel  
Direction From Primary Structure: South  
Total Depth of Contamination: 18 inches  
Approximate Square Footage: 64
- (Area F) Surface Material: Lawn  
Direction From Primary Structure: East  
Total Depth of Contamination: 12 inches  
Approximate Square Footage: 414
- (Area G) Surface Material: Lawn  
Direction From Primary Structure: East  
Other Directions: East of area F  
Total Depth of Contamination: 6 inches  
Comments: Small isolated deposit  
Approximate Square Footage: 45

(Area H) Surface Material: Gravel  
Direction From Primary Structure: Southeast  
Other Directions: In alley  
Total Depth of Contamination: 6 inches  
Comments: Small isolated deposit  
Approximate Square Footage: 32

(Area I) Surface Material: Lawn  
Direction From Primary Structure: East  
Other Directions: North of patio  
Total Depth of Contamination: 6 inches  
Approximate Square Footage: 78

(Area J) Surface Material: Soil  
Direction From Primary Structure: Southeast  
Other Directions: East of patio  
Total Depth of Contamination: 6 inches  
Approximate Square Footage: 110



#### 4.0 RECOMMENDED REMEDIAL ACTION

##### 4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-01358-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 \$6,283.

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

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

## 5.0 REFERENCES

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

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

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

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

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

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

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

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

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

## 6.0 APPENDIX

This Appendix contains the following:

Appendix Tables:

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

Appendix Figures:

Figure 2.1	Vicinity Map
Figure 2.2	Site Plan
Figure 3.1	Exterior Grid-Point Exposure Rates
Figure 3.2	Exterior Sample Locations
Figure 3.3	Exterior Estimated Extent of Contamination

Official Survey Report

Team Leader Notes

Deconvolution Graphs (Apparent Radium-226 Concentration)

Exterior Gamma Scan - Appendix Copy

## Radium Concentrations at Exterior Locations

DOE ID #GJ-01358-RS

1644 North 15th 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	150262	03	TC	3.3		*	West of primary structure Water line DC = 0 inches
		06	TC	3.5		*	
		09	TC	3.6		*	
		12	TC	3.7		*	
		15	TC	3.8		*	
		18	TC	3.8		*	
		21	TC	3.8		*	
		24	TC	3.8		*	
		27	TC	3.9		*	
		30	TC	4.0		*	
		33	TC	4.0		*	
		36	TC	3.9		*	
		39	TC	3.8		*	
		42	TC	3.8		*	
		45	TC	3.8		*	
		48	TC	3.7		*	
		51	TC	4.0		*	
		54	TC	4.0		*	
		57	TC	4.0		*	
		60	TC	3.9		*	
2	152243	00	DS	22.0		*	South of primary structure
		06	DS	4.5		*	
		12	DS	3.4		*	
		18	DS	2.3		*	
3	164242	00	DS	3.1		*	South of primary structure
		06	DS	1.7		*	
4	165228	00	DS	4.5		*	South of primary structure
		06	DS	2.0		*	
5	167248	00	DS	9.9		*	Gas line
		06	DS	11.3		*	
		12	DS	2.2		*	
		18	DS	2.5		*	
6	180247	03	TC	4.0		*	South of primary structure DC = 15 inches Based on the deconvolution graph
		06	TC	4.6		*	
		09	TC	4.9		*	
		12	TC	5.0		*	
		15	TC	4.6		*	
		18	TC	4.4		*	
		21	TC	4.6		*	

## Radium Concentrations at Exterior Locations

DOE ID #GJ-01358-RS

1644 North 15th 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.		
6	180247	24	TC	4.5		*	
		27	TC	4.4		*	
		30	TC	4.4		*	
		33	TC	4.3		*	
		36	TC	4.3		*	
7	186251	03	TC	3.7		*	Southeast side of primary structure DC = 12 inches Based on all available data
		06	TC	4.0		*	
		09	TC	4.3		*	
		12	TC	4.3		*	
		15	TC	4.4		*	
		18	TC	4.6		*	
		21	TC	4.6		*	
		24	TC	4.5		*	
		27	TC	4.6		*	
		30	TC	4.6		*	
		33	TC	4.5		*	
		36	TC	4.5		*	
		39	TC	4.5		*	
		42	TC	4.4		*	
		45	TC	4.5		*	
		48	TC	4.5		*	
		51	TC	4.5		*	
		54	TC	4.5		*	
		57	TC	4.5		*	
		60	TC	4.5		*	
		63	TC	4.4		*	
8	195245	03	TC	50.7		*	Southeast side of primary structure DC = 12 inches Based on the deconvolution graph
		06	TC	59.4		*	
		09	TC	39.7		*	
		12	TC	23.3		*	
		15	TC	15.3		*	
		18	TC	11.2		*	
		21	TC	9.3		*	
		24	TC	8.2		*	
		27	TC	7.5		*	
		30	TC	6.9		*	
		33	TC	6.5		*	
		36	TC	6.1		*	
		39	TC	5.8		*	
		42	TC	5.6		*	
		45	TC	5.3		*	
		48	TC	5.2		*	

## Radium Concentrations at Exterior Locations

DOE ID #GJ-01358-RS

1644 North 15th Street

Page 3 of 4

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
8	195245	51	TC	5.1		*	
		54	TC	5.1		*	
		57	TC	5.0		*	
		60	TC	4.9		*	
		63	TC	4.8		*	
		66	TC	4.7		*	
		69	TC	4.7		*	
		72	TC	4.5		*	
		75	TC	4.5		*	
		78	TC	4.4		*	
		81	TC	4.4		*	
		84	TC	4.4		*	
		87	TC	4.3		*	
		90	TC	4.6		*	
		93	TC	4.1		*	
9	204262	03	TC	3.6		*	Next to sewer line DC = 6 inches Based on all available data
		06	TC	3.5		*	
		09	TC	3.6		*	
		12	TC	3.6		*	
		15	TC	3.7		*	
		18	TC	3.8		*	
		21	TC	3.9		*	
		24	TC	3.9		*	
		27	TC	3.9		*	
		30	TC	4.0		*	
		33	TC	4.0		*	
		36	TC	3.9		*	
		39	TC	3.8		*	
		42	TC	3.8		*	
		45	TC	3.8		*	
		48	TC	3.9		*	
		51	TC	3.9		*	
		54	TC	4.0		*	
		57	TC	3.9		*	
		60	TC	3.9		*	
		63	TC	4.0		*	
10	205241	00	DS	3.0		*	Southeast of primary structure
		06	DS	1.9		*	
11	205252	00	DS	3.4		*	East of primary structure
		06	DS	2.2		*	

## Radium Concentrations at Exterior Locations

DOE ID #GJ-01358-RS

1644 North 15th Street

Page 4 of 4

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
12	206234	00	DS	1.4		*	Southeast of primary structure
13	207263	00	DS	4.3		*	East of primary structure
		06	DS	1.4		*	
14	208288	00	DS	2.3		*	Northeast of primary structure
		06	DS	2.9		*	
15	221269	03	TC	21.4		*	East of primary structure DC = 12 inches Based on the deconvolution graph
		06	TC	18.0		*	
		09	TC	12.2		*	
		12	TC	8.0		*	
		15	TC	5.9		*	
		18	TC	5.0		*	
		21	TC	4.5		*	
		24	TC	4.2		*	
		27	TC	4.2		*	
		30	TC	4.1		*	
		33	TC	4.1		*	
		36	TC	4.0		*	
		39	TC	4.0		*	
		42	TC	3.9		*	
		45	TC	3.9		*	
16	237283	00	DS	3.3		*	East of primary structure
		06	DS	2.5		*	
17	280230	00	DS	5.1		*	Alleyway
		06	DS	<1.0		*	

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 = 06-20-85  
 Team Leader = SM

Table 3.2

## Summary of Interior Gamma Exposure Rates

DOE ID No. GJ-01358-RS 1644 North 15th Street Page 1 of 1

Location	Number of Readings Taken at Waist Level	Range at Waist Level (uR/h)	Mean at Waist Level (uR/h)	Number of Readings Taken at Surface	Range at Surface (uR/h)	Mean Surface (uR/h)
-----	-----	-----	-----	-----	-----	-----
PRIMARY STRUCTURE	*	*	*	*	13-16	*
SHED	*	*	*	*	14-16	*
-----	-----	-----	-----	-----	-----	-----

\* A walking gamma scan was performed to confirm the absence of interior contamination at these locations.



Table 4.1  
Area and Volume Calculations  
DOE ID No. GJ-01358-RS

Page 1 of 1

<u>AREA</u>	<u>CALCULATIONS(ft)</u>	<u>SF</u>	<u>DEPTH(ft)</u>	<u>CF</u>	<u>CUBIC YARDS</u>
EXTERIOR					
	Concrete				
B	10 x 12 =	120			
	20 x 22 =	440			
		<u>560</u>	x 0.3 =	168	
C	3 x 17 =	51	x 0.3 =	15	
	Volume of Concrete			<u>183</u>	= 183/27 = 7
	Contaminated Fill				
A	2 x 16 =	32	x 1.0 =	32	
B	10 x 12 =	120			
	20 x 22 =	440			
		<u>560</u>	x 0.7 =	392	
C	3 x 17 =	51	x 0.7 =	36	
D	20 x 4 =	80			
	40 x 3 =	120			
	4 x 15 =	60			
	4 x 17 =	68			
		<u>328</u>	x 0.5 =	164	
E	16 x 4 =	64	x 1.5 =	96	
F	23 x 18 =	414	x 1.0 =	414	
G	9 x 5 =	45	x 0.5 =	23	
H	8 x 4 =	32	x 0.5 =	16	
I	6 x 13 =	78	x 0.5 =	39	
J	22 x 5 =	110	x 0.5 =	55	
	Volume of Fill			<u>1,267</u>	= 1,267/27 = 47
	TOTAL VOLUME - EXTERIOR				<u>54</u>

See Appendix Figure 3.3 For Areas

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Table 4.2  
Estimated Cost of Decontamination and Restoration  
DOE ID No. GJ-01358-RS

Page 1 of 2

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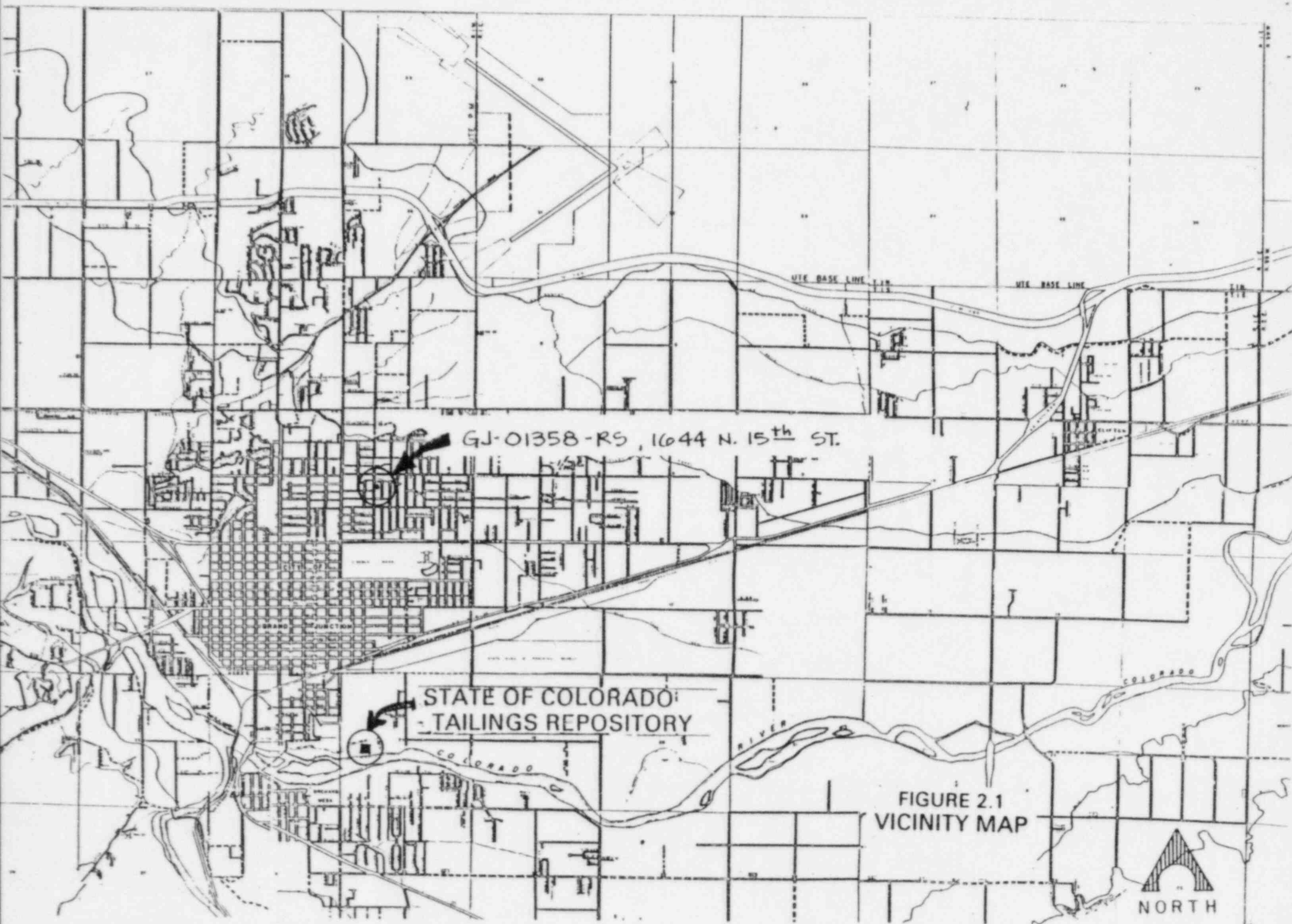
Saw-cut sidewalk (4" deep) 3 lf @ \$0.63/lf/inch of depth	\$ 8
Remove/replace concrete flatwork 611 sf @ \$2.98/sf	1,821
Remove identified residual radioactive material 40 cy @ \$14.50/cy (machine - open)	580
7 cy @ \$44/cy (manual - open)	308
Replace areas with topsoil 21 cy @ \$9.50	200
Replace areas with roadbase 26 cy @ \$11.50	299
Replace areas with sod 537 sf @ \$0.25/sf	134
Temporary carport roof support Lump sum	290
Replace gravel on entire drive Lump sum	75
Remove and replace brick border Lump sum	55
Remove and reinstall fencing and trellis 42 lf @ \$2/lf	84
Replace landscaping Lump sum	290
	<hr/>
TOTAL EXTERIOR	\$ 4,144

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TOTAL EXTERIOR	\$	4,144
TOTAL INTERIOR		0
ACCESS CONTROL		250
		<hr/>
SUBTOTAL	\$	4,394
CONTINGENCY @ 10%		439
		<hr/>
SUBTOTAL	\$	4,833
CONTRACTOR OVERHEAD & PROFIT @ 30%		1,450
		<hr/>
GRAND TOTAL	\$	6,283

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REA01358.AB:AB010:MJP



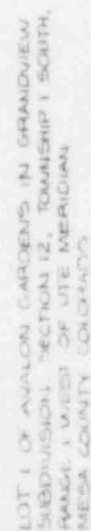


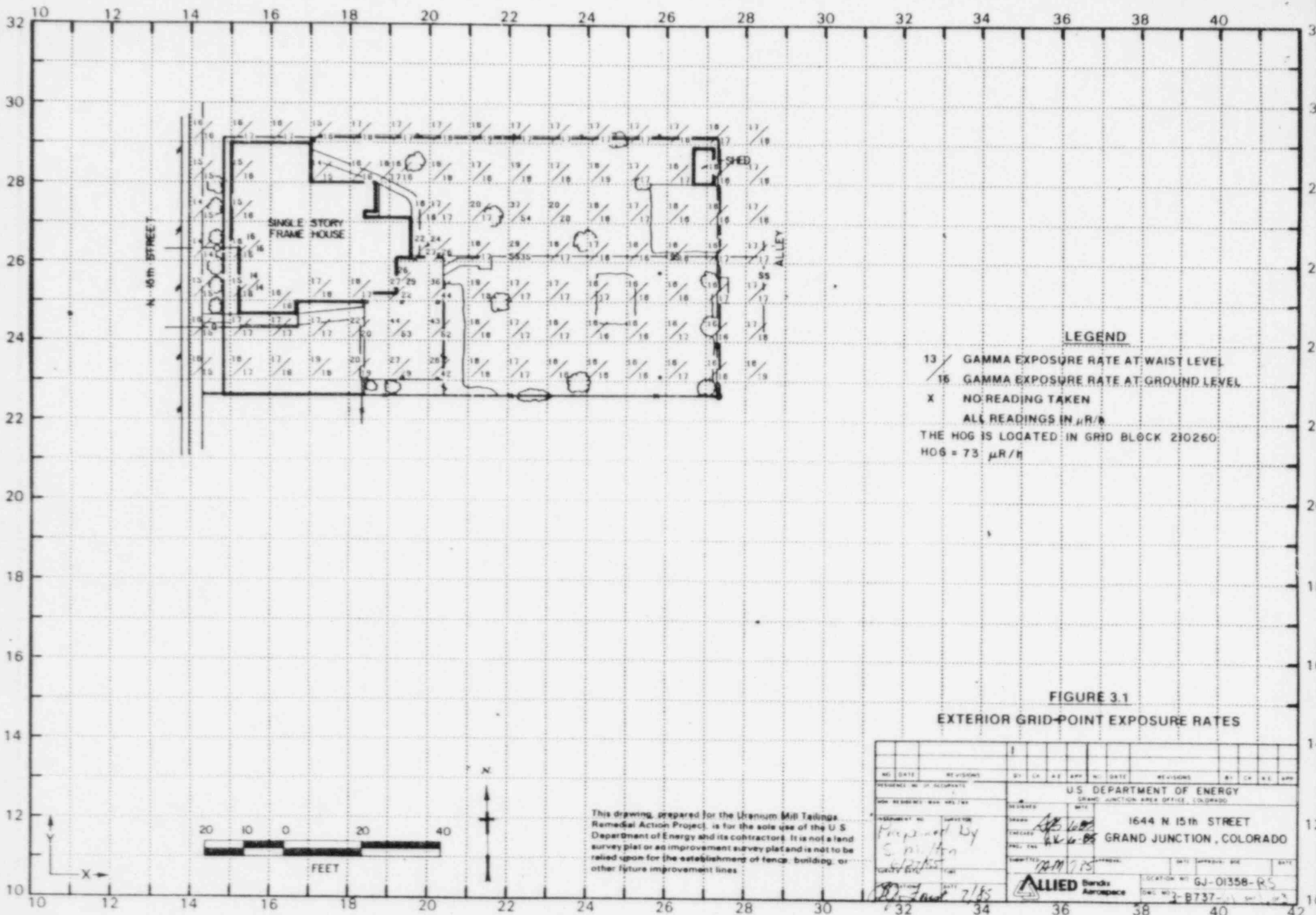
FIGURE 2.2 SITE PLAN

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION PROJECT OFFICE, COLORADO ADDRESS 1644 N 15th STREET GRAND JUNCTION, CO 81501 SURVEY MAP 15-B-2127 RAS/2-B-65 DRAWING NO. C-2127-21	DATE 12-NOV-63 GJ 01-58-RS ALLIED 10000 E. Highway 100 Grand Junction, Colorado 81501 GJ 58-R-1-1
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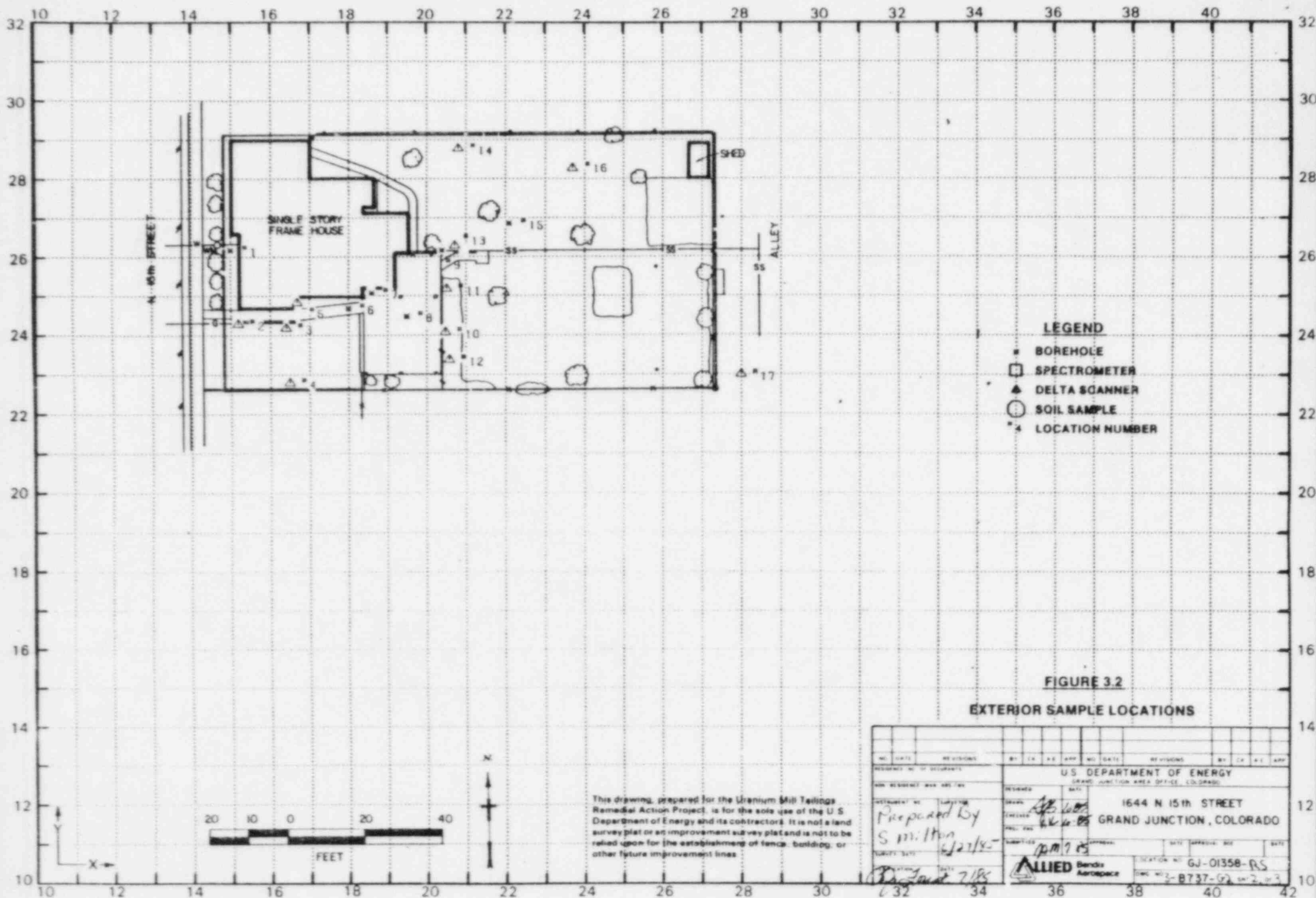
SCALE IN FEET



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 improvement survey plot and is not to be relied upon for the establishment of fence, building, or other future improvement lines.





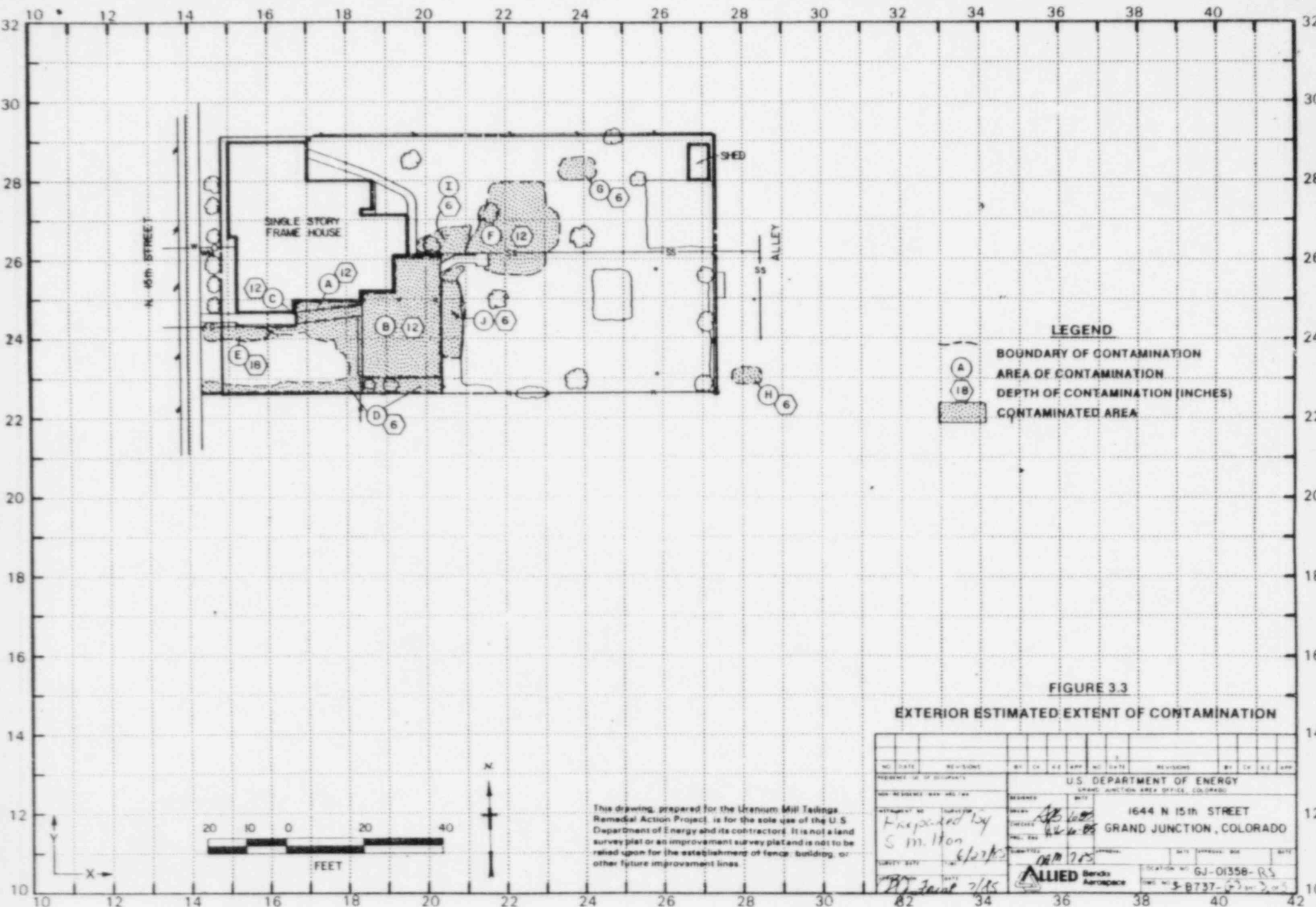


NO. DATE REVISIONS BY: CH. A.E. APP. NO. DATE REVISIONS BY: CH. A.E. APP.											
RESIDENTIAL NO. OF DOCUMENTS						U.S. DEPARTMENT OF ENERGY GRAND JUNCTION AREA OFFICE, COLORADO					
ANN. RESIDENTIAL NO. AND DATE						DESIGNED DATE					
INSTRUMENT NO. LOCATION						DRAWN DATE					
Prepared by S. Milton 6/27/85						CHECKED DATE					
TARGET DATE						APPROVED DATE					
6/32						34					
32						36					
38						40					
42						42					

1644 N 15th STREET  
GRAND JUNCTION, COLORADO

LOCATION NO. GJ-01358-RS  
DWC NO. 2-B737-(S) SH 2 OF 3

ALLIED Bendix Aerospace



**LEGEND**

- BOUNDARY OF CONTAMINATION
- AREA OF CONTAMINATION
- DEPTH OF CONTAMINATION (INCHES)
- CONTAMINATED AREA

**FIGURE 3.3**

**EXTERIOR ESTIMATED EXTENT OF CONTAMINATION**

NO. DATE		REVISIONS		BY	CHK	DATE	NO. DATE		REVISIONS		BY	CHK	DATE	APP	
<p>U.S. DEPARTMENT OF ENERGY          GRAND JUNCTION AREA OFFICE, COLORADO</p> <p>1644 N 15th STREET          GRAND JUNCTION, COLORADO</p> <p>LOCATION NO. GJ-01358-RS          CONT. NO. 3-B737-23</p>															
PREPARED BY S. M. HON 6/27/82				CHECKED BY [Signature] 6/27/82				APPROVED BY [Signature] 6/27/82				DATE APPROVED: 6/27/82			
SECURITY: [ ] [Signature] 7/1/82				ALLIED Bonds Aerospace				[Signature] 7/1/82				[Signature] 7/1/82			

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.



3/85

DOE ID NO. GJ-01358-RS

Date 6-25-85

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

Official Survey Report

Property Address 1644 North 15th Street

Property Owner William and Margie Brown

Address of Owner (if different from above) \_\_\_\_\_

Report Prepared By Skip Milton

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 XXX 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 = 16 uR/h  
HOG = 73 uR/h

MEMORANDUM

ALLIED Bendix  
Aerospace

Bendix Field Engineering Corporation  
Grand Junction Operations  
Grand Junction, Colorado

Date: June 20, 1985

To: Files

From: Skip Milton

*Skip Milton*

Subject: Team Leader Notes - GJ-01358-RS

Address: 1644 North 15th Street

Owner: W.L. and M.A. Brown

Weather: Clear, sunny.

Year Built: 1937

Team Members

S. Milton (Team Leader)  
D. Bell  
D. Willis  
M. Heronema

S. Larsen  
D. Krabacher  
G. Meeker

Health and Safety arrived at the site, everything appeared to be fine with them.

An exterior gamma scan was performed, elevated readings were discovered in the carport. A core was performed there. Mrs. Brown informed me that she thought a buried cistern was in the northeast corner of the carport. A core and auger hole was performed.

An interior gamma survey showed no elevated readings, which is consistent with Oak Ridge National Laboratory (ORNL) and Colorado Department of Health (CDH) historical background information.

Contamination appeared also to be associated with the sidewalk south of the primary structure. A core was performed.

Team Leader Notes  
Skip Milton  
GJ-01358-RS  
June 20, 1985  
Page 2

All of the utilities were investigated with auger holes and/or  
deltas.

The team members were frisked before leaving the site.

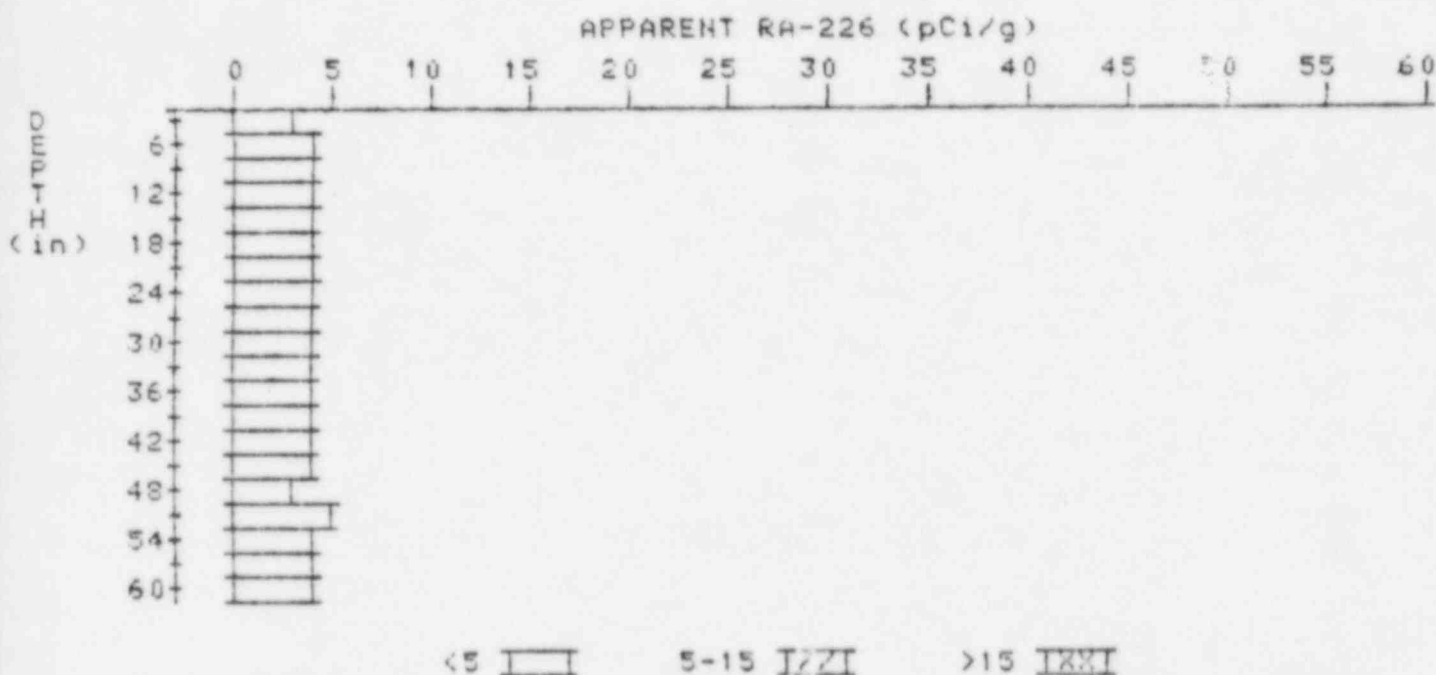
# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

1

PROPERTY NUMBER: GJ-01358-RS

HOLE NUMBER: 1

LOCATION: 150262



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.3	3.3
6	3.5	3.7
9	3.6	3.6
12	3.7	3.7
15	3.8	4.0
18	3.8	3.8
21	3.8	3.8
24	3.8	3.6
27	3.9	3.9
30	4.0	4.2
33	4.0	4.2
36	3.9	3.9
39	3.8	3.6
42	3.8	3.8
45	3.8	4.0
48	3.7	3.8
51	4.0	4.5
54	4.0	4.0

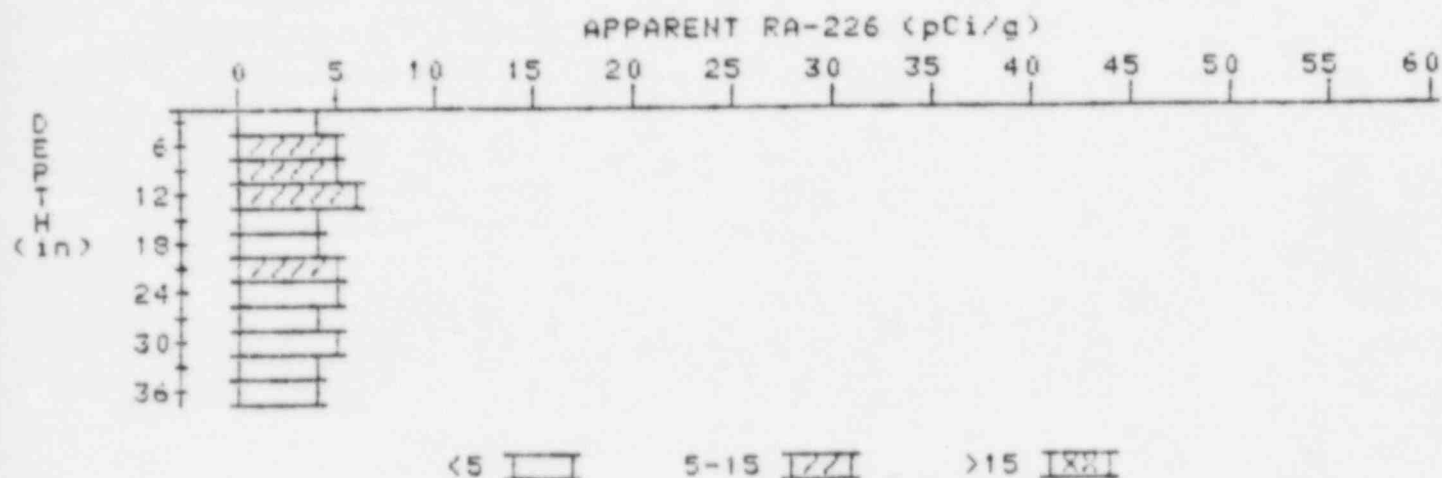
# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

6

PROPERTY NUMBER: GJ-01358-R3

HOLE NUMBER: 6

LOCATION: 180247



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.0	4.0
6	4.6	5.1
9	4.9	5.3
12	5.0	5.9
15	4.6	4.2
18	4.4	3.7
21	4.6	5.1
24	4.5	4.5
27	4.4	4.2
30	4.4	4.6
33	4.3	4.1
36	4.3	4.3

57  
60

4.0  
3.9

4.2  
3.9

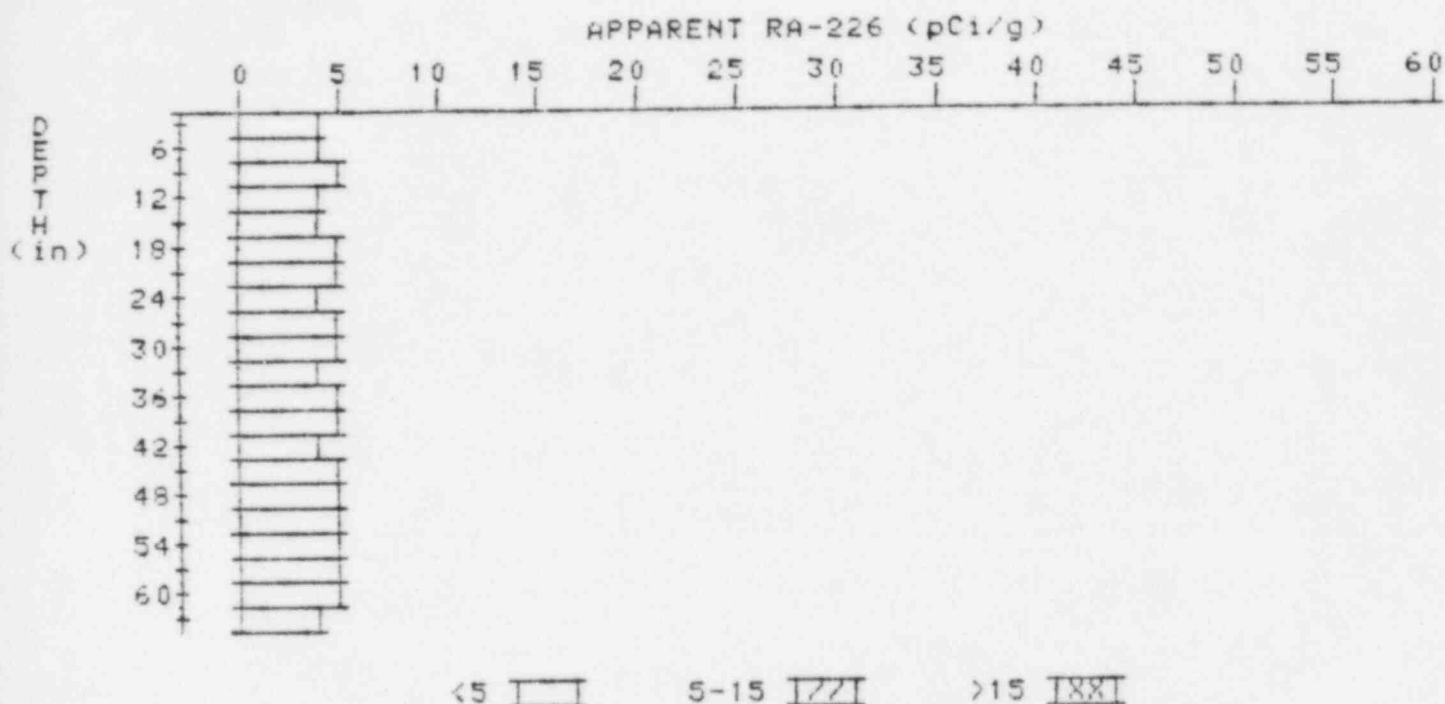
# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

7

PROPERTY NUMBER: GJ-01358-RS

HOLE NUMBER: 7

LOCATION: 186251



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.7	3.7
6	4.0	4.0
9	4.3	4.8
12	4.3	4.1
15	4.4	4.2
18	4.6	5.0
21	4.6	4.8
24	4.5	4.1
27	4.6	4.8
30	4.6	4.8
33	4.5	4.3
36	4.5	4.8
39	4.5	4.7
42	4.4	4.0
45	4.5	4.7
48	4.5	4.5
51	4.5	4.5

TABLE 1. *Continued*

 $1.26 \times 10^{-2} \text{ mol} \cdot \text{dm}^{-3}$



51  
57  
60  
63

7  
8  
4  
8.4

10  
1.7  
8.4

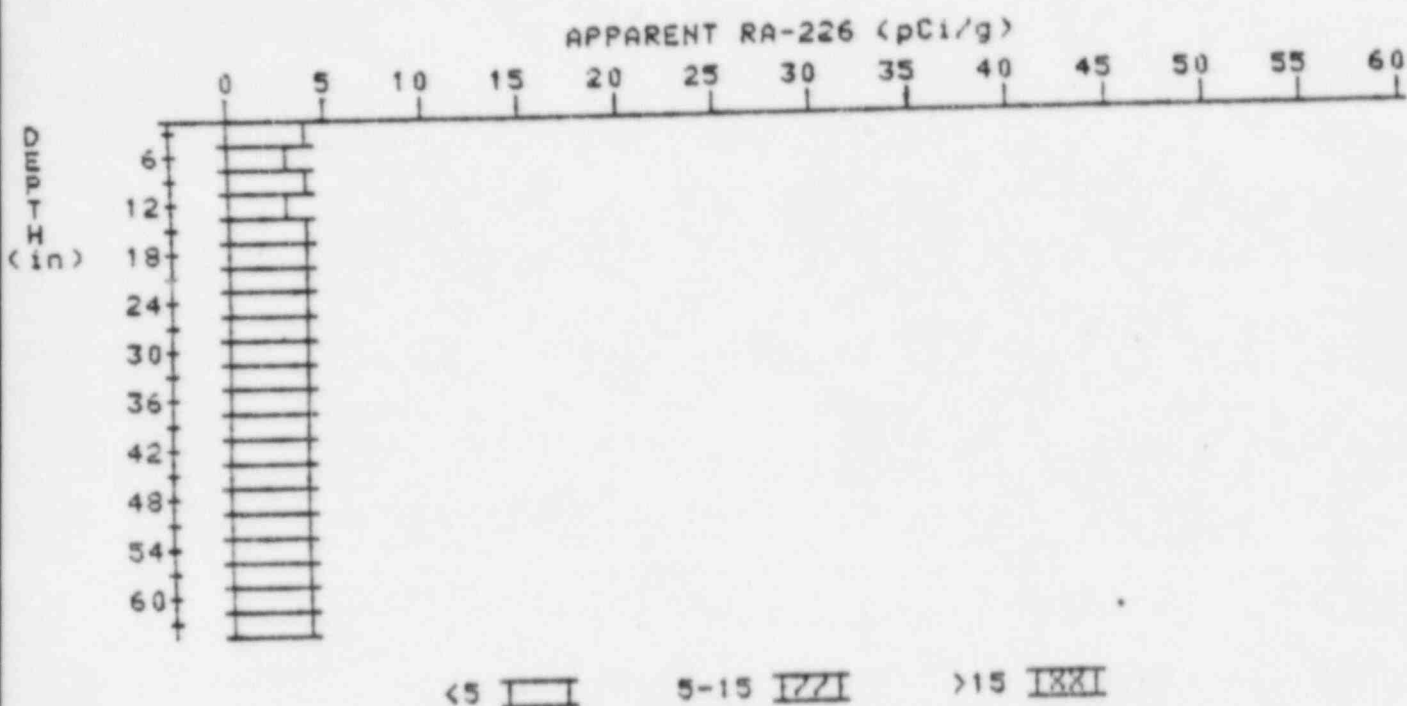
# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

9

PROPERTY NUMBER: GJ-01358-RS

HOLE NUMBER: 9

LOCATION: 204262



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.6	3.6
6	3.5	3.1
9	3.6	3.8
12	3.6	3.4
15	3.7	3.7
18	3.8	3.8
21	3.9	4.1
24	3.9	3.9
27	3.9	3.7
30	4.0	4.2
33	4.0	4.2
36	3.9	3.9
39	3.8	3.6
42	3.8	3.8
45	3.8	3.6
48	3.9	4.1
51	3.9	3.7

30	6.9	6.5
33	6.5	6.5
36	6.1	5.9
39	5.8	5.6
42	5.6	5.8
45	5.3	4.9
48	5.2	5.2
51	5.1	4.9
54	5.1	5.3
57	5.0	5.0
60	4.9	4.9
63	4.8	4.8
66	4.7	4.5
69	4.7	5.1
72	4.5	4.1
75	4.5	4.7
78	4.4	4.2
81	4.4	4.4
84	4.4	4.6
87	4.3	3.6
90	4.6	6.0
93	4.1	4.1

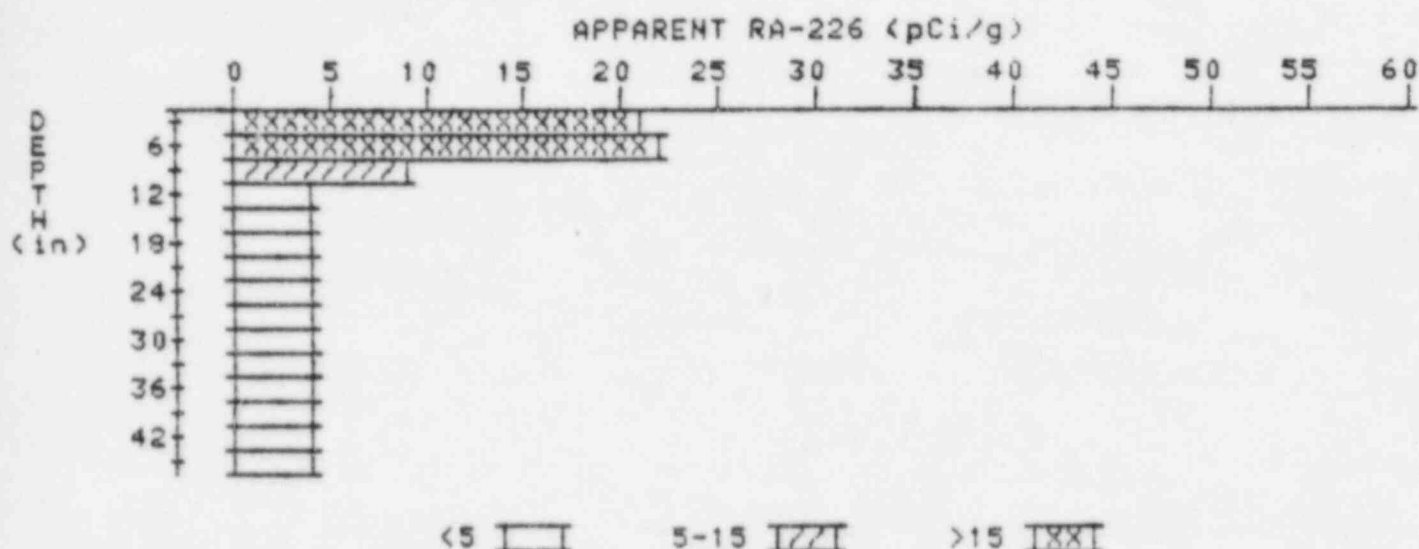
# APPARENT RADIUM-226 CONCENTRATION 15

## DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-01358-RS

HOLE NUMBER: 15

LOCATION: 221269



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	21.4	21.4
6	18.0	22.3
9	12.2	9.4
12	8.0	4.3
15	5.9	3.8
18	5.0	4.3
21	4.5	4.1
24	4.2	3.7
27	4.2	4.4
30	4.1	3.9
33	4.1	4.3
36	4.0	3.8
39	4.0	4.2
42	3.9	3.7
45	3.9	3.9

54  
57  
60  
63

4.0  
3.9  
3.9  
4.0

4.4  
3.7  
3.7  
4.0

