

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-06194-CS  
ADDRESS: 908 NORTH 1ST STREET

JUNE 1985

FOR

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT OFFICE

ALBUQUERQUE OPERATIONS OFFICE

DEPARTMENT OF ENERGY

BY

BENDIX FIELD ENGINEERING CORPORATION  
P.O. Box 1569  
Grand Junction, Colorado 81502

APPROVED BY

*Michael K. Tucker*

M. TUCKER  
DOE PROJECT ENGINEER

DATE

*June 27, 1985*

REA06194:REA-608

8507150439 850625  
PDR WASTE  
WM-54 PDR

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## **1.0 EXECUTIVE SUMMARY**

### **1.1 Introduction**

The location, DOE ID No. GJ-06194-CS, is a commercial property located at 908 North 1st Street, Grand Junction, Colorado.

The purpose of this assessment is to evaluate the extent of uranium millsite contamination at this property. This assessment includes recommended remedial action, estimated volume of material to be removed, and estimated cost of the proposed action.

### **1.2 Evaluation and Recommendation**

The action recommended is the removal of contaminated material and restoration of the property to its original condition. The identified residual radioactive material found on this property is tailings; the estimated volume is: exterior, 38 cu. yd.; interior, 0 cu. yd.

Estimated cost to perform remedial action, including dislocation when applicable, is \$4,973. Remedial action on this property will take approximately 14 days to complete.

## 2.0 PROPERTY DESCRIPTION

### 2.1 General Description

Address: 908 North 1st Street, Grand Junction, Colorado

Zoning: Commercial (C-2)

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

Legal Description: Lots 23 and 24, Block 12, City of Grand Junction, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 3 miles 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

Bordering Properties:

North:	Alley
South:	Teller Avenue
East:	Single-family residence
West:	North 1st Street

### 2.2 Existing Facilities and Structures

Primary Structure:

Type:	Commercial structure
Size:	Approximately 2,293 sf
Construction Date:	1955
Construction:	Single-story wood-frame
Foundation:	6" concrete slab-on-grade with thickened edge
Footing Depth:	Approximately 8" to bottom of thickened edge from grade
Basement:	None
Crawl Space:	None
Condition:	Fair

Other Structures: None



General Remarks:

The general condition of the property is fair. 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-06194-CS on May 15, 1985. Data collection methods were performed in accordance with procedures fully described in the Radiologic Support Operations Procedures Manual GJ-07(84) (Bendix Field Engineering Corporation, 1984). These data were evaluated to determine the areal and vertical extent of uranium mill tailings contamination at this property as well as any other contaminated material that may have originated from the millsite.

A review of historical information from the files of the Colorado Department of Health (CDH) and the inclusion data from Oak Ridge National Laboratory (ORNL) was conducted. These records indicate contamination associated with the sidewalks and along the east property line.

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: 14 to 16 uR/h  
Highest Outside Gamma Reading (HOG): 65 uR/h

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

##### 3.2.2 Interior Findings

Background Readings: 13 to 15 uR/h  
Highest Inside Gamma Reading (HIG): 18 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; these areas 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) Under the asphalt in the city street west of the primary structure, contamination extends to a total depth of 18 inches, based on information collected in Area B (approximately 50 sf). This area shall not be removed because tailings are not removed when found under city streets or alleys.
- (AREA B) Under the 4-inch-thick concrete sidewalk west of the primary structure, contamination extends to a depth of 14 inches. The total depth of contamination is 18 inches (approximately 50 sf).
- (AREA C) Southwest of the primary structure, contamination under the 4-inch-thick concrete sidewalk extends to a depth of 14 inches. The total depth of contamination is 18 inches (approximately 90 sf).
- (AREA D) South of Area C, contamination extends under the 4-inch-thick concrete sidewalk to a depth of 5 inches. The total depth of contamination is 9 inches (approximately 380 sf).
- (AREA E) South of the primary structure, contamination extends under the 4-inch-thick concrete sidewalk to a depth of 14 inches. The total depth of contamination is 18 inches, based on information collected in Area C (approximately 210 sf).
- (AREA F) In the gravel parking lot south of the primary structure, contamination extends to a depth of 6 inches (approximately 9 sf).
- (AREA G) In the gravel parking lot, a deposit of contamination extends to a depth of 6 inches (approximately 24 sf).
- (AREA H) A small deposit of contamination along the east property line extends to a depth of 12 inches, based on information collected in Area I (approximately 8 sf).
- (AREA I) Southeast of the primary structure, contamination extends to a depth of 12 inches (approximately 136 sf).

(AREA J) South of the primary structure, contamination extends to a depth of 21 inches. An old slab of concrete is buried in this area (approximately 6 sf).

(AREAS REQUIRING FURTHER INVESTIGATION DURING REMEDIAL ACTION)

Areas under the sidewalk should be closely monitored during remedial action to assure all contaminated material is removed.

#### **4.0 RECOMMENDED REMEDIAL ACTION**

##### **4.1 Decontamination and Restoration**

The recommended remedial action for this property, DOE ID No. GJ-06194-CS, 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.

At the present time dislocation of the occupants will not be required for this remedial action; however, if the commercial structure is leased, construction will have to be phased to provide access.

##### **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 \$4,973.

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	Sample Locations
Figure 3.3	Estimated Extent of Contamination

Official Survey Report

Exterior Gamma Scan Field Map

Memo of Understanding

Team Leader Notes

Deconvolution Graphs (Apparent Radium-226 Concentration)

## Radium Concentrations at Exterior Locations

DOE ID #GJ-06194-CS

908 North 1st Street

Page 1 of 4

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
1	159228	03	TC	59.7		*	Through core in sidewalk
		06	TC	93.8		*	
		09	TC	103.1		*	
		12	TC	91.1		*	
		15	TC	65.8		*	
		18	TC	41.6		*	DC = 18 inches Based on the deconvolution graph
		21	TC	23.4		*	
		24	TC	15.0		*	
		27	TC	10.9		*	
		30	TC	8.8		*	
		33	TC	7.5		*	
		36	TC	6.7		*	
		39	TC	6.1		*	
		42	TC	5.7		*	
		45	TC	5.3		*	
		48	TC	5.0		*	
		51	TC	4.9		*	
		54	TC	4.6		*	
		57	TC	4.6		*	
		60	TC	4.4		*	
		63	TC	4.3		*	
		66	TC	4.3		*	
		69	TC	4.3		*	
2	184281	00	DS	<1.0		*	Gas line
		17	DS	<1.0		*	On gas line
3	187228	03	TC	50.9		*	Through core in sidewalk
		06	TC	78.0		*	
		09	TC	70.4		*	
		12	TC	52.6		*	
		15	TC	34.4		*	
		18	TC	20.7		*	DC = 18 inches Based on the deconvolution graph
		21	TC	13.5		*	
		24	TC	9.9		*	
		27	TC	7.9		*	
		30	TC	7.0		*	
		33	TC	6.4		*	
		36	TC	6.1		*	
		39	TC	5.7		*	
		42	TC	5.2		*	
		45	TC	5.1		*	
		48	TC	4.8		*	
		51	TC	4.8		*	



## Radium Concentrations at Exterior Locations

DOE ID #GJ-06194-CS

908 North 1st Street

Page 2 of 4

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
3	187228	54	TC	4.8		*	
		57	TC	4.9		*	
		60	TC	4.9		*	
		63	TC	4.9		*	
		66	TC	4.9		*	
		69	TC	5.0		*	
4	193228	00	DS	40.5		*	Sidewalk
5	197227	03	TC	78.8		*	Through core in sidewalk
		06	TC	109.7		*	
		09	TC	117.3		*	
		12	TC	101.8		*	
		15	TC	75.5		*	
		18	TC	61.6		*	DC = 18 inches Based on the deconvolution graph
		21	TC	66.8		*	
		24	TC	39.4		*	
		27	TC	25.3		*	
		30	TC	18.7		*	
		33	TC	16.0		*	
		36	TC	14.4		*	
		39	TC	13.4		*	
		42	TC	12.6		*	
		45	TC	11.8		*	
		48	TC	10.8		*	
		51	TC	10.4		*	
		54	TC	10.2		*	
		57	TC	10.2		*	
		60	TC	10.4		*	
		63	TC	9.4		*	
		66	TC	9.3		*	
		69	TC	8.5		*	
		72	TC	7.9		*	
		75	TC	7.3		*	
		78	TC	6.8		*	
		81	TC	6.2		*	
		84	TC	5.7		*	
		87	TC	5.3		*	
		90	TC	5.2		*	
		93	TC	5.0		*	
		96	TC	5.0		*	
		99	TC	5.2		*	
6	200263	00	DS	1.8		*	On top of concrete

## Radium Concentrations at Exterior Locations

DOE ID #GJ-06194-CS

908 North 1st Street

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
7	201262	03	TC	4.5		*	Sewer line  DC = 21 inches Based on the deconvolution graph
		06	TC	5.5		*	
		09	TC	6.0		*	
		12	TC	6.3		*	
		15	TC	6.6		*	
		18	TC	5.9		*	
		21	TC	4.7		*	
		24	TC	4.2		*	
		27	TC	3.8		*	
		30	TC	3.8		*	
		33	TC	3.7		*	
		36	TC	3.7		*	
		39	TC	3.6		*	
8	204262	10	DS	1.6		*	South of primary structure
9	204263	00	DS	<1.0		*	On top of concrete
10	212263	18	DS	1.5		*	South of primary structure
		24	DS	1.1		*	
		36	DS	1.1		*	
11	216275	03	TC	7.9		*	Near east property line  DC = 12 inches Based on the deconvolution graph
		06	TC	9.0		*	
		09	TC	7.7		*	
		12	TC	6.0		*	
		15	TC	4.9		*	
		18	TC	4.3		*	
		21	TC	4.1		*	
		24	TC	3.9		*	
		27	TC	3.8		*	
		30	TC	3.8		*	
		33	TC	3.8		*	
		36	TC	3.6		*	
		39	TC	3.7		*	
12	216279	00	DS	3.6		*	Near east property line DC = 12 inches
		06	DS	2.2		*	
		12	DS	<1.0		*	
13	220228	03	TC	4.6		*	Through sidewalk
		06	TC	4.9		*	
		09	TC	4.4		*	

## Radium Concentrations at Exterior Locations

DOE ID #GJ-06194-CS

908 North 1st Street

Page 4 of 4

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
13	220228	12	TC	4.1		*	DC = 9 inches
		15	TC	4.0		*	Based on the
		18	TC	3.9		*	deconvolution graph
		21	TC	4.2		*	
		24	TC	4.4		*	
		27	TC	5.1		*	
		30	TC	5.4		*	
		33	TC	5.7		*	
		36	TC	6.0		*	
		39	TC	6.2		*	
		42	TC	5.9		*	
		45	TC	5.6		*	
		48	TC	5.2		*	
		51	TC	5.0		*	
		54	TC	4.9		*	
		57	TC	5.0		*	
		60	TC	4.8		*	
14	220230	00	DS	5.8		*	Sidewalk
15	252271	00	DS	5.4		*	Near east property
		06	DS	1.8		*	line DC = 6 inches
16	262241	00	DS	2.7		*	North of Teller
		06	DS	1.3		*	Avenue DC = 6 inches

Measurement GB = GAD-6 Borehole  
Types: GS = GAD-6 Surface  
DS = Delta Scintillometer  
TC = Total Count Borehole  
SS = Soil Sample  
BH = Combined GAD-6 and  
Total Count Borehole

Notes: DC = Depth of Contamination  
\* = No Soil Sample Taken  
[n] = Reading Taken n-Inches  
Above Floor or Ground  
Date of Survey = 05-15-85  
Team Leader = SM

Table 3.2

## Summary of Interior Gamma Exposure Rates

DOE ID No. GJ-06194-CS 908 North 1st Street 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)
-----	-----	-----	-----	-----	-----	-----
PRIMARY STRUCTURE	55	13-18	13	55	13-16	14

Table 4.1  
Area and Volume Calculations  
DOE ID No. GJ-06194-CS

Page 1 of 2

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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>
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EXTERIOR

Concrete

B	10 x 5	=	50	x	0.3	=	15
C	28 x 5	=	140	x	0.3	=	42
D	76 x 5	=	380	x	0.3	=	114
E	5 x 42	=	210	x	0.3	=	63

Volume of Concrete

234 = 234/27 = 9

Contaminated Fill

*A	10 x 5	=	50	Not To Be Removed			
B	10 x 5	=	50	x	1.2	=	60
C	18 x 5	=	90	x	1.2	=	108
D	76 x 5	=	380	x	0.5	=	190
E	5 x 42	=	210	x	1.2	=	252
F	3 x 3	=	9	x	0.5	=	5
G	4 x 6	=	24	x	0.5	=	12

Table 4.1  
Area and Volume Calculations  
DOE ID No. GJ-06194-CS

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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>
H	4 x 2 =	8	x 1.0 =	8	
I	20 x 5 =	100			
	12 x 3 =	36			
		<hr/>			
		136	x 1.0 =	136	
J	2 x 3 =	6	x 1.8 =	11	
				<hr/>	
	Volume of Fill			= 782	= 782/27 = 29
					<hr/>
	TOTAL VOLUME - EXTERIOR				= 38

\*Note: Area A is under asphalt in the city street. Tailings are not removed when found under paved city streets and alleys.

See Appendix Figure 3.3 For Areas

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EXTERIOR

Saw-cut concrete 20 lf @ \$1.50/lf	\$ 30
Remove/replace 4" sidewalks 780 sf @ \$3/sf	2,340
Remove identified residual radioactive material 29 cy @ \$14.50/cy	421
Backfill areas with compacted roadbase 28 cy @ \$11.50/cy	322
Spread 3/4" crushed rock in parking area 1 cy @ \$13.50/cy	14
Cleanup Lump sum	100

TOTAL EXTERIOR \$ 3,227

TOTAL INTERIOR 0

ACCESS CONTROL 250

SUBTOTAL \$ 3,477

CONTINGENCY @ 10% 348

SUBTOTAL \$ 3,825

CONTRACTOR OVERHEAD & PROFIT @ 30% 1,148

GRAND TOTAL \$ 4,973

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CK062085  
REA06194/REA-608/LMR







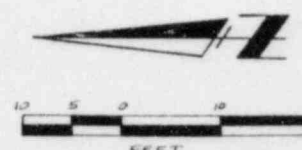
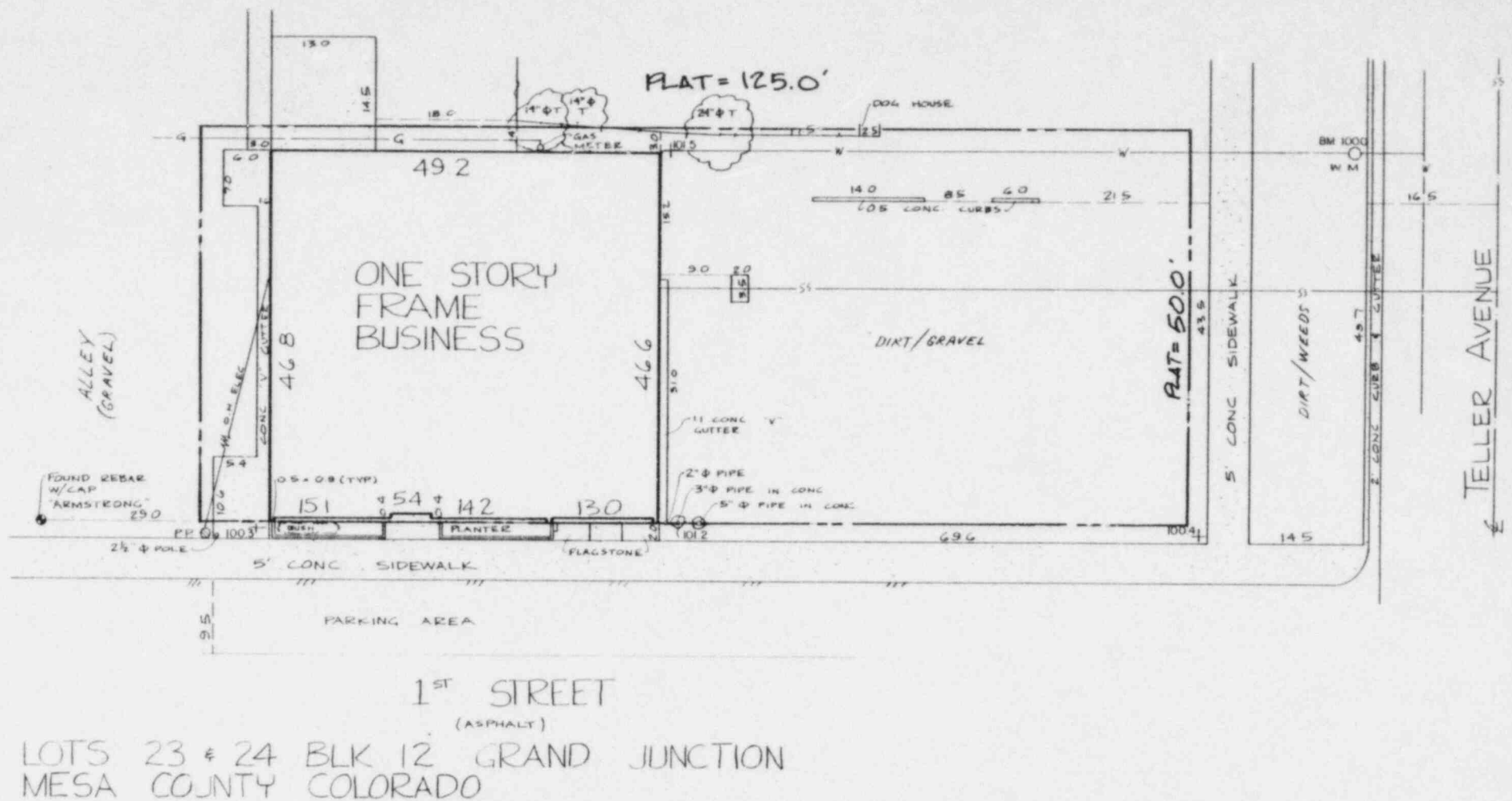
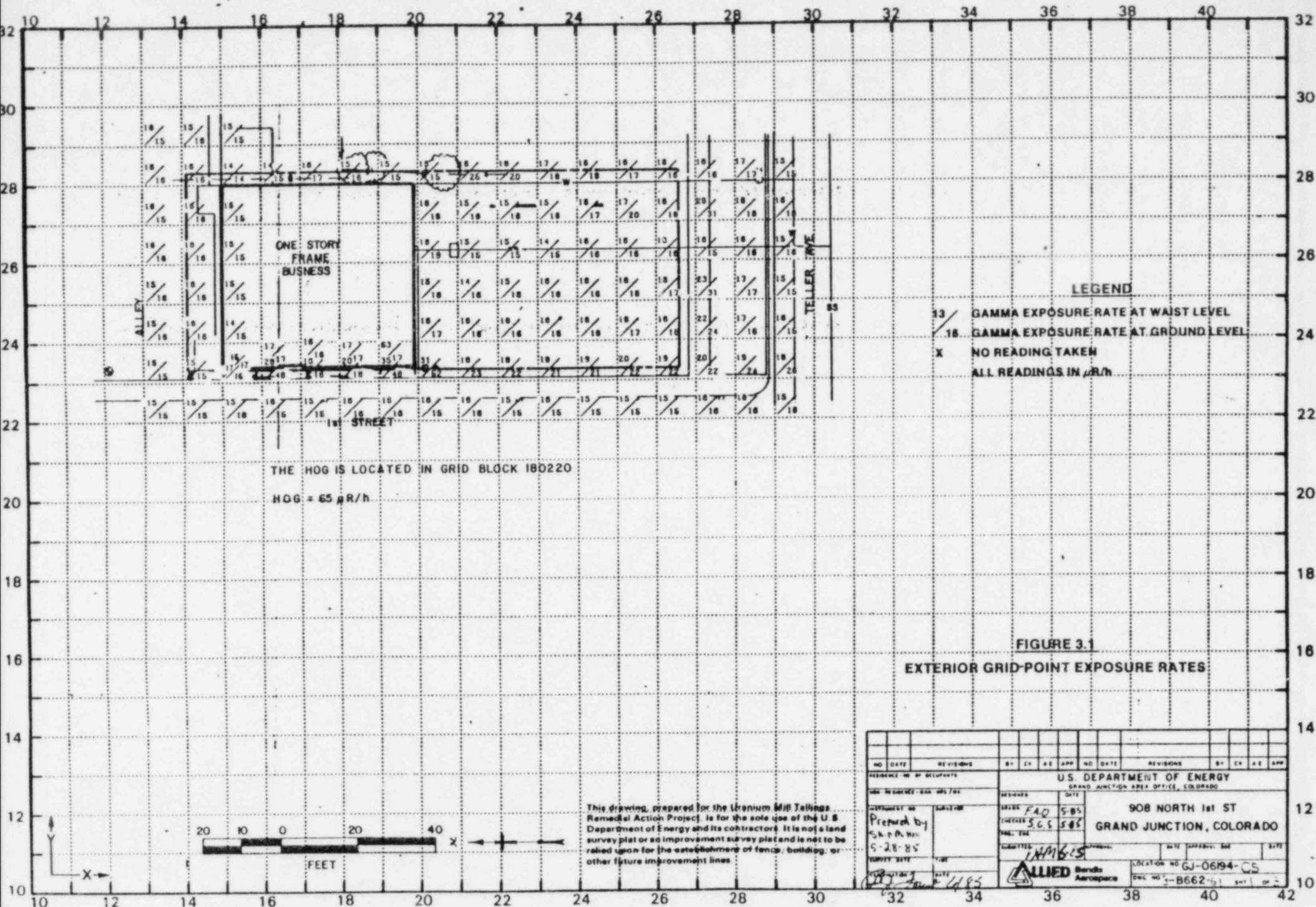


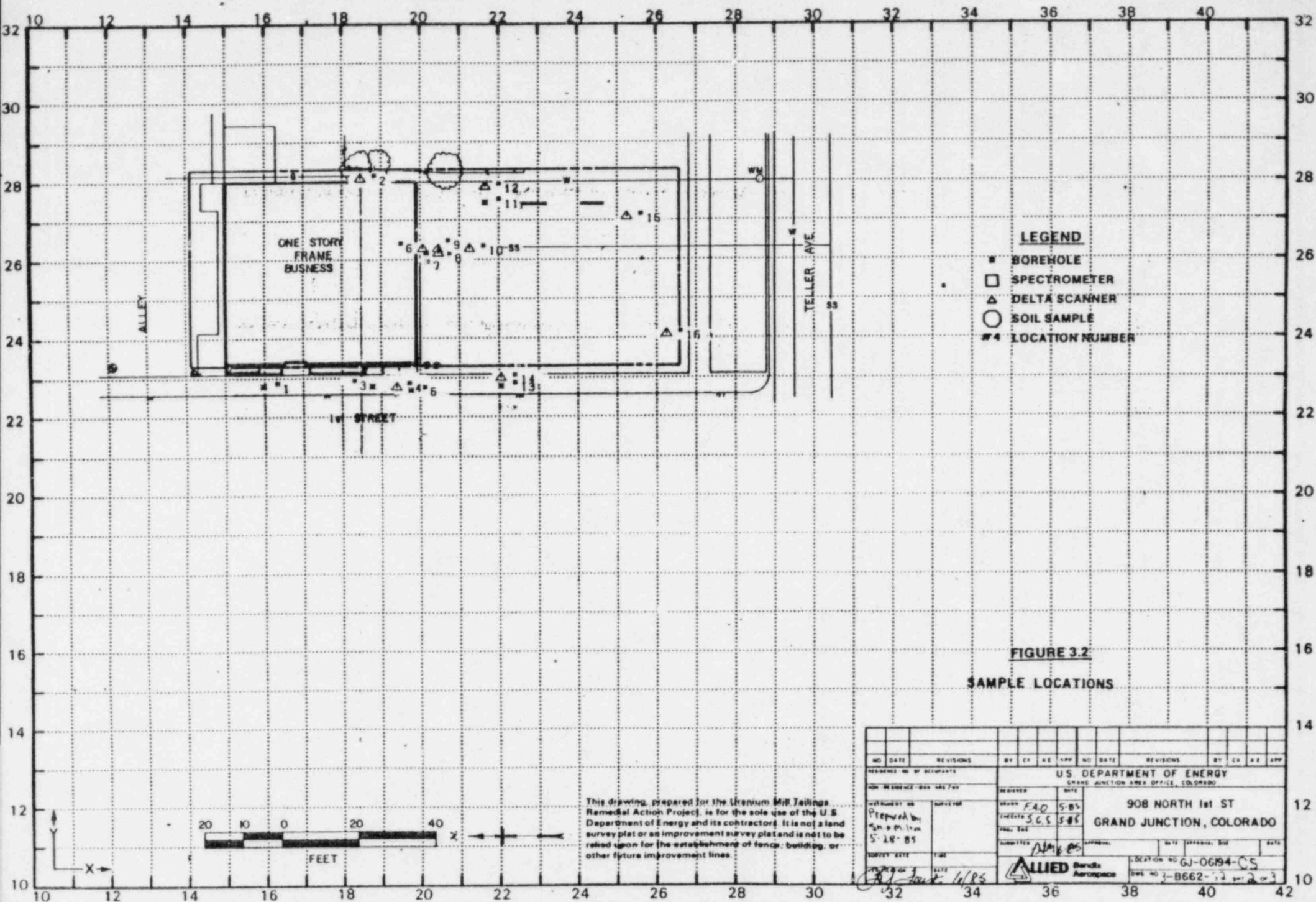
FIGURE 2.2 SITE PLAN

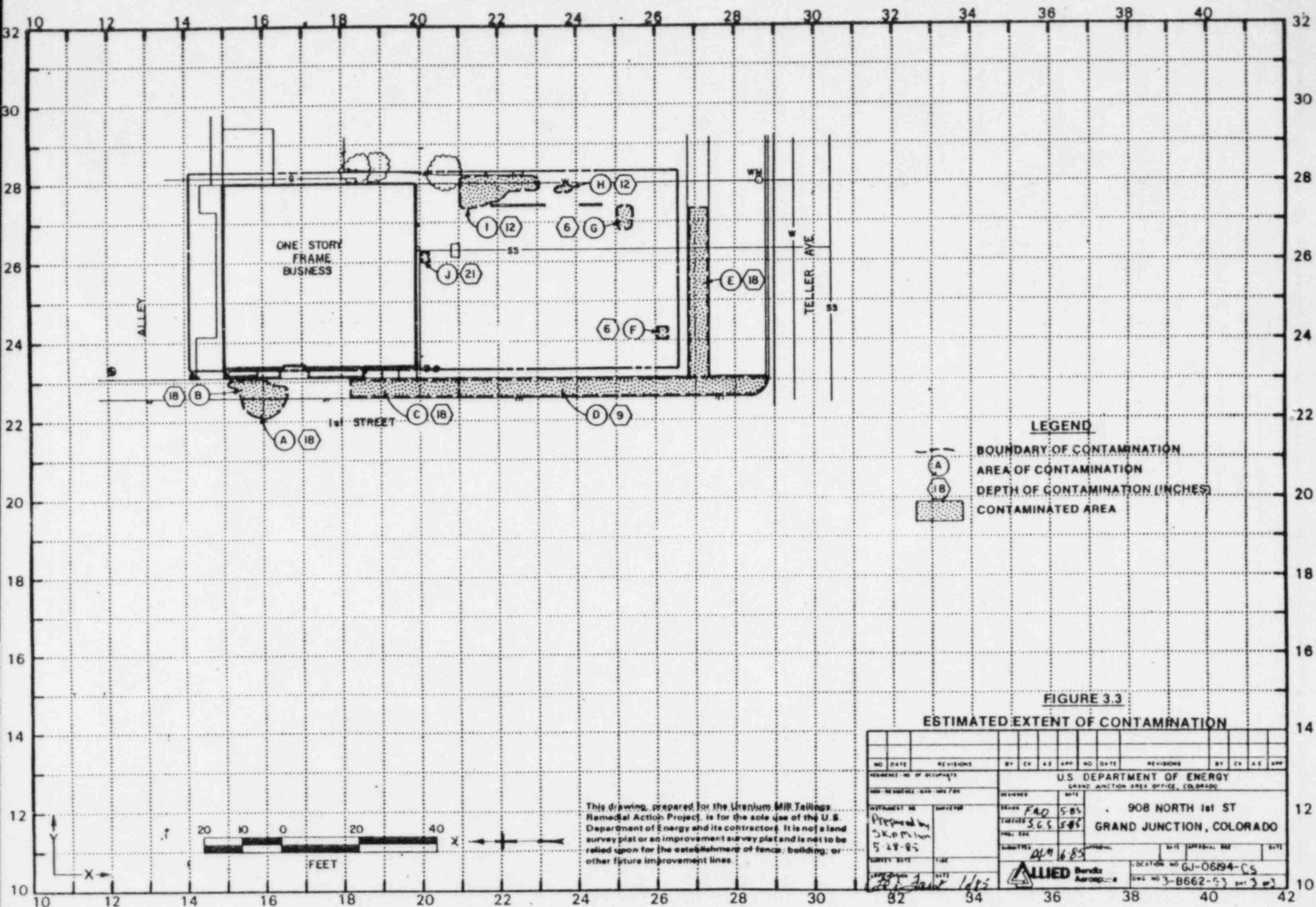
This drawing, prepared for the Uranium Mill Tailings Remedial Action Project, is for the sole use of the U.S. Department of Energy and its contractors. It is not a land survey plot or an improvement survey plot and is not to be relied upon for the establishment of fence, building, or other future improvement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

U.S. DEPARTMENT OF ENERGY		DOE ID NO.
GRAND JUNCTION PROJECT OFFICE, COLORADO		GJ 06194 CS
ADDRESS 908 NORTH 1 <sup>ST</sup> ST		
GRAND JUNCTION, COLORADO		
SURV WHL/5785	DRAFT TJ/5985	CR 1/15-85
DRAWING NO 3 C 662	F I	SHEET 1 OF 1



NO. DATE		REVISIONS		BY CR AE APP		NO. DATE		REVISIONS		BY CR AE APP	
RESUME NO. OF RECAPS											
U.S. DEPARTMENT OF ENERGY GRAND JUNCTION AREA OFFICE, COLORADO											
NAME: NO. SOURCE - SAN. AHS. 704				DESIGNED: F.A.O. 5-85				DATE: 5-28-85			
PREPARED BY: S.A.P.M.H.				CHECKED: S.C.S. 5-85				DATE: 5-28-85			
SURVEY DATE: 5-28-85				SURVEY SITE: 90B NORTH 1st ST				LOCATION NO: GJ-06194-C5			
DRAWN BY: S.A.P.M.H.				DATE: 5-28-85				SCALE: 1" = 40'			
APPROVED: S.A.P.M.H.				DATE: 5-28-85				DRAWING NO: B662-1			





**FIGURE 3.3**

## ESTIMATED EXTENT OF CONTAMINATION

[illegible]



3/85

DOE ID NO. GJ-06194-CS

Date 5-28-85

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

Official Survey Report

Property Address 908 North 1st. Street

Property Owner Donn McKinney

Address of Owner (if different from above) 820 Kimball Avenue

Report Prepared By Skip Milton

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 XXX 1 In open areas.

1 XXX 1 Under or around exterior improvements.

1 1 Under or around a typically nonoccupied structure.

1 XXX 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, CJ/CDH

J. Themelis, Mgr. UMTRA Proj. Off.

HIG = 18 uR/h  
HOC = 65 uR/h





Bendix  
Aerospace

Bendix Field Engineering Corporation  
P. O. Box 1569  
Grand Junction, CO 81502-1569  
Telephone (303) 242-8621  
Telex: 454-338

May 30, 1985

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

ATTN: Elaine Brummett

Dear Elaine:

The following is in response to your questions and comments during the Technical Review concerning Department of Energy (DOE) Identification (ID) number GJ-06194-CS.

1. The foundation information will only be taken if contamination is found. The interior survey showed negative readings, therefore, there will not be a final map in the assessment for the interior.
2. Borehole 13 was questionable and a note at the bottom of the final Radiologic and Engineering Assessment (REA) will read: "The areas underneath the sidewalks should be closely monitored for deeper contamination during remedial action."
3. The south sidewalk appears to be represented by the rest of the sidewalk and the core there would not have been necessary.

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

Very truly yours,

Skip Milton  
RSD Survey Team Leader

SM:pr

CDH.LETTER:06194:MILTON

ALLIED Bendix  
Aerospace

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

DATE: May 15, 1985

TO: Files

FROM: Skip Milton

SUBJECT: Team Leader Notes - GJ-06194-RS <sup>CS 96 6/14/85</sup>

Address: 908 North 1st Street

Owner: Don McKinney

Tenant: Mrs. Kuxhausen

Weather: Clear, warm.

Team Members

S. Milton (Team Leader)

L. Kula

B. Wilkins

D. Bell

M. Gilfillan

N. Wallace

V. Young

A. Raabe

Instruments

See Equipment Summary sheet.

Contamination appears to be consistent with Colorado Department of Health (CDH) and Oak Ridge National Laboratory (ORNL) background information.

An interior gamma survey showed no apparent contamination within the primary structure.

Mrs. Kuxhausen, the shop owner, showed an elevated reading of 4600 cps. She was removed during the interior gamma survey (she had taken, two days prior to the visit, an iodine dye pill for an x-ray).



Team Leader Notes

Skip Milton

GJ-06194-RS CS 6/19/84

May 15, 1985

Page 2

The utility lines were all located and investigated with boreholes and deltas.

Visible tailings were seen in the concrete core boreholes.

All holes were filled in and cleaned up.

All team members were frisked before leaving the property.

ALLIED Bendix  
Aerospace

Bendix Field Engineering Corporation  
Grand Junction Operations  
Grand Junction, Colorado

Date: May 21, 1985

To: Files

From: Skip Milton

Subject: Team Leader Notes - GJ-06194-CS

Address: 908 North 1st Street

Owner: Donn L. McKinney

Team Members

S. Milton (Team Leader)  
R. Wilkins

Instruments

Delta - C-3938

An 8-inch-thick concrete slab was found extending from the building and going south 10 feet. A 36-inch hole over the indicated sewer line was dug with a depth delta, taken at 18 inches, 24 inches, and 36 inches. All results were negative. A horizontal delta underneath the slab also came up negative.

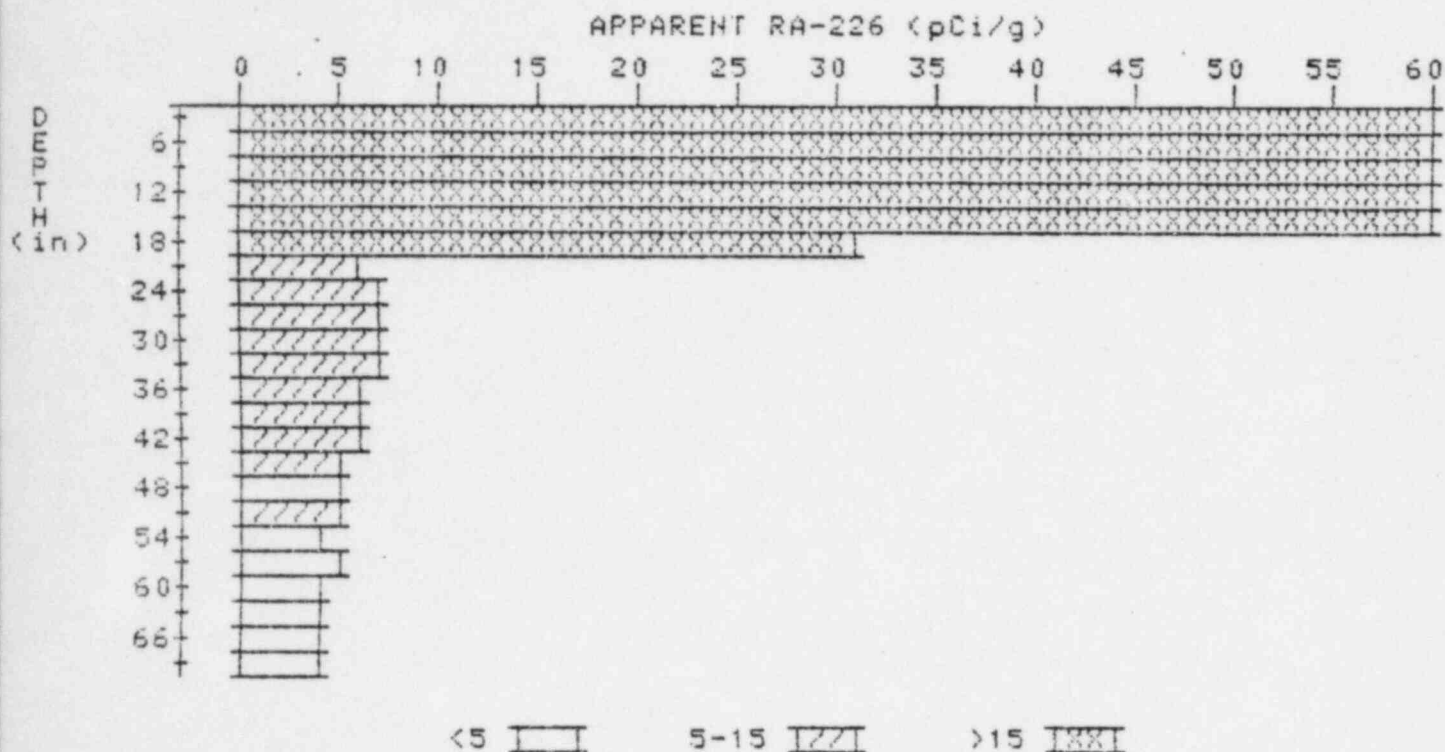
# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

1

PROPERTY NUMBER: GJ-06194-CS

HOLE NUMBER: 1

LOCATION: 159228



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	59.7	59.7
6	93.8	137.9
9	103.1	141.0
12	91.1	114.7
15	65.8	63.8
18	41.6	30.9
21	23.4	6.0
24	15.0	7.4
27	10.9	7.3
30	8.8	7.4
33	7.5	6.6
36	6.7	6.3
39	6.1	5.7
42	5.7	5.7
45	5.3	5.1

48  
51  
54  
57  
60  
63  
66  
69

5.0  
4.9  
4.6  
4.6  
4.4  
4.3  
4.3  
4.3

4.6  
5.3  
4.1  
5.0  
4.2  
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4.3  
4.3

# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

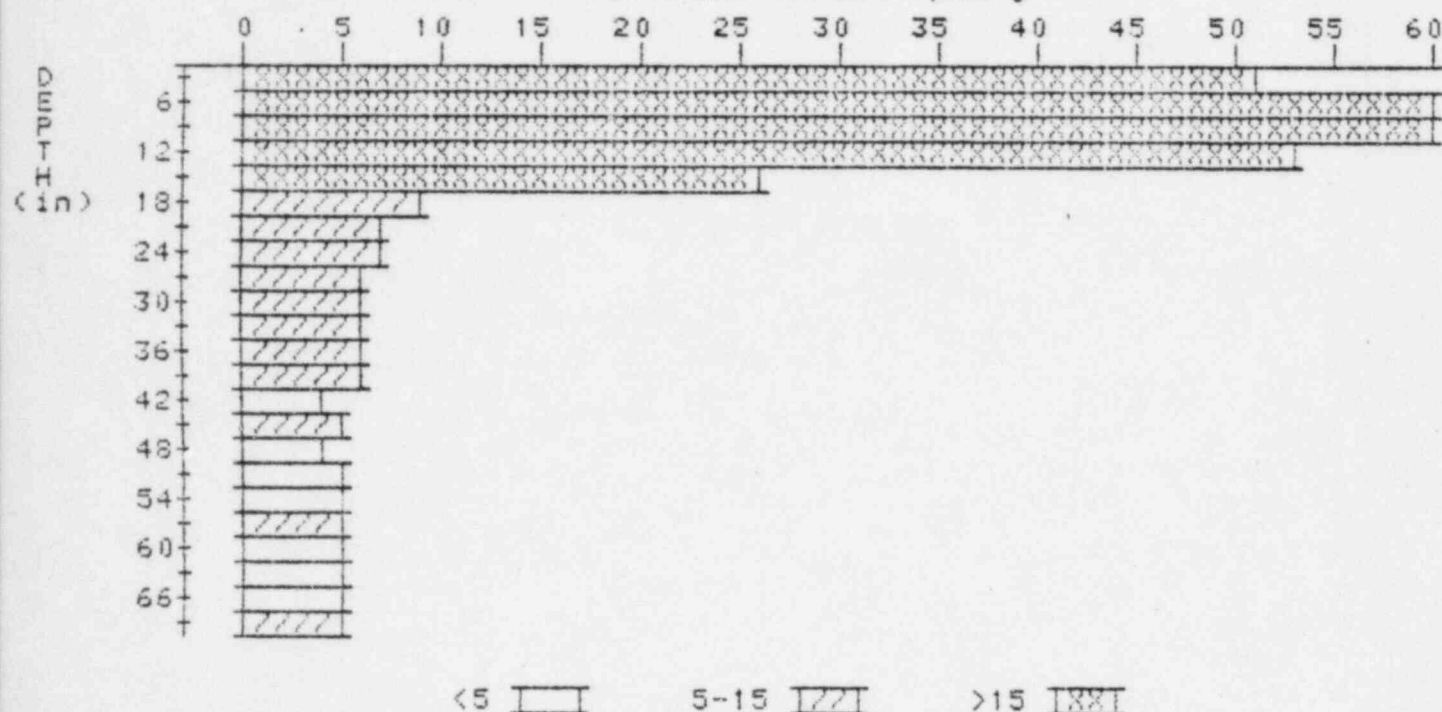
3

PROPERTY NUMBER: GJ-06194-CS

HOLE NUMBER: 3

LOCATION: 187228

APPARENT RA-226 (pCi/g)



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	50.9	50.9
6	78.0	139.7
9	70.4	88.5
12	52.6	53.3
15	34.4	26.4
18	20.7	9.1
21	13.5	7.1
24	9.9	7.1
27	7.9	5.9
30	7.0	6.5
33	6.4	5.9
36	6.1	6.3
39	5.7	5.9
42	5.2	4.5
45	5.1	5.5

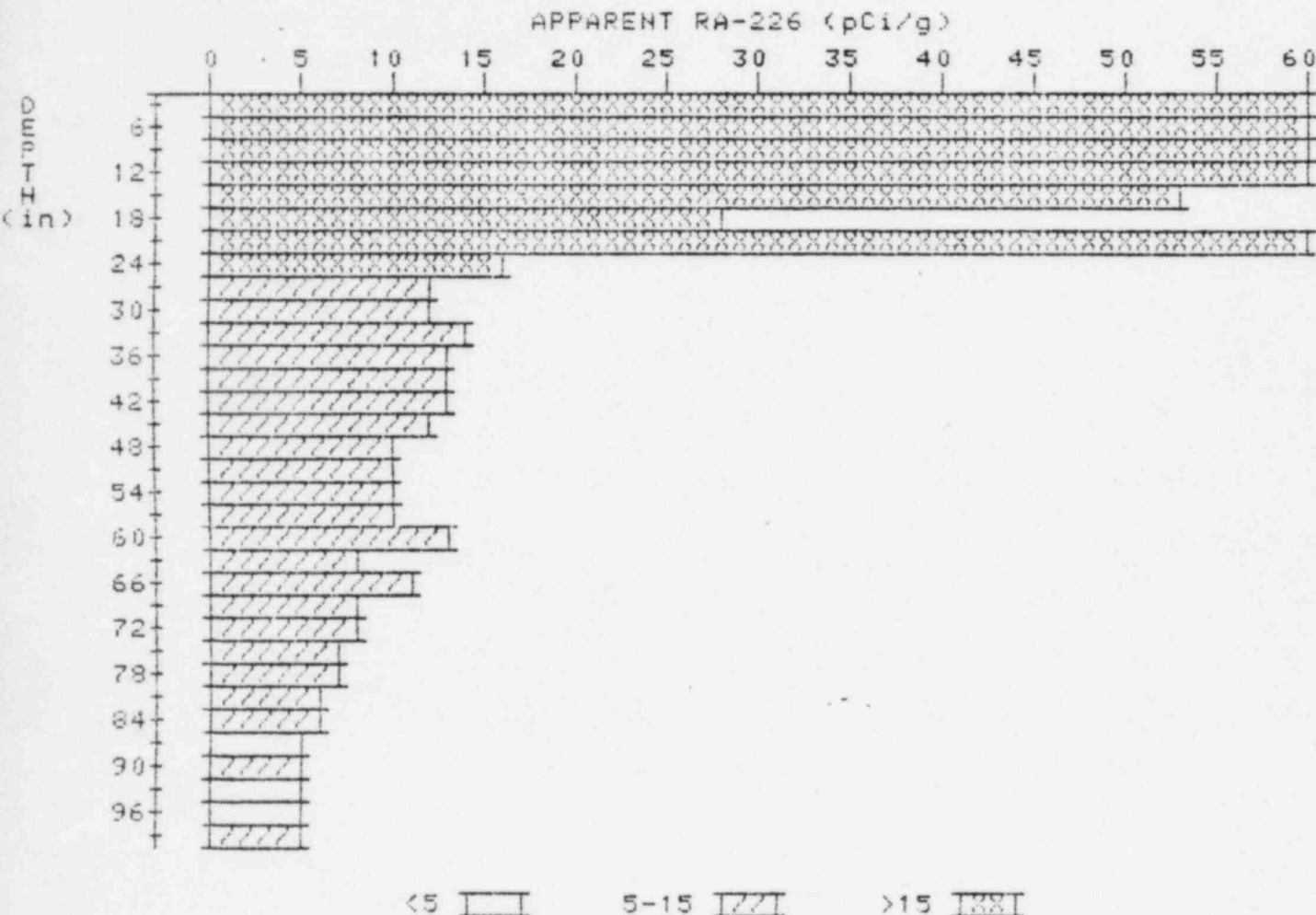
48  
51  
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57  
60  
63  
66  
69

4.8  
4.8  
4.8  
4.9  
4.9  
4.9  
4.9  
5.0

4.3  
4.8  
4.6  
5.1  
4.9  
4.9  
4.7  
5.0

# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH 5

PROPERTY NUMBER: GJ-06194-CS  
HOLE NUMBER: 5  
LOCATION: 197227



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	78.8	78.8
6	109.7	151.1
9	117.3	158.4
12	101.8	121.0
15	75.5	53.5
18	61.6	27.6
21	66.8	124.8
24	39.4	15.8

27	25.3	12.0
30	18.7	11.8
33	16.0	11.0
36	14.4	11.3
39	13.4	13.0
42	12.6	12.6
45	11.8	12.2
48	10.8	9.7
51	10.4	10.0
54	10.2	9.8
57	10.2	9.8
60	10.4	12.5
63	9.4	7.8
66	9.3	10.5
69	8.5	8.1
72	7.9	7.9
75	7.3	7.1
78	6.8	7.0
81	6.2	6.0
84	5.7	5.5
87	5.3	4.8
90	5.2	5.4
93	5.0	4.6
96	5.0	4.6
99	5.2	5.2



# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

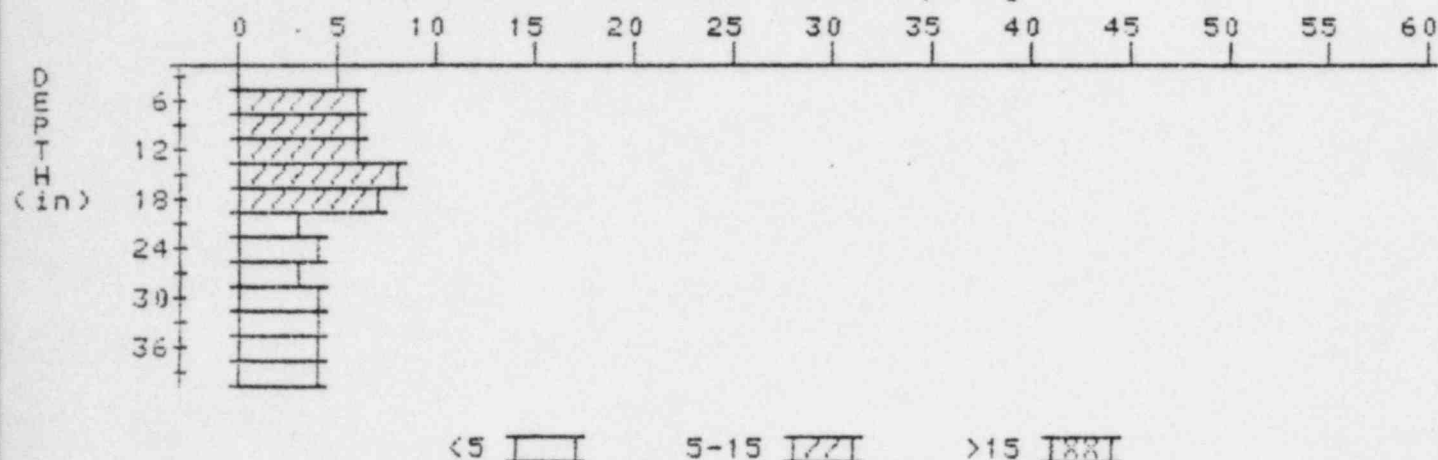
7

PROPERTY NUMBER: GJ-06194-CS

HOLE NUMBER: 7

LOCATION: 201262

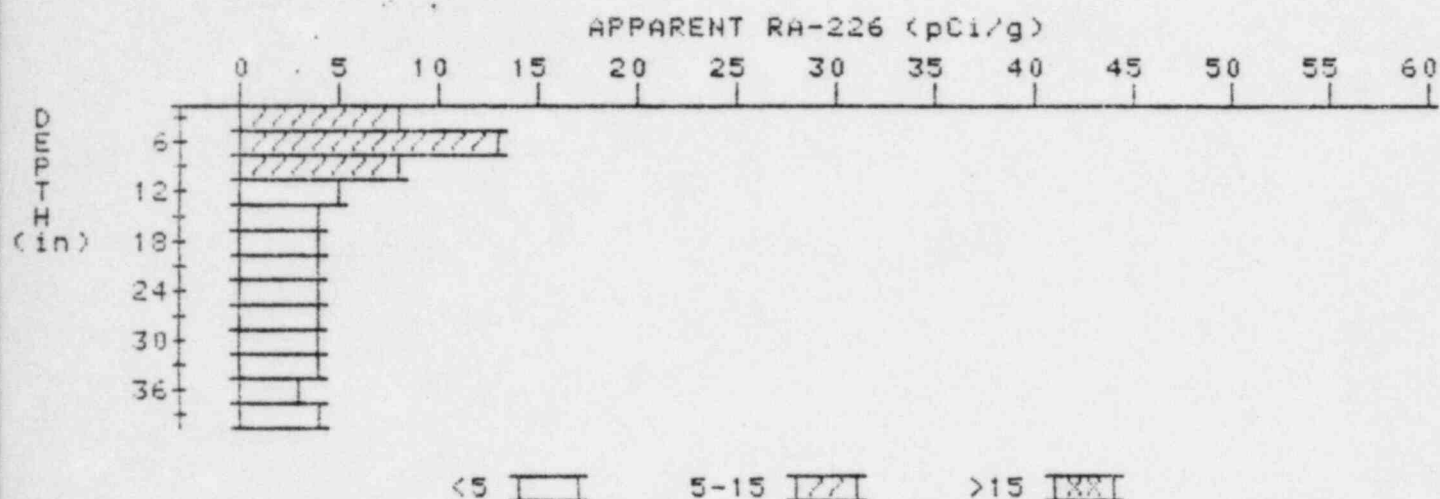
APPARENT RA-226 (pCi/g)



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.5	4.5
6	5.5	6.4
9	6.0	6.4
12	6.3	6.3
15	6.6	8.4
18	5.9	6.8
21	4.7	3.5
24	4.2	4.0
27	3.8	3.1
30	3.8	4.0
33	3.7	3.5
36	3.7	3.9
39	3.6	3.6

# APPARENT RADIUM-226 CONCENTRATION 11 DECONVOLUTION GRAPH

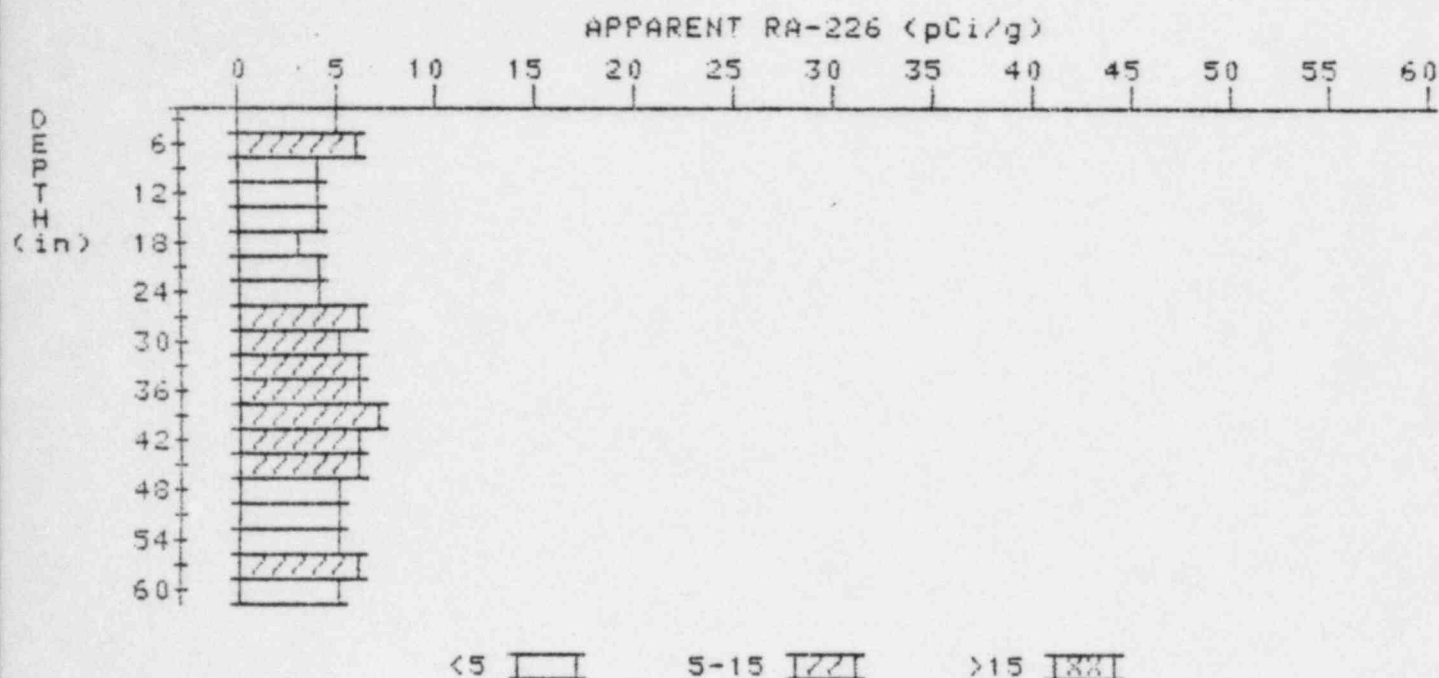
PROPERTY NUMBER: GJ-06194-CS  
HOLE NUMBER: 11  
LOCATION: 216275



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	7.9	7.9
6	9.0	13.3
9	7.7	8.4
12	6.0	4.9
15	4.9	4.0
18	4.3	3.6
21	4.1	4.1
24	3.9	3.7
27	3.8	3.6
30	3.8	3.8
33	3.8	4.2
36	3.6	3.1
39	3.7	3.7

# APPARENT RADIUM-226 CONCENTRATION 13 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-06194-CS  
HOLE NUMBER: 13  
LOCATION: 220228



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.6	4.6
6	4.9	6.3
9	4.4	4.0
12	4.1	3.7
15	4.0	4.0
18	3.9	3.2
21	4.2	4.4
24	4.4	3.5
27	5.1	5.8
30	5.4	5.4
33	5.7	5.7
36	6.0	6.2
39	6.2	7.1
42	5.9	5.9
45	5.6	5.8
48	5.2	4.8
51	5.0	4.8
54	4.9	4.5

57  
60

5.0  
4.8

5.5  
4.8