# RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-07784-RS
ADDRESS: 2696 MILO DRIVE

APRIL 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 April 16, 1985

REA07784:REA-312

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# 1.0 EXECUTIVE SUMMARY

## 1.1 Introduction

The location, DOE ID No. GJ-07784-RS, is a single-family residence located at 2696 Milo 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 contaminated 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, 16 cu. yd.; interior, 0 cu. yd.

Approximately 10 days are required for completion of design work. Estimated cost to perform remedial action, including dislocation when applicable, is $1,988. Remedial action on this property will take approximately 7 days to complete.

# 2.0 PROPERTY DESCRIPTION

## 2.1 General Description

Address: 2696 Milo Drive, Grand Junction, Colorado

Zoning: Residential (RMF)

Lot Size: Approximately 12,375 sf (0.28 acre)

Legal Description: Lot 12, Munfrada Subdivision, Section 26, T. 1S., R. 1W, City of Grand Junction, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 1 mile southwest 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: | Commercial complex |
| South: | Milo Drive |
| East: | Single-family residence |
| West: | Single-family residence |

## 2.2 Existing Facilities and Structures

Primary Structure:

| | |
|---|---|
| Type: | Single-family residence |
| Size: | Approx. 1,279 sf |
| Construction Date: | 1957 |
| Construction: | Wood-frame with brick veneer on front |
| Foundation: | Concrete stemwall on spread footing |
| Footing Depth: | Approximately 12" to bottom of footing from grade |
| Basement: | None |
| Crawl Space: | Yes; full |
| Condition: | Fair |

Other Structures:

| | |
|---|---|
| Type: | Metal shed |
| Size: | Approximately 43 sf |
| Construction: | Metal |
| Foundation: | Not determined |
| Condition: | Good |

Improvements or Attachments to Structure:

| | |
|---|---|
| Additions: | None |
| Porches: | None |
| Patios: | None |
| Driveways: | |
| Type: | Gravel |
| Location: | Milo Drive to the house |
| Sidewalks: | |
| Type: | Concrete |
| Location: | Driveway to front door |
| Fences: | |
| Type: | Chain link and woven wire |
| Location: | Around perimeter of yard except south side |
| General Remarks: | The property is well landscaped; the house is in fair condition. 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-07784-RS on January 28, 1985. Data collection methods were performed in accordance with procedures fully described in the Radiologic Support Operations Procedures Manual GJ-07(84) (Bendix Field Engineering Corporation, 1984). These data were evaluated to determine the areal and vertical extent of uranium mill tailings contamination at this property as well as any other contaminated material that may have originated from the millsite.

A review of historical information from the files of the Colorado Department of Health (CDH) and the inclusion data from Oak Ridge National Laboratory (ORNL) was conducted. These records indicate that contamination is located along the total length of the west property line and in two small areas in the north yard.

The Bendix radiologic survey was designed to investigate the entire property, with emphasis on previously identified areas of contamination. Conclusions based upon data analyses are discussed in Section 3.5, Extent of Contamination. Photocopies of the Official Survey Report, Memo of Understanding, team leader notes, and deconvolution graphs are included in the Appendix (Section 6.0).

## 3.2 Gamma Exposure-Rate Surveys

### 3.2.1 Exterior Findings

Background Readings: 13 to 15 uR/h
Highest Outside Gamma Reading (HOG): 32 uR/h

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

### 3.2.2 Interior Findings

Background Readings: 11 to 14 uR/h
Highest Inside Gamma Reading (HIG): 14 uR/h

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

### 3.4 Radon/Radon Daughter Concentration (RDC)

The working level was not assessed by CDH. No RDC measurements were taken by Bendix.

### 3.5 Extent of Contamination

Appendix Figure 3.5 shows identified areas and estimated depths of contamination on this property, based on assessments of all measurements taken. As noted in this figure, areas recommended for remedial action that contain identified residual radioactive materials are:

(AREA A) Along the fence, southwest of the primary structure, there is contamination to a depth of 24 inches (approximately 88 sf).

(AREA B) Along the fence, west of the primary structure, there is contamination to a depth of 9 inches (approximately 60 sf).

(AREA C) North of the primary structure there is contamination to a depth of 12 inches (approximately 42 sf).

(AREA D) Two deposits along the west property line are contaminated to a depth of 12 inches (approximately 104 sf).

(AREA E) There is a deposit of contamination northeast of the primary structure. The depth of contamination is 18 inches (approximately 40 sf).

# 4.0 RECOMMENDED REMEDIAL ACTION

## 4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-07784-RS, includes removal of all areas identified as containing radioactive material (as discussed in Section 3.5 and shown in Appendix Figure 3.5) and transport of removed material to the disposal site.

After remedial action is completed, the areas involved will be restored to original condition in accordance with the Bendix drawings, Vicinity Properties General Construction Specification (Bendix Field Engineering Corporation, 1984), and Statement of Work for Construction Subcontractor.

Dislocation of the occupants will not be required for this remedial action.

## 4.2 Evaluation of Recommended Remedial Action

Volume calculations of the areas included for remedial action are presented in Appendix Table 4.1. Cost estimates are presented in Appendix Table 4.2.

Estimated cost of remedial action is $1,988.

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

Owner preference is to have the remedial action done in late fall.

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 | Contaminated Material Calculations |
| Table 4.2 | Estimated Cost of Decontamination and Restoration |

Appendix Figures:

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

Official Survey Report
Memo of Understanding
Team Leader Notes
Deconvolution Graphs (Apparent Radium-226 Concentration)

| Loc # | Grid Location | Depth (in.) | Meas. Type | In Situ Ra-226 (pCi/g) Tot. Ct | Spectr. | Chem Ra-226 (pCi/g) | Comments |
|---|---|---|---|---|---|---|---|
| 1 | 204217 | 03 | TC | 4.8 | | * | North yard |
| | | 06 | TC | 4.7 | | * | near fence line |
| | | 09 | TC | 4.6 | | * | |
| | | 12 | TC | 4.2 | | * | DC = 12 inches |
| | | 15 | TC | 3.9 | | * | Based on the |
| | | 18 | TC | 3.5 | | * | deconvolution graph |
| | | 21 | TC | 3.2 | | * | |
| 2 | 214243 | 03 | TC | 3.4 | | * | In leach field |
| | | 06 | TC | 3.6 | | * | |
| | | 09 | TC | 3.7 | | * | |
| | | 12 | TC | 3.7 | | * | |
| | | 15 | TC | 3.7 | | * | DC = 0 inches |
| | | 18 | TC | 3.6 | | * | |
| | | 21 | TC | 3.5 | | * | |
| | | 24 | TC | 3.4 | | * | |
| 3 | 224246 | 03 | TC | 4.0 | | * | In leach field |
| | | 06 | TC | 4.3 | | * | |
| | | 09 | TC | 4.4 | | * | |
| | | 12 | TC | 4.4 | | * | |
| | | 15 | TC | 4.3 | | * | DC = 0 inches |
| | | 18 | TC | 4.3 | | * | |
| | | 21 | TC | 4.1 | | * | |
| | | 24 | TC | 4.1 | | * | |
| | | 27 | TC | 3.9 | | * | |
| 4 | 240270 | 03 | TC | 8.0 | | * | North of house |
| | | 06 | BH | 6.7 | 5.2 | * | |
| | | 09 | TC | 5.9 | | * | |
| | | 12 | BH | 5.2 | 2.9 | * | |
| | | 15 | TC | 4.9 | | * | DC = 12 inches |
| | | 18 | BH | 4.4 | 1.8 | * | Based on the |
| | | 21 | TC | 4.1 | | * | deconvolution graph |
| | | 24 | TC | 3.6 | | * | |
| | | 27 | TC | 3.4 | | * | |
| | | 30 | TC | 3.1 | | * | |
| 5 | 243267 | 03 | TC | 4.5 | | * | North of house |
| | | 06 | TC | 4.9 | | * | |
| | | 09 | TC | 4.9 | | * | DC = 0 inches |
| | | 12 | TC | 4.9 | | * | |
| | | 15 | TC | 4.9 | | * | |

| Loc # | Grid Location | Depth (in.) | Meas. Type | In Situ Ra-226 (pCi/g) Tot. Ct | Spectr. | Chem Ra-226 (pCi/g) | Comments |
|---|---|---|---|---|---|---|---|
| 5 | 243267 | 18 | TC | 4.8 | | * | |
| | | 21 | TC | 4.4 | | * | |
| | | 24 | TC | 4.0 | | * | |
| 6 | 252287 | 03 | TC | 10.7 | | * | Northeast of house |
| | | 06 | BH | 9.6 | 8.4 | * | |
| | | 09 | TC | 7.9 | | * | |
| | | 12 | BH | 6.5 | 4.5 | * | |
| | | 15 | TC | 5.5 | | * | |
| | | 18 | BH | 4.7 | 2.4 | * | DC = 18 inches |
| | | 21 | TC | 4.1 | | * | Based on the |
| | | 24 | BH | 3.6 | 1.2 | * | deconvolution graph |
| | | 27 | TC | 3.3 | | * | |
| | | 30 | TC | 3.2 | | * | |
| | | 33 | TC | 3.2 | | * | |
| 7 | 258243 | 03 | TC | 3.9 | | * | Near sewer line |
| | | 06 | TC | 4.1 | | * | |
| | | 09 | TC | 4.4 | | * | |
| | | 12 | TC | 4.5 | | * | DC = 0 inches |
| | | 15 | TC | 4.4 | | * | |
| | | 18 | TC | 4.3 | | * | |
| | | 21 | TC | 4.0 | | * | |
| 8 | 270217 | 03 | TC | 5.1 | | * | West of house |
| | | 06 | TC | 5.2 | | * | Next to fence line |
| | | 09 | TC | 4.9 | | * | |
| | | 12 | TC | 4.6 | | * | |
| | | 15 | TC | 4.5 | | * | |
| | | 18 | TC | 4.1 | | * | DC = 9 inches |
| | | 21 | TC | 3.7 | | * | Based on the |
| | | 24 | TC | 3.3 | | * | deconvolution graph |
| | | 27 | TC | 3.1 | | * | |
| | | 30 | TC | 3.0 | | * | |
| | | 33 | TC | 3.0 | | * | |
| 9 | 280229 | 03 | TC | 3.8 | | * | West side of house |
| | | 06 | TC | 4.1 | | * | Auger refusal |
| | | 09 | TC | 4.3 | | * | |
| | | 12 | TC | 4.4 | | * | DC = 0 inches |
| | | 15 | TC | 4.3 | | * | |
| | | 18 | TC | 4.1 | | * | |
| | | 21 | 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 |
|---|---|---|---|---|---|---|---|
| 10 | 289267 | 03 | TC | 3.6 | | * | Near water line |
| | | 06 | TC | 3.7 | | * | |
| | | 09 | TC | 3.9 | | * | |
| | | 12 | TC | 4.2 | | * | |
| | | 15 | TC | 4.3 | | * | |
| | | 18 | TC | 4.4 | | * | |
| | | 21 | TC | 4.3 | | * | |
| | | 24 | TC | 4.2 | | * | |
| | | 27 | TC | 4.0 | | * | |
| | | 30 | TC | 4.0 | | * | DC = 0 inches |
| | | 33 | TC | 3.9 | | * | |
| | | 36 | TC | 3.9 | | * | |
| | | 39 | TC | 3.7 | | * | |
| | | 42 | TC | 3.7 | | * | |
| | | 45 | TC | 3.7 | | * | |
| | | 48 | TC | 3.7 | | * | |
| | | 51 | TC | 3.7 | | * | |
| | | 54 | TC | 3.7 | | * | |
| | | 57 | TC | 3.8 | | * | |
| | | 60 | TC | 3.6 | | * | |
| | | 63 | TC | 3.7 | | * | |
| | | 66 | TC | 3.7 | | * | |
| 11 | 290217 | 00 | DS | 20.4 | | * | Southwest of house |
| | | 06 | DS | 12.4 | | * | |
| | | 12 | DS | 5.5 | | * | |
| | | 18 | DS | 3.1 | | * | |
| | | 24 | DS | 1.0 | | * | |
| | | 03-09 | SS | | | 75.7 | DC = 24 inches |
| | | 12-16 | SS | | | 14.8 | |
| | | 16-20 | SS | | | 3.4 | |
| 12 | 290230 | 00 | DS | 1.8 | | * | Above gas line |
| | | 24 | DS | 1.3 | | * | DC = 0 inches |
| 13 | 290242 | 00 | DS | <1.0 | | * | Background |
| | | 00-06 | SS | | | 2.6 | Wet moist soil |
| | | 03 | TC | 3.4 | | * | |
| | | 06 | TC | 3.7 | | * | |
| | | 09 | TC | 3.9 | | * | DC = 0 inches |
| | | 12 | BH | 4.0 | 1.3 | * | |
| | | 15 | 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 |
|---|---|---|---|---|---|---|---|
| 13 | 290242 | 18 | BH | 3.9 | 1.1 | * | |
| | | 21 | TC | 3.9 | | * | |
| | | 24 | TC | 3.9 | | * | |
| | | 27 | TC | 3.8 | | * | |

Tool 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

Date of Survey = 01-28-85
Team Leader = R2

Table 3.2

Summary of Interior Gamma Exposure Rates

DOE ID No. GJ-07784-RS 2696 Milo Drive 

| 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) |
|---|---|---|---|---|---|---|
| GROUND FLOOR | * | * | * | * | 11-14 | * |
| SHED | 05 | 10-11 | 11 | 05 | 11-11 | 11 |

* The CDH and ORNL data indicated the absence of interior contamination at this property. This information was investigated by performing a walking gamma scan. These areas and the ranges of gamma measurements are shown in Appendix Figure 3.3. Exposure rates in the shed are shown in Appendix Figure 3.3.

Table 4.1
Contaminated Material Calculations
DOE ID No. GJ-07784-RS



| AREA | CALCULATIONS(ft) | | SF | | DEPTH(ft) | | CF | | | | CUBIC YARDS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| EXTERIOR | | | | | | | | | | | |
| A | 22 x 4 | = | 88 | x | 2.0 | = | 176 | | | | |
| B | 15 x 4 | = | 60 | x | 0.8 | = | 48 | | | | |
| C | 7 x 6 | = | 42 | x | 1.0 | = | 42 | | | | |
| D | 26 x 4 | = | 104 | x | 1.0 | = | 104 | | | | |
| E | 10 x 4 | = | 40 | x | 1.5 | = | 60 | | | | |
| | TOTAL VOLUME - EXTERIOR | | | | | = | 430 | = | 430/27 | = | 16 |

See Appendix Figure 3.5 For Areas

Table 4.2
Estimated Cost of Decontamination and Restoration
DOE ID No. GJ-07784-RS



| | | |
|---|---|---|
| EXTERIOR | | |
| Remove identified residual radioactive material (manual) | | |
| 16 cy @ $44.00/cy | $ | 704 |
| Replace roadbase | | |
| 4 cy @ $11.50/cy | | 46 |
| Replace topsoil | | |
| 12 cy @ $9.50/cy | | 114 |
| Replace sod | | |
| 334 sf @ $0.30/sf | | 100 |
| Remove/replace sprinkler system | | |
| 192 sf @ $0.40/sf | | 77 |
| TOTAL EXTERIOR | $ | 1,041 |
| TOTAL INTERIOR | | 0 |
| ACCESS CONTROL | | 250 |
| SUBTOTAL | $ | 1,291 |
| CONTINGENCY @ 10% | | 129 |
| SUBTOTAL | $ | 1,420 |
| CONTRACTOR OVERHEAD & PROFIT @ 40% | | 568 |
| GRAND TOTAL | $ | 1,988 |

LR850308
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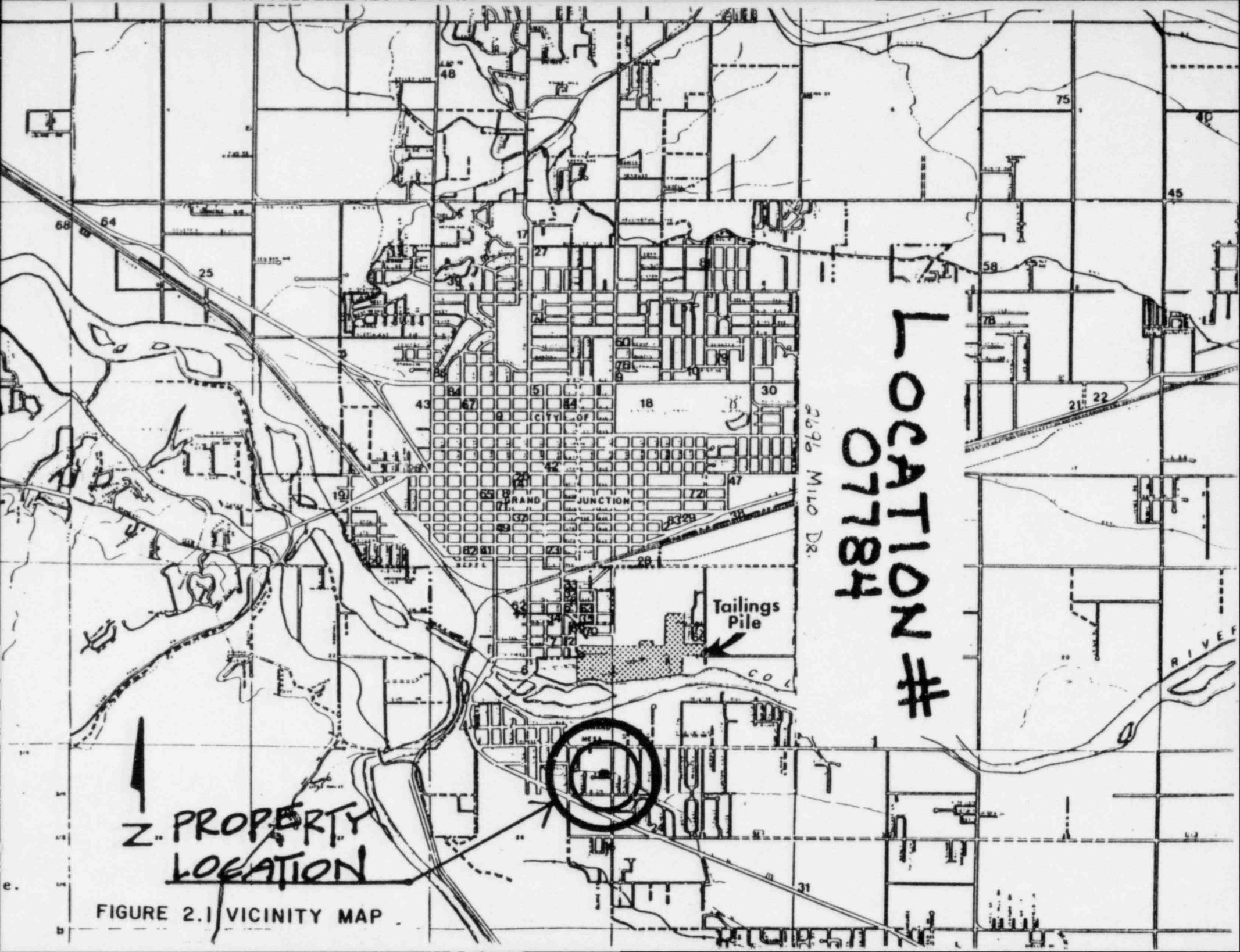
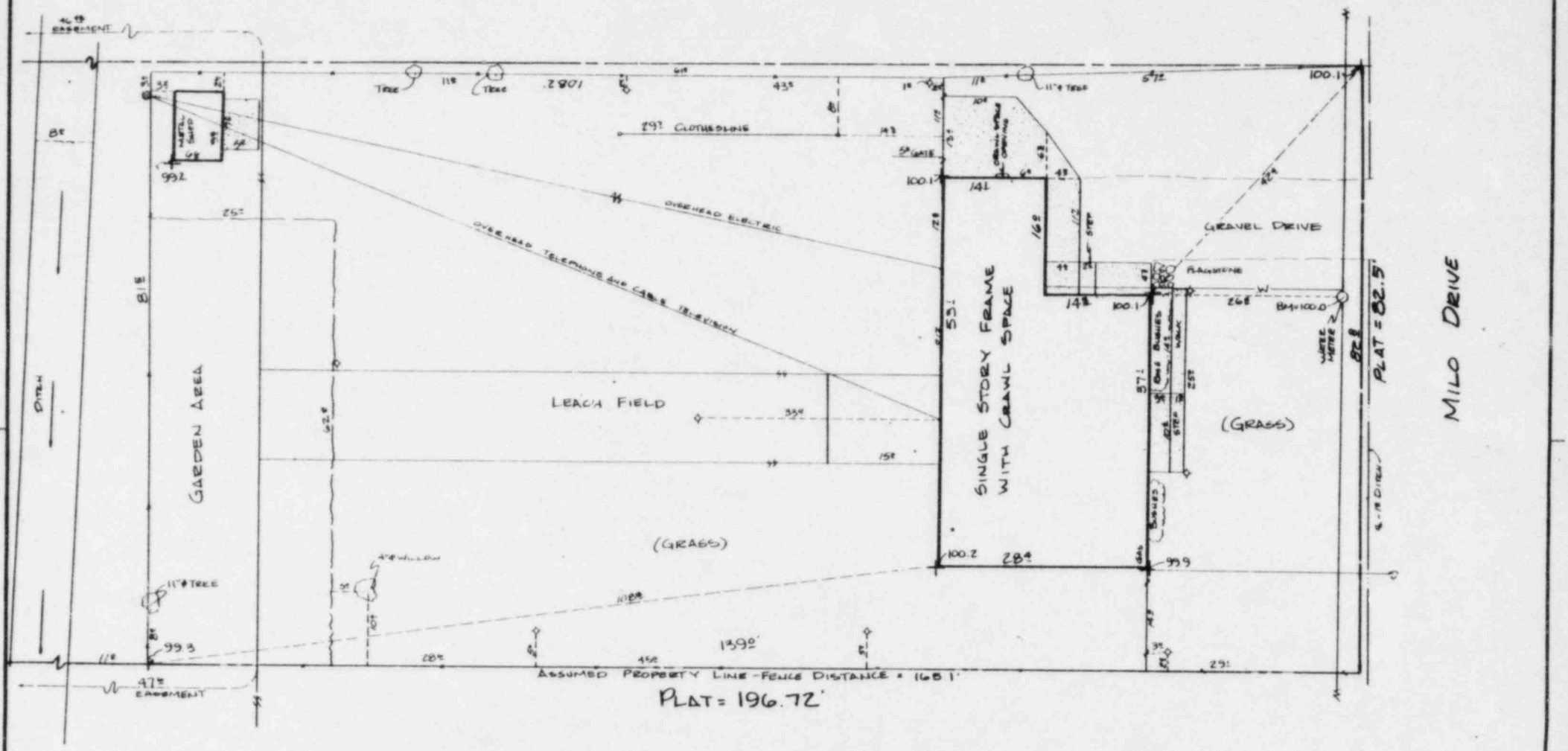



FIGURE 2.1 VICINITY MAP




LOT 12 MUNFRADA SUBDIVISION
SECTION 26 T1S, R1W
CITY OF GRAND JUNCTION
MESA COUNTY, COLORADO

# FIGURE 2.2 SITE PLAN

FEET

This drawing, prepared for the Uranium Mill Tailings Remedial Action Project, is for the sole use of the U.S. Department of Energy and its contractors. It is not a land survey plat or an improvement survey plat and is not to be relied upon for the establishment of fence, building, or other future improvement lines.

| | | |
|---|---|---|
| U.S. DEPARTMENT OF ENERGY<br>GRAND JUNCTION AREA OFFICE, COLORADO | | LOCATION NO. CJ07784RS |
| ADDRESS<br>2696 MILO DRIVE<br>GRAND JUNCTION, COLORADO | | Bendix Field Engineering Corporation<br>Grand Junction Operations |
| OWNER | | TELE. |
| TENENT | | TELE. |
| SURV. WIL 1-22-85 | DRAFT. RLR 1-22-85 | CK. |
| DRAWING NO. B-C503F1 | | SHEET 1 OF 1 |

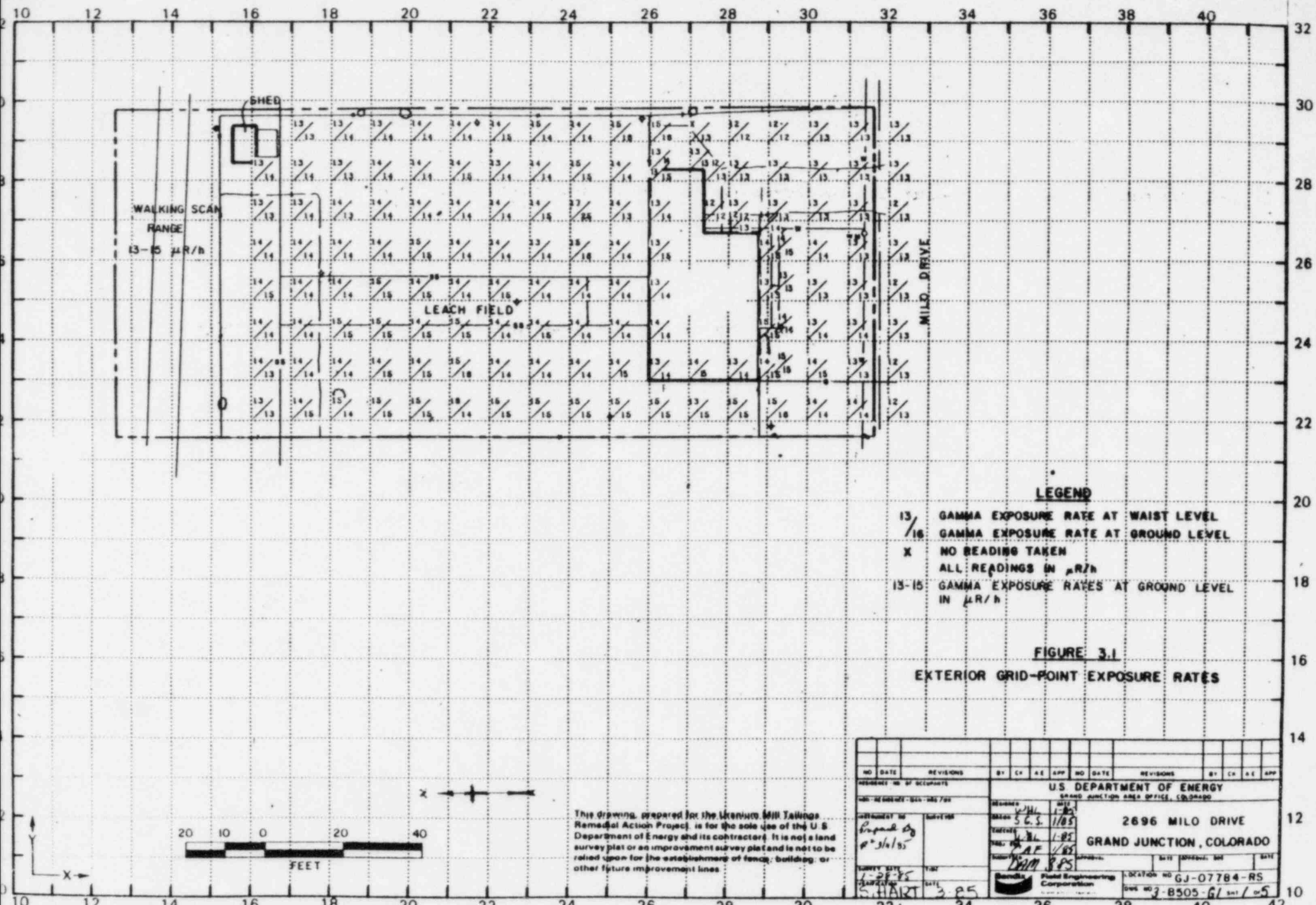



FIGURE 3.1

EXTERIOR GRID-POINT EXPOSURE RATES

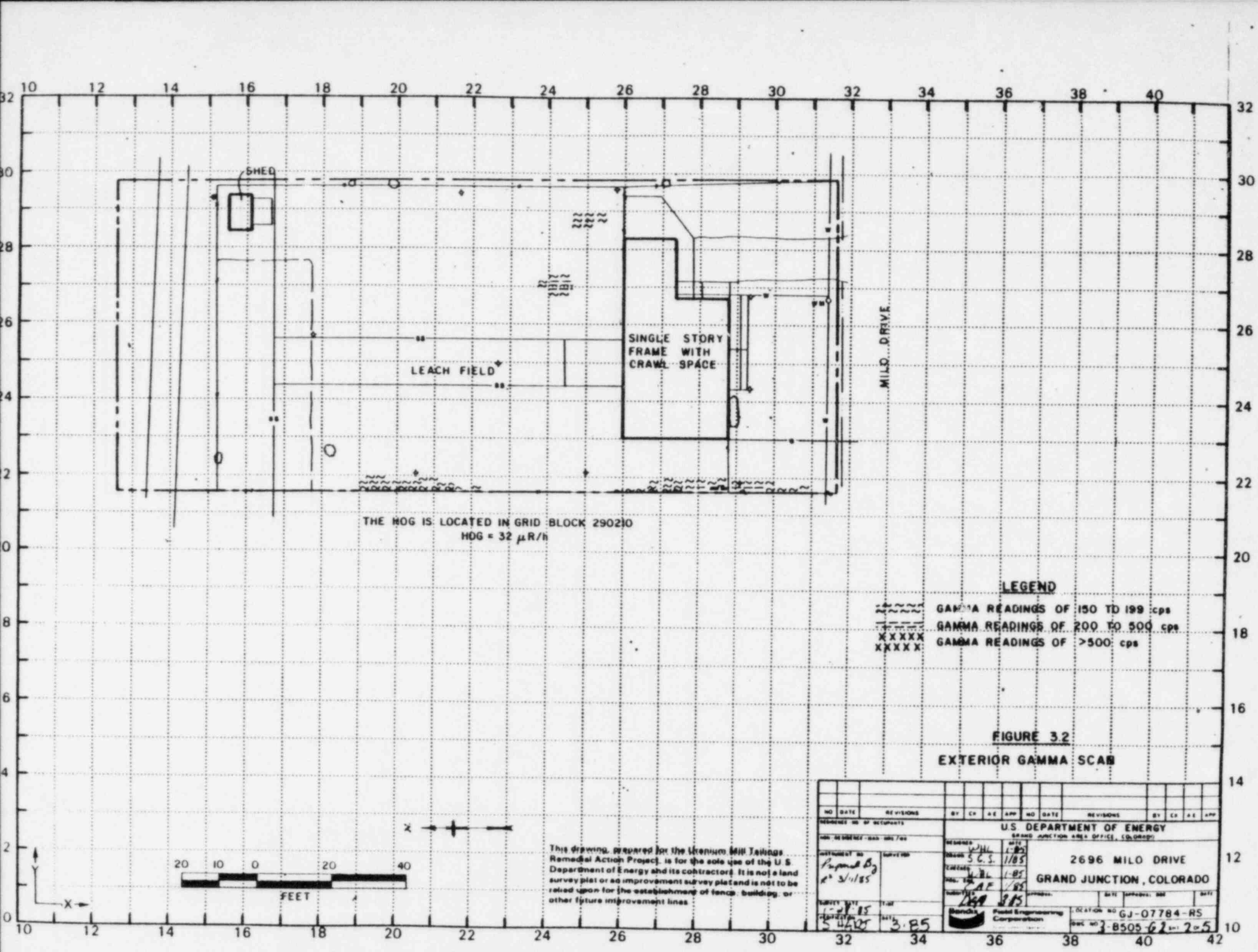



FIGURE 3.2

EXTERIOR GAMMA SCAN

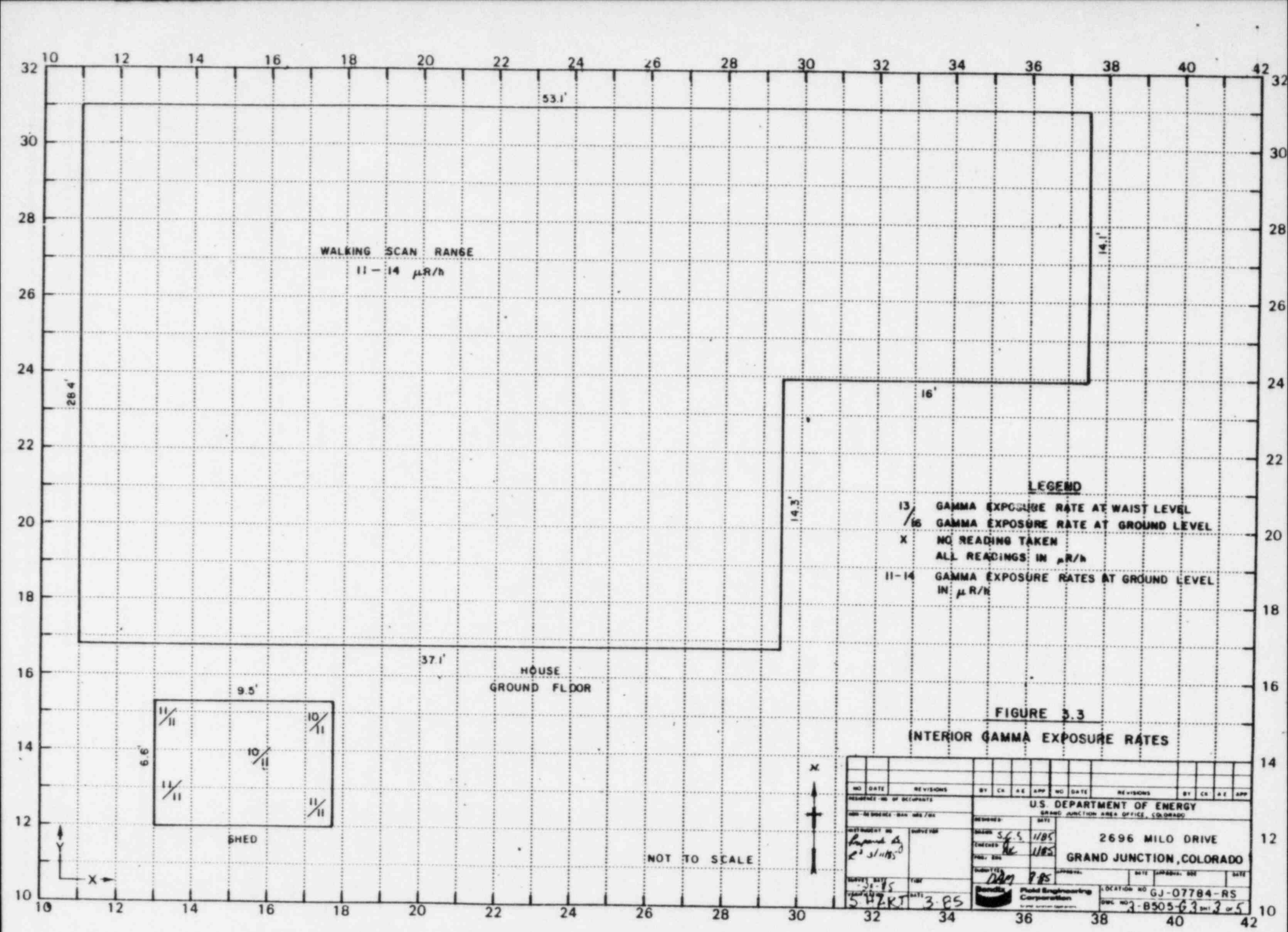



FIGURE 3.3

INTERIOR GAMMA EXPOSURE RATES

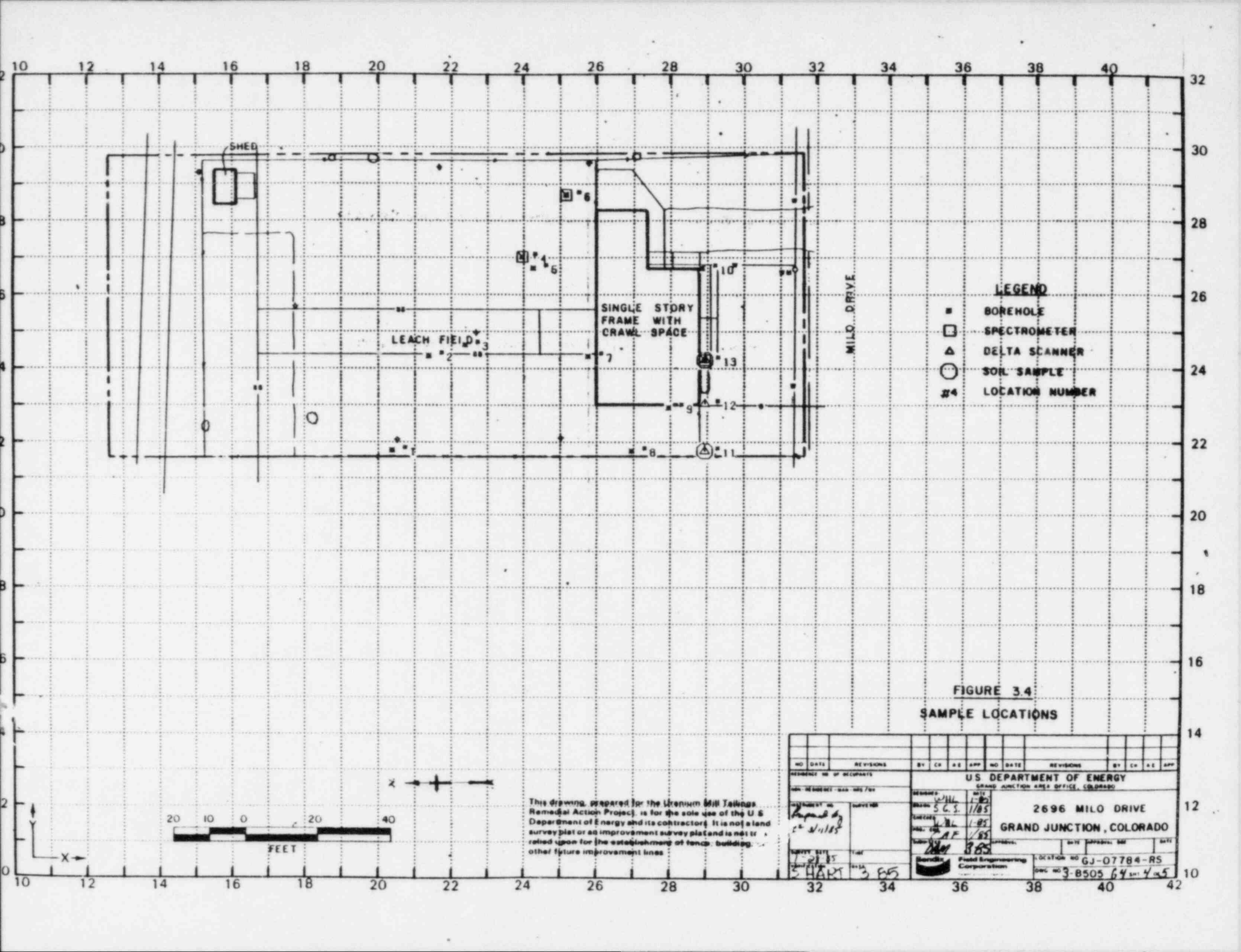



FIGURE 3.4

SAMPLE LOCATIONS

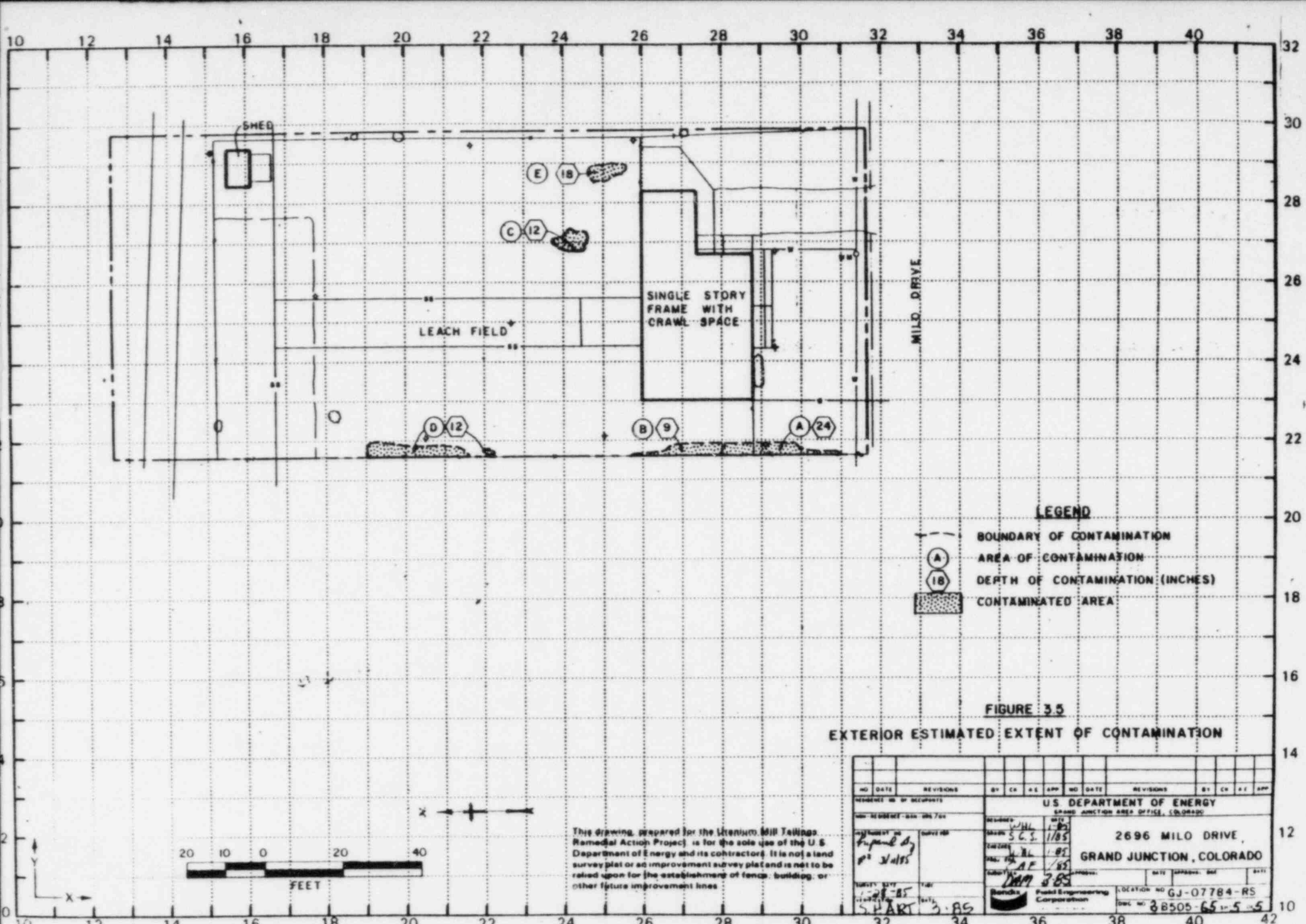



FIGURE 3.5

EXTERIOR ESTIMATED EXTENT OF CONTAMINATION

This drawing, prepared for the Uranium Mill Tailings Remedial Action Project, is for the sole use of the U.S. Department of Energy and its contractors. It is not a land survey plat or an improvement survey plat and is not to be relied upon for the establishment of fence, building, or other future improvement lines.

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

2696 MILO DRIVE,
GRAND JUNCTION, COLORADO

Bechtel Jacobs Company Project Engineering Corporation

LOCATION NO GJ-07784-RS

DWG NO 38505-65-5-S

3/85

DOE ID NO. GJ-07784-RS Date March 11, 1985

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

Official Survey Report

Property Address 2696 Milo Drive

Property Owner Randy A. and Cynthia J. Hoit

Address of Owner (if different from above) _____

Report Prepared By R. Ryan

I. PRESENCE/ABSENCE OF RESIDUAL RADIOACTIVE MATERIALS

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

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

1 XXX 1 In open areas.

1 ___ 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 XXX 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 = 14 uR/h
HOG = 32 uR/h

**Bendix**

**Field Engineering Corporation**

...ion Operations

P.O. Box 1569
Grand Junction, CO 81502
Tel (303) 242-8621

A Subsidiary of
The Bendix Corporation

March 8, 1985

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

ATTN: Jon Luellen

Dear Jon:

This letter is a follow-up of the Department of Energy (DOE) Identification (ID) number GJ-00784-RS (2696 Milo Drive), conducted on 28 January 1985. The areas requiring additional work or commentary are as follows:

1. Gridpoint measurements shown in Figure 3.1, locations 300280 and 270230, were a computer error that has been corrected. A corrected gridpoint map is enclosed.

2. To include location number 6, Area 'E' with a depth of 18 inches has been added to the Estimated Extent of Contamination map.

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

Yours very truly,

Terry Coulson

Terry Coulson
Radiologic Survey Team

TC:pr

**INTERNAL MEMORANDUM**

**Bendix Field Engineering Corporation**
**Grand Junction Projects Office**

**Date:** January 28, 1985

**To:** Files

**From:** Rick Ryan RR

**Subject:** GJ-07784-RS

---

Weather

Sunny

Occupancy

Three, two adults, and one child.

Crew

| | | |
|---|---|---|
| I. Caley | C. Adams | P. Tuhey |
| J. Garcia | B. Beltz | V. Young |

Waterline was investigated with an auger next to the house.

The sewer line and leach field was investigated with augers to check for possible contamination involvement.

The gas line was investigated with a delta on the surface and a depth delta on top of the line.

A low spot in the north section of the lawn was found and augered to see if there was fill in this area. The owner said that this was once a fish pond that had been filled in.

The entire yard has river rock fill and the augers were not as deep because of the difficulty in augering through the large rock.

Contamination on the west side of the property extends over the property line. This adjoining property has been gamma surveyed this summer.

A walking scan of the interior showed no contamination. Since Oak Ridge National Laboratory (ORNL) and Colorado Department of Health (CDH) files indicate no interior contamination, the crawlspace was not gamma surveyed. Because of the difficulty in augering due to the river rock fill, depth deltas were used to find the depth of contamination west of the house near the fence.

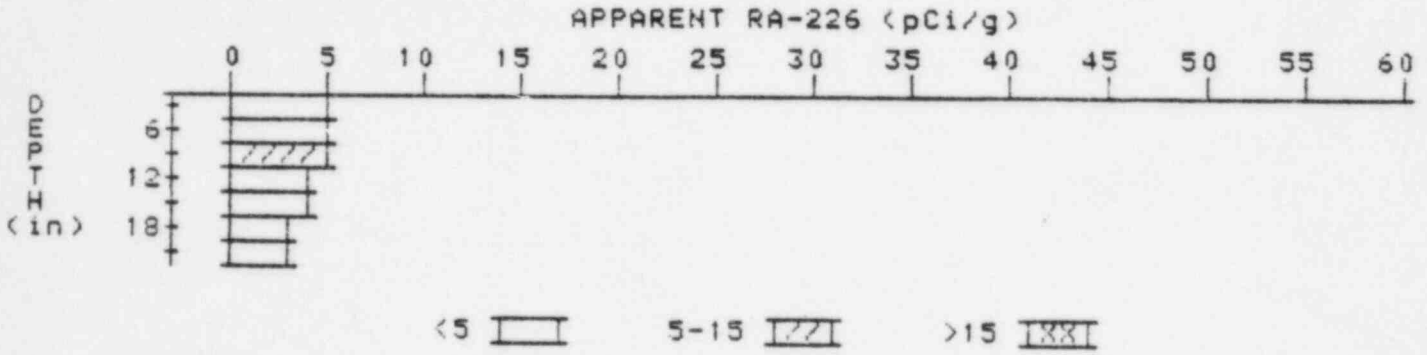
All personnel were frisked before leaving the site.

DECON V85.1<850117.1233>

# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH



PROPERTY NUMBER: GJ-07784-RS
HOLE NUMBER: 1
LOCATION: 204217



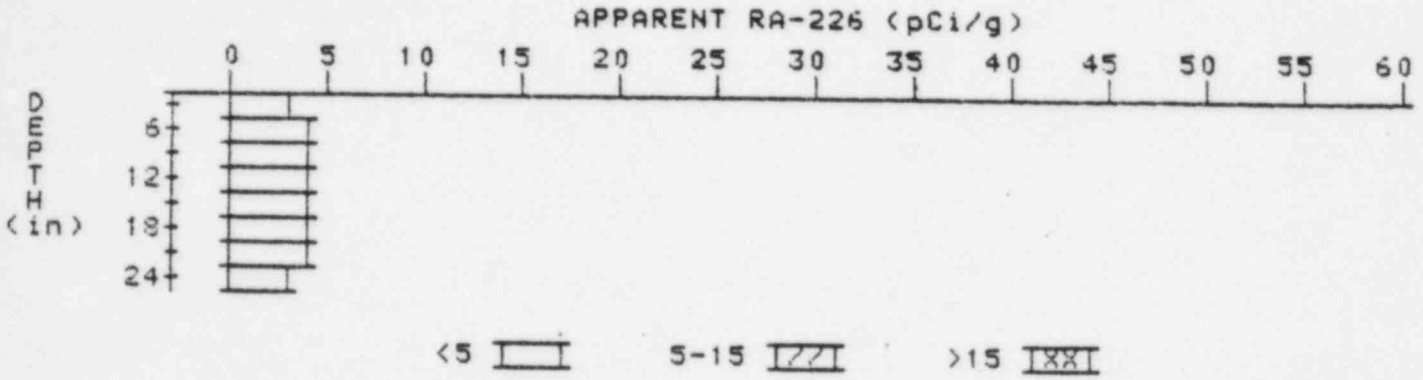

| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---|---|---|
| 3 | 4.8 | 4.8 |
| 6 | 4.7 | 4.7 |
| 9 | 4.6 | 5.1 |
| 12 | 4.2 | 4.0 |
| 15 | 3.9 | 4.1 |
| 18 | 3.5 | 3.3 |
| 21 | 3.2 | 3.2 |

DECON V85.1<850117.1233>

# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH



PROPERTY NUMBER: GJ-07784-RS
HOLE NUMBER: 2
LOCATION: 214243

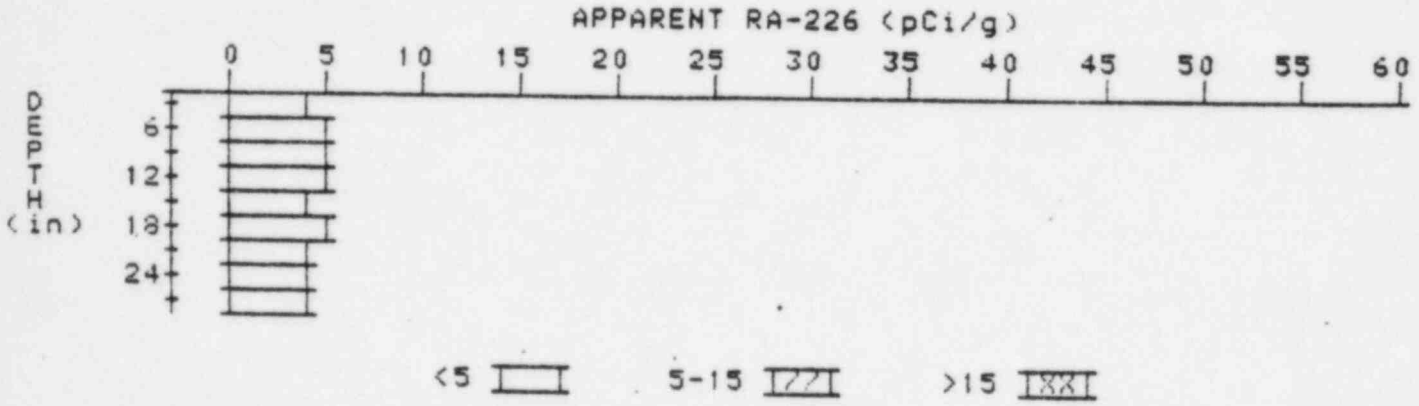



| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---|---|---|
| 3 | 3.4 | 3.4 |
| 6 | 3.6 | 3.8 |
| 9 | 3.7 | 3.9 |
| 12 | 3.7 | 3.7 |
| 15 | 3.7 | 3.9 |
| 18 | 3.6 | 3.6 |
| 21 | 3.5 | 3.5 |
| 24 | 3.4 | 3.4 |

# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH



PROPERTY NUMBER: GJ-07784-RS
HOLE NUMBER: 3
LOCATION: 224246

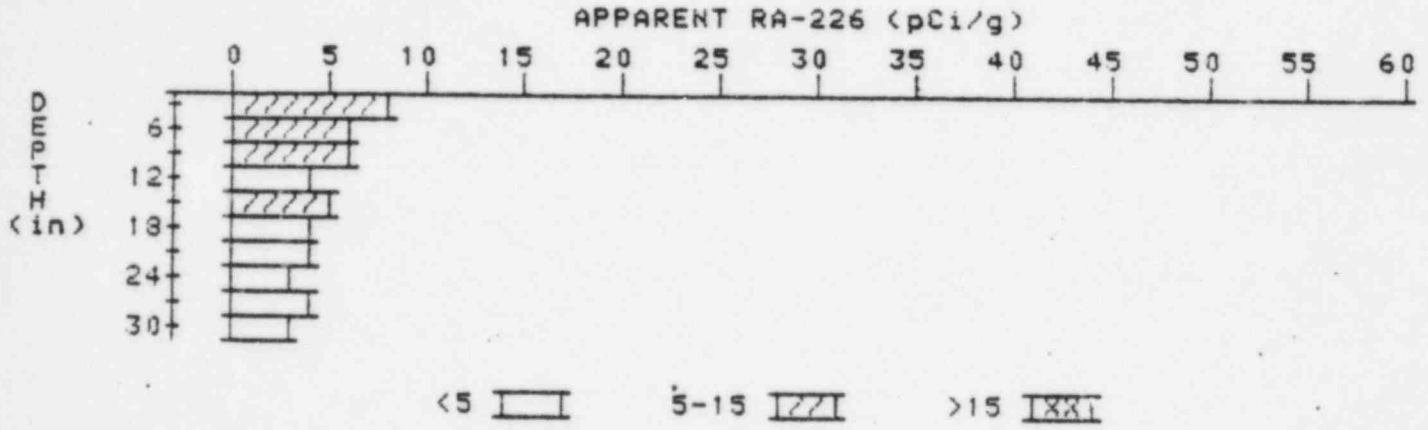



| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---|---|---|
| 3 | 4.0 | 4.0 |
| 6 | 4.3 | 4.7 |
| 9 | 4.4 | 4.6 |
| 12 | 4.4 | 4.6 |
| 15 | 4.3 | 4.1 |
| 18 | 4.3 | 4.7 |
| 21 | 4.1 | 3.7 |
| 24 | 4.1 | 4.5 |
| 27 | 3.9 | 3.9 |

# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH



PROPERTY NUMBER: GJ-07784-RS
HOLE NUMBER: 4
LOCATION: 240270



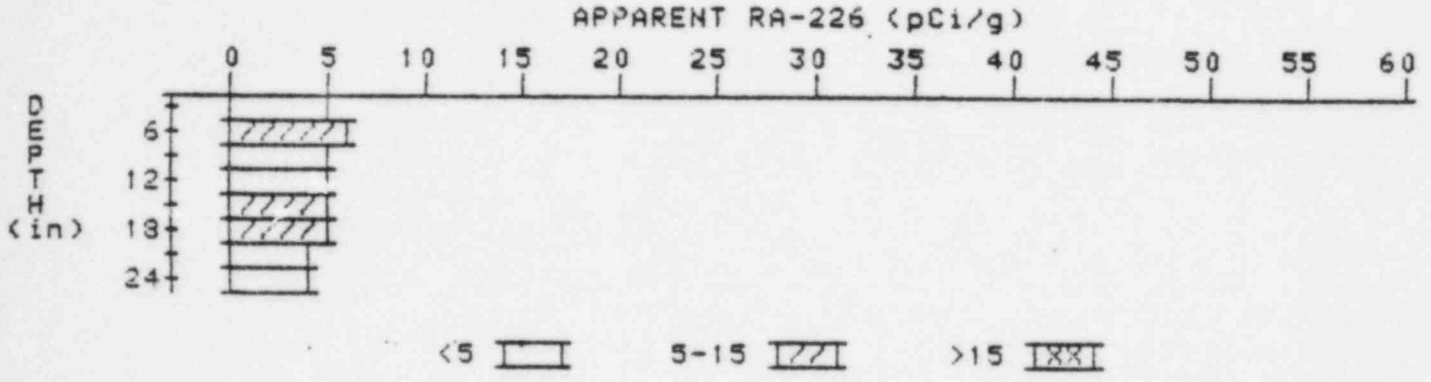

| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---|---|---|
| 3 | 8.0 | 8.0 |
| 6 | 6.7 | 5.8 |
| 9 | 5.9 | 5.7 |
| 12 | 5.2 | 4.5 |
| 15 | 4.9 | 5.3 |
| 18 | 4.4 | 4.0 |
| 21 | 4.1 | 4.5 |
| 24 | 3.6 | 3.1 |
| 27 | 3.4 | 3.6 |
| 30 | 3.1 | 3.1 |

DECON V85.1<850117.1233>

# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

5

PROPERTY NUMBER: GJ-07734-RS
HOLE NUMBER: 5
LOCATION: 243267



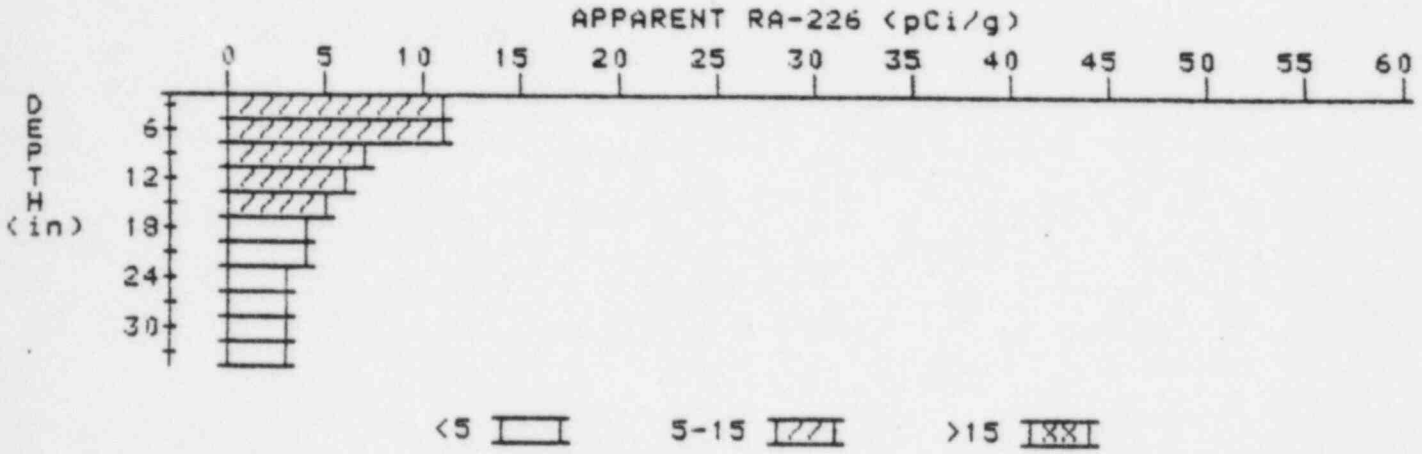

| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---|---|---|
| 3 | 4.5 | 4.5 |
| 6 | 4.9 | 5.6 |
| 9 | 4.9 | 4.9 |
| 12 | 4.9 | 4.9 |
| 15 | 4.9 | 5.1 |
| 18 | 4.8 | 5.3 |
| 21 | 4.4 | 4.4 |
| 24 | 4.0 | 4.0 |

DECON V85.1<850117.1233>

# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH



PROPERTY NUMBER: GJ-07784-RS
HOLE NUMBER: 6
LOCATION: 252287



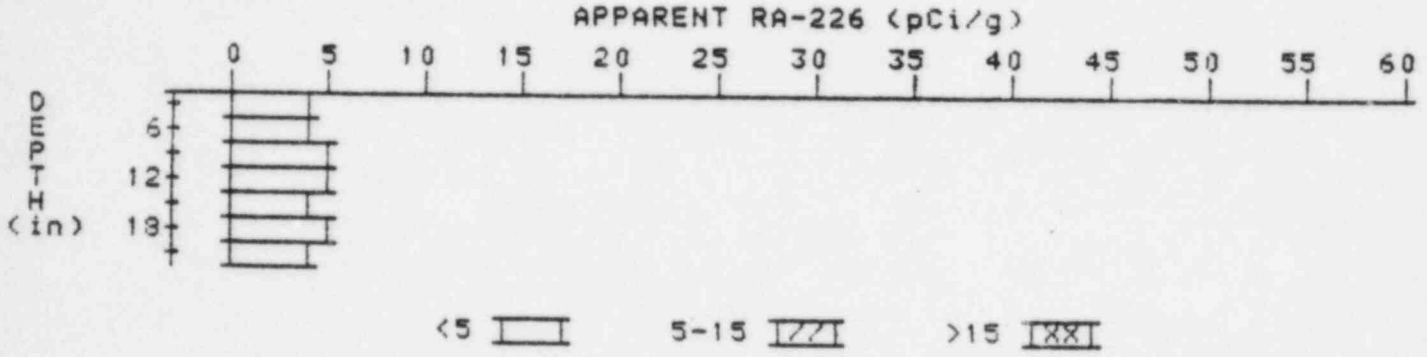

| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---|---|---|
| 3 | 10.7 | 10.7 |
| 6 | 9.6 | 10.7 |
| 9 | 7.9 | 7.4 |
| 12 | 6.5 | 5.8 |
| 15 | 5.5 | 5.1 |
| 18 | 4.7 | 4.3 |
| 21 | 4.1 | 3.9 |
| 24 | 3.6 | 3.2 |
| 27 | 3.3 | 2.9 |
| 30 | 3.2 | 3.0 |
| 33 | 3.2 | 3.2 |

DECON V35.1<850117.1233>

# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

7

PROPERTY NUMBER: GJ-07784-RS
HOLE NUMBER: 7
LOCATION: 258243

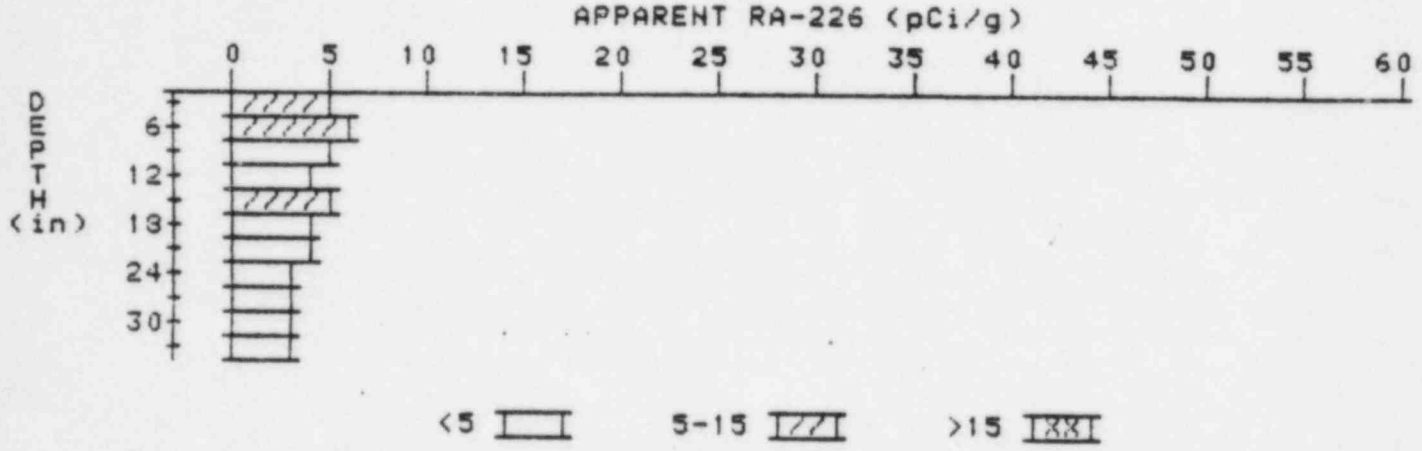



| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---|---|---|
| 3 | 3.9 | 3.9 |
| 6 | 4.1 | 3.9 |
| 9 | 4.4 | 4.8 |
| 12 | 4.5 | 4.9 |
| 15 | 4.4 | 4.4 |
| 18 | 4.3 | 4.7 |
| 21 | 4.0 | 4.0 |

# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH



PROPERTY NUMBER: GJ-07784-RS
HOLE NUMBER: 8
LOCATION: 270217



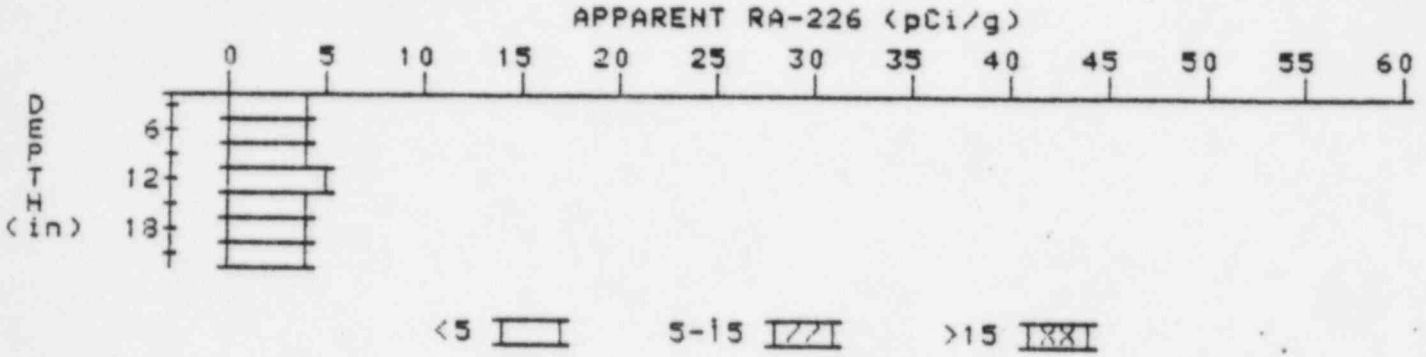

| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---|---|---|
| 3 | 5.1 | 5.1 |
| 6 | 5.2 | 5.9 |
| 9 | 4.9 | 4.9 |
| 12 | 4.6 | 4.2 |
| 15 | 4.5 | 5.0 |
| 18 | 4.1 | 4.1 |
| 21 | 3.7 | 3.7 |
| 24 | 3.3 | 2.9 |
| 27 | 3.1 | 2.9 |
| 30 | 3.0 | 2.8 |
| 33 | 3.0 | 3.0 |

DECON V85.1<850117.1233>

# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH



PROPERTY NUMBER: GJ-07784-RS
HOLE NUMBER: 9
LOCATION: 280229



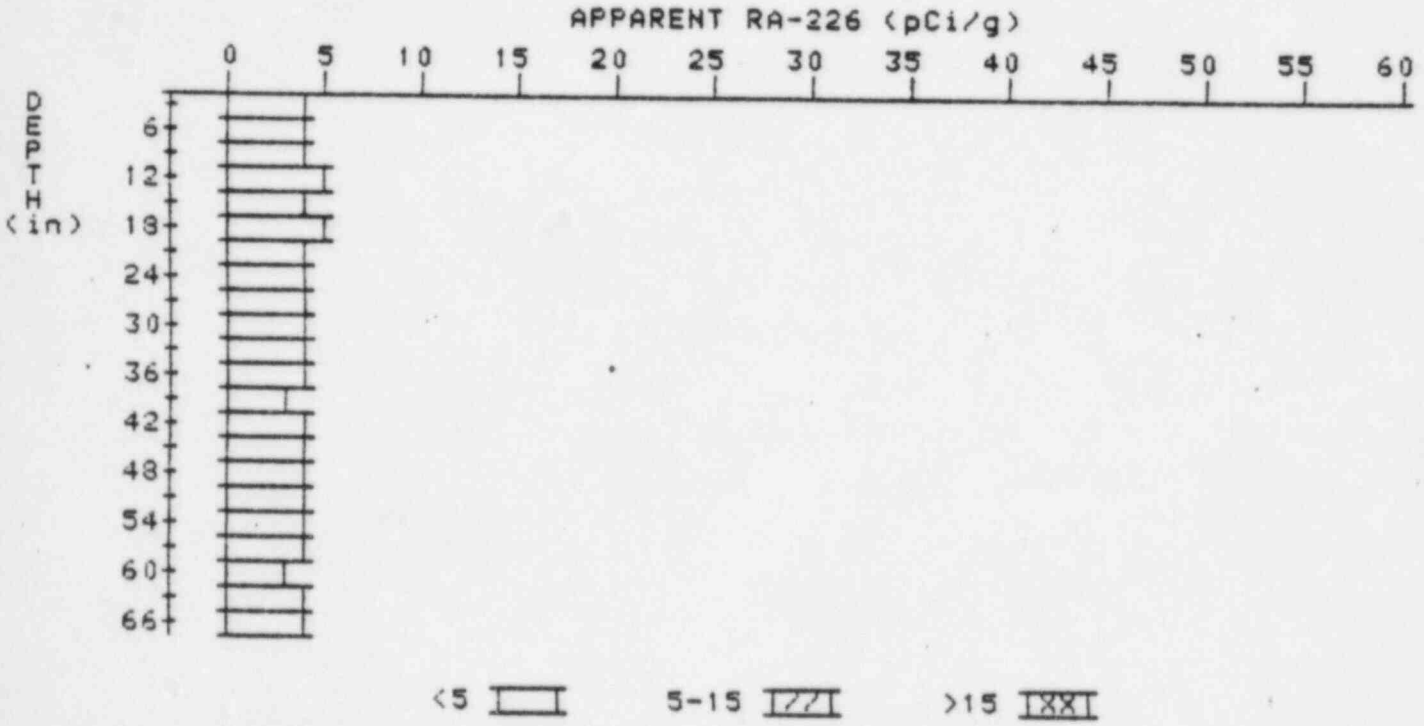

| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---|---|---|
| 3 | 3.8 | 3.8 |
| 6 | 4.1 | 4.3 |
| 9 | 4.3 | 4.5 |
| 12 | 4.4 | 4.8 |
| 15 | 4.3 | 4.5 |
| 18 | 4.1 | 4.1 |
| 21 | 3.9 | 3.9 |

DECON V85.1<850117.1233>

# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

10

PROPERTY NUMBER: GJ-07784-RS
HOLE NUMBER: 10
LOCATION: 289267



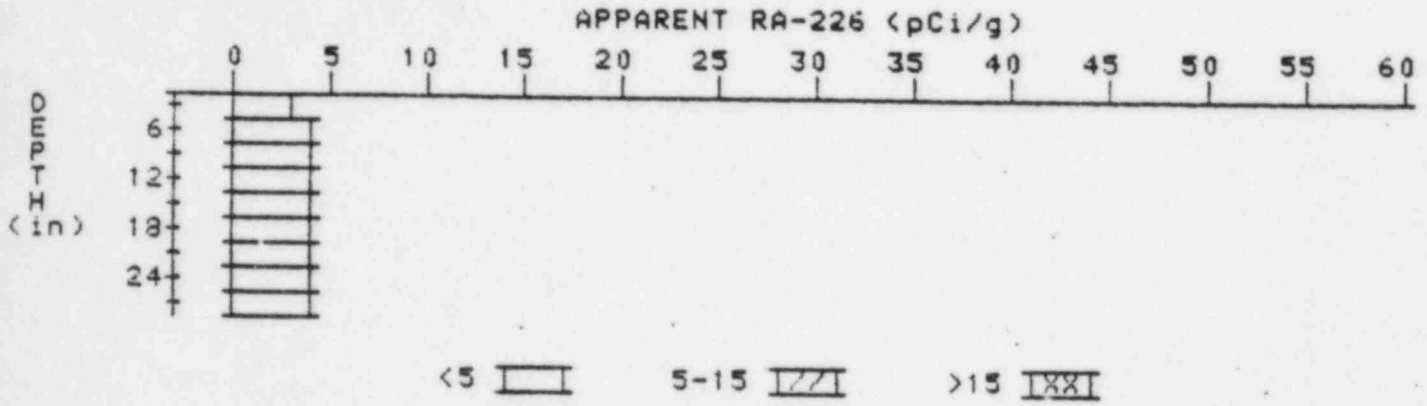

| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---|---|---|
| 3 | 3.6 | 3.6 |
| 6 | 3.7 | 3.5 |
| 9 | 3.9 | 3.7 |
| 12 | 4.2 | 4.6 |
| 15 | 4.3 | 4.3 |
| 18 | 4.4 | 4.8 |
| 21 | 4.3 | 4.3 |
| 24 | 4.2 | 4.4 |
| 27 | 4.0 | 3.6 |
| 30 | 4.0 | 4.2 |
| 33 | 3.9 | 3.7 |
| 36 | 3.9 | 4.3 |
| 39 | 3.7 | 3.3 |
| 42 | 3.7 | 3.7 |
| 45 | 3.7 | 3.7 |
| 48 | 3.7 | 3.7 |

| | | |
|---|---|---|
| 51 | 3.7 | 3.7 |
| 54 | 3.7 | 3.5 |
| 57 | 3.8 | 4.3 |
| 60 | 3.6 | 3.1 |
| 63 | 3.7 | 3.9 |
| 66 | 3.7 | 3.7 |

DECON V85.1<850117.1233>

# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH 13

PROPERTY NUMBER: GJ-07784-RS
HOLE NUMBER: 13
LOCATION: 290242




| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---|---|---|
| 3 | 3.4 | 3.4 |
| 6 | 3.7 | 3.9 |
| 9 | 3.9 | 4.1 |
| 12 | 4.0 | 4.2 |
| 15 | 4.0 | 4.2 |
| 18 | 3.9 | 3.7 |
| 21 | 3.9 | 3.9 |
| 24 | 3.9 | 4.1 |
| 27 | 3.8 | 3.8 |