

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-10972-RS
ADDRESS: 304 TELLER 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

Michael K. Tucker
M. TUCKER
DOE PROJECT ENGINEER

DATE

August 30, 1985

REA10972:REA-712

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-10972-RS, is a single-family residence located at 304 Teller 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, 25 cu. yd.; interior, 0 cu. yd.

Estimated cost to perform remedial action is \$3,252. Remedial action on this property will take approximately 7 days to complete.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 304 Teller Avenue, Grand Junction, Colorado

Zoning: Residential (RMF-32)

Lot Size: Approximately 6,250 sf (0.14 acres)

Legal Description: Lots 31 and 32, Block 14, Grand Junction Addition, City of Grand Junction, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 2 mile(s) northwest 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:	Alley
South:	Teller Avenue
East:	Single-family residence
West:	3rd Street

2.2 Existing Facilities and Structures

Primary Structure:

Type:	Single-story residence
Size:	Approximately 1,000 sf
Construction Date:	1909
Construction:	Wood-frame
Foundation:	Concrete wall on spread footing
Footing Depth:	Not determined
Basement:	Yes - partial (north end)
Crawl Space:	Yes - partial (south end)
Condition:	Good

Other Structures:

Type:	Garage
Size:	Approximately 240 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 over 50 years old. Therefore, it does meet the eligibility criteria for consideration of inclusion on the National Register of Historic Places.

Alterations to Structure: None

Architectural Significance: None

Historical Significance: None known

3.0 RADIOLOGIC SURVEY

3.1 Introduction

Radiologic data were collected by Bendix at DOE ID No. GJ-10972-RS on August 5, 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 the historical information available for this property was conducted to determine the areas of potential contamination identified during previous radiologic 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): 51 uR/h

Exterior radium-concentration measurements are presented in Appendix Table 3.1. Exterior exposure-rate survey results are shown in Appendix Figure 3.1.

3.2.2 Interior Findings

Background Readings: 14 to 17 uR/h
Highest Inside Gamma Reading (HIG): 17 uR/h

Interior gamma exposure-rate measurements are summarized in Appendix Table 3.2.

3.3 Boreholes, Soil Samples, and Other Measurements

Areas which displayed elevated gamma levels were further investigated; the locations and types of these investigations are shown in Appendix Figure 3.2. 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 3.3 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: Concrete
Direction From Primary Structure: Northwest, west,
and south
Total Depth of Contamination: 9 inches
Other (height or thickness): 4-inch-thick concrete
Comments: City sidewalk, 5 deposits
Approximate Square Footage: 480
- (Area B) Surface Material: Soil
Direction From Primary Structure: West and south
Total Depth of Contamination: 9 inches
Comments: 4 deposits
Approximate Square Footage: 241
- (Area C) Surface Material: Soil
Direction From Primary Structure: West and south
Total Depth of Contamination: 6 inches
Comments: 8 deposits
Approximate Square Footage: 168

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-10972-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 \$3,252.

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 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-10972-RS

304 Teller Avenue

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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	133212	00	DS	<1.0		*	Northwest of primary structure
2	137215	00	DS	8.7		*	West of garage DC = 6 inches Based on all available data
		03	TC	4.4		*	
		06	TC	4.6		*	
		09	TC	4.7		*	
		12	TC	4.5		*	
		15	TC	4.3		*	
		18	TC	4.2		*	
		21	TC	4.1		*	
		24	TC	4.1		*	
		27	TC	4.1		*	
		30	TC	4.1		*	
		33	TC	4.1		*	
		36	TC	4.1		*	
3	138208	00	DS	5.7		*	Gravel West of garage DC = 6 inches Based on all available data
		03	TC	4.7		*	
		06	TC	5.0		*	
		09	TC	4.8		*	
		12	TC	4.5		*	
		15	TC	4.2		*	
		18	TC	4.1		*	
		21	TC	3.9		*	
		24	TC	4.0		*	
		27	TC	3.9		*	
4	141212	00	DS	15.8		*	West of garage on sidewalk
5	148212	00	DS	1.2		*	Northwest of primary structure on sidewalk
6	156212	00	DS	1.4		*	Northwest of primary structure
7	161206	00	DS	1.8		*	Northwest of primary structure
		06	DS	1.1		*	

Radium Concentrations at Exterior Locations

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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.		
8	164208	00	DS	6.7		*	Northwest of primary structure
		03	TC	4.7		*	
		06	TC	4.9		*	
		09	TC	4.9		*	DC = 6 inches Based on all available data
		12	TC	4.5		*	
		15	TC	4.5		*	
		18	TC	4.3		*	
		21	TC	4.1		*	
		24	TC	4.1		*	
		27	TC	4.0		*	
		30	TC	3.9		*	
		33	TC	4.0		*	
9	167212	00	DS	26.6		*	Northwest of primary structure on sidewalk
		03	TC	40.6		*	
		06	TC	39.5		*	
		09	TC	24.1		*	DC = 9 inches Based on the deconvolution graph
		12	TC	14.7		*	
		15	TC	10.1		*	
		18	TC	7.4		*	
		21	TC	6.0		*	
		24	TC	5.3		*	
		27	TC	4.8		*	
		30	TC	4.6		*	
		33	TC	4.7		*	
		36	TC	5.0		*	
10	170200	00	DS	1.9		*	
11	170204	00	DS	3.0		*	
		04	DS	1.9		*	
12	175215	00	DS	10.9		*	
		06	DS	6.0		*	
		12	DS	2.2		*	
13	184212	00	DS	25.5		*	Sidewalk
14	196253	00	DS	1.6		*	Gas line
		18	DS	<1.0		*	Gas line exposed
15	222208	00	DS	11.3		*	
		03	TC	7.0		*	
		06	TC	6.1		*	

Radium Concentrations at Exterior Locations

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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.		
15	222208	09	TC	5.5		*	DC = 9 inches Based on the deconvolution graph
		12	TC	4.9		*	
		15	TC	4.6		*	
		18	TC	4.4		*	
		21	TC	4.3		*	
		24	TC	4.2		*	
		27	TC	4.2		*	
		30	TC	4.1		*	
		33	TC	4.0		*	
		36	TC	3.8		*	
16	222212	00	DS	29.9		*	West of primary structure on concrete
17	222215	00	DS	21.4		*	
		06	DS	<1.0		*	
18	241236	03	TC	3.3		*	South foundation Water line DC = 0 inches
		06	TC	3.5		*	
		09	TC	3.6		*	
		12	TC	3.7		*	
		15	TC	3.8		*	
		18	TC	3.8		*	
		21	TC	3.8		*	
		24	TC	3.8		*	
		27	TC	3.9		*	
		30	TC	3.9		*	
		33	TC	3.9		*	
		36	TC	3.8		*	
		39	TC	3.8		*	
		42	TC	3.8		*	
		45	TC	3.9		*	
		48	TC	3.8		*	
		51	TC	3.8		*	
		54	TC	3.8		*	
57	TC	3.9		*			
60	TC	3.8		*			
63	TC	3.7		*			
19	244244	00	DS	2.2		*	South of primary structure
		06	DS	1.6		*	
20	245208	00	DS	5.5		*	
		03	TC	4.4		*	

Radium Concentrations at Exterior Locations

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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.		
20	245208	06	TC	4.4		*	DC = 6 inches
		09	TC	4.4		*	Based on all
		12	TC	4.4		*	available data
		15	TC	4.3		*	
		18	TC	4.3		*	
		21	TC	4.3		*	
		24	TC	4.2		*	
		27	TC	4.0		*	
		30	TC	4.0		*	
21	250212	00	DS	33.8		*	West of primary
		03	TC	41.0		*	structure on the
		06	TC	28.7		*	sidewalk
		09	TC	17.3		*	DC = 9 inches
		12	TC	11.3		*	Based on the
		15	TC	8.1		*	deconvolution graph
		18	TC	6.5		*	
		21	TC	5.6		*	
		24	TC	5.1		*	
		27	TC	4.8		*	
		30	TC	4.6		*	
		33	TC	4.4		*	
		36	TC	4.4		*	
22	250260	00	DS	1.1		*	Background
		03	TC	3.2		*	DC = 0 inches
		06	TC	3.5		*	
		09	TC	3.6		*	
		12	TC	3.7		*	
		15	TC	3.8		*	
		18	TC	3.8		*	
		21	TC	3.8		*	
		24	TC	3.8		*	
		27	TC	3.8		*	
		30	TC	3.7		*	
		33	TC	3.6		*	
23	252215	00	DS	5.7		*	Southwest of
		06	DS	6.1		*	primary structure
		12	DS	1.7		*	
24	258212	00	DS	1.3		*	Southwest of primary structure on concrete

Radium Concentrations at Exterior Locations

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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.		
25	261230	00	DS	13.5		*	DC = 9 inches
		06	DS	8.2		*	Based on the
		03	TC	16.6		*	deconvolution graph
		06	TC	12.8		*	
		09	TC	8.5		*	
		12	TC	6.4		*	
		15	TC	5.4		*	
		18	TC	4.9		*	
		21	TC	4.6		*	
		24	TC	4.4		*	
		27	TC	4.4		*	
26	261255	00	DS	8.4		*	South of the
		06	DS	2.4		*	primary structure
27	265220	00	DS	30.1		*	Sidewalk
28	265240	00	DS	23.6		*	DC = 9 inches
		03	TC	42.9		*	Based on the
		06	TC	29.9		*	deconvolution graph
		09	TC	18.9		*	
		12	TC	12.6		*	
		15	TC	9.3		*	
		18	TC	7.4		*	
		21	TC	6.3		*	
		24	TC	5.4		*	
		27	TC	5.1		*	
		30	TC	4.9		*	
29	265250	00	DS	9.8		*	South of primary structure
30	265260	00	DS	1.4		*	Sidewalk
31	268235	00	DS	3.2		*	South of the
		06	DS	1.5		*	primary structure
32	268255	00	DS	3.9		*	South edge of
		03	TC	4.8		*	sidewalk
		06	TC	4.4		*	DC = 6 inches
		09	TC	4.3		*	Based on all
		12	TC	4.2		*	available data

Radium Concentrations at Exterior Locations

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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.		
32	268255	15	TC	4.2		*	
		18	TC	4.1		*	
		21	TC	4.0		*	
		24	TC	4.0		*	
		27	TC	4.0		*	
		30	TC	3.9		*	
33	270220	00	DS	1.6		*	Southwest of the primary structure

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 = 08-05-85
 Team Leader = CA

Table 3.2

Summary of Interior Gamma Exposure Rates

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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	*	*	*	*	16-17	*
Ground Floor	*	*	*	*	14-16	*
Garage	*	*	*	*	14-16	*

* Gamma scans were performed to confirm the absence of interior contamination.

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-10972-RS

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<u>AREA</u>	<u>CALCULATIONS(ft)</u>	<u>SF</u>	<u>DEPTH(ft)</u>	<u>CF</u>	<u>CUBIC YARDS</u>
EXTERIOR					
	Concrete				
A	5 x 42.8	=	214		
	5 x 10	=	50		
	5 x 8	=	40		
	5 x 35	=	175		
	5 x 10	=	50		
			529	x 0.3 =	159
	Volume of Concrete			= 159 =	159/27 = 6
	Contaminated Fill				
A	5 x 42	=	210		
	5 x 10	=	50		
	5 x 6	=	30		
	5 x 28	=	140		
	5 x 10	=	50		
			480	x 0.5 =	240
B	2 x 68	=	136		
	3 x 35	=	105		
			241	x 0.8 =	193
C	2 x 84	=	168	x 0.5 =	84
	Volume of Fill			= 517 =	517/27 = 19
	TOTAL VOLUME - EXTERIOR				= 25

See Appendix Figure 3.3 For Areas

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Table 4.2
Estimated Cost of Decontamination and Restoration
DOE ID No. GJ-10972-RS

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EXTERIOR

Remove/replace concrete sidewalks 529 sf @ \$3/sf		\$ 1,587
Remove identified residual radioactive material 19 cy @ \$14.50/cy (machine-open)		276
Replace areas with topsoil 10 cy @ \$9.50/cy		95
Replace areas with roadbase 9 cy @ \$11.50/cy		104
	TOTAL EXTERIOR	\$ 2,062
	TOTAL INTERIOR	0
	ACCESS CONTROL	150
	SUBTOTAL	\$ 2,212
	CONTINGENCY @ 5%	111
	SUBTOTAL	\$ 2,323
	CONTRACTOR OVERHEAD & PROFIT @ 40%	929
	GRAND TOTAL	\$ 3,252

RR083085
REA10972/REA-712/AP



PROPERTY LOCATION

STATE OF COLORADO
TAILINGS REPOSITORY

FIGURE 2.1
VICINITY MAP



**LOT 31 AND 32 BLOCK 14
GRAND JUNCTION ADDITION
CITY OF GRAND JUNCTION
MESA COUNTY, COLORADO.**

PLAT DIST = 1250

PLAT DIST = 500

EXISTING STRUCTURES:
GARAGE
HOUSE
SINGLE STORY FRAME W/CRAWLSPACE

PROPOSED IMPROVEMENTS:
SIDEWALK
CURB/GUTTER
DIRT/GRAVEL

UTILITIES:
OH UTILITIES
GAS
ELECTRICITY
SEWER

LANDSCAPE FEATURES:
TREES
BUSHES
GRASS

DIMENSIONS AND BEARINGS:
Various measurements are provided throughout the site plan, including lot widths and building footprints.

SCALE:
0 10 20 30 FEET

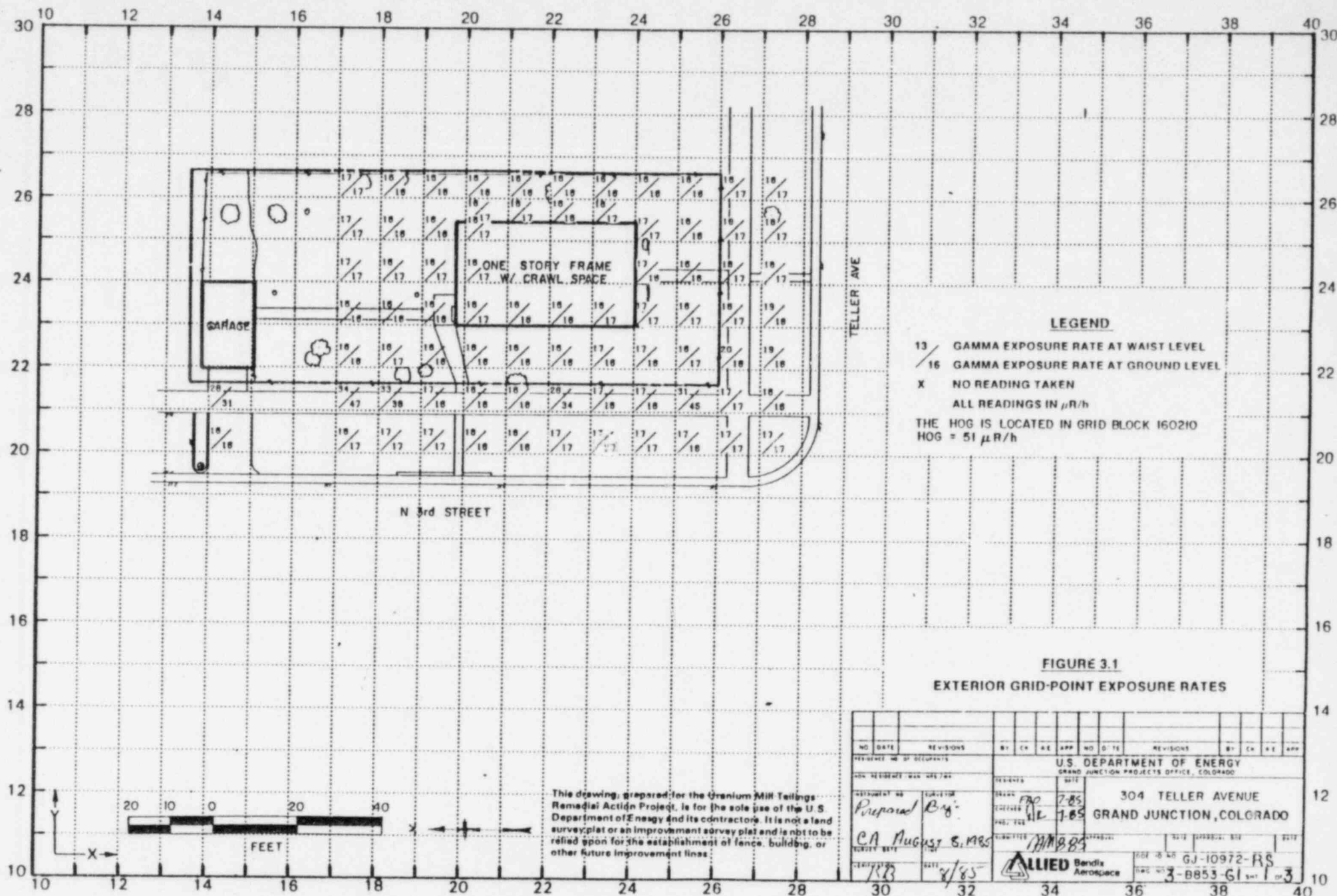
NORTH ARROW:
Indicates orientation towards the top of the page.

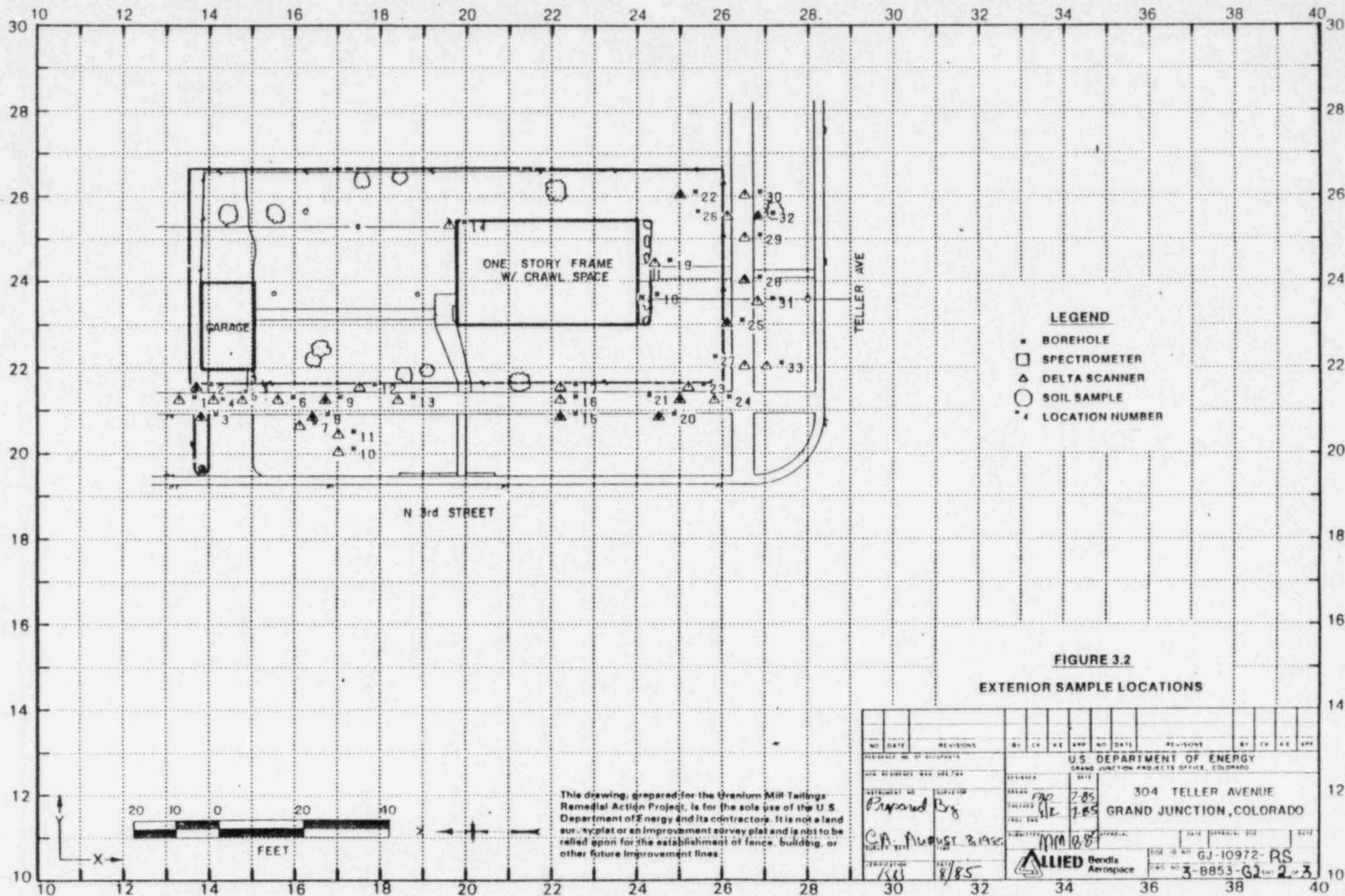
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FIGURE 2.2 SITE PLAN

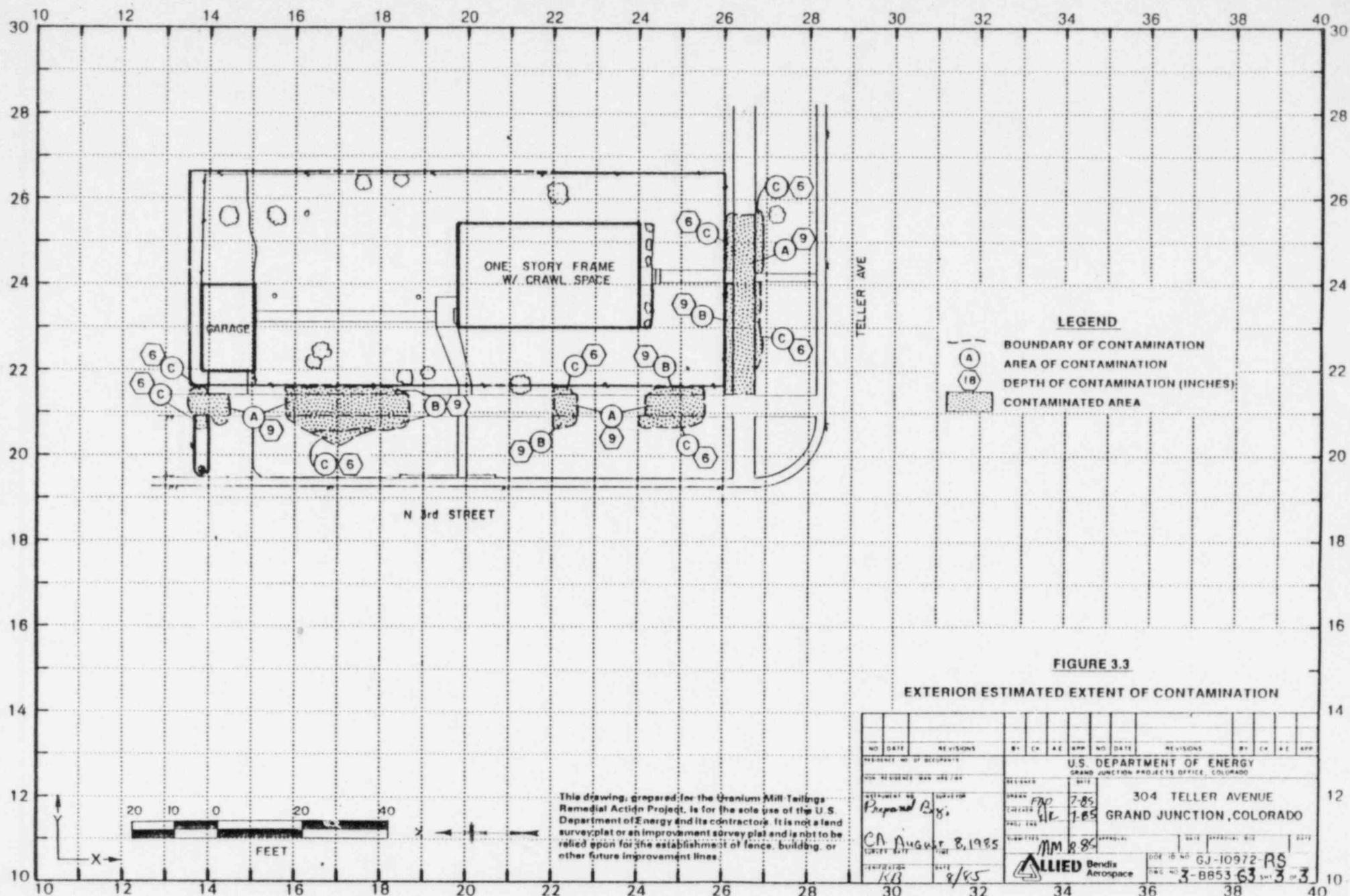
U.S. DEPARTMENT OF ENERGY		DOE #
GRAND JUNCTION PROJECT OFFICE, COLORADO		J
ADDRESS 304 TELLEBACH E		
GRAND JUNCTION, COLORADO		
SURV PLS 7-29-86	DRAFT PLS 1-20-87	CN

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 to be used as a survey plat or an improvement survey plat and is not to be relied upon for the establishment of fence, building, or other permanent improvements.

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION PROJECT OFFICE COLORADO		DOW ID NO J10972-RS
ADDRESS 304 TELLER AVE GRAND JUNCTION, COLORADO		ALLIED Needs File Engineering Corporation <small>Dept. of Industrial and Chemical</small>
SURV P.B. 220-A	DRAFT P.B. 220-A	CR WCT-1-1
DRAWING NO 3-C-853-F1		SHEET OF







DOE ID NO. GJ-10972-RS Date August 8, 1985

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

Official Survey Report

Property Address 304 Teller Avenue
Property Owner Roberta Ringaman
Address of Owner (if different from above) Same
Report Prepared By Cordell Adams

I. PRESENCE/ABSENCE OF RESIDUAL RADIOACTIVE MATERIALS

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

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

1 XX 1 In open areas.

1 XX 1 Under or around exterior improvements.

1 1 Under or around a typically nonoccupied structure.

1 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 = 51 uR/h

ALLIED Bendix
Aerospace

Bendix Field Engineering Corporation
Grand Junction Operations
Grand Junction, Colorado

Date: August 5, 1985

To: Files

From: Cordell Adams

Subject: Team Leader Notes - GJ-10972-RS

Address: 304 Teller Avenue

Owner: Roberta N. Bingaman

Weather: Warm and sunny

Occupancy: Three

Team Members

C. Adams (Team Leader)
T. Coulson
S. Southern

H. Lucero
M. Dexter
H. Mattison

Instruments

Crutch Scintillometers: C-1196, C-1158, C-1113, C-1247, C-1214

Total Count Meters: C-4099, C-3956

Delta Scintillometers: C-3940, C-4058, C-4065

Our survey showed contamination to be in the city sidewalk surrounding the property on the west and south sides. The sidewalk on the west side showed four places of contamination. Deltas were taken in areas that were shown as clean. According to the gamma scan the deltas proved the contamination to be in patched spots in the sidewalk. Cores were taken in this sidewalk, visible tailings

4

were noticed beneath the sidewalk at approximately 2-1/2 inches deep. The crutch scintillometer showed readings ranging from 300 to 400 counts per second (cps) on the top of the sidewalk and 1000 to 1200 cps in the cored hole before augering.

All utility lines, with the exception of the sewer line, were investigated. The basement was checked for the location of the sewer line; however, it could not be located. The house does not have a full basement, due to the basement being finished off. Attempts were made to enter the crawl space; however, due to remodeling of the entry way, the crawl space no longer exists. Only an opening for access to the plumbing on the bathtub was all that could be found. All utility lines that were investigated proved to be free of contamination.

This property appears to have a natural high background. The majority of scintillometer readings ranged from 110 to 135 cps. During the augering, it was noted that the ground appears to be of a hard shale.

The lot is fairly flat and does not have any great elevated grade changes.

No instrument failures occurred.

No spillover contamination was noted.

All team members were alpha scanned before leaving the property.

APPARENT RADIUM-226 CONCO
DECONVOLUTION Q

Team Leader Notes
Cordell Adams
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Team Leader Notes
Cordell Adams
GJ-10972-RS
August 5, 1985
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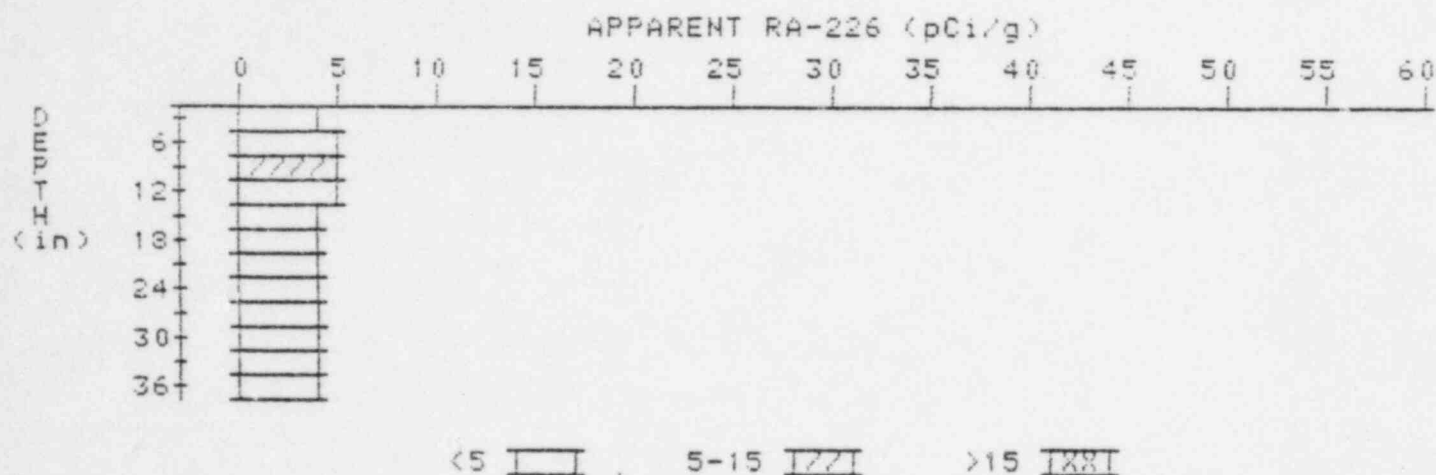
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

2

PROPERTY NUMBER: GJ-10972-R3

HOLE NUMBER: 2

LOCATION: 137215

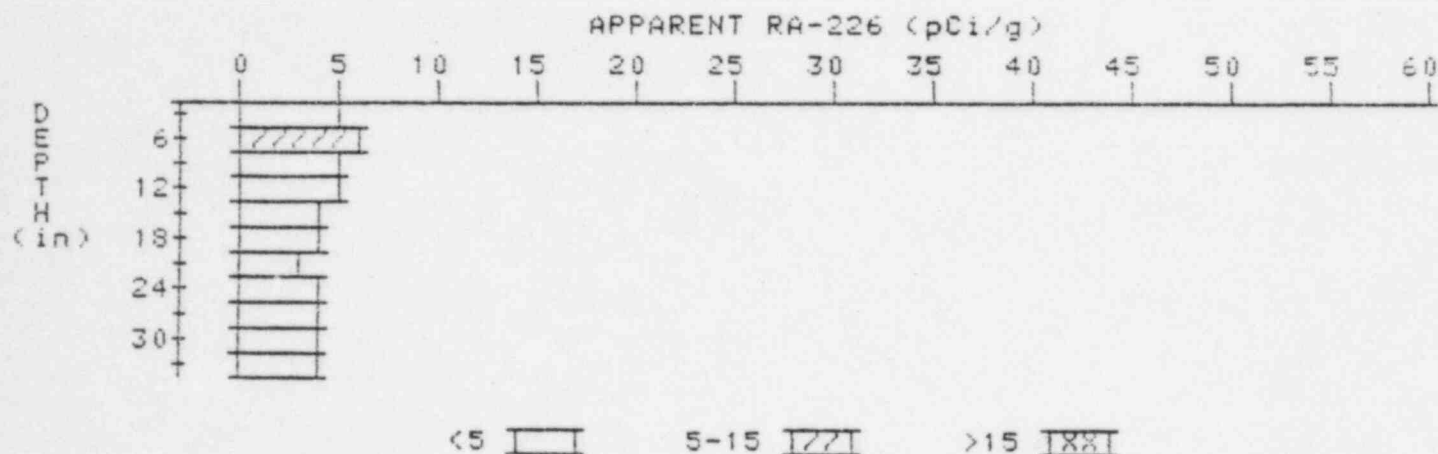


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.4	4.4
6	4.6	4.8
9	4.7	5.2
12	4.5	4.5
15	4.3	4.1
18	4.2	4.2
21	4.1	3.9
24	4.1	4.1
27	4.1	4.1
30	4.1	4.1
33	4.1	4.1
36	4.1	4.1

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

3

PROPERTY NUMBER: GJ-10972-RS
HOLE NUMBER: 3
LOCATION: 138208



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.7	4.7
6	5.0	5.9
9	4.3	5.0
12	4.5	4.5
15	4.2	3.8
18	4.1	4.3
21	3.9	3.4
24	4.0	4.4
27	3.9	3.7
30	3.9	3.9
33	3.9	3.9

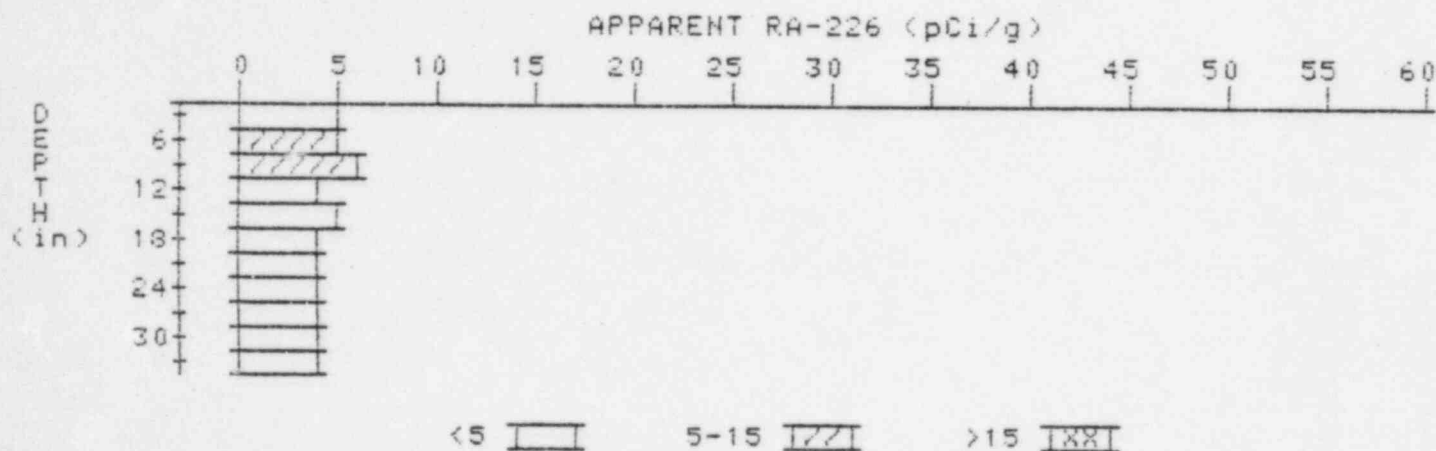
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

8

PROPERTY NUMBER: GJ-10972-RS

HOLE NUMBER: 8

LOCATION: 164208



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.7	4.7
6	4.9	5.3
9	4.9	5.6
12	4.5	3.8
15	4.5	4.9
18	4.3	4.3
21	4.1	3.7
24	4.1	4.3
27	4.0	4.0
30	3.9	3.5
33	4.0	4.0

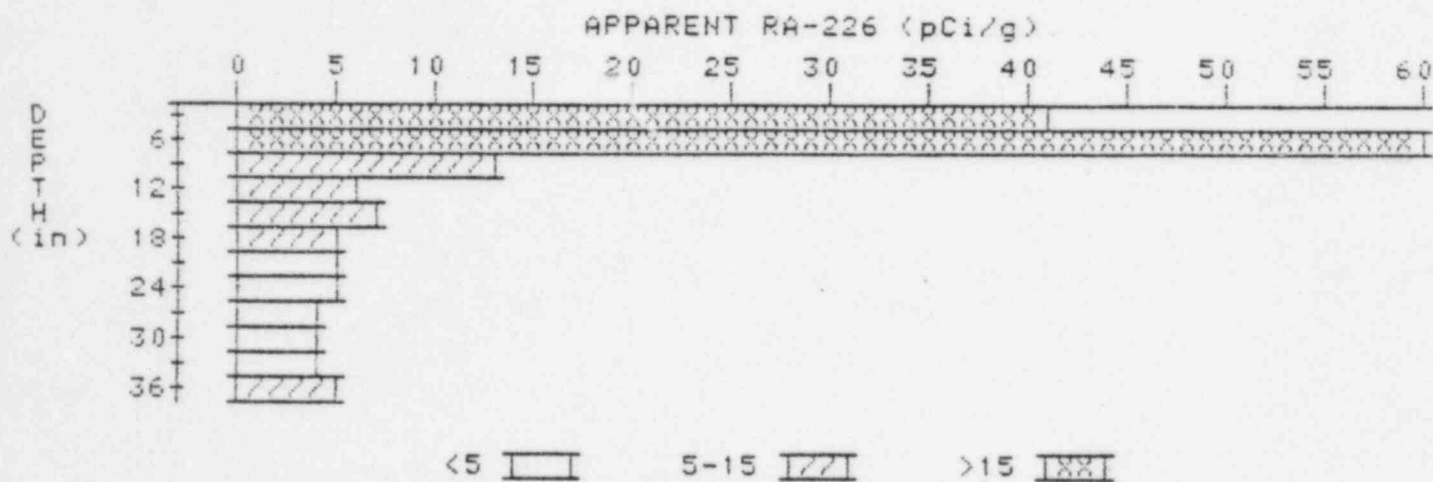
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

9

PROPERTY NUMBER: GJ-10972-RS

HOLE NUMBER: 9

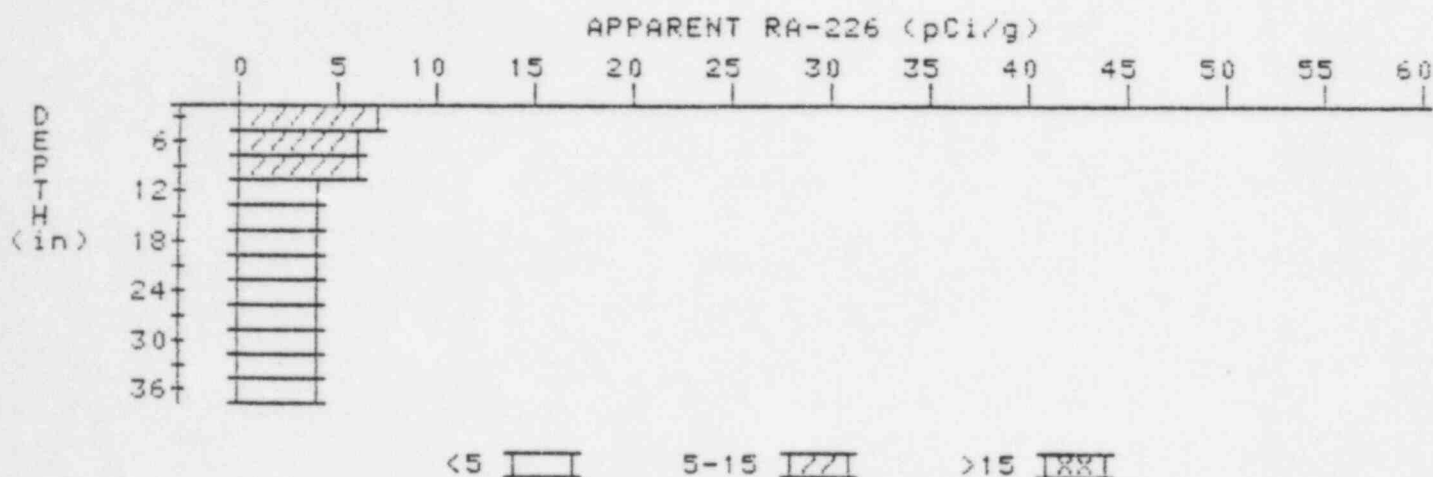
LOCATION: 167212



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	40.6	40.6
6	39.5	64.9
9	24.1	13.4
12	14.7	6.2
15	10.1	6.7
18	7.4	5.1
21	6.0	4.8
24	5.3	4.9
27	4.8	4.3
30	4.6	4.1
33	4.7	4.3
36	5.0	5.0

APPARENT RADIUM-226 CONCENTRATION 15 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-10972-RS
HOLE NUMBER: 15
LOCATION: 222208



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	7.0	7.0
6	6.1	5.6
9	5.5	5.5
12	4.9	4.4
15	4.6	4.4
18	4.4	4.2
21	4.3	4.3
24	4.2	4.0
27	4.2	4.4
30	4.1	4.1
33	4.0	4.2
36	3.8	3.8

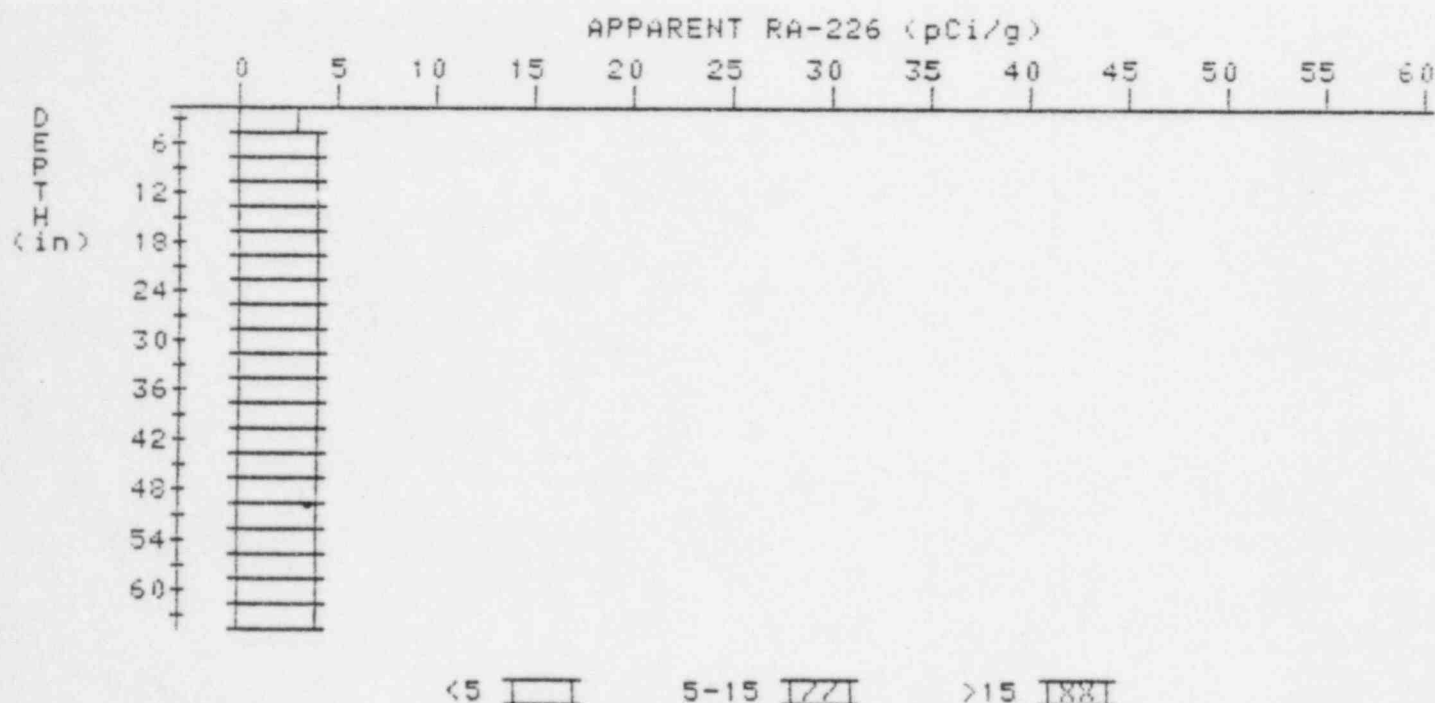
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

18

PROPERTY NUMBER: GJ-10972-RS

HOLE NUMBER: 18

LOCATION: 241236



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.3	3.3
6	3.5	3.7
9	3.6	3.6
12	3.7	3.7
15	3.8	4.0
18	3.8	3.8
21	3.8	3.8
24	3.8	3.6
27	3.9	4.1
30	3.9	3.9
33	3.9	4.1
36	3.8	3.6
39	3.8	3.8
42	3.8	3.6
45	3.9	4.3
48	3.8	3.6
51	3.8	3.8

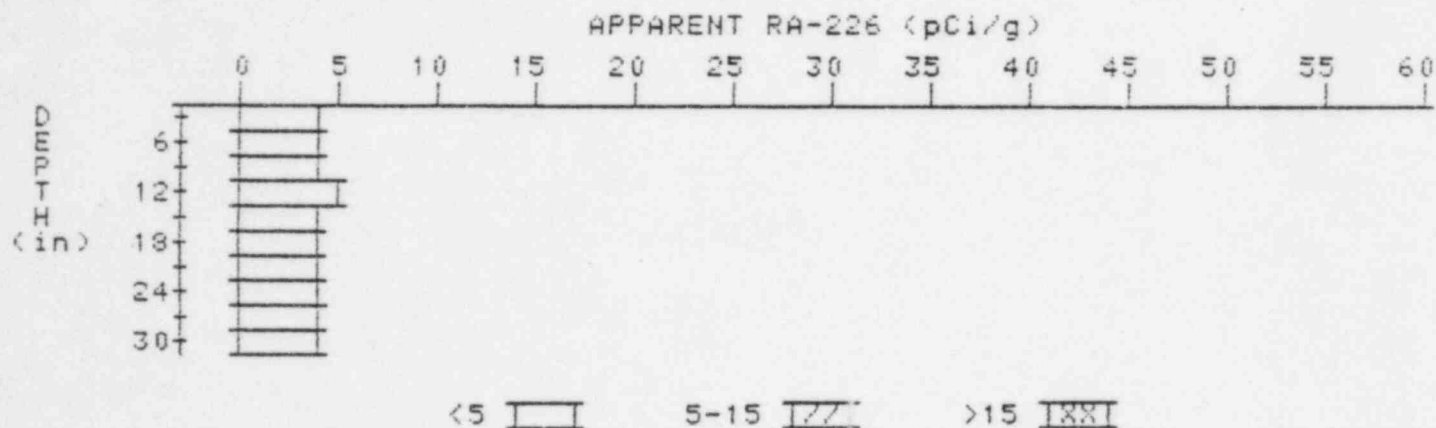
54
57
60
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3.8
3.9
3.8
3.7

6.6
4.3
3.8
3.7

APPARENT RADIUM-226 CONCENTRATION 20 DECONVOLUTION GRAPH

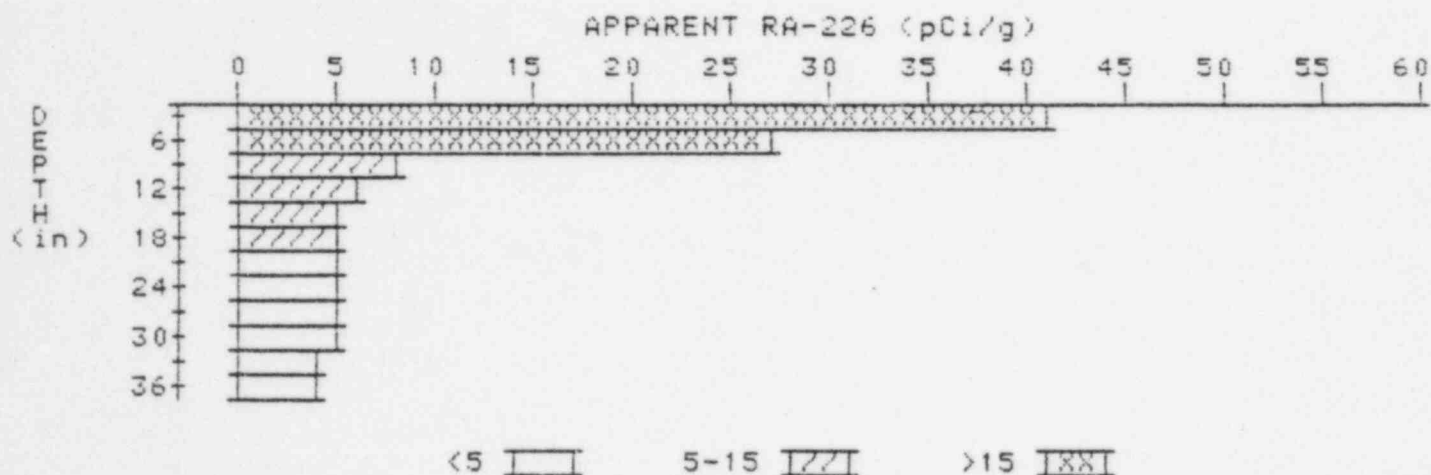
PROPERTY NUMBER: GJ-10972-RS
HOLE NUMBER: 20
LOCATION: 245208



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.4	4.4
6	4.4	4.4
9	4.4	4.4
12	4.4	4.6
15	4.3	4.1
18	4.3	4.3
21	4.3	4.5
24	4.2	4.4
27	4.0	3.6
30	4.0	4.0

APPARENT RADIUM-226 CONCENTRATION 21 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-10972-RS
HOLE NUMBER: 21
LOCATION: 250212



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	41.0	41.0
6	28.7	27.1
9	17.3	7.7
12	11.3	6.3
15	8.1	5.3
18	6.5	5.3
21	5.6	4.9
24	5.1	4.7
27	4.8	4.6
30	4.6	4.6
33	4.4	4.0
36	4.4	4.4

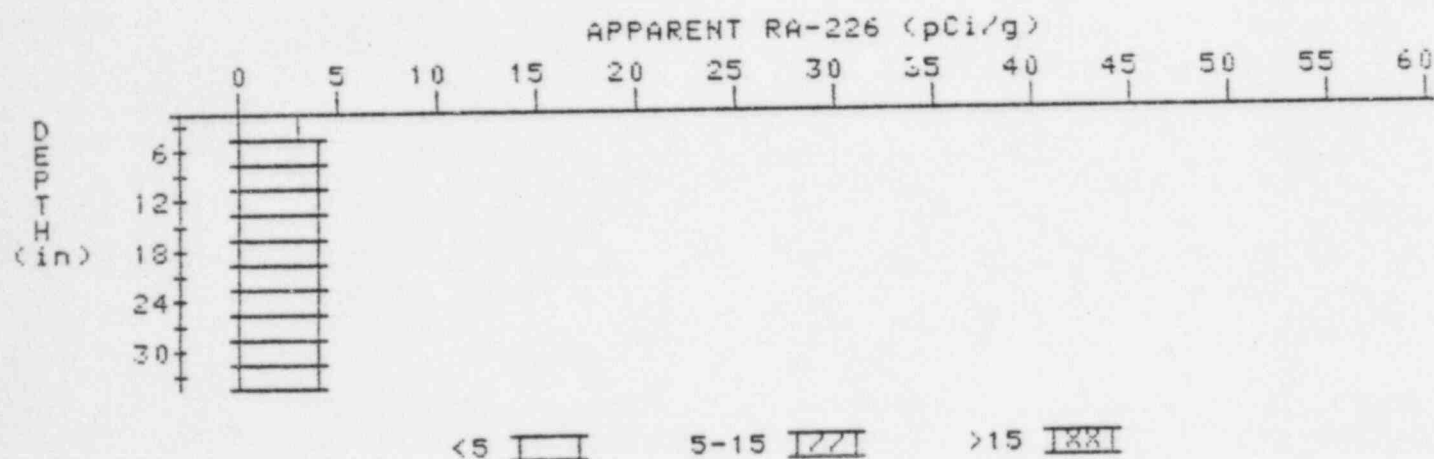
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

22

PROPERTY NUMBER: GJ-10972-RS

HOLE NUMBER: 22

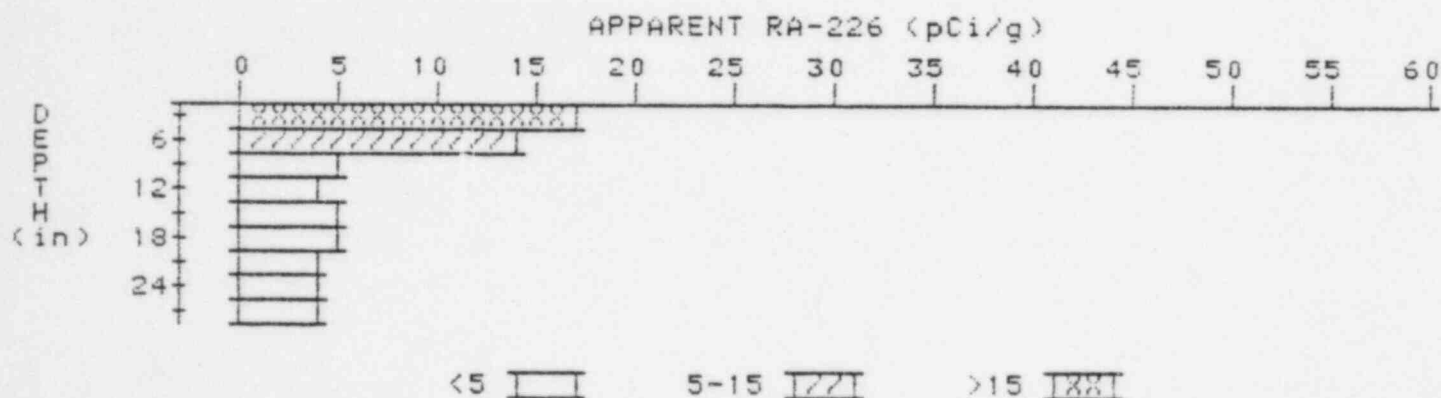
LOCATION: 250260



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

APPARENT RADIUM-226 CONCENTRATION 25 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-10972-RS
HOLE NUMBER: 25
LOCATION: 261230



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	16.6	16.6
6	12.8	13.7
9	8.5	4.6
12	6.4	4.4
15	5.4	4.5
18	4.9	4.5
21	4.6	4.4
24	4.4	4.0
27	4.4	4.4

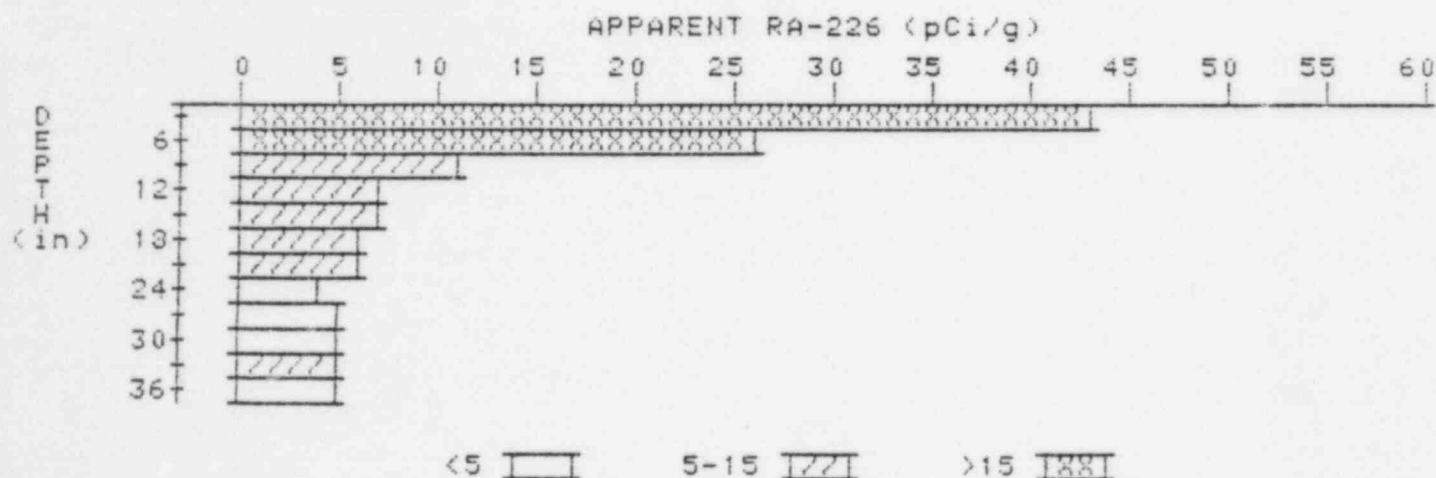
APPARENT RADIUM-226 CONCENTRATION 28

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-10972-RS

HOLE NUMBER: 28

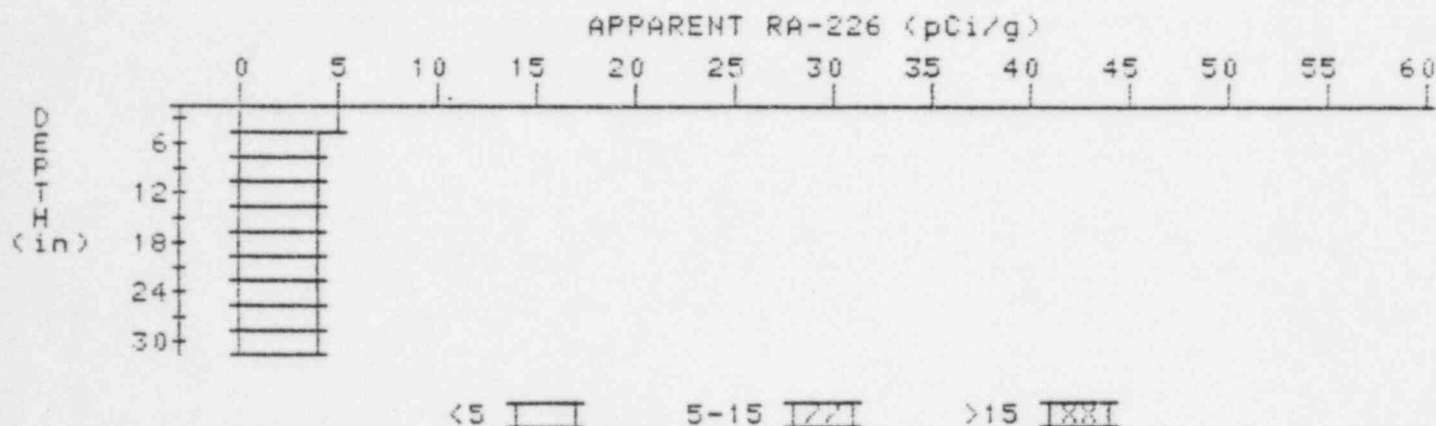
LOCATION: 265240



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	42.9	42.9
6	29.9	26.3
9	18.9	10.5
12	12.6	7.3
15	9.3	6.8
18	7.4	6.0
21	6.3	5.9
24	5.4	4.3
27	5.1	4.9
30	4.9	4.5
33	4.9	5.4
36	4.6	4.6

APPARENT RADIUM-226 CONCENTRATION 32 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-10972-RS
HOLE NUMBER: 32
LOCATION: 268255



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.8	4.8
6	4.4	3.9
9	4.3	4.3
12	4.2	4.0
15	4.2	4.4
18	4.1	4.1
21	4.0	3.8
24	4.0	4.0
27	4.0	4.2
30	3.9	3.9

