

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-10991-RS
ADDRESS: 329 TELLER AVENUE

JULY 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 ⁶²CDH
M. TUCKER
DOE PROJECT ENGINEER

DATE

July 26, 1985

REA10991:REA-702

8508140351 850729
PDR WASTE
WM-54 PDR

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-10991-RS, is a single-family residence located at 329 Teller Avenue, Grand Junction, Colorado.

The purpose of this assessment is to evaluate the extent of uranium millsite contamination at this property. This assessment includes recommended remedial action, estimated volume of material to be removed, and estimated cost of the proposed action.

1.2 Evaluation and Recommendation

The action recommended is the removal of contaminated material and restoration of the property to its original condition. The identified residual radioactive material found on this property is tailings; the estimated volume is: exterior, 23 cu. yd.; interior, 0 cu. yd.

Estimated cost to perform remedial action, including dislocation when applicable, is \$2,463. Remedial action on this property will take approximately 5 days to complete.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 329 Teller Avenue, Grand Junction, Colorado

Zoning: Residential (RMF-32)

Lot Size: Approximately 6,250 sf (0.14 acre)

Legal Description: Lots 7 and 8, Block 31, City of Grand Junction, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 2 mile(s) northwest 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:	None

Bordering Properties:

North:	Teller Avenue
South:	Alley
East:	Single-family residence
West:	Single-family residence

2.2 Existing Facilities and Structures

Primary Structure:

Type:	Two-story residence
Size:	Approximately 1,370 sf
Construction Date:	1909
Construction:	Wood-frame
Foundation:	Not determined
Footing Depth:	Not determined
Basement:	Yes - Partial
Crawl Space:	Yes - Partial
Condition:	Good

Other Structures:

Type:	Garage
Size:	Approximately 488 sf
Construction:	Wood-frame
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 over 50 years old. Therefore, it does meet the eligibility criteria for consideration of inclusion on the National Register of Historic Places.

Alterations to Structure: None

Architectural Significance: None known

Historical Significance: None known

3.0 RADIOLOGIC SURVEY

3.1 Introduction

Radiologic data were collected by Bendix at DOE ID No. GJ-10991-RS on June 24, 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 north of the primary structure associated with the city sidewalk.

The Bendix radiologic survey was designed to investigate the entire property, with emphasis on previously identified areas of contamination. Conclusions based upon data analyses are discussed in Section 3.5, Extent of Contamination. Photocopies of the Official Survey Report, team leader notes, deconvolution graphs, and Exterior Gamma Scan map are included in the Appendix (Section 6.0).

3.2 Gamma Exposure-Rate Surveys

3.2.1 Exterior Findings

Background Readings: 15 to 16 uR/h
Highest Outside Gamma Reading (HOG): 55 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 Reading: 15 to 17 uR/h
Highest Inside Gamma Reading (HIG): 10 uR/h (ORNL)

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. Data from these investigations are included in Appendix Tables 3.1 and 3.2. Exterior locations are shown in Appendix Figure 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) Surface Material: Lawn
Direction From Primary Structure: North
Other Directions: North of city sidewalk
Total Depth of Contamination: 18 inches
Comments: The gas line passes through this area.
Approximate Square Footage: 102
- (Area B) Surface Material: Concrete
Direction From Primary Structure: North
Total Depth of Contamination: 15 inches
Other (height or thickness): 4-inch-thick concrete
Approximate Square Footage: 300
- (Area C) Surface Material: Lawn
Direction From Primary Structure: Northeast
Other Directions: South of city sidewalk
Total Depth of Contamination: 12 inches
Comments: The gas line passes through this area.
Approximate Square Footage: 46
- (Area D) Surface Material: Lawn
Direction From Primary Structure: North
Other Directions: South of city sidewalk
Total Depth of Contamination: 15 inches
Approximate Square Footage: 8
- (Area E) Surface Material: Lawn
Direction From Primary Structure: Northwest
Other Direction: South of city sidewalk
Total Depth of Contamination: 6 inches
Approximate Square Footage: 36
- (Area F) Surface Material: Lawn
Direction From Primary Structure: North
Other Direction: North of city sidewalk
Total Depth of Contamination: 6 inches
Approximate Square Footage: 18

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-10991-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 \$2,463.

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 Exterior 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-10991-RS

329 Teller Avenue

Page 1 of 4

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
4	142275	00	DS	1.3		*	Northeast of primary structure
		06	DS	2.2		*	
5	143234	00	DS	1.3		*	Northwest corner of property
		06	DS	1.9		*	
6	143250	00	DS	1.4		*	North of city sidewalk
		06	DS	1.1		*	
7	146264	00	DS	8.6		*	North of primary structure near city sidewalk
		06	DS	4.3		*	
		12	DS	3.3		*	
		18	DS	2.8		*	
8	146284	00	DS	4.9		*	Northeast of primary structure
		06	DS	2.4		*	
9	149278	03	TC	40.6		*	On sidewalk DC = 15 inches Based on the deconvolution graph
		06	TC	58.6		*	
		09	TC	49.1		*	
		12	TC	30.8		*	
		15	TC	19.8		*	
		18	TC	13.4		*	
		21	TC	9.7		*	
		24	TC	7.8		*	
		27	TC	6.8		*	
		30	TC	6.1		*	
		33	TC	5.6		*	
		36	TC	5.2		*	
		39	TC	5.0		*	
		42	TC	5.0		*	
		45	TC	4.8		*	
		48	TC	4.8		*	
		51	TC	4.8		*	
		54	TC	4.6		*	
		57	TC	4.5		*	
10	152284	00	DS	11.0		*	Northeast property
		06	DS	4.5		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-10991-RS

329 Teller Avenue

Page 2 of 4

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
10	152284	12	DS	2.9		*	
11	153244	00	DS	3.6		*	Northwest of primary structure
		06	DS	1.8		*	
12	153260	00	DS	17.9		*	North of primary structure
		06	DS	17.9		*	
		03	TC	18.0		*	
		06	TC	24.6		*	
		09	TC	23.8		*	
		12	TC	16.7		*	
		15	TC	11.6		*	DC = 15 inches Based on the deconvolution graph
		18	TC	8.5		*	
		21	TC	7.1		*	
		24	TC	6.1		*	
		27	TC	5.9		*	
		30	TC	5.5		*	
		33	TC	5.3		*	
		36	TC	5.1		*	
		39	TC	4.8		*	
		42	TC	4.7		*	
		45	TC	4.7		*	
		48	TC	4.8		*	
		51	TC	4.7		*	
		54	TC	4.6		*	
		57	TC	4.7		*	
		60	TC	4.5		*	
		63	TC	4.5		*	
		66	TC	4.5		*	
		69	TC	4.5		*	
		72	TC	4.5		*	
13	153267	00	DS	35.7		*	North of primary structure
		03	TC	27.5		*	
		06	TC	17.9		*	
		09	TC	12.4		*	
		12	TC	9.2		*	DC = 12 inches Based on the deconvolution graph
		15	TC	7.4		*	
		18	TC	6.3		*	
		21	TC	6.0		*	
		24	TC	5.6		*	
		27	TC	5.4		*	
		30	TC	5.2		*	
		33	TC	5.1		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-10991-RS

329 Teller Avenue

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.		
13	153267	36	TC	4.9		*	
		39	TC	4.8		*	
		42	TC	4.8		*	
		45	TC	4.7		*	
		48	TC	4.6		*	
		51	TC	4.6		*	
		54	TC	4.5		*	
		57	TC	4.6		*	
		60	TC	4.7		*	
		63	TC	4.7		*	
		66	TC	4.8		*	
14	154234	00	DS	1.4		*	South side of city sidewalk
		06	DS	1.5		*	
15	155275	00	DS	1.9		*	South side of city sidewalk
		06	DS	1.8		*	
16	169256	00	DS	1.7		*	Water line DC = 0 inches
		03	TC	3.1		*	
		06	TC	3.5		*	
		09	TC	4.0		*	
		12	TC	3.9		*	
		15	TC	3.9		*	
		18	TC	3.9		*	
		21	TC	3.9		*	
		24	TC	3.9		*	
		27	TC	3.9		*	
		30	TC	3.9		*	
		33	TC	4.0		*	
		36	TC	3.9		*	
		39	TC	4.0		*	
		42	TC	4.0		*	
		45	TC	4.0		*	
		48	TC	4.0		*	
		51	TC	4.1		*	
		54	TC	4.0		*	
		57	TC	3.9		*	
		60	TC	3.9		*	
17	193238	00	DS	1.0		*	Background DC = 0 inches
		00	GS		1.9	*	
		03	TC	3.1		*	
		06	TC	3.6		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-10991-RS

329 Teller Avenue

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.		
17	193238	09	TC	3.9		*	
		12	TC	3.9		*	
		15	TC	4.0		*	
		18	TC	4.0		*	
		21	TC	4.0		*	
		24	TC	3.9		*	
		27	TC	3.8		*	
		30	TC	3.8		*	
		33	TC	3.7		*	
		36	TC	3.7		*	
		39	TC	3.7		*	
18	197248	00	DS	1.0		*	Sewer line
		03	TC	3.2		*	DC = 0 inches
		06	TC	3.4		*	
		09	TC	3.6		*	
		12	TC	3.6		*	
		15	TC	3.7		*	
		18	TC	3.9		*	
		21	TC	3.9		*	
		24	TC	3.8		*	
		27	TC	3.7		*	
		30	TC	3.8		*	
		33	TC	3.9		*	
		36	TC	3.9		*	
		39	TC	3.8		*	
		42	TC	3.8		*	
		45	TC	4.0		*	
19	204274	00	DS	1.8		*	Gas line
		12	DS	1.2		*	
20	250257	00	DS	1.3		*	Electric line
		12	DS	1.4		*	

Measurement GB = GAD-6 Borehole
Types: GS = GAD-6 Surface
DS = Delta Scintillometer
TC = Total Count Borehole

Notes: DC = Depth of Contamination
* No Soil Sample Taken
Date of Survey = 06-24-85
Team Leader = PT

Radium Concentrations at Interior Locations

DOE ID #GJ-10991-RS

329 Teller Avenue

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		00	DS	1.1		*	In basement
2		00	DS	1.2		*	In basement
3		00	DS	1.5		*	In basement

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 = 06-24-85
Team Leader = PT

Table 3.3

Summary of Interior Gamma Exposure Rates

DOE ID No. GJ-10991-RS

329 Teller Avenue

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)
Crawl space	00	00	00	06	16-17	16
Basement	07	15-17	16	07	16-19	18
Garage	08	15-16	15	08	15-16	15

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-10991-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	5 x 60 =	300	x 0.3 =	90	
Volume of Concrete				= 90	= 90/27 = 3
Contaminated Fill					
A	2 x 51 =	102	x 1.5 =	153	
B	5 x 60 =	300	x 1.0 =	300	
C	23 x 2 =	46	x 1.0 =	46	
D	4 x 2 =	8	x 1.3 =	10	
E	18 x 2 =	36	x 0.5 =	18	
F	9 x 2 =	18	x 0.5 =	9	
Volume of Fill				= 536	= 536/27 = 20
TOTAL VOLUME - EXTERIOR					= 23

See Appendix Figure 3.3 For Areas

=====

Table 4.2
Estimated Cost of Decontamination and Restoration
DOE ID No. GJ-10991-RS

Page 1 of 1

EXTERIOR

Remove identified residual radioactive material

18 cy @ \$14.50/cy	\$	261
2 cy @ \$44/cy		88

Remove/replace concrete

300 sf @ \$3/sf		900
-----------------	--	-----

Replace areas with compacted roadbase

15 cy @ \$11.50/cy		173
--------------------	--	-----

Replace areas with topsoil

5 cy @ \$9.50/cy		48
------------------	--	----

Replace areas with sod

210 sf @ \$.50/sf		105
-------------------	--	-----

TOTAL EXTERIOR	\$	1,575
----------------	----	-------

TOTAL INTERIOR		0
----------------	--	---

ACCESS CONTROL		100
----------------	--	-----

SUBTOTAL	\$	1,675
----------	----	-------

CONTINGENCY @ 5%		84
------------------	--	----

SUBTOTAL	\$	1,759
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CONTRACTOR OVERHEAD & PROFIT @ 40%		704
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GRAND TOTAL	\$	2,463
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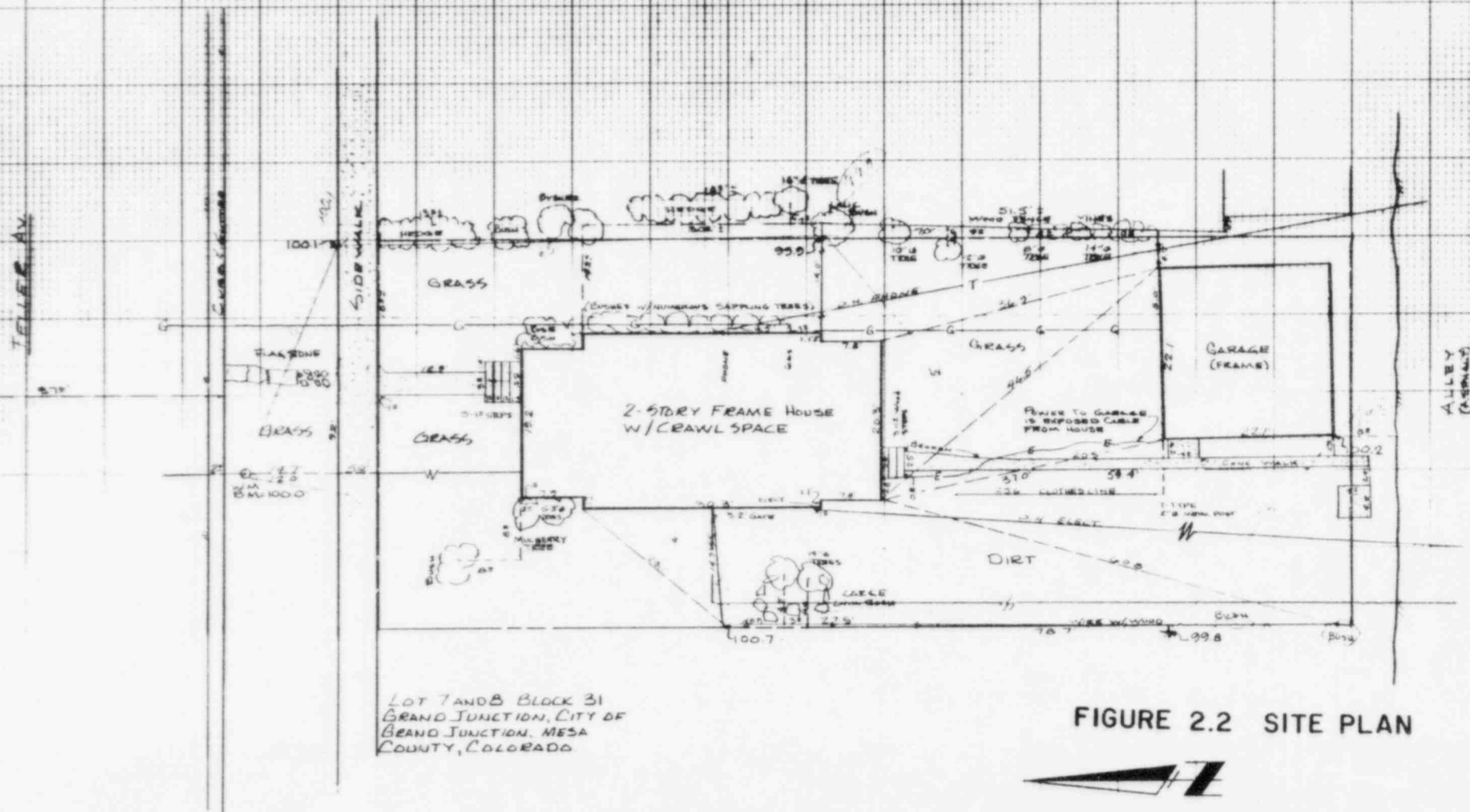
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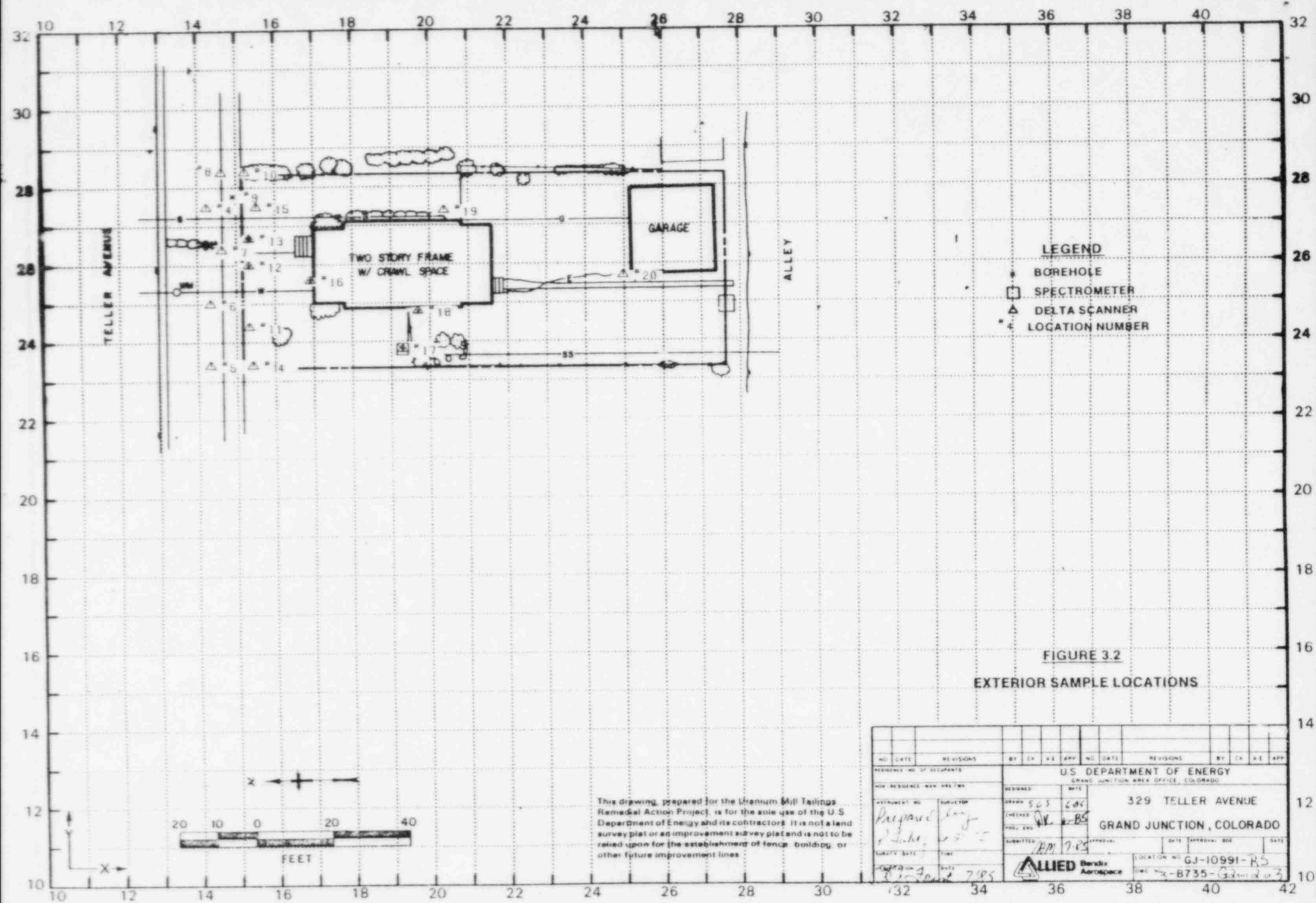
STATE OF COLORADO
- TAILINGS REPOSITORY

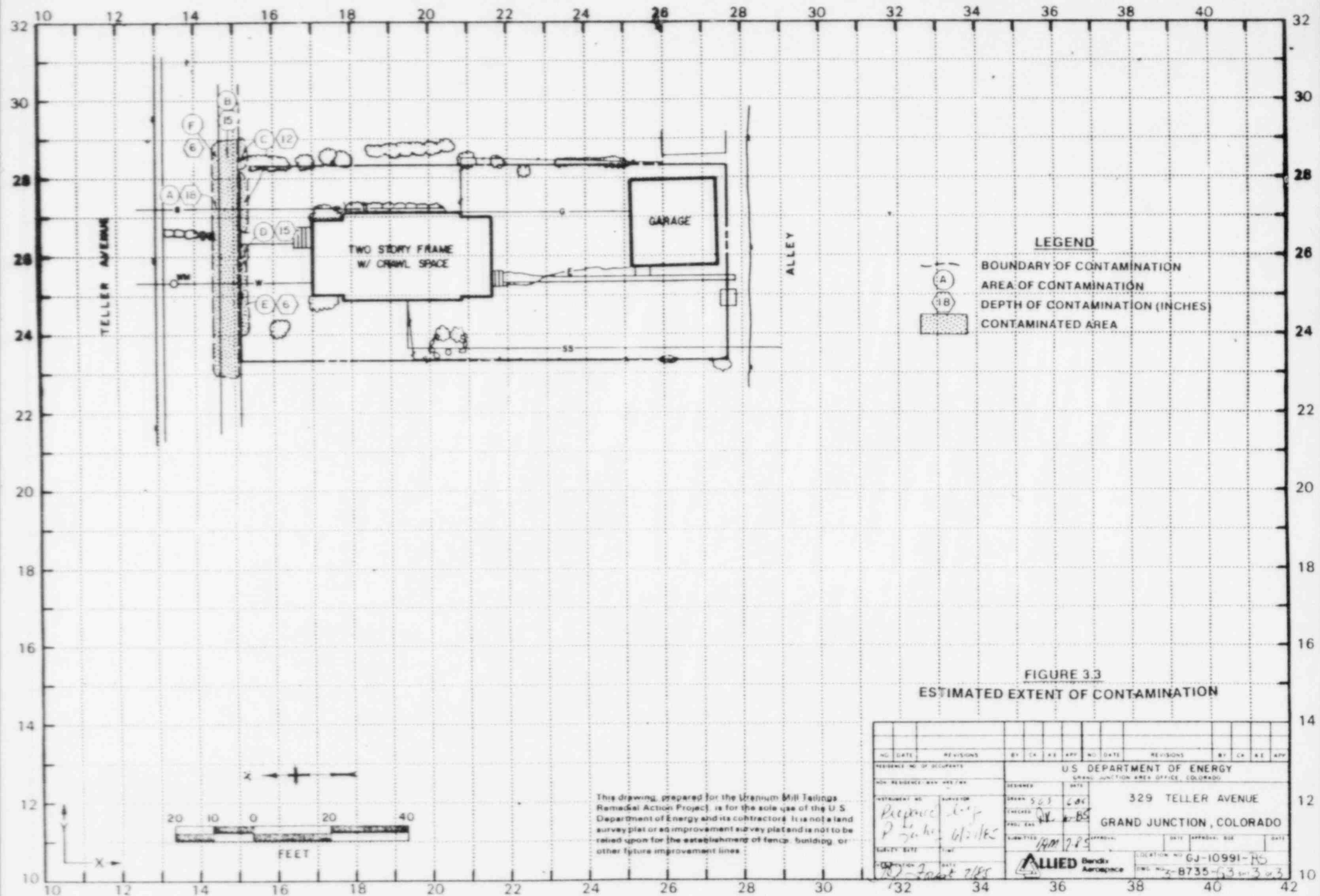




This drawing, prepared for the Uranium Mill Tailings Remedial Action Project, is for the sole use of the U.S. Department of Energy and its contractors. It is not a land survey plan or an engineering survey plan and is not to be used for the establishment of lines, building, or other future improvement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

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION PROJECT OFFICE, COLORADO		DOE ID NO. GJ 10991 RS
ADDRESS 329 TELLER AV GRAND JUNCTION, COLORADO.		ALLIED ENGINEERING CORPORATION Grand Junction, Colorado
SURV AB 6-17-85	DRAFT AB 6-17-85	CR 11-4-85
DRAWING NO 3-C 735 F1		SHEET 1 OF 1





3/85

DOE ID NO. GJ-10991-R5 Date June 27, 1985

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

Official Survey Report

Property Address 329 Teller Avenue
Property Owner Ward Scott
Address of Owner (if different from above) _____
Report Prepared By Penny Tuhey

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 = 10 (ORNL) uR/h
HCG = 55 uR/h

ALLIED Bendix
Aerospace

Bendix Field Engineering Corporation
Grand Junction Operations
Grand Junction, Colorado

Date: June 24, 1985

To: Files

From: Penny Tuhey

Subject: Team Leader Notes - GJ-10991-RS

Address: 329 Teller Avenue

Owner: Ward Scott

Arrival Time: Approximately 7:30 AM

Team Members

P. Tuhey (Team Leader)	K. Roemer
D. Clay	S. Larsen
D. Dow	S. Garcia

Instruments

Scintillometers: C-1206, C-1158, C-1113, C-1184, C-1172
Delta: C-4060, C-4059
Total Count: C-3956
Surface Spectrometer: C-2474

Verbal approval was given to conduct the survey.

Colorado Department of Health (CDH) and Oak Ridge National Laboratory (ORNL) data indicate contamination underneath and around the city sidewalk. After conducting our survey this was confirmed.

Team Leader Notes
Penny Tuhey
GJ-10991-RS
June 24, 1985
Page 3

There was no indication of contamination on the property bordering the west.

When contacting ORNL, they informed me that 345 Teller Avenue was not in the process of being a completed property inclusion at this time.

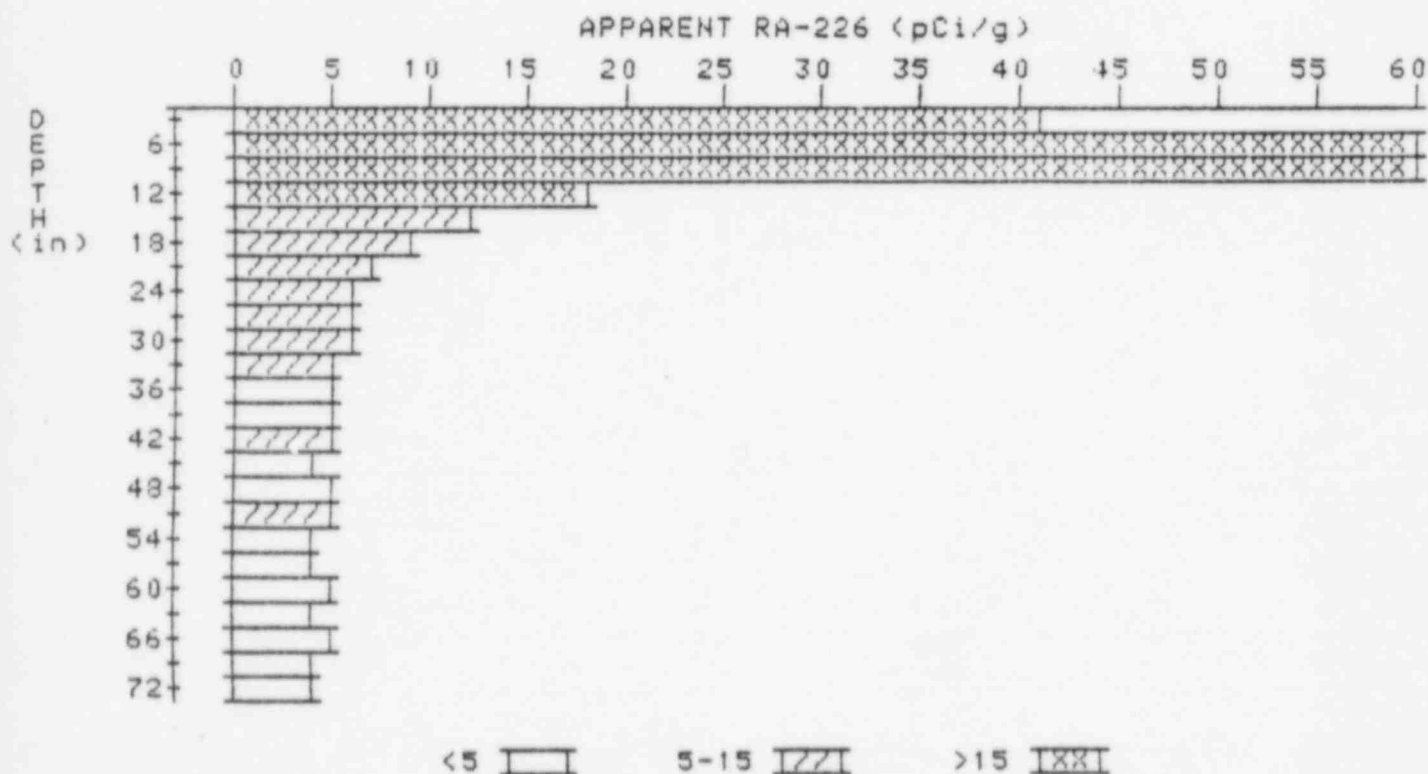
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

9

PROPERTY NUMBER: GJ-10991-RS

HOLE NUMBER: 9

LOCATION: 149278



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	40.6	40.6
6	58.6	107.5
9	49.1	64.7
12	30.8	17.3
15	19.8	11.6
18	13.4	3.6
21	9.7	6.5
24	7.8	6.2
27	6.8	6.3
30	6.1	5.7
33	5.6	5.4
36	5.2	4.9
39	5.0	4.6
42	5.0	5.4
45	4.8	4.4

48
51
54
57
60
63
66
69
72

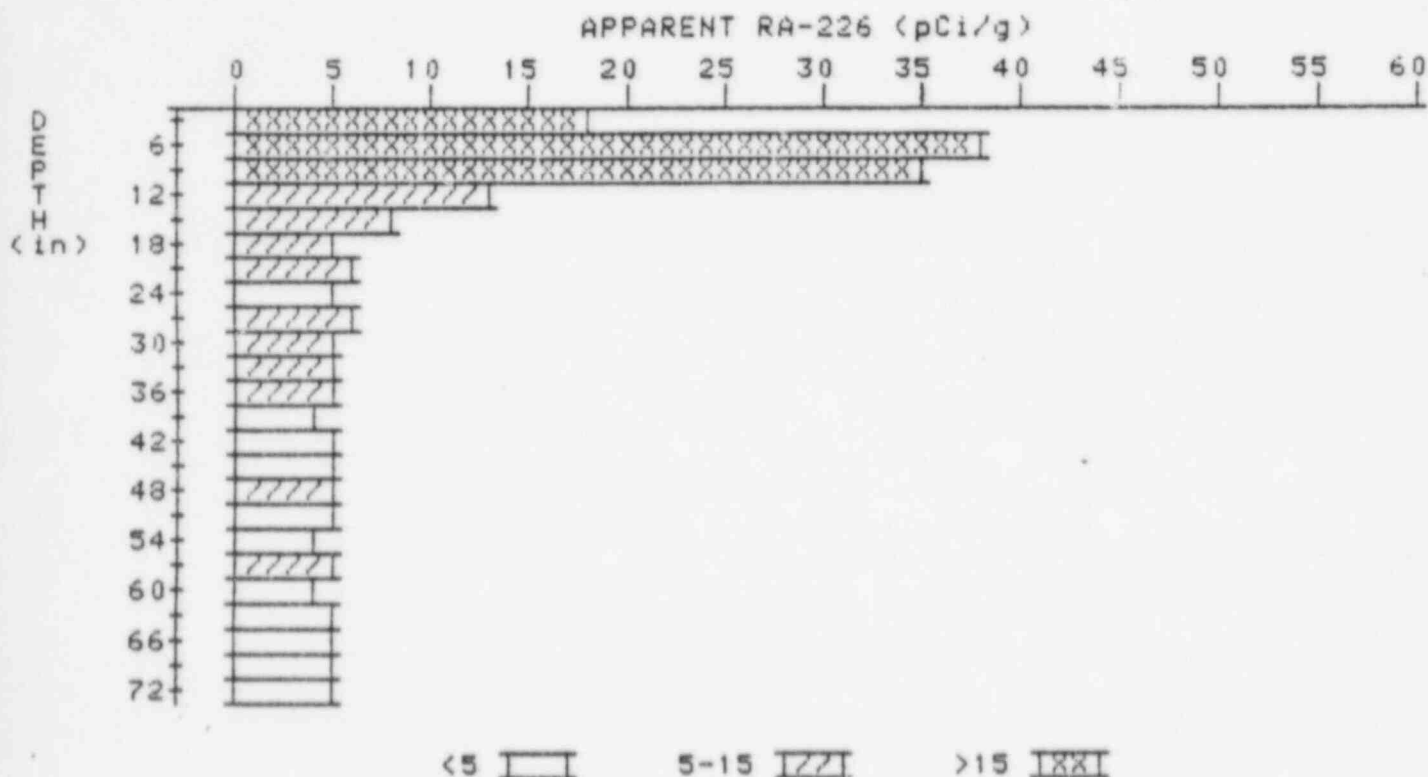
4.8
4.8
4.6
4.5
4.5
4.4
4.4
4.3
4.3

4.8
5.2
4.4
4.3
4.7
4.2
4.6
4.1
4.3

APPARENT RADIUM-226 CONCENTRATION 12

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-10991-RS
HOLE NUMBER: 12
LOCATION: 153260



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
=====	=====	=====
3	13.0	13.0
6	24.6	37.8
9	23.8	35.0
12	16.7	13.1
15	11.6	8.0
18	8.5	5.5
21	7.1	6.4
24	6.1	4.7
27	5.9	6.3
30	5.5	5.1
33	5.3	5.3
36	5.1	5.3
39	4.8	4.4
42	4.7	4.5
45	4.7	4.5

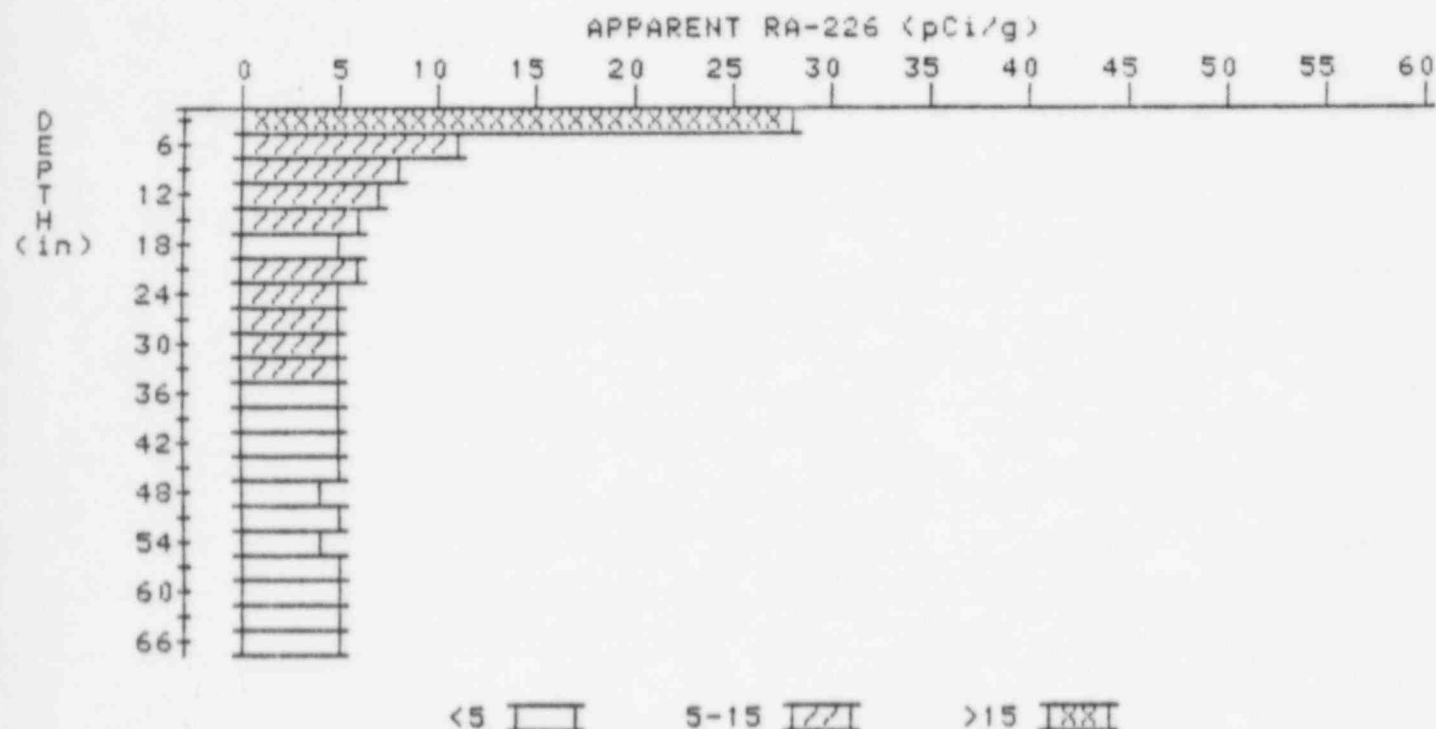
48
51
54
57
60
63
66
69
72

4.8
4.7
4.6
4.7
4.5
4.5
4.5
4.5
4.5

5.2
4.7
4.2
5.2
4.1
4.5
4.5
4.5
4.5

APPARENT RADIUM-226 CONCENTRATION 13 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-10991-RS
HOLE NUMBER: 13
LOCATION: 153267



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	27.5	27.5
6	17.9	10.6
9	12.4	8.3
12	9.2	6.7
15	7.4	6.2
18	6.3	4.9
21	6.0	6.2
24	5.6	3.2
27	5.4	5.4
30	5.2	3.0
33	5.1	5.3
36	4.9	4.7
39	4.8	4.6
42	4.8	5.0
45	4.7	4.7
48	4.6	4.4

51
54
57
60
63
66

4.6
4.5
4.6
4.7
4.7
4.8

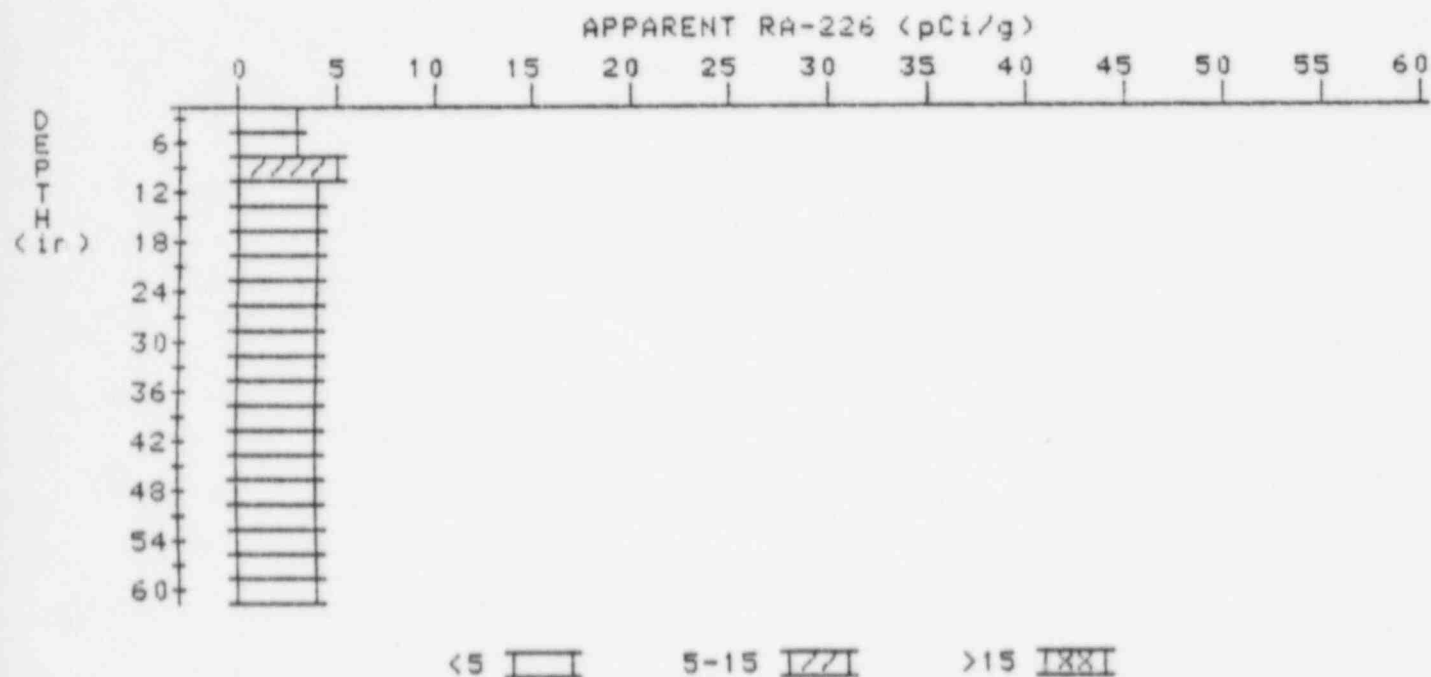
4.8
4.1
4.6
4.9
4.5
4.8

APPARENT RADIUM-226 CONCENTRATION 16 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-10991-RS

HOLE NUMBER: 16

LOCATION: 169256



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.1	3.1
6	3.5	3.3
9	4.0	5.1
12	3.9	3.7
15	3.9	3.9
18	3.9	3.9
21	3.9	3.9
24	3.9	3.9
27	3.9	3.9
30	3.9	3.7
33	4.0	4.4
36	3.9	3.8
39	4.0	4.2
42	4.0	4.0
45	4.0	4.0
48	4.0	3.8
51	4.1	4.5
54	4.0	4.0

57
60

3.9
3.9

3.7
3.9

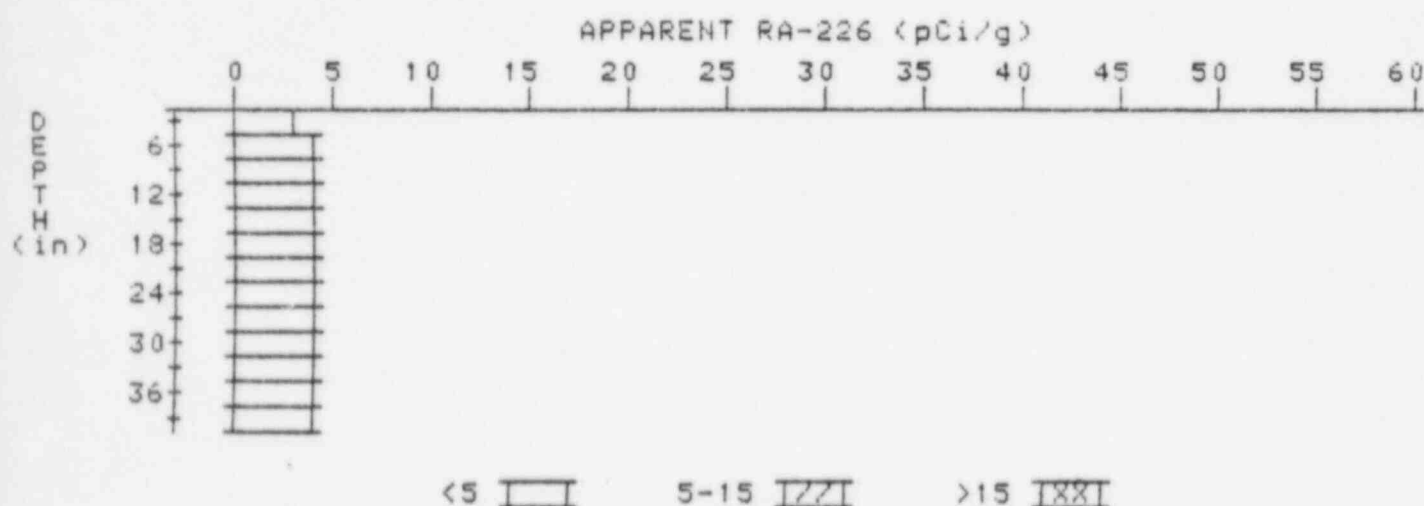
APPARENT RADIUM-226 CONCENTRATION 17

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-10991-RS

HOLE NUMBER: 17

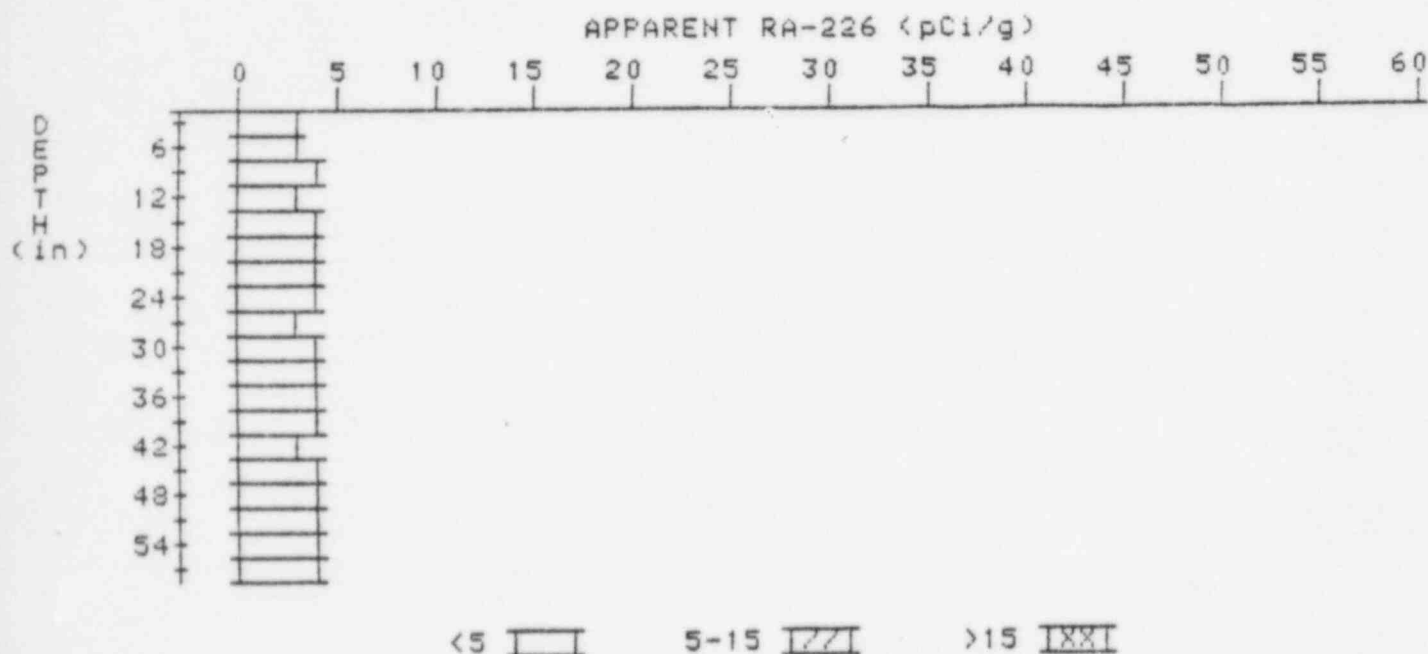
LOCATION: 193238



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.1	3.1
6	3.6	4.0
9	3.9	4.4
12	3.9	3.7
15	4.0	4.2
18	4.0	4.0
21	4.0	4.2
24	3.9	3.9
27	3.8	3.6
30	3.8	4.0
33	3.7	3.5
36	3.7	3.7
39	3.7	3.7

APPARENT RADIUM-226 CONCENTRATION 18 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-10991-RS
HOLE NUMBER: 18
LOCATION: 197248

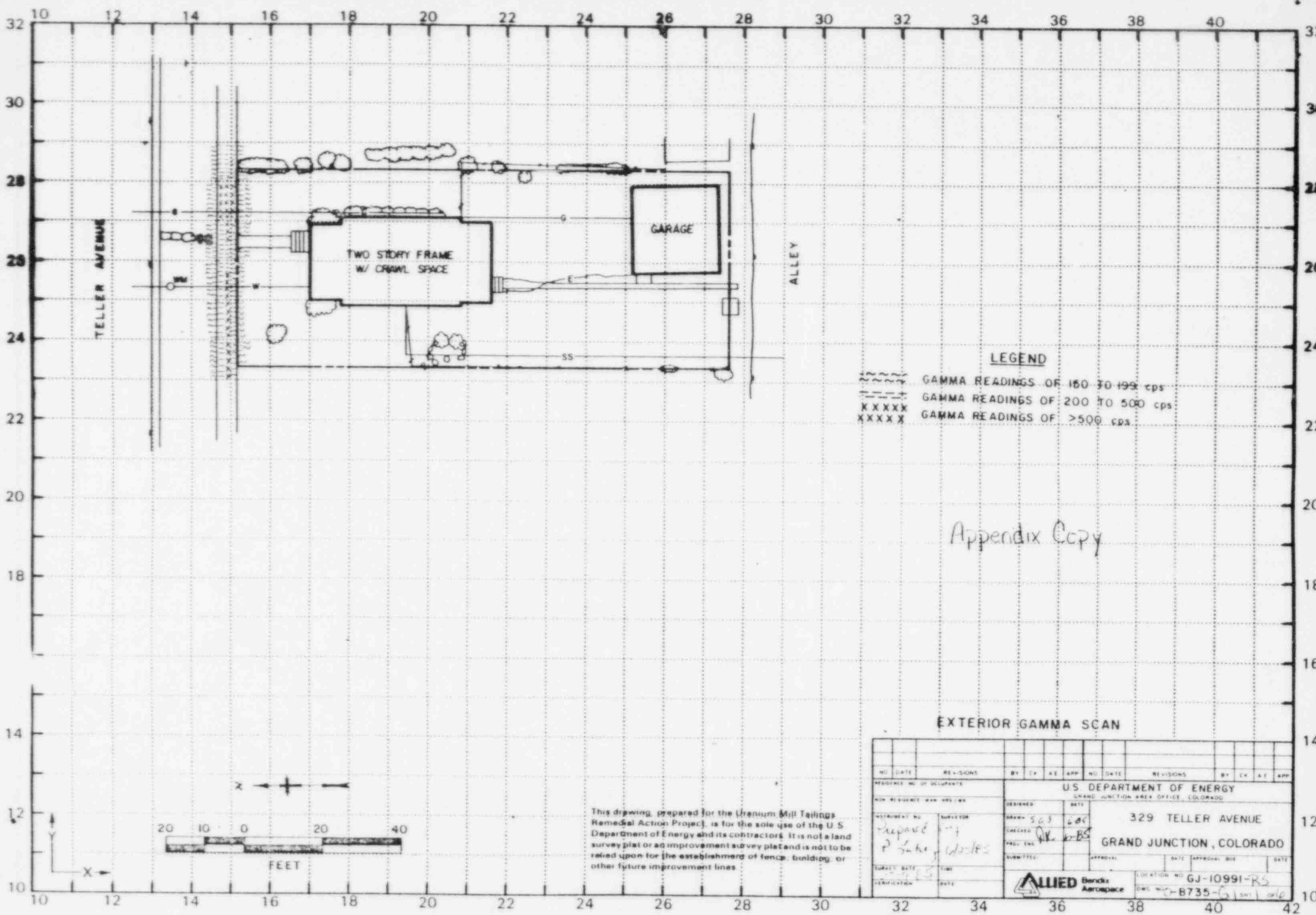


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.2	3.2
6	3.4	3.4
9	3.6	4.0
12	3.6	3.4
15	3.7	3.5
18	3.9	4.3
21	3.9	4.1
24	3.8	3.8
27	3.7	3.3
30	3.8	3.8
33	3.9	4.1
36	3.9	4.1
39	3.8	3.6
42	3.8	3.4
45	4.0	4.4
48	4.0	4.0
51	4.0	4.0
54	4.0	4.0

57

4.0

4.0



LEGEND

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

Appendix Copy

EXTERIOR GAMMA SCAN

NO. DATE		REVISIONS		BY CH. AE APP. NO. DATE		REVISIONS		BY CH. AE APP.	
RESIDENT NO. OF OCCUPANTS					U.S. DEPARTMENT OF ENERGY GRAND JUNCTION AREA OFFICE, COLORADO				
NON-RESIDENT MAX. HRS. / WK.					DESIGNED		DATE		
ATTACHMENT NO.		SURVEYOR			DRAWN		DATE		
PREPARED BY		CHECKED			DATE		DATE		
SURVEY DATE		TIME			APPROVAL		DATE		
VERIFICATION		DATE			APPROVAL		DATE		
329 TELLER AVENUE GRAND JUNCTION, COLORADO					LOCATION NO. GJ-10991-RS DRG. NO. C-8735-G1 SH1 010				
ALLIED BORDS AEROSPACE									

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.