

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-12406-RS
ADDRESS: 555 ASHLEY LANE

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 ⁶³ _{CPH}
M. TUCKER
DOE PROJECT ENGINEER

DATE

August 14, 1985

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-12406-RS, is a single-family residence located at 555 Ashley Lane, 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, 9 cu. yd.; interior, 0 cu. yd.

Estimated cost to perform remedial action, including dislocation when applicable, is \$716. Remedial action on this property will take approximately 3 days to complete.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 555 Ashley Lane, Grand Junction, Colorado

Zoning: Residential (R-4)

Lot Size: Approximately 12,000 sf (0.28 acres)

Legal Description: Beginning 506 feet east plus 308 feet north of the southwest corner SE 1/4 NE 1/4 Section 7, T1S, R1E, north 75 feet, west 160 feet, south 75 feet, east 160 feet to point of beginning, City of Grand Junction, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 3 mile(s) northeast 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:	Ashley Lane
West:	Single-family residence

2.2 Existing Facilities and Structures

Primary Structure:

Type:	Single-story residence
Size:	Approximately 1,568 sf including full basement
Construction Date:	1955
Construction:	Wood-frame
Foundation:	Concrete wall on spread footing
Footing Depth:	Approximately 98" to bottom of footing from grade
Basement:	Yes - full
Crawl Space:	None
Condition:	Good

Other Structures:

Type:	Shed
Size:	Approximately 143 sf
Construction:	Wood-frame
Foundation:	Concrete slab-on-grade
Condition:	Good
Type:	Storage (canopy)
Size:	Approximately 195 sf
Construction:	Wood roof with wood post supports
Foundation:	None
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-12406-RS on July 9, 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 two deposits of contaminated materials located in the yard west 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: 15 to 17 uR/h
Highest Outside Gamma Reading (HOG): 51 uR/h

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

3.2.2 Interior Findings

Remedial action has been previously accomplished on the interior of the primary structure on this property, under the Grand Junction Remedial Action Project.

3.3 Boreholes, Soil Samples, and Other Measurements

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

3.4 Radon/Radon Daughter Concentration (RDC)

Determined by CDH: 0.015 gross working level (WL). No additional RDC measurements were taken by Bendix.

3.5 Extent of Contamination

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

(Area A) Surface Material: Lawn
Direction From Primary Structure: West
Other Directions: Northwest corner of property
Total Depth of Contamination: 12 inches
Approximate Square Footage: 199

(Area B) Surface Material: Soil
Direction From Primary Structure: West
Total Depth of Contamination: 9 inches
Comments: Garden plot
Approximate Square Footage: 48

(AREAS REQUIRING FURTHER INVESTIGATION DURING REMEDIAL ACTION)

The area over the gas line, adjacent to the primary structure, should be rechecked for elevated radium-concentrations at the surface.

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-12406-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 \$716.

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-GMD4-84AL28460) 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 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 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 Map

Radium Concentrations at Exterior Locations

DOE ID #GJ-12406-RS

555 Ashley Lane

Page 1 of 2

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
1	138248	00	DS	2.3		*	West side of property
2	141231	03	TC	12.2		*	In garden west of primary structure
		06	BH	10.2	3.4	*	
		09	TC	7.3		*	
		12	BH	5.5	2.5	*	
		15	TC	4.7		*	DC = 9 inches Based on the deconvolution graph
		18	BH	4.1	2.0	*	
		21	TC	4.0		*	
		24	TC	4.0		*	
3	141269	03	TC	16.7		*	Northwest corner of property
		06	BH	18.7	6.3	*	
		09	TC	13.6		*	
		12	BH	8.7	2.6	*	DC = 12 inches Based on the deconvolution graph
		15	TC	6.2		*	
		18	BH	4.9	1.7	*	
		21	TC	4.5		*	
		24	TC	4.2		*	
		27	TC	4.1		*	
4	150270	00	DS	3.3		*	Northwest corner of property
		06	DS	1.4		*	
5	224255	03	TC	3.5		*	Sewer line
		06	TC	3.9		*	DC = 0 inches
		09	TC	3.9		*	
		12	TC	4.0		*	
		15	TC	4.0		*	
		18	TC	3.9		*	
		21	TC	3.9		*	
		24	TC	3.8		*	
		27	TC	3.7		*	
		30	TC	3.7		*	
		33	TC	3.6		*	
		36	TC	3.7		*	
		39	TC	3.7		*	
		42	TC	3.6		*	
		45	TC	3.5		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-12406-RS

555 Ashley Lane

Page 2 of 2

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
6	257240	00	DS	1.5		*	Along brick planter east of primary structure
7	257261	00	DS	3.0		*	Gas line
		17	DS	1.8		*	
8	285225	00	DS	2.2		*	Water line east of primary structure Background
		03	TC	2.8		*	
		06	BH	3.4	1.8	*	
		09	TC	3.6		*	
		12	BH	3.8	1.7	*	DC = 0 inches
		15	TC	3.7		*	
		18	BH	3.7	1.7	*	
		21	TC	3.8		*	
		24	TC	3.8		*	
		27	TC	3.8		*	
		30	TC	3.7		*	
		33	TC	3.6		*	
		36	TC	3.7		*	
		39	TC	3.7		*	
		42	TC	3.6		*	
		45	TC	3.7		*	
		48	TC	3.6		*	

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 = 07-09-85
Team Leader = JD

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-12406-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					
A	13 x 13	=	169		
	5 x 6	=	30		
			199 x 1.0	=	199
B	8 x 6	=	48 x 0.8	=	33
TOTAL VOLUME - EXTERIOR				=	237 = 237/27 = 9

See Appendix Figure 3.3 For Areas

=====

Table 4.2
Estimated Cost of Decontamination and Restoration
DOE ID No. GJ-12406-RS

Page 1 of 1

EXTERIOR

Remove identified residual radioactive material
9 cy @ \$14.50/cy (machine-open)

\$ 131

Replace areas with topsoil
9 cy @ \$9.50/cy

86

TOTAL EXTERIOR \$ 217

TOTAL INTERIOR 0

ACCESS CONTROL 150

SUBTOTAL \$ 367

CONTINGENCY @ 30% 110

SUBTOTAL \$ 477

CONTRACTOR OVERHEAD & PROFIT @ 50% 239

GRAND TOTAL \$ 716

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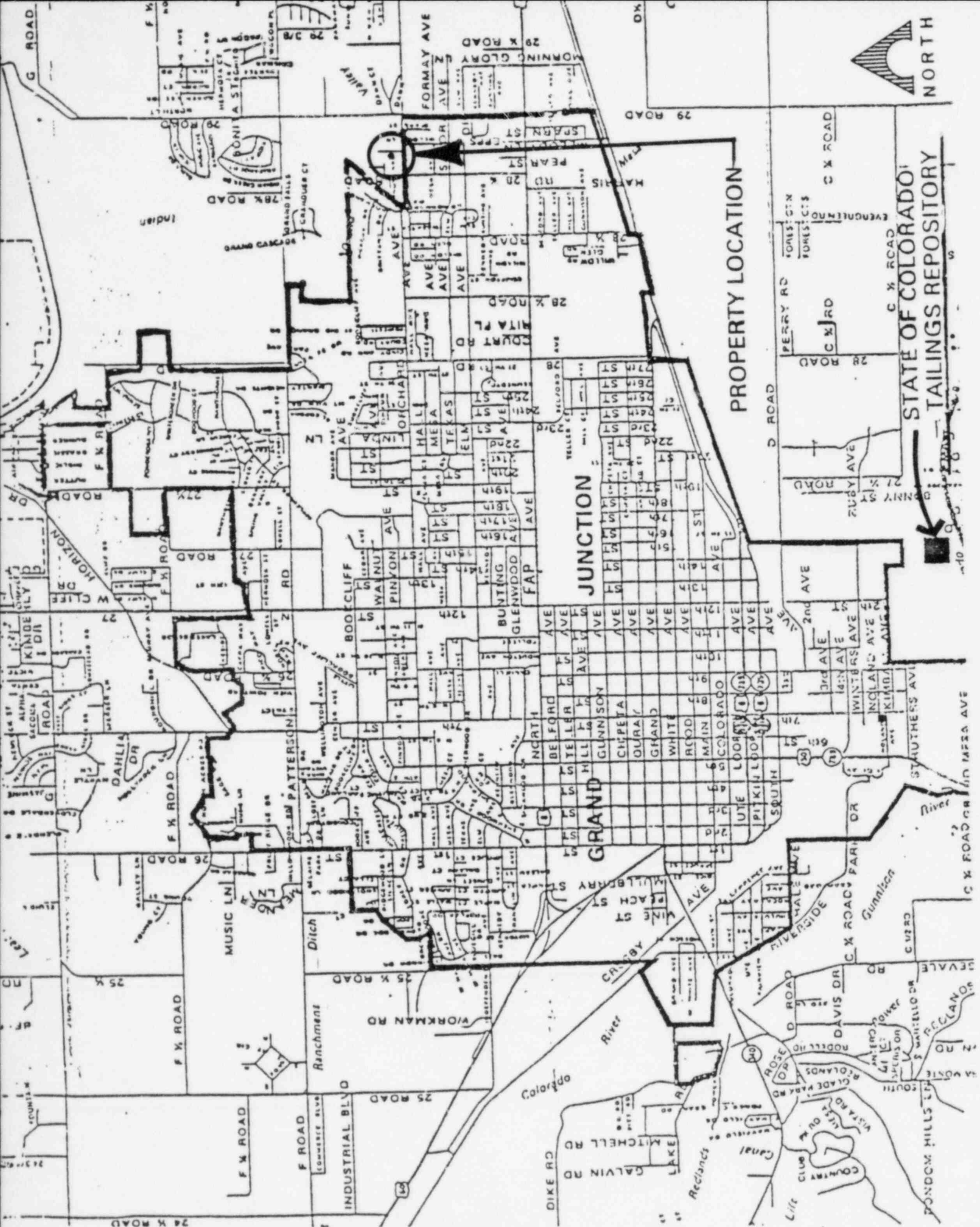
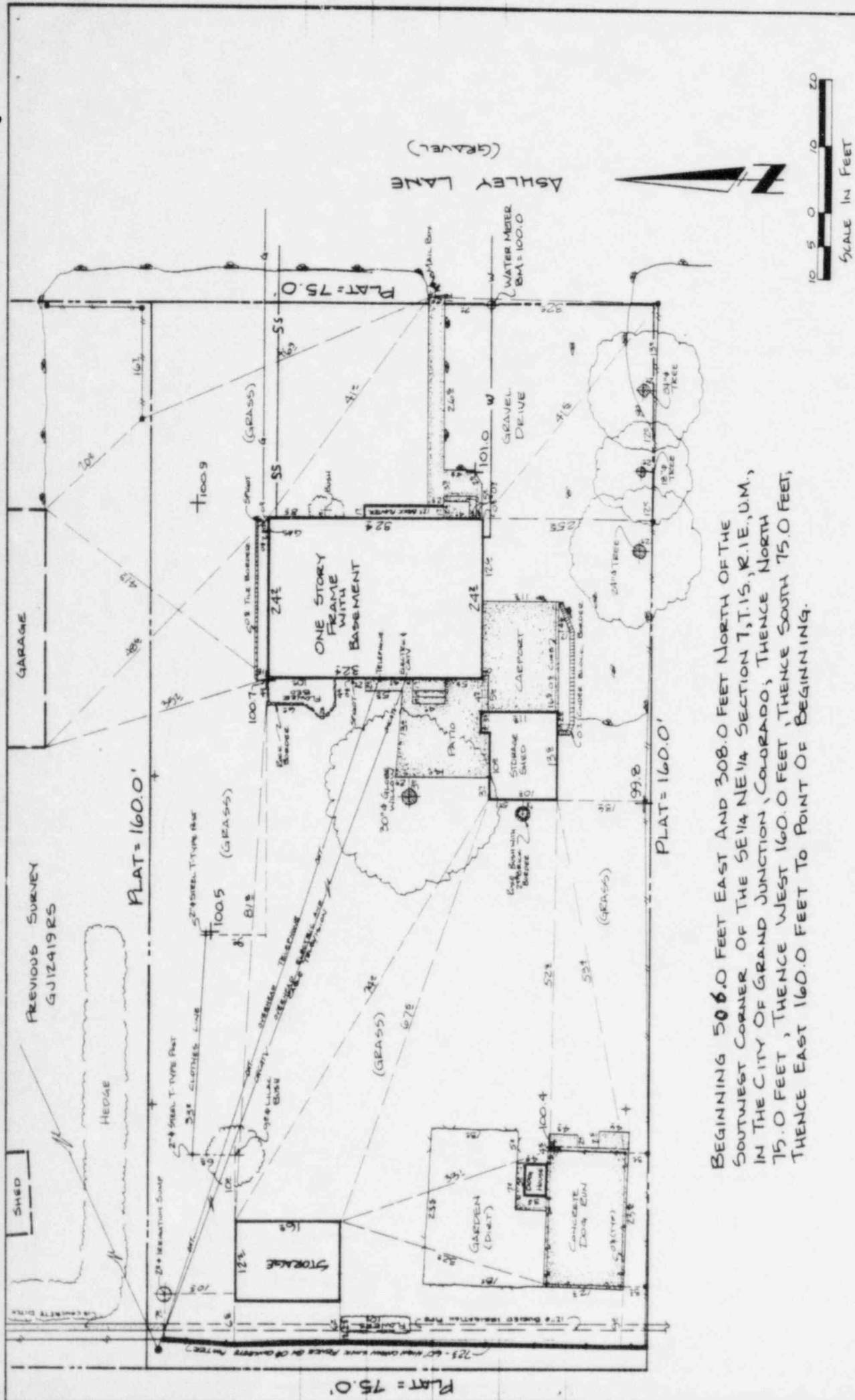
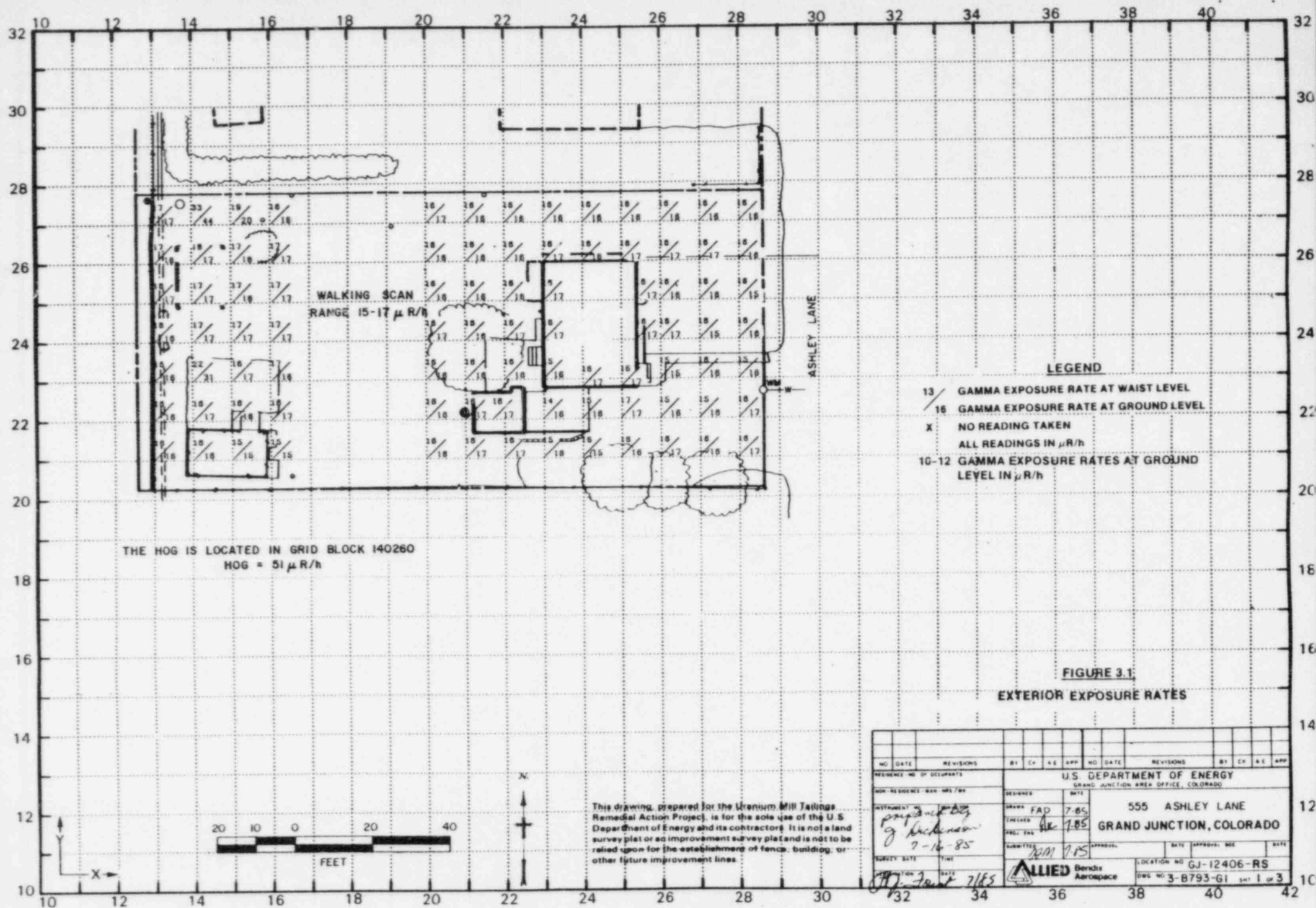
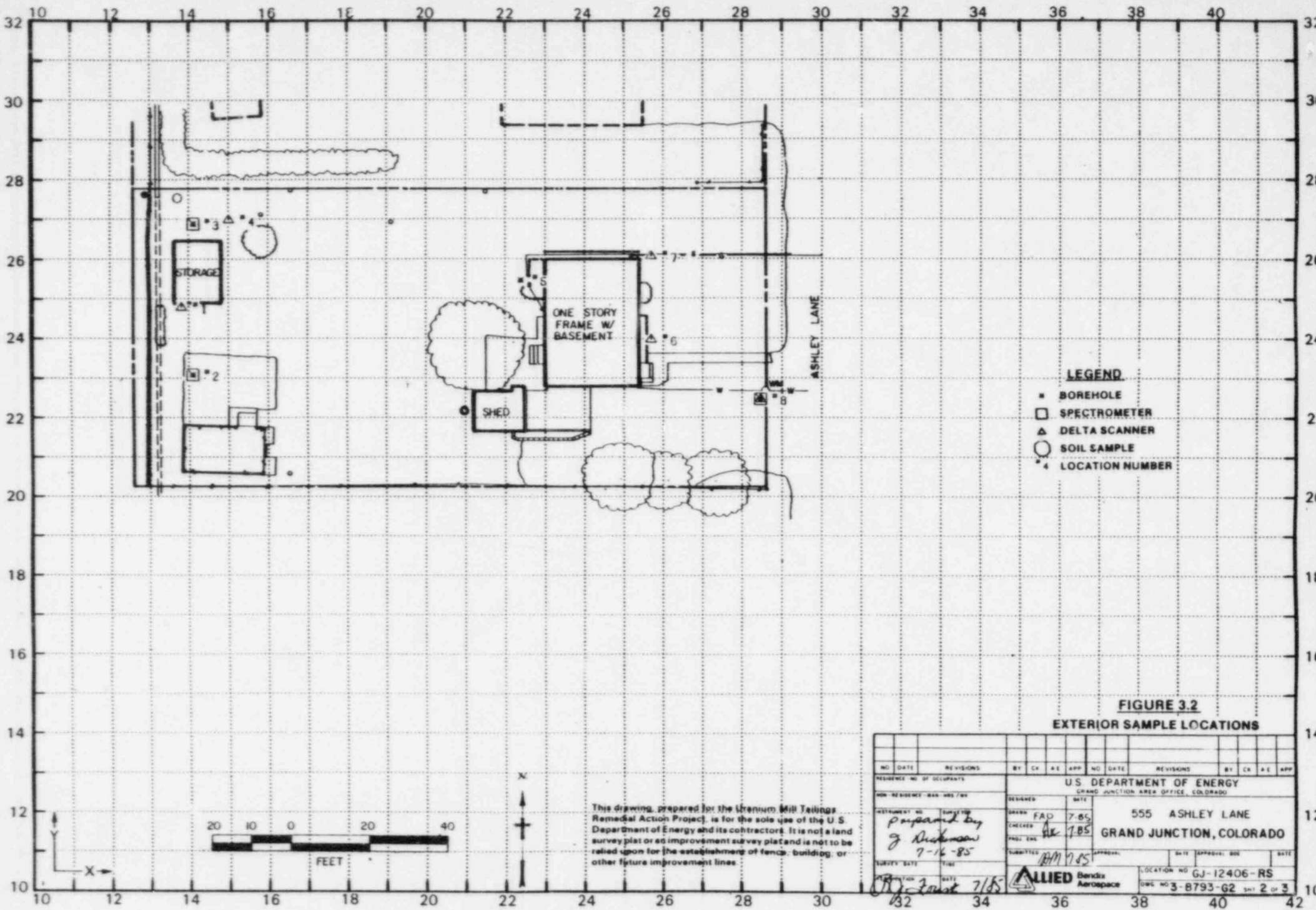


FIGURE 2.1
VICINITY MAP



BEGINNING 506.0 FEET EAST AND 308.0 FEET NORTH OF THE SOUTHWEST CORNER OF THE SE 1/4 NE 1/4 SECTION 7, T.15, R.1E., U.M., IN THE CITY OF GRAND JUNCTION, COLORADO; THENCE NORTH 75.0 FEET, THENCE WEST 160.0 FEET, THENCE SOUTH 75.0 FEET, THENCE EAST 160.0 FEET TO POINT OF BEGINNING.





LEGEND

- BOREHOLE
- SPECTROMETER
- △ DELTA SCANNER
- SOIL SAMPLE
- * LOCATION NUMBER

FIGURE 3.2
EXTERIOR SAMPLE LOCATIONS

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.

NO. DATE REVISIONS BY CR A/E APP				NO. DATE REVISIONS BY CR A/E APP			
RESIDENCE NO. OF OCCUPANTS							
NON-RESIDENCE - MAX. HRS. / WK.							
INSTRUMENT NO. <i>prepared by</i> <i>g. Dickson</i> <i>7-16-85</i> SURVEY DATE <i>7/16/85</i>				U.S. DEPARTMENT OF ENERGY GRAND JUNCTION AREA OFFICE, COLORADO 555 ASHLEY LANE GRAND JUNCTION, COLORADO DRAWN <i>FAD</i> 7-85 CHECKED <i>AK</i> 7-85 PROJ. ENG. <i>BM</i> 7-85 SUBMITTED <i>BM</i> 7-85 APPROVAL <i>BM</i> 7-85 DATE <i>7/16/85</i>			
ALLIED Bendix Aerospace 132 34 36 38 40 42				LOCATION NO. GJ-12406-RS DWG. NO. 3-8793-G2 SHEET 2 OF 3			

3/85

DOE ID NO. _____

GJ-12406-RS

Date _____

July 12, 1985

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

Official Survey Report

Property Address 555 Ashley Lane, Grand Junction, Co.

Property Owner R. and J. Cozza

Address of Owner (if different from above) _____

Report Prepared By J. Dickerson

I. PRESENCE/ABSENCE OF RESIDUAL RADIOACTIVE MATERIALS

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

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

1 XX 1 In open areas.

1 1 Under or around exterior improvements.

1 1 Under or around a typically nonoccupied structure.

1 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 XX 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 = Not applicable uR/h
HOG = 51 uR/h

ALLIED Bendix
Aerospace

Bendix Field Engineering Corporation
Grand Junction Operations
Grand Junction, Colorado

Date: July 9, 1985
To: Files
From: John Dickerson
Subject: Team Leader Notes - GJ-12406-RS

Address: 555 Ashley Lane

Owner: R. and J. Cozza

Team Members

J. Dickerson (Team Leader)	S. Garcia
H. Mattison	N. Wallace
S. Larsen	D. Bell

The Oak Ridge National Laboratory (ORNL) inclusion data indicate previous removal of uranium mill tailings has been accomplished for the interior of the primary structure. This information has been checked by reviewing available data in the Document Control files. Remedial action on the interior of the primary structure was completed in June 1975. This action consisted of the application of a sealant and some excavation.

The homeowner expressed a desire not to have any auger holes located adjacent to the foundation due to leakage into the basement caused by previous investigations and/or excavations. As the interior cleanup involved exterior excavation around the foundation of the primary structure (fide Mrs. Cozza) there should be no need for auger holes near the primary structure.

The sewer and water lines were investigated by a total count instrument; no tailings involvement was found. The gas line was checked with a depth delta count scintillometer; no contamination.

Team Leader Notes
John Dickerson
GJ-12406-RS
July 9, 1985
Page 2

The slightly elevated readings that were noted adjacent to the brick planter east of the primary structure are due to the 24-inch-high brick facing.

Contamination was limited to two isolated deposits in the yard west of the primary structure.

The property was cleaned up and team members were alpha scanned. The survey team departed the property at 1045 hours.

Addendum

Date: July 25, 1985

The elevated readings south of the storage shed near the west property line are due to uraniferous rock specimens which are not included for removal during remedial action.

NOTE: There is a buried electric line which runs from the northeast corner of the shed by the carport to a pump located on Area 'A' (please see Figure 3.3).

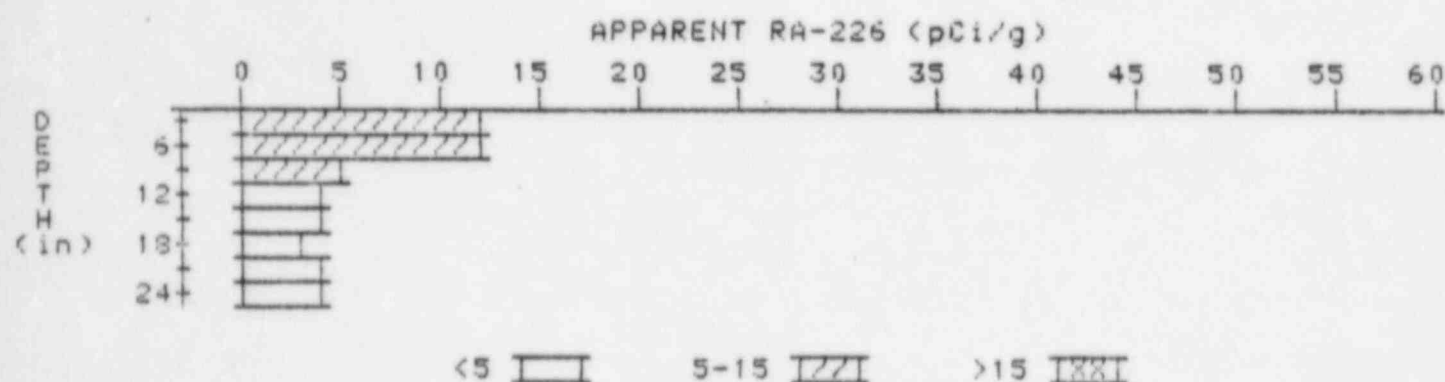
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

2

PROPERTY NUMBER: GJ-12406-RS

HOLE NUMBER: 2

LOCATION: 141231



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	12.2	12.2
6	10.2	11.8
9	7.3	5.3
12	5.5	3.7
15	4.7	4.3
18	4.1	3.2
21	4.0	3.8
24	4.0	4.0

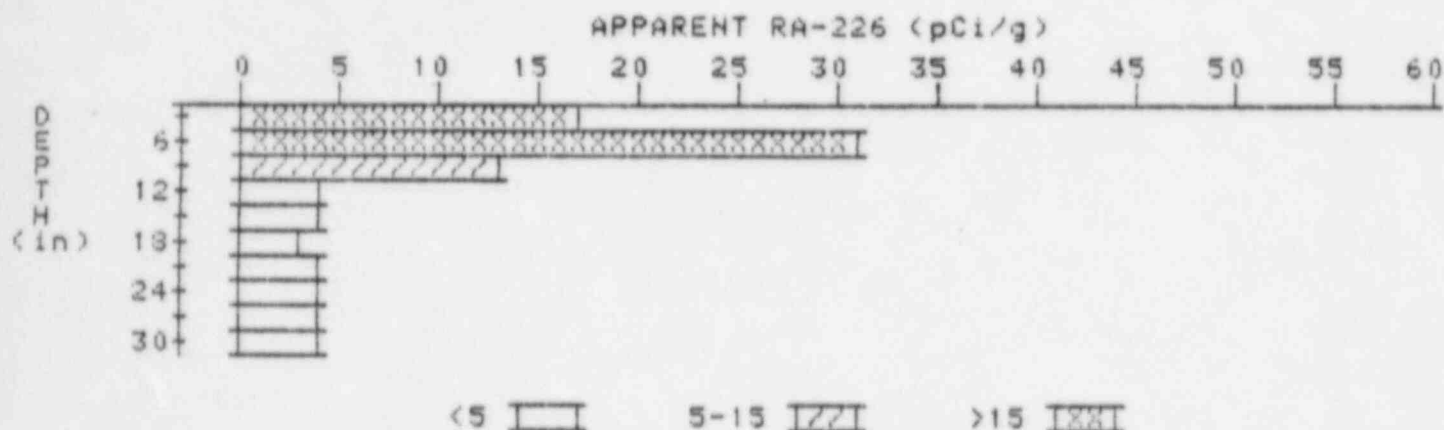
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

3

PROPERTY NUMBER: GJ-12406-RS

HOLE NUMBER: 3

LOCATION: 141269



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	16.7	16.7
6	18.7	31.3
9	13.6	13.2
12	8.7	4.4
15	6.2	4.1
18	4.9	3.3
21	4.5	4.3
24	4.2	3.8
27	4.1	3.7
30	4.2	4.2

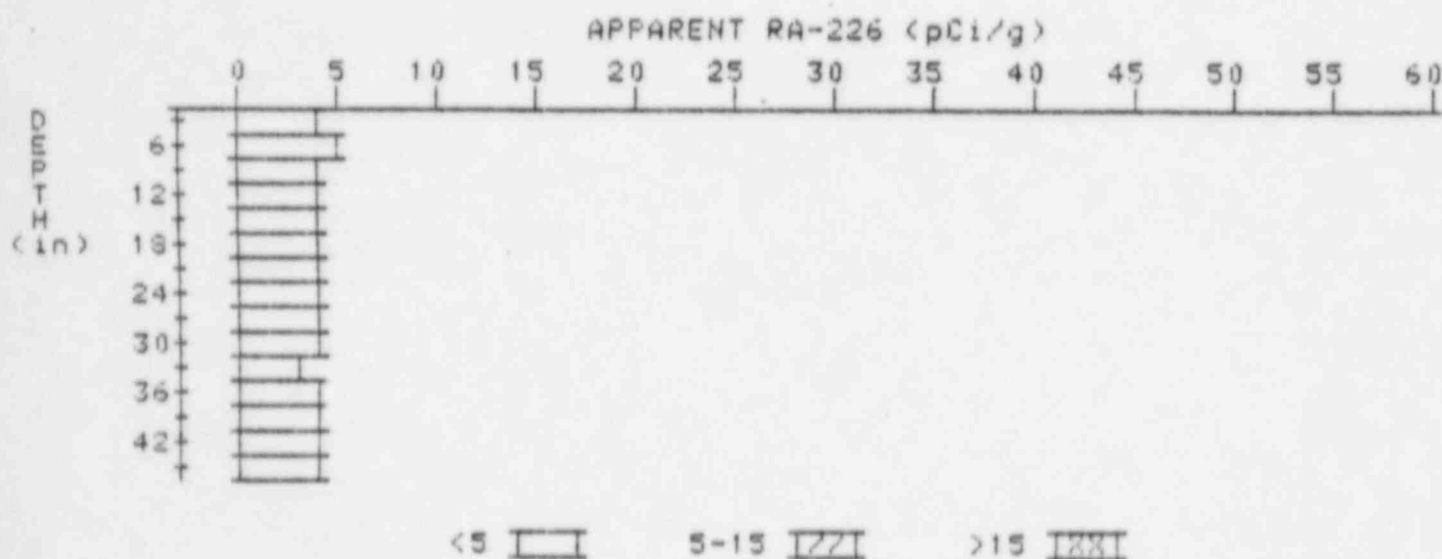
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

5

PROPERTY NUMBER: GJ-12406-RS

HOLE NUMBER: 5

LOCATION: 224255



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.5	3.5
6	3.9	4.6
9	3.9	3.7
12	4.0	4.2
15	4.0	4.2
18	3.9	3.7
21	3.9	4.1
24	3.8	3.8
27	3.7	3.8
30	3.7	3.9
33	3.6	3.2
36	3.7	3.9
39	3.7	3.9
42	3.6	3.6
45	3.8	3.8

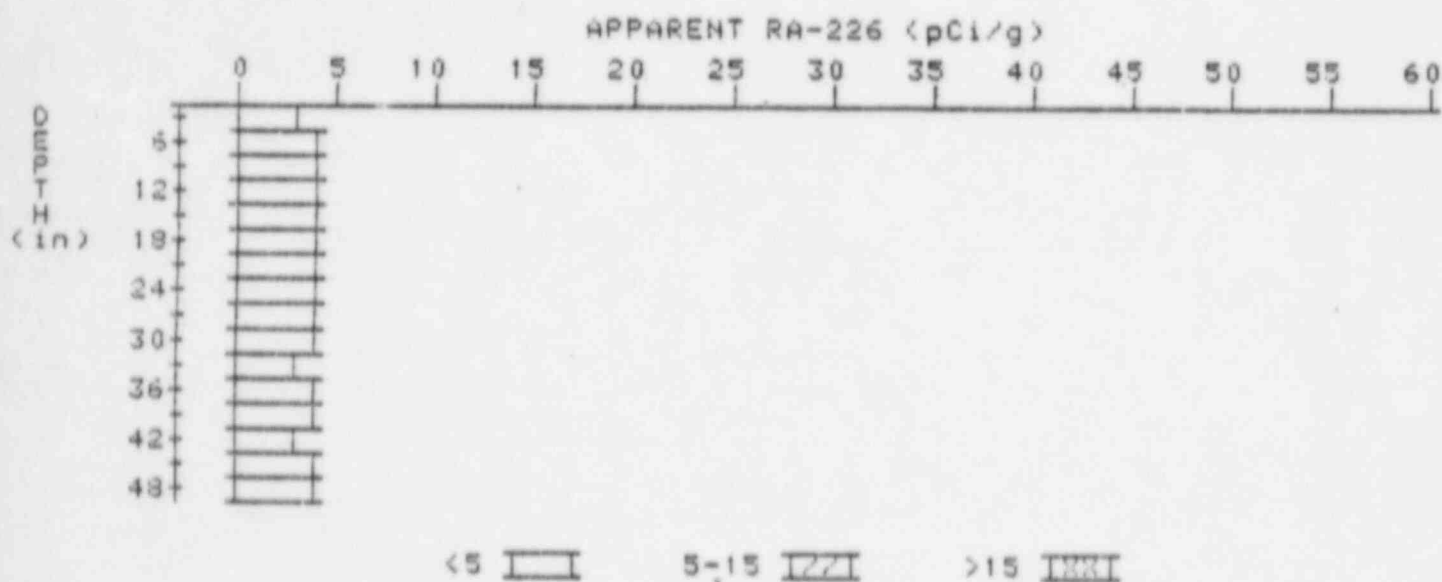
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

8

PROPERTY NUMBER: GJ-12406-RS

HOLE NUMBER: 3

LOCATION: 285225



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.8	2.8
6	3.4	4.1
9	3.6	3.6
12	3.8	4.3
15	3.7	3.5
18	3.7	3.5
21	3.8	4.0
24	3.8	3.8
27	3.8	4.0
30	3.7	3.7
33	3.6	3.8
36	3.7	3.9
39	3.7	3.9
42	3.6	3.8
45	3.7	4.1
48	3.6	3.6

