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MORRISON-KNUDSEN Co., Inc.

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Trans. No. MK-3050-SLC-0218c

PROJECT: UMTRA

Contract No. 3050

CLIENT: U.S. DEPARTMENT OF ENERGY

Date April 25, 1985

TO: <u>U.S. Nuclear Regulatory Commission</u>	APPROVED FOR CONSTRUCTION/FABRICATION	A
<u>7915 Eastern Avenue</u>	INFORMATION ONLY	B
<u>Silver Spring, MD 20910</u>	APPROVAL ACTION REQUESTED	C
	DISAPPROVAL-RESUBMIT	D
ATT: <u>Mr. Dennis Sollenberger</u>	APPROVAL WITH COMMENTS	E

REMARKS	Attached is one copy of the Draft REA with Final Design for SL-206. Comments are requested to be forwarded to M. Matthews of the DOE with a copy to this office by 5/6/85.
---------	--

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ADDRESSEE: SIGN & RETURN COPY NO. 2 TO ABOVE ADDRESS

MORRISON-KNUDSEN

BY:

TITLE

THE ABOVE LISTED DOCUMENTS HAVE
BEEN RECEIVED BY:

COMPANY NAME US NRC

NAME & TITLE Linda Luther - Lic. Info. Asst.

DATE REC'D. 4/29/85

Res. Mail - 4126185

DEPARTMENT OF ENERGY
ALBUQUERQUE OPERATIONS OFFICE
CONTRACT NO. DE-AC04-83AL18796

Draft Radiological and Engineering Assessment

Vicinity Property No. SLC 206

Remedial Actions
Contractor
for the
Uranium Mill Tailings
Remedial Actions
Project



MORRISON
KNUDSEN

Vicinity Property No. SLC 206

DRAFT

THE RADIOLOGICAL AND ENGINEERING ASSESSMENT

AND FINAL DESIGN

FOR

SALT LAKE CITY PROPERTY

SL-206

April 19, 1985

PREPARED FOR

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT OFFICE

UNITED STATES DEPARTMENT OF ENERGY

PREPARED BY

MORRISON-KNUDSEN COMPANY, INC

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

Property SL-206 is a commercial property located at 3275 South 900 West Street, Salt Lake City, UT.

1.2 Evaluation and Recommendation

1.2.1 Residual Radioactive Material Involvement

There is one small area of contamination located on this property.

1.2.2 Recommended Remedial Action Option

The recommended option is to remove the contaminated material.

1.2.3 Estimated Costs

The estimated cost for removal of the contaminated material and restoration of the property is \$1,100.00.

1.2.4 Schedule

The estimated duration of the remedial action effort is 5 to 7 days.

2.0 ENGINEERING FIELD SURVEY

2.1 Property Description

2.1.1 Property Use and Occupancy

Property SL-206 is a commercial property located at 3275 South 900 West Street and owned by Blaine H. Berrett, Salt Lake County, Utah. The map in Figure 2.1 illustrates the property's vicinity location.

2.1.2 Legal Description

The legal description as recorded with the Salt Lake County Recorder's Office in Deed Book No. 4790, Page 0769 follows:

Beginning 1034.65 feet north and 938 feet east and 406.24 feet north from south 1/4 corner of Section 26, T1S, R1W, Salt Lake Meridian, north 0° 03' 14" east 100 feet; south 89° 50' 00" east 200.26 feet; south 1° 57' 00" east 100.07 feet, north 89° 50' 00" west 203.76 feet to point of beginning.

2.1.3 Bordering Properties

The lot is zoned Business-A, for business, office and retail establishments. It is located in a commercial area adjacent to the old Vitro mill tailings site. The property is bounded on the north by vacant property; on the east by the Vitro site; on the south by vacant property; and on the west by 900 West Street.

2.2 Existing Facilities and Structures

2.2.1 Structures

There is one principal structure on the property. The structure is constructed concrete block with brick masonry veneer on the front wall. The front portion of the building is two stories housing offices. The balance of the building is a warehouse. The remainder of the property is surfaced with asphalt paving.

TABLE 2.1

COMMERCIAL/INSTITUTIONAL

PROPERTY SURVEY DATA

GENERAL:

Facility Name: Sierra Corporation

Address: 3275 South 900 West Street

Owner: Blaine H. Berrett

Occupancy: Employees/Occupants (Full Time): 15 +/-

Employees/Occupants (Part Time): _____

Remarks:

PROPERTY DESCRIPTION:

Structure: (Identify) Offices and Warehouse

: SQ FT _____ Levels _____ Two _____

: Construction Type Concrete Block

: Foundation Concrete

Remarks: No interior remedial work anticipated

TABLE 2.1

COMMERCIAL/INSTITUTIONAL

PROPERTY SURVEY DATE

Facility Name: Sierra Corporation

PROPERTY DESCRIPTION:

Driveway/Access: Concrete: X Asphalt: _____ Gravel: _____

Remarks: None

Sidewalks: Concrete: _____ Asphalt: _____

Remarks: None

Fences: Chain link X Mesh _____ Wood _____

Remarks: Owned by adjacent property

Grounds: Lawn None

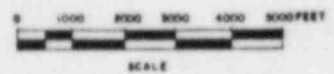
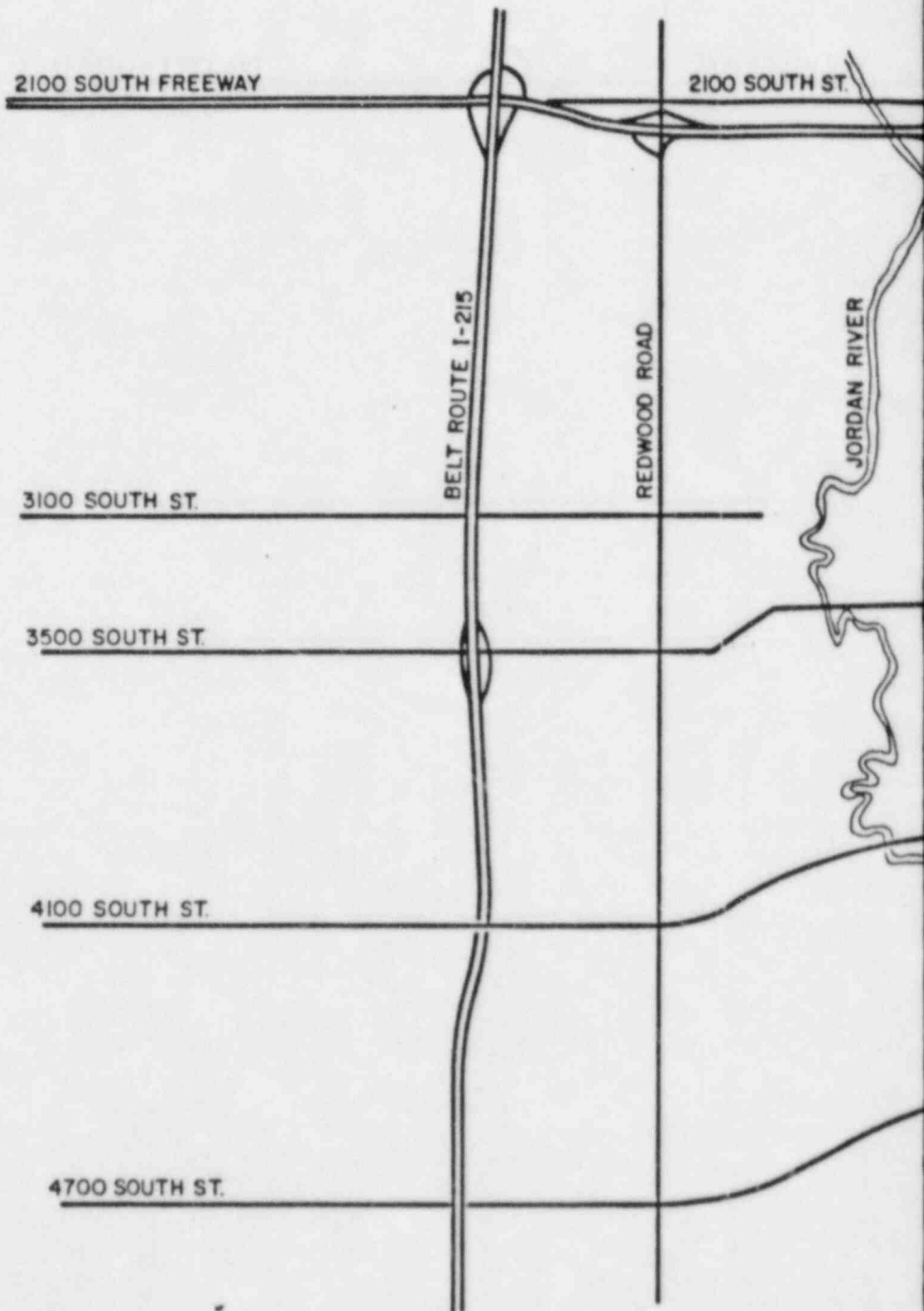
Trees None

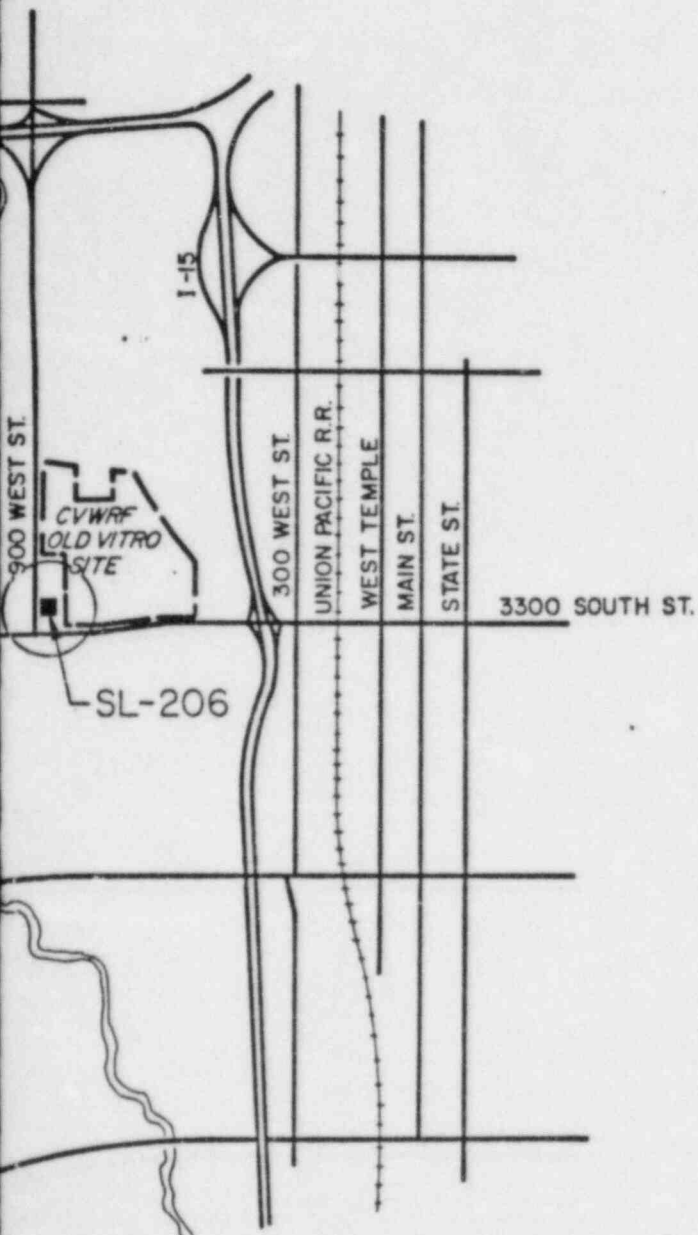
Shrubs Evergreens

Grading Level

Soil Type Sandy gravel

Remarks _____





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NOTE:

PROPERTY LOCATED IN SOUTH SALT LAKE

8508010115-01

U. S. DEPARTMENT OF ENERGY ALBUQUERQUE, NEW MEXICO

DESIGNED/DRAWN
TLE
CHECKED
REVIEWED
RECOMMENDED
APPROVED

FIGURE 2.1

VICINITY MAP SL-206

SALT LAKE COUNTY, UTAH
URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT

NR

NR

NR



MORRISON
KNUDSEN

PROJECT NO.

DE-AC04-83AL18796

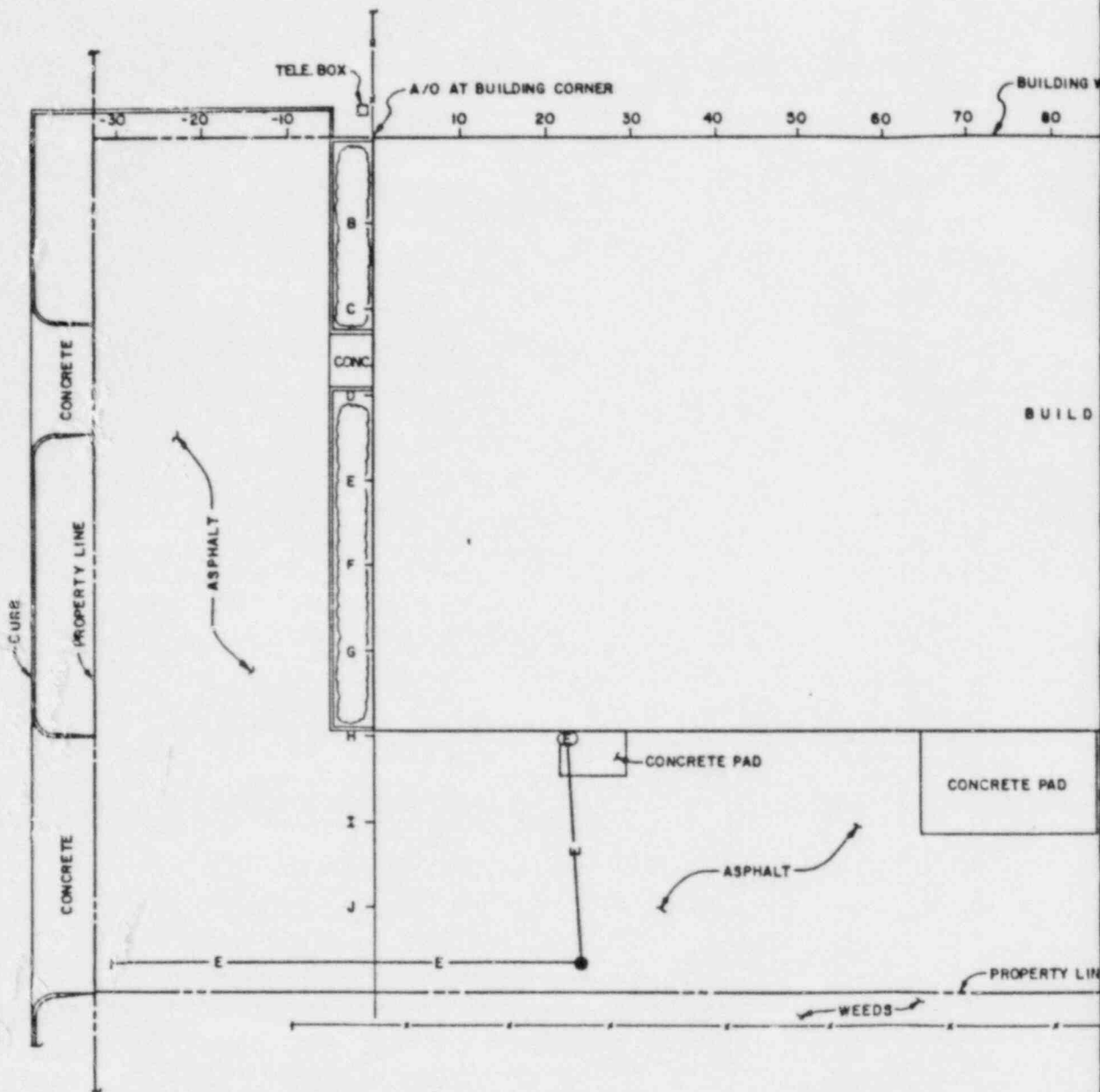
DRAWING NO.
SL-206-005

REV.
A

NO.	DATE	REVISIONS	DRWN	CHECKED	APPROVAL	APPROVAL	PROJ	APPROVAL
A	3-8-85	FINAL REA SUBMITTAL	DHN	VCD	VCD	VCD	—	—
BT	BT	LIB	DN	END	DOE			



900 WEST STREET



0 5 10 15 20
SCALE

LEGEND

— W —	WATER LINE
— G —	GAS LINE
— GM —	GAS MAIN
— S —	SEWER LINE
— SM —	SEWER MAIN
— STM —	STORM SEWER
— E —	ELECTRICAL LINE
— T —	TELEPHONE LINE
— TV —	CABLE TV
— — —	PROPERTY LINE
— X — X —	FENCE LINE
⊗	METER
⊗	VALVE
●	PROPERTY PIN
●	POWER POLE

NOTE: OVERHEAD SERVICE DENOTED BY SOLID LINE.
UNDERGROUND SERVICE DENOTED BY DASHED LINE.

ALL/PROPERTY LINE

90 100 110 120 130 140 150 160

PROPERTY LINE

CONCRETE PAD

Also Available On
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TI
APERTURE
CARD

8508010115-02

U. S. DEPARTMENT OF ENERGY ALBUQUERQUE, NEW MEXICO

FIGURE 2.2
SITE PLAN SL-206

SALT LAKE COUNTY, UTAH
URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT

DESIGNED
DRAWN
CHECKED
REVIEWED
RECOMMENDED
APPROVED

NR

NR

NR



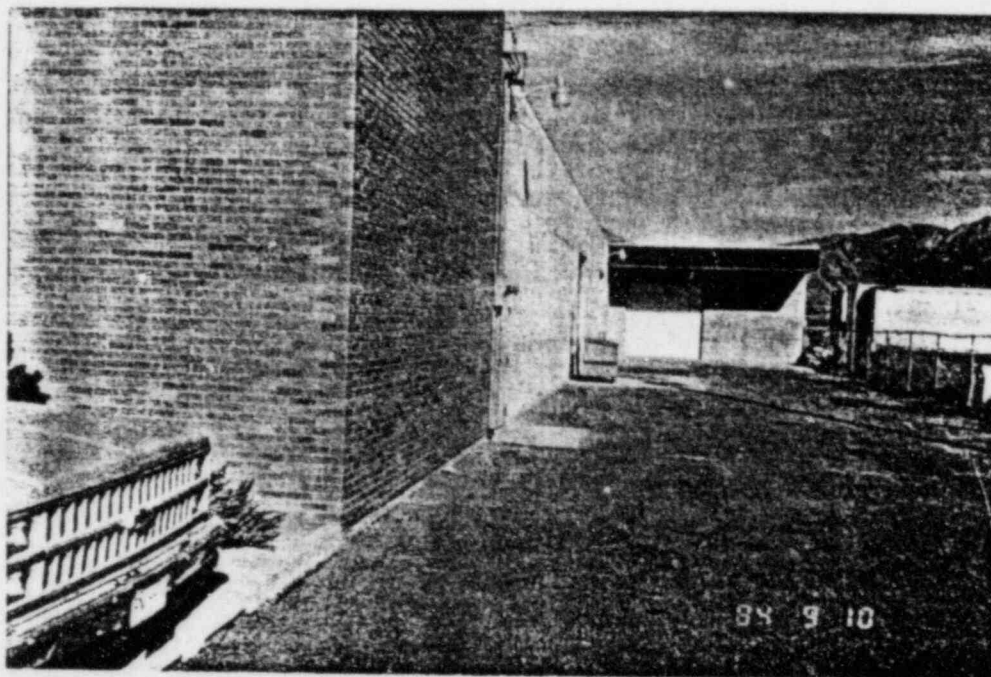
MORRISON
KNUDSEN

PROJECT NO.
DE-AC04-83AL18796

DRAWING NO.
SL-206-010

REV.
A

NO.	DATE	REVISIONS	DRAWN BY	CHECKED BY	APPROVED BY	DATE	PROJ. ENG.	APPROVED BY	DATE
A	3-8-85	FINAL REA SUBMITTAL	DHN	Vro	Vro	Vro	Vro	Vro	Vro



South Side of Property Looking East

Figure 2.3 Property Photos

3.0 RADIOLOGICAL SURVEY AND ASSESSMENT

3.1 Gamma Exposure Rate Survey

3.1.1 Survey Method

A gamma survey in accordance with the RAC Procedure 019 was impractical due to the proximity of SL-206 to the site. High background readings indicated the need for a shielded probe ("delta") survey. A delta survey was conducted in accordance with Section 4.1.2, Appendix C of the Health Physics Monitoring Plan. This survey was conducted in areas identified in the inclusion survey (Results of the Radiological Survey at SL-206, ORNL, August 1983), and other areas as described in this document.

3.1.2 Survey Results

Contamination concentration readings on the property range from 1 to 7 pCi/g, as described in Table 3.1 and shown in Figure 3.1.

3.2 Borehole Survey

3.1.1 Survey Method

A gasoline-powered hand auger was used to drill 4-inch diameter holes in and around the regions identified as contaminated during the gamma survey. The holes were surveyed in compliance with the RAC UMTRA Procedure 018.

3.2.2 Survey Results

Contamination was not found in any of the 10 outdoor holes augered. The location and depth of the contamination is described in Table 3.2 and is shown in Figure 3.1.

3.3 Radon/Radon Daughter Survey

Radon/radon daughter surveys performed by ORNL inside buildings at the property ranged from .010 to .029. Because all borehole surveys, interior and exterior, indicated no contamination is present below the surface, we believe that the elevated WL's are due to the proximity to the site. This is the same conclusion drawn by ORNL.

3.4 Estimated Extent of Contamination

There is one area of minor contamination on SL-206. These findings concur with those of the inclusion survey. The area is located along the south side of the building. The depth of contamination in this area is 6 inches.

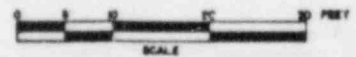
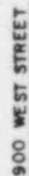
There are two spots indicating 5 pCi/g. These areas do not require excavation.

Table 3.1
OUTDOOR GAMMA SCREENING
DELTA SYSTEM
Property SL-206

POINT	CONCENTRATION (pCi/g)
I+0,+110	7
I+0,+100	5
I+0,+90	7
I+0,+60	6
J+0,-30	5
J+0,+20	5

Table 3.2
BOREHOLE SAMPLE SURVEY
Property SL-206

HOLE	LOCATION	CONTAMINATION DEPTH
1	A+8,-12	--
2	G+7,-16	--
3	I+3,+8	--
4	J+1.5,+63	--
5	J+7,+102	--
6	J+5.5,+121	--
7	F+9,+58.5	--
8	B+3,+98	--
9	D+1.5,+124	--
10	J+5.5,+130	--



A	
MO.	

LEGEND

— W —	WATER LINE
— G —	GAS LINE
— GM —	GAS MAIN
— S —	SEWER LINE
— SM —	SEWER MAIN
— STM —	STORM SEWER
— E —	ELECTRICAL LINE
— T —	TELEPHONE LINE
— TV —	CABLE TV
— — —	PROPERTY LINE
— x — x — x —	FENCE LINE
⊙ G, W or E	METER
⊗ G or W	VALVE
●	PROPERTY PIN
●	POWER POLE

NOTE: OVERHEAD SERVICE DENOTED BY SOLID LINE.
UNDERGROUND SERVICE DENOTED BY DASHED LINE.

⊙² AUGER HOLE DESIGNATION

ESTIMATED DEPTH OF CONTAMINATION



6'

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U. S. DEPARTMENT OF ENERGY ALBUQUERQUE, NEW MEXICO

FIGURE 3.1

RADIOLOGICAL SURVEY DATA SL-206

SALT LAKE COUNTY, UTAH

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT

DESIGNED BY DHN				
CHECKED				
REVIEWED				
RECOMMENDED				
APPROVED	DATE	FOR PROJECT MANAGER	DATE	FOR PROJECT ENGINEER
NR		NR		NR
PROJECT NO. DE-AC04-83AL18796		DRAWING NO. SL-206-015		



MORRISON
KNUDSEN

DATE	REVISIONS	BY	CHKD	APP'D	APP'D	PROJ	APP'D

4.0 ENGINEERING ASSESSMENT

Engineering options were formulated and evaluated based on the radiological and engineering assessment for this property. Factors forming the basis of the evaluation were: the extent and location of the contamination, construction costs, and required demolition and constructibility for the various options. Results of the evaluation are detailed below.

4.1 Evaluation of Options

4.1.1 Options

Two options were evaluated for property SL-206:

Option 1 - No action should be taken.

Option 2 - Complete decontamination of the property including retrieval of the contaminated material and restoration of the property to a clean condition.

The decontamination of the property will proceed in the following manner:

- o Remove asphalt paving and aggregate base course.
- o Excavate contaminated soils to depths indicated in Figure 4.1.
- o Backfill with common fill.
- o Place and compact 6 inch aggregate base course.
- o Place 3 inches of asphalt paving.

Existing utilities should pose no safety problems to the subcontractor. However, special care should be exercised during excavation and backfill operations to protect existing underground utilities during the remedial work.

The property occupants will not require relocation during the remedial action on this property.

4.1.2 Costs

Estimated costs for the activities associated with Option 2 are detailed in Table 4.1. Costs include labor, insurance, material, equipment, supplies, overhead, profit, and contingency. All costs are listed in 1985 dollars. It is anticipated that the time required for the subcontractor to complete the work will be 5 to 7 days based on fair weather conditions.

4.2 Recommendation

The limited cost and amount of remedial action work precluded evaluating any more than these two options. The results of the radiological assessment concluded that contamination levels on the property exceeded EPA guidelines. Therefore, based on these guidelines, it is recommended that Option 2, decontamination of the property, be pursued. The total estimated cost for Option 2 is \$1,100.00.

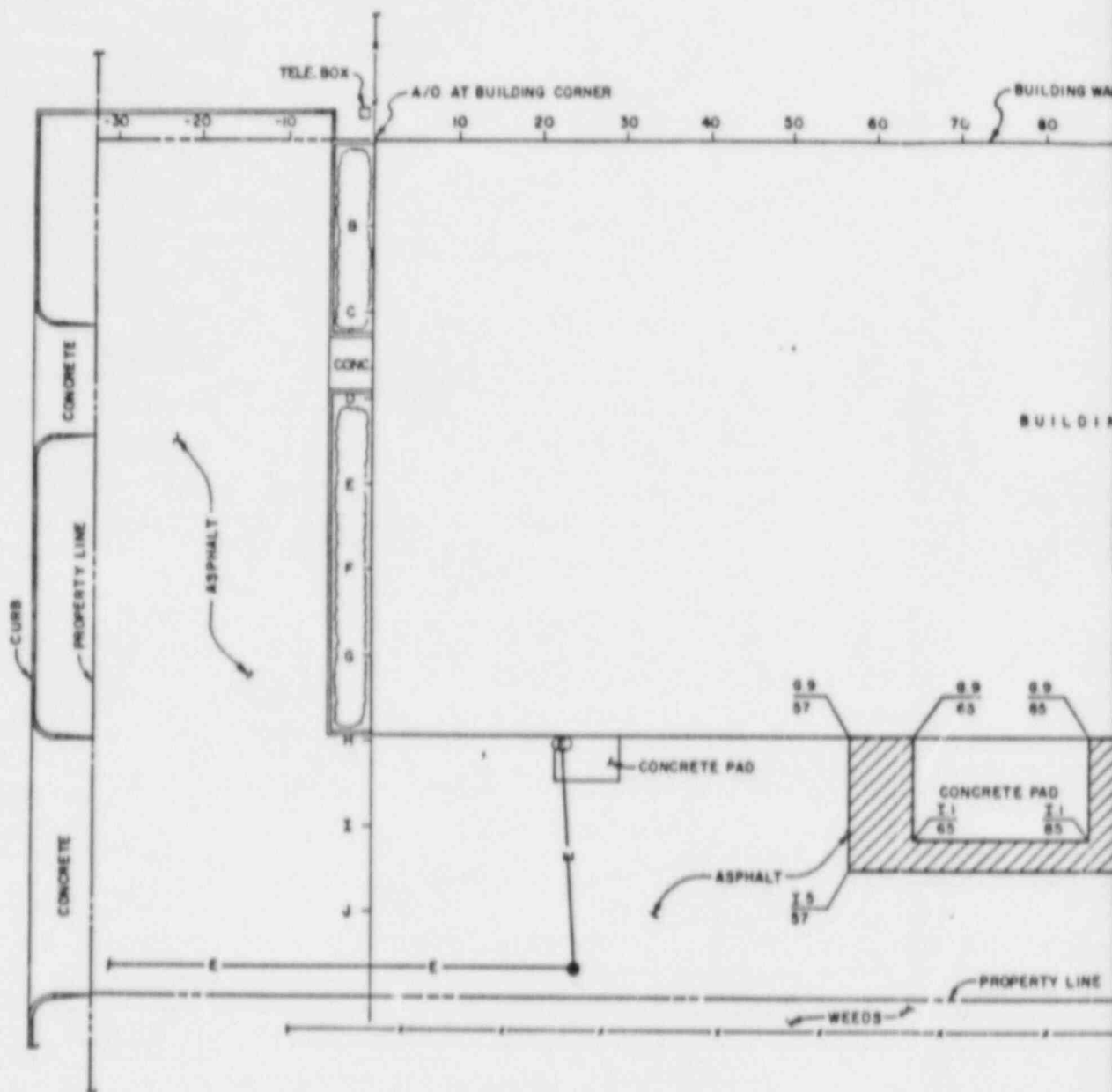
Table 4.1
OPTION 2 COSTS

Activity	Unit Price	Quantity	Estimated Cost
Remove Asphalt Paving	0.20	100 sy	20.00
Excavation (Machine)	3.40	15 cy	50.00
Backfill (Machine)	7.50	10 cy	75.00
Aggregate Base Course	13.05	5 cy	65.00
Asphalt Paving	6.00	100 sy	600.00

Subtotal	810.00
5% Contractor's Contingency	40.00
20% Overhead and Profit	150.00
Subtotal	1,000.00
10% Engineer's Contingency	<u>100.00</u>
Total	1,100.00



900 WEST STREET



0 10 20 30 FEET
SCALE

LEGEND

— W —	WATER LINE
— G —	GAS LINE
— GM —	GAS MAIN
— S —	SEWER LINE
— SM —	SEWER MAIN
— STM —	STORM SEWER
— E —	ELECTRICAL LINE
— T —	TELEPHONE LINE
— TV —	CABLE TV
— — —	PROPERTY LINE
— x — x —	FENCE LINE
⊙ G.W.M.E	METER
⊗ G or W	VALVE
●	PROPERTY PIN
●	POWER POLE

NOTE: OVERHEAD SERVICE DENOTED BY SOLID LINE.
UNDERGROUND SERVICE DENOTED BY DASHED LINE.

NOTES:

1. THE LATEST REVISION OF THE FOLLOWING TECHNICAL SPECIFICATIONS APPLY TO THE REMEDIAL ACTION WORK REQUIRED FOR PROPERTY NO. SL-206.

SECTION 02050	DEMOLITION
SECTION 02110	CLEARING AND GRUBBING
SECTION 02130	CONTAMINATED MATERIAL REMOVAL
SECTION 02200	EXCAVATION AND BACKFILL
SECTION 02500	PAVING AND SURFACING

UTILITY LOCATIONS ARE FOR REFERENCE ONLY. ACTUAL LOCATIONS SHALL BE DETERMINED BY THE SUBCONTRACTOR PRIOR TO START OF CONSTRUCTION.

2. THE EXCAVATION LIMITS AND DEPTHS ARE BASED ON A LIMITED NUMBER OF BORINGS TAKEN DURING THE RADIOLOGICAL SURVEYS OF THIS PROPERTY. ADDITIONAL RADIOLOGICAL SURVEYS PERFORMED DURING REMEDIAL ACTION MAY REQUIRE MORE OR LESS EXCAVATION TO BE TAKEN FROM THE DESIGNATED AREAS. ALL CHANGES TO THE LIMITS AND DEPTHS OF EXCAVATION AS SHOWN ON THE DESIGN DRAWINGS SHALL BE AS DIRECTED BY THE CONTRACTORS REPRESENTATIVE.

SCOPE OF WORK:

- REMOVE ASPHALT PAVING.
- EXCAVATE CONTAMINATED SOIL TO A DEPTH OF 9 INCHES.
- PLACE AND COMPACT 6 INCHES OF AGGREGATE BASE COURSE.
- REPAVE AREA WITH 3 INCHES OF ASPHALT PAVING.

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U. S. DEPARTMENT OF ENERGY ALBUQUERQUE, NEW MEXICO

FIGURE 4.1 EXCAVATION & RESTORATION PLAN SL-206

SALT LAKE COUNTY, UTAH
UMAHAN MLL TAILINGS REMEDIAL ACTION PROJECT

DESIGNED BY
CHECKED BY
REVIEWED BY
APPROVED BY

NR

DATE

FOR PROJECT MANAGER

NR

DATE

FOR PROJECT ENGINEER

NR

DATE

PROJECT NO.

DE-AC04-83AL18796

DRAWING NO.

SL-206-020

REV.

A



MORRISON
KNUDSEN

L/PROPERTY LINE

90 100 110 120 130 140 150 160

PROPERTY LINE

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109

CONCRETE PAD

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1.5
114

5.000 FINAL RES SUBMITTAL

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5.0 TECHNICAL SPECIFICATIONS

Technical specifications applicable to this property are indexed in Table 5.1 . Specifications previously approved by the Department of Energy (DOE) are noted in the table. Also listed are specifications not previously submitted to the DOE which require approval. The text for these additional specifications follow the table.

Table 5.1
INDEX OF TECHNICAL SPECIFICATIONS

Description	Specifications	
	Previously Approved	Specifications Requiring DOE Approval
Division 2 - Site Work		
SECTION 02050	DEMOLITION	X
SECTION 02110	CLEARING AND GRUBBING	X
SECTION 02130	CONTAMINATED MATERIAL REMOVAL	X
SECTION 02200	EXCAVATION AND BACKFILL	X
SECTION 02500	PAVING AND SURFACING	X

6.0 CONSTRUCTION DRAWINGS

Listed below is an index of the construction drawings required for remedial action on this property.

<u>Drawing Number</u>	<u>Drawing Title</u>
SL-206-020	Excavation & Restoration Plan SL-206

APPENDIX A
SURVEY DATA LOGS

APPENDIX A
SURVEY DATA LOGS

OUTDOOR GAMMA SCREENING SURVEY DATA SHEET

LOGGING CREW: Mike Griffin
Derek Fitzgerald

SHEET 1 OF 3 PAGE 1

DATE: Oct 29, 1984

PROPERTY ID: SL-206 Sierra Corp

INSTRUMENT ID NO.: #31983 Probe# 019576

BACKGROUND CALCULATION:

#1 603 + #2 570 + #3 580 = 1753 - 3 = 584.3 COUNTS/.1MIN *

AREA:				AREA:				AREA:			
Point ID	1 meter reading	surface reading	delta reading	Point ID	1 meter reading	surface reading	delta reading	Point ID	1 meter reading	surface reading	delta reading
A+00	41634	639	314	E-38	5373	613	439	H+90	3923	792	471
A-10	4100	712	402	F-38	5162	796	455	H+100	3968	817	471
A-20	5624	726	488	F-30	4874	653	417	H+110	3764	755	442
A-30	6056	768	517	F-20	4481	684	390	H+120	3907	676	414
A-38	5717	905	516	F-10	3431	636	385	H+130	2880	665	399
B-30	5948	765	486	F+00	3277	626	349	H+140	2478	537	335
B-38	5570	754	492	G+00	3377	651	414	I+140	3631	685	449
B-20	5412	735	412	G-10	2959	473	273	I+130	4927	694	461
B-10	3036	534	328	G-20	4709	675	407	I+120	5782	785	483
B+00	3815	582	355	G-30	5303	761	440	I+110	6858	950	467
C+00	3657	602	309	G-38	5286	780	440	I+100	6105	960	541
C-10	4076	625	400	H-38	5640	619	396	I+90	5696	1013	521
C-20	5258	720	445	H-30	5743	862	470	I+80	5836	790	470
C-30	5703	780	534	H-20	5210	755	467	I+70	5443	827	461
C-38	6035	723	474	H-10	3933	655	370	I+60	5403	925	464
D-38	5202	688	406	H+00	4384	692	377	I+50	5214	849	469
D-30	5498	793	424	H+10	3574	774	399	I+40	5992	777	474
D-20	4773	638	428	H+20	3597	728	413	I+30	4735	790	457
D-10	4308	683	437	H+30	3422	752	476	I+20	5448	825	484
D+00	3064	545	283	H+40	3581	771	464	I+10	5220	787	447
E+00	3636	625	324	H+50	3839	830	476	I+00	5616	781	452
E-10	4288	671	446	H+60	3540	796	421	I-10	5756	743	432
E-20	4811	735	404	(H+3)+70	3937	630	385	I-20	6113	776	470
E-30	5145	718	446	H+80	3832	650	403	I-30	6429	838	503

REMARKS: * ALL READINGS ARE IN COUNTS/ 0.1 MIN.

Surface readings made with a one-half inch lead collimator

Delta readings made with a one-half inch 10" X 10" lead plate on the surface below the collimated detector

OUTDOOR GAMMA SCREENING SURVEY DATA SHEET

LOGGING CREW: Mike Griffin
Derek Fitzgerald

SHEET 2 OF 2 PAGE 2

DATE: Oct. 29, 1984

PROPERTY ID: SL-206 Sierra Corp

INSTRUMENT ID NO.: #31983 probe # 019576

BACKGROUND CALCULATION:

#1 603 + #2 570 + #3 580 = 1753 ÷ 3 = 584.3 COUNTS/1MIN *

AREA:				AREA:				AREA:			
Point ID	1 meter reading	surface reading	delta reading	Point ID	1 meter reading	surface reading	delta reading	Point ID	1 meter reading	surface reading	delta reading
I-38	6286	711	418	K+100	7700	947	564				
J-38	5133	712	437	K+90	7661	830	523				
J-30	5408	897	4785	K+80	7639	867	496				
J-20	5309	801	522	K+70	7406	907	517				
J-10	5200	846	492	K+60	7182	829	498				
J+00	5196	855	516	K+50	6723	883	491				
J+10	5106	856	513	K+40	6457	855	486				
J+20	5053	869	4435	K+30	6479	818	471				
J+30	5277	886	568	K+20	6269	704	536				
J+40	5204	866	503	K+10	6215	762	424				
J+50	5380	813	523	K+00	6126	811	436				
J+60	5602	832	535	K-10	6997	865	487				
J+70	5984	893	573	K-20	6130	757	492				
J+80	5830	915	582	K-30	6153	897	517				
J+90	6191	925	538	K-38	5920	638	454				
J+100	6454	936	577								
J+110	6408	939	595								
J+120	6485	862	595								
J+130	5722	812	519								
J+140	3802	558	352								
K+140	6787	684	387								
K+130	6260	849	484								
K+120	6971	842	551								
K+110	7476	972	568								

REMARKS: * ALL READINGS ARE IN COUNTS/ 0.1 MIN.

Surface readings made with a one-half inch lead collimator

Delta readings made with a one-half inch 10" X 10" lead plate on the surface below the collimated detector

BOREHOLE LOG

LOGGING CREW: Jeff Manship
Joe Worthen

SHEET 1 OF 4 PAGE 4

DATE: Oct. 30, 1984

PROPERTY ID: SL-206 Sierra Corp.

INSTRUMENT ID NO. #26511 probe # 015812

AREA: S.L.C.

- NOTES: 1. ALL HOLES ARE 4"DIA. UNLESS OTHERWISE NOTED.
2. RECORD UNUSUAL CONDITIONS, SUCH AS THE PRESENCE OF WATER IN BOREHOLES AND DEPTH, CASING TYPE AND THICKNESS IF USED, CONCRETE CORES AND THICKNESS, OBSTRUCTIONS, UTILITIES, ETC., IN THE REMARKS SECTION.

HOLE ID: <u>SL-206-1</u>	HOLE ID: <u>SL-206-2</u>	HOLE ID: <u>SL-206-3</u>	HOLE ID: <u>SL-206-4</u>
TIME DRILLED: _____	TIME DRILLED: _____	TIME DRILLED: _____	TIME DRILLED: _____
TIME LOGGED: _____	TIME LOGGED: _____	TIME LOGGED: _____	TIME LOGGED: _____
SOIL TYPE: _____	SOIL TYPE: _____	SOIL TYPE: _____	SOIL TYPE: _____

DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN
SURFACE		SURFACE		SURFACE		SURFACE	
0"	<u>4616*</u>	0"	<u>4229*</u>	0"	<u>3998*</u>	0"	<u>5182*</u>
6"	<u>1647</u>	6"	<u>1660</u>	6"	<u>1830</u>	6"	<u>1987</u>
12"	<u>1465</u>	12"	<u>1582</u>	12"	<u>1968</u>	12"	<u>1921</u>
18"	<u>1818</u>	18"	<u>1927</u>	18"	<u>2495</u>	18"	<u>2106</u>
24"	<u>2135</u>	24"	<u>2642</u>	24"	<u>2834</u>	24"	<u>2859</u>
30"		30"	<u>2702</u>	30"	<u>2899</u>	30"	
36"		36"	<u>2435</u>	36"	<u>2784</u>	36"	
42"		42"		42"		42"	
48"		48"		48"		48"	
54"		54"		54"		54"	
60"		60"		60"		60"	
66"		66"		66"		66"	
72"		72"		72"		72"	
78"		78"		78"		78"	
84"		84"		84"		84"	
90"		90"		90"		90"	
96"		96"		96"		96"	

REMARKS: _____

* Disregard due to shine from Vitar site

BOREHOLE LOG

LOGGING CREW: Jeff Manship
Joe Worthen

SHEET 2 OF 24 PAGE 5

DATE: Oct. 30, 1984

PROPERTY ID: SL-206 Sierra Corp.

INSTRUMENT ID NO. #26511 probe #015812

AREA: S.L.C.

- NOTES: 1. ALL HOLES ARE 4" DIA. UNLESS OTHERWISE NOTED.
2. RECORD UNUSUAL CONDITIONS, SUCH AS THE PRESENCE OF WATER IN BOREHOLES AND DEPTH, CASING TYPE AND THICKNESS IF USED, CONCRETE CORES AND THICKNESS, OBSTRUCTIONS, UTILITIES, ETC., IN THE REMARKS SECTION.

HOLE ID: <u>SL-206-5</u>	HOLE ID: <u>SL-206-6</u>	HOLE ID: _____	HOLE ID: _____
TIME DRILLED: _____	TIME DRILLED: _____	TIME DRILLED: _____	TIME DRILLED: _____
TIME LOGGED: _____	TIME LOGGED: _____	TIME LOGGED: _____	TIME LOGGED: _____
SOIL TYPE: _____	SOIL TYPE: _____	SOIL TYPE: _____	SOIL TYPE: _____

DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN
SURFACE		SURFACE		SURFACE		SURFACE	
0"	<u>5277 *</u>	0"	<u>4829 *</u>	0"		0"	
6"	<u>2389</u>	6"	<u>2124</u>	6"		6"	
12"	<u>2219</u>	12"	<u>2425</u>	12"		12"	
18"	<u>2325</u>	18"	<u>2402</u>	18"		18"	
24"	<u>2265</u>	24"	<u>2385</u>	24"		24"	
30"	<u>2435</u>	30"		30"		30"	
36"		36"		36"		36"	
42"		42"		42"		42"	
48"		48"		48"		48"	
54"		54"		54"		54"	
60"		60"		60"		60"	
66"		66"		66"		66"	
72"		72"		72"		72"	
78"		78"		78"		78"	
84"		84"		84"		84"	
90"		90"		90"		90"	
96"		96"		96"		96"	

REMARKS: _____

* Disregard bar to shine from Yitro site

BOREHOLE LOG

 LOGGING CREW: Jeff Manship

 SHEET 3 OF 4 PAGE 6
Paul Hearld

 DATE: Nov. 5, 1984
Derek Fitzgerald

 PROPERTY ID: SL-206

 INSTRUMENT ID NO. 26511 probe # 015812

AREA: _____

- NOTES: 1. ALL HOLES ARE 4" DIA. UNLESS OTHERWISE NOTED.
 2. RECORD UNUSUAL CONDITIONS, SUCH AS THE PRESENCE OF WATER IN BOREHOLES AND DEPTH, CASING TYPE AND THICKNESS IF USED, CONCRETE CORES AND THICKNESS, OBSTRUCTIONS, UTILITIES, ETC., IN THE REMARKS SECTION.

HOLE ID: <u>SL-206-7</u>	HOLE ID: <u>SL-206-8</u>	HOLE ID: <u>SL-206-9</u>	HOLE ID: <u>SL-206-10</u>
TIME DRILLED: _____	TIME DRILLED: _____	TIME DRILLED: _____	TIME DRILLED: _____
TIME LOGGED: _____	TIME LOGGED: _____	TIME LOGGED: _____	TIME LOGGED: _____
SOIL TYPE: _____	SOIL TYPE: _____	SOIL TYPE: _____	SOIL TYPE: _____

DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN
SURFACE		SURFACE		SURFACE		SURFACE	
0"	<u>3287*</u>	0"	<u>3047*</u>	0"	<u>3656*</u>	0"	<u>4042*</u>
6"	<u>1908</u>	6"	<u>1854</u>	6"	<u>2096</u>	6"	<u>2062</u>
12"	<u>2035</u>	12"	<u>1472</u>	12"	<u>1407</u>	12"	<u>1850</u>
18"	<u>1749</u>	18"	<u>1664</u>	18"	<u>1459</u>	18"	<u>2294</u>
24"		24"	<u>1935</u>	24"	<u>1616</u>	24"	<u>2405</u>
30"		30"	<u>1899</u>	30"	<u>1691</u>	30"	
36"		36"		36"		36"	
42"		42"		42"		42"	
48"		48"		48"		48"	
54"		54"		54"		54"	
60"		60"		60"		60"	
66"		66"		66"		66"	
72"		72"		72"		72"	
78"		78"		78"		78"	
84"		84"		84"		84"	
90"		90"		90"		90"	
96"		96"		96"		96"	

 REMARKS: * Discarded due to interference from shine from V. to site.



MORRISON-KNUDSEN COMPANY, INC.

UMTRA PROJECT OFFICE
P.O. BOX 9136
ALBUQUERQUE, NEW MEXICO 87119