RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-03061-RS
ADDRESS: 1608 PINYON AVENUE

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 M.K. Tucker for DH
M. TUCKER
DOE PROJECT ENGINEER

DATE August 5, 1985

REA03061:REA-AB007

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-03061-RS, is a single-family residence located at 1608 Pinyon 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, 94 cu. yd.; interior, 8 cu. yd.

Estimated cost to perform remedial action, including dislocation when applicable, is $8,740. Remedial action on this property will take approximately 14 days to complete.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 1608 Pinyon Avenue, Grand Junction, Colorado

Zoning: Residential (RSF-8)

Lot Size: Approximately 6,000 sf (0.14 acres)

Legal Description: Lot 7, block 2, Weaver subdivision, 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:	Pinyon avenue
East:	Single-family residence
West:	Single-family residence

2.2 Existing Facilities and Structures

Primary Structure:

Type:	Split-level frame house
Size:	Approximately 1,900 sf
Construction Date:	1964
Construction:	Wood-frame with concrete floor on lower level
Foundation:	Concrete stemwall on spread footing
Footing Depth:	Approximately 40" to bottom of footing from grade
Basement:	None
Crawl Space:	None
Condition:	Good

Other Structures:

Type:	Work shed/carport
Size:	Approximately 660 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-03061-RS on June 6, 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 north and south yards.

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 18 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: 13 to 17 uR/h
Highest Inside Gamma Reading (HIG): 17 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 Figure 3.2 shows 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 3.2 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 Figures 3.4a and 3.4b show identified areas and estimated depths of contamination on this property, based on assessments of all measurements taken. As noted in these figures, areas recommended for remedial action that contain identified residual radioactive materials are:

(AREA A) Contamination in the work shed extends to an estimated total depth of 12 inches, including a 4-inch-thick concrete slab. This assessment is based on data collected in Area B (approximately 220 sf).

(AREA B) In the northwest corner of the yard, against the property lines, contamination in the lawn extends to a depth of 12 inches (approximately 1,010 sf).

(AREA C) There is contamination beneath the 4-inch-thick concrete carport slab. It extends to a total depth of 12 inches (approximately 440 sf).

(AREA D) Northeast of the primary structure, contamination in the soil extends to a 12-inch depth (approximately 906 sf).

(AREA E) Two isolated deposits in the lawn north of the primary structure are contaminated to an estimated depth of 12 inches, based on data collected in Area B (approximately 30 sf).

(AREA F) Immediately north of the primary structure, contamination in the soil extends to a depth of 6 inches (approximately 39 sf).

(AREA G) Contamination in the lawn along the south side of the primary structure extends to a depth of 6 inches (approximately 260 sf).

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-03061-RS, includes removal of all areas identified as containing radioactive material (as discussed in Section 3.5 and shown in Appendix Figures 3.4a and 3.4b) 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 $8,740.

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 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	Interior Gamma Exposure Rates and Sample Locations
Figure 3.3	Exterior Sample Locations
Figure 3.4a	Interior Estimated Extent of Contamination
Figure 3.4b	Exterior Estimated Extent of Contamination

Official Survey Report
Team Leader Notes
Deconvolution Graphs (Apparent Radium-226 Concentration)
Exterior Gamma Scan Map

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g) Tot. Ct	Spectr.	Chem Ra-226 (pCi/g)	Comments
3	143272	03	TC	15.9		*	North of shed
		06	TC	15.4		*	
		09	TC	10.4		*	DC = 12 inches
		12	TC	6.8		*	Based on the
		15	TC	5.3		*	deconvolution graph
		18	TC	4.6		*	
		21	TC	4.2		*	
		24	TC	4.2		*	
		27	TC	7.2		*	
		30	TC	4.5		*	
4	150281	03	TC	14.6		*	East of shed
		06	TC	20.3		*	
		09	TC	15.6		*	
		12	TC	9.4		*	DC = 12 inches
		15	TC	6.9		*	Based on the
		18	TC	5.5		*	deconvolution graph
		21	TC	4.9		*	
		24	TC	4.6		*	
		27	TC	4.5		*	
		30	TC	4.5		*	
		33	TC	4.5		*	
		36	TC	4.4		*	
		39	TC	4.2		*	
		42	TC	4.0		*	
		45	TC	4.0		*	
		48	TC	3.9		*	
		51	TC	4.0		*	
5	152229	03	TC	19.1		*	North yard
		06	BH	19.7	7.4	*	
		09	TC	12.9		*	
		12	TC	8.4		*	DC = 12 inches
		15	TC	6.3		*	Based on the
		18	TC	5.2		*	deconvolution graph
		21	TC	4.5		*	
		24	TC	4.3		*	
		27	TC	4.1		*	
		30	TC	3.9		*	
		33	TC	3.9		*	
		36	TC	4.0		*	

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g) Tot. Ct	Spectr.	Chem Ra-226 (pCi/g)	Comments
6	155255	00	DS	<1.0		*	Grassy area
		06	DS	1.3		*	
7	160259	00	DS	1.3		*	Concrete carport
8	160270	00	DS	11.0		*	Concrete carport
		03	TC	18.4		*	
		06	BH	30.5	17.9	*	
		09	TC	23.0		*	DC = 12 inches
		12	BH	14.3	6.7	*	Based on the
		15	TC	10.1		*	deconvolution graph
		18	TC	8.2		*	
		21	TC	7.4		*	
		24	TC	6.8		*	
		27	TC	6.6		*	
		30	TC	6.3		*	
		33	TC	5.9		*	
		36	TC	5.6		*	
		39	TC	5.3		*	
		42	TC	5.1		*	
		45	TC	5.0		*	
		48	TC	4.9		*	
		51	TC	4.9		*	
		54	TC	4.6		*	
		57	TC	4.5		*	
		60	TC	4.4		*	
		63	TC	4.4		*	
		66	TC	4.4		*	
		69	TC	4.5		*	
		72	TC	4.4		*	
9	170259	00	DS	<1.0		*	Concrete carport
10	170270	00	DS	8.5		*	Concrete carport
11	175277	03	TC	11.8		*	South of concrete
		06	TC	13.0		*	carport
		09	TC	9.1		*	
		12	TC	6.3		*	DC = 12 inches
		15	TC	5.1		*	Based on the
		18	TC	4.4		*	deconvolution graph
		21	TC	4.2		*	
		24	TC	4.2		*	
		27	TC	4.2		*	

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
12	189232	00	DS	3.4		*	
		06	DS	1.8		*	
13	189242	03	TC	2.8		*	North of primary
		06	TC	3.2		*	structure
		09	TC	3.4		*	DC = 0 inches
		12	TC	3.5		*	
		15	TC	3.4		*	
		18	TC	3.5		*	
		21	TC	3.5		*	
		24	TC	3.5		*	
		27	TC	3.5		*	
		30	TC	3.6		*	
		33	TC	3.6		*	
		36	TC	3.7		*	
		39	TC	3.6		*	
		42	TC	3.7		*	
		45	TC	3.6		*	
		48	TC	3.5		*	
		51	TC	3.5		*	
		54	TC	3.6		*	
		57	TC	3.6		*	
		60	TC	3.5		*	
14	201229	00	DS	<1.0		*	Gas line
		06	DS	<1.0		*	
		18	DS	<1.0		*	
15	210271	03	TC	2.9		*	East of primary
		06	TC	3.3		*	structure
		09	TC	3.5		*	DC = 0 inches
		12	TC	3.6		*	
		15	TC	3.7		*	
		18	TC	3.7		*	
		21	TC	3.8		*	
		24	TC	3.8		*	
		27	TC	3.8		*	
		30	TC	3.9		*	
		33	TC	3.9		*	
		36	TC	3.8		*	
		39	TC	3.9		*	
		42	TC	3.9		*	

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g) Tot. Ct	Spectr.	Chem Ra-226 (pCi/g)	Comments
15	210271	45	TC	3.8		*	
		48	TC	3.8		*	
		51	TC	3.7		*	
		54	TC	3.6		*	
16	216250	00	DS	1.1		*	Concrete front step
17	216260	03	TC	3.2		*	South of primary
		06	TC	3.5		*	structure
		09	TC	3.7		*	
		12	TC	3.8		*	DC = 0 inches
		15	TC	3.9		*	
		18	TC	3.8		*	
		21	TC	3.8		*	
		24	TC	3.8		*	
		27	TC	3.8		*	
		30	TC	3.9		*	
		33	TC	3.8		*	
		36	TC	3.8		*	
		39	TC	3.8		*	
18	218255	03	TC	9.5		*	South of primary
		06	BH	8.6	3.5	*	structure
		09	TC	6.3		*	DC = 6 inches
		12	TC	5.1		*	Based on the
		15	TC	4.5		*	deconvolution graph
		18	TC	4.2		*	
		21	TC	4.1		*	
		24	TC	4.0		*	
19	219249	00	DS	<1.0		*	Concrete front walkway
20	240270	00	DS	<1.0		*	Background
		03	TC	3.0		*	
		06	BH	3.2	2.0	*	DC = 0 inches
		09	TC	3.4		*	
		12	TC	3.5		*	
		15	TC	3.5		*	
		18	TC	3.6		*	
		21	TC	3.5		*	

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g) Tot. Ct	Spectr.	Chem Ra-226 (pCi/g)	Comments
20	240270	24	TC	3.6		*	
		27	TC	3.6		*	
		30	BH	3.6	1.8	*	
		33	TC	3.6		*	

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 = 06-06-85
Team Leader = DGD

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		00	DS	7.0		*	In shed concrete floor
2		00	DS	<1.0		*	In shed concrete floor

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 = 06-06-85
Team Leader = DGD

Table 3.3
Summary of Interior Gamma Exposure Rates

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	*	*	*	*	13-17	*
WORK SHED	15	18-28	23	15	17-29	22

* The historical data indicate the absence of interior contamination in the primary structure. This information was investigated by performing a walking gamma scan. This area and the exposure rates in the work shed are shown in Appendix Figure 3.2.

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-03061-RS

AREA	CALCULATIONS(ft)		SF		DEPTH(ft)		CF				CUBIC YARDS
INTERIOR											
	Concrete										
A	10 x 22	=	220	x	0.3	=	66				
	Volume of Concrete					=	66	=	66/27	=	2
	Contaminated Fill										
A	10 x 22	=	220	x	0.7	=	154				
	Volume of Fill					=	154	=	154/27	=	6
	TOTAL VOLUME - INTERIOR									=	8
EXTERIOR											
	Concrete										
C	20 x 22	=	440	x	0.3	=	132				
	Volume of Concrete					=	132	=	132/27	=	5
	Contaminated Fill										
B	30 x 28	=	840								
	10 x 17	=	170								
			1010	x	1.0	=	1010				
C	20 x 22	=	440	x	0.7	=	308				
D	24 x 16	=	384								
	6 x 87	=	522								
			906	x	1.0	=	906				
E	5 x 4	=	20								
	2 x 5	=	10								
			30	x	1.0	=	30				
F	3 x 13	=	39	x	0.5	=	20				

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-03061-RS

G	10 x 17	=	170							
	6 x 15	=	90							
			260	x	0.5	=	130			
	Volume of Fill					=	2,404	= 2,404/27	=	89
	TOTAL VOLUME - EXTERIOR								=	94

See Appendix Figures 3.4a and 3.4b For Areas

Table 4.2
Estimated Cost of Decontamination and Restoration
DOE ID No. GJ-03061-GJ

INTERIOR		
Remove/store/replace workshop contents		
Lump sum		$ 250
Remove/replace concrete floor		
220 sf @ $4/sf		880
Remove identified residual radioactive material		
6 cy @ $44/cy (manual - open)		264
Replace area with compacted road base		
6 cy @ $11.50/cy		69
Shore exterior walls		
64 lf @ $3/lf		192
	TOTAL INTERIOR	$ 1,655
EXTERIOR		
Remove/replace concrete slab (carport)		
440 sf @ $3/sf		$ 1,320
Remove identified residual radioactive material		
69 cy @ $14.50/cy (machine - open)		1,001
20 cy @ $44/cy (manual - open)		880
Replace areas with topsoil		
62 cy @ $9.50/cy		589
Replace areas with compacted road base		
27 cy @ $11.50/cy		311
Replace areas with sod		
1200 sf @ $0.25/sf		300
Replace plantings		
Lump sum		150
	TOTAL EXTERIOR	$ 4,551

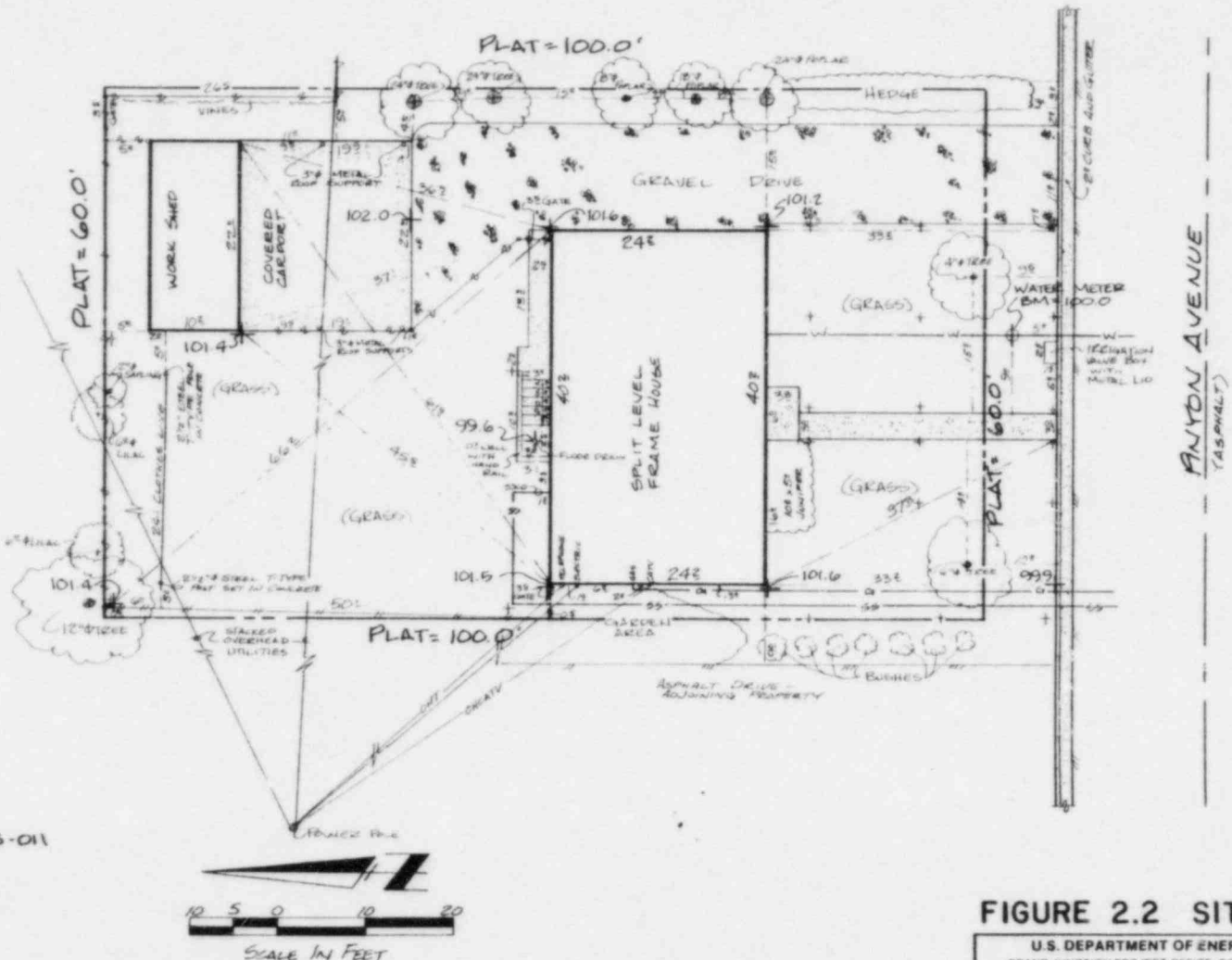
Table 4.2
Estimated Cost of Decontamination and Restoration
DOE ID No. GJ-03061-GJ Page 2 of 2

TOTAL EXTERIOR	$	4,551
TOTAL INTERIOR		1,655
ACCESS CONTROL		150
SUBTOTAL	$	6,356
CONTINGENCY @ 10%		636
SUBTOTAL	$	6,992
CONTRACTOR OVERHEAD & PROFIT @ 25%		1,748
GRAND TOTAL	$	8,740

SC080285
REA03061/REA-AB007/LMR

FIGURE 2.1
VICINITY MAP

LOT 7 BLOCK 2 WEAVER SUBDIVISION,
GRAND JUNCTION, COLORADO.



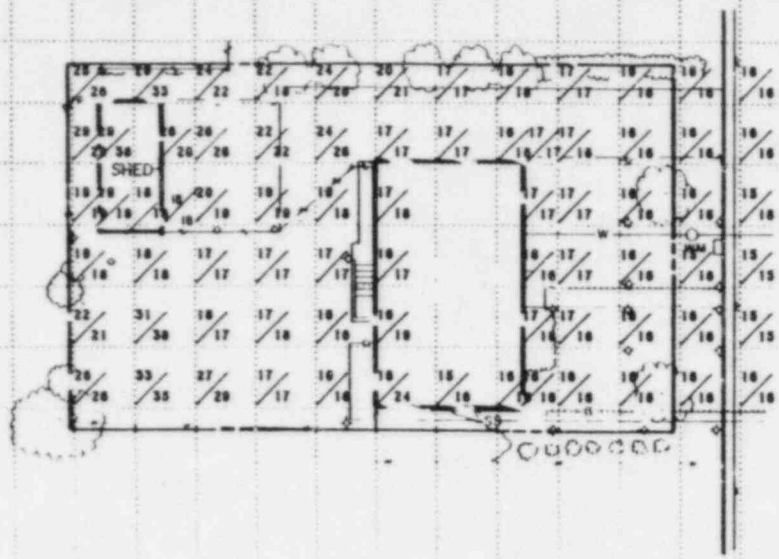
TAX SCHEDULE No. 2945-122-05-011

10 5 0 10 20
SCALE IN FEET

FIGURE 2.2 SITE PLAN

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION PROJECT OFFICE, COLORADO	DOE ID NO. GJ03061 RS
ADDRESS 1608 PINYON AVENUE GRAND JUNCTION, COLORADO	ALLIED Bendix Field Engineering Corp. Grand Junction Operations
SURV GDE 5-31-85 DRAFT REV 6-3-85	CK
DRAWING NO. 3 C 704 F1	SHEET 1 OF 1

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.



LEGEND

13 / 16 GAMMA EXPOSURE RATE AT WAIST LEVEL / GAMMA EXPOSURE RATE AT GROUND LEVEL

X NO READING TAKEN

ALL READINGS IN $\mu R/h$

HOG IS LOCATED IN GRID BLOCK 140270
HOG = 53 $\mu R/h$

FIGURE 3.1

EXTERIOR GRID-POINT EXPOSURE RATES

20 10 0 20 40
FEET

Y
X

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PREPARED BY DMD 6 85

D.M. 6-85

S. Hart 6-85

U.S. DEPARTMENT OF ENERGY

1608 PINYON AVENUE
GRAND JUNCTION, COLORADO

ALLIED Bendix Aerospace

GJ-03061-25
3-8704-1

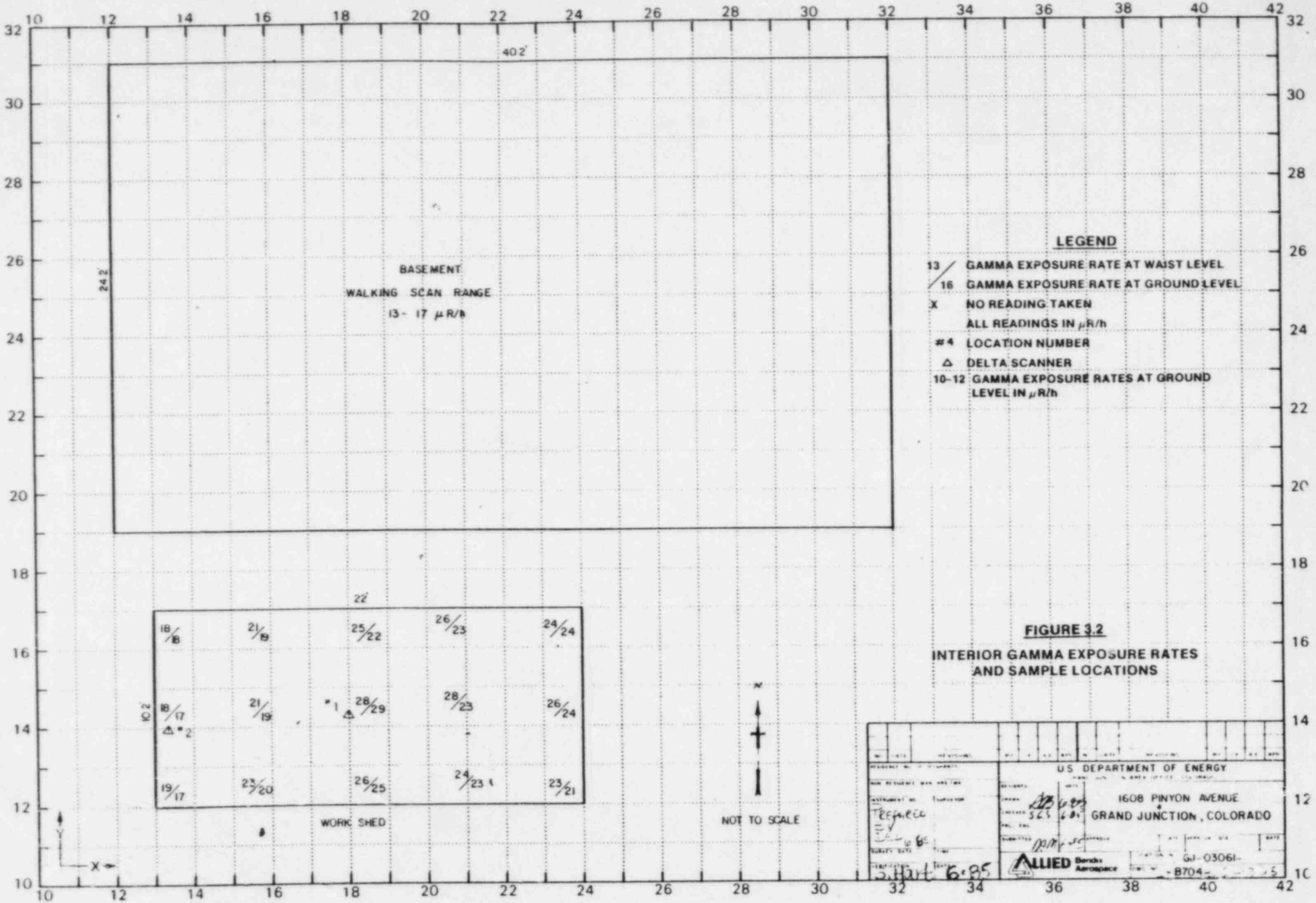


FIGURE 3.2

INTERIOR GAMMA EXPOSURE RATES AND SAMPLE LOCATIONS

US DEPARTMENT OF ENERGY
1608 PINYON AVENUE
GRAND JUNCTION, COLORADO
ALLIED Bendix Aerospace
GJ-03061-
-8704-

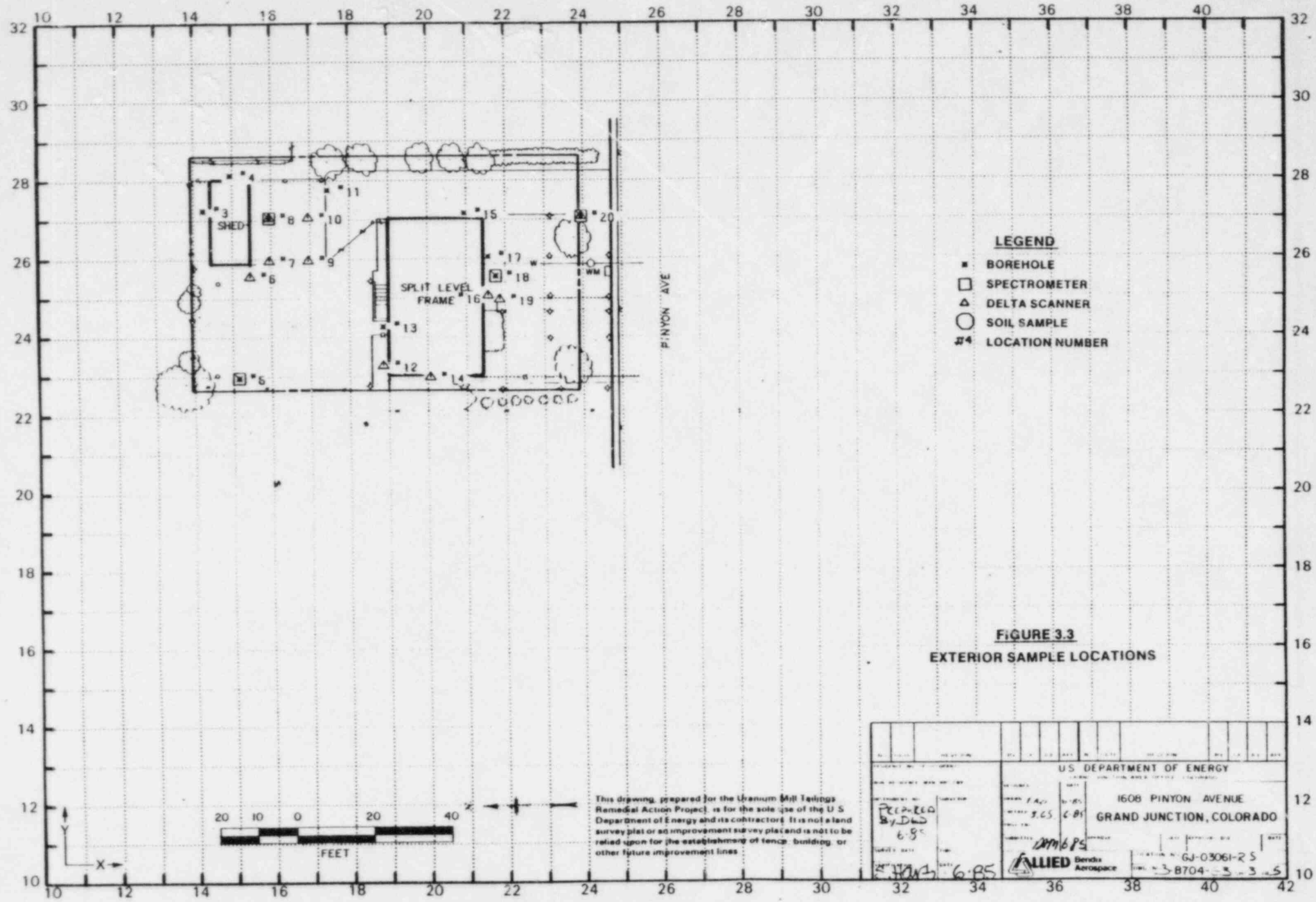


FIGURE 3.3

EXTERIOR SAMPLE LOCATIONS

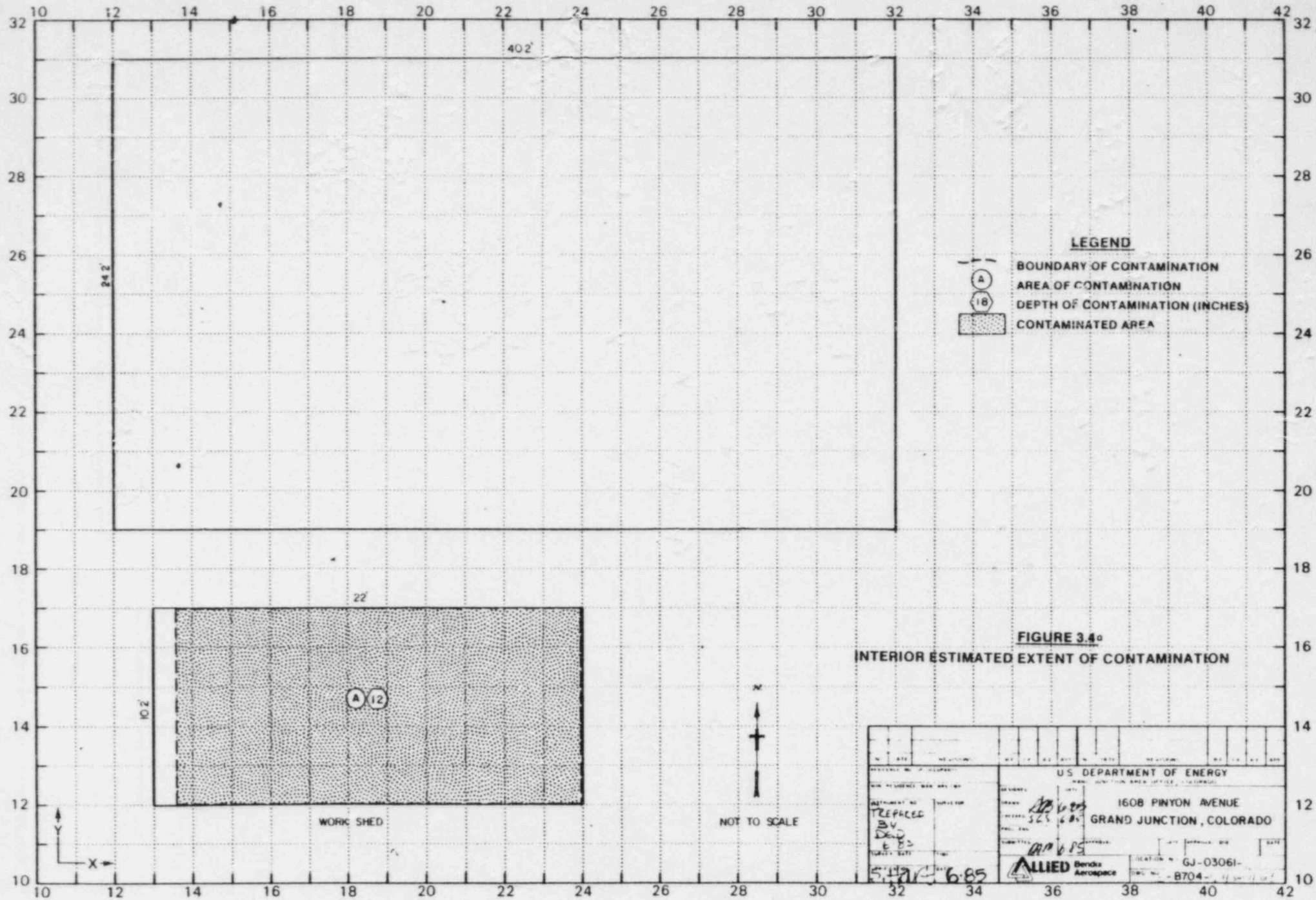
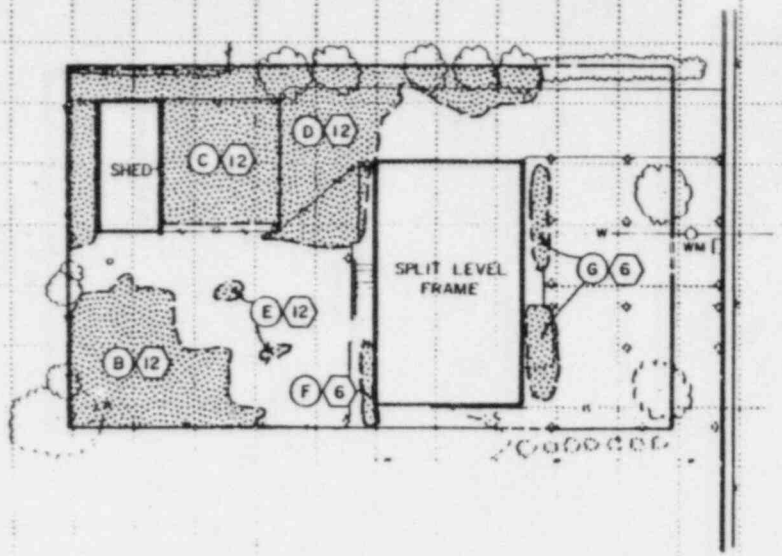


FIGURE 3.4a

INTERIOR ESTIMATED EXTENT OF CONTAMINATION



LEGEND

- BOUNDARY OF CONTAMINATION
- A — AREA OF CONTAMINATION
- 18 — DEPTH OF CONTAMINATION (INCHES)
- CONTAMINATED AREA

FIGURE 3.4b

EXTERIOR ESTIMATED EXTENT OF CONTAMINATION

20 10 0 20 40

FEET

Y

X

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.

PREPARED BY DKD 6.85

S. Hart 6-85

RMB 6/85

ALLIED Bendix Aerospace

U.S. DEPARTMENT OF ENERGY

1608 PINYON AVENUE

GRAND JUNCTION, COLORADO

GJ-03061-R5

B704-C-5-5-5

3/85

DOE ID NO. GJ-03061-RS Date June 7, 1985

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

Official Survey Report

Property Address 1608 Pinyon Avenue

Property Owner Ruth Hjelmstad

Address of Owner (if different from above) _____

Report Prepared By David Dille

I. PRESENCE/ABSENCE OF RESIDUAL RADIOACTIVE MATERIALS

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

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

1 XX 1 In open areas.

1 XX 1 Under or around exterior improvements.

1 XX 1 Under or around a typically nonoccupied structure.

1 XX 1 Under or around a typically occupied structure.

II. RESULTS OF RADIOLOGIC ASSESSMENT

1 ___ 1 Levels of radiation from residual radioactive materials, if any, do not exceed EPA Standards and no action is required under the Uranium Mill Tailings Remedial Action Project.

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

cc:
G. A. Franz, III, GJ/CDH
J. Themelis, Mgr. UMTRA Proj. Off.

HIG = 17 uR/h
HOG = 53 uR/h

MEMORANDUM

ALLIED Bendix
Aerospace

Bendix Field Engineering Corporation
Grand Junction Operations
Grand Junction, Colorado

Date: June 6, 1985

To: Files

From: David G. Dille

Subject: Team Leader Notes - GJ-03061-RS

Address: 1608 Pinyon Avenue

Owner: Ruth A. Hjelmstad

Occupancy: Two

Weather: Sunny, warm.

Colorado Department of Health (CDH) and Oak Ridge National Laboratory (ORNL) indicate contamination located in the yard and around the primary structure.

Ruth Hjelmstad, the owner of the property, stated that the primary structure was built in 1964. She has owned this property since 1962. She also stated that her knowledge of the tailings is limited. The survey was allowed to proceed.

Team Members

D. Dille (Team Leader)
M. Dexter
G. Meeker
S. Larsen
H. Mattison
A. Raabe
K. Roemer

Team members augered holes at the foundation on three sides of the primary structure. The forth side was not augered because of plants and obstructions.

Team members investigated areas of contamination with delta measurements and borehole total counts.

Team members scanned the primary structure, including the basement walls.

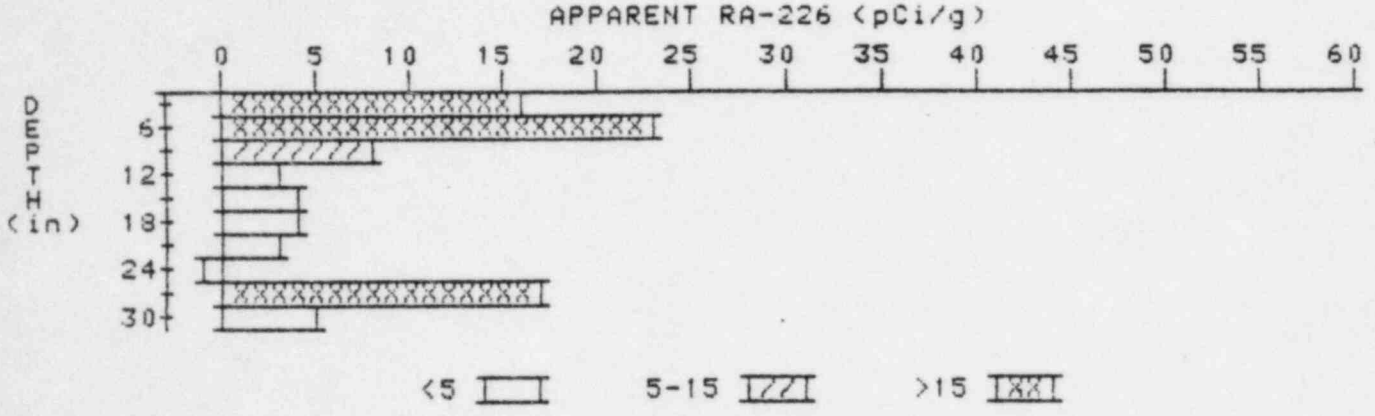
Contamination appears to spillover to the property to the east (2005 North 17th). No one was home at the time of the survey.

All personnel were frisked before leaving the property.

DECON V85.1<850524.0823>

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH 3

PROPERTY NUMBER: GJ-03061-RS
HOLE NUMBER: 3
LOCATION: 143272

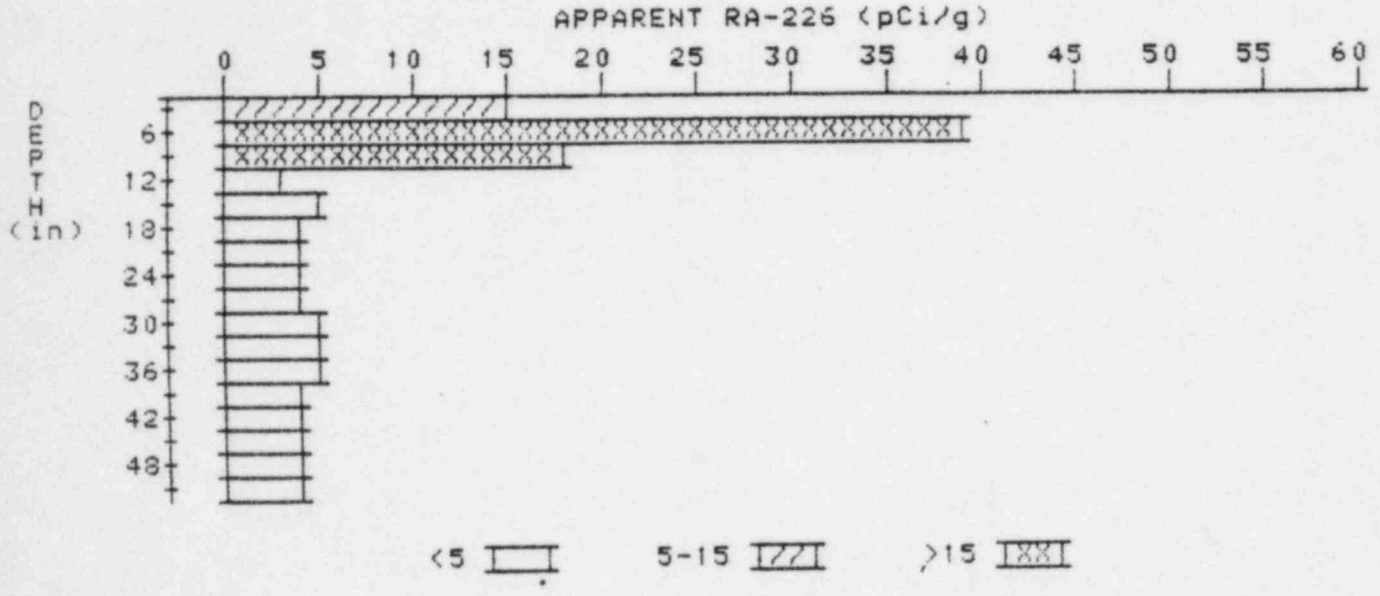


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	15.9	15.9
6	15.4	23.4
9	10.4	7.9
12	6.8	3.1
15	5.3	3.9
18	4.6	4.1
21	4.2	3.5
24	4.2	-1.1
27	7.2	17.3
30	4.5	4.5

DECON V85.1<850524.0823>

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-03061-RS
HOLE NUMBER: 4
LOCATION: 150281



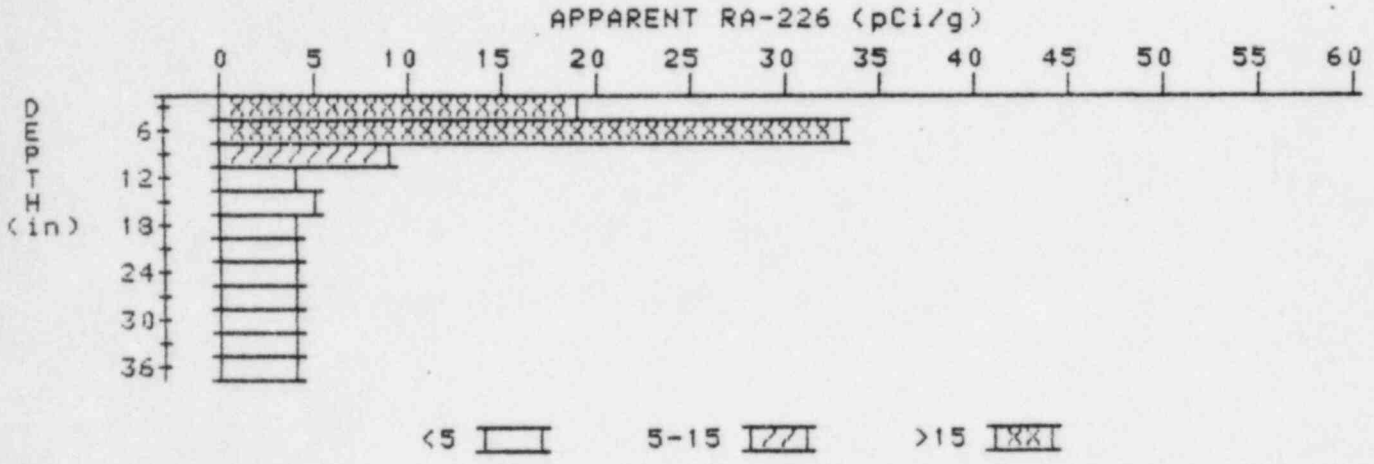
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	14.6	14.6
6	20.3	38.8
9	15.6	18.3
12	9.4	2.8
15	6.9	4.9
18	5.5	4.1
21	4.9	4.4
24	4.6	4.2
27	4.5	4.3
30	4.5	4.5
33	4.5	4.7
36	4.4	4.6
39	4.2	4.2
42	4.0	3.6
45	4.0	4.2
48	3.9	3.5
51	4.0	4.0

DECON V85.1<850524.0823>

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

5

PROPERTY NUMBER: GJ-03061-RS
HOLE NUMBER: 5
LOCATION: 152229

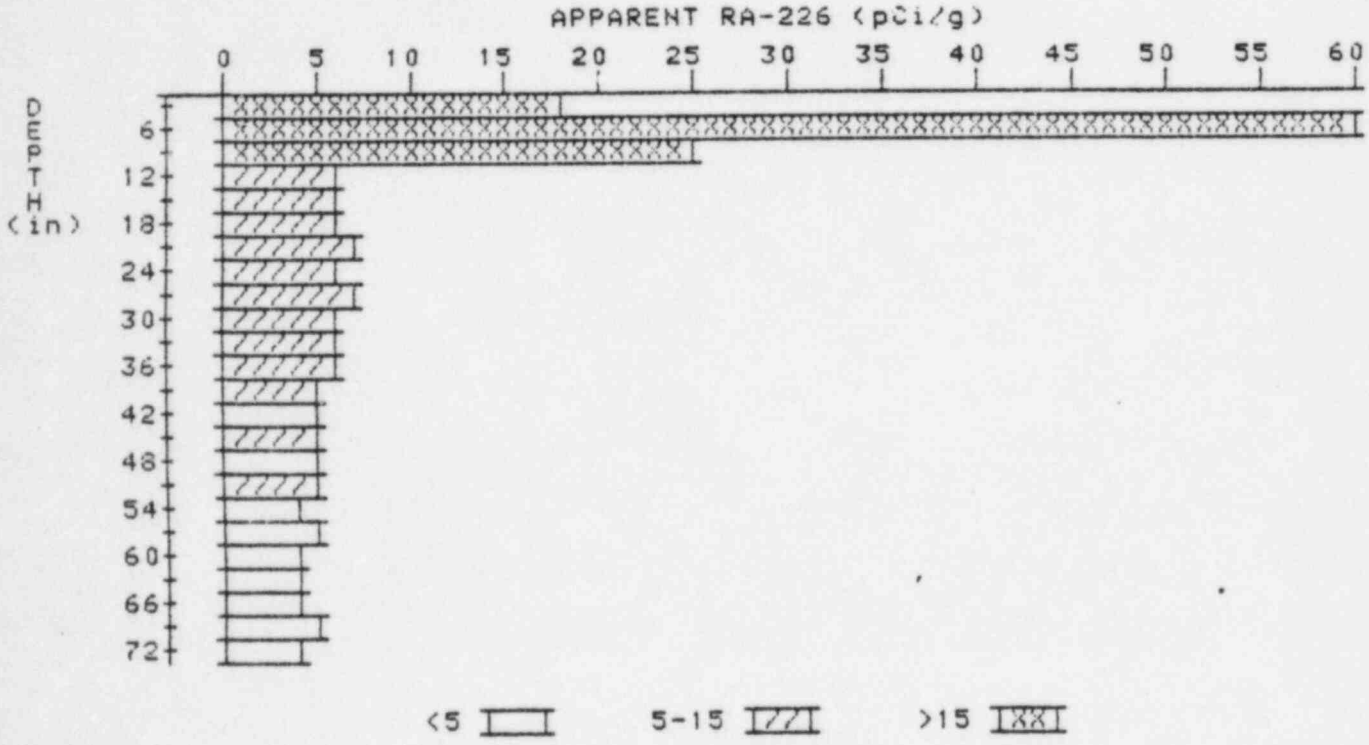


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	19.1	19.1
6	19.7	32.9
9	12.9	8.8
12	8.4	4.1
15	6.3	4.5
18	5.2	4.5
21	4.5	3.6
24	4.3	4.3
27	4.1	4.1
30	3.9	3.5
33	3.9	3.7
36	4.0	4.0

DECON V85.1<850524.0823>

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-03061-RS
HOLE NUMBER: 8
LOCATION: 160270



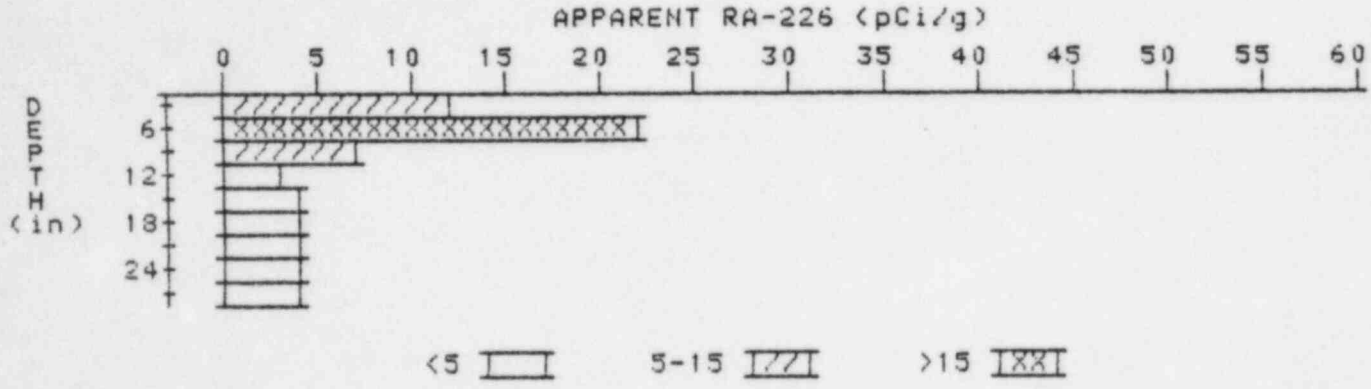
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	18.4	18.4
6	30.5	65.3
9	23.0	25.1
12	14.3	6.3
15	10.1	6.0
18	8.2	6.2
21	7.4	7.0
24	6.8	6.1
27	6.6	6.8
30	6.3	6.5
33	5.9	5.7
36	5.6	5.6
39	5.3	5.1
42	5.1	4.9
45	5.0	5.0

48	4.9	4.7
51	4.9	5.4
54	4.6	4.2
57	4.5	4.5
60	4.4	4.2
63	4.4	4.4
66	4.4	4.2
69	4.5	4.9
72	4.4	4.4

DECON V85.1<850524.0823>

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH 11

PROPERTY NUMBER: GJ-03061-RS
HOLE NUMBER: 11
LOCATION: 175277

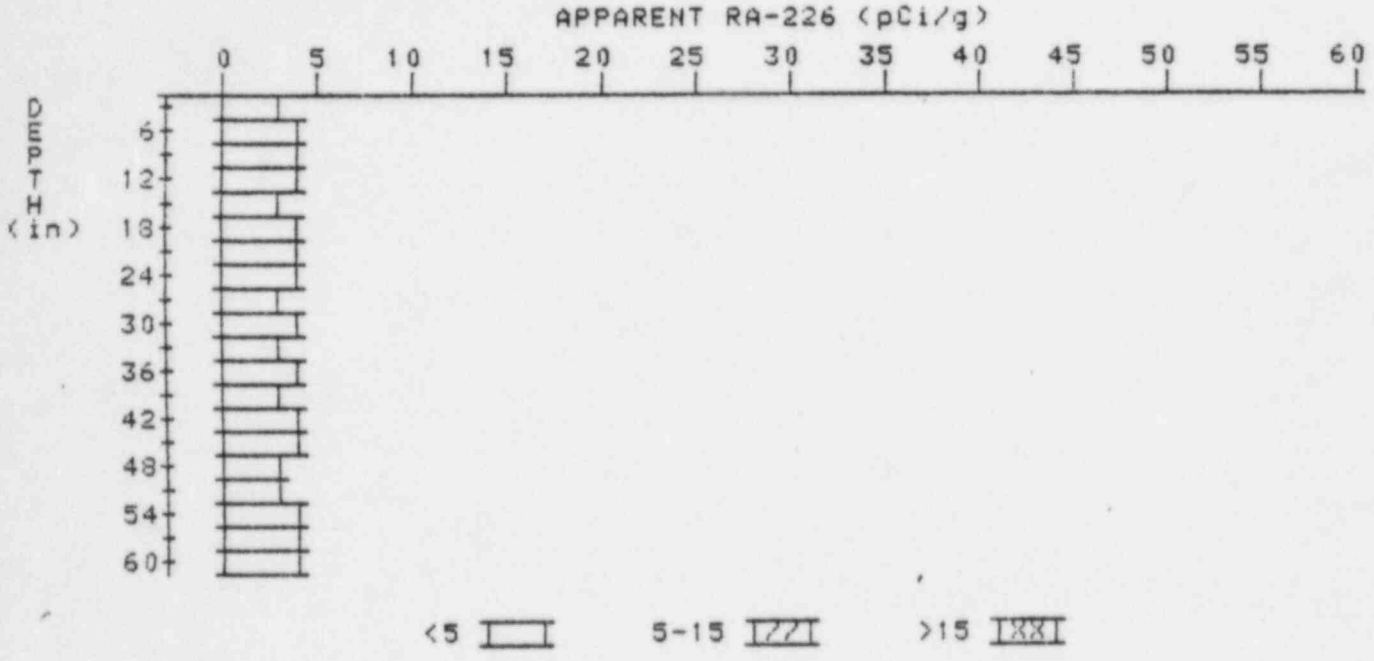


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	11.8	11.8
6	13.0	22.1
9	9.1	7.1
12	6.3	3.5
15	5.1	4.2
18	4.4	3.5
21	4.2	3.8
24	4.2	4.2
27	4.2	4.2

DECON V35.1<850524.0823>

APPARENT RADIUM-226 CONCENTRATION 13
DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-03061-RS
HOLE NUMBER: 13
LOCATION: 189242



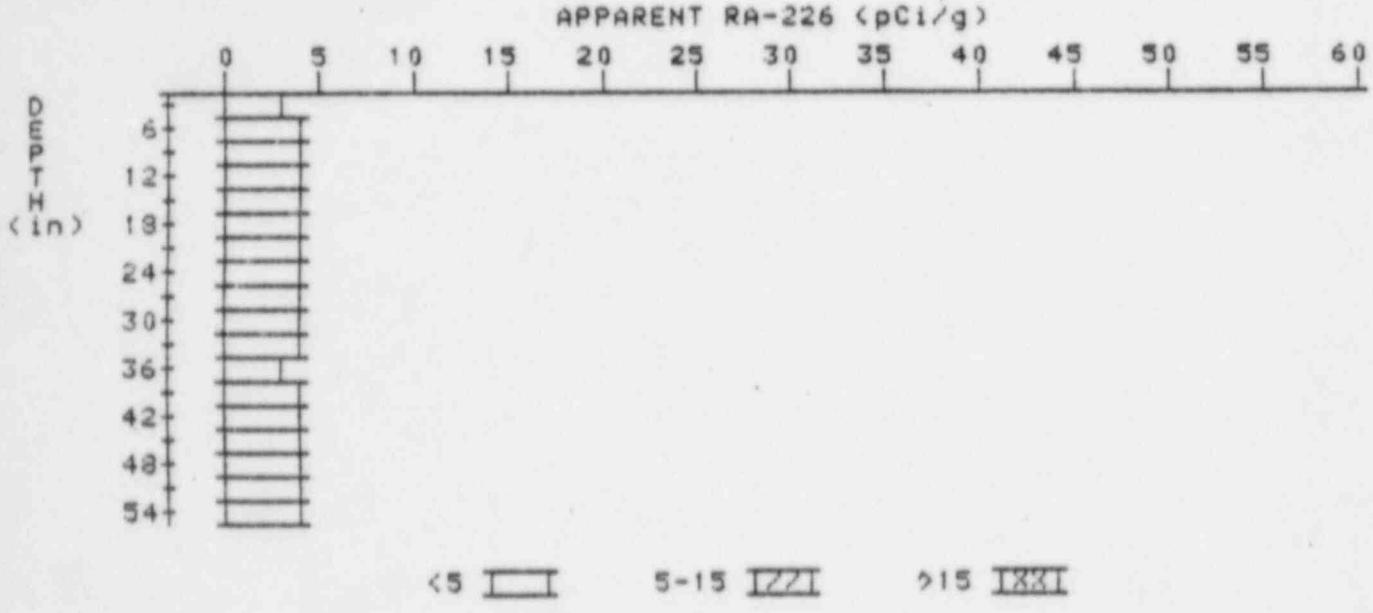
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.8	2.8
6	3.2	3.6
9	3.4	3.6
12	3.5	3.9
15	3.4	3.0
18	3.5	3.7
21	3.5	3.5
24	3.5	3.5
27	3.5	3.3
30	3.6	3.8
33	3.6	3.4
36	3.7	4.1
39	3.6	3.2
42	3.7	4.1
45	3.6	3.6
48	3.5	3.3
51	3.5	3.3
54	3.6	3.8

57	3.6	3.8
60	3.5	3.5

DECON V85.1(850524.0823)

APPARENT RADIUM-226 CONCENTRATION 15
DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-03061-RS
HOLE NUMBER: 15
LOCATION: 210271

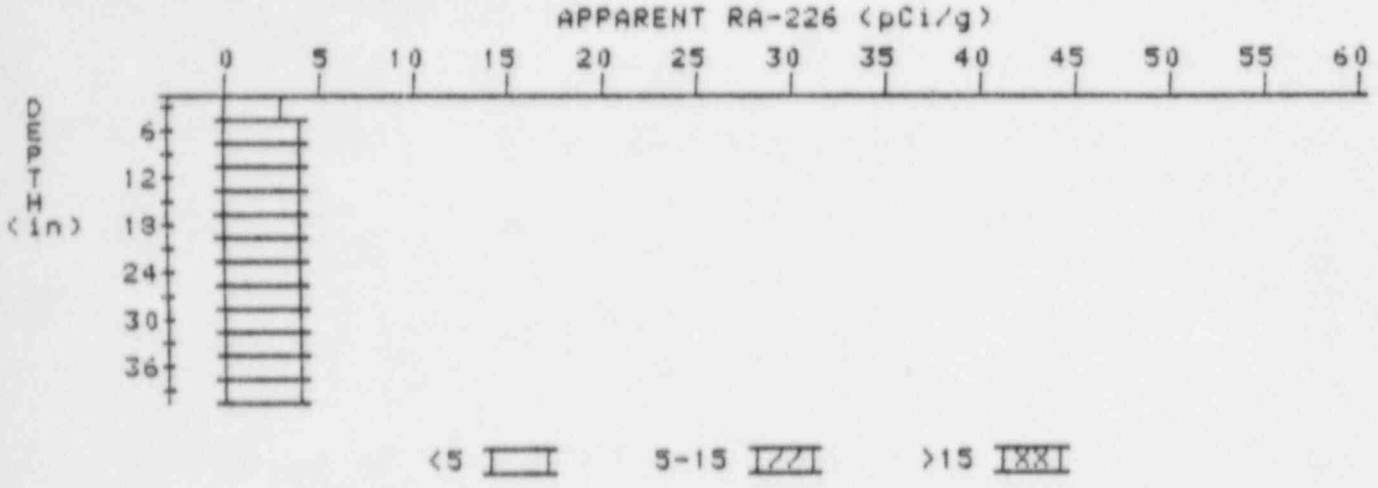


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.9	2.9
6	3.3	3.7
9	3.5	3.7
12	3.6	3.6
15	3.7	3.9
18	3.7	3.5
21	3.8	4.0
24	3.8	3.8
27	3.8	3.6
30	3.9	4.1
33	3.9	4.1
36	3.8	3.4
39	3.9	4.1
42	3.9	4.1
45	3.9	3.6
48	3.8	4.0
51	3.7	3.7
54	3.6	3.6

DECON V85.1<850524.0823>

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH 17

PROPERTY NUMBER: GJ-03061-RS
HOLE NUMBER: 17
LOCATION: 216260

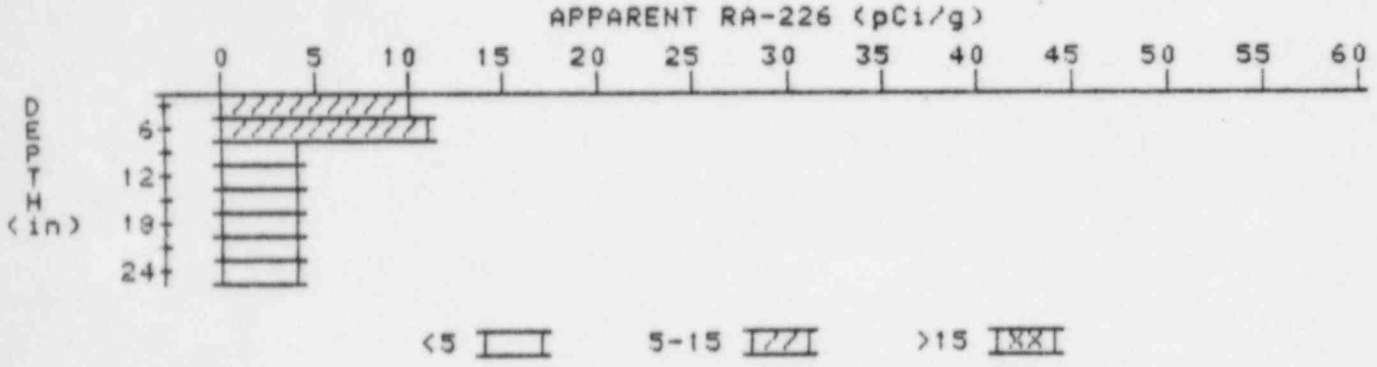


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.2	3.2
6	3.5	3.7
9	3.7	3.9
12	3.8	3.8
15	3.9	4.3
18	3.8	3.6
21	3.8	3.8
24	3.8	3.8
27	3.8	3.6
30	3.9	4.3
33	3.8	3.6
36	3.8	3.8
39	3.8	3.8

DECON V85.1<850524.0823>

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH 18

PROPERTY NUMBER: GJ-03061-RS
HOLE NUMBER: 18
LOCATION: 218255

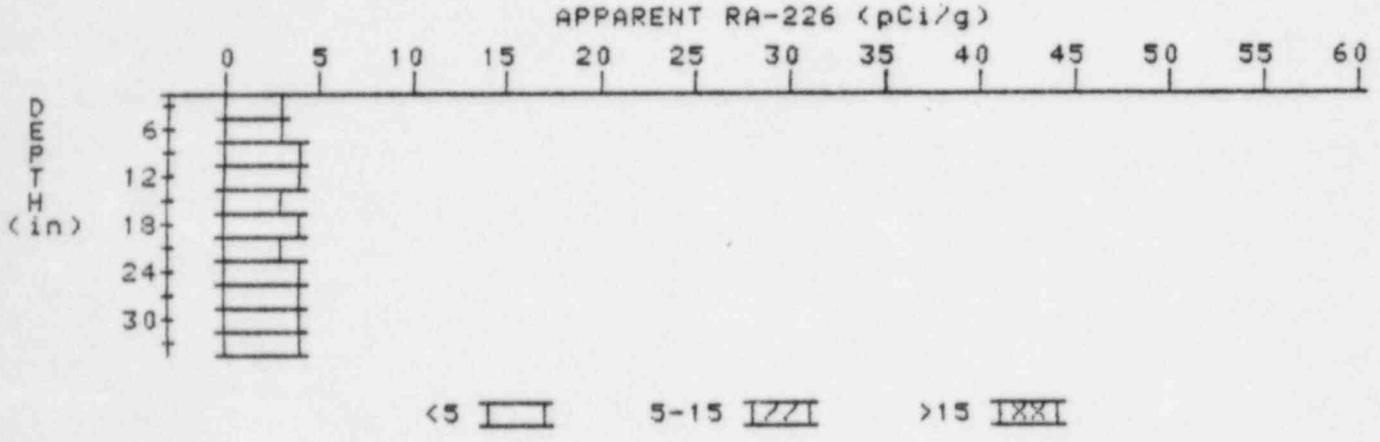


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	9.5	9.5
6	8.6	11.1
9	6.3	4.3
12	5.1	4.0
15	4.5	4.0
18	4.2	3.8
21	4.1	4.1
24	4.0	4.0

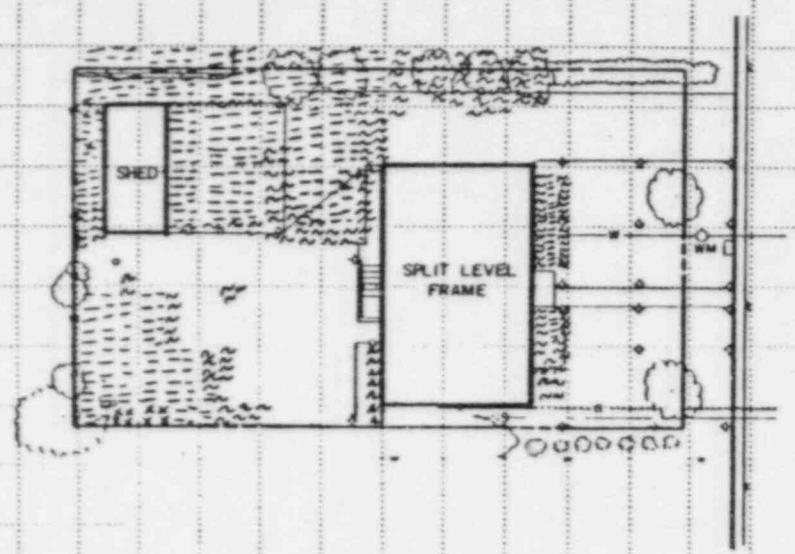
DECON V85.1<850524.0823>

APPARENT RADIUM-226 CONCENTRATION 20
DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-03061-RS
HOLE NUMBER: 20
LOCATION: 240270



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.0	3.0
6	3.2	3.2
9	3.4	3.6
12	3.5	3.7
15	3.5	3.3
18	3.6	4.0
21	3.5	3.1
24	3.6	3.8
27	3.6	3.6
30	3.6	3.6
33	3.6	3.6



LEGEND

≈ Gamma Readings of 150 to 199 cps
= Gamma Readings of 200 to 500 cps
X Gamma Readings of >500 cps

Exterior Gamma Scan Map
Appendix Copy

20 10 0 20 40
FEET

Y
X

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

1608 PINYON AVENUE
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ALLIED Bendix Aerospace

LOCATION NO. GJ-03061-
DWG. NO. 1-8704-F1