

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-00577-RS
ADDRESS: 1742 NORTH 20th STREET

JUNE 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

June 19, 1985

REA00577:REA-509

8507080403 850619
PDR WASTE
WM-54 PDR

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-00577-RS, is a single-family residence located at 1742 North 20th 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, 7 cu. yd.; interior, 0 cu. yd.

Estimated cost to perform remedial action, including dislocation when applicable, is \$3,002. Remedial action on this property will take approximately 6 days to complete.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 1742 North 20th Street, Grand Junction, Colorado

Zoning: Residential (RSF-8)

Lot Size: Approximately 7,500 sf (0.2 acre)

Legal Description: Lot 17, Block 7, Subdivision Del Rey Replat, City of Grand Junction, County of Mesa, State of Colorado.

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

Utilities: Utility locations are shown in Appendix Figure 2.2.

Electrical:	Overhead
Gas:	Underground
Telephone:	Overhead
Sewer:	Underground
Water:	Underground
Cable TV:	Overhead

Bordering Properties:

North:	Single-family residence
South:	Single-family residence
East:	Alley (gravel)
West:	North 20th Street

2.2 Existing Facilities and Structures

Primary Structure:

Type:	Single-story residence with basement and attached carport
Size:	Approximately 2,122 sf (including basement)
Construction Date:	1955
Construction:	Wood-frame
Foundation:	Concrete foundation wall on spread footing
Footing Depth:	Approximately 80" to bottom of footing from grade
Basement:	Yes (full)
Crawl Space:	None
Condition:	Good

Other Structures:

Type:	Storage shed/carport
Size:	Approximately 400 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-00577-RS on May 1, 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 patio, and between the storage shed/carport and 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, and deconvolution graphs 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): 28 uR/h

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

3.2.2 Interior Findings

Background Readings: 12 to 16 uR/h
Highest Inside Gamma Reading (HIG): 16 uR/h

Interior gamma exposure-rate measurements are summarized in Appendix Table 3.2. Appendix Figures 3.3a and 3.3b 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 Figure 3.4. Data from these investigations are included in Appendix Table 3.1.

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 3.5 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) Between the storage shed/carport and the primary structure, a small deposit of contamination extends to a depth of 12 inches (approximately 4 sf).
- (AREA B) East of the primary structure, the 4-inch-thick concrete patio slab is contaminated (approximately 566 sf).
- (AREA C) Northeast of the patio, contamination extends to a depth of 6 inches. Area C includes a clothesline metal post (approximately 60 sf).

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-00577-RS, includes removal of all areas identified as containing radioactive material (as discussed in Section 3.5 and shown in Appendix Figure 3.5) 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 \$3,002.

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

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

5.0 REFERENCES

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

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

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

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

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

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

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

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

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

6.0 APPENDIX

This Appendix contains the following:

Appendix Tables:

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

Appendix Figures:

Figure 2.1	Vicinity Map
Figure 2.2	Site Plan
Figure 3.1	Exterior Grid-Point Exposure Rates
Figure 3.2	Exterior Gamma Scan
Figure 3.3a	Interior Gamma Exposure Rates - Basement
Figure 3.3b	Interior Gamma Exposure Rates
Figure 3.4	Exterior Sample Locations
Figure 3.5	Estimated Extent of Contamination

Official Survey Report

Memo of Understanding

Team Leader Notes

Deconvolution Graphs (Apparent Radium-226 Concentration)

Radium Concentrations at Exterior Locations

DOE ID #GJ-00577-RS

1742 North 20th Street

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
1	196275	00	DS	<1.0		*	On sidewalk
2	198275	00	DS	3.0		*	Next to primary
		06	DS	2.4		*	structure
		12	DS	<1.0		*	DC = 12 inches
3	199248	03	TC	3.3		*	Next to water line
		06	TC	3.4		*	
		09	TC	3.4		*	DC = 0 inches
		12	TC	3.5		*	
		15	TC	3.5		*	
		18	TC	3.6		*	
		21	TC	3.6		*	
		24	TC	3.5		*	
		27	TC	3.5		*	
		30	TC	3.4		*	
		33	TC	3.5		*	
		36	TC	3.5		*	
		39	TC	3.5		*	
		42	TC	3.5		*	
		45	TC	3.6		*	
		48	TC	3.6		*	
		51	TC	3.7		*	
		54	TC	3.8		*	
		57	TC	3.8		*	
		60	TC	3.8		*	
4	206235	00	DS	1.3		*	Gas line
		06	DS	1.0		*	
		12	DS	1.0		*	DC = 0 inches
		18	DS	1.1		*	
		32	DS	1.2		*	
5	210235	03	TC	3.2		*	South of primary
		06	TC	3.7		*	structure
		09	TC	4.0		*	DC = 0 inches
		12	TC	4.1		*	
		15	TC	4.0		*	
		18	TC	4.0		*	
		21	TC	4.0		*	
		24	TC	4.0		*	
		27	TC	4.0		*	
		30	TC	4.1		*	
		33	TC	3.9		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-00577-RS

1742 North 20th Street

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
5	210235	36	TC	4.0		*	
		39	TC	4.1		*	
		42	TC	4.0		*	
6	210281	03	TC	3.1		*	North side of primary structure
		06	TC	3.3		*	
		09	TC	3.4		*	DC = 0 inches
		12	TC	3.4		*	
		15	TC	3.4		*	
		18	TC	3.4		*	
		21	TC	3.4		*	
		24	TC	3.5		*	
		27	TC	3.5		*	
		30	TC	3.5		*	
		33	TC	3.5		*	
		36	TC	3.5		*	
		39	TC	3.6		*	
		42	TC	3.6		*	
		45	TC	3.7		*	
		48	TC	3.7		*	
		51	TC	3.6		*	
		54	TC	3.7		*	
		57	TC	3.7		*	
		60	TC	3.7		*	
		63	TC	3.7		*	
		66	TC	3.7		*	
		69	TC	3.6		*	
		72	TC	3.6		*	
		75	TC	3.5		*	
		78	TC	3.6		*	
		81	TC	3.5		*	
		84	TC	3.6		*	
		87	TC	3.6		*	
		90	TC	3.6		*	
		93	TC	3.5		*	
		96	TC	3.5		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-00577-RS

1742 North 20th Street

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
7	227244	00-00	SS			3.5	Concrete samples
		00-04	SS			30.4	Concrete core
		04-10	SS			1.9	Soil under core
		03	TC	15.7		*	On patio
		06	TC	15.6		*	
		09	TC	10.1		*	DC = 4 inches
		12	TC	7.4		*	Based on the soil
		15	TC	5.8		*	sample analyses
		18	TC	5.1		*	
		21	TC	4.7		*	
		24	TC	4.5		*	
		27	TC	4.4		*	
		30	TC	4.3		*	
		33	TC	4.3		*	
		36	TC	4.3		*	
8	234281	00	DS	6.5		*	Next to sidewalk
		06	DS	2.4		*	
		12	DS	1.9		*	DC = 6 inches
9	235261	03	TC	2.9		*	Next to patio
		06	TC	3.3		*	
		09	TC	3.6		*	DC = 0 inches
		12	TC	3.5		*	
		15	TC	3.5		*	
		18	TC	3.6		*	
		21	TC	3.7		*	
		24	TC	3.6		*	
		27	TC	3.6		*	
		30	TC	3.6		*	
		33	TC	3.5		*	
		36	TC	3.5		*	
		39	TC	3.6		*	
		42	TC	3.6		*	
		45	TC	3.6		*	
		48	TC	3.7		*	
		51	TC	3.7		*	
		54	TC	3.6		*	
		57	TC	3.6		*	
		60	TC	3.6		*	
		63	TC	3.5		*	
		66	TC	3.6		*	
		69	TC	3.5		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-00577-RS

1742 North 20th Street

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
9	235261	72	TC	3.5		*	
		75	TC	3.4		*	
		78	TC	3.4		*	
		81	TC	3.4		*	
		84	TC	3.3		*	
		87	TC	3.4		*	
		90	TC	3.4		*	
		93	TC	3.6		*	
		96	TC	3.6		*	
		99	TC	3.6		*	
		102	TC	3.7		*	
		105	TC	3.8		*	
		108	TC	3.8		*	
10	241240	03	TC	3.1		*	East of patio DC = 0 inches
		06	TC	3.4		*	
		09	TC	3.6		*	
		12	TC	3.7		*	
		15	TC	3.7		*	
		18	TC	3.7		*	
		21	TC	3.9		*	
		24	TC	3.9		*	
		27	TC	3.9		*	
		30	TC	4.0		*	
		33	TC	4.0		*	
		36	TC	4.0		*	

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 = 05-01-85
 Team Leader = SM

Table 3.2
Summary of Interior Gamma Exposure Rates
DOE ID No. GJ-00577-RS 1742 North 20th Street Page 1 of 1
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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)
-----	-----	-----	-----	-----	-----	-----
BASEMENT	*	*	*	*	14-16	*
GROUND FLOOR	*	*	*	*	12-16	*
STORAGE	03	14-14	14	03	14-14	14
=====	=====	=====	=====	=====	=====	=====

* The CDH and ORNL data indicates the absence of contamination in the primary structure. This information was investigated by performing a walking gamma scan. These areas and the ranges of gamma measurements are shown in Appendix Figures 3.3a and 3.3b. Exposure rates in the storage are shown in Appendix Figure 3.3b.

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-00577-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	49 x 9 =	441			
	8 x 9/2 =	36			
	20 x 8/2 =	80			
	3 x 3 =	9			
		<u>566</u>	x 0.3 =	170	
	Volume of Concrete		=	<u>170</u>	= 170/27 = 6
	Contaminated Fill				
A	2 x 2 =	4	x 1.0 =	4	
C	6 x 10 =	60	x 0.5 =	30	
	Volume of Fill		=	<u>34</u>	= 34/27 = 1
	TOTAL VOLUME - EXTERIOR				<u>7</u>

See Appendix Figure 3.5 For Areas

=====

EXTERIOR

Remove/replace contaminated concrete patio
566 sf @ \$3/sf \$ 1,698

Remove identified residual radioactive material
1 cy @ \$44/cy (manual-open) 44

Replace areas with topsoil
1 cy @ \$9.50/cy 10

Remove/replace wood fence
20 lf @ \$3/lf 60

Replace areas with sod
60 sf @ \$.50/sf 30

TOTAL EXTERIOR \$ 1,842

TOTAL INTERIOR 0

ACCESS CONTROL 200

SUBTOTAL \$ 2,042

CONTINGENCY @ 5% 102

SUBTOTAL \$ 2,144

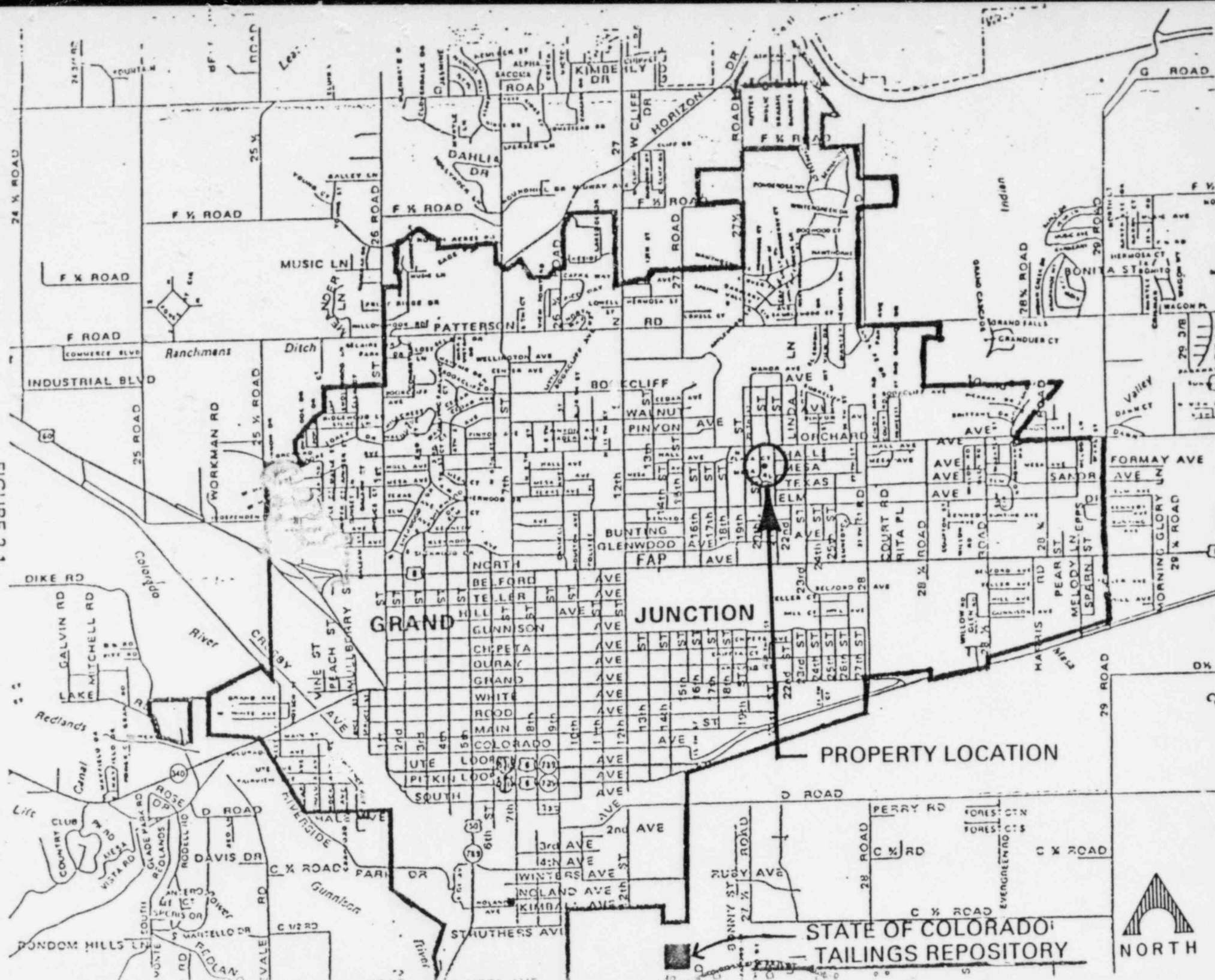
CONTRACTOR OVERHEAD & PROFIT @ 40% 858

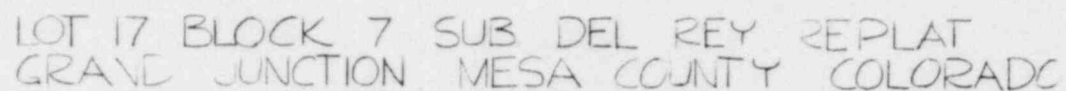
GRAND TOTAL \$ 3,002


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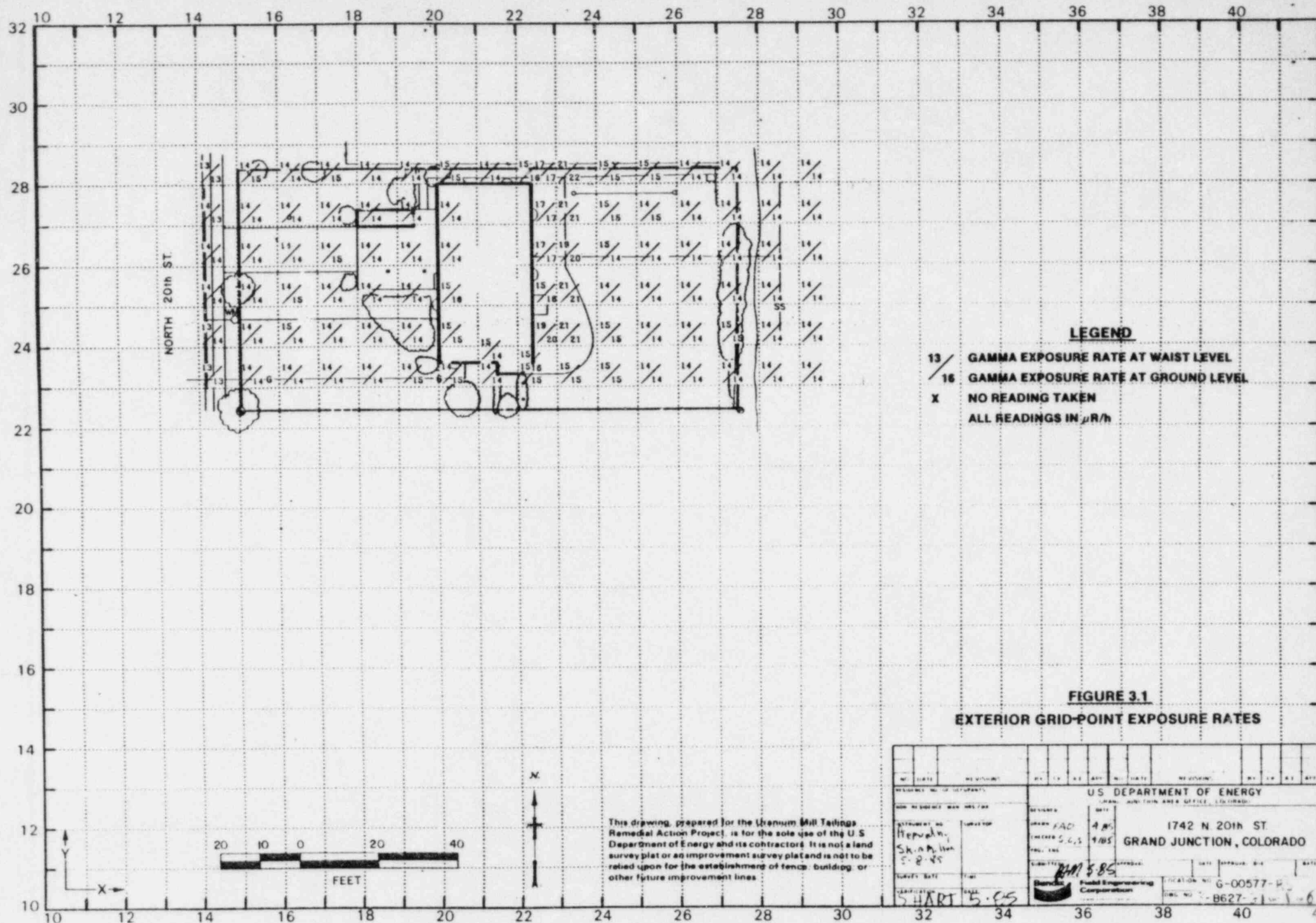
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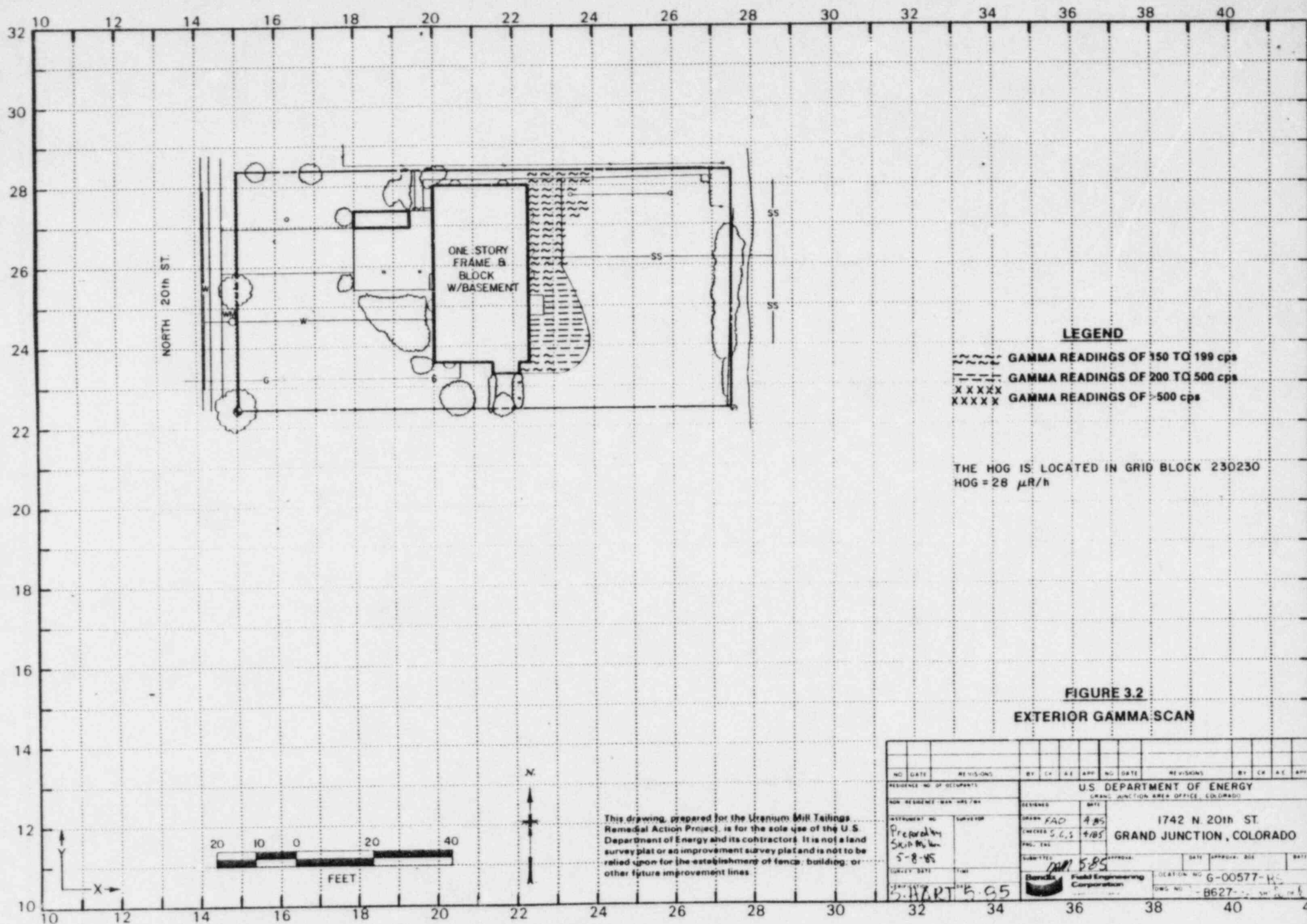
FIGURE 2.1
VICINITY MAP





U.S. DEPARTMENT OF ENERGY		DOE ID NO
GRAND JUNCTION PROJECT OFFICE COLORADO		GJ-00577P
ADDRESS 1742 N 20 TH ST		 Allied Energy Services Grand Fork Engineering Corporation Grand Junction Operations
ADDRESS GRAND JUNCTION, COLO		
SURV	RLB/4 18 85	DRAFT
DRAWING NO 3 C 627 F1		CR AF 4 22 85
SHEET		OF 1





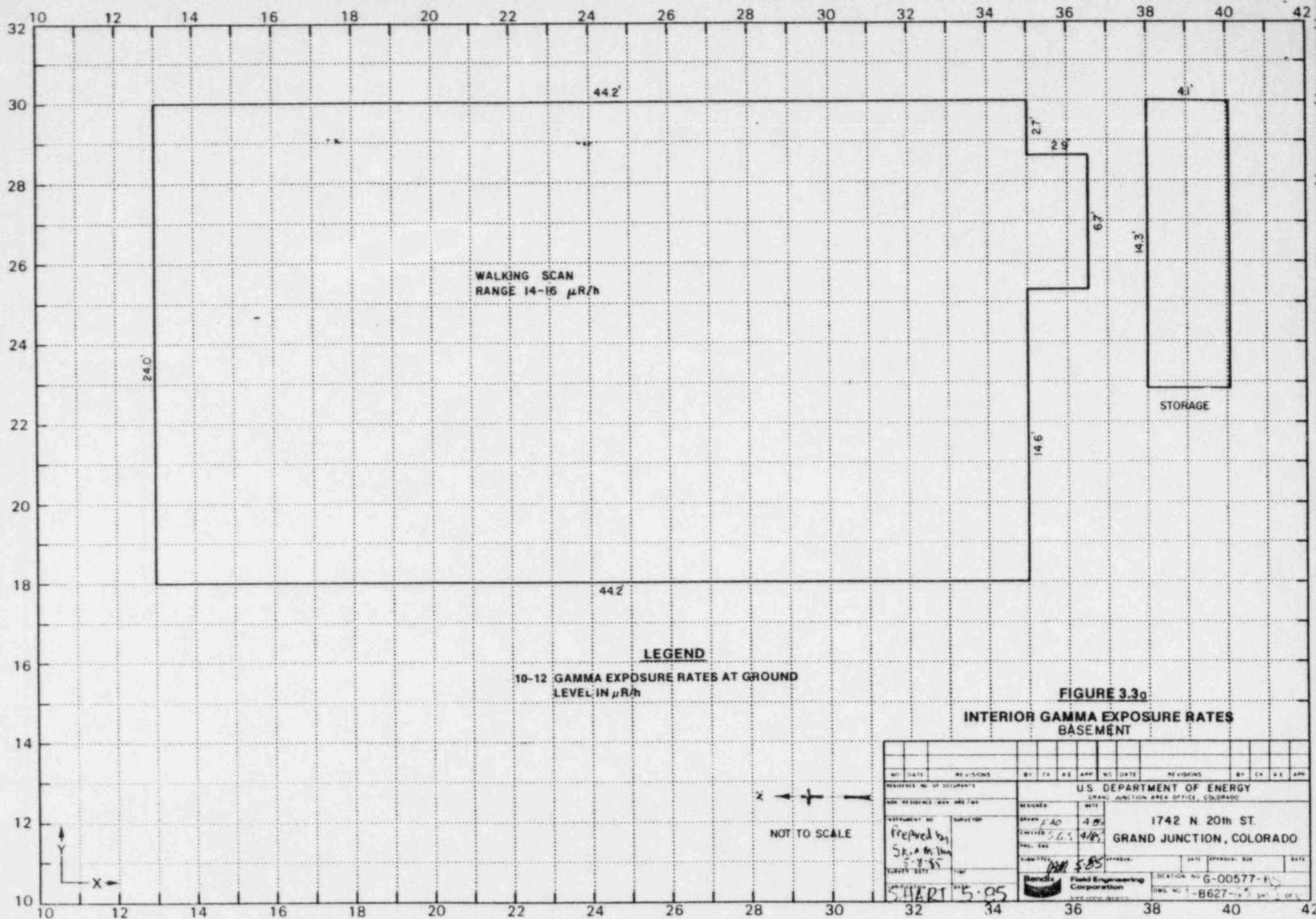
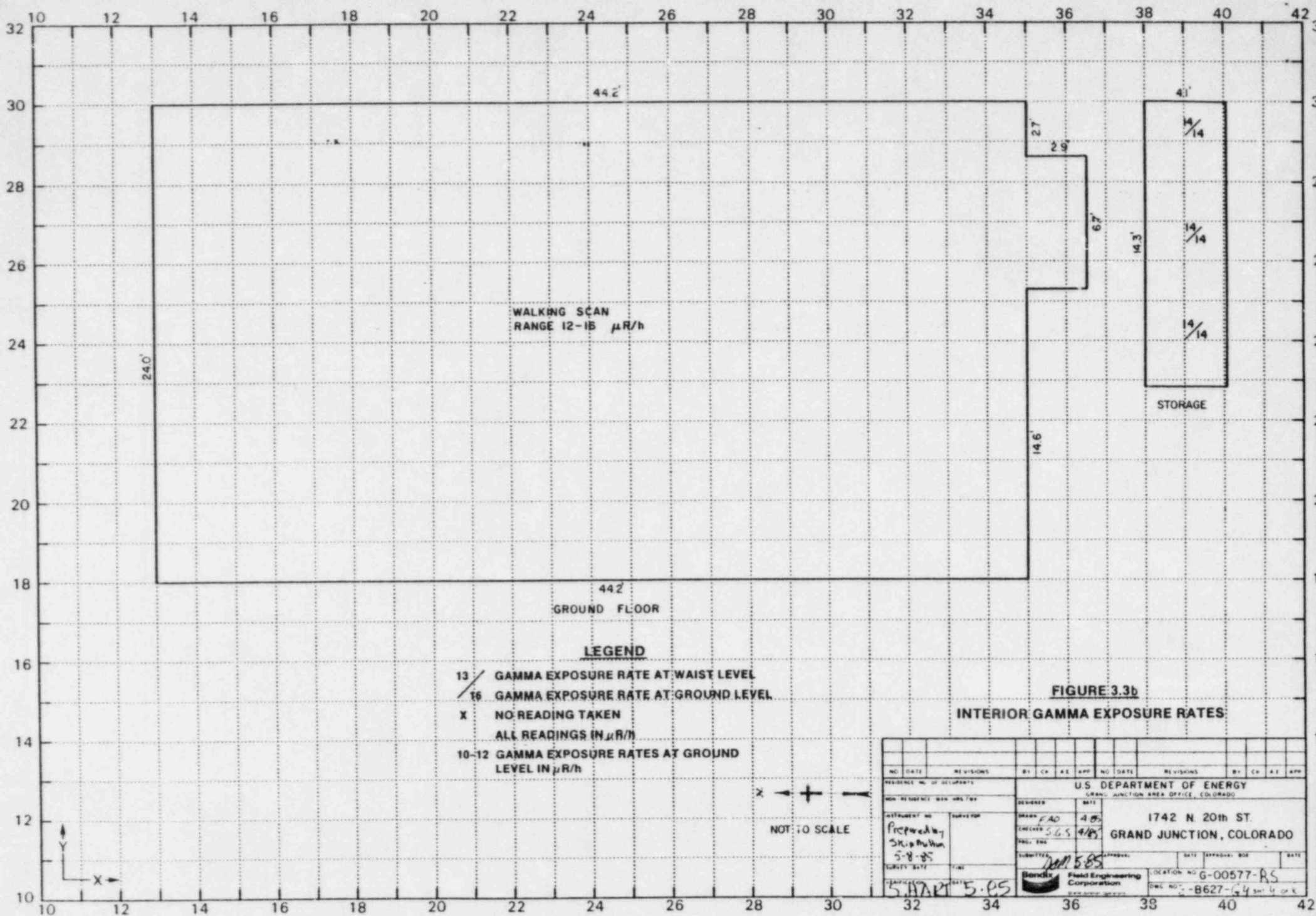


FIGURE 3.3a

**INTERIOR GAMMA EXPOSURE RATES
BASEMENT**

NO. DATE		REVISIONS		BY CH. A.E. APP. NO. DATE		REVISIONS		BY CH. A.E. APP.	
RESIDENCE NO. OF OCCUPANTS									
U.S. DEPARTMENT OF ENERGY GRAND JUNCTION AREA OFFICE, COLORADO									
1742 N 20th ST. GRAND JUNCTION, COLORADO									
NON-RESIDENCE - YES / NO		DESIGNED		DATE		CHECKED		DATE	
		5-85		4-85		5-85		4-85	
SURVEY NO.		SURVEYOR		PROJ. ENG.		QUANTITIES		APPROVAL: SEE	
5-85		S. J. HART		S. J. HART		S. J. HART		S. J. HART	
SURVEY DATE		TIME		BENDIX Field Engineering Corporation		LOCATION NO. G-00577-F		DWG. NO. T-B627-14	
5-85		5-85		5-85		5-85		5-85	



NO.		DATE		REVISIONS		BY		CHK		APP		NO.		DATE		REVISIONS		BY		CHK		APP	
RESIDENTIAL NO. OF OCCUPANTS												U.S. DEPARTMENT OF ENERGY GRAND JUNCTION AREA OFFICE, COLORADO											
NON-RESIDENTIAL MAX. HRS./WEEK												1742 N. 20th ST. GRAND JUNCTION, COLORADO											
INSTRUMENT NO.				DRAWN				DESIGNED				DATE				APPROVED				DATE			
Prepared by SK. P. P. P.				5-8-85				FAD				4-85				5-8-85				5-8-85			
CHECKED				5-8-85				5-8-85				5-8-85				5-8-85				5-8-85			
SUBMITTED				5-8-85				5-8-85				5-8-85				5-8-85				5-8-85			
DATE				5-8-85				5-8-85				5-8-85				5-8-85				5-8-85			
TIME				5-8-85				5-8-85				5-8-85				5-8-85				5-8-85			
BONDIX				Field Engineering Corporation				BONDIX				Field Engineering Corporation				BONDIX				Field Engineering Corporation			
LOCATION NO.				G-00577-RS				LOCATION NO.				G-00577-RS				LOCATION NO.				G-00577-RS			
DWC NO.				B627-G4				DWC NO.				B627-G4				DWC NO.				B627-G4			

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

Official Survey Report

Property Address 1742 North 20th

Property Owner William O. Dyar

Address of Owner (if different from above) _____

Report Prepared By Skip Milton

I. PRESENCE/ABSENCE OF RESIDUAL RADIOACTIVE MATERIALS

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

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

1XXX 1 In open areas.

1 1 Under or around exterior improvements.

1 1 Under or around a typically nonoccupied structure.

1XXX 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.

1XXX 1 Levels of radiation from residual radioactive materials exceed EPA Standards such that Remedial Action is recommended and will be accomplished, with your consent, as soon as budget and schedule permit.

cc:

G. A. Franz, III, GJ/CDH

J. Themelis, Mgr. UMTRA Proj. Off.

HIG = 16 uR/h
HOG = 28 uR/h

May 16, 1985

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

ATTN: Coleen Campbell

SUBJECT: Technical Review, DOE ID GJ-00577

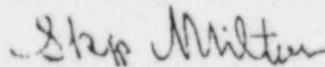
Dear Coleen:

The following is in response to your questions and comments during the Technical Review concerning Department of Energy (DOE) Identification (ID) number GJ-00577.

1. The radium table will be changed to include a depth of 12 inches of contamination at Location 8.
2. Drilling became difficult at Locations 3 and 5, seeming as though we encountered rocks and rip rap.
3. The depth of the basement footing on the north side, and the other three sides, is 78 inches.
4. The depth from the bottom plate to the base of the footing is 86 inches as per footing/foundation information sheet.

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

Very truly yours,



Skip Milton
RSD Survey Team Leader

SM:pr

ALLIED Bendix
Aerospace

Bendix Field Engineering Corporation
Grand Junction Operations
Grand Junction, Colorado 81501

DATE: May 1, 1985

TO: Files

FROM: Skip Milton

SUBJECT: Team Leader Notes - GJ-00577-RS

Address: 1742 North 20th Street

Owner: William O. Dyar

Weather: Sunny, warm

Team Members

S. Milton (Team Leader)
N. Wallace
P. Hardy
R. Herman

R. Schouten
M. Gilfillan
V. Young
D. Bell

Instruments

Crutch Scintillometer - C-1163, C-1185, C-1196, C-1127, C-1166
Total Count - C-1062, C-3967
Delta Scintillometer - C-3940

The gas line was located by the primary structure. It was either deeper than 32 inches or was not properly marked.

Instrument PRS-1 broke down. It broke down suddenly.

Elevated readings were found between the storage and the house. Depth deltas were taken.

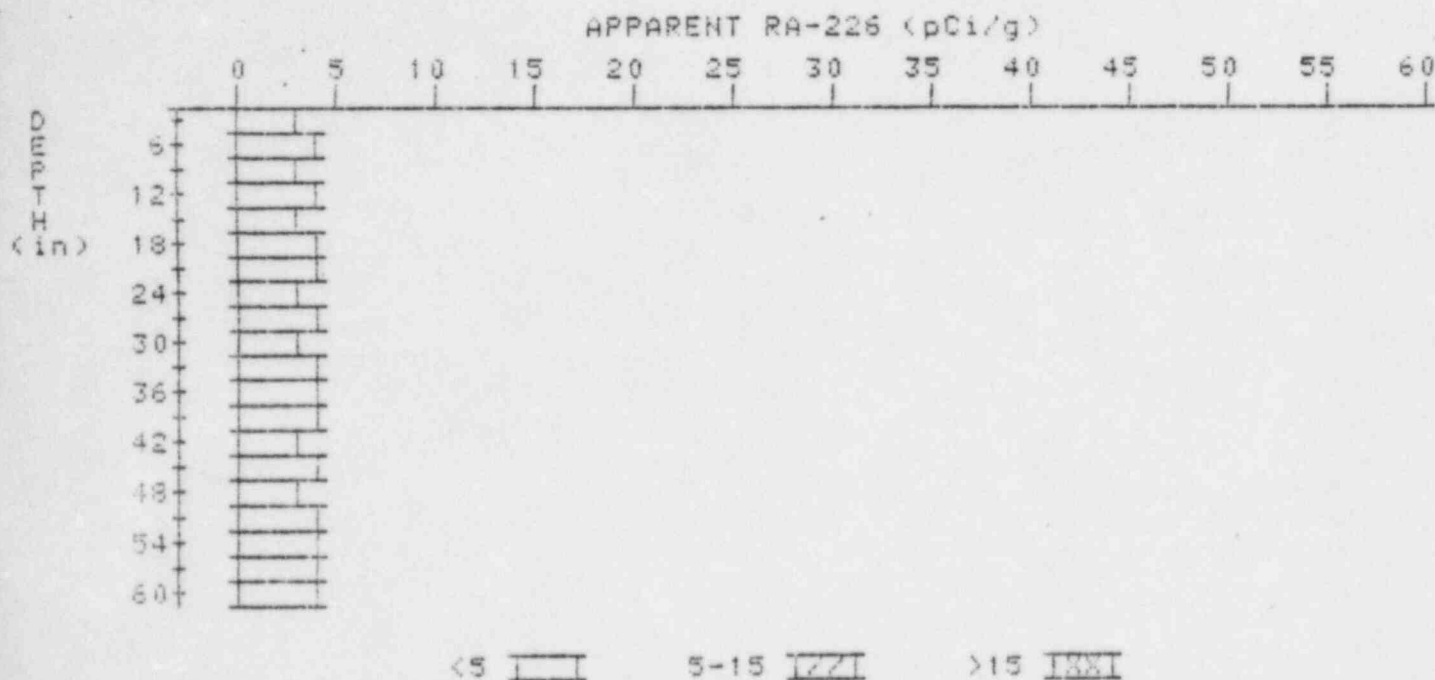
A core was taken from the patio concrete slab. A soil sample and borehole were also taken.

There were elevated readings coming from an area northeast of the patio.

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

3

PROPERTY NUMBER: GJ-00377-RS
HOLE NUMBER: 3
LOCATION: 199248



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	3.4	3.2
12	3.5	3.7
15	3.5	3.3
18	3.6	3.9
21	3.6	3.8
24	3.5	3.5
27	3.5	3.7
30	3.4	3.0
33	3.5	3.7
36	3.5	3.5
39	3.3	3.5
42	3.5	3.3
45	3.6	3.9
48	3.6	3.4
51	3.7	3.7
54	3.9	4.0

57
60

5.0
5.0

5.0
5.0

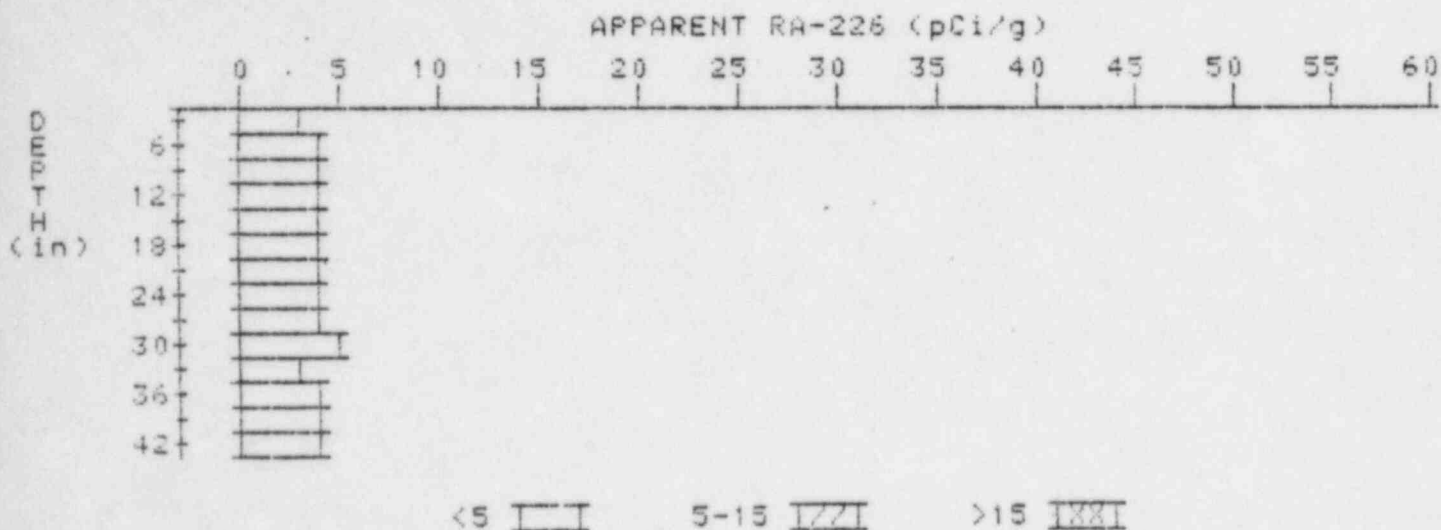
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

5

PROPERTY NUMBER: GJ-00577-R9

HOLE NUMBER: 5'

LOCATION: 210235'



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.2	3.2
6	3.7	4.1
9	4.0	4.4
12	4.1	4.5
15	4.0	3.8
18	4.0	4.0
21	4.0	4.0
24	4.0	4.0
27	4.0	3.8
30	4.1	4.6
33	3.9	3.4
36	4.0	4.0
39	4.1	4.5
42	4.0	4.0

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

6

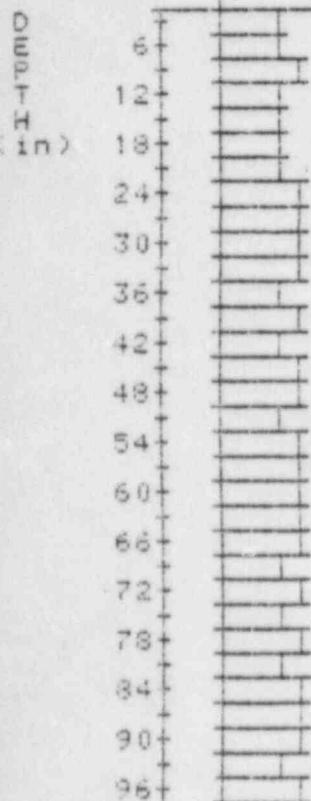
PROPERTY NUMBER: GJ-00577-R3

HOLE NUMBER: 6

LOCATION: 210291

APPARENT RA-226 (pCi/g)

0 5 10 15 20 25 30 35 40 45 50 55 60



<5 5-15 >15

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

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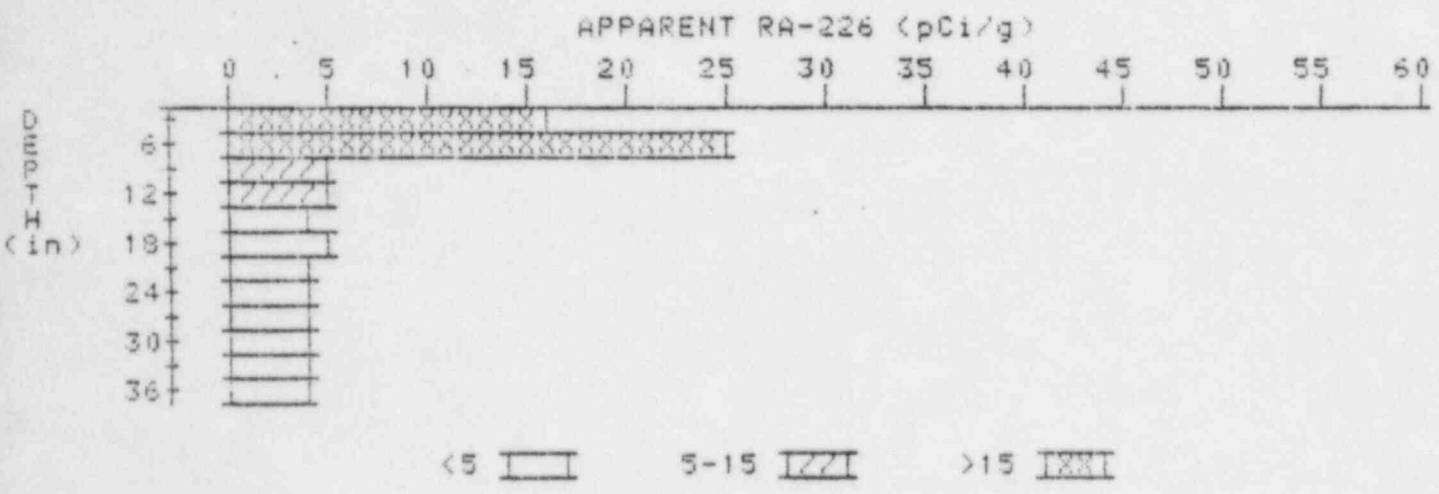
3.5
3.5
3.5
3.6
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3.4
3.6
3.1
4.0
3.1
3.8
3.6
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3.5
3.5

APPARENT RADIUM-226 CONCENTRATION

DECONVOLUTION GRAPH

7

PROPERTY NUMBER: GJ-00377-R3
HOLE NUMBER: 7
LOCATION: 227244



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	15.7	15.7
6	15.6	25.2
9	10.1	5.1
12	7.4	5.4
15	5.8	4.2
18	5.1	4.6
21	4.7	4.3
24	4.5	4.3
27	4.4	4.4
30	4.3	4.1
33	4.3	4.3
36	4.3	4.3

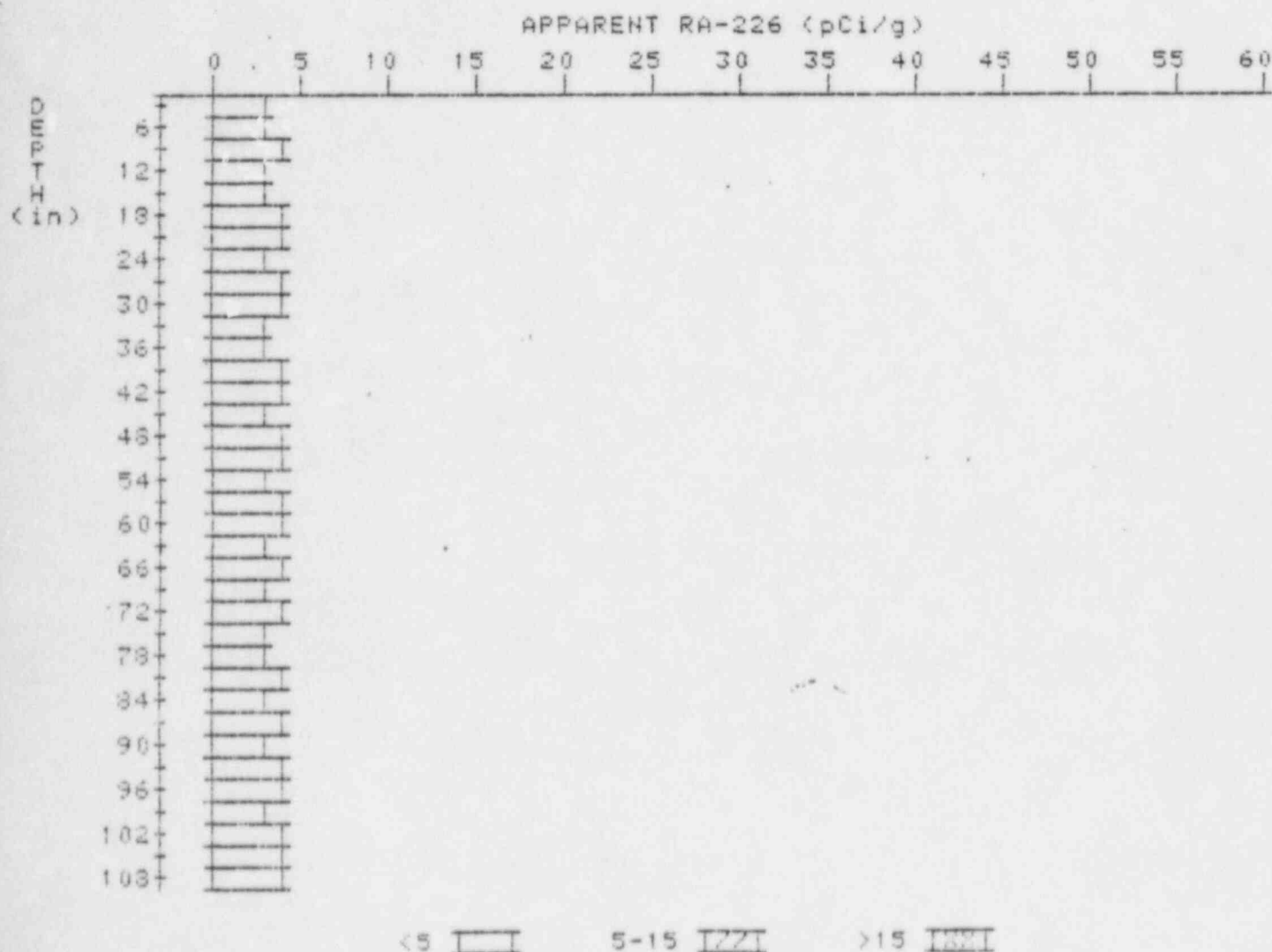
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

9

PROPERTY NUMBER: GJ-00577-RS

HOLE NUMBER: 9'

LOCATION: 235261/



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.9	2.9
6	3.3	3.3
9	3.6	4.3
12	3.3	3.3
15	3.3	3.3
18	3.6	3.6

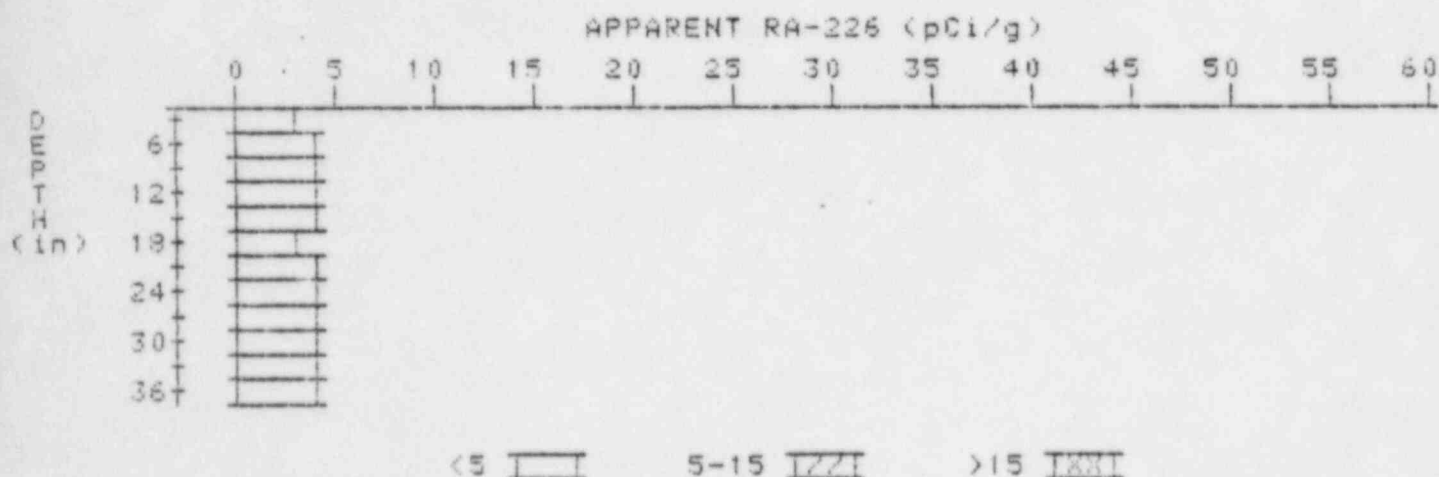
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3.7
4.0
3.8

APPARENT RADIUM-226 CONCENTRATION 10 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-00577-R8
HOLE NUMBER: 10'
LOCATION: 241240'



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.1	3.1
6	3.4	3.6
9	3.6	3.8
12	3.7	3.9
15	3.7	3.7
18	3.7	3.3
21	3.9	4.3
24	3.9	3.9
27	3.9	3.7
30	4.0	4.2
33	4.0	4.0
36	4.0	4.0