

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

Draft Radiological and Engineering Assessment

Vicinity Property No. SLC 021

**Remedial Actions
Contractor
for the
Uranium Mill Tailings
Remedial Actions
Project**



MORRISON
KNUDSEN

Vicinity Property No. SLC 021

8501070208 841206
PDR WASTE PDR
WM-41

DRAFT
THE RADIOLOGICAL AND ENGINEERING ASSESSMENT
AND FINAL DESIGN
FOR
SALT LAKE CITY PROPERTY
SL-021

December 3, 1984

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-021 is a commercial property located at 1444 East 3300 South Street, Salt Lake City, UT.

1.2 Evaluation and Recommendation

1.2.1 Residual Radioactive Material Involvement

There is only one area of contamination located in front of Building #1 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 \$4,000.00.

1.2.4 Schedule

The estimated duration of the remedial action effort is 10 to 15 days.

2.0 ENGINEERING FIELD SURVEY

2.1 Property Description

2.1.1 Property Use and Occupancy

Property SL-021 is a commercial property located at 1444 East 3300 South Street and owned by George Z. Aposhian Jr., Julia F. Aposhian, and Richard W. Aposhian. 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. 4390, Page 3150 and Book 5454, Page 1608 follows:

COMMENCING 243.8 feet East and 33 feet South from center of intersection of 33rd South Street and Highland Drive, East 71.975 feet, South 168.3 feet, West 71.975 feet, North 168.3 feet to beginning. 0.28 acre. Beiong in SW 1/4 of SW 1/4, Section 28, Township 1 South, Range 1 East, S.L.M.

COMMENCING on side of street 315.775 feet East and 33 feet South from center of intersection of 33rd South Street and Highland Drive, East 71.975 feet, South 168.3 feet, West 71.975 feet, North 168.3 feet to beginning. 0.28 acre.

2.1.3 Bordering Properties

The lot is zoned C-2, community commercial. It is located in a commercial area less than five miles East of the old Vitro mill tailings site. The property is bounded on the north by 3300 South Street; on the east by commercial property; on the south by commercial and residential property; and on the west by commercial property.

2.2 Existing Facilities and Structures

2.2.1 Structures

This commercial property consists of four buildings constructed in phases and of varied materials. The buildings house a commercial garage and office spaces. The balance of the property is asphalt paved.

2.2.2 Utilities

Utilities are serviced to the property as follows:

Electric power - From 3300 South and rear of property.

Telephone - From 3300 South and rear of property.

Water - From 3300 South Street.

Gas - From 3300 South Street.

Sewer - From 3300 South Street.

2.2.3 Site Plan and Survey Data

See Figure 2.2 for a site plan of the property. Property survey data and photos are presented in Table 2.1 and Figure 2.3.

Radiological and Engineering Assessment: Property SL-021

TABLE 2.1

COMMERCIAL/INSTITUTIONAL

PROPERTY SURVEY DATA

GENERAL:

Facility Name: Aposhian Commercial Property

Address: 1444 East 3300 South Street

Owner: Geroge Z. Aposhian Jr., Julia F. Aposhian, Richard W. Aposhian

Occupancy: Employees/Occupants (Full Time): 20

Employees/Occupants (Part Time): N/A

Remarks: _____

PROPERTY DESCRIPTION:

Structure: (Identify) Office spaces (Lease)

: SQ FT 6750 Levels 2

: Construction Type Concrete masonry

: Foundation Concrete

Remarks: _____

Structure: (Identify) Office and Repair Garage

: SQ FT 5850 Levels 1

: Construction Type Concrete masonry and metal siding

: Foundation Concrete

Remarks: _____

Radiological and Engineering Assessment: Property SL-021

TABLE 2.1

COMMERCIAL/INSTITUTIONAL

PROPERTY SURVEY DATE

Facility Name: Aposhian Commercial Property

PROPERTY DESCRIPTION:

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

Remarks: _____

Sidewalks: Concrete: X Asphalt: _____

Remarks: _____

Fences: Chain link _____ Mesh _____ Wood _____

Remarks: N/A

Grounds: Lawn N/A

Trees N/A

Shrubs Minimal

Grading Level

Soil Type Sandy loam with gravel

Remarks _____

TABLE 2.1

COMMERCIAL/INSTITUTIONAL

PROPERTY SURVEY DATA

Facility Name: Aposhian Commercial Property

UTILITIES: Heating: Gas X Electric _____ Oil _____
Hot Water _____ Other _____

Remarks: _____

Air Conditioning: Elec. Heating Pump _____ Gas _____
Evap. Cooler X Other _____

Remarks: _____

Electric Line Location: From 3300 South Street and rear of property

Gas Line Location: From 3300 South Street

Water Line Location: From 3300 South Street

Sewer Line Location: From 3300 South Street

Telephone Line Location: From 3300 South Street and rear of property

BUILDING CODES AND ZONING:

Building Code: UBC X BOCA _____

Remarks: _____

Zoning Jurisdiction: Salt Lake County

Present Facility Zoning: C-2



2100 SOUTH FREEWAY

2100 SOUTH ST

BELT ROUTE I-215

REDWOOD ROAD

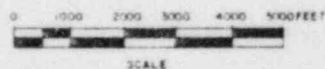
JORDAN RIVER

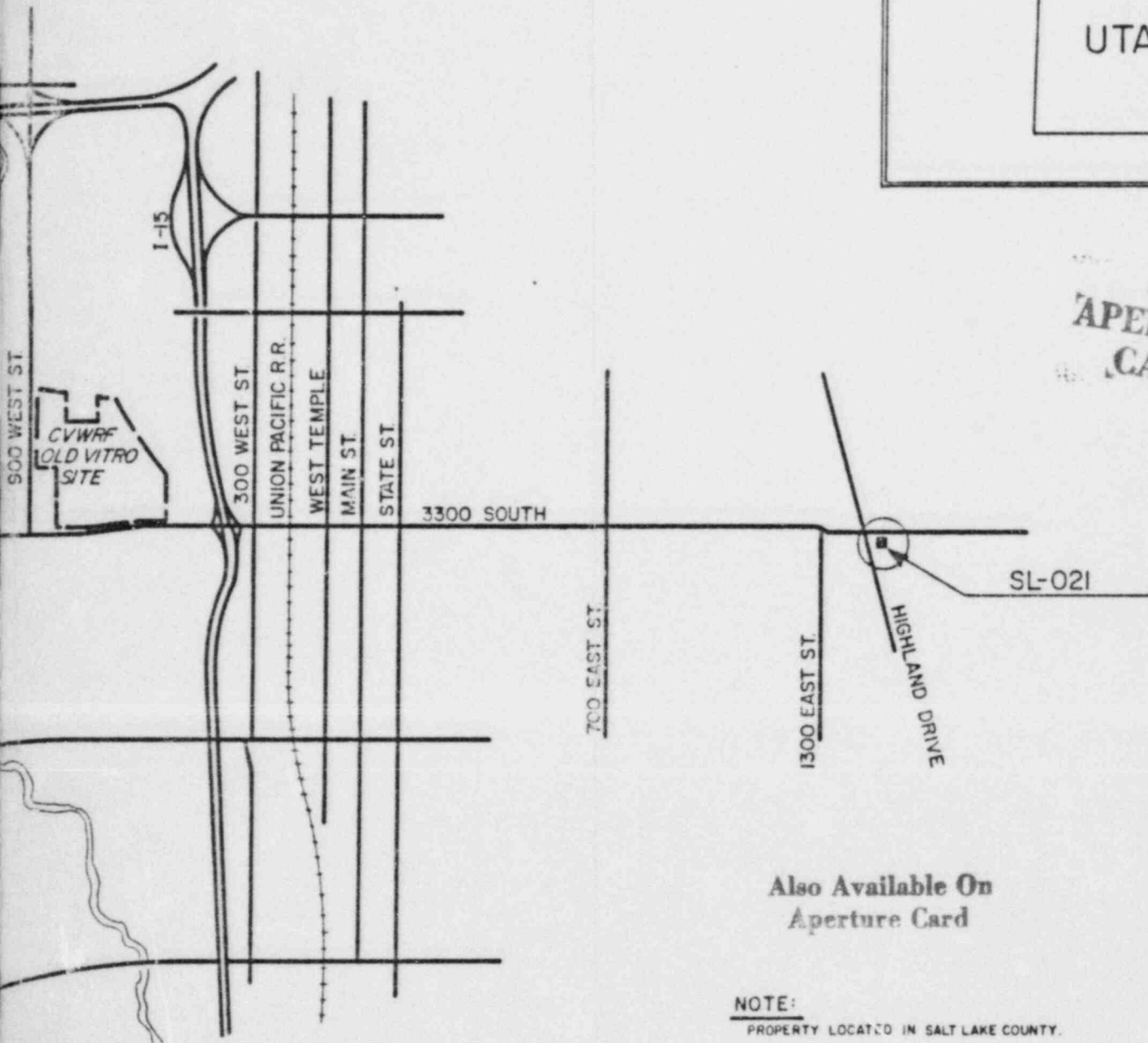
3100 SOUTH ST.

3500 SOUTH ST.

4100 SOUTH ST.

4700 SOUTH ST.





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NOTE:

PROPERTY LOCATED IN SALT LAKE COUNTY.

8501070208-01

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ALBUQUERQUE, NEW MEXICO

FIGURE 2.1
VICINITY MAP SL-021

SALT LAKE COUNTY, UTAH
URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT

DESIGNED BY TLE
CHECKED BY [Signature]
REVIEWED BY [Signature]
RECOMMENDED BY [Signature]
APPROVED BY [Signature]

NR

NR

NR

PROJECT NO.

DE-AC04-83AL18796

DRAWING NO.
SL-021-005

REV
A



MORRISON
KNUDSEN

NO.	DATE	REVISIONS	TLE	ST	ST	LOC	CH	PROJ	APPV	DOE
A	1/14/84	FINAL REA SUBMITTAL								



PROPERTY PIN 0 10 20 30 40 50 60 70 80 90 100 110 120

3300 SOUTH
(ASPHALT PAVEMENT)

35'-0"

SIGN

SIGN

CONC. SIDEWALK

FAUCET

SHUT-OFF
VALVE

ASPHALT

PARKING

CONC.

BUILDING 1

BUILD

CONCRETE

BUSHES & SMALL TREES

OFFICE

PROPERTY LINE
(TYP)

ASPHALT PAVEMENT

CONCRETE

FIRE
HYDRANT

COVERED ROOF

PLATFORM

SHED

BUILDING 3

BUILDING 4

POWER POLE (TYP)

0 5 10 20 30 FEET
SCALE

130 140
GRID LINE SET
AT BACK OF SIDEWALK
SIDEWALK

PHALT
RKING

SIDEWALK

ING 2

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.

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8501070208 -02

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ALBUQUERQUE, NEW MEXICO

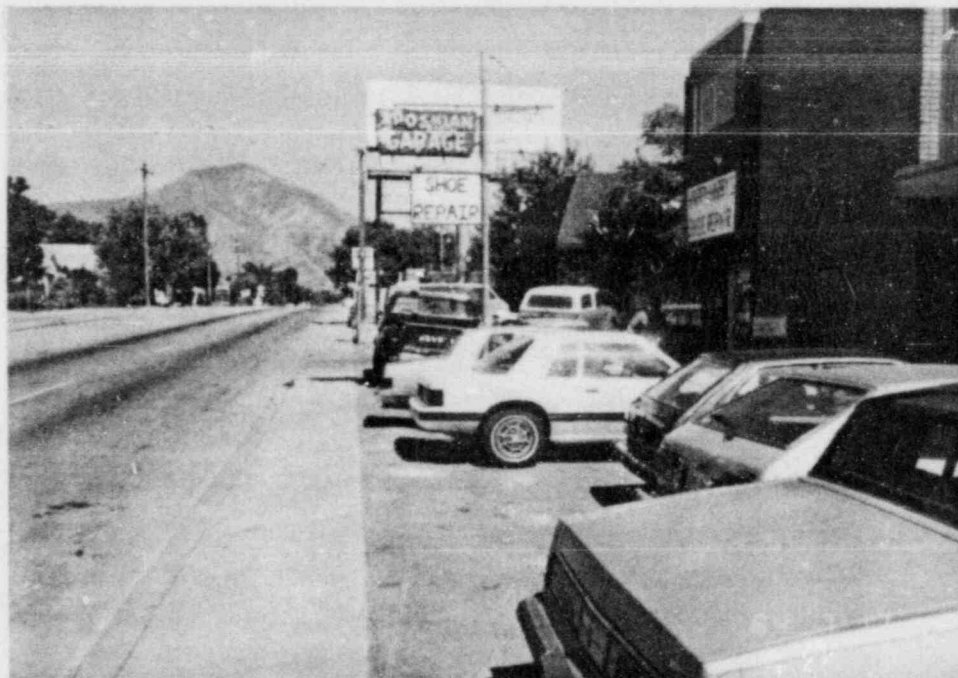
DESIGNED BY <i>[Signature]</i>	CHECKED BY <i>[Signature]</i>	REVIEWED BY <i>[Signature]</i>	RECOMMENDED BY <i>[Signature]</i>	APPROVED NR	DATE	DOE PROJECT MANAGER NR	DATE	DOE PROJECT ENGINEER NR	DATE
FIGURE 2.2 SITE PLAN SL-021 SALT LAKE COUNTY, UTAH URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT					PROJECT NO. DE-AC04-83AL18796				
DRAWING NO. SL-021-010					REV A				

NO.	DATE	REVISIONS	BY	CHKD	APP'D	PROJ	ENG	DOE
A	11/4/84	FINAL REA SUBMITTAL	TLE	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	—

MORRISON
KNUDSEN



View of Parking Lot Looking West



View of Parking Lot Looking East

Figure 2.3 Property Photos

3.0 RADIOLOGICAL SURVEY AND ASSESSMENT

3.1 Gamma Exposure Rate Survey

3.1.1 Survey Method

Outdoor and indoor gamma surveys were conducted in accordance with RAC UMTRA Procedure 019.

3.1.2 Survey Results

Surface gamma readings on the property, as shown in Figure 3.1, range from 11 to 38 micro R/hr (Table 3.1). This may be compared with the background for the Salt Lake City site of 8 micro R/hr.

Indoor surface gamma readings are all less than 10 micro R/hr, with a high of 9 micro R/hr in Room 2 of Building #1.

3.2 Borehole Survey

3.2.1 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 found in 3 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

No radon/radon daughter surveys were performed inside buildings at the property, since the inclusion survey reported that no contamination is present in or under the structures.

3.4 Estimated Extent of Contamination

There is one area of contamination on vicinity property SL-021. Borehole survey points in this area show contamination as deep as 36 inches. This area corresponds to the area identified in the inclusion survey.

Table 3.1
OUTDOOR GAMMA AND BOREHOLE SURVEY
Property SL-021

POINT	MICRO R/hr
B+60	38
B+55	29
B+50	15
B+40	16
C+50	11

Radiological and Engineering Assessment: Property SL-021

Table 3.2
BOREHOLE SURVEY
Property SL-021

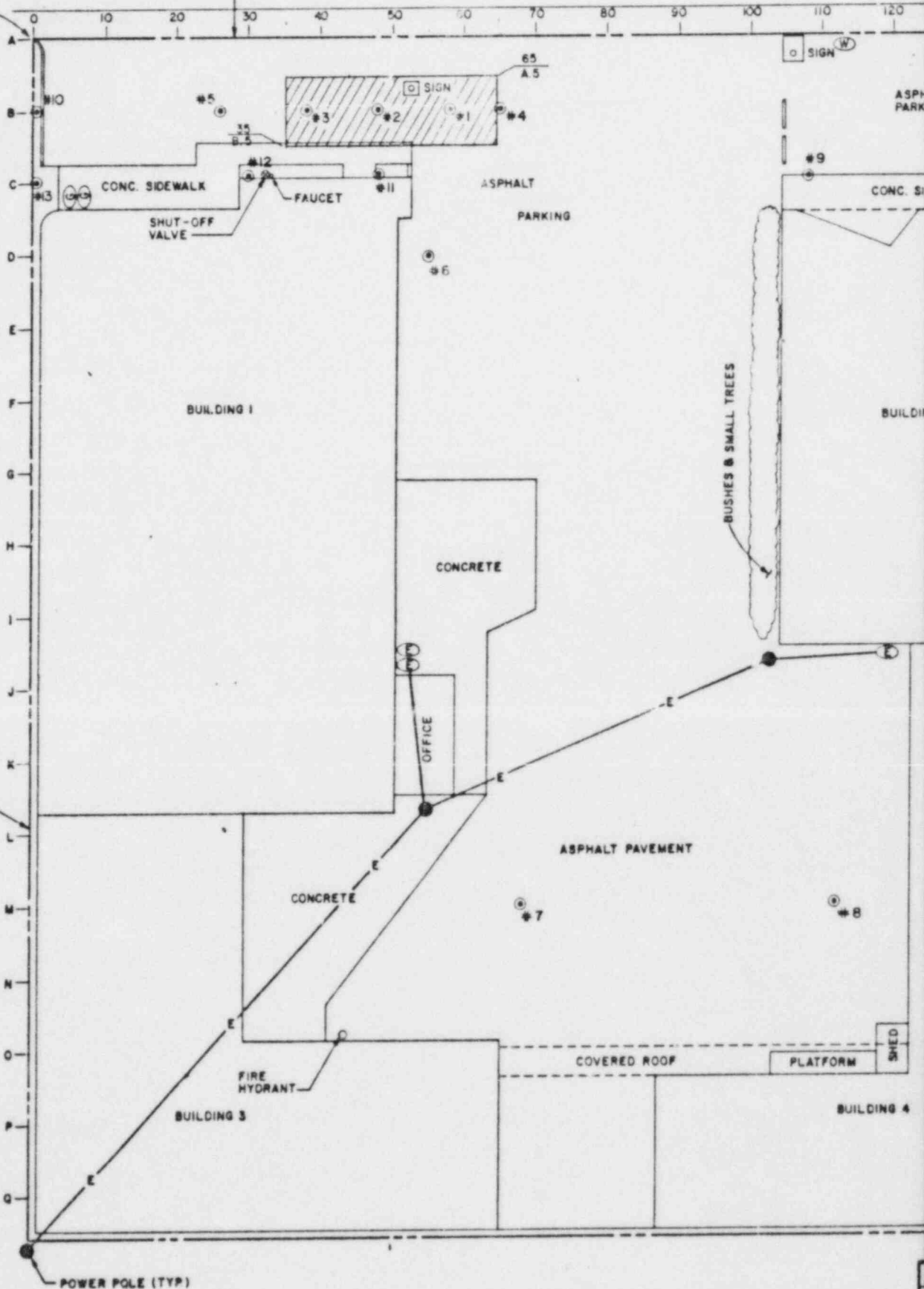
HOLE	LOCATION	CONTAMINATION DEPTH
1	B+58	0-24"
2	B+48	0-18"
3	B+38	0-36"
4	B+65	--
5	B+26	--
6	D+55	--
7	M+68	--
8	M+112	--
9	C+108	--
10	B+0	--
11	C+48	--
12	C+30	--
13	C+0	--



PROPERTY PIN

3300 SOUTH
(ASPHALT PAVEMENT)

33'-0"



0 10 20 30 FEET
SCALE

GRID LINE SET
AT BACK OF SIDEWALK.

SIDEWALK

LEGEND

④-5 AUGER HOLE DESIGNATION-BY M.K.

ESTIMATED DEPTH OF
CONTAMINATION



• 36"

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FIGURE 3.1

RADIOLOGICAL SURVEY DATA SL-021

SALT LAKE COUNTY, UTAH

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT

DESIGNED BY
CHECKED BY
APPROVED BY
REVIEWED BY
APPROVED BY

NR

NR

NR



MORRISON
KNUDSEN

PROJECT NO.

DE-AC04-83AL18796

DRAWING NO.

SL-021-015

REV.

A

NO. DATE FINAL REA SUBMITTAL

REVISIONS

TLE
BY BY LGE ON E-W APPRA DOE

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-021:

Option 1: No action should be taken.

Option 2: See Figure 4.1 for the plan of this option which proposes the decontamination of the affected portion of this property as herein described.

Excavate and remove asphalt paving, concrete walk, and contaminated material remove pipe sign support and clean the concrete base, and protect utilities as necessary.

Replace contaminated material with clean compacted fill, replace concrete walk and asphalt paving, reinstall pipe sign support.

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 escalated to 1985 dollars. It is anticipated that the time required for the subcontractor to complete the work will be 10 to 15 days.

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 \$4,000.00.

Table 4.1
OPTION 2 COSTS

Activity	Unit Price	Quantity	Estimated Cost
Remove Asphalt	0.20	100 sy	20.00
Remove Concrete Walk	3.00	60 sf	180.00
Excavate Tailings	4.00	35 cy	140.00
Remove & Clean Sign	LS	1	500.00
Re-Install Sign	LS	1	500.00
Install Clean Fill	7.20	35 cy	250.00
Replace Concrete Walk	3.85	60 sf	230.00
Gravel Base	12.40	2 cy	25.00
Asphalt Paving	6.00	100 sy	600.00
Subtotal			<u>2445.00</u>
5% Contractor Contingency			125.00
20% Overhead & Profit			515.00
Subtotal			<u>3085.00</u>
20% Engineer Contingency			615.00
1985 Escalation (5%)			<u>300.00</u>
TOTAL			4,000.00

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	Requiring DOE Approval
Division 2 - Site Work		
SECTION 02050	DEMOLITION	X
SECTION 02130	CONTAMINATED MATERIAL REMOVAL	X
SECTION 02200	EXCAVATION AND BACKFILL	X
SECTION 02500	PAVING AND SURFACING	X
SECTION 03330	CAST-IN-PLACE CONCRETE	X

6.0 CONSTRUCTION DRAWINGS

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

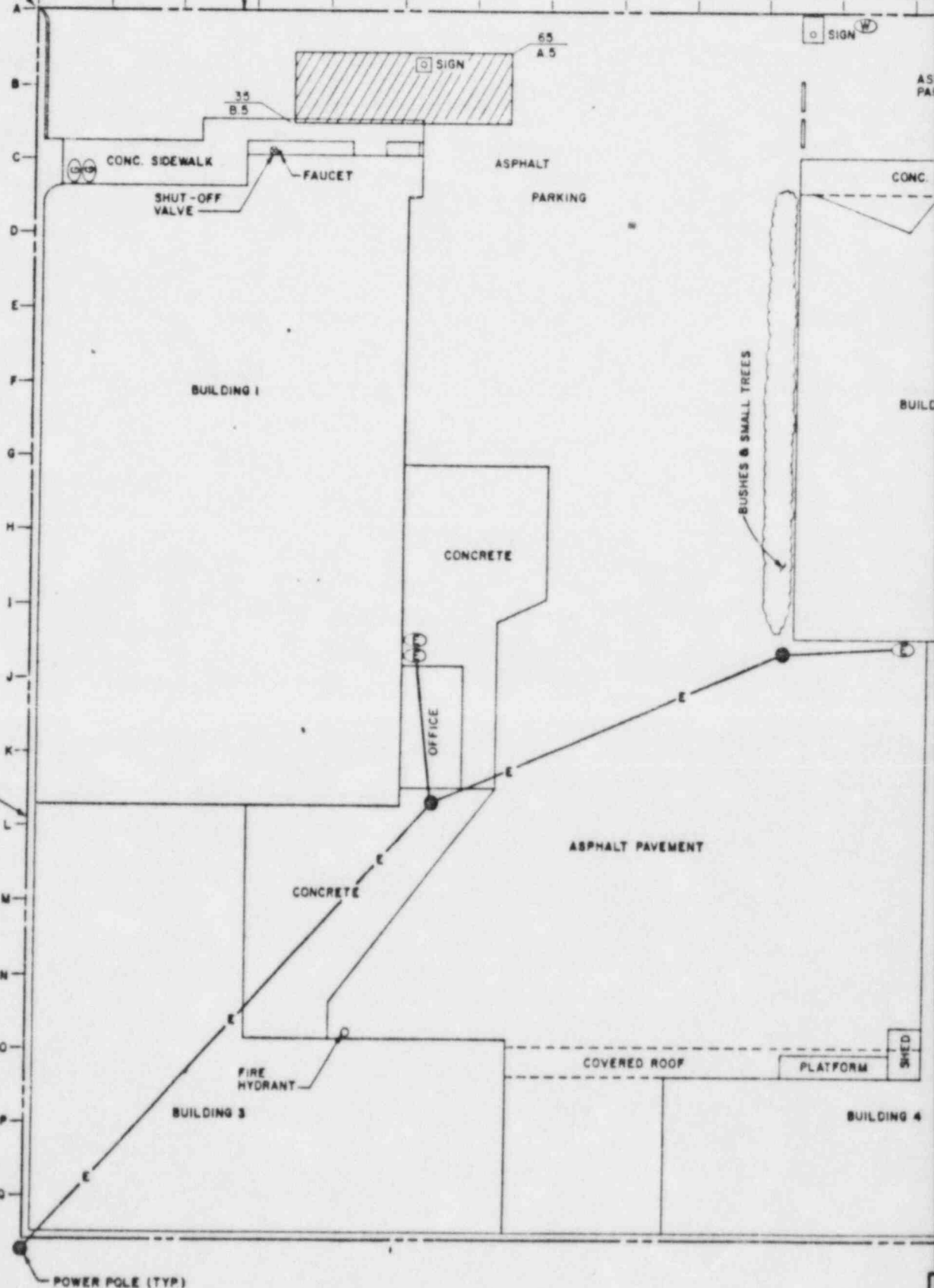
<u>Drawing Number</u>	<u>Drawing Title</u>
SL-021-020	Excavation and Restoration Plan SL-021



PROPERTY P/N

3300 SOUTH
(ASPHALT PAVEMENT)

0 10 20 30 40 50 60 70 80 90 100 110 120



0 10 20 30 40 50 FEET
SCALE

GRID LINE SET
AT BACK OF SIDEWALK
SIDEWALK

HALT
KING

SIDEWALK

NG 2

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
- FENCE LINE
- METER
- VALVE
- PROPERTY PIN
- POWER POLE

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

ESTIMATED DEPTH OF CONTAMINATION



NOTES:

- THE LATEST REVISION OF THE FOLLOWING TECHNICAL SPECIFICATIONS APPLY TO THE REMEDIAL ACTION WORK REQUIRED FOR PROPERTY NO. SL-021.

- SECTION 02050
DEMOLITION
- SECTION 02150
CONTAMINATED MATERIAL REMOVAL
- SECTION 02200
EXCAVATION AND BACKFILL
- SECTION 02500
PAVING AND SURFACING
- SECTION 03300
CAST-IN-PLACE CONCRETE

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- UTILITY LOCATIONS ARE FOR REFERENCE ONLY. ACTUAL LOCATIONS SHALL BE DETERMINED BY THE SUBCONTRACTOR PRIOR TO START OF CONSTRUCTION.
- 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 CONTRACTOR'S REPRESENTATIVE.

SCOPE OF WORK

- DEMOLISH AND REMOVE ASPHALT PAVING AND CONCRETE WALK AS NECESSARY TO FACILITATE CONTAMINATED MATERIAL REMOVAL.
- EXCAVATE AND REMOVE CONTAMINATED MATERIAL TO A DEPTH OF 36 INCHES AND BACKFILL.
- PLACE 4 INCHES AGGREGATE BASE COURSE AND 1 1/2 INCH ASPHALT PAVING.
- REMOVE, DECONTAMINATE, AND RE-INSTALL SIGN POST.
- PROTECT UNDERGROUND UTILITIES AS REQUIRED TO MAINTAIN UTILITY SERVICE DURING THE WORK OF DECONTAMINATION AND RESTORATION.

8501070208-04

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

FIGURE 41
EXCAVATION & RESTORATION PLAN SL-021

SALT LAKE COUNTY, UTAH
URANUM MILL TAILINGS REMEDIAL ACTION PROJECT

DESIGNED	DATE
CHECKED	DATE
REVIEWED	DATE
APPROVED	DATE

NR	DATE	NR	DATE	NR	DATE
----	------	----	------	----	------



PROJECT NO.	DE-AC04-83AL18796
DRAWING NO.	SL-021-020
REV.	A

NO.	DATE	REVISIONS	DRAWN BY	CHECKED BY	APPROVED BY	DATE	DATE	DATE
A	11/8/84	FINAL DESIGN FOR CLIENT REVIEW	TLE	JCB	JCB	11/8/84		

APPENDIX A
SURVEY DATA LOGS

OUTDOOR GAMMA SCREENING SURVEY DATA SHEET

LOGGING CREW: JEFF MANSHIP
VON BLACK

SHEET 1 OF 2 PAGE 1

DATE: SEPTEMBER 18, 1984

PROPERTY ID: SL-021

INSTRUMENT ID NO: 26498

BACKGROUND CALCULATION:

#1 1020 + #2 1006 + #3 1064 = 3090 ÷ 3 = 1030 COUNTS/1MIN*

AREA: _____			AREA: _____			AREA: _____			AREA: _____		
POINT ID	READING 1 m. / Surf.		POINT ID	READING 1 m. / Surf.		POINT ID	READING 1 m. / Surf.		POINT ID	READING 1 m. / Surf.	
A+00	1017	984	B+80	1107	1170	C+130	1086	1061	F+90	1079	1213
A+10	928	995	B+70	1288	1154	C+140	1069	1060	F+80	1091	1185
A+20	996	974	B+60	2984	6695	C+150	1028	1030	F+70	1101	1118
A+30	1055	981	B+55	2853	5092	C.S+150	1128	1100	F+60	1089	1267
A+40	1151	1017	B+50	2681	2798	C.S+140	1063	1159	F+55	1454	1528
A+50	1235	1007	B+40	1786	2910	C.S+130	1221	1262	G+55	1495	1276
A+55	1197	948	B+30	882	1096	C.S+120	1101	1128	G+60	1007	1050
A+60	1077	1002	B+20	846	1028	C.S+110	1329	1264	G+70	1053	1105
A+70	949	937	B+10	911	1045	D+110	1314	1262	G+80	1147	1172
A+80	1012	958	B+00	980	1025	D+100	956	1113	G+90	1199	1155
A+90	984	1000	C+00	1099	1120	D+90	1104	1119	G+100	1291	1332
A+100	938	942	C+10	949	921	D+80	1055	1130	G+110	1576	1358
A+110	911	943	C+20	878	869	D+70	928	1349	H+110	1435	1390
A+120	1020	973	C+30	980	1070	D+60	1011	1435	H+100	1267	1302
A+130	1063	1029	C+40	1734	1740	D+55	1398	1439	H+90	1119	1276
A+140	1010	966	C+50	1028	2060	E+55	1614	1448	H+80	1126	1297
A+150	991	942	C+55	2075	1963	E+60	1368	1449	H+70	986	1026
B+150	880	1071	C+60	1820	1525	E+70	1219	1282	H+60	810	940
B+140	1049	1119	C+70	1346	1302	E+80	1124	1071	H+55	1261	1122
B+130	1021	1156	C+80	1117	1143	E+90	1135	1238	I+55	676	888
B+120	1023	1116	C+90	989	1014	E+100	1192	1243	I+60	779	928
B+110	973	1112	C+100	764	972	E+110	1516	1345	I+70	839	1013
B+100	736	935	C+110	1023	1116	F+110	1611	1362	I+80	1173	994
B+90	989	1021	C+120	978	983	F+100	1029	1138	I+90	1038	1181

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

OUTDOOR GAMMA SCREENING SURVEY DATA SHEET

LOGGING CREW:

JEFF MANSHIP
VON BLACK

SHEET 2 OF 2 PAGE 2

DATE: SEPTEMBER 18, 1984

PROPERTY ID: SL-021

INSTRUMENT ID NO: 26498

BACKGROUND CALCULATION:

#1 1020 + #2 1006 + #3 1064 = 3090 - 3 = 1030 COUNTS/1MIN*

AREA: _____			AREA: _____			AREA: _____			AREA: _____		
POINT ID	READING 1 m. / Surf.		POINT ID	READING 1 m. / Surf.		POINT ID	READING 1 m. / Surf.		POINT ID	READING 1 m. / Surf.	
I+100	1225	1318	L+60	971	984	O+32	876	879	R+0	1029	906
I+110	1449	1215	L+50	961	1048	O+40	902	930			
J+125	967	1154	L+40	837	1104	O+50	896	925			
J+120	911	874	L+32	1020	1170	O+60	901	924			
J+110	781	862	M+32	924	983	O+70	769	951			
J+100	929	1016	M+40	945	912	O+80	820	1107			
J+90	998	1056	M+50	1006	991	O+90	656	967			
J+80	1116	1306	M+60	1182	1358	O+100	582	794			
J+70	882	1306	M+70	899	936	O+110	819	908			
J+60	967	904	M+80	929	953	O+120	664	1024			
J+55	883	1058	M+90	808	930	D+0	1141	1161			
K+60	701	905	M+100	835	862	E+0	1303	1297			
K+70	855	1272	M+110	686	906	F+0	1314	1335			
K+80	939	987	M+120	777	905	G+0	1368	1271			
K+90	798	892	N+120	702	821	H+0	1258	1216			
K+100	891	951	N+110	795	903	I+0	1034	1102			
K+110	723	951	N+100	609	775	J+0	1044	1053			
K+120	724	988	N+90	645	878	K+0	1101	1075			
L+120	661	892	N+80	761	876	L+0	1083	1081			
L+110	784	882	N+70	801	923	M+0	993	962			
L+100	839	917	N+60	967	1011	N+0	943	946			
L+90	964	972	N+50	1138	1373	O+0	939	977			
L+80	1009	983	N+40	881	944	P+0	964	978			
L+70	1412	1118	N+32	870	887	Q+0	926	1019			

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

BOREHOLE LOG

LOGGING CREW: J. Manship
J. Worthen
M. Griffin

SHEET 1 OF 4 PAGE 3

DATE: 9-25-84

PROPERTY ID: SL-021

INSTRUMENT ID NO. 26511, Pr# 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-021-1</u>	HOLE ID: <u>SL-021-2</u>	HOLE ID: <u>SL-021-3</u>	HOLE ID: <u>SL-021-4</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"	8912	0"	3731	0"	6786	0"	1349
6"	18665	6"	6948	6"	20320	6"	1657
12"	11093	12"	6552	12"	17130	12"	2068
18"	5722	18"	3747	18"	10119	18"	2173
24"	3274	24"	2949	24"	5932	24"	2172
30"	2406	30"	2641	30"	4478	30"	2060
36"	2112	36"		36"	3798	36"	
42"	2004	42"		42"	3784	42"	
48"	2001	48"		48"	4334	48"	
54"	2011	54"		54"	3380	54"	
60"	2040	60"		60"	2696	60"	
66"		66"		66"	2702	66"	
72"		72"		72"		72"	
78"		78"		78"		78"	
84"		84"		84"		84"	
90"		90"		90"		90"	
96"		96"		96"		96"	

REMARKS: _____

BOREHOLE LOG

LOGGING CREW: J. Manship
J. Worthen
M. Griffin

SHEET 2 OF 4 PAGE 4

DATE: 9-25-84

PROPERTY ID: SL-021

INSTRUMENT ID NO. 26511 Pr. # 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-021-5</u>		HOLE ID: <u>SL-021-6</u>		HOLE ID: <u>SL-021-7</u>		HOLE ID: <u>SL-021-8</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"	1342	0"	1418	0"	1181	0"	969
6"	1829	6"	1620	6"	1931	6"	1743
12"	2113	12"	1705	12"	2080	12"	1965
18"	1975	18"		18"	2081	18"	1936
24"	1737	24"		24"	1950	24"	1835
30"	1609	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: _____

BOREHOLE LOG

LOGGING CREW: J. Manship
J. Worthen
M. Griffin

SHEET 3 OF 4 PAGE 5

DATE: 9-25-84

PROPERTY ID: SL-021

INSTRUMENT ID NO. 26511 Pr# 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-021-9</u>		HOLE ID: <u>SL-021-10</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>1231</u>	0"	<u>1181</u>	0"		0"	
6"	<u>1622</u>	6"	<u>1505</u>	6"		6"	
12"	<u>1852</u>	12"	<u>1704</u>	12"		12"	
18"	<u>2120</u>	18"	<u>1591</u>	18"		18"	
24"	<u>2203</u>	24"	<u>1720</u>	24"		24"	
30"		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: _____

PROPERTY SURVEY SKETCH

Sheet

of

2

SITE LOCATION

Salt Lake City

ADDRESS

PROPERTY TYPE

Commercial

LOT NO.

SL-021

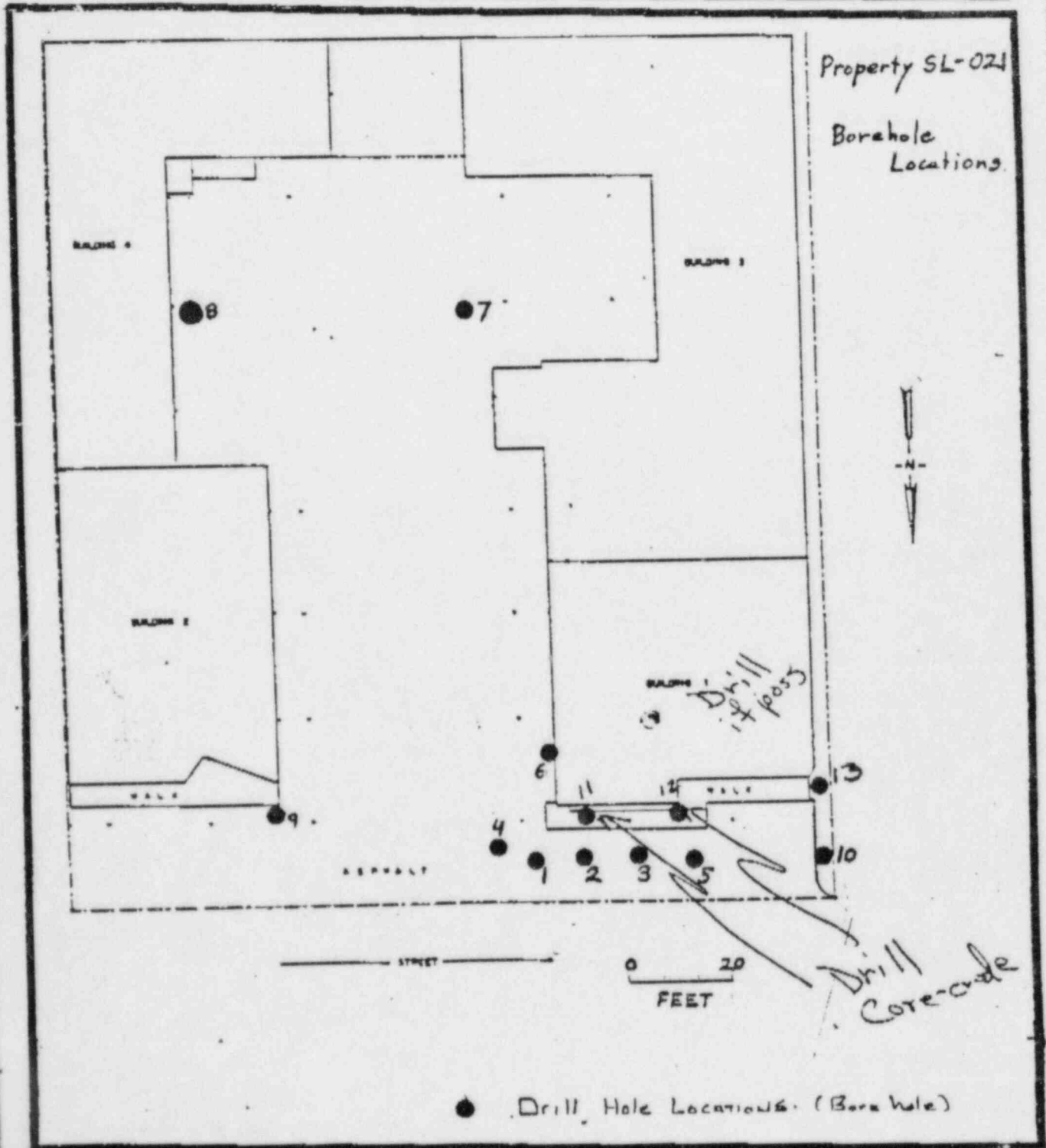
OWNER

SKETCH COMPLETED BY

J. Manship

DATE

9-27-84



BOREHOLE LOG

LOGGING CREW: Von Black
Jeff Manship
Derek F.
 INSTRUMENT ID NO. 26511/015812

SHEET 2 OF 2 PAGE 2
 DATE: 10/15/84
 PROPERTY ID: Apashian / 021
 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-021-11</u>	HOLE ID: <u>SL-021-12</u>	HOLE ID: <u>SL-021-13</u>	HOLE ID: _____
TIME DRILLED: <u>0800</u>	TIME DRILLED: <u>0803</u>	TIME DRILLED: <u>0806</u>	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	<u>2631</u>	SURFACE	<u>2126</u>	SURFACE	<u>1388</u>	SURFACE	
0"		0"		0"		0"	
6"	<u>3773</u>	6"	<u>3683</u>	6"	<u>1858</u>	6"	
12"	<u>3085</u>	12"	<u>3097</u>	12"	<u>1876</u>	12"	
18"	<u>2338</u>	18"	<u>2761</u>	18"	<u>1849</u>	18"	
24"	<u>2291</u>	24"	<u>2116</u>	24"	<u>1987</u>	24"	
30"		30"	<u>2025</u>	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: Bore holes in the interior of the office were
not drilled due to the need to remove carpets from
the floor to drill holes. R.N.



MORRISON-KNUDSEN COMPANY, INC.

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