

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-04153-RS
ADDRESS: 1630 NORTH 17TH STREET

AUGUST 1985

FOR

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT OFFICE

ALBUQUERQUE OPERATIONS OFFICE

DEPARTMENT OF ENERGY

BY

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

APPROVED BY

M.K. Tucker ⁶² *CRA*
M. TUCKER
DOE PROJECT ENGINEER

DATE

August 7, 1985

REA04153:REA-615

8508300280 850807
PDR WASTE PDR
WM-54

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 EXECUTIVE SUMMARY	1
1.1 Introduction	1
1.2 Evaluation and Recommendation	1
2.0 PROPERTY DESCRIPTION	2
2.1 General Description	2
2.2 Existing Facilities and Structures	2
3.0 RADIOLOGIC SURVEY	4
3.1 Introduction	4
3.2 Gamma Exposure-Rate Surveys	4
3.2.1 Exterior Findings	4
3.2.2 Interior Findings	4
3.3 Boreholes, Soil Samples, and Other Measurements	4
3.4 Radon/Radon Daughter Concentration	5
3.5 Extent of Contamination	5
4.0 RECOMMENDED REMEDIAL ACTION	6
4.1 Decontamination and Restoration	6
4.2 Evaluation of Recommended Remedial Action	6
5.0 REFERENCES	7
6.0 APPENDIX	8

1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-04153-RS, is a single-family residence located at 1630 North 17th 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, 11 cu. yd.; interior, 0 cu. yd.

Estimated cost to perform remedial action, including dislocation when applicable, is \$1,256. Remedial action on this property will take approximately 7 days to complete.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 1630 North 17th Street, Grand Junction, Colorado

Zoning: Residential (RSF-8)

Lot Size: Approximately 6,688 sf (0.15 acres)

Legal Description: Lot 9, Block 3, Elmwood Plaza Refile, except south 2 feet, Section 12, 1S 1W, City of Grand Junction, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 2 mile(s) north of the State of Colorado Tailings Repository. Appendix Figure 2.1 shows the property location relative to its surroundings.

Utilities: Utility locations are shown in Appendix Figure 2.2.

Electrical:	Overhead
Gas:	Underground
Telephone:	Overhead
Sewer:	Underground
Water:	Underground
Cable TV:	None

Bordering Properties:

North:	Single-family residence
South:	Single-family residence
East:	Alley (dirt)
West:	North 17th Street

2.2 Existing Facilities and Structures

Primary Structure:

Type:	Single-story residence with attached carport
Size:	Approximately 2,078 sf
Construction Date:	1958
Construction:	Wood-frame
Foundation:	Concrete wall on spread footing
Footing Depth:	Approximately 68" to bottom of footing from grade
Basement:	Yes - full
Crawl Space:	None
Condition:	Good

Other Structures:

Type:	Carport
Size:	Approximately 276 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 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-04153-RS on June 28, 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 east yard and associated with the sidewalk which abuts the east side 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, Memo of Understanding, 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: 14 to 16 uR/h
Highest Outside Gamma Reading (HOG): 53 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: 16 to 18 uR/h
Highest Inside Gamma Reading (HIG): 25 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 Figures 3.2a and 3.2b. 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) Surface Material: Brick
Direction From Primary Structure: West
Other (height and thickness): 18 inch high by 3 inch wide planter walls
Comments: The brick planter is contaminated.
Approximate Square Footage: 11
- (Area B) Surface Material: Concrete
Direction From Primary Structure: East
Other Directions: Abuts the east side of the primary structure
Total Depth of Contamination: 12 inches
Other (height or thickness): 4-inch-thick concrete
Comments: The material underlying the concrete sidewalk is contaminated.
Approximate Square Footage: 144
- (Area C) Surface Material: Lawn
Direction From Primary Structure: East
Other Directions: Adjacent to Area B
Total Depth of Contamination: 9 inches
Approximate Square Footage: 108
- (Area D) Surface Material: Road base/flagstone
Direction From Primary Structure: East
Other Directions: In alley
Total Depth of Contamination: 9 inches
Approximate Square Footage: 39

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-04153-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 \$1,256.

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 (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 3.2a	Interior Sample Locations
Figure 3.2b	Exterior Sample Locations
Figure 3.3	Exterior Estimated Extent of Contamination

Official Survey Report

Memo of Understanding

Team Leader Notes

Deconvolution Graphs (Apparent Radium-226 Concentration)

Exterior Gamma Scan Map

Radium Concentrations at Exterior Locations

DOE ID #GJ-04153-RS

1630 North 17th Street

Page 1 of 3

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
7	160300	00	DS	2.3		*	Northwest of the primary structure DC = 0 inches
		03	TC	3.3		*	
		06	TC	3.4		*	
		09	TC	3.3		*	
		12	TC	3.3		*	
		15	TC	3.2		*	
		18	TC	3.2		*	
		21	TC	3.3		*	
		24	TC	3.2		*	
8	209286	00	DS	1.4		*	
9	212262	[12]	DS	6.7		*	Side of the brick planter brick planter
		[12]	GS		5.3	*	
		06	DS	2.8		*	
10	212270	[2]	DS	3.2		*	Side of the brick planter
		[2]	GS		5.3	*	
11	212280	00	DS	1.4		*	
12	213262	00	DS	2.0		*	Inside of the brick planter
13	215265	00	DS	<1.0		*	Sidewalk west of the primary structure
14	230302	00	DS	<1.0		*	Background DC = 0 inches
		03	TC	2.9		*	
		06	TC	3.2		*	
		09	TC	3.4		*	
		12	TC	3.5		*	
		15	TC	3.5		*	
		18	TC	3.6		*	
		21	TC	3.6		*	
		24	TC	3.5		*	
		27	TC	3.4		*	
15	242273	00	DS	37.3		*	Sidewalk east of the primary structure DC = 12 inches Based on the deconvolution graph
		03	TC	37.5		*	
		06	TC	59.0		*	
		09	TC	45.8		*	
		12	TC	26.0		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-04153-RS

1630 North 17th Street

Page 2 of 3

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
15	241273	15	TC	16.4		*	
		18	TC	10.5		*	
		21	TC	7.8		*	
		24	TC	6.3		*	
		27	TC	5.7		*	
		30	TC	5.3		*	
		33	TC	5.0		*	
		36	TC	4.9		*	
		39	TC	4.8		*	
		42	TC	4.4		*	
		45	TC	4.3		*	
		48	TC	4.3		*	
		51	TC	4.2		*	
		54	TC	4.2		*	
		57	TC	4.2		*	
		60	TC	4.0		*	
		63	TC	3.9		*	
		66	TC	3.8		*	
		69	TC	3.8		*	
		72	TC	3.9		*	
		75	TC	3.8		*	
		78	TC	3.7		*	
16	245275	00	DS	10.0		*	East side of the
		03	TC	8.1		*	primary structure
		06	TC	6.8		*	DC = 9 inches
		09	TC	5.6		*	Based on the
		12	TC	4.9		*	deconvolution graph
		15	TC	4.5		*	
		18	TC	4.5		*	
		21	TC	4.4		*	
		24	TC	4.3		*	
		27	TC	4.4		*	
		30	TC	4.3		*	
		33	TC	4.2		*	
		36	TC	4.2		*	
		39	TC	4.2		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-04153-RS

1630 North 17th Street

Page 3 of 3

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
17	245286	00	DS	21.5		*	Gas line
		06	DS	13.0		*	Visible tailings
		12	DS	3.7		*	slough
		18	DS	3.0		*	
18	276267	00	DS	5.2		*	Alley
		03	TC	6.1		*	DC = 9 inches
		06	TC	5.4		*	Based on the
		09	TC	4.4		*	deconvolution graph
		12	TC	3.9		*	
		15	TC	3.6		*	
		18	TC	3.6		*	
		21	TC	3.5		*	
		24	TC	3.4		*	
		27	TC	3.5		*	

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 = 06-28-85
Team Leader = TC

Radium Concentrations at Interior Locations

DOE ID #GJ-04153-RS

1630 North 17th Street

Page 1 of 1

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
1		[24]	DS	2.8		*	Bathroom
		[24]	GS		3.1	*	West brick facing
2		00	DS	1.2		*	Bathroom
		00	GS		2.3	*	Shower floor
3		[30]	DS	2.5		*	Bathroom
		[30]	GS		2.9	*	South brick facing
4		[12]	DS	3.1		*	Bathroom
		[12]	GS		2.9	*	North brick faacing
5		[2]	DS	2.3		*	Furnace room
		[2]	GS		2.1	*	
6		[12]	DS	2.6		*	
		[12]	GS		2.4	*	Washer room

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 = 06-28-85
Team Leader = TC

Table 3.3

Summary of Interior Gamma Exposure Rates

DOE ID No. GJ-04153-RS 1630 North 17th 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)
Room A	08	16-18	17	08	17-17	17
Room B	12	15-18	17	12	16-18	17
Room C	04	16-19	17	04	16-18	17
Room D	02	20-25	23	02	20-21	21
Room E	04	16-18	17	04	16-18	17
Room F	05	16-17	16	05	16-17	17
Ground Floor	*	*	*	*	13-17	*

* A walking gamma scan was performed to confirm the absence of interior contamination.

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-04153-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 and Brick					
A	38 x 0.3 =	11	x 1.5 =	17	
B	4 x 36 =	144	x 0.3 =	43	
Volume of Concrete				= 60	= 60/27 = 2
Contaminated Fill					
A	1 x 18 =	18	x 1.5 =	27	
B	4 x 36 =	144	x 0.7 =	101	
C	3 x 36 =	108	x 0.8 =	86	
D	13 x 3 =	39	x 0.8 =	31	
Volume of Fill				= 245	= 245/27 = 9
TOTAL VOLUME - EXTERIOR					= 11

See Appendix Figure 3.3 For Areas

=====

Table 4.2
Estimated Cost of Decontamination and Restoration
DOE ID No. GJ-04153-RS Page 1 of 1

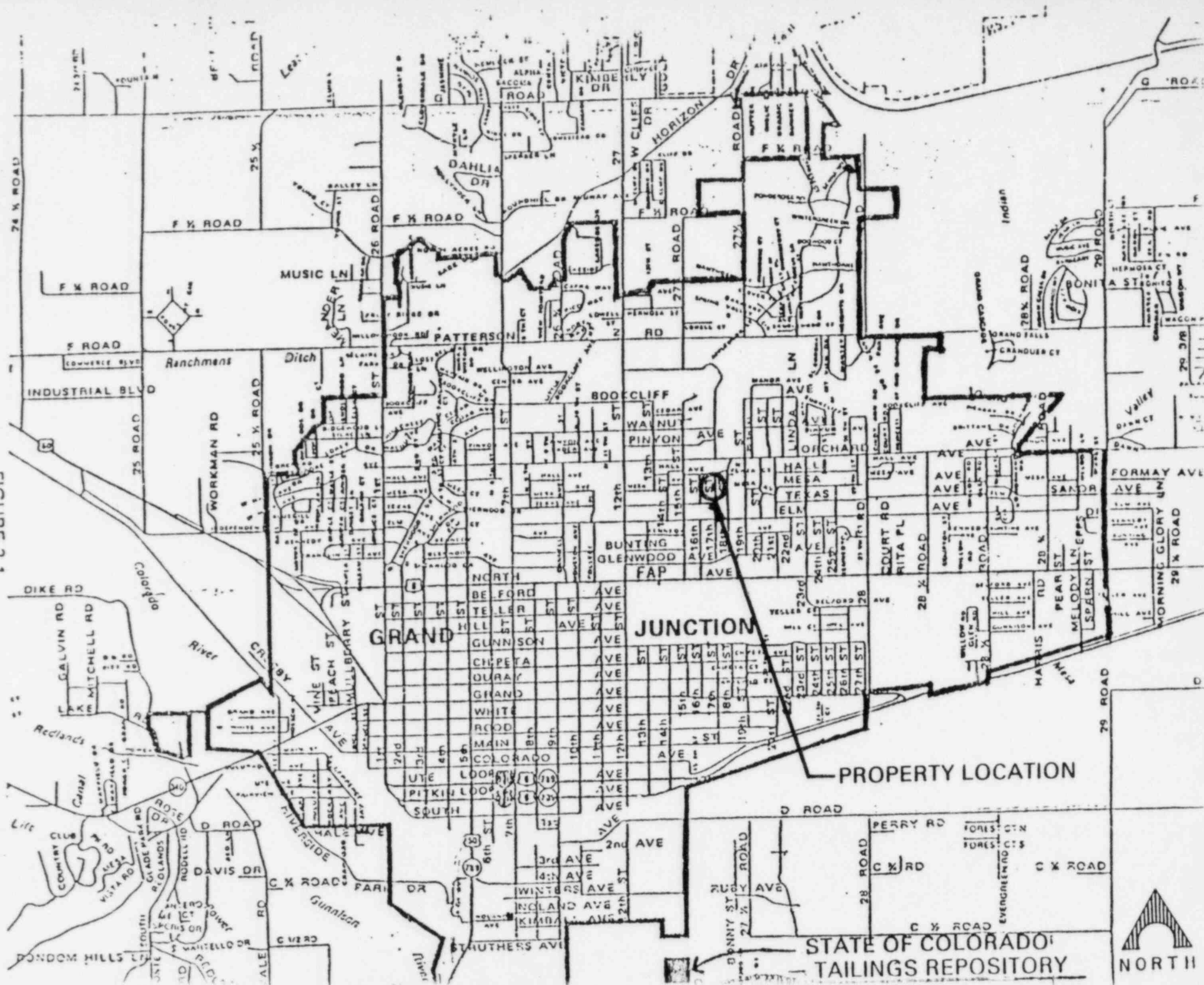
EXTERIOR

Remove identified residual radioactive material		
6 cy @ \$14.50/cy (machine-open)	\$	87
3 cy @ \$44/cy (manual-open)		132
Remove/replace concrete		
14 sf @ \$3/sf		42
Remove/replace brick planter		
Lump sum		200
Replace areas with roadbase		
5 cy @ \$11.50/cy		58
Replace areas with topsoil		
4 cy @ \$9.50/cy		38
Replace areas with sod		
108 sf @ \$.50/sf		54
TOTAL EXTERIOR	\$	611
TOTAL INTERIOR		0
ACCESS CONTROL		150
SUBTOTAL	\$	761
CONTINGENCY @ 10%		76
SUBTOTAL	\$	837
CONTRACTOR OVERHEAD & PROFIT @ 50%		419
GRAND TOTAL	\$	1,256

=====

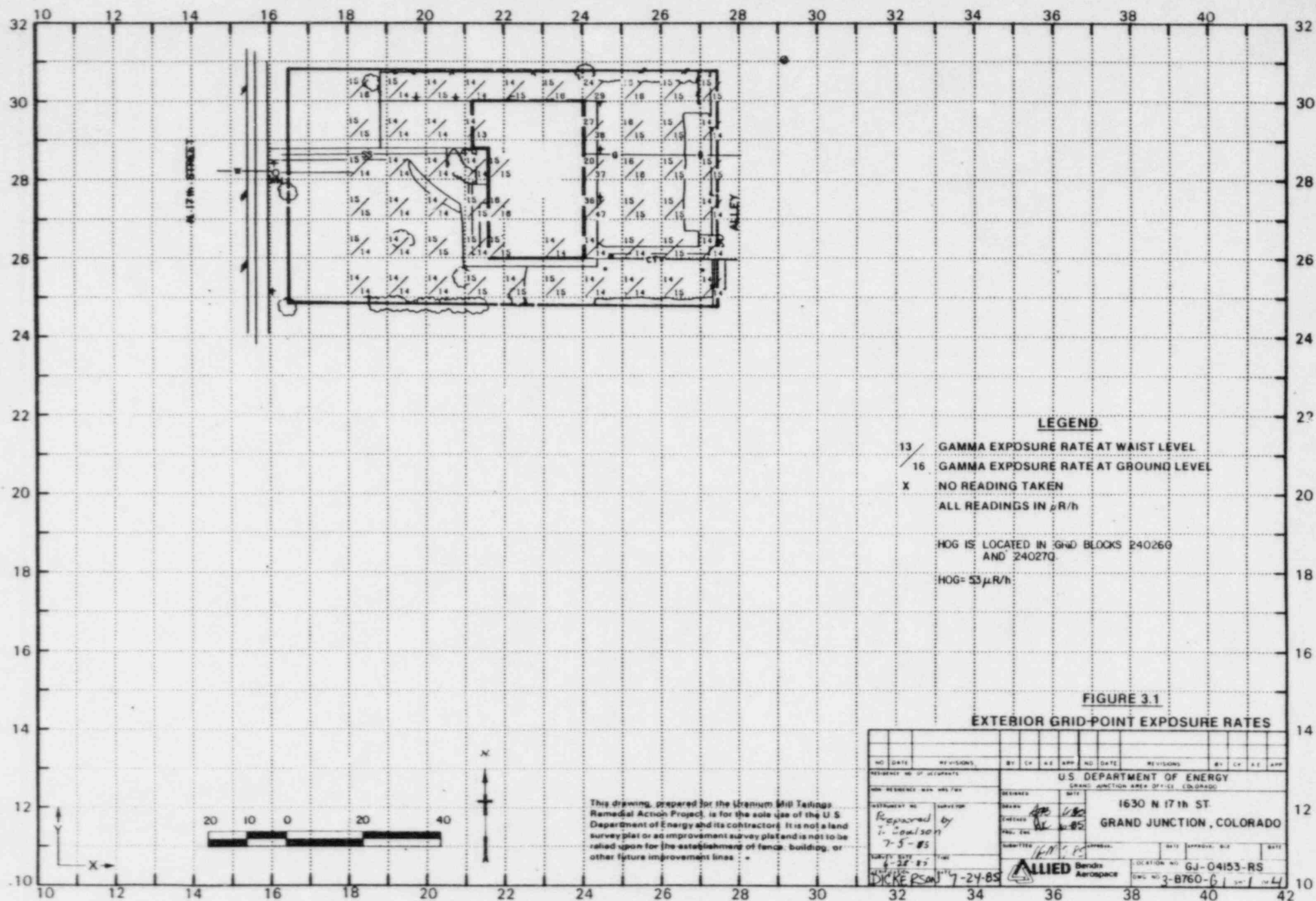
LR080585
REA04153/REA-615/LMR

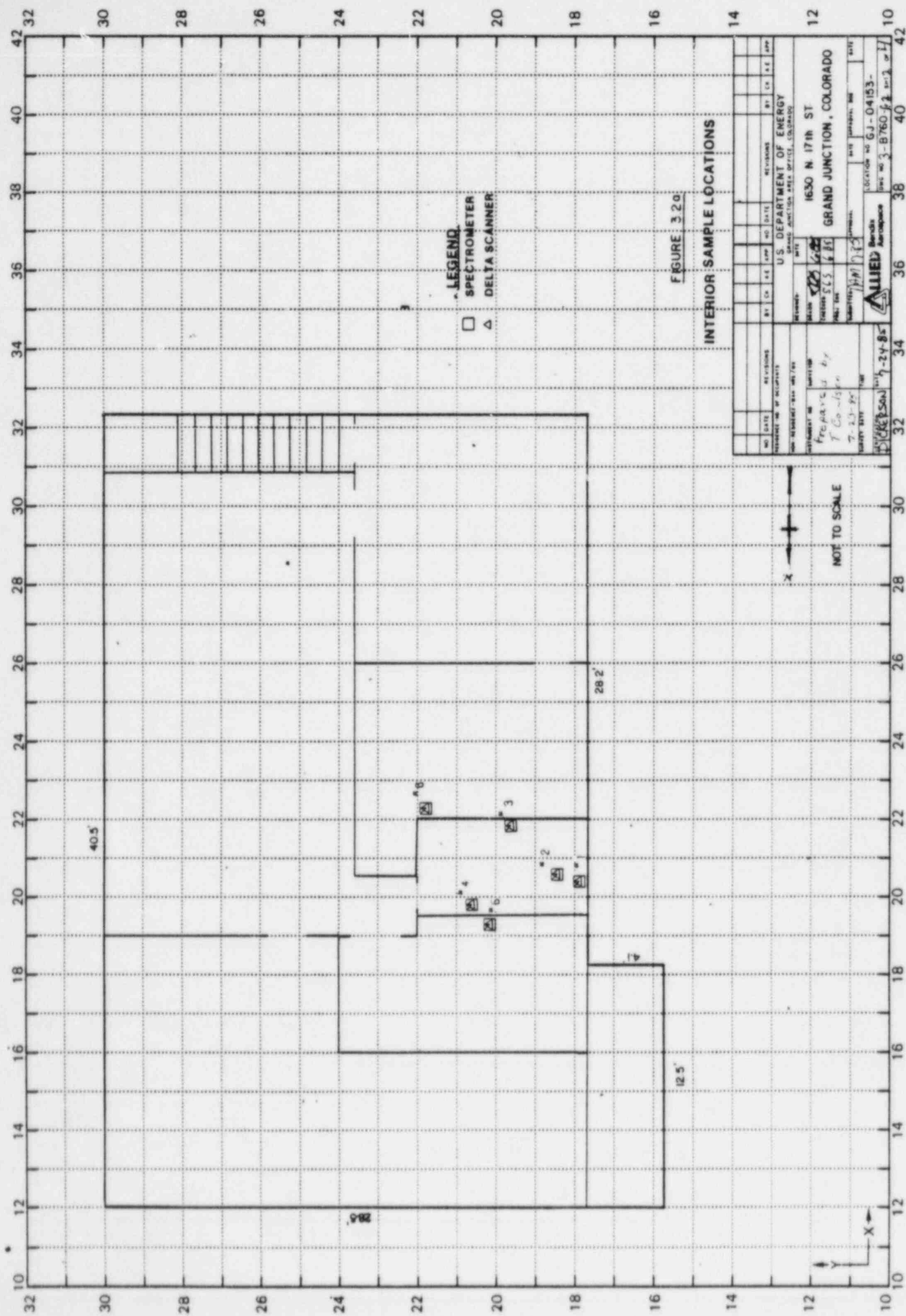
FIGURE 2.1
VICINITY MAP

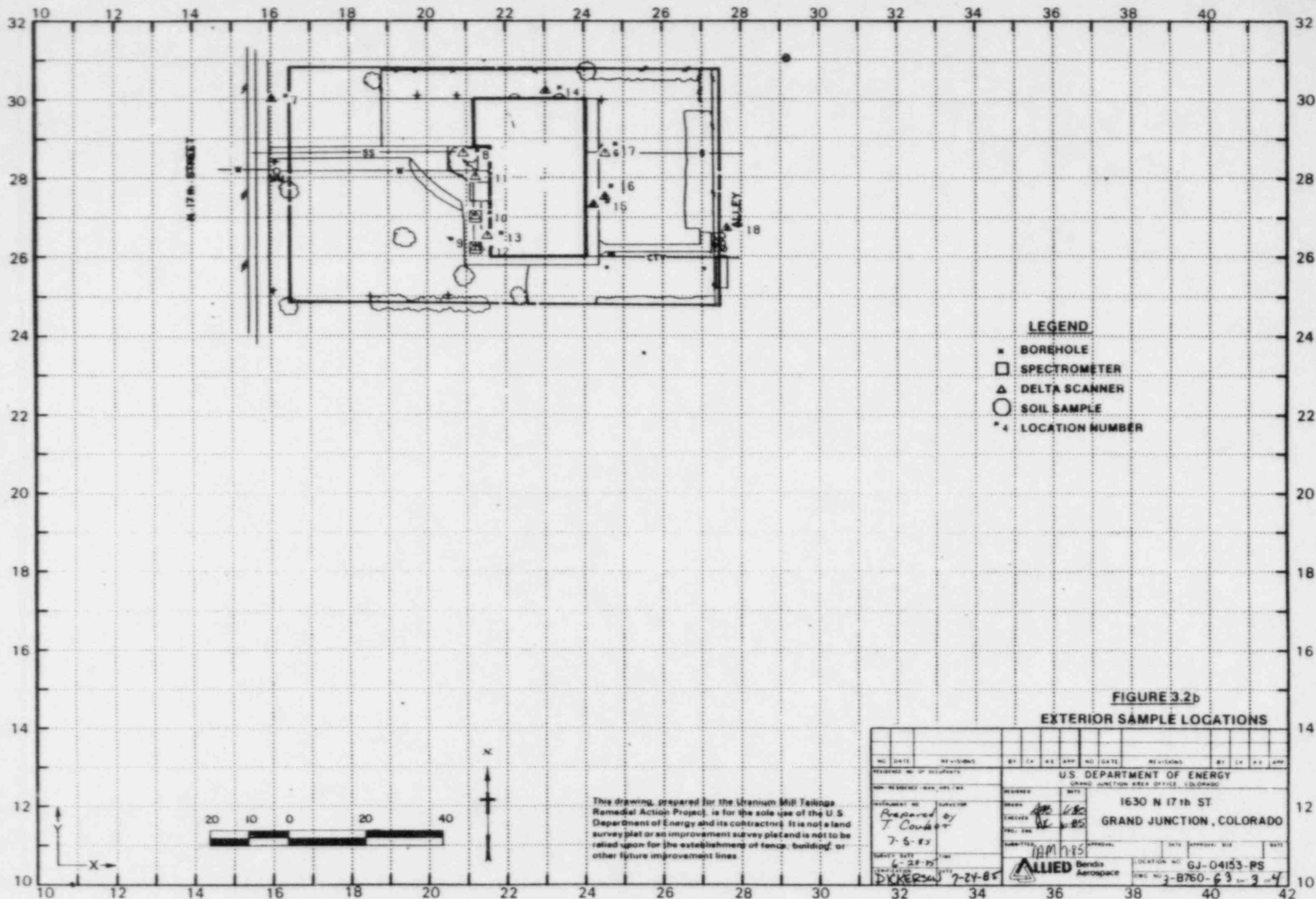


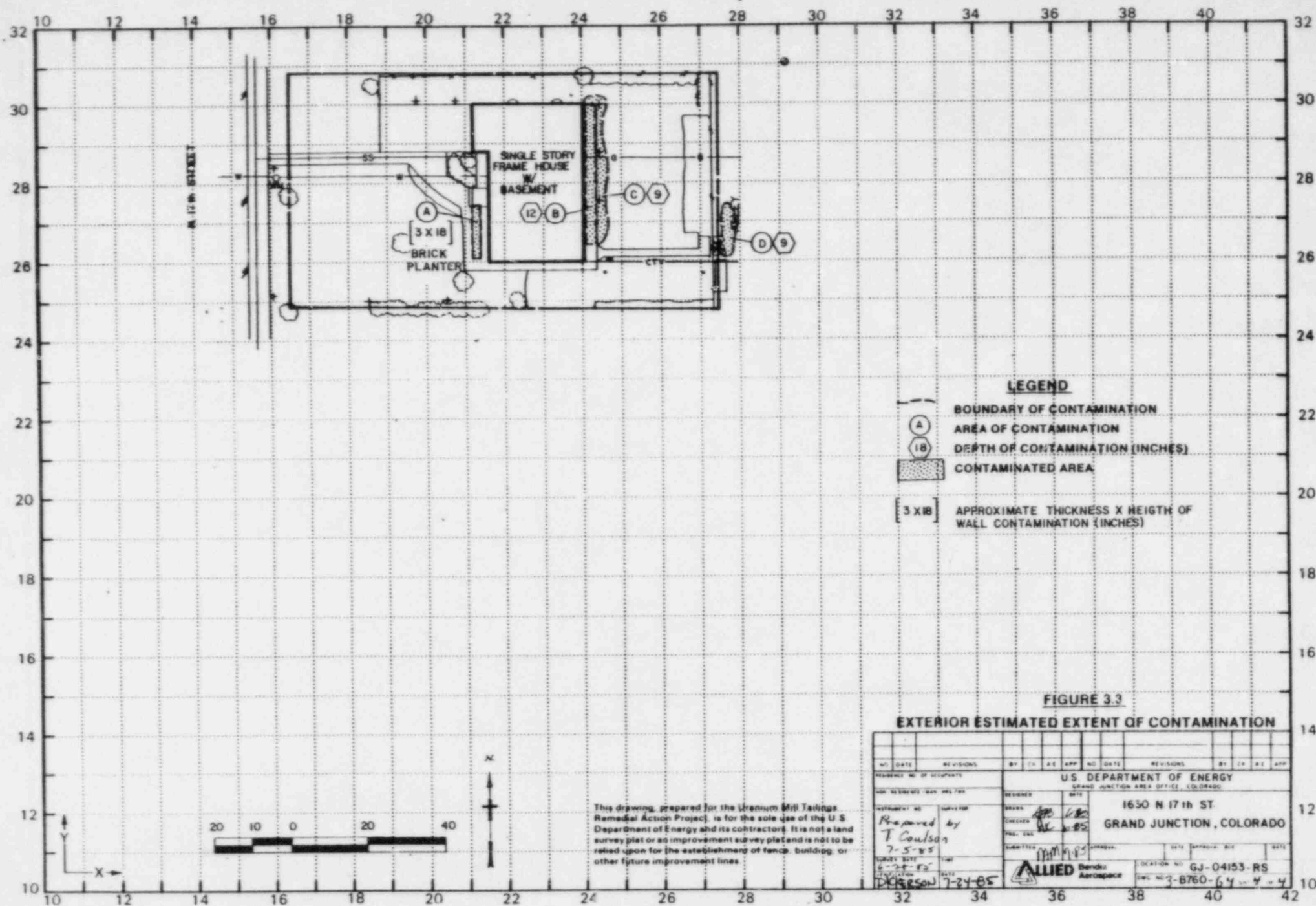
STATE OF COLORADO
TAILINGS REPOSITORY











REVISIONS										REVISIONS									
NO.	DATE	BY	CHK	APP	NO.	DATE	BY	CHK	APP	NO.	DATE	BY	CHK	APP					
U.S. DEPARTMENT OF ENERGY GRAND JUNCTION AREA OFFICE, COLORADO 1630 N 17th ST. GRAND JUNCTION, COLORADO										DESIGNED BY DATE CHECKED BY DATE APPROVED BY DATE									
PROJECT NO. 6-24-85 7-24-85										LOCATION NO. GJ-04153-RS DWG NO. 3-B760-64-4-4									

3/85

DOE ID NO. GJ-04153-RS

Date 7/9/85

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

Official Survey Report

Property Address 1630 North 17th Street

Property Owner J.A. Brown

Address of Owner (if different from above)

Report Prepared By T. Coulson

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 = 25 uR/h
HOG = 53 uR/h



Bendix
Aerospace

Bendix Field Engineering Corporation
P. O. Box 1569
Grand Junction, CO 81502-1569
Telephone (303) 242-8621
Telex 454-338

July 22, 1985

Colorado Department of Health
222 South 6th Street
Grand Junction, Colorado 81501

ATTN: Chuck Thornberg

Dear Chuck:

The following is in response to your questions and comments concerning Department of Energy (DOE) Identification (ID) number GJ-04153-RS (1630 North 17th Street).

1. Locations 209286 and 212280 were augered at the time of the survey. The depth of these locations was approximately 72 inches. The downhole scintillometer was used to access these locations. The reading range was 155 to 195 counts per second (cps).
2. See above.
3. The elevated readings in the basement are associated with several interior brickwalls. This type of elevated reading is not unusual for interior brick walls, therefore, I am not calling for removal.

Thank you for your time and cooperation. If you should have additional questions or comments you may contact me at 242-8621, extension 433.

Yours truly,

Terry Coulson
RSD Survey Team Leader

TC:pr

MEMORANDUM

ALLIED Bendix
Aerospace

Bendix Field Engineering Corporation
Grand Junction Operations
Grand Junction, Colorado

Date: May 5, 1985
To: Files
From: Terry Coulson
Subject: Team Leader Notes - GJ-04153-RS

Address: 1630 North 17th Street

Owner: J.A. Brown

Team Members

T. Coulson (Team Leader)	H. Mattison
D. Clay	M. Dexter
P. Hardy	R. Wilkins
M. Johnson	

The property is owned and occupied by J.A. Brown (owner).

Team members noted readings ranging from 170 to 190 counts per second (cps) when scanning the front planter.

Readings of 200 cps were noted coming from the west wall of the basement bathroom.

A spot of contamination was found in the alley and another in the driveway.

Oak Ridge National Laboratory (ORNL) indicated contamination in the backyard sidewalk. A delta on the core reads 1 pCi/g.

The water and sewer lines were located in the basement, corresponding locations were investigated in the front yard. All downhole scintillometer readings were ranging between 140 to 190 cps. Seventy-two inch holes were augered in these cores.

Team Leader Notes
Terry Coulson
GJ-04153-RS
May 5, 1985
Page 2

In the basement elevated exposure-rates are associated with the brick walls in the bathroom and laundry room. This is due to the natural radiation from the bricks.

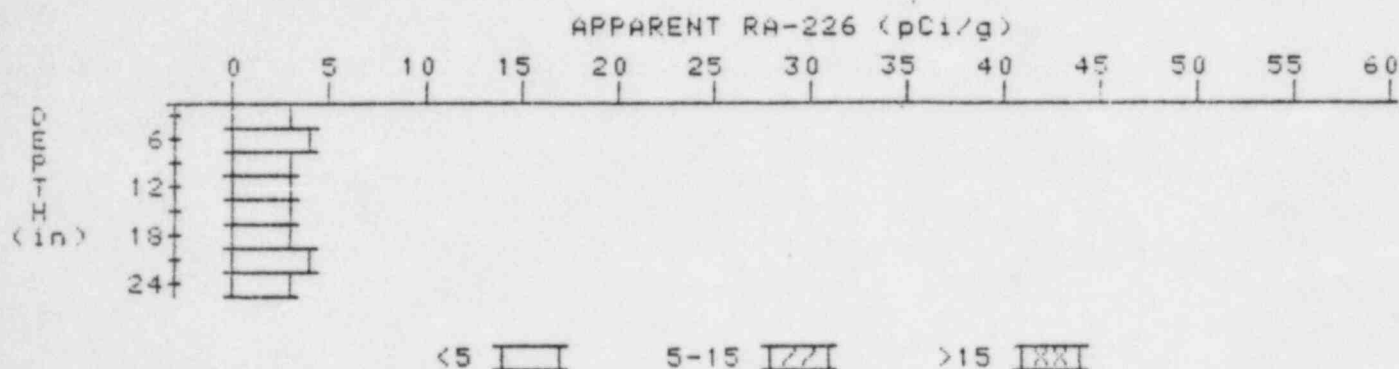
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

7

PROPERTY NUMBER: GJ-04153-RS

HOLE NUMBER: 7

LOCATION: 160300



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.3	3.3
6	3.4	3.6
9	3.3	3.1
12	3.3	3.5
15	3.2	3.0
18	3.2	3.0
21	3.3	3.7
24	3.2	3.2

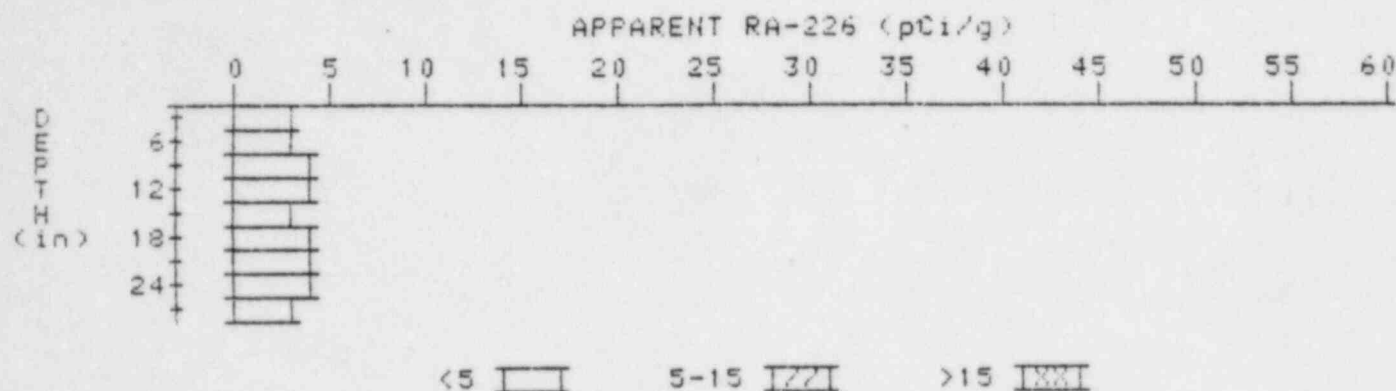
APPARENT RADIUM-226 CONCENTRATION 14

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-04153-R3

HOLE NUMBER: 14

LOCATION: 230302



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.9	2.9
6	3.2	3.4
9	3.4	3.6
12	3.5	3.7
15	3.5	3.3
18	3.6	3.8
21	3.6	3.8
24	3.8	3.5
27	3.4	3.4

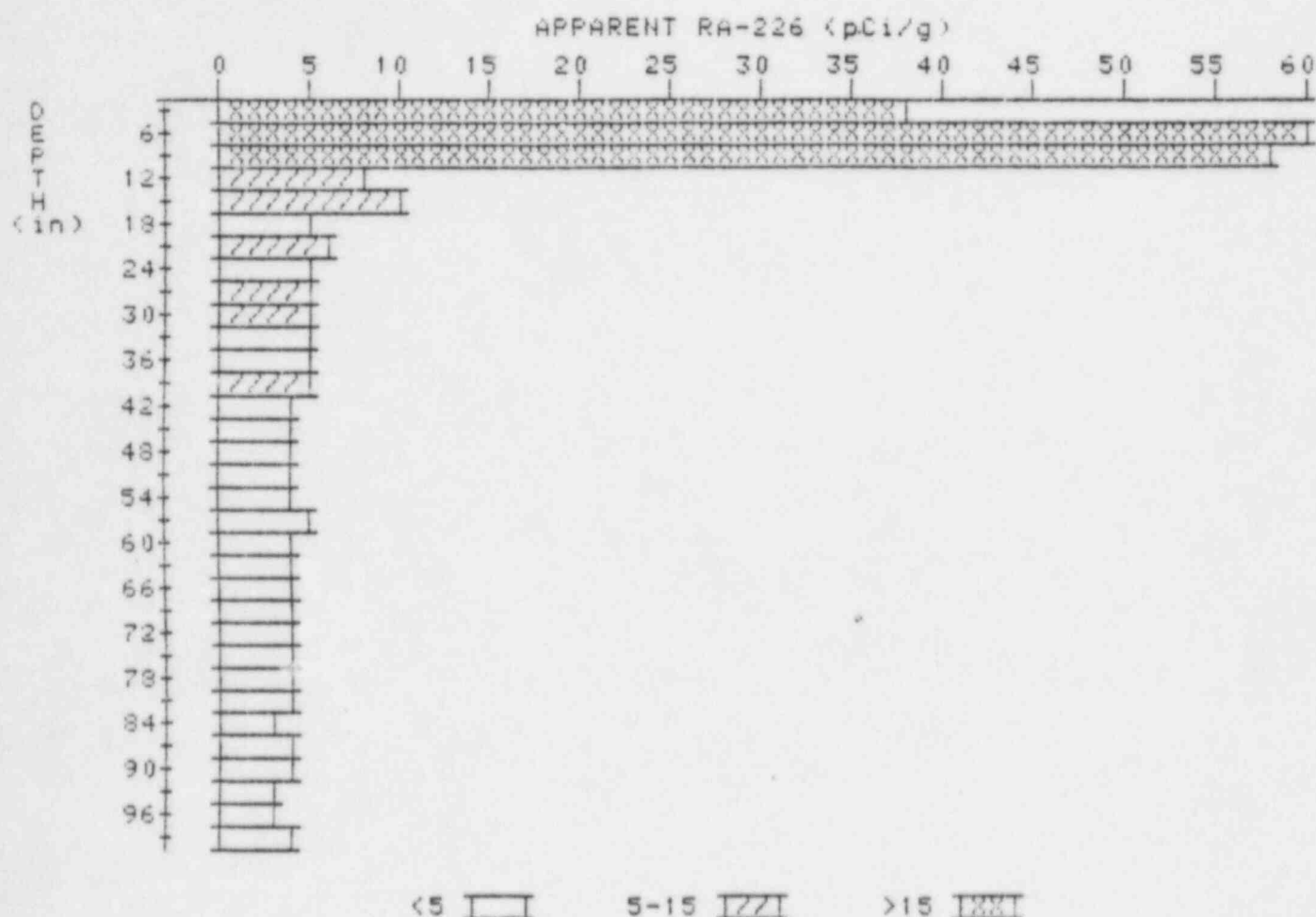
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

15

PROPERTY NUMBER: GJ-04153-R5

HOLE NUMBER: 15

LOCATION: 242273



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	37.5	37.5
6	59.0	120.7
9	45.8	57.5
12	26.0	7.9
15	16.4	9.8
18	10.5	4.8
21	7.8	5.7
24	6.3	4.7

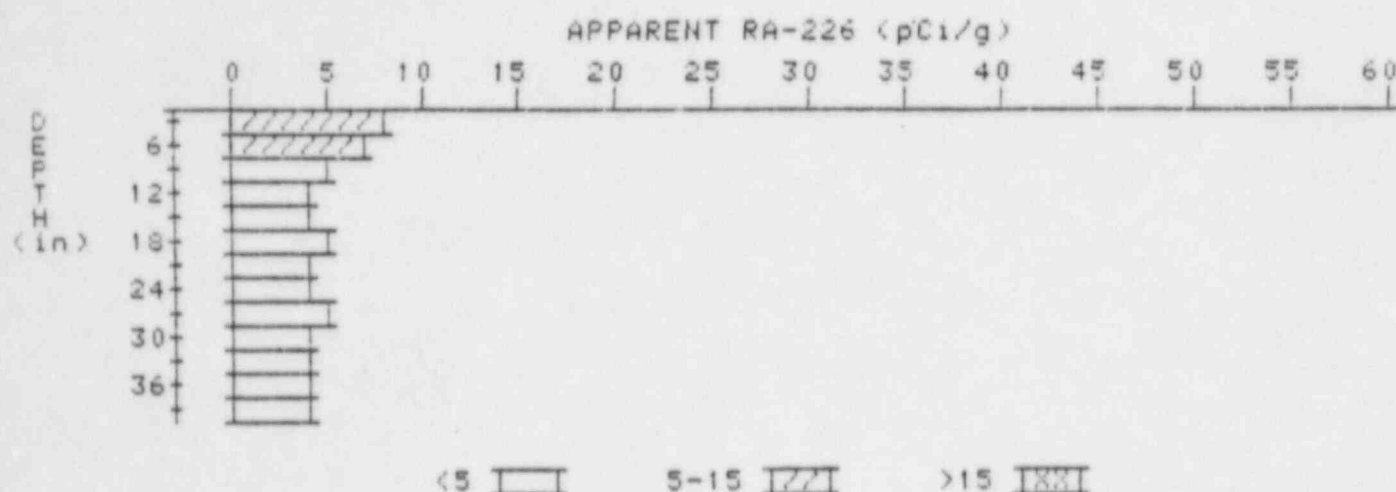
27
30
33
36
39
42
45
48
51
54
57
60
63
66
69
72
75
78
81
84
87
90
93
96
99

5.7
5.3
5.0
4.9
4.8
4.4
4.3
4.3
4.2
4.2
4.2
4.0
3.9
3.8
3.8
3.9
3.8
3.7
3.7
3.6
3.7
3.7
3.6
3.6
3.7

5.3
5.1
4.8
4.9
5.3
3.9
4.1
4.5
4.0
4.0
4.8
3.8
3.9
3.8
3.8
4.3
3.8
3.8
3.8
3.8
3.8
3.4
3.4
3.7

APPARENT RADIUM-226 CONCENTRATION 17 DECONVOLUTION GRAPH

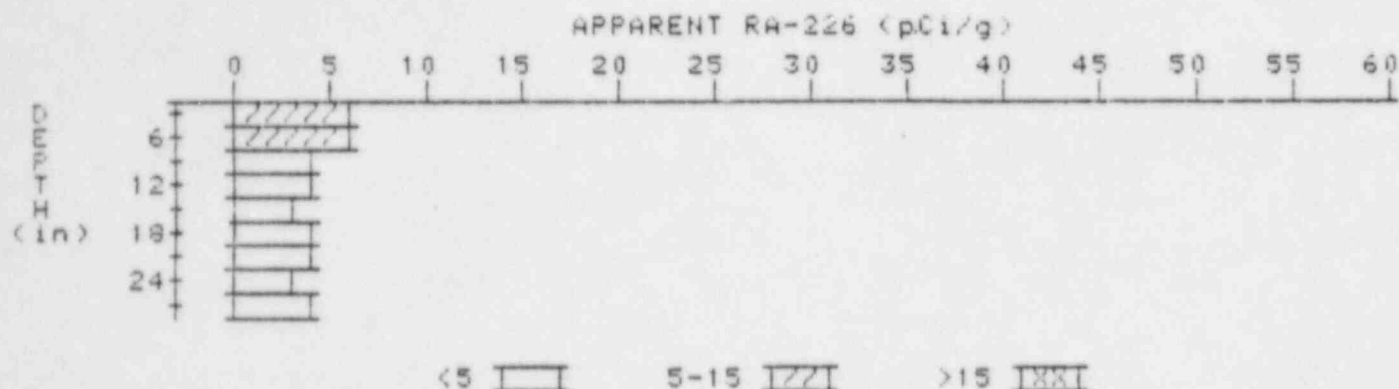
PROPERTY NUMBER: GJ-04153-R3
HOLE NUMBER: 17
LOCATION: 245275



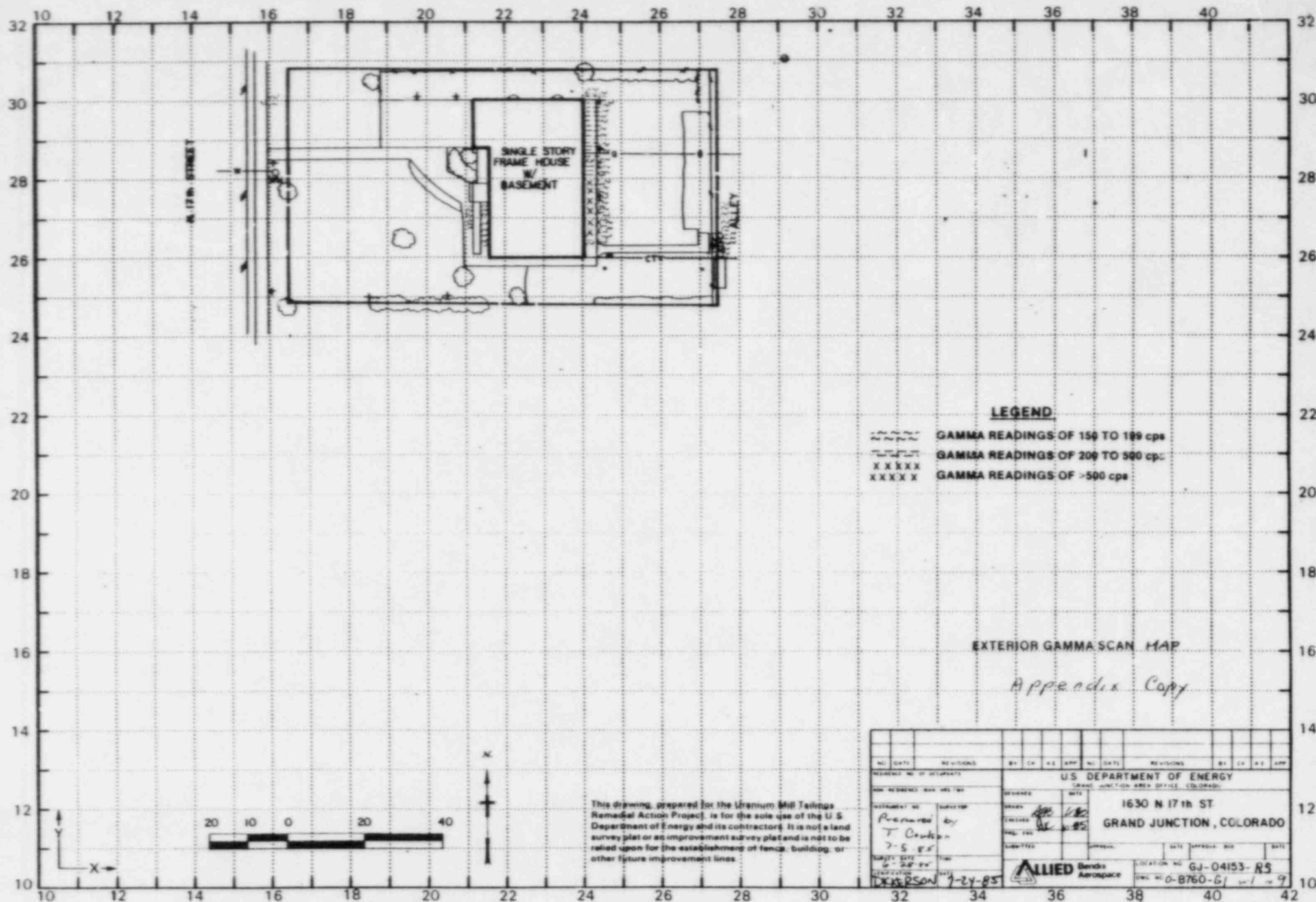
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	8.1	8.1
6	6.8	6.6
9	5.6	4.7
12	4.9	4.4
15	4.5	3.8
18	4.5	4.7
21	4.4	4.4
24	4.3	3.8
27	4.4	4.3
30	4.3	4.3
33	4.2	4.0
36	4.2	4.2
39	4.2	4.2

APPARENT RADIUM-226 CONCENTRATION 18 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-04153-RS
HOLE NUMBER: 18
LOCATION: 276267



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	6.1	6.1
6	5.4	5.9
9	4.4	3.5
12	3.9	3.5
15	3.6	3.1
18	3.6	3.0
21	3.5	3.5
24	3.4	3.0
27	3.5	3.5



NO.	DATE	REVISIONS	BY	CHK	APP	NO.	DATE	REVISIONS	BY	CHK	APP
REVISIONS						REVISIONS					
NO. REVISIONS						NO. REVISIONS					
<p align="center">U.S. DEPARTMENT OF ENERGY GRAND JUNCTION AREA OFFICE, COLORADO</p> <p align="center">1630 N 17TH ST. GRAND JUNCTION, COLORADO</p>											
<p>DESIGNED: _____ DATE: _____</p> <p>DRAWN: _____ DATE: _____</p> <p>CHECKED: _____ DATE: _____</p> <p>PAID: _____ DATE: _____</p>						<p>APPROVED: _____ DATE: _____</p> <p>DATE: _____</p>					
<p>PROJECT NO. _____</p> <p>PREPARED BY: _____</p> <p>DATE: 7-5-85</p> <p>SURVEY DATE: 6-28-85</p> <p>LOCATION: _____</p> <p>DATE: 7-24-85</p>						<p>ALLIED Bonds Aerospace</p> <p>LOCATION NO. GJ-04153-RS</p> <p>FILE NO. 0-8760-61</p>					