

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-13359-RS
ADDRESS: 713 CENTAURI DRIVE

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

August 30, 1985

REA13359:REA-620

8509300045 850903
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	7
4.1 Decontamination and Restoration	7
4.2 Evaluation of Recommended Remedial Action	7
5.0 REFERENCES	8
6.0 APPENDIX	9

1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-13359-RS, is a single-family residence located at 713 Centauri Drive, 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, 14 cu. yd.; interior, 0 cu. yd.

Estimated cost to perform remedial action is \$1,196. Remedial action on this property will take approximately 5 days to complete.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 713 Centauri Drive, Grand Junction, Colorado

Zoning: Residential (R-1-B)

Lot Size: Approximately 18,729 sf (0.43 acres)

Legal Description: Lot 8, Block 3, Galaxy Subdivision, Section 35, T1N, R1W, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 4 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:	Underground
Sewer:	Underground
Water:	Underground
Cable TV:	Overhead

Bordering Properties:

North:	Single-family residence
South:	Alpha Place
East:	Centauri Drive
West:	Single-family residence

2.2 Existing Facilities and Structures

Primary Structure:

Type:	Two-story residence with attached garage
Size:	Approximately 3,103 sf
Construction Date:	1966
Construction:	Wood-frame with brick veneer
Foundation:	Concrete stemwall on spread footing
Footing Depth:	Not determined
Basement:	Yes - partial
Crawl Space:	Yes - partial
Condition:	Good

Other Structures:

Type:	Shed
Size:	Approximately 90 sf
Construction:	Prefabricated metal
Foundation:	Concrete slab-on-grade
Condition:	Good

General Remarks:

There is a concrete swimming pool west 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-13359-RS on July 12, 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 available for this property was conducted to determine the areas of potential contamination indicated during previous assessments.

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 17 uR/h
Highest Outside Gamma Reading (HOG): 35 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: 14 to 18 uR/h
Highest Inside Gamma Reading (HIG): 21 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, 3.2b, and 3.2c. 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: Soil
Direction From Primary Structure: Northwest
Other Directions: Northwest corner of property
Total Depth of Contamination: 12 inches
Comments: Vegetable garden
Approximate Square Footage: 100
- (Area B) Surface Material: Lawn
Direction From Primary Structure: West
Other Directions: Along west fence line
Total Depth of Contamination: 9 inches
Approximate Square Footage: 245
- (Area C) Surface Material: Soil
Direction From Primary Structure: Southwest
Other Directions: West of swimming pool
Total Depth of Contamination: 6 inches
Comments: Flower bed
Approximate Square Footage: 42
- (Area D) Surface Material: Lawn
Direction From Primary Structure: North and east
Total Depth of Contamination: 6 inches
Comments: This area includes two deposits.
Approximate Square Footage: 55
- (Area E) Surface Material: Soil
Direction From Primary Structure: East
Other Directions: Flower bed
Total Depth of Contamination: 6 inches
Comments: The flower bed is raised 4 inches and is bordered by railroad ties.
Approximate Square Footage: 28

- (Area F) Surface Material: Railroad ties
Direction From Primary Structure: East
Other Directions: South of Area E
Total Depth of Contamination: Estimated at 10 inches
Other (height or thickness): 8-inch x 8-inch railroad ties
Comments: The depth of contamination is based on data
collected in Area E.
Approximate Square Footage: 6
- (Area G) Surface Material: Lawn
Direction From Primary Structure: East
Other Directions: Along east property line
Total Depth of Contamination: 12 inches
Approximate Square Footage: 12

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-13359-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 \$1,196.

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

Official Survey Report

Team Leader Notes

Deconvolution Graphs (Apparent Radium-226 Concentration)

Exterior Gamma Scan Map

Radium Concentrations at Exterior Locations

DOE ID #GJ-13359-RS

713 Centauri Drive

Page 1 of 5

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
7	117183	00	DS	3.5		*	In flower bed
		03	TC	4.7		*	along west fence
		06	TC	4.9		*	line
		09	TC	4.7		*	
		12	TC	4.4		*	
		15	TC	4.2		*	DC = 6 inches
		18	TC	4.2		*	Based on all
		21	TC	4.1		*	available data
		24	TC	3.9		*	
		27	TC	3.9		*	
		30	TC	3.8		*	
		33	TC	3.8		*	
		36	TC	3.8		*	
8	117204	00	DS	2.1		*	Gravel
9	117220	00	DS	1.8		*	Along west fence
		03	TC	3.8		*	line
		06	TC	3.9		*	DC = 0 inches
		09	TC	4.0		*	
		12	TC	4.1		*	
		15	TC	3.9		*	
		18	TC	3.9		*	
		21	TC	3.7		*	
		24	TC	3.6		*	
		27	TC	3.5		*	
10	117240	00	DS	1.2		*	West fence line
		03	TC	3.5		*	
		06	TC	3.7		*	
		09	TC	4.0		*	
		12	TC	3.9		*	
		15	TC	3.9		*	DC = 0 inches
		18	TC	3.7		*	
		21	TC	3.6		*	
		24	TC	3.4		*	
		27	TC	3.4		*	
		30	TC	3.4		*	
		33	TC	3.4		*	
11	119300	00	DS	3.6		*	Along west fence
		03	TC	5.6		*	line

Radium Concentrations at Exterior Locations

DOE ID #GJ-13359-RS

713 Centauri Drive

Page 2 of 5

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
11	119300	06	TC	6.2		*	
		09	TC	6.2		*	
		12	TC	5.3		*	DC = 12 inches
		15	TC	4.8		*	Based on the
		18	TC	4.4		*	deconvolution graph
		21	TC	4.3		*	
		24	TC	4.3		*	
		27	TC	4.3		*	
		30	TC	4.3		*	
		33	TC	4.2		*	
		36	TC	4.2		*	
12	120270	00	DS	5.2		*	Along west fence
		03	TC	5.1		*	line
		06	TC	4.9		*	
		09	TC	4.3		*	DC = 9 inches
		12	TC	3.9		*	Based on the
		15	TC	3.6		*	deconvolution graph
		18	TC	3.4		*	
		21	TC	3.2		*	
		24	TC	3.3		*	
		27	TC	3.4		*	
		30	TC	3.5		*	
		33	TC	3.6		*	
		36	TC	3.7		*	
		39	TC	3.8		*	
13	121183	00	DS	1.9		*	Flower bed
14	174258	00	DS	<1.0		*	West foundation
		03	TC	3.5		*	
		06	TC	3.8		*	DC = 0 inches
		09	TC	4.0		*	
		12	TC	4.1		*	
		15	TC	4.2		*	
		18	TC	4.4		*	
		21	TC	4.5		*	
		24	TC	4.7		*	
		27	TC	4.5		*	
		30	TC	4.5		*	
		33	TC	4.4		*	
		36	TC	4.3		*	
		39	TC	4.0		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-13359-RS

713 Centauri Drive

Page 3 of 5

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
15	189240	00	DS	<1.0		*	On concrete
		[48]	GS		1.7	*	Horizontally into brick siding
16	189267	00	DS	2.1		*	Near west foundation
17	190220	00	DS	<1.0		*	West of garage
18	190291	00	DS	1.4		*	Northwest foundation
19	205295	00	DS	1.2		*	Sewer clean-out
		03	TC	3.3		*	North of primary
		06	TC	3.5		*	structure
		09	TC	3.7		*	
		12	TC	3.9		*	
		15	TC	4.0		*	DC = 0 inches
		18	TC	4.0		*	
		21	TC	4.0		*	
		24	TC	4.2		*	
		27	TC	4.3		*	
		30	TC	4.4		*	
		33	TC	4.4		*	
		36	TC	4.4		*	
		39	TC	4.4		*	
		42	TC	4.5		*	
20	210292	00	DS	2.1		*	
		03	TC	3.8		*	Auger refusal
		06	TC	4.0		*	North of primary
		09	TC	4.1		*	structure
		12	TC	4.1		*	
		15	TC	4.2		*	DC = 0 inches
		18	TC	4.1		*	
21	218230	00	DS	1.1		*	East foundation
22	218240	[48]	GS		2.0	*	Horizontally into brick siding
23	220175	00	DS	1.2		*	Background
		00	GS		<1.0	*	DC = 0 inches
		03	TC	3.0		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-13359-RS

713 Centauri Drive

Page 4 of 5

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
23	220175	06	TC	3.3		*	
		09	TC	3.5		*	
		12	TC	3.6		*	
		15	TC	3.7		*	
		18	TC	3.6		*	
		21	TC	3.6		*	
		24	TC	3.6		*	
		27	TC	3.7		*	
		30	TC	3.9		*	
		33	TC	4.0		*	
		36	TC	4.1		*	
24	221289	00	DS	10.8		*	Gas line
		24	DS	2.1		*	Next to flower bed
25	222275	00	DS	1.9		*	Flower bed
		03	TC	3.3		*	East foundation
		06	TC	3.5		*	
		09	TC	3.5		*	DC = 0 inches
		12	TC	3.6		*	
		15	TC	3.6		*	
		18	TC	3.6		*	
		21	TC	3.6		*	
		24	TC	3.5		*	
		27	TC	3.6		*	
		30	TC	3.6		*	
26	223281	00	DS	1.8		*	Flower bed
		06	DS	2.8		*	
27	231284	00	DS	6.4		*	Flower bed east of
		06	DS	1.8		*	primary structure
28	235280	00	DS	6.5		*	East lawn
		06	DS	1.8		*	
29	251283	00	DS	8.0		*	East lawn
		03	TC	7.5		*	
		06	TC	7.0		*	DC = 12 inches
		09	TC	5.9		*	Based on the
		12	TC	5.0		*	deconvolution graph
		15	TC	4.5		*	
		18	TC	4.2		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-13359-RS

713 Centauri Drive

Page 5 of 5

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
29	251283	21	TC	4.0		*	
		24	TC	3.8		*	
		27	TC	3.7		*	
		30	TC	3.8		*	
		33	TC	3.9		*	
		36	TC	4.2		*	
		39	TC	4.2		*	
30	252207	03	TC	3.1		*	By water main
		06	TC	3.4		*	
		09	TC	3.3		*	
		12	TC	3.4		*	DC = 0 inches
		15	TC	3.5		*	
		18	TC	3.5		*	
		21	TC	3.6		*	
		24	TC	3.6		*	
		27	TC	3.7		*	
		30	TC	3.7		*	
		33	TC	3.7		*	
		36	TC	3.6		*	
		39	TC	3.5		*	

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 = 07-12-85
 Team Leader = CRK

Radium Concentrations at Interior Locations

DOE ID #GJ-13359-RS

713 Centauri Drive

Page 1 of 1

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
1		00	DS	2.1		*	Dirt floor in furnace pit
2		00	DS	<1.0		*	Along footing in the crawl space
3		00	DS	1.3		*	In basement by brick wall
4		00	DS	1.7		*	In breezeway
5		00	DS	1.2		*	In living room on the ground floor
6		00	DS	1.1		*	In garage

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 = 07-12-85
Team Leader = CRK

Table 3.3

Summary of Interior Gamma Exposure Rates

DOE ID No. GJ-13359-RS

713 Centauri Drive

Page 1 of 1

Location	Number of Readings Taken at Waist Level	Range at Waist Level (uR/h)	Mean at Waist Level (uR/h)	Number of Readings Taken at Surface	Range at Surface (uR/h)	Mean Surface (uR/h)
Crawl Space	10	16-18	17	10	16-20	18
Basement	17	14-18	16	17	14-19	16
Ground Floor	35	14-21	17	33	14-21	17
Garage	09	16-19	18	09	15-19	17

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-13359-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					
	Contaminated Fill				
A	5 x 20 =	100	x 1.0 =	100	
B	5 x 49 =	245	x 0.8 =	196	
C	2 x 21 =	42	x 0.5 =	21	
D	5 x 3 =	15			
	4 x 7 =	28			
	3 x 4 =	12			
		55	x 0.5 =	28	
E	4 x 7 =	28	x 0.5 =	14	
F	9 x 0.7 =	6	x 0.2 =	1	
G	3 x 4 =	12	x 1.0 =	12	
TOTAL VOLUME - EXTERIOR				= 372 =	372/27 = 14

See Appendix Figure 3.3 For Areas

EXTERIOR

Remove identified residual radioactive material	
11 cy @ \$14.50/cy (machine-open)	\$ 160
3 cy @ \$44/cy (manual-open)	132

Replace areas with topsoil	
14 cy @ \$11.50/cy	161

Replace areas with sod	
512 sf @ \$.50/sf	156

Replace flowers	
Lump sum	50

	TOTAL EXTERIOR	\$	659
--	----------------	----	-----

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

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

	SUBTOTAL	\$	759
--	----------	----	-----

	CONTINGENCY @ 5%		38
--	------------------	--	----

	SUBTOTAL	\$	797
--	----------	----	-----

	CONTRACTOR OVERHEAD & PROFIT @ 50%		399
--	------------------------------------	--	-----

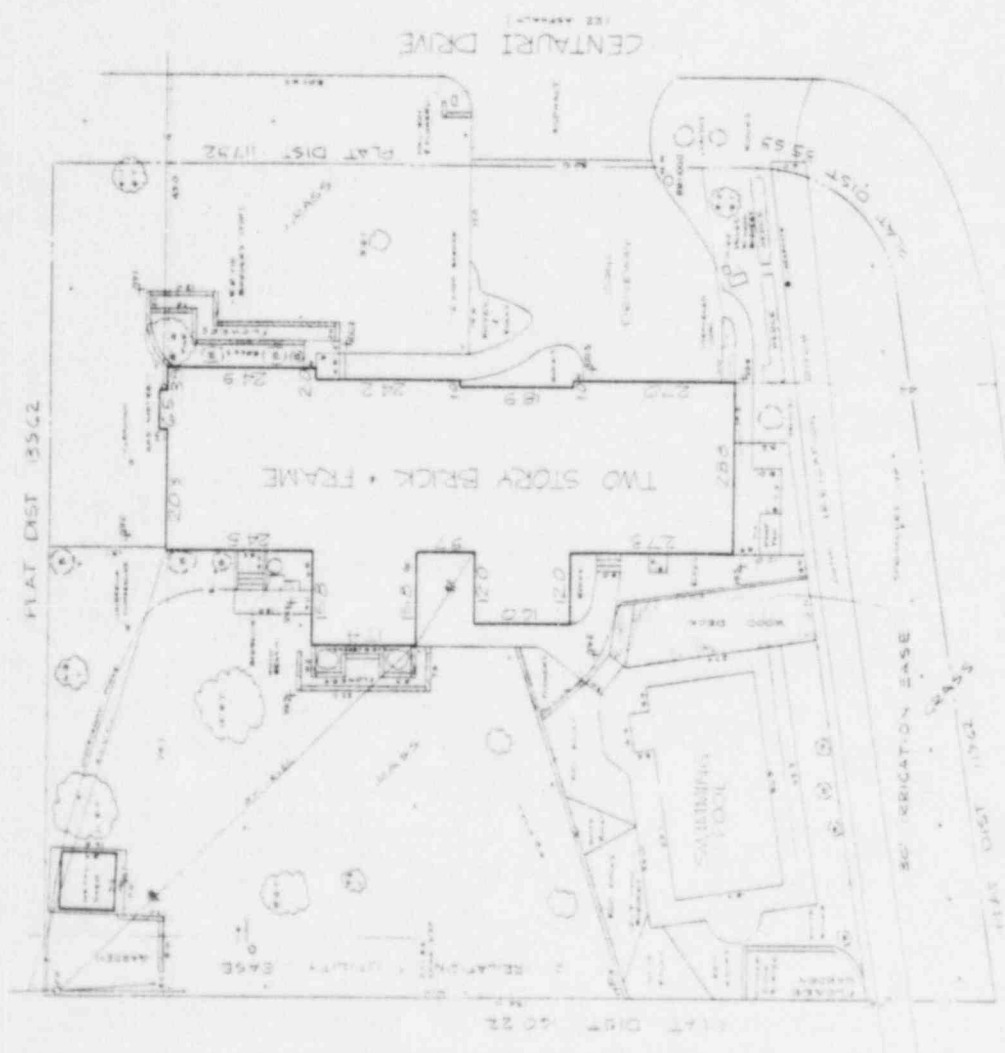
	GRAND TOTAL	\$	1,196
--	-------------	----	-------

=====

LR082885
REAL3359/REA-620/LMR

STATE OF COLORADO
TAILINGS REPOSITORY

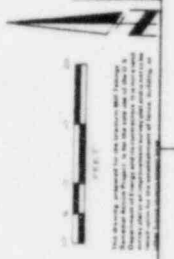




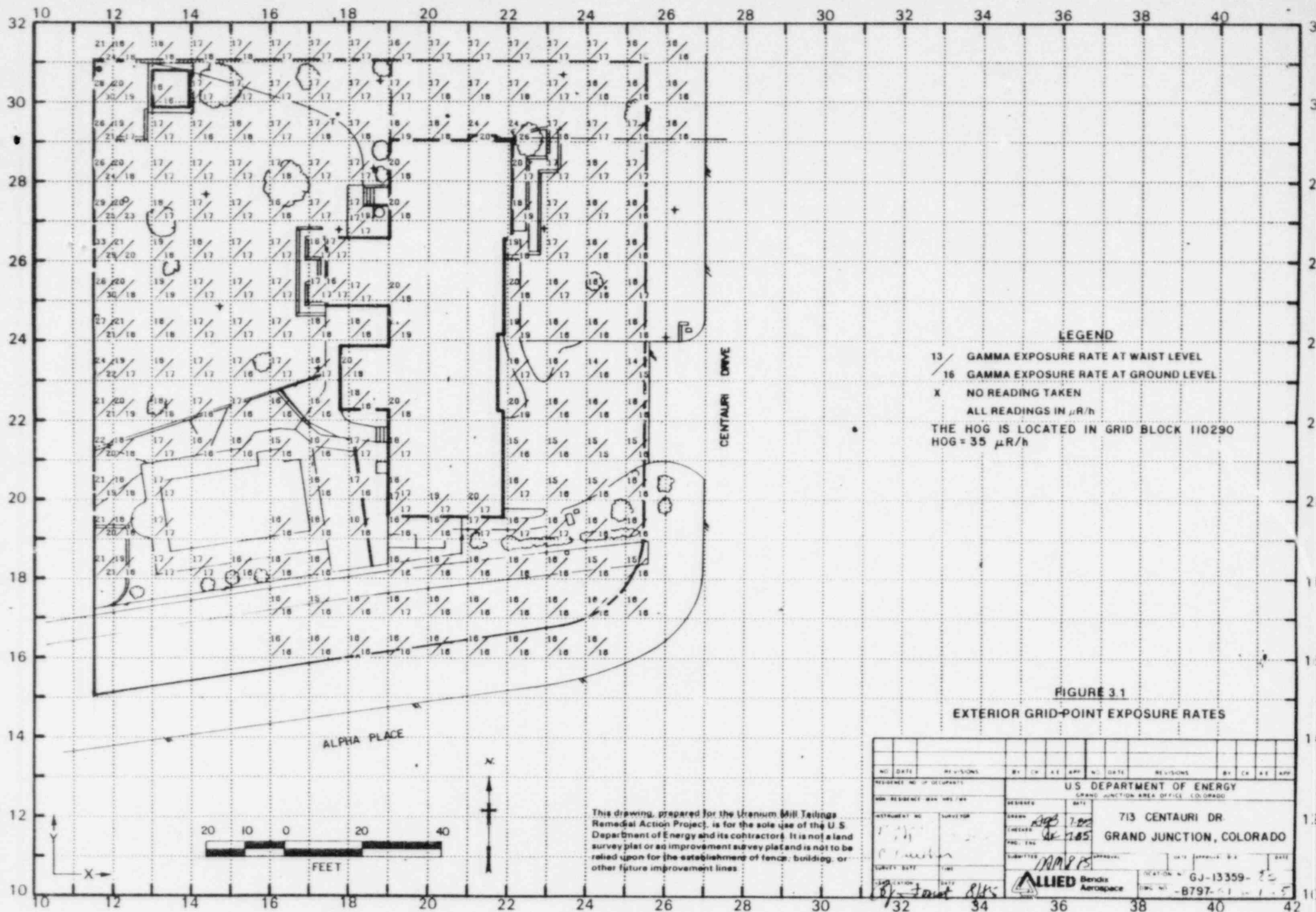
LOT 3, BLOCK 3, GALAXY SUB
GRAND JCT MESA COUNTY COLO

ALPHA PLAT
11792

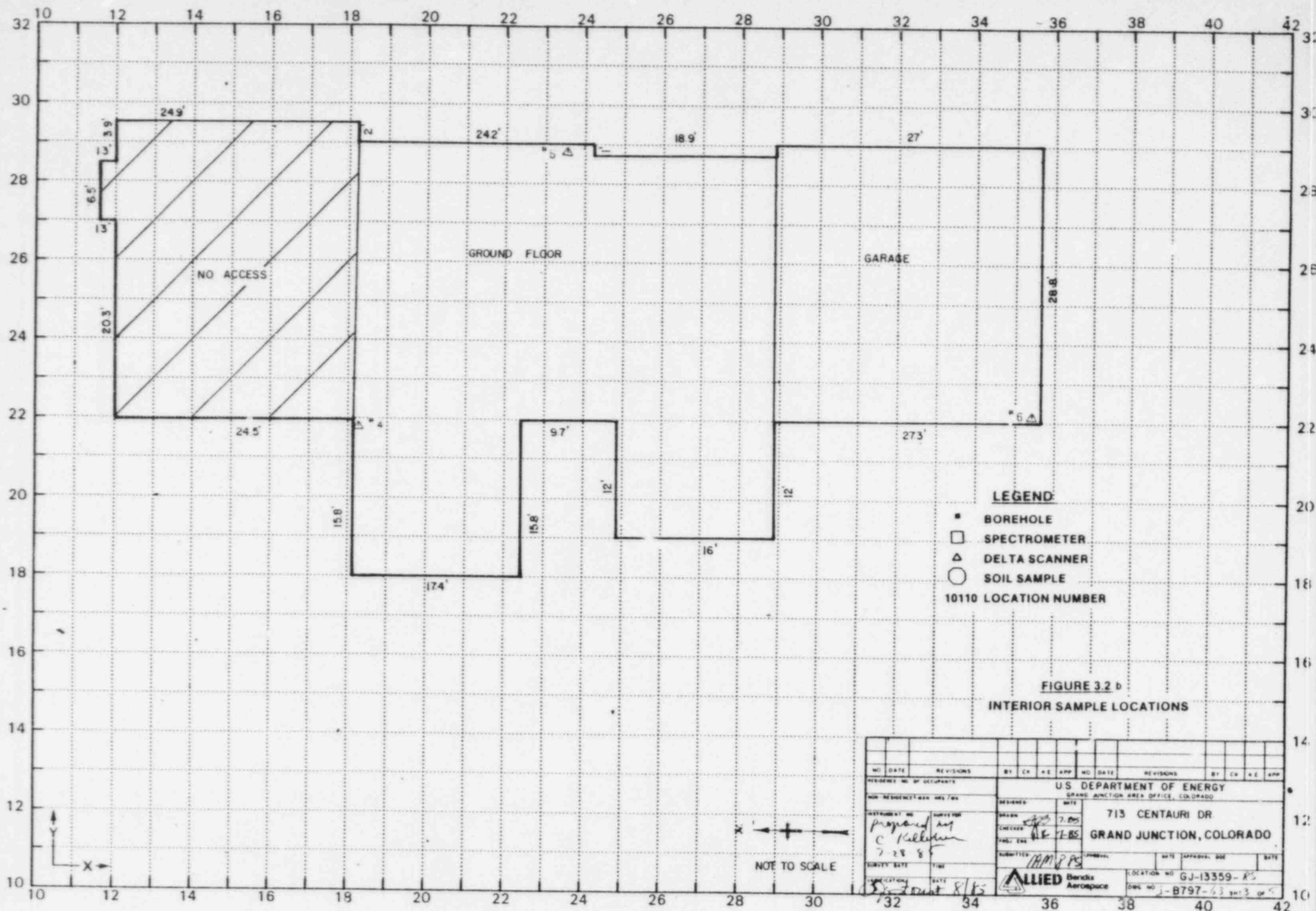
FIGURE 2.2 SITE PLAN



U.S. DEPARTMENT OF ENERGY	
PROJECT: GALAXY SUB	DATE: 11/15/91
DESIGNER: JES. CENTAURI, INC.	APPROVED: [Signature]
CLIENT: JES. CENTAURI, INC.	DATE: 11/15/91
PROJECT: GALAXY SUB	DATE: 11/15/91
PROJECT: GALAXY SUB	DATE: 11/15/91



NO. DATE REVISIONS BY CH. A.E. APP. N. DATE REVISIONS BY CH. A.E. APP.				U.S. DEPARTMENT OF ENERGY GRAND JUNCTION AREA OFFICE (GJ-ORAD)			
RESIDENT NO. OF OCCUPANTS				713 CENTAURI DR. GRAND JUNCTION, COLORADO			
OWN. RESIDENT NAME AND ADDRESS				DRAWN: <i>[Signature]</i> DATE: <i>[Date]</i>			
INSTRUMENT NO. SURVEYOR				CHECKED: <i>[Signature]</i> DATE: <i>[Date]</i>			
SURVEY DATE				TOLERANCE: <i>[Signature]</i> DATE: <i>[Date]</i>			
CALCULATION				APPROVED: <i>[Signature]</i> DATE: <i>[Date]</i>			
BY: <i>[Signature]</i> DATE: <i>[Date]</i>				ALLIED Bendix Aerospace			
32 34 36 38 40 42				LOCATION: GJ-13359-25 INSTR. NO. -B797-1-1-5			



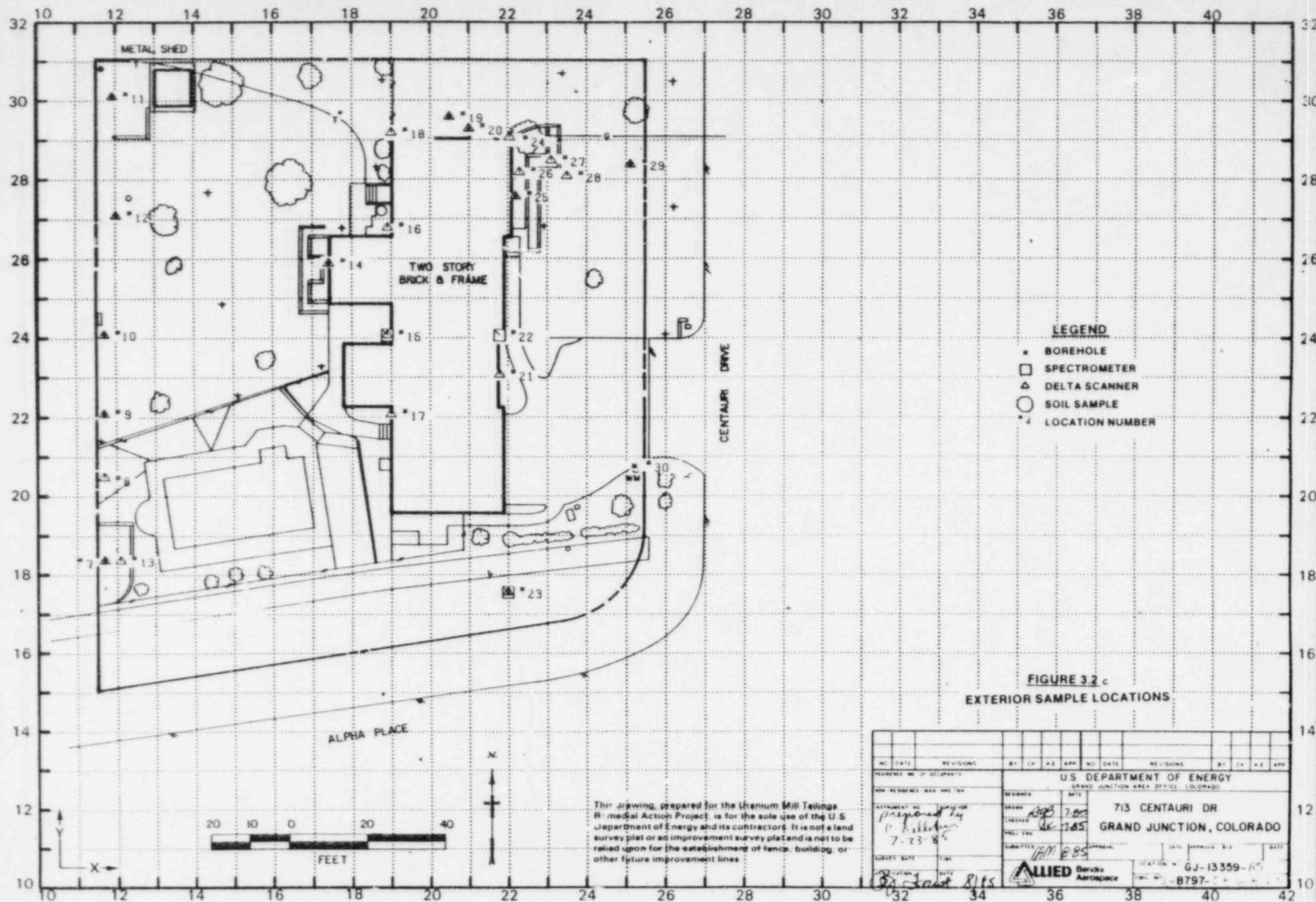
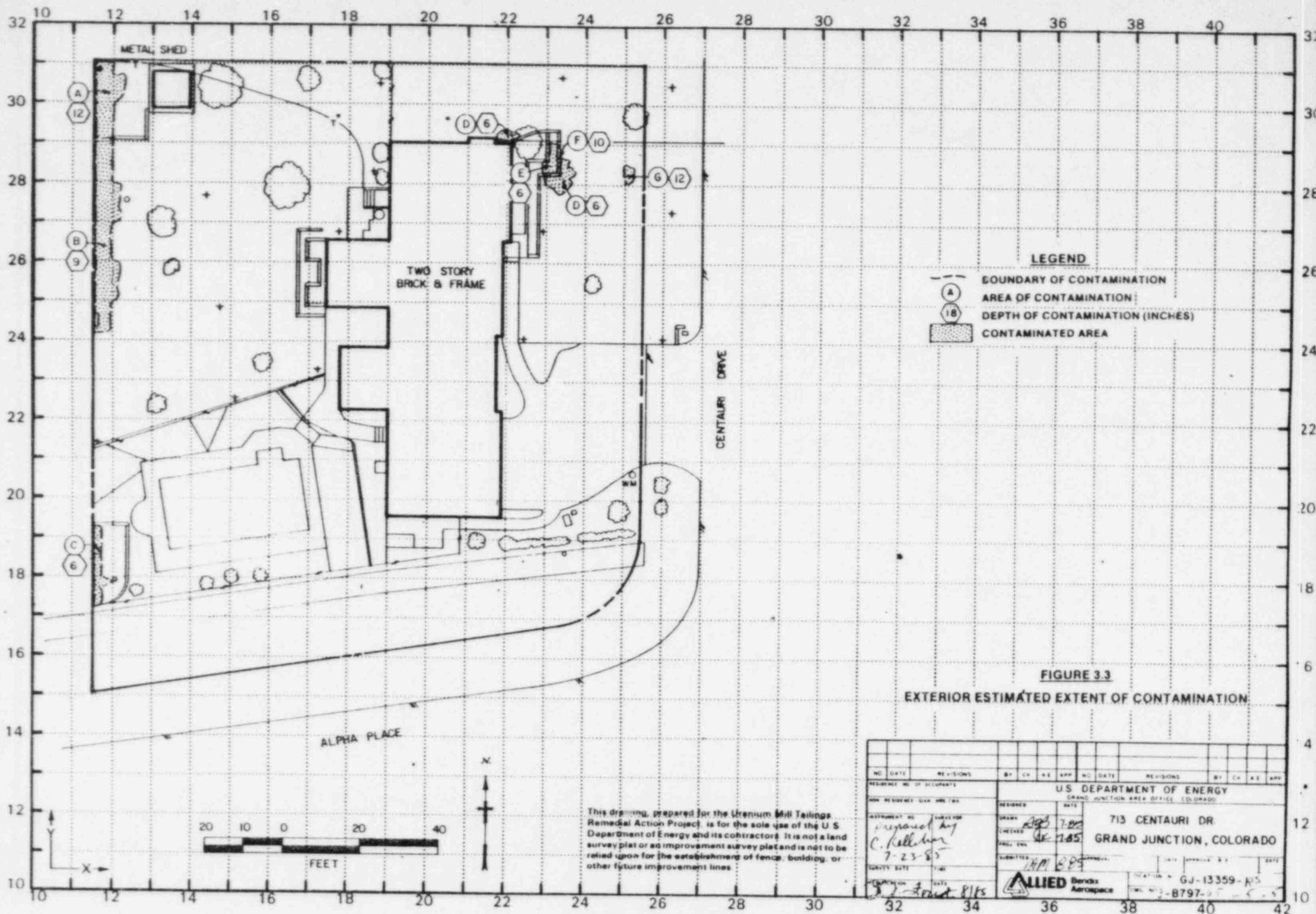


FIGURE 3.2 c
EXTERIOR SAMPLE LOCATIONS

NO DATE					REVISIONS					BY CH X E APP NO DATE					REVISIONS					BY CH X E APP				
RESIDENCE NO. OF OCCUPANTS										U.S. DEPARTMENT OF ENERGY														
NON-RESIDENCE MAX. ANT. YRS										GRAND JUNCTION AREA OFFICE (COLORADO)														
ATTACHMENT NO. <i>prepared by C. H. H. 7-23-85</i>										713 CENTAURI DR GRAND JUNCTION, COLORADO														
DESIGNED DRAWN <i>EGG</i> CHECKED <i>EGG</i> ENG. TKS SUBMITTED <i>MM 885</i>										DATE APPROVAL: <i>8/15</i> DATE: <i>8/15</i>														
SHEET NO. <i>32</i>										LOCATION: <i>GJ-13359-1A</i> 8797														
TITLE: <i>Joint 815</i> DATE: <i>8/15</i>										ALLIED BENDIS Aerospace														



U.S. DEPARTMENT OF ENERGY
URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT
GRAND JUNCTION VICINITY PROPERTIESOfficial Survey Report

Property Address 713 Centauri Drive
Property Owner Carol and Tom Tadvick
Address of Owner (if different from above) same
Report Prepared By Cathy Kelleher

I. PRESENCE/ABSENCE OF RESIDUAL RADIOACTIVE MATERIALS

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

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

1 xxxx 1 In open areas.

1 1 Under or around exterior improvements.

1 1 Under or around a typically nonoccupied structure.

1 xxxxx 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 xxxxx 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 = 21 uR/h
HOG = 35 uR/h

ALLIED Bendix
Aerospace

Bendix Field Engineering Corporation
Grand Junction Operations
Grand Junction, Colorado

Date: July 11, 1985

To: Files

From: Cathy Kelleher

Subject: Team Leader Notes - GJ-13359-RS

Address: 713 Centauri

Owner: Carol and Ted Tadvick

Occupancy: Five people summer, four winter

Weather: Hot and muggy

Team Members

C. Kelleher (Team Leader)
C. Adams
R. Wilkins
M. Dexter

C. Holmes
N. Wallace
M. Gilfillan

Background Data: This property is a spillover inclusion from the property to the west. There is no Oak Ridge National Laboratory (ORNL) data. The Colorado Department of Health (CDH) data indicates tailings along the rear (west) fence and next to a small pen. Currently there is no small pen on the property. Contamination was found along the west fence and in a small area east of the house. The house was built with a white brick facing. Readings of 150 to 200 counts per second (cps) were noted adjacent to these bricks. A number of deltas were taken in this area to ensure this was elevation from the brick and not the soil. Spectrometer readings of the bricks were also taken.

The lot west of the house slopes 2- to 3-feet down to the west fence. There was no access to the pool area as the pool was full of water and could not be surveyed. CDH background data from a Building Permit Survey (BPS) at the time of the construction of the pool indicated no contamination in that area.

There was an auger refusal by the north foundation.

Utilities:

Gas - a delta was taken on the exposed gas line.

Sewer - An auger hole was drilled beside the sewer clean-out north of the house.

Water - The point where the water line exits the house could not be located. Therefore, we augered a hole beside the water meter pit. The pit was shallower than normal.

Interior:

The house consists of a half basement on the north, a crawl space under the middle section, and a single story on the south end. There are two additions on the west side of the house. There were elevated interior readings along the exterior brick wall and two interior brick walls. Deltas were taken to substantiate that this was shine from the brick. There were also elevated readings found in the pit dug for the furnace in the crawl space. A delta was taken here also.

No foundation hole was done adjacent the south side as a concrete sidewalk came out 3 feet on that side.

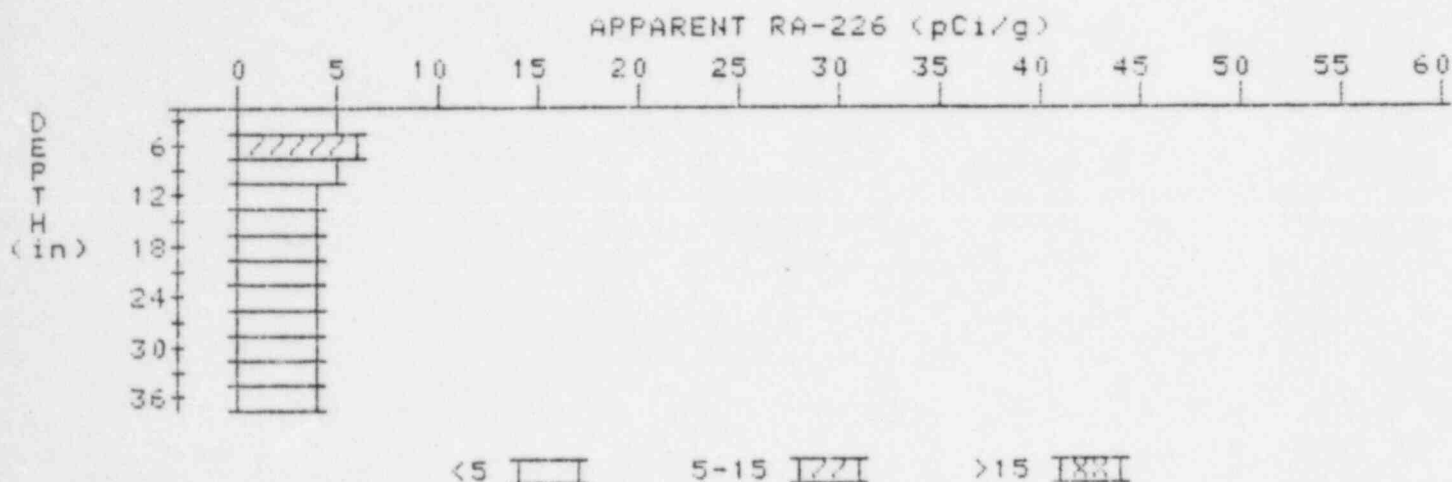
Spillover

The property to the west is already included and has been surveyed and sent to Engineering.

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

7

PROPERTY NUMBER: GJ-13359-RS
HOLE NUMBER: 7
LOCATION: 117183

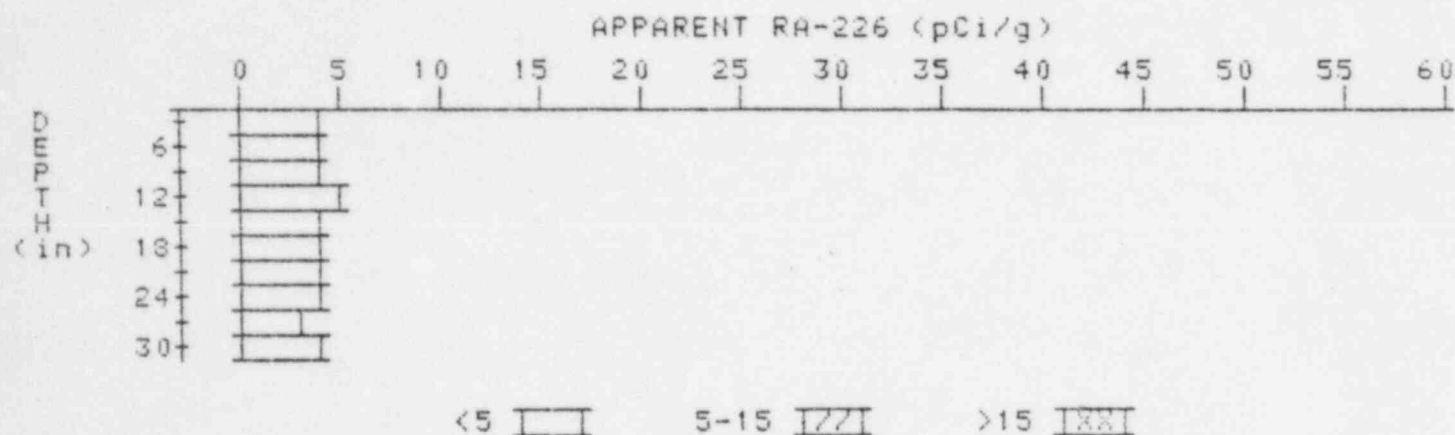


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.7	4.7
6	4.9	5.6
9	4.7	4.9
12	4.4	4.2
15	4.2	3.8
18	4.2	4.4
21	4.1	4.3
24	3.9	3.5
27	3.9	4.1
30	3.8	3.6
33	3.8	3.8
36	3.8	3.8

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

9

PROPERTY NUMBER: GJ-13359-RS
HOLE NUMBER: 9
LOCATION: 117220

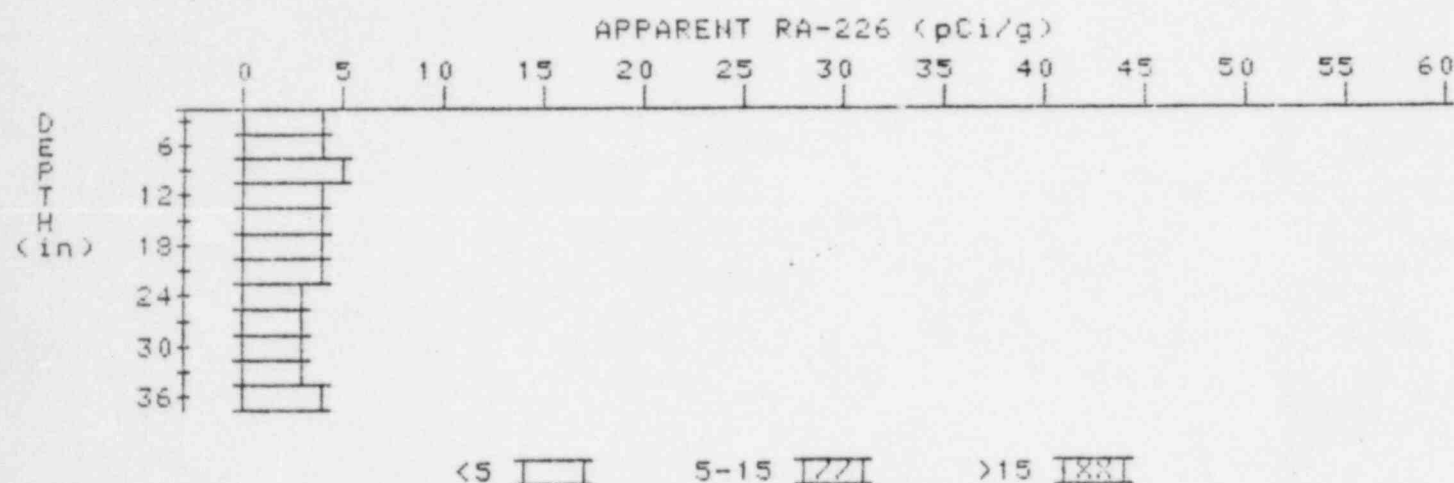


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.8	3.8
6	3.9	3.9
9	4.0	4.0
12	4.1	4.6
15	3.9	3.5
18	3.9	4.3
21	3.7	3.5
24	3.6	3.6
27	3.5	3.1
30	3.6	3.6

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

10

PROPERTY NUMBER: GJ-13359-RS
HOLE NUMBER: 10
LOCATION: 117240

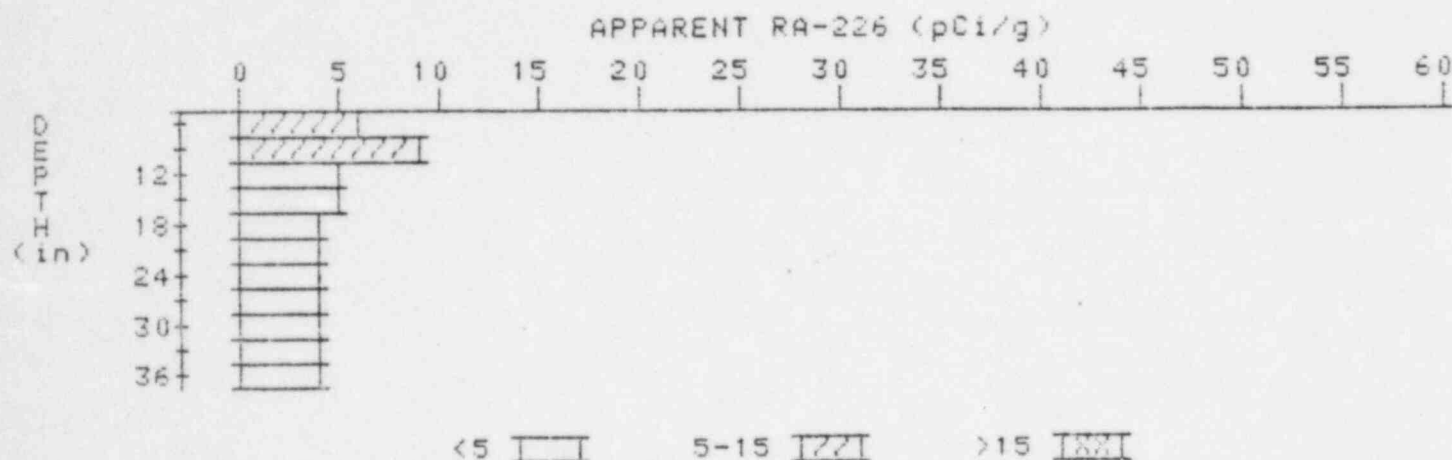


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.5	3.5
6	3.7	3.5
9	4.0	4.7
12	3.9	3.7
15	3.9	4.3
18	3.7	3.5
21	3.6	3.8
24	3.4	3.0
27	3.4	3.4
30	3.4	3.4
33	3.4	3.2
36	3.5	3.5

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

11

PROPERTY NUMBER: GJ-13359-RS
HOLE NUMBER: 11
LOCATION: 119300



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.6	5.6
9	6.2	8.9
12	5.3	4.6
15	4.8	4.6
18	4.4	3.9
21	4.3	4.1
24	4.3	4.3
27	4.3	4.3
30	4.3	4.5
33	4.2	4.0
36	4.2	4.2

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

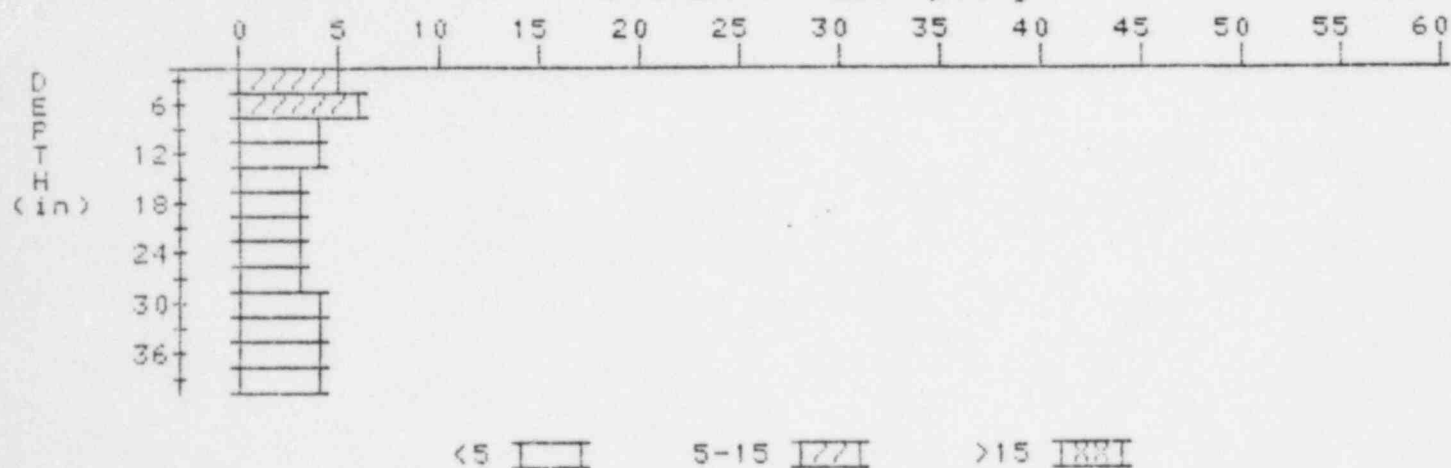
12

PROPERTY NUMBER: GJ-13359-RS

HOLE NUMBER: 12

LOCATION: 120270

APPARENT RA-226 (pCi/g)



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.1	5.1
6	4.9	5.6
9	4.3	3.9
12	3.9	3.7
15	3.6	3.4
18	3.4	3.4
21	3.2	2.7
24	3.3	3.3
27	3.4	3.4
30	3.5	3.5
33	3.6	3.6
36	3.7	3.7
39	3.8	3.8

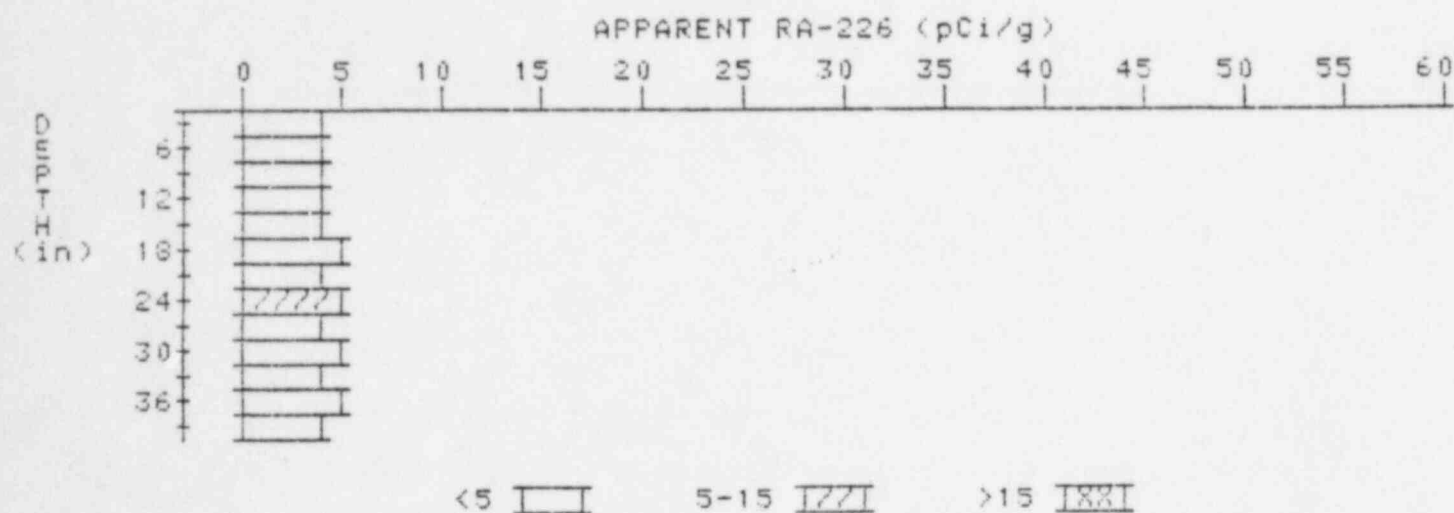
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

14

PROPERTY NUMBER: GJ-13359-RS

HOLE NUMBER: 14

LOCATION: 174258



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.5	3.5
6	3.8	4.0
9	4.0	4.2
12	4.1	4.1
15	4.2	4.0
18	4.4	4.6
21	4.5	4.3
24	4.7	5.4
27	4.5	4.1
30	4.5	4.7
33	4.4	4.4
36	4.3	4.7
39	4.0	4.0

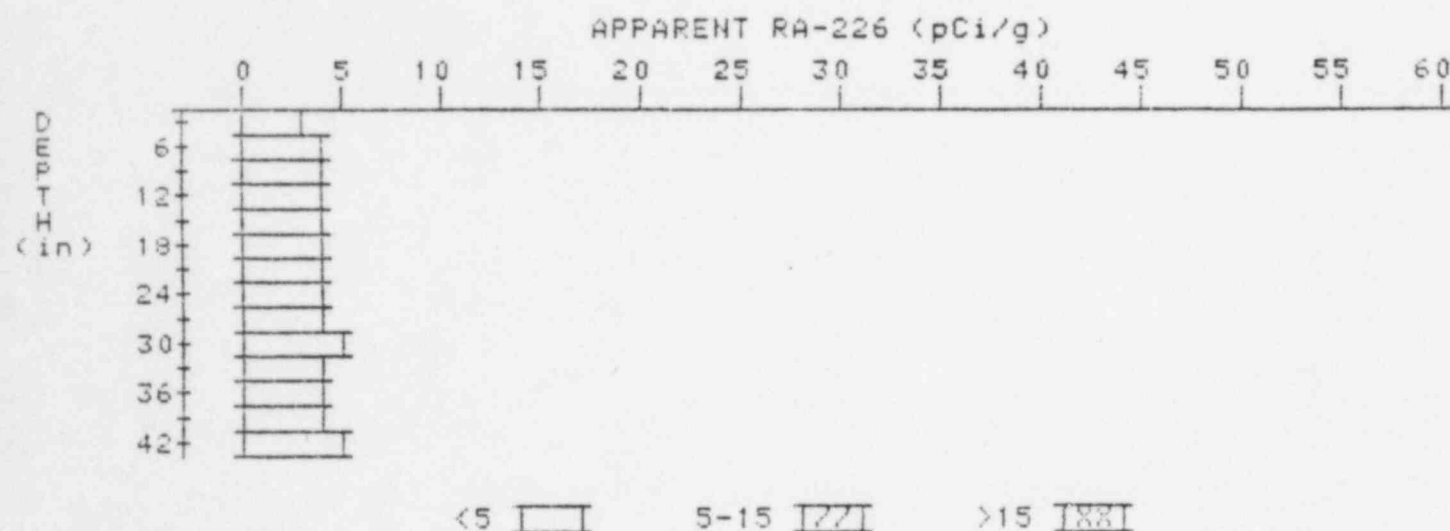
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

19

PROPERTY NUMBER: GJ-13359-RS

HOLE NUMBER: 19

LOCATION: 205295



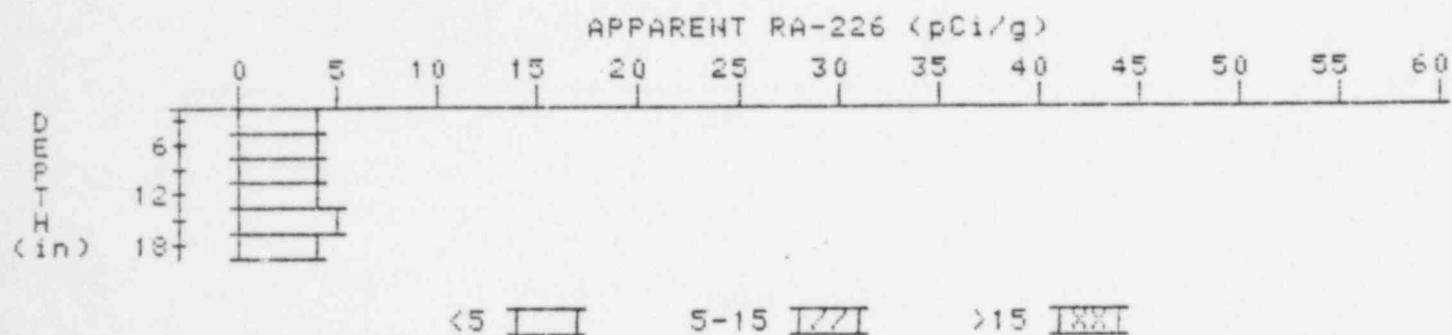
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.3	3.3
6	3.5	3.5
9	3.7	3.7
12	3.9	4.1
15	4.0	4.2
18	4.0	4.0
21	4.0	3.6
24	4.2	4.4
27	4.3	4.3
30	4.4	4.6
33	4.4	4.4
36	4.4	4.4
39	4.4	4.2
42	4.5	4.5

APPARENT RADIUM-226 CONCENTRATION 20 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13359-R3

HOLE NUMBER: 20

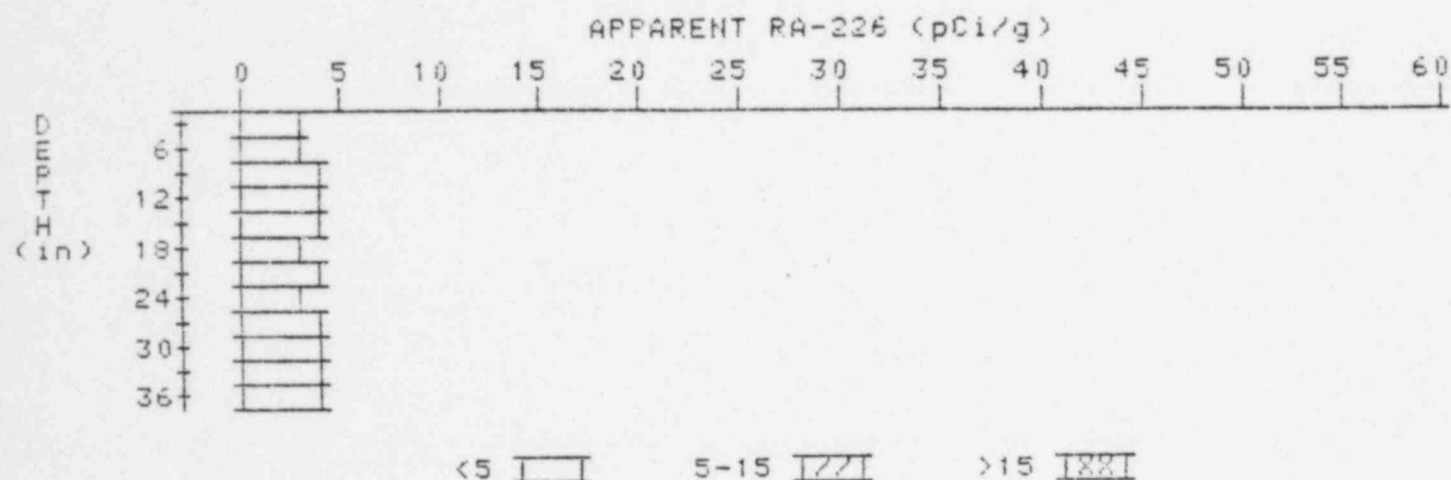
LOCATION: 210292



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.8	3.8
6	4.0	4.2
9	4.1	4.3
12	4.1	3.9
15	4.2	4.6
18	4.1	4.1

APPARENT RADIUM-226 CONCENTRATION 23 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13359-RS
HOLE NUMBER: 23
LOCATION: 220175



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.0	3.0
6	3.3	3.5
9	3.5	3.7
12	3.6	3.6
15	3.7	4.1
18	3.6	3.4
21	3.6	3.6
24	3.6	3.4
27	3.7	3.5
30	3.9	4.1
33	4.0	4.0
36	4.1	4.1

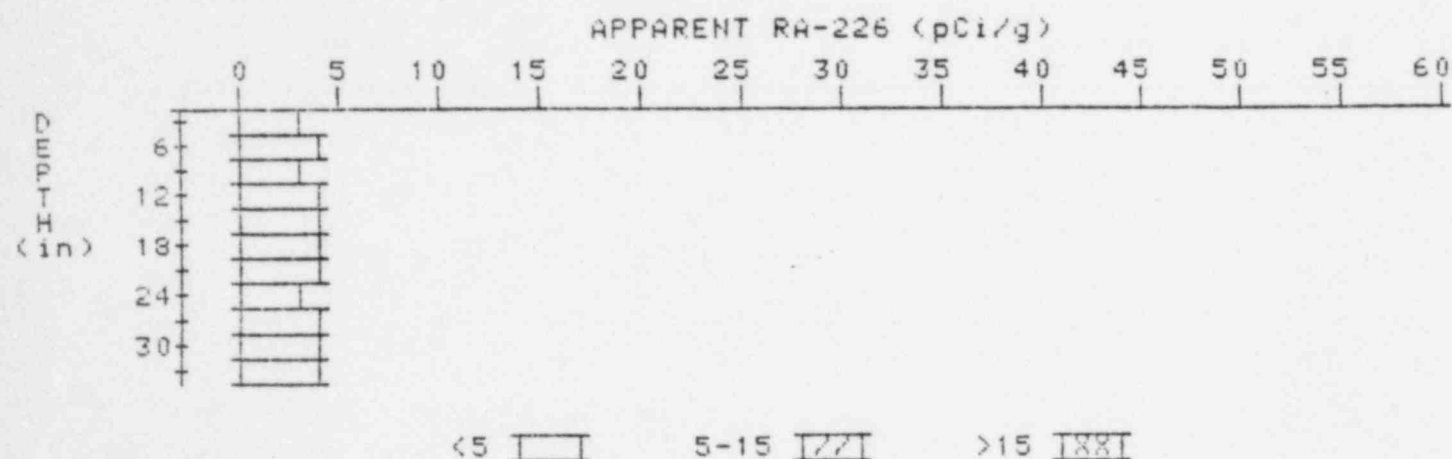
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

25

PROPERTY NUMBER: GJ-13359-RS

HOLE NUMBER: 25

LOCATION: 222275



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.3	3.3
6	3.5	3.9
9	3.5	3.3
12	3.6	3.8
15	3.6	3.6
18	3.6	3.6
21	3.6	3.8
24	3.5	3.1
27	3.6	3.8
30	3.6	3.8
33	3.5	3.5

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

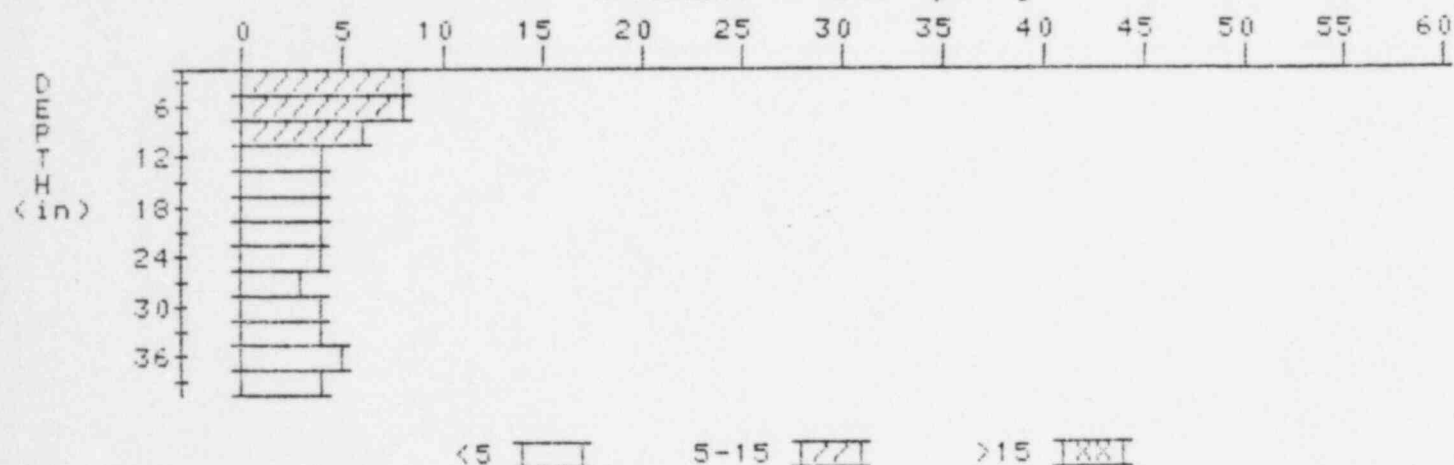
29

PROPERTY NUMBER: GJ-13359-RS

HOLE NUMBER: 29

LOCATION: 251283

APPARENT RA-226 (pCi/g)



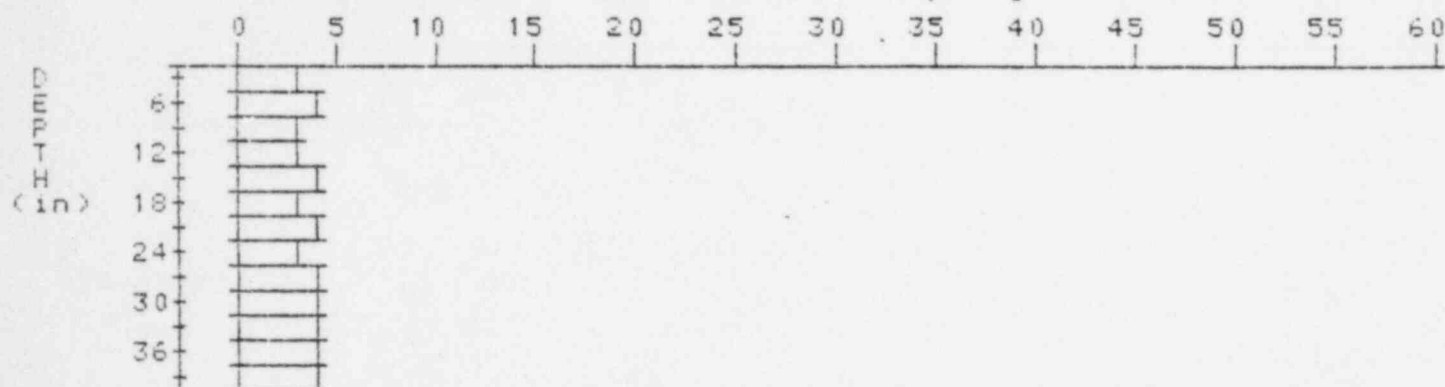
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	7.5	7.5
6	7.0	6.1
9	5.9	5.5
12	5.0	4.3
15	4.5	4.1
18	4.2	4.0
21	4.0	4.0
24	3.8	3.6
27	3.7	3.3
30	3.8	3.8
33	3.9	3.5
36	4.2	4.7
39	4.2	4.2

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

30

PROPERTY NUMBER: GJ-13359-RS
HOLE NUMBER: 30
LOCATION: 252207

APPARENT RA-226 (pCi/g)



<5

5-15

>15

Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.1	3.1
6	3.4	4.1
9	3.3	2.9
12	3.4	3.4
15	3.5	3.7
18	3.5	3.3
21	3.6	3.8
24	3.6	3.4
27	3.7	3.9
30	3.7	3.7
33	3.7	3.9
36	3.6	3.6
39	3.5	3.5

