RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-04729-MR
ADDRESS: 1520 NORTH 23RD STREET

AUGUST 1985

FOR

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT OFFICE

ALBUQUERQUE OPERATIONS OFFICE

DEPARTMENT OF ENERGY

BY

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

APPROVED BY Michael K Tucker
M. TUCKER
DOE PROJECT ENGINEER

DATE September 3, 1985

REA04729:REA-621

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-04729-MR, is a single-family residence located at 1520 North 23rd Street, Grand Junction, Colorado.

The purpose of this assessment is to evaluate the extent of uranium millsite contamination at this property and present a recommendation based on this assessment.

1.2 Evaluation and Recommendation

It is recommended that no remedial action be performed on this property (as discussed in Section 4.0) and that a Property Completion Report be prepared for use in the DOE certification process. The identified residual radioactive material found on this property is tailings; the estimated volume is: exterior, 0 cu. yd.; interior, 28 cu. yd.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 1520 North 23rd Street, Grand Junction, Colorado

Zoning: Residential (RSF-8)

Lot Size: Approximately 7,688 sf (0.18 acres)

Legal Description: Beginning 158.5 feet north and 25 feet east of the center of SE 1/4 of Section 12, T1S, R1W, U.M., east 140 feet, north 61.5 feet, west 140 feet, south to beginning; except east 15 feet, City of Grand Junction, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 2 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:	Single-family residence
West:	North 23rd Street

2.2 Existing Facilities and Structures

Primary Structure:

Type:	Single-story residence
Size:	Approximately 1,054 sf
Construction Date:	1955
Construction:	Wood-frame
Foundation:	Concrete stemwall on spread footing
Footing Depth:	Approximately from 15" to 54" to bottom of footing from grade
Basement:	Yes - partial
Crawl Space:	Yes - partial
Condition:	Good

Other Structures:

Type:	Garage
Size:	Approximately 533 sf
Construction:	Wood-frame
Foundation:	Concrete slab-on-grade
Condition:	Good

General Remarks:

There is a patio east of the main structure. 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-04729-MR on June 7, 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 that the walls and floor of the basement, and the walls of the crawl space are contaminated.

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 17 uR/h
Highest Outside Gamma Reading (HOG): 32 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 19 uR/h
Highest Inside Gamma Reading (HIG): 39 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. Appendix Figures 3.2a and 3.2b show interior exposure rates and locations of these measurements.

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 3.3. 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 3.4 shows identified areas and estimated depths of contamination on this property, based on assessments of all measurements taken. As noted in this figure, areas that contain identified residual radioactive materials are:

(AREA A) The basement walls are contaminated. The walls are 8 inches thick by 84 inches tall. The footing is estimated to be 10 inches thick by 20 inches wide. This area is excluded from remedial action.

(AREA B) The footing and walls of the crawl space are contaminated. The wall is 8 inches thick by 27 inches tall, and the footing is 7 inches thick by 16 inches wide. The total depth to the base of the footing is 34 inches. This area is excluded from remedial action.

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

It is recommended that no remedial action be performed and that an indoor RDC measurement be completed on this property. If the RDC measurement exceeds EPA standards, then the REA will be revised and remedial action accomplished in accordance with the Vicinity Property Management and Implementation Manual. If EPA standards are not exceeded, then the no-action recommendation will be considered valid, and a Property Completion Report will be prepared for DOE certification.

4.2 Evaluation of Recommended Remedial Action

Remedial action will not be performed on Areas A and B of this property because the levels of radioactivity in these areas do not exceed the EPA Standards (40 CFR 192), as described below:

(1) Indoor radon-decay products shall not exceed a working level of 0.03, nor, to the extent possible, a working level of 0.02.

(2) Indoor gamma radiation shall not exceed 20 microroentgens per hour (uR/h) above background levels. (At this location the interior background readings were found to be between 16 and 19 uR/h, with the highest mean surface gamma reading at 30 uR/h.)

Appendix Table 4.1 presents the area and volume calculations of contamination present on the property.

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:

Table 3.1
Radium Concentrations at Exterior Locations

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g) Tot. Ct	Spectr.	Chem Ra-226 (pCi/g)	Comments
14	150270	00	DS	1.6		*	Background
		00	GS		2.0	*	
		03	TC	2.7		*	DC = 0 inches
		06	TC	3.0		*	
		09	TC	3.1		*	
		12	BH	3.3	1.4	*	
		15	TC	3.3		*	
		18	TC	3.4		*	
		21	TC	3.4		*	
		24	BH	3.4	1.4	*	
		27	TC	3.5		*	
		30	BH	3.3	1.3	*	
15	168248	03	TC	3.9		*	Water line
		06	TC	4.0		*	
		09	TC	4.0		*	DC = 0 inches
		12	BH	3.9	1.2	*	
		15	TC	3.9		*	
		18	TC	3.9		*	
		21	TC	4.0		*	
		24	TC	4.1		*	
		27	TC	4.1		*	
		30	TC	4.1		*	
		33	TC	4.1		*	
		36	BH	4.0	1.4	*	
		39	TC	3.9		*	
		42	TC	3.7		*	
		45	TC	3.5		*	
		48	TC	3.5		*	
		51	TC	3.4		*	
		54	TC	3.5		*	
		57	TC	3.5		*	
		60	TC	3.5		*	
		63	TC	3.5		*	
		66	TC	3.7		*	
		69	TC	3.7		*	
		72	TC	3.7		*	
		75	TC	3.8		*	
		78	BH	3.8	1.7	*	
16	183282	00	DS	1.7		*	Gas line
		06	DS	1.2		*	
		21	DS	1.3		*	

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g) Tot. Ct	Spectr.	Chem Ra-226 (pCi/g)	Comments
17	190281	03	TC	3.4		*	DC = 0 inches
		06	TC	3.4		*	
		09	TC	3.3		*	
		12	BH	3.2	<1.0	*	
		15	TC	3.2		*	
		18	TC	3.3		*	
		21	TC	3.2		*	
		24	TC	3.3		*	
		27	TC	3.2		*	
		30	TC	3.2		*	
		33	BH	3.2	1.4	*	
		36	TC	3.2		*	
		39	TC	3.3		*	
		42	TC	3.2		*	
		45	TC	3.3		*	
		48	TC	3.3		*	
		51	TC	3.4		*	
		54	TC	3.4		*	
		57	BH	3.4	2.3	*	
18	196245	03	TC	3.5		*	Sewer line
		06	TC	3.7		*	
		09	TC	3.7		*	DC = 0 inches
		12	TC	3.8		*	
		15	TC	3.9		*	
		18	TC	4.0		*	
		21	TC	3.9		*	
		24	TC	4.0		*	
		27	TC	3.9		*	
		30	TC	4.0		*	
		33	TC	3.9		*	
		36	TC	3.8		*	
		39	TC	3.9		*	
		42	TC	3.8		*	
		45	TC	3.9		*	
		48	TC	3.9		*	
		51	TC	4.0		*	
		54	TC	4.2		*	
		57	TC	4.4		*	
		60	TC	4.2		*	
		63	TC	4.0		*	
		66	TC	3.9		*	
		69	TC	3.9		*	

Table 3.1
Radium Concentrations at Exterior Locations

DOE ID #GJ-04729-MR   1520 North 23rd Street

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g) Tot. Ct	In Situ Ra-226 (pCi/g) Spectr.	Chem Ra-226 (pCi/g)	Comments
18	196245	72	TC	3.9		*	
		75	TC	3.9		*	
		78	TC	3.9		*	
		81	TC	4.0		*	
		84	TC	4.0		*	

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 = 06-07-85
Team Leader = JDG

RADRPT V85.1<850513.1530> Table 3.2

Radium Concentrations at Interior Locations

DOE ID #GJ-04729-MR 1520 North 23rd Street

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g) Tot. Ct	In Situ Ra-226 (pCi/g) Spectr.	Chem Ra-226 (pCi/g)	Comments
1		[36]	DS	9.6		*	Basement/northwest
		00	DS	2.1		*	corner of office
		[36]	GS		14.5	*	
		00	GS		10.7	*	
2		[36]	DS	7.3		*	Basement
		00	DS	3.8		*	North wall of
		[36]	GS		13.1	*	office
		00	GS		9.9	*	
3		00	DS	2.7		*	Basement, center of
		00	GS		6.7	*	office floor
4		00	DS	1.2		*	Basement
		00	GS		5.1	*	South end of office
5		00	DS	2.0		*	Washroom floor
		00	GS		6.7	*	
6		[36]	DS	9.1		*	Washroom floor
		00	DS	3.3		*	South wall of
		[36]	GS		14.6	*	washroom
		00	GS		9.5	*	
7		[36]	DS	6.7		*	East wall of crawl
		00	DS	4.0		*	space
		[36]	GS		12.3	*	
		00	GS		13.2	*	
8		00	DS	1.3		*	Center of crawl
		00	GS		4.5	*	space
9		[24]	DS	6.2		*	On footing
		00	DS	3.0		*	west wall of crawl
		[24]	GS		8.9	*	space
		00	GS		9.2	*	
10		00	DS	2.3		*	Next to footing
		00	GS		6.1	*	by west wall of crawl space

RADRPT V85.1<850513.1530> Table 3.2

Radium Concentrations at Interior Locations

DOE ID #GJ-04729-MR 1520 North 23rd Street

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g) Tot. Ct	In Situ Ra-226 (pCi/g) Spectr.	Chem Ra-226 (pCi/g)	Comments
11		00	DS	1.5		*	On washroom floor
		00	GS		6.5	*	
12		00	DS	1.7		*	Under stairs
		00	GS		6.0	*	
13		03	TC	3.3		*	Office floor
		06	TC	3.3		*	
		09	TC	3.4		*	DC = 0 inches
		12	TC	3.3		*	
		15	TC	3.4		*	
		18	TC	3.4		*	
		21	TC	3.4		*	
		24	TC	3.4		*	
		27	TC	3.5		*	
		30	TC	3.4		*	

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 = 06-07-85
Team Leader = JDG

Table 3.3
Summary of Interior Gamma Exposure Rates
DOE ID No. GJ-04729-MR 1520 North 23rd 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)
OFFICE	09	24-38	33	09	26-31	28
WASHROOM	09	25-39	34	07	25-37	29
CRAWL SPACE	12	20-38	28	12	21-40	30
ROOM A	05	18-19	19	05	20-21	21
ROOM B	05	17-18	17	05	17-20	18
ROOM C	05	16-19	17	05	17-21	19
ROOM D	08	17-18	18	08	18-20	19
ROOM E	06	17-19	18	06	19-20	20
GARAGE	*	*	*	*	13-16	*

* A walking gamma scan was performed in the garage. Exposure rates and the locations of these measurements are shown in Appendix Figures 3.2a and 3.2b.

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-04729-MR

AREA	CALCULATIONS(ft)		SF		DEPTH(ft)		CF				CUBIC YARDS
INTERIOR											
	Concrete										
A	0.8 x 58	=	46	x	7.0	=	322	(wall)			
	1.7 x 58	=	99	x	0.8	=	79	(footing)			
B	0.8 x 96	=	77	x	3.0	=	231	(wall)			
	1.7 x 96	=	163	x	0.8	=	130	(footing)			
	TOTAL VOLUME - INTERIOR					=	762	=	762/27	=	28

See Appendix Figure 3.4 For Areas

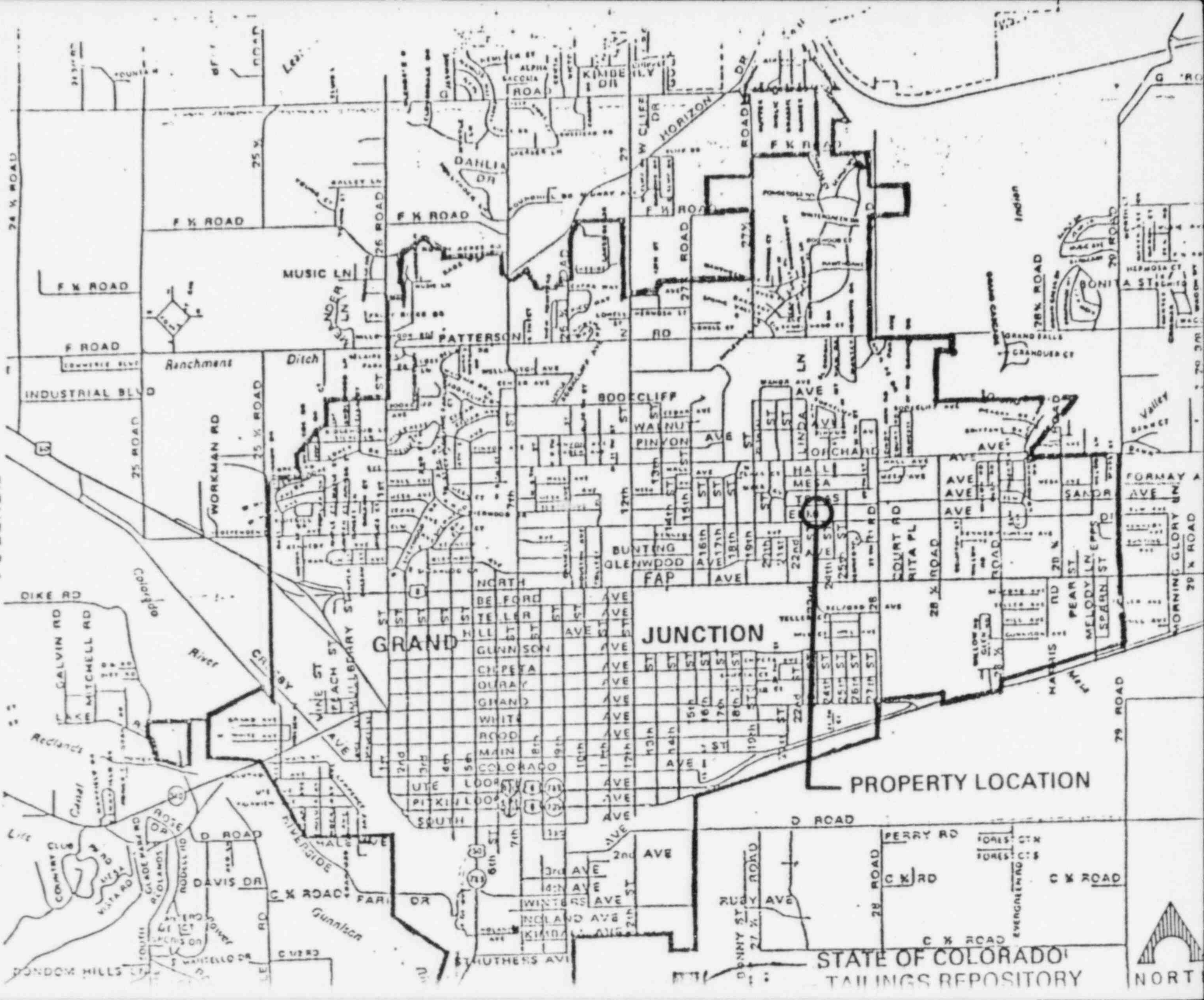


FIGURE 2.1
VICINITY MAP

BEGINNING 158.5 FEET NORTH AND 25.0 FEET EAST OF THE CENTER OF THE SOUTHEAST QUARTER OF SECTION 12, T.1S., R.1W., U.M.; THENCE EAST 140.0 FEET, THENCE NORTH 61.5 FEET, THENCE WEST 140.0 FEET, THENCE SOUTH TO BEGINNING, EXCEPT THE EAST 15.0 FEET.

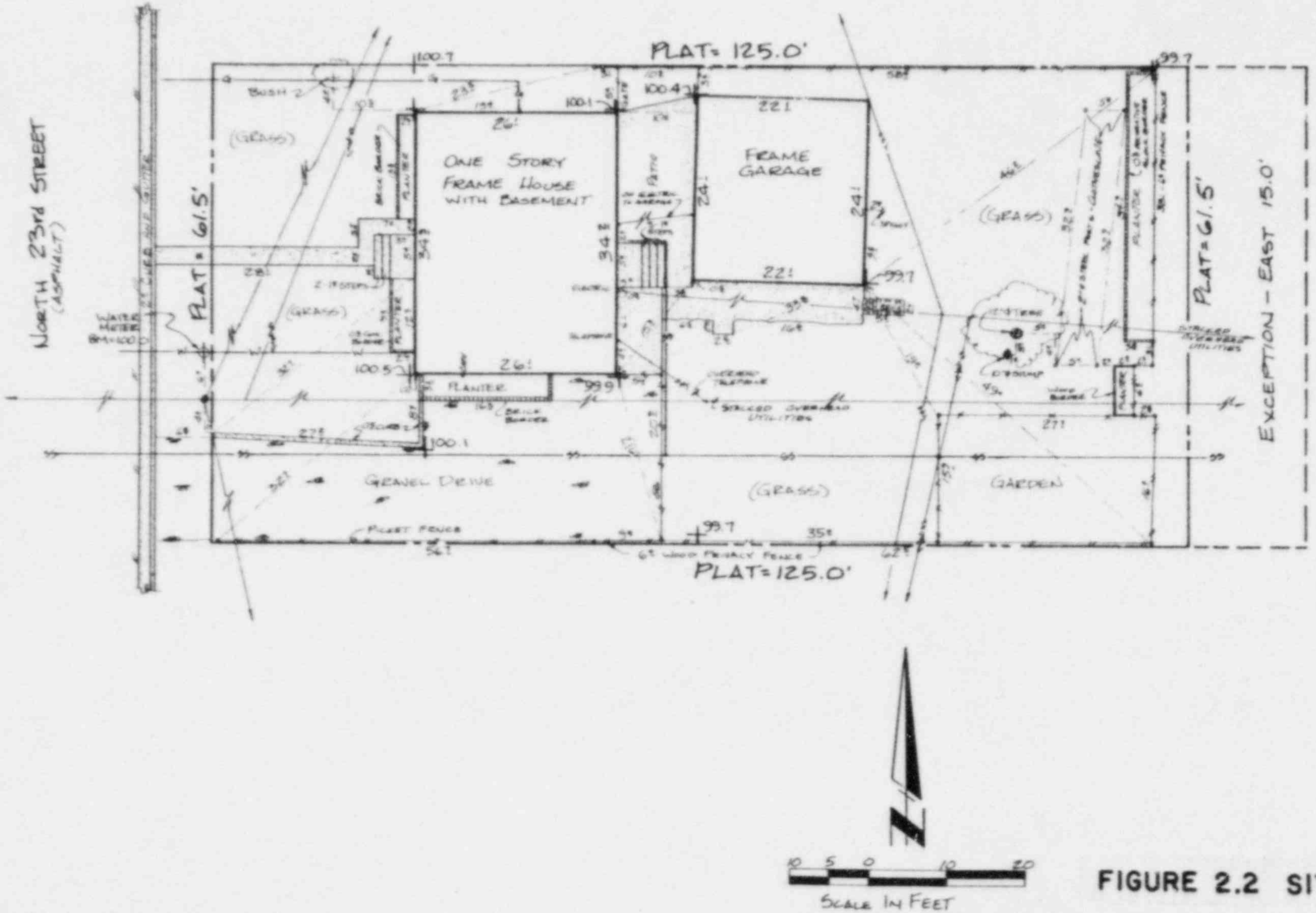


FIGURE 2.2 SITE PLAN

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.

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION PROJECT OFFICE, COLORADO	DOE ID NO GJ04729 MR
ADDRESS 1520 NORTH 23rd STREET GRAND JUNCTION, COLORADO	ALLIED
SURV RLB 6-3-85 DRAFT RSK 6-3-85	CK
DRAWING NO 3-C705 F1	SHEET 1 OF 1

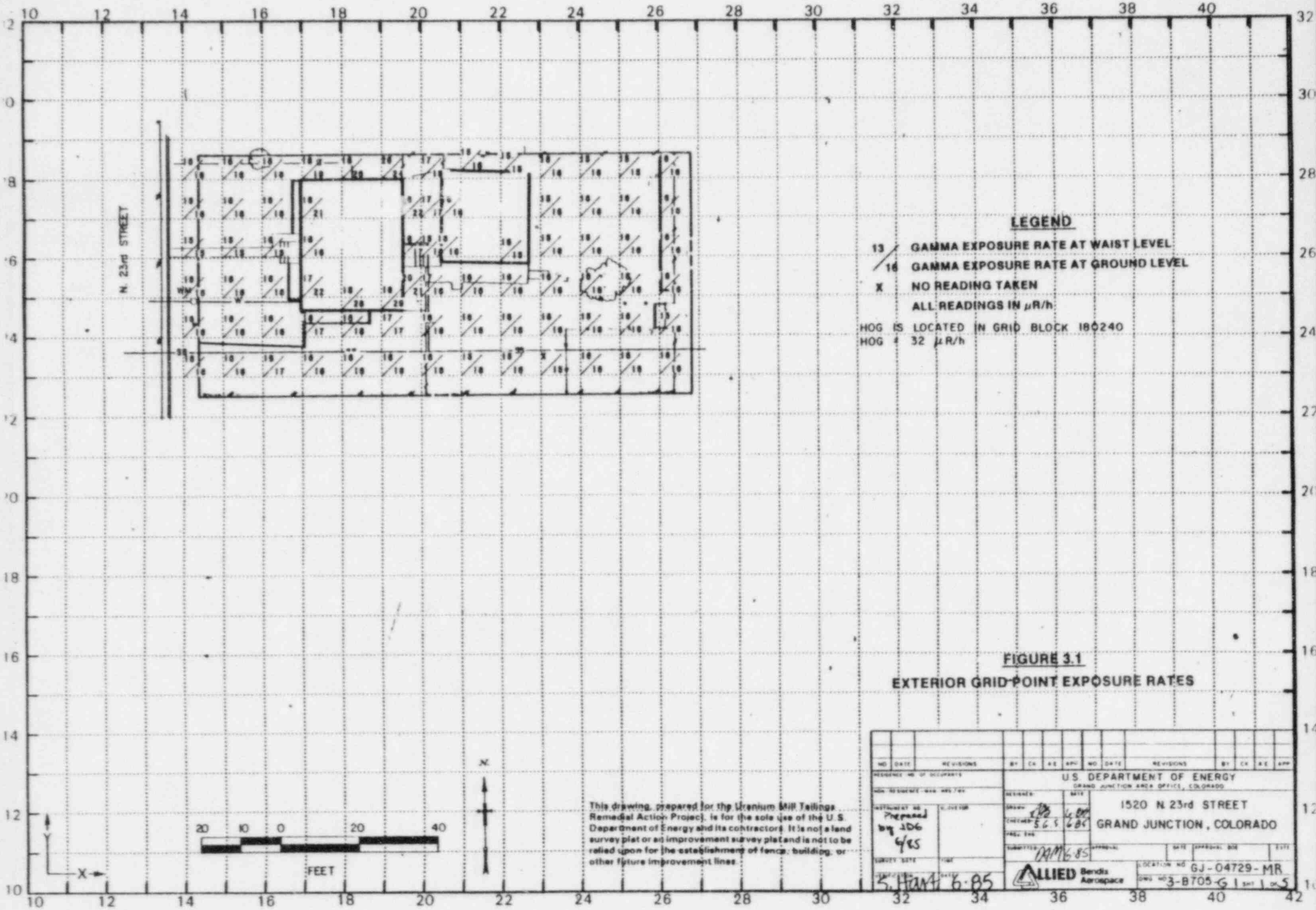


FIGURE 3.1

EXTERIOR GRID-POINT EXPOSURE RATES

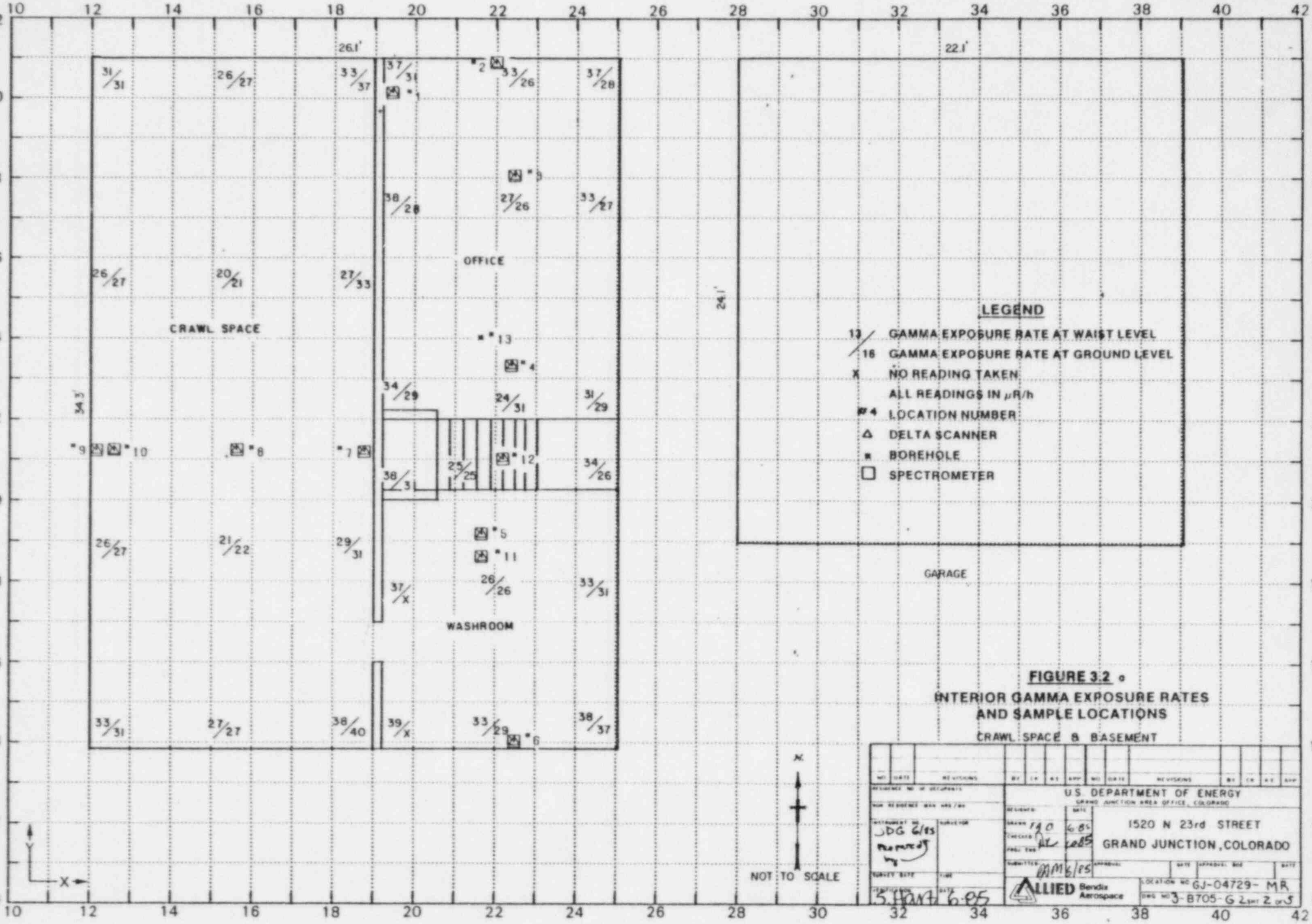


FIGURE 3.2

INTERIOR GAMMA EXPOSURE RATES AND SAMPLE LOCATIONS

CRAWL SPACE & BASEMENT

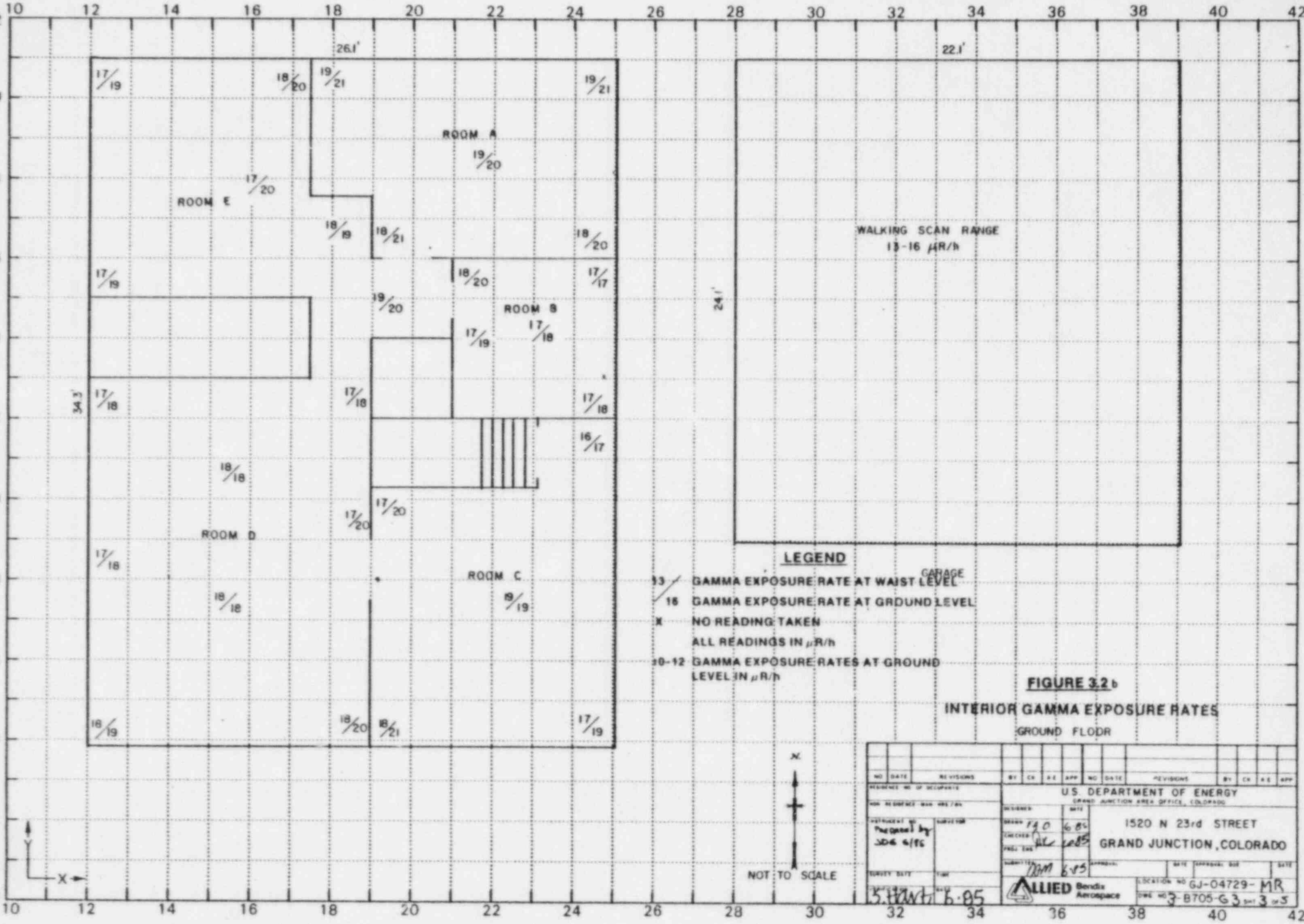
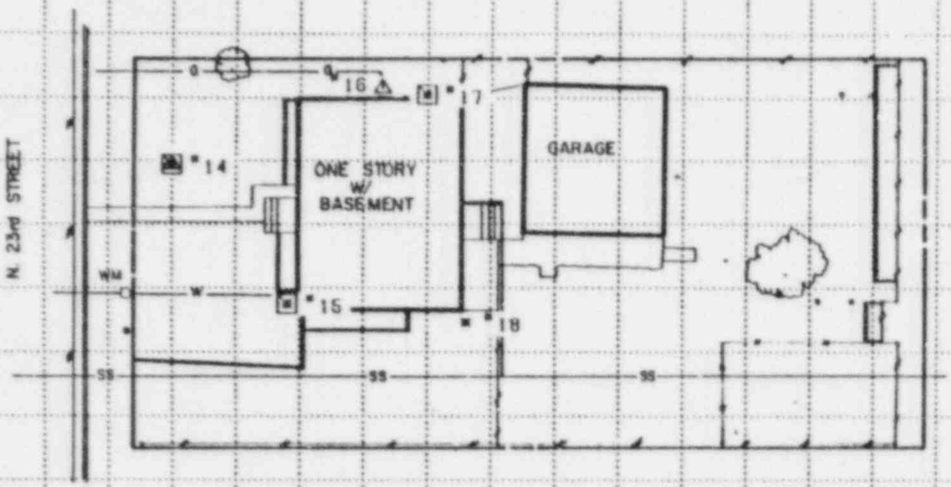


FIGURE 3.2 b

INTERIOR GAMMA EXPOSURE RATES

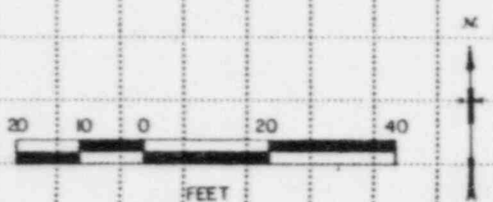
GROUND FLOOR



LEGEND

- ■ BOREHOLE
- □ SPECTROMETER
- △ DELTA SCANNER
- ○ SOIL SAMPLE
- #4 LOCATION NUMBER

FIGURE 3.3
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.

U.S. DEPARTMENT OF ENERGY
GRAND JUNCTION AREA OFFICE, COLORADO

1520 N. 23rd STREET
GRAND JUNCTION, COLORADO

Prepared by SDG 6/85
Drawn 6/85
Checked S.G.S. 6/85
Submitted MM 6/85
S. Hart 6.85

ALLIED Bendix Aerospace

LOCATION NO. GJ-04729-MR
DWG NO. 3-B705-G4 SHT 4 OF 5

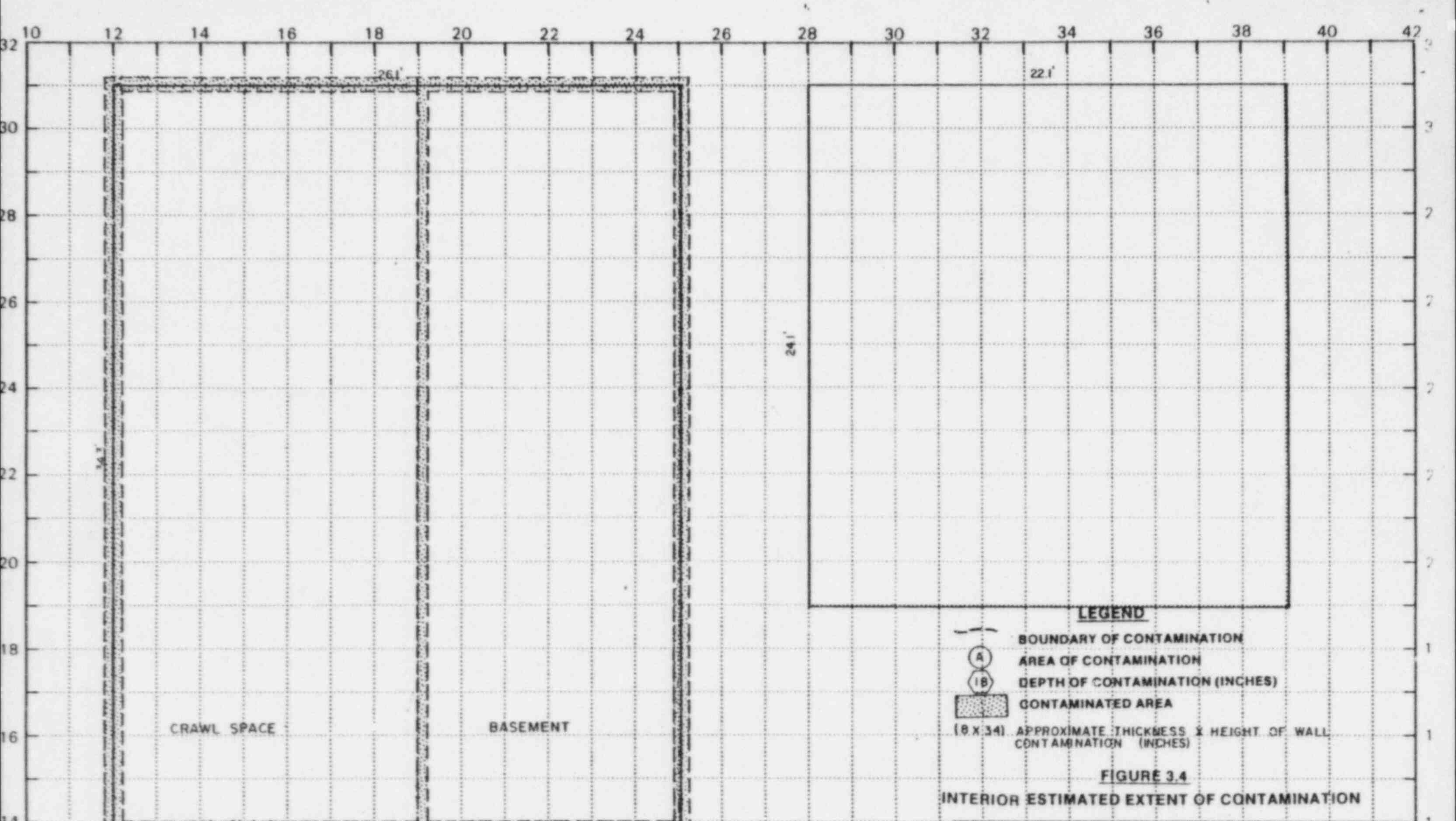


FIGURE 3.4

INTERIOR ESTIMATED EXTENT OF CONTAMINATION

U.S. DEPARTMENT OF ENERGY
GRAND JUNCTION AREA OFFICE, COLORADO

1520 N 23rd STREET
GRAND JUNCTION, COLORADO

Prepared by JDG 6/85

DRAWN FJO 6-85

SUBMITTED 6-85

Verification S. Hart 6-85

ALLIED Bendix Aerospace

LOCATION NO GJ-04729-MR

DWG NO 3-B705-G5 SHT 5 OF 5

3/85

DOE ID NO. GJ-04729-MR Date 6/12/85

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

Official Survey Report

Property Address 1520 North 23rd Street

Property Owner Denny and Nola Daily

Address of Owner (if different from above) ______

Report Prepared By James D. Garcia

I. PRESENCE/ABSENCE OF RESIDUAL RADIOACTIVE MATERIALS

1____1 No evidence of residual radioactive material on surveyed property.

1XXXX1 Residual ractioactive materials found at the following locations:

1____1 In open areas.

1____1 Under or around exterior improvements.

1____1 Under or around a typically nonoccupied structure.

1XXXX1 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.

1XXXX1 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 = 39 uR/h
HOG = 32 uR/h

Date: June 7, 1985

To: Files

From: James D. Garcia

Subject: Team Leader Notes - GJ-04729-MR

Owners: Denny and Nola Daily
Address: 1520 North 23rd Street
Phone: 245-2712
Occupancy: 4

Survey Crew

J. Garcia   S. Garcia   G. Meeker   R. Wilkins   S. Larsen
S. Southern   P. J. Bonner

Instruments

Scintillometers: C-1086, C-1185, C-1113, C-1236, C-1205, C-1213, C-1042, C-1115
PRS-1 Total Counts: C-4006, C-1062, C-3959
GAD-6 Borehole: C-0498
GAD-6 Surface: C-2474
Delta Scintillometers: C-3936, C-3937

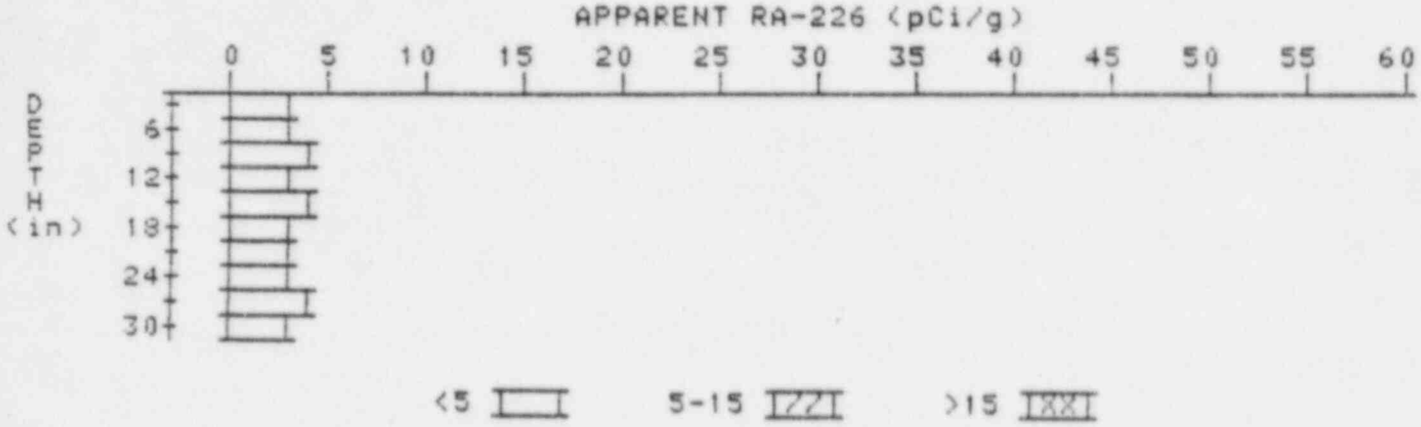
While doing the exterior gamma scan, elevated readings were only found very near the primary structure. I believe these readings were shine from the concrete walls.

Inside the primary structure, several delta and spectrometer readings were taken on the floor and walls of the basement and on the walls and footing in the crawl space. A core sample was taken through the basement floor. The hole was augered and logged. The core sample was removed to an uncontaminated area and checked with a scintillometer. No elevated readings were registered while scanning the core. The ground floor of the primary structure has a wooden floor supported by 2" x 8" floor joists which are supported by the concrete walls of the basement and crawl space.

DECON V85.1<850524.0823>

APPARENT RADIUM-226 CONCENTRATION 13
DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-04729-MR
HOLE NUMBER: 13
LOCATION:

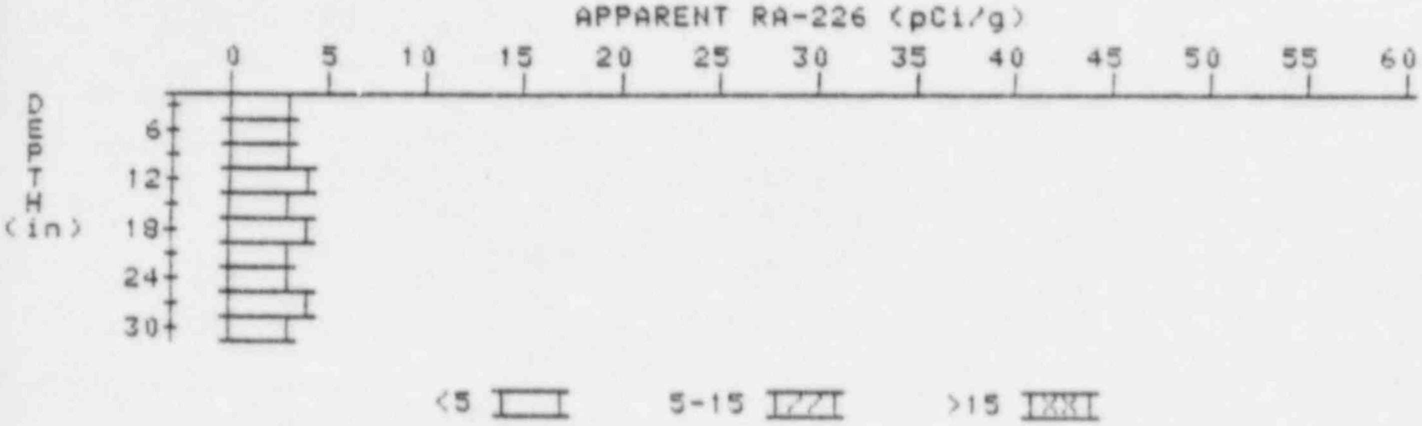


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.3	3.3
6	3.3	3.1
9	3.4	3.8
12	3.3	2.9
15	3.4	3.6
18	3.4	3.4
21	3.4	3.4
24	3.4	3.2
27	3.5	3.9
30	3.4	3.4

DECON V85.1<850524.0823>

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-04729-MR
HOLE NUMBER: 14
LOCATION: 150270

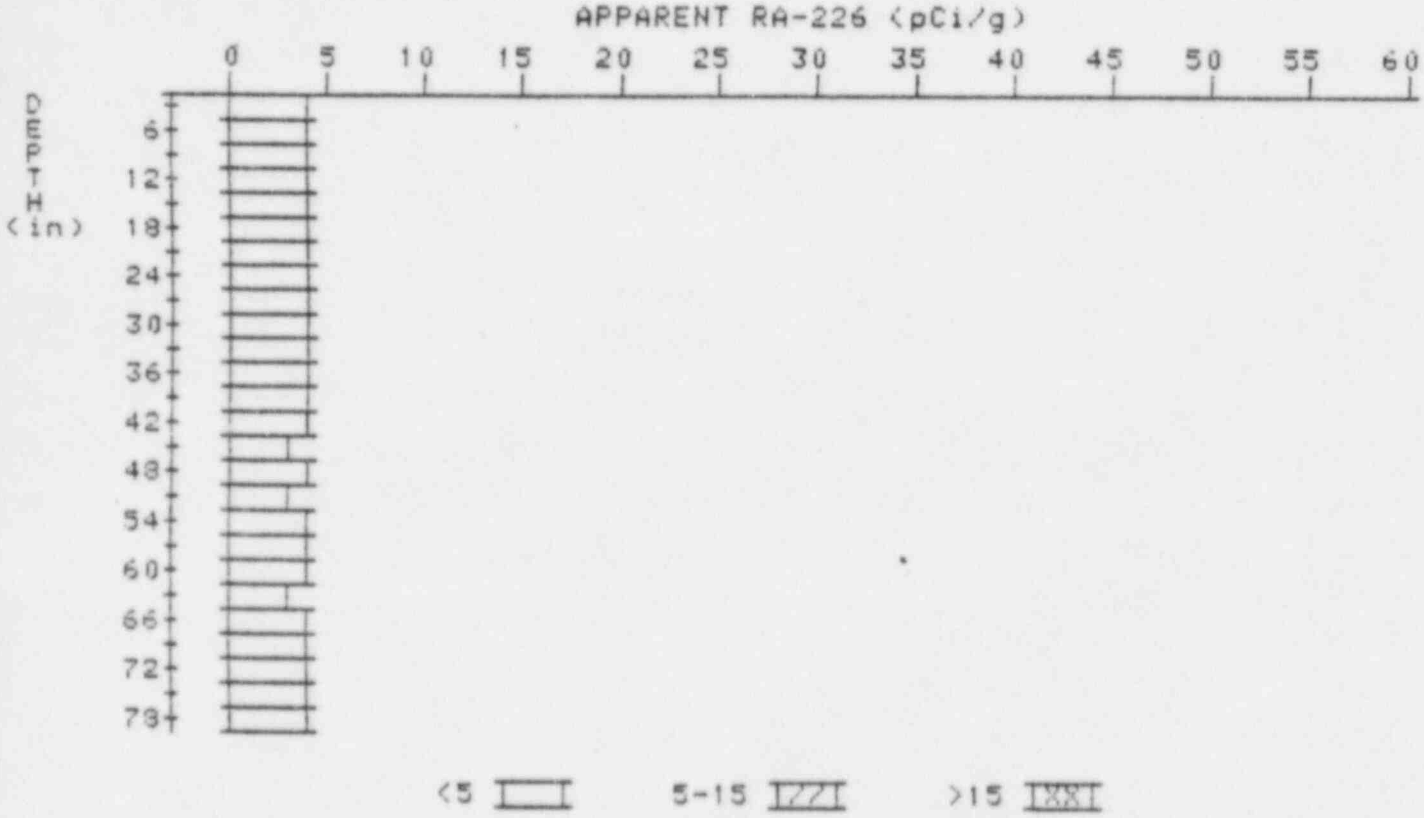


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.7	2.7
6	3.0	3.4
9	3.1	2.9
12	3.3	3.7
15	3.3	3.1
18	3.4	3.6
21	3.4	3.4
24	3.4	3.2
27	3.5	4.0
30	3.3	3.3

DECON V85.1<850524.0823>

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-04729-MR
HOLE NUMBER: 15
LOCATION: 168248



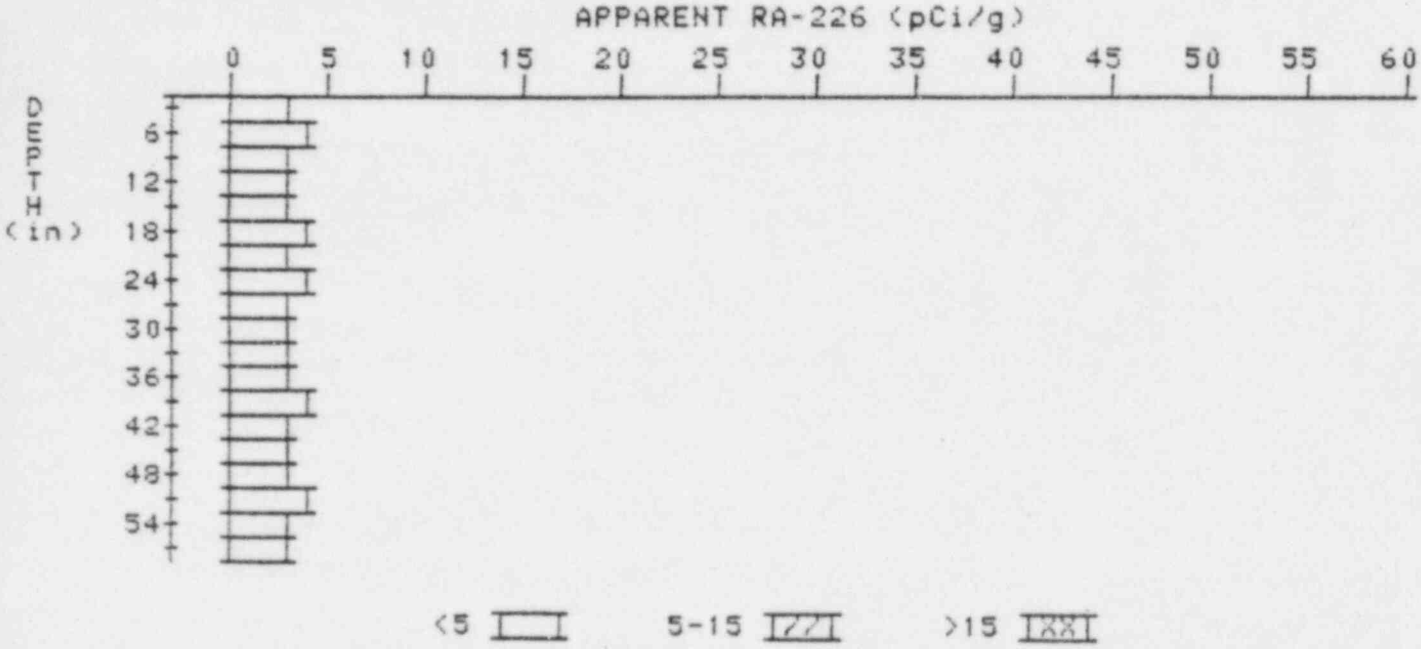
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.9	3.9
6	4.0	4.2
9	4.0	4.2
12	3.9	3.7
15	3.9	3.9
18	3.9	3.7
21	4.0	4.0
24	4.1	4.3
27	4.1	4.1
30	4.1	4.1
33	4.1	4.3
36	4.0	4.0
39	3.9	4.1

42	3.7	3.7
45	3.5	3.1
48	3.5	3.7
51	3.4	3.0
54	3.5	3.7
57	3.5	3.5
60	3.5	3.5
63	3.5	3.1
66	3.7	4.1
69	3.7	3.7
72	3.7	3.5
75	3.8	4.0
78	3.8	3.8

DECON V85.1<850524.0823>

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-04729-MR
HOLE NUMBER: 17
LOCATION: 190281



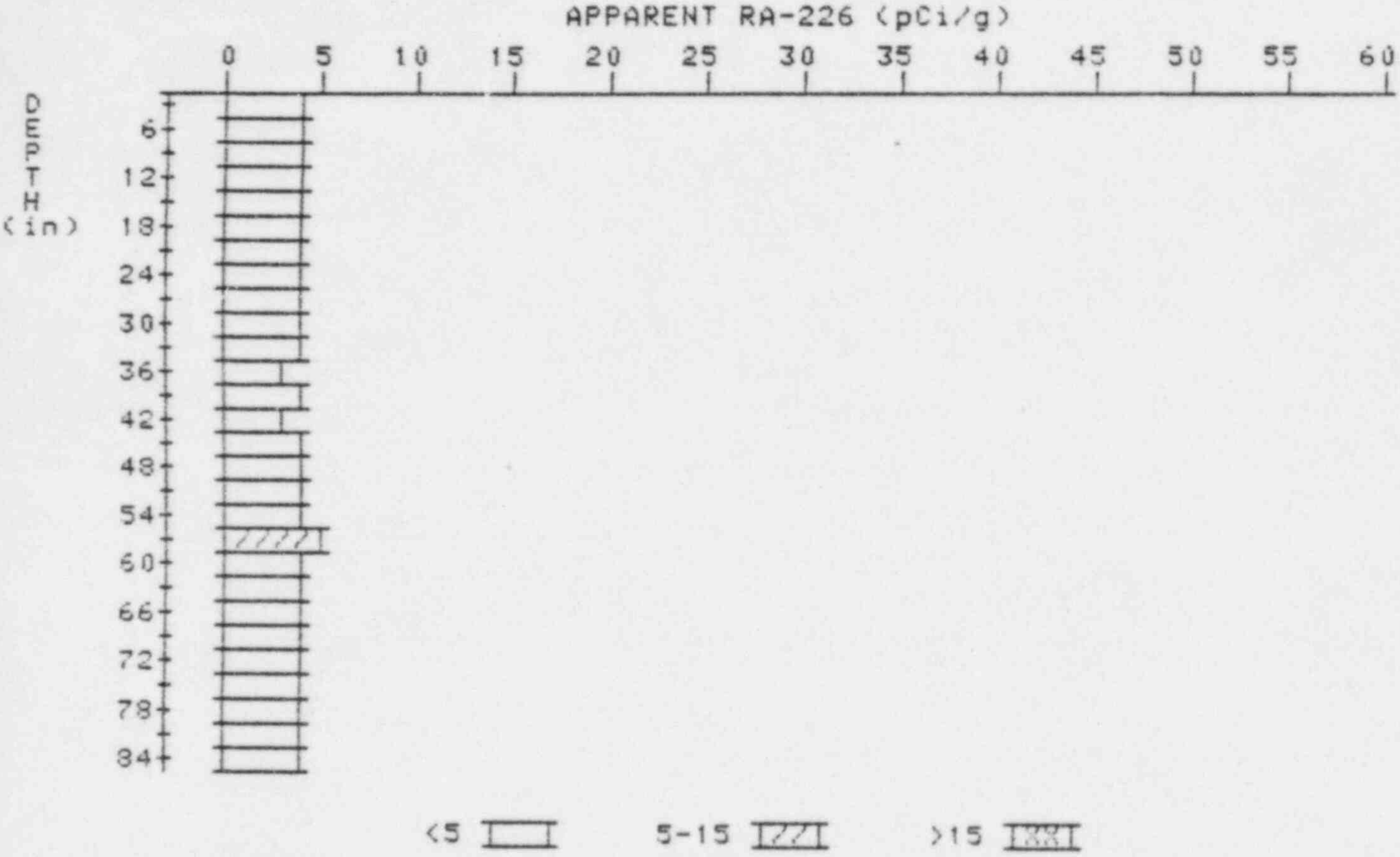
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.4	3.4
6	3.4	3.6
9	3.3	3.3
12	3.2	3.0
15	3.2	3.0
18	3.3	3.7
21	3.2	2.8
24	3.3	3.7
27	3.2	3.0
30	3.2	3.2
33	3.2	3.2
36	3.2	3.0
39	3.3	3.7
42	3.2	2.8
45	3.3	3.5
48	3.3	3.1
51	3.4	3.6
54	3.4	3.4

57 3.4 3.4

DECON V85.1<850524.0823>

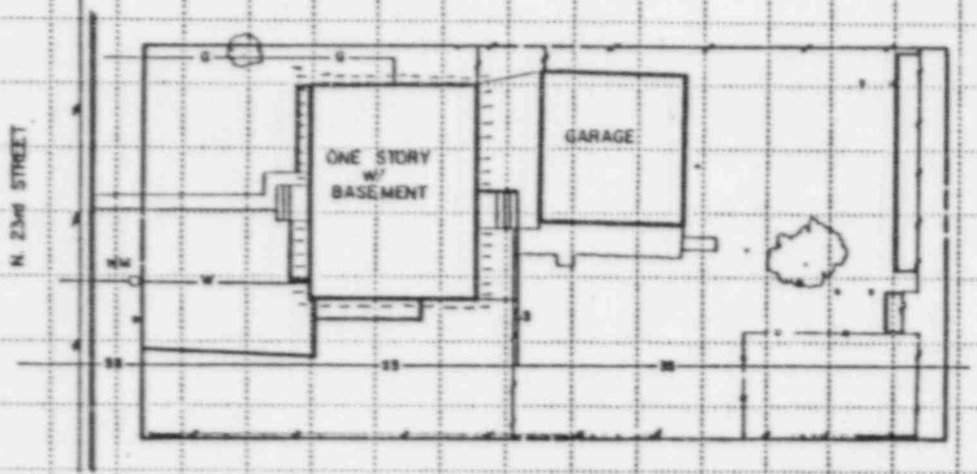
APPARENT RADIUM-226 CONCENTRATION 18
DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-04729-MR
HOLE NUMBER: 18
LOCATION: 196245



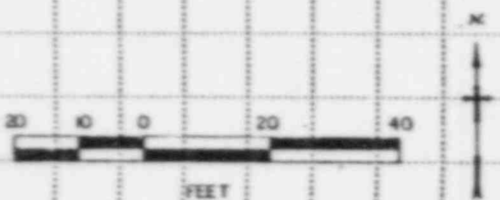
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.5	3.5
6	3.7	4.1
9	3.7	3.5
12	3.8	3.8
15	3.9	3.9
18	4.0	4.4
21	3.9	3.5
24	4.0	4.4
27	3.9	3.5
30	4.0	4.4
33	3.9	3.9
36	3.8	3.4

39	3.9	4.3
42	3.8	3.4
45	3.9	4.1
48	3.9	3.7
51	4.0	3.8
54	4.2	4.2
57	4.4	5.1
60	4.2	4.2
63	4.0	3.8
66	3.9	3.7
69	3.9	3.9
72	3.9	3.9
75	3.9	3.9
78	3.9	3.7
81	4.0	4.2
84	4.0	4.0



LEGEND

GAMMA READINGS OF 150 TO 199 cps
GAMMA READINGS OF 200 TO 500 cps
GAMMA READINGS OF >500 cps



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.

EXTERIOR GAMMA SCAN MAP

Appendix A Copy

U.S. DEPARTMENT OF ENERGY
GRAND JUNCTION AREA OFFICE, COLORADO

1520 N. 23rd STREET
GRAND JUNCTION, COLORADO

ALLIED Bendix Aerospace

LOCATION NO. GJ-04729-
DWG NO. 1-B705-F1