

P A P UPDATE REGISTER

MINE NAME			FILE NUMBER		
DEER CREEK			ACT/015/018		
DATE REC.	PAGE #s	PLATE #s	APPROVAL DATE	INSERT BY	CONTENT/REMARKS
3/7/89	4-37, 131, 110 4-35.1, 2, 3, 4, 5 4-36.1, 2, 3, 4, 5, 6 2-25	2-11A 2-13A		Tommonson	PROBABLE HYDROCONSEQ. CRABEN X-ING
4/14/89	3-17, 3-17B	DS11270 051143D PS11380, 1, 2 DS1139E 20FY	6/2/89	T. nuss	SEDIMENT POWD CLEANING ADJENOMEN
6/15/89	3-27, 29, and 29.1	3-9 DS202E	6/12/89	Pgl	Rock Dust Silo in Substation
10/20/89	3-48 and 3-48.1 in Recl. Est.	Plate 3-8	10/20/89	Pgl	Sediment Trap and Small Comptrol Bldg ACT/015/018-89G
11/8/89	Table of Contents	Plate 3-9	11/8/89	Pgl	ACT/015/018 89G 60 - built
1/5/90	3-54 3-55 3-55.1	Plates 3-18 all 6 of 6	1/8/90	Pgl	County Road ACT/015/018-89H
1/23/90	3-15	3-18, 18	1/23/90	P6L	AUTOMATED ACCESS SYSTEM
5/16/90	3-31, 3-47, 3-48, 3-48.1, 4-3	3-9	5/7/90	Pgl	Trailer Water Discharge Pipe Installation ACT/015/018-90D
7/11/90	3-48, 3-48.1, 3-50.1	3-9	7/11/90	Pgl	ACT/015/018-90E Tipple Drainage
10/3/90	9, 3-32, 3-32.1, 3-32.2,	1-3, 3-9, 5-1	7/11/90	Jess Kelley	BTCA designations

MRP Update Register

Mine Name

File Number

~~DEER CREEK~~

ACT/015/018

Date Rec.	Page #s	Plate #s	Approval Date	Insert By	Content/Remarks
12/4/87		DS963C		RUS 3/10/88	Should become Map # 3-20
4/86	3-6, 4-1 4-14, 4-33, 4-34		4/24/86	RUS 3/14/88	
8/10/88	3-17, 3-47 4-27		8/3/88	8/4/88 RUS	DAP amendment
11/25/87 8/10/88	Back 2379 Face of contour VPT	CM-10546-DR 5 of 8	12/30/87	RUS 11/4/88	DAP amendment # 87D
6/29/88	1-1 thru 1-5 1-24.1	CE-10533 CE-10532		RUS	Midterm Response
6/29/88	4-12 E, F, G 4-17 thru 4-24	CE-10404 CE-10473 (3 sheets)		"	"
6/29/88	4-28A, 4-29 4-31, 4-32	CM-10491 (2 sheets)		"	"
6/29/88	4-37.1 thru 4-37.12	CM-10524 CM-10525		"	"
6/29/88	3-1 thru 3-14D, 3-55A	DS202E CE-10478 CE-10464		"	"
9/30/88	#70	Plate 3-6A CM-10785-DR	9-30-88	pgl	R2P2 update (Removed Drawing # CM-10524-DR 10/83)
11/29/88	3-6B thru 3-79	PLATE 3-17A	11/29/88	TM	ELK CANYON STORAGE PLAN
12/8/88	4-37.1 4-37.2			RUS	midterm Response
1/24/89	4-46 4-47		1/30/89	RUS	Amendment 89A
1/24/89	Appendix X p. 1-6		1/30/89	RUS	Amendment 89A



DEER CREEK COAL MINE

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INTRODUCTION

DIVISION OF
OIL, GAS & MINING

Utah Power & Light Company owns and leases certain fee coal lands, together with assigned federal coal leases, and controls approximately 22,500 acres of contiguous minable property located in Emery County, Utah.

Geographically, the area is known as East Mountain, a large relatively flat plateau, containing three minable coal seams.

Coal is mined through three separate mines, Deer Creek, Wilberg and Des-Bee-Dove Mines.

Several federal coal leases are coincidental to both the Wilberg and Deer Creek Mines as the mines are superimposed, and are listed in the description of the permit area for both mines.

Figure 1 shows the Deer Creek Mine permit area which is bounded on the south, west and north by the lease boundaries, and on the east by the Deer Creek Fault. Multiple seam mining as utilized in the Deer Creek and Wilberg Coal Mines dictates that part of the permit area of the Deer Creek Mine is underlain by areas of the Wilberg Mine.

Generally, the lower seam is extracted through the Wilberg Mine whereas the upper seam is mined through the Deer Creek Mine.

Revised 11/21/83

This report and related information addresses only the Deer Creek Mine complex and the lands above the coal planned for extraction through the Deer Creek portal facilities.

On February 15, 1983, applicant submitted to the DOGM an application to include the Meetinghouse Lease (U-47979) in the Deer Creek Mine permit. This amended application incorporates that modification into the appropriate sections.

No additional surface facilities are required excepting a breakout for ventilation located in the upper reaches of Meetinghouse Canyon. Details of the breakout are included in the Mine Plan narrative.

All coal mined from Deer Creek will be utilized as fuel for Company-owned power plants located near the mine.

Preparation of this application was assigned to Company's Mining and Exploration Department under the supervision of its Manager, Mr. D. W. Jense.

The department staffs sufficient professional and technical personnel to adequately address and narrate the majority of subject matter required for submission of this application.

Where environmental or ecological studies were required, Company engaged qualified consultants to perform the work and are identified on the title pages preceding their respective reports.

Revised 11/21/83

Other Company departments were used where their expertise coincided application requirements.

The following photograph depicts the Deer Creek Mine Portal as it exists.

DEER CREEK COAL MINE

Owned By	Utah Power & Light Company
Operated By	Emery Mining Corporation
Located	Eight miles west of Huntington, Utah
Average Production	2.7 Million Tons Per Year
Estimated Mine Life	48 Years
Type of Operation	Underground coal mine
Operation Commenced	1969
Transportation System	Conveyor System - 2.5 miles northeast to Huntington Power Plant
Elevation	7,500 Feet
Annual Precipitation	8-10 Inches
Aspect	Northeast Facing
Vegetation Communities	Pinyon-Juniper, mixed Conifer and Riparian
Drainage	Deer Creek/Huntington Creek
Area of Disturbance	20 Acres

Revised 11/21/83

ORGANIZATION OF MINING PERMIT APPLICATION

The following volumes contain Utah Power & Light Company's Permit Application for underground coal mining operations at the Deer Creek Coal Mine.

The applicant has chosen to assemble this application in a format consistent with, and in sequence similar to the Division's permanent regulations, Sections UMC 771 through UMC 786.

The application is organized into a set of five volumes as follows:

Volume 1

Introduction
Verification of Applicant
Table of Contents
Part 1 - Legal, Financial, Compliance
Information
Part 2 - Environmental Resources

Volume 2

Part 2 - Environmental Resources (cont.)
Part 3 - Mining Operation Plan
Part 4 - Reclamation Plan

Volume 3

Appendices

Volume 4

Maps and Drawings

Volume 5

Maps and Drawings

Volume 6

Maps and Drawings

Revised 11/21/83

CERTIFICATION

STATE OF UTAH)
 : ss
County of Salt Lake)

Except as otherwise indicated thereon, all maps, plans, and cross sections submitted with this application have been prepared under the supervision of Don A. Dewey, a registered Professional Engineer of the State of Colorado, who hereby certifies to the correctness thereof.



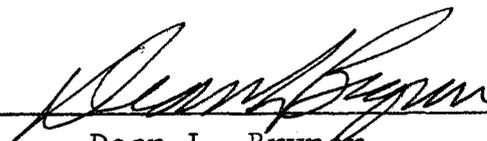
Don A. Dewey, P.E.
(Professional Engineer #6522)

3/20/81

VERIFICATION OF APPLICANT

STATE OF UTAH)
 : ss.
County of Salt Lake)

I, DEAN L. BRYNER, a Vice President of Utah Power & Light Company, the applicant herein, hereby certifies that the material and information contained in the within Application for Mining Permit is complete and correct to the best of my knowledge, information and belief.



Dean L. Bryner

Subscribed and sworn to before me this 11th day
of March, 1981.



Notary Public, residing in
Salt Lake County, Utah

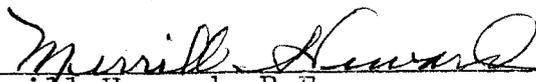
My Commission Expires:
June 8, 1984

3/20/81

CERTIFICATION

STATE OF UTAH)
 : ss.
County of Salt Lake)

This mining plan has been prepared under the direction of Merrill Heward, a registered Professional Engineer of the State of Utah.



Merrill Heward, P.E.
(Professional Engineer #1834)

3/20/81

CERTIFICATION

STATE OF UTAH)
 : ss.
County of Salt Lake)

Except as otherwise indicated thereon, all maps, plans, and cross sections submitted with this application have been prepared under the supervision of Don A. Dewey, a registered Professional Engineer of the State of Colorado, who hereby certifies to the correctness thereof.



Don A. Dewey, P.E.
(Professional Engineer #6522)

3/20/81

CERTIFICATION

STATE OF UTAH)
): ss.
County of Salt Lake)

Except as otherwise indicated thereon, all maps, plans, and cross sections submitted with this application relating to the mining operation have been prepared under the supervision of John Bootle, a registered Professional Engineer of the State of Utah, who hereby certifies to the correctness thereof.



John Bootle, P.E.
(Professional Engineer #5198)

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- III - Roof Control Plan
- IV - Ventilation System, and Methane, and Dust Control Plan
- V - Photographs of Existing Structures
- VI - Blasting Plan
- VII - Hydrological Calculations
- VIII - Stability Report (Rollins)
- IX - Hydrological Procedures and Calculations with
Drainage Map CM-10379-EM

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DEER CREEK
MAPS AND DRAWINGS

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Map #

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1-1	Coal Ownership	CM-10522-DR
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1-3	Permit Area Map	CM-10367-DR

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2-1	Surface Exploration Drill Holes	CE-10424-EM
2-2	Hiawatha Structure Contour Map (3 sheets)	CE-10469-EM
2-3	Blind Canyon Structure Map (3 sheets)	CE-10540-EM
2-4	Geologic Cross Sections	CE-10244-EM
2-5	Isopach Map-Hiawatha Seam (3 sheets)	CE-10437-EM

VOLUME 5

2-6	Interburden Isopach Map Between Hiawatha and Blind Canyon Coal Seams (3 sheets)	CE-10470-EM
2-7	Isopach Map-Blind Canyon Seam (3 sheets)	CE-10434-EM
2-8	Hiawatha Overburden Contour Map (3 sheets)	CE-10471-EM
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2-11	Hydrologic Data Map	CM-10495-DR
2-12	Spring Map	CE-10404-EM
2-13	Cross Section of Roans Canyon Fault System (sheet 1 of 2)	CE-10517-EM

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2-14	Vegetation Map	CE-10488-DR
2-15	Mine Plan Area Vegetation Map	CM-10485-DR
2-16	General Soils Map	CE-10498-DR
2-17	Mine Plan Area Soils Map	CM-10344-DR
2-18	Land Use Map	CM-10588-DR
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3-4	Mine Plan-Hiawatha Seam - Sheet 1	CM-10491-DR
3-5	Mine Plan-Hiawatha Seam - Sheet 2	CM-10491-DR
3-6	5 Year Increments-Blind Canyon Seam	CM-10524-DR
3-7	5 Year Increments-Hiawatha Seam	CM-10525-DR
3-8	Surface Facilities Location Map "A"	CM-10352-DR
3-9	Surface Yard Map	DS202E
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3-10	Sanitation System/Sewer Line (R&S)	7750-C1
3-11	Sanitation System (EMC)	DS-667-C
3-12	Underground Drainage Diversion Map (3 sheets)	CM-10380-DR
3-13	Surface Drainage Collective System	CM-10387-DR
3-14	Track Layout (EMC)	DS-453-C
3-15	Sedimentation Pond	CM-10867-DR
	Sedimentation Pond Cross Section	CM-10593-DR
3-16	Sedimentation Pond	MK-00-52-1-010
3-17	Waste Rock Disposal Site	CM-10386-DR
3-18	Access Road Plan & Profiles Sheets 1-4	CM-10546-DR
3-19	Access Road Plan & Profiles Sheets 5-8	CM-10546-DR
	Engineering Report Supplement to Drawing CM-10546-DR - Sheet 5 of 8	

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4-1	Final Reclamation (3 Sheets)	CM-10545-DR
4-2	Revegetation Location Map	CM-10548-DR
4-3	Disturbed Mine Plan Area Cross-Sections	CM-10483-DR
4-4	Final Reclamation Backfill & Grading Cross-Sections (3 Sheets)	CM-10551-DR
4-5	Subsidence Monitoring Plan (3 Sheets)	CM-10400-DR
	East Mountain 1990 Primary Control Diagram	CM-10590-DR

3-12	Underground Drainage Diversion Map (3 Sheets)	CM-10380-DR
3-13	Surface Drainage Collective System	CM-10387-DR
3-14	Track Layout (EMC)	DS-453-C
3-15	Sedimentation Pond	MK-00-52-1-009
3-16	Sedimentation Pond	MK-00-52-1-010
3-17	Waste Rock Disposal Site	CM-10386-DR
3-18	Access Road Plan & Profiles Sheets 1-4	CM-10546-DR
3-19	Access Road Plan & Profiles Sheets 5-8	CM-10546-DR
3-20	<i>Mine Area Access Road</i>	<i>DS-963-C</i>
Reclamation		
4-1	Final Reclamation (3 Sheets)	CM-10545-DR
4-2	Revegetation Location Map	CM-10548-DR
4-3	Disturbed Mine Plan Area Cross Sections	CM-10483-DR

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JAN 31 1992

DIVISION OF
OIL GAS & MINING

Mr. Lowell P. Braxton
Associate Director, Mining
Division of Oil, Gas and Mining
3 Triad, Suite 350
Salt Lake City, Utah 84180-1203

Dear Mr. Braxton:

Re: Request for Permit Change Deer Creek Mine,
ACT/015/018 , Emery County, Utah

As a result of a recent change in the Utah Administrative Code, the prefix R614 (the Utah Coal Regulatory Program) will be replaced by the new prefix R645. This is a prefix change only. The section/subsection citations balance of the rules governing the Coal Regulatory Program remains unchanged.

In order to accurately reflect this change in the above-cited Mining and Reclamation Plan, please consider this letter an application for a Permit Change as provided for at R645(614)-303-220. The prefix R645 replaces prefix R614 in all portions of the approved permit.

Approval of this Permit Change by the Division of Oil, Gas and Mining will obviate the need to change this prefix in each portion of the permit until other circumstances require submission of a rewritten permit.



Signed

PacifiCorp Electric Operations
Company

JANUARY 27, 1992
Date

UTAH POWER & LIGHT COMPANY
DEER CREEK COAL MINE
APPLICATION FOR MINING PERMIT

The application for mining permit is submitted to the State of Utah, Department of Natural Resources, Division of Oil, Gas & Mining, in accordance with the Utah Coal Mining and Reclamation Act, Title 40, Chapter 10, U.C.A., 1953 (as amended); the applicable rules and regulations adopted thereunder (Part UMC 771.1, et seq.); the Surface Mining Control & Reclamation Act of 1977 (P.L. 95-87), and applicable regulations adopted thereunder (30 C.F.R. § 770, et seq.), the Cooperative Agreement between the State of Utah and the United States Secretary of Interior, and other applicable laws and regulations.

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JUN 29 1988
DIVISION OF
OIL, GAS & MINING

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Section II LEGAL/FINANCIAL OWNERSHIP, ETC.

UMC 782.13 IDENTIFICATION OF INTERESTS

The permit applicant is:

Utah Power and Light Company
1407 West North Temple
Salt Lake City, Utah 84116
(801) 535-2000

Utah Power and Light Company is the legal owner of record of the areas to be effected. Coal mining will not take place within the areas of this permit.

The operator is:

Utah Power and Light Company
Mining Division
P.O. Box 310
Huntington, Utah 84528
(801) 687-9821

The agent for service of process is:

Mr. J. Brett Harvey
Vice President & General Manager
Mining Division
P.O. Box 310
Huntington, Utah 84528
(801) 687-9821

Utah Power & Light Company is a corporation under the laws of the State of Utah. The names and address of every officer and director are shown below. Utah Power & Light Co. common stock is widely held by the public and it has no principal shareholders.

UTAH POWER & LIGHT COMPANY

OFFICERS

Frank N. Davis	President & Chief Executive Officer	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
Sidney G. Baucom	Executive Vice President & General Counsel	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
Verl R. Topham	Senior Vice President, Commercial Manager, & Chief Financial Officer	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116

Curtis L. Hoskins	Executive Vice President	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
Harry Haycock	Senior Vice President	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
Robert Gordon	Vice President & Corporate Secretary	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
Orrin T. Colby, Jr.	Vice President & Controller	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
J. Brett Harvey	Vice President & General Manager, Mining Division	Utah Power & Light Company P.O. Box 310 Huntington, Utah 84528
John A. Bohling	Assistant Vice President	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
Shelly R. Faigle	Assistant Vice President	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
Thomas W. Forsgren	Assistant Vice President	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
J. Lynn Rasband	Assistant Vice President	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
Ernest Wessman	Assistant Vice President	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
Sam F. Chamberlain	Assistant Secretary	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
John E. Droubay	Treasurer	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
Martin H. Craven	Assistant Treasurer	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116

BOARD OF DIRECTORS

DeeDee Corradini	Director	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
Michael O. Leavitt	Director	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
John A. Lindquist, Sr.	Chairman of the Board	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
Chase N. Peterson	Director	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
Rogers K. Rose	Director	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
Robert V. Thompson	Director	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
Richard L. Warner	Director	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
Don M. Wheeler	Director	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
Frank N. Davis	Director	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
Sidney G. Baucom	Director	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116
Verl R. Thopham	Director	Utah Power & Light Company 1407 West No. Temple Salt Lake City, Utah 84116

Applicant has not operated underground or surface coal mines in the United States during the five years preceding the date of this application under any other name. However, it did employ an independent contractor to operate all of its mines from 1979 to 1986. The independent contractor so employed during the past five years was Emery Mining Corporation of Huntington, Utah (formerly known as American Coal Company).

Revised 6/29/88

The following federal coal leases, upon which the applicant bases his right to perform coal mining in the permit area, have all been subleased or assigned to Utah Power & Light Company:

Lease No. SL-064607-064621
Issued to Clara Howard Miller 10/4/46

Section 2	Lots 2, 5, 6, 7, 10, 11, and 12 and SW $\frac{1}{4}$
Section 3	SE $\frac{1}{4}$ SE $\frac{1}{4}$
Section 10	NE $\frac{1}{4}$

Lease No. SL-064900
Issued to Cyrus Wilberg 2/3/45

Section 22	SE $\frac{1}{4}$ SW $\frac{1}{4}$, SW $\frac{1}{4}$ SE $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$, NW $\frac{1}{4}$ SE $\frac{1}{4}$
------------	--

Township 17 South, Range 7 East, S.L.M. Utah,
containing 160 acres

Lease No. U-1358
Issued to Castle Valley Mining Co. 8/1/67

Section 22	S $\frac{1}{2}$ NW $\frac{1}{4}$, W $\frac{1}{2}$ SW $\frac{1}{4}$, E $\frac{1}{2}$ SE $\frac{1}{4}$
Section 27	E $\frac{1}{2}$ NE $\frac{1}{4}$

Township 17 South, Range 7 East, S.L.M. Utah,
containing 320 acres

Lease No. SL-070645, U-02292
Issued to Clara Howard Miller 4/1/52

Section 4	SW $\frac{1}{4}$ SE $\frac{1}{4}$, S $\frac{1}{2}$ SW $\frac{1}{4}$
Section 5	SE $\frac{1}{4}$ SW $\frac{1}{4}$, S $\frac{1}{2}$ SE $\frac{1}{4}$
Section 8	E $\frac{1}{2}$, E $\frac{1}{2}$ W $\frac{1}{2}$
Section 9	All
Section 10	W $\frac{1}{2}$
Section 15	N $\frac{1}{2}$
Section 16	N $\frac{1}{2}$
Section 17	NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$

Revised 11/21/83

Township 17 South, Range 7 East, S.L.M.
Utah, containing 2560 acres
Lease No. U-084923
Issued to Malcolm N. McKinnon 8/1/64

Section 4	Lots 2, 3, 4, 5, 6, 7, 10, 11, 12, NW $\frac{1}{4}$ SE $\frac{1}{4}$, N $\frac{1}{2}$ SW $\frac{1}{4}$
Section 5	Lots 1 thru 12, N $\frac{1}{2}$ S $\frac{1}{2}$, SW $\frac{1}{4}$ SW $\frac{1}{4}$
Section 6	Lots 1 thru 11, SE $\frac{1}{4}$
Section 7	Lots 1 thru 4, E $\frac{1}{2}$
Section 8	W $\frac{1}{2}$ W $\frac{1}{2}$
Section 18	Lot 1 and 2, N $\frac{1}{2}$
Section 17	W $\frac{1}{2}$ NW $\frac{1}{4}$

Township 17 South, Range 7 East, S.L.M.
Utah, containing 2252.42 acres

Lease No. U-084924
Issued to Malcolm N. McKinnon 8/1/64

Section 1	Lots 1, 2, 3, S $\frac{1}{2}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$
Section 12	E $\frac{1}{2}$, E $\frac{1}{2}$ W $\frac{1}{2}$
Section 13	NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$

Township 17 South, Range 6 East, S.L.M.
Utah, containing 1211.48 acres

Lease No. U-083066
Issued to Cooperative Security Corp. 3/1/62

Section 13	E $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$
Section 24	E $\frac{1}{2}$ W $\frac{1}{2}$, E $\frac{1}{2}$
Section 25	N $\frac{1}{2}$ NE $\frac{1}{4}$

Township 17 South, Range 6 East, S.L.M.
Utah

Section 17	SW $\frac{1}{4}$, W $\frac{1}{2}$ SE $\frac{1}{4}$
Section 18	Lots 3 and 4, SE $\frac{1}{4}$
Section 19	Lots 1, 2, 3, 4, E $\frac{1}{2}$
Section 20	W $\frac{1}{2}$, W $\frac{1}{2}$ E $\frac{1}{2}$
Section 29	NW $\frac{1}{4}$ NE $\frac{1}{4}$, N $\frac{1}{2}$ NW $\frac{1}{4}$
Section 30	Lots 1, 2, 3, N $\frac{1}{2}$ NE $\frac{1}{4}$, SW $\frac{1}{4}$ NE $\frac{1}{4}$, NW $\frac{1}{4}$ SE $\frac{1}{4}$

Township 17 South, Range 7 East, S.L.M.
Utah, containing 2485 acres

Revised 11/21/83

Lease No. U-040151
Issued to Cooperative Security Corp. 3/1/62

Section 15	SW $\frac{1}{4}$
Section 16	S $\frac{1}{2}$
Section 17	E $\frac{1}{2}$ SE $\frac{1}{4}$
Section 20	E $\frac{1}{2}$ E $\frac{1}{2}$
Section 21	All
Section 22	N $\frac{1}{2}$ NW $\frac{1}{4}$
Section 27	N $\frac{1}{2}$ NW $\frac{1}{4}$
Section 28	N $\frac{1}{2}$ N $\frac{1}{2}$
Section 29	NE $\frac{1}{4}$ NE $\frac{1}{4}$

Township 17 South, Range 7 East, S.L.M.
Utah, containing 1720 acres

Lease No. U-044025
Issued to Cooperative Security Corp. 8/1/60

Section 27 NW $\frac{1}{4}$ NE $\frac{1}{4}$

Township 17 South, Range 7 East, S.L.M.
Utah, containing 40 acres

Lease No. U-06039
Issued to Ferdinand F. Hintze 5/1/53

Section 19	SE $\frac{1}{4}$
Section 20	S $\frac{1}{2}$
Section 29	N $\frac{1}{2}$, SW $\frac{1}{4}$, W $\frac{1}{2}$ SE $\frac{1}{4}$
Section 30	E $\frac{1}{2}$

Township 16 South, Range 7 East, S.L.M.
Utah, containing 1360 acres

Lease No. U-024317
Issued to Huntington Corporation 5/1/58

Section 20	S $\frac{1}{2}$ NE $\frac{1}{4}$
Section 21	S $\frac{1}{2}$ N $\frac{1}{2}$, SW $\frac{1}{4}$

Township 16 South, Range 7 East, S.L.M.
Utah, containing 400 acres

Lease No. SL-051221
Issued to Rulon W. Jeppson 11/5/34

Section 28 W $\frac{1}{2}$ NW $\frac{1}{4}$

Township 16 South, Range 7 East, S.L.M.
Utah, containing 80 acres

*not permitted
due to lack
of acres
by V.P. & L.*

Revised 11/21/83

Lease No. U-014275
Issued to John Helco 10/1/55

Section 28 E $\frac{1}{2}$ SW $\frac{1}{4}$

Township 16 South; Range 7 East, S.L.M.,
Utah, containing 80 acres

Lease No. U-024319
Issued to Huntington Corporation 5/1/60

Section 27 SW $\frac{1}{4}$
Section 28 SE $\frac{1}{4}$
Section 33 E $\frac{1}{2}$, E $\frac{1}{2}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$,
 S $\frac{1}{2}$ SW $\frac{1}{4}$
Section 34 NW $\frac{1}{4}$, NW $\frac{1}{4}$ SW $\frac{1}{4}$

Township 16 South, Range 7 East, S.L.M.,
Utah, containing 1040 acres

In addition, Federal Coal Lease U-47979 issued to
Utah Power & Light Company October 1, 1981.

Section 34 S $\frac{1}{2}$ NE $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$,
 S $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$

Township 16 South, Range 7 East, S.L.M.
Utah

Section 3 Lots 1-8, 10-12,
 SW $\frac{1}{4}$, SW $\frac{1}{4}$ SE $\frac{1}{4}$

Section 4 Lots 1, 8, 9,
 E $\frac{1}{2}$ SE $\frac{1}{4}$

Township 17 South, Range 7 East, S.L.M.,
Utah
Containing 1,063.38 acres, more or less.

Revised 11/21/83

Owners of Coal to be Mined
Other than the United States

Description of Land

Owner

SE $\frac{1}{4}$	Section 10	The Estate of Malcolm McKinnon
W $\frac{1}{2}$ W $\frac{1}{2}$, NE $\frac{1}{4}$ NW $\frac{1}{4}$	Section 11	c/o Frank Armstrong 1300 Walker Bank Bldg.
W $\frac{1}{2}$ NW $\frac{1}{4}$	Section 14	Salt Lake City, Utah 84111

All T17S, R7E, S.L.M.

Surface rights and coal leased to Utah Power & Light Company

SE $\frac{1}{4}$	Section 15	Cooperative Security Corp. 115 East South Temple
NE $\frac{1}{4}$	Section 22	Salt Lake City, Utah 84111

All T17S, R7E, S.L.M.

Also:

Beginning at the SE corner of NE $\frac{1}{4}$ SE $\frac{1}{4}$
Section 25, T17S, R6E, S.L.M,
thence North 160 rods, West 116 rods to
center line of Cottonwood Creek; thence
Southerly along center line of said creek
to a point 84 rods West of the beginning;
thence East 84 rods to the beginning.

Surface rights and coal leased to Utah Power & Light Company

SW $\frac{1}{4}$ (west of the Deer Creek Fault)	Section 14	Utah Power & Light Company P. O. Box 899 Salt Lake City, Utah 84110
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All T17S, R7E, S.L.M.

SE $\frac{1}{4}$	Section 21	Utah Power & Light Company P. O. Box 899
SW $\frac{1}{4}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$	Section 22	Salt Lake City, Utah 84110
N $\frac{1}{2}$ NE $\frac{1}{4}$	Section 28	

All T16S, R7E, SLM

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Surface Owners of Record Within the Permit Area

<u>Description of Land</u>		<u>Owner</u>
Lots 3, 4, 5, and 6	Section 4	Kent Barton 1515 Lavidia Drive
Lots 1 thru 8, Lot 12 and W $\frac{1}{2}$ of Lot 11	Section 5	Disalia, California
Lots 1, 6 and 7	Section 6	
T17S, R7E, S.L.M.		
<hr/>		
SW $\frac{1}{4}$	Section 5	Elk Springs Property Users Association
E-1/3 SE $\frac{1}{4}$ SE $\frac{1}{4}$	Section 6	P. O. Box 21284 Salt Lake City, Utah 84121
T17S, R7E, S.L.M.		
<hr/>		
S $\frac{1}{2}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$, E $\frac{1}{2}$ W $\frac{1}{2}$, NW $\frac{1}{4}$ NE $\frac{1}{4}$	Section 8	Betty Jane Poulsen, Guy Karl Seely, Trustees
N $\frac{1}{2}$ SE $\frac{1}{4}$, SW $\frac{1}{4}$, SW $\frac{1}{4}$ NE $\frac{1}{4}$, S $\frac{1}{2}$ NW $\frac{1}{4}$	Section 9	Castle Dale, Utah 84513
All	Section 17	
T17S, R7E, S.L.M.		
<hr/>		
SE $\frac{1}{4}$, SE $\frac{1}{4}$ SW $\frac{1}{4}$ N $\frac{1}{2}$ SW $\frac{1}{4}$, S $\frac{1}{2}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$	Section 21	Karl A. Seely, Inc. Castle Dale, Utah 84513
T17S, R7E, S.L.M.		
<hr/>		
NE $\frac{1}{4}$, N $\frac{1}{2}$ NW $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, N $\frac{1}{2}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$	Section 21	Edward & Clay Crawford & Annette Jensen
T17S, R7E, S.L.M.		1809 Yale Crest Avenue Salt Lake City, Utah 84105
<hr/>		
Lots 1-7, 10-12	Section 2	The Estate of Malcolm McKinnon
SE $\frac{1}{4}$	Section 10	c/o Frank Armstrong 1300 Walker Bank Bldg.
W $\frac{1}{2}$ W $\frac{1}{2}$, NE $\frac{1}{4}$ NW $\frac{1}{4}$	Section 11	Salt Lake City, Utah 84111
NW $\frac{1}{4}$	Section 14	
All T17S, R7E, S.L.M.		

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Description of LandOwner

SE $\frac{1}{4}$	Section 15	Cooperative Security Corp.
NE $\frac{1}{4}$	Section 22	115 East South Temple Salt Lake City, Utah 84111

All T17S, R7E, S.L.M.

Also:

Beginning at the SE corner of NE $\frac{1}{4}$ SE $\frac{1}{4}$ Section 25, T17S, R6E, S.L.M., thence North 160 rods, West 116 rods to center line of Cottonwood Creek; thence Southerly along center line of said creek to a point 84 rods West of the beginning; thence East 84 rods to the beginning.

SE $\frac{1}{4}$	Section 21	Utah Power & Light Company P. O. Box 899
SW $\frac{1}{4}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$	Section 22	Salt Lake City, Utah 84110
N $\frac{1}{2}$ NE $\frac{1}{4}$	Section 28	

All T16S, R7E, S.L.M.

SW $\frac{1}{4}$, S $\frac{1}{2}$ NW $\frac{1}{4}$	Section 4	
SE $\frac{1}{4}$, S $\frac{1}{2}$ NE $\frac{1}{4}$ E $\frac{1}{2}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$	Section 5	
NE $\frac{1}{4}$ SE $\frac{1}{4}$, W-2/3 SE $\frac{1}{4}$ SE $\frac{1}{4}$	Section 6	
NE $\frac{1}{4}$ NE $\frac{1}{4}$	Section 8	
N $\frac{1}{2}$ NW $\frac{1}{4}$, S $\frac{1}{2}$ SE $\frac{1}{4}$	Section 9	
E $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$	Section 11	
SW $\frac{1}{4}$ (west of Fault)	Section 14	
N $\frac{1}{2}$	Section 15	
E $\frac{1}{2}$	Section 18	
E $\frac{1}{2}$	Section 19	
All	Section 20	

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Description of Land

Owner

SW $\frac{1}{4}$ SW $\frac{1}{4}$ All T17S, R7E, S.L.M.	Section 21	Utah Power & Light Company (continued)
SE $\frac{1}{4}$ T17S, R7E, S.L.M.	Section 2	State of Utah State Lands & Forestry Southeastern Region No. 6 South First East Moab, Utah 84532
SW $\frac{1}{4}$ T17S, R7E, S.L.M.	Section 2	United States of America Department of the Interior Bureau of Land Management University Club Building Salt Lake City, Utah 84138

The remaining surface is controlled by:

The United States of America
Department of Agriculture
U. S. Forest Service
The Manti-LaSal National Forest
350 East Main Street
Price, Utah 84501

For coal ownership, see Drawing 1-1 in Drawings and
Map section.

For surface owners see Drawing 1-2.

The total acres of surface lands contained in the
permit area is approximately 16,600.

OWNERS OF SURFACE LANDS CONTIGUOUS TO THE PERMIT AREA
(782.13(e))

Trail Mountain Coal Company
Orangeville, Utah 84528

Shirl and Bessie McArthur
Huntington, Utah 84528

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Northwest Carbon Corporation
315 East 200 South
Salt Lake City, Utah 84111
C.O.P. Coal Development Corporation
3753 South State
Salt Lake City, Utah 84115

The Estate of Malcolm McKinnon
c/o Frank Armstrong
1300 Walker Bank Building
Salt Lake City, Utah 84111

State of Utah
Division of State Lands
231 East 400 South
Salt Lake City, Utah 84111

Manti-LaSal national Forest
United States of America
Department of Agriculture
U. S. Forest Service
350 East Main Street
Price, Utah 84501

United States of America
Department of the Interior
Bureau of Land Management
University Club Building
Salt Lake City, Utah 84138

OWNERS OF SUBSURFACE RIGHTS CONTIGUOUS TO THE PERMIT AREA

United States of America
Department of the Interior
Bureau of Land Management
University Club Building
Salt Lake City, Utah 84138

State of Utah
Division of State Lands
231 East 400 South
Salt Lake City, Utah 84111

Shirl and Bessie McArthur
Huntington, Utah 84528

Trail Mountain Coal Company
Orangeville, Utah 84528

Northwest Carbon Corporation
315 East 200 South
Salt Lake City, Utah 84111

Revised 11/21/83

C.O.P. Coal Development corporation
3753 South State
Salt Lake City, Utah 84115

The Estate of Malcolm McKinnon
c/o Frank Armstrong
1300 Walker Bank Building
Salt lake City, Utah 84111

Utah Power & Light Company
P. O. Box 899
Salt Lake City, Utah 84110

The applicant is the owner of fee surface and coal rights and the holder of leases related to the Des-Bee-Dove Coal Mine and the Wilberg Coal Mine which are contiguous to the permit area. These properties are detailed separately in the permit application for those mines.

The applicant has no option, bid, or other interest in any contiguous acreage other than as stated above.

There are no holders of record of any leasehold interest in areas to be affected by surface operations or facilities or coal to be mined other than oil and gas leases and grazing permits.

There are no purchasers of record under a real estate contract of areas to be affected by surface operations and facilities or coal to be mined.

782.13(d)

Utah Power & Light Company presently holds the following additional coal mining permits:

Wilberg Mine

DOGM Act/015/01⁹ issued May 11, 1978
U.S.G.S. issued January 23, 1978
MSHA ID No. 42-00080

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1-15

Des-Bee-Dove Mine

DOGM Act/015/017 issued May 11, 1978
MSHA ID Nos.
Deseret 42-00988
Beehive 42-00082
Little Dove 42-01393

Applicant neither owns nor operates any other coal mines.

COMPLIANCE INFORMATION (782.14)

The applicant has never had a federal or state mining permit suspended or revoked nor forfeited a mining bond or similar security deposited in lieu of bond.

NOTICES OF VIOLATION RECEIVED BY THE APPLICANT FROM THE DIVISION OF OIL, GAS AND MINING FOR COAL MINING ACTIVITIES (3-Year Period prior to Application) (782.14c)

NOV 81-7-1-2 issued 9/14/81 at Wilberg Mine

- (1) Failure to maintain diversion abated
10/2/81.
- (2) Failure to manage non-coal wastes abated
10/19/81.

Assessment conference held 5/24/82.

Final assessment paid 7/15/82.

NOV 81-6-1-2 issued 9/4/81 at Des-Bee-Dove Mine

- (1) Failure to maintain sediment control measures abated 10/6/81.
- (2) Failure to have records of blasting abated
10/6/81.

Finalized assessment paid 9/9/82.

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NOV 81-4-7-2 issued 12/9/81 at Wilberg Mine

(1) Failure to maintain diversions abated
12/21/81 - Terminated 5/28/82.

(2) Snow removal - abated 12/21/81.

Finalized assessment paid 6/1/82.

NOV 81-4-8-2 issued 12/10/81 at Deer Creek Mine

(1) Failure to maintain surface drainage abated
12/21/81.

(2) Failure to minimize water pollution -
vacated.

Finalized assessment paid 3/18/82.

NOV 82-4-1-1 issued 1/22/82 for all mines

(1) Failure to report water monitoring data.

Submitted 1/27/82 - Terminated 1/27/82.

Violation vacated 11/26/82.

NOV 82-4-2-1 issued 1/27/82 at Wilberg Mine

(1) Failure to minimize water pollution and
erosion abated 2/23/82.

Finalized assessment paid 5/28/82.

NOV 82-1-1-1 issued 2/17/82 at Wilberg Mine

(1) Water discharge from Miller Canyon breakout
abated 2/22/82.

Assessment paid 1/14/83.

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NOV 82-1-4-2 issued 3/23/82 at Wilberg Mine

- (1) Coal waste in Miller Canyon.
- (2) Failure to post signs and prevent access.

Assessment paid 9/9/82.

NOV 82-2-2-2 issued 3/25/82 at Wilberg Mine

- (1) Failure to maintain sediment control at the Cottonwood Portal.
- (2) Failure to protect topsoil storage.

Assessment paid 2/25/83.

NOV 82-4-6-1 issued 6/22/82 at Wilberg Mine

- (1) Failure to maintain sediment control at fan portal road.

Assessment paid 3/18/83.

NOV 82-4-10-1 issued 9/20/82 at Des-Bee-Dove Mine

- (1) Failure to maintain ditches and non-coal wastes.

Assessment paid 3/18/83.

NOV 82-4-16-1 issued 12/9/82 at Wilberg Mine

- (1) Discharge at sedimentation pond.

Terminated effective 12/16/82.

Assessment paid 4/28/83.

NOV 83-4-1-1 issued 1/13/83 at Deer Creek Mine

- (1) Surface drainage on conveyor right-of-way.

Assessment paid 6/17/83.

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NOV 83-4-4-1 issued 4/6/83 at Deer Creek Mine

- (1) Failure to have approved waste disposal site.

Vacated 6/2/83.

NOV 83-4-3-1 issued 4/6/83 at Wilberg Mine

- (1) Disposal of waste in undisturbed drainage area.

Terminated 5/18/83

Assessment paid 6/13/83.

NOV 83-7-7-1 issued 8/17/83 at Wilberg Mine

- (1) Refuse in waste rock site.

Assessment conference requested 9/22/83.

NOV 83-7-8-1 issued 10/14/83 at Wilberg Mine

- (1) Surface drainage

RIGHT OF ENTRY (UMC 782.15)

Assignment of the following coal leases and subleases were entered into on March 24, 1977, between Utah Power & Light Company as assignee and Peabody Coal Company as assignor and were approved by the Bureau of Land Management, Utah State Office, effective as of September 1, 1977.

<u>Subleases</u>	<u>Leases</u>
SL-070645-U-02292	SL-064607-064621
U-040151	SL-064900
U-044025	SL-066116
U-083066	U-1358
U-084923	
U-084924	

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Assignments of the following additional coal leases were entered into on May 18, 1979, between Utah Power & Light Company as assignee, and Peabody Coal Company as assignor and were approved by the Bureau of Land Management, effective January 1, 1980.

Leases

SL-051221
U-06039
U-014275
U-024317
U-024319

By Coal Mining Lease dated January 1, 1969, Malcolm N. McKinnon leased surface and coal mining rights as follows to Peabody Coal Company, who assigned their rights to UP&L on March 24, 1977.

T17S, R7E, SLM
Sec 10: SE $\frac{1}{4}$
Sec 11: W $\frac{1}{2}$, SW $\frac{1}{4}$, S $\frac{1}{2}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$
Sec 14: W $\frac{1}{2}$ NW $\frac{1}{4}$

By Coal Mining Lease dated June 13, 1972, Malcolm N. McKinnon leased surface and coal mining rights as follows to Peabody Coal Company, who assigned their rights to UP&L on March 24, 1977.

T17S, R7E, SLM
Sec 11: N $\frac{1}{2}$ NW $\frac{1}{4}$, N $\frac{1}{2}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$

By Coal Mining Lease dated December 30, 1979, Cooperative Security Corporation leased surface and coal mining rights as follows to Peabody Coal Company, who assigned their rights to UP&L on March 24, 1977.

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T17S, R6E, SLM
100 Acres, more or less in the
E½ of Section 25,
T17S, R7E, SLM
Sec 15: SE¼
Sec 22: NE¼
Sec 14: SW¼ West of Fault
Sec 23: NW¼ West of Fault

None of these documents are subjects of pending litigation.

AREAS DESIGNATED UNSUITABLE FOR MINING (782.16)

In consultation with concerned federal land agencies and the Division of Oil, Gas and Mining, no lands within or adjacent to the permit area have been identified as qualifying under UMC-764 as areas unsuitable for surface effects of underground coal mining activities.

References:

Land Management Plan
Ferron-Price Planning Unit
Manti-LaSal National Forest

Mr. John Niebergall
U. S. Forest Service
Manti-LaSal National Forest
Ferron, Utah

Mr. Sam Rowley
Bureau of Land Management
Price, Utah

Mr. Ron Daniels
Division of Oil, Gas and Mining
Salt Lake City, Utah

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No facilities or operations will be conducted within 300 feet of an occupied dwelling.

Applicant has demonstrated that a financial and legal commitment was made prior to January 4, 1977 (Peabody - UP&LCO contracts for coal delivery). In addition, an updated contact with the state and federal agencies responsible for administering the unsuitability criteria (U. S. Forest Service, B.L.M. and State of Utah) revealed no action or petition has been initiated.

There are no known restricted areas near the permit area of the Deer Creek Mine.

PERMIT TERM (UMC 782.17)

This application is for the five (5) year permit term, however, schedules for mining coal included in the mining plan narrative are tabulated for the life of the lease. In addition, mine maps submitted show areas to be mined on a year-by-year basis through the life of the lease.

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PERSONAL INJURY AND PROPERTY DAMAGE INSURANCE (782.18)

The liability insurance coverage required by UMC 806.14 is provided by a policy issued to applicant's operator, Emery Mining Corporation. Applicant will insure that such insurance coverage is maintained in full force and effect during the life of the permit and through completion of reclamation, or will provide evidence that the self-insurance requirements of UMC 806.14 have been satisfied by it.

MINING PERMITS (782.19)

The Deer Creek Mine is presently operating under an interim mining permit issued by the State of Utah, Division of Oil, Gas & Mining (Act/015/018A) issued on May 11, 1978 and approval under 30 CFR 211 issued by the U. S. Geological Survey on January 23, 1978.

The MSHA identification number assigned to the Deer Creek Mine is 42-00121.

Revised 11/21/83

CERTIFICATE OF INSURANCE

02/19/92

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

PRODUCER
MARSH & McLENNAN, INC.
 900 S. W. FIFTH, SUITE 1100
 PORTLAND, OR
 97204-
 PHONE 503-226-9500

COMPANIES AFFORDING COVERAGE

- COMPANY LETTER A **AEGIS INSURANCE SERVICES, LTD.**
- COMPANY LETTER B
- COMPANY LETTER C
- COMPANY LETTER D
- COMPANY LETTER E

INSURED
PacifiCorp, DBA PacifiCorp
Electric Operations
 920 SW Sixth
 Portland,, OR
 97204-

> COVERAGES <=====
 THIS IS TO CERTIFY THAT POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL TERMS, EXCLUSIONS, AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFF DATE	POLICY EXP DATE	ALL LIMITS IN THOUSANDS	
					EACH OCC	AGGREGATE
	GENERAL LIABILITY				GENERAL AGGREGATE	35000
A	<input checked="" type="checkbox"/> COMMERCIAL GEN LIABILITY	XO296A1A92	02/24/92	02/24/93	PRODS-COMP/OPS AGG.	
A	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> CLAIMS MADE [] OCC. [] OWNER'S & CONTRACTORS PROTECTIVE	retro date: 12-24-86			PERS. & ADVG. INJURY	
A	<input checked="" type="checkbox"/> XCU []				EACH OCCURRENCE	35000
	AUTOMOBILE LIAB				FIRE DAMAGE (ANY ONE FIRE)	
	[] ANY AUTO [] ALL OWNED AUTOS [] SCHEDULED AUTOS [] HIRED AUTOS [] NON-OWNED AUTOS [] GARAGE LIABILITY []				MEDICAL EXPENSE (ANY ONE PERSON)	
	EXCESS LIABILITY				CSL	
A	[] UMBRELLA FORM <input checked="" type="checkbox"/> OTHER THAN UMBRELLA FORM	XO296A1A92 (SEE ATTACHED)	02/24/92	02/24/93	BODILY INJURY (PER PERSON)	
	WORKERS' COMP AND EMPLOYERS' LIAB				BODILY INJURY (PER ACCIDENT)	
	OTHER				PROPERTY	
					EACH OCC	AGGREGATE
					35000	35000
					STATUTORY	
					EACH ACC	
					DISEASE-POLICY LIMIT	
					DISEASE-EACH EMPLOYEE	

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

DEERCREEK ACT/015/018

Damage due to explosives is covered. Insurance Company will notify State of Utah of changes or cancellation

> CERTIFICATE HOLDER <=====
 CANCELLATION <=====
 = SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL SEND BY MAIL 45 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT NOT LATER THAN 30 DAYS BEFORE THE EXPIRATION DATE. THE COMPANY, ITS AGENTS OR REPRESENTATIVES SHALL HAVE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

STATE OF UTAH, DEPT OF NATURAL RESOURCES, DIV. OF OIL & GAS
 355 W. NORTH TEMPLE
 SALT LAKE CITY, UT
 84180-1203

= AUTHORIZED REPRESENTATIVE

Andrea D. Johnson

ACORD 25-S (3/88)

Certificate Number: **No. 22306**

ASSOCIATED ELECTRIC & GAS INSURANCE SERVICES LIMITED
Hamilton, Bermuda

CERTIFICATE OF INSURANCE

(~~EXCESS~~ Liability)
Primary

This Certificate is furnished to the Certificate Holder named below as a matter of information only. Neither this Certificate nor the issuance hereof modifies the policy of insurance identified below (the "Policy") in any manner. The Policy terms are solely as stated in the Policy or in any endorsement thereto. Any amendment, change or extension of the Policy can only be effected by a specific endorsement issued by the Company and attached to the Policy.

The undersigned hereby certifies that the Policy has been issued by Associated Electric & Gas Insurance Services Limited (the "Company") to the Named Insured identified below for the coverage described and for the policy period specified.

Notwithstanding any requirements, terms or conditions of any contract or other document with respect to which this Certificate may be issued or to which it may pertain, the insurance afforded by the Policy is subject to all of the terms of the Policy.

NAME OF INSURED: PacifiCorp, PacifiCorp dba PacifiCorp Electric Operations
920 SW Sixth
PRINCIPAL ADDRESS: Portland, Oregon 97204

POLICY NUMBER: X0296A1A92 POLICY PERIOD: From: 2-24-92 To: 2-24-93

RETROACTIVE DATE: 12-24-86 Primary

DESCRIPTION OF COVERAGE: Claims-First-Made ~~EXCESS~~ Liability Policy covering claims for Bodily Injury, Property Damage and Personal Injury arising from the operations described below.

LIMIT OF LIABILITY: \$ 35,000,000 per occurrence and in the aggregate, where applicable.

ADDITIONAL INSURED: The Certificate Holder is an additional Insured under the Policy but only (i) to such extent and for such Limits of Liability (subject always to the terms and Limits of Liability of the Policy) as the Named Insured has agreed to provide insurance for the Certificate Holder under the following contract:
DEERCREEK ACT/015/018

and (ii) with respect to the following operations:
Damages due to explosives is covered. Insurance Company will notify State of Utah of changes or cancellation

Should the Policy be cancelled, assigned or changed in a manner that is materially adverse to the Insured(s) under the Policy, the undersigned will endeavor to give 45 days advance written notice thereof to the Certificate Holder, but failure to give such notice will impose no obligation or liability of any kind upon the Company, the undersigned or any agent or representative of either.

DATE: 2-24-92

ISSUED TO: State of Utah

("Certificate Holder")

ADDRESS: Department of Natural Resources
Division of Oil, Gas and Mining
356 West North Temple
Salt Lake City, Utah 84180-1203

AEGIS INSURANCE SERVICES, INC.

BY: Sandra D. Johnson

At Jersey City, New Jersey 1-23.2

LICENSES, PERMITS AND APPROVALS OBTAINED BY APPLICANT
TO CONDUCT MINING ACTIVITIES (782.19)

<u>Name and Address of Issuing Authority</u>	<u>License or Permit</u>	<u>I.D. No. & Date of Issue</u>
U. S. Geological Survey Conservation Division 2040 Administration Bldg. 1745 West 1700 South Salt Lake City, Utah 84104	Mining Permit (30CFR211)	Leases - SL-070645 U-02292 1/20/78
State of Utah Division of Oil, Gas & Mining 1588 West North Temple Salt Lake City, Utah 84116	Mining Permit Hydrologic Monitoring Plan Petition for Bonding Surface Owners	ACT/015/018A 5/11/78 10/10/79 12/28/77
State of Utah Division of Health 150 West North Temple Suite 426 P. O. Box 2500 Salt Lake City, Utah 84110	Construction Permit for Sedimentation Pond Wastewater Disposal System	533-6146 2/6/79 10/4/83
U.S. E.P.A. Region VIII 1860 Lincoln Street Denver, Colorado 80203	NPDES Discharge Permit Sedimentation Pond	UT-0023604 8/12/80
U. S. Forest Service Manti-LaSal National Forest 350 East Main Street Price, Utah 84501	Special Use Permit 5.85 Acres-Yard Area	3/7/79
State of Utah Division of State Lands 231 East 400 South Salt Lake City, Utah 84111	Special Use Lease Agreement - 160 Acres SE¼, Section 2, T17S, R7E, SLM	SULA No. 284 11/6/78
Bureau of Land Management 136 East South Temple Salt Lake City, Utah	R/W Power Line R/W Conveyor	U-18934 10/26/72 U-52401 5/3/83

Revised 11/21/83

Utah Power & Light commits to stipulations 817.41-(1), 817.50-(1,2), 817.52-(1) and 817.124-(1,2,3) as issued with the Deer Creek Mine permit ACT/015/018. Utah Power & Light does reserve the right to apply for changes to these stipulations as conditions or data collection information dictates.

Utah Power & Light commits to the United States Forest Service requirements as addressed in Appendix 1 of the Decision Notice and Finding of No Significant Impact for Mine Breakout Portals, North Fork Meetinghouse Canyon, Federal Coal Lease U-47979 dated April 25, 1986.

LOCATION OF PUBLIC OFFICE FOR FILING OF APPLICATION (782.20)

This application will be submitted to the Division of Oil, Gas and Mining and the applicant will file a copy of this application for public inspection at the office of the

Emery County Recorder
Emery County Courthouse
Castle Dale, Utah 84513

NEWSPAPER ADVERTISEMENT AND PROOF OF PUBLICATION (782.21)

The following is a copy of the newspaper advertisement which will be published in a local newspaper of general circulation in the locality of the permit area at least once a week for four consecutive weeks. Proof of Publication will be filed with the Division within four weeks after the date of publication.

Notice

Utah Power & Light Company, P. O. Box 899, Salt Lake City, Utah 84110, hereby announces its intent to file an application for a Coal Mining Permit for the Deer Creek Mine with the Division of Oil, Gas and Mining under the laws of the State of Utah and the Office of Surface Mining.

A copy of the complete application is available for public inspection at the Emery County Recorder's Office, Emery County Courthouse, Castle Dale, Utah 84513.

Revised 11/21/83

Written comments on the application should be submitted to the State of Utah, Division of Oil, Gas and Mining, 4241 State Office Building, Salt Lake City, Utah 84114.

The area to be mined is contained on the U.S.G.S. 7.5-minute "Red Point," "Rilda" and "Mahogany Point" quadrangle maps.

The approximately 16,600 acres contained in the permit area involve all or part of the following federal and fee coal leases:

Lease No. SL-064607-064621
Issued to Clara Howard Miller 10/4/46

Section 2	<i>S$\frac{1}{2}$ and</i> Lots 2, 5, 6, 7, 10, 11, and 12 and SW $\frac{1}{4}$ <i>State Lease?</i>
Section 3	SE $\frac{1}{4}$ SE $\frac{1}{4}$
Section 10	NE $\frac{1}{4}$

Lease No. SL-064900
Issued to Cyrus Wilberg 2/3/45

Section 22	SE $\frac{1}{4}$ SW $\frac{1}{4}$, SW $\frac{1}{4}$ SE $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$, NW $\frac{1}{4}$ SE $\frac{1}{4}$
------------	--

Township 17 South, Range 7 East, S.L.M. Utah,
containing 160 acres

Lease No. U-1358
Issued to Castle Valley Mining Co. 8/1/67

Section 22	S $\frac{1}{2}$ NW $\frac{1}{4}$, W $\frac{1}{2}$ SW $\frac{1}{4}$, E $\frac{1}{2}$ SE $\frac{1}{4}$
Section 27	E $\frac{1}{2}$ NE $\frac{1}{4}$

Township 17 South, Range 7 East, S.L.M. Utah,
containing 320 acres

Revised 11/21/83

Lease No. SL-070645, U-02292
Issued to Clara Howard Miller 4/1/52

Section 4	SW $\frac{1}{4}$ SE $\frac{1}{4}$, S $\frac{1}{2}$ SW $\frac{1}{4}$
Section 5	SE $\frac{1}{4}$ SW $\frac{1}{4}$, S $\frac{1}{2}$ SE $\frac{1}{4}$
Section 8	E $\frac{1}{2}$, E $\frac{1}{2}$ W $\frac{1}{2}$
Section 9	All
Section 10	W $\frac{1}{2}$
Section 15	N $\frac{1}{2}$
Section 16	N $\frac{1}{2}$
Section 17	NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$

Township 17 South, Range 7 East, S.L.M.
Utah, containing 2560 acres
Lease No. U-084923
Issued to Malcolm N. McKinnon 8/1/64

Section 4	Lots 2, 3, 4, 5, 6, 7, 10, 11, 12, NW $\frac{1}{4}$ SE $\frac{1}{4}$, N $\frac{1}{2}$ SW $\frac{1}{4}$
Section 5	Lots 1 thru 12, N $\frac{1}{2}$ S $\frac{1}{2}$, SW $\frac{1}{4}$ SW $\frac{1}{4}$
Section 6	Lots 1 thru 11, SE $\frac{1}{4}$
Section 7	Lots 1 thru 4, E $\frac{1}{2}$
Section 8	W $\frac{1}{2}$ W $\frac{1}{2}$
Section 18	Lot 1 and 2, N $\frac{1}{2}$
Section 17	W $\frac{1}{2}$ NW $\frac{1}{4}$

Township 17 South, Range 7 East, S.L.M.
Utah, containing 2252.42 acres

Lease No. U-084924
Issued to Malcolm N. McKinnon 8/1/64

Section 1	Lots 1, 2, 3, S $\frac{1}{2}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$
Section 12	E $\frac{1}{2}$, E $\frac{1}{2}$ W $\frac{1}{2}$
Section 13	NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$

Township 17 South, Range 6 East, S.L.M.
Utah, containing 1211.48 acres
Lease No. U-083066
Issued to Cooperative Security Corp. 3/1/62

Section 13	E $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$
Section 24	E $\frac{1}{2}$ W $\frac{1}{2}$, E $\frac{1}{2}$
Section 25	N $\frac{1}{2}$ NE $\frac{1}{4}$

Township 17 South, Range 6 East, S.L.M.
Utah

Revised 11/21/83

Section 17	SW $\frac{1}{4}$, W $\frac{1}{2}$ SE $\frac{1}{4}$
Section 18	Lots 3 and 4, SE $\frac{1}{4}$
Section 19	Lots 1, 2, 3, 4, E $\frac{1}{2}$
Section 20	W $\frac{1}{2}$, W $\frac{1}{2}$ E $\frac{1}{2}$
Section 29	NW $\frac{1}{4}$ NE $\frac{1}{4}$, N $\frac{1}{2}$ NW $\frac{1}{4}$
Section 30	Lots 1, 2, 3, N $\frac{1}{2}$ NE $\frac{1}{4}$, SW $\frac{1}{4}$ NE $\frac{1}{4}$, NW $\frac{1}{4}$ SE $\frac{1}{4}$

Township 17 South, Range 7 East, S.L.M.
Utah, containing 2485 acres
Lease No. U-040151
Issued to Cooperative Security Corp. 3/1/62

Section 15	SW $\frac{1}{4}$
Section 16	S $\frac{1}{2}$
Section 17	E $\frac{1}{2}$ SE $\frac{1}{4}$
Section 20	E $\frac{1}{2}$ E $\frac{1}{2}$
Section 21	All
Section 22	N $\frac{1}{2}$ NW $\frac{1}{4}$
Section 27	N $\frac{1}{2}$ NW $\frac{1}{4}$
Section 28	N $\frac{1}{2}$ N $\frac{1}{2}$
Section 29	NE $\frac{1}{4}$ NE $\frac{1}{4}$

Township 17 South, Range 7 East, S.L.M.
Utah, containing 1720 acres

Lease No. U-044025
Issued to Cooperative Security Corp. 8/1/60

Section 27	NW $\frac{1}{4}$ NE $\frac{1}{4}$
------------	-----------------------------------

Township 17 South, Range 7 East, S.L.M.
Utah, containing 40 acres

Lease No. U-06039
Issued to Ferdinand F. Hintze 5/1/53

Section 19	SE $\frac{1}{4}$
Section 20	S $\frac{1}{2}$
Section 29	N $\frac{1}{2}$, SW $\frac{1}{4}$, W $\frac{1}{2}$ SE $\frac{1}{4}$
Section 30	E $\frac{1}{2}$

Township 16 South, Range 7 East, S.L.M.
Utah, containing 1360

*deleted
from permit
JW*

Lease No. U-024317
Issued to Huntington Corporation 5/1/58

Not approved

Section 20 S $\frac{1}{2}$ NE $\frac{1}{4}$
Section 21 S $\frac{1}{2}$ N $\frac{1}{2}$, SW $\frac{1}{4}$

Township 16 South, Range 7 East, S.L.M.
Utah, containing 400 acres

not approved

Lease No. SL-051221
Issued to Rulon W. Jeppson 11/5/34

Section 28 W $\frac{1}{2}$ NW $\frac{1}{4}$

Township 16 South, Range 7 East, S.L.M.
Utah, containing 80 acres

Lease No. U-014275
Issued to John Helco 10/1/55

Section 28 E $\frac{1}{2}$ SW $\frac{1}{4}$

Township 16 South; Range 7 East, S.L.M.,
Utah, containing 80 acres

Lease No. U-024319
Issued to Huntington Corporation 5/1/60

Section 27 SW $\frac{1}{4}$
Section 28 SE $\frac{1}{4}$
Section 33 E $\frac{1}{2}$, E $\frac{1}{2}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$,
 S $\frac{1}{2}$ SW $\frac{1}{4}$
Section 34 NW $\frac{1}{4}$, NW $\frac{1}{4}$ SW $\frac{1}{4}$

Township 16 South, Range 7 East, S.L.M.,
Utah, containing 1040 acres

In addition, Federal Coal Lease U-47979 issued to
Utah Power & Light Company October 1, 1981.

Section 34 S $\frac{1}{2}$ NE $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$,
 S $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$

Township 16 South, Range 7 East, S.L.M.
Utah

Revised 11/21/83

Section 3 Lots 1-8, 10-12,
 SW $\frac{1}{4}$, SW $\frac{1}{4}$ SE $\frac{1}{4}$

Section 4 Lots 1, 8, 9,
 E $\frac{1}{2}$ SE $\frac{1}{4}$

Township 17 South, Range 7 East, S.L.M.,
Utah
Containing 1,063.38 acres, more or less.

Revised 11/21/83

Owners of Coal to be Mined
Other than the United States

<u>Description of Land</u>		<u>Owner</u>
SE $\frac{1}{4}$	Section 10	The Estate of Malcolm McKinnon
W $\frac{1}{2}$ W $\frac{1}{2}$, NE $\frac{1}{4}$ NW $\frac{1}{4}$	Section 11	c/o Frank Armstrong 1300 Walker Bank Bldg.
W $\frac{1}{2}$ NW $\frac{1}{4}$	Section 14	Salt Lake City, Utah 84111
All T17S, R7E, S.L.M.		
Surface rights and coal leased to Utah Power & Light Company		
SE $\frac{1}{4}$	Section 15	Cooperative Security Corp. 115 East South Temple
NE $\frac{1}{4}$	Section 22	Salt Lake City, Utah 84111
All T17S, R7E, S.L.M.		
Also:		
Beginning at the SE corner of NE $\frac{1}{4}$ SE $\frac{1}{4}$ Section 25, T17S, R6E, S.L.M, thence North 160 rods, West 116 rods to center line of Cottonwood Creek; thence Southerly along center line of said creek to a point 84 rods West of the beginning; thence East 84 rods to the beginning		
Surface rights and coal leased to Utah Power & Light Company		
SW $\frac{1}{4}$ (west of the Deer Creek Fault)	Section 14	Utah Power & Light Company P. O. Box 899 Salt Lake City, Utah 84110
All T17S, R7E, S.L.M.		
SE $\frac{1}{4}$	Section 21	} <i>not approved in permit</i>
SW $\frac{1}{4}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$	Section 22	
N $\frac{1}{2}$ NE $\frac{1}{4}$	Section 28	
All T16S, R7E, SLM		

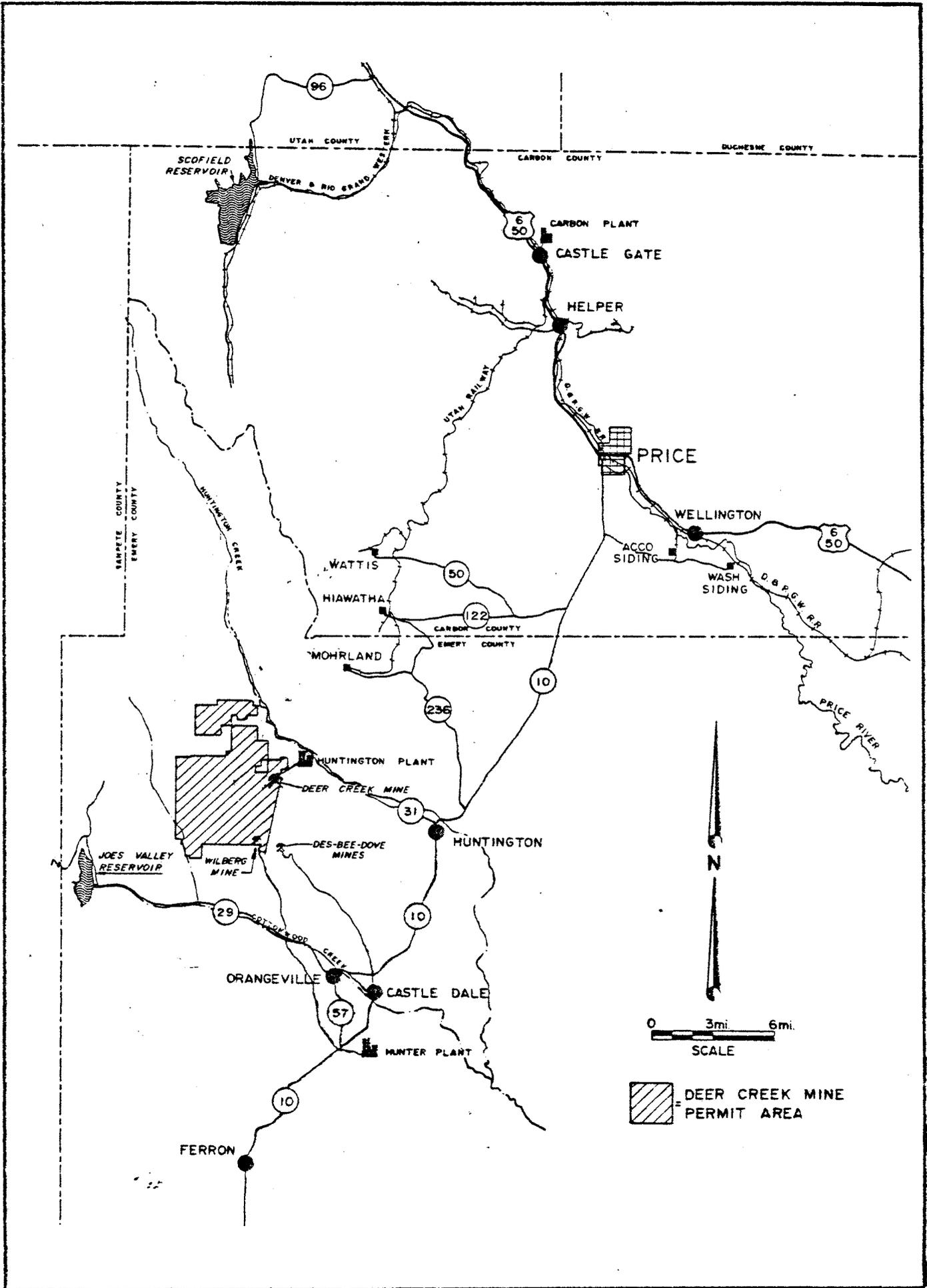
Revised 11/21/83

Additional Lands to Be Affected by Mining

State of Utah Special Use Lease Agreement No. 284
utilized for conveyor and power line right-of-ways located in
the southeast quarter of Section 2, T17S, R7E, SLM.

Revised 11/21/83

1-32



SCOFIELD RESERVOIR

UTAH COUNTY

CARBON COUNTY

DUCHESE COUNTY

DENVER & RIO GRAND WESTERN

CARBON PLANT

CASTLE GATE

HELPER

PRICE

WELLINGTON

WATTIS

HIAWATHA

ACCO SIDING

WASH SIDING

MOHRLAND

HUNTINGTON PLANT

DEER CREEK MINE

DES-BEE-DOVE MINES

HUNTINGTON

JOES VALLEY RESERVOIR

WILBERG MINE

ORANGEVILLE

CASTLE DALE

HUNTER PLANT

FERRON



SCALE



DEER CREEK MINE PERMIT AREA

(783.12(b))

ARCHEOLOGICAL SAMPLE SURVEY
AND
CULTURAL RESOURCE EVALUATIONS
OF THE
EAST MOUNTAIN LOCALITY
IN
EMERY COUNTY, UTAH

Mine Plan Applicant:
Utah Power and Light Company
of Salt Lake City, Utah

F. R. Hauck, Principal Investigator



Report Prepared by:
F. R. Hauck and D. G. Weder
ARCHEOLOGICAL-ENVIRONMENTAL
RESEARCH CORPORATION

PAPER NO. 22
September, 1980
Salt Lake City, Utah

ABSTRACT

In July and August, 1980, personnel of the Archeological-Environmental Research Corporation conducted a survey of 86 sample units totaling 2705 acres on East Mountain in Emery County, Utah. The purpose of the survey was to determine the cultural resource site density on the mountain and to assess the potential for the disruption of significant sites from future subsidence related to the underground mining being conducted within East Mountain.

Four prehistoric cultural resource sites and 11 isolated artifacts were recorded during the course of the survey. One site, 42Em1308, is considered to be significant and should be tested to determine its actual significance prior to nomination to the National Register of Historic Places. None of the four sites is considered susceptible to extensive destruction through subsidence because of their low profile, lack of architecture, and lack of rock art.

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Chapter I - INTRODUCTION

A. General Data on the Project

In July and August, 1980, the Archeological-Environmental Research Corporation (AERC) of Salt Lake City, Utah, conducted a sample survey cultural resource evaluation for Utah Power and Light Company (UPL) on East Mountain in Emery County, Utah (see Figure 1). Utah Power and Light Company, desirous of preparing a mine plan application for submission to federal and state authorities, requested that cultural resource evaluations be conducted within the potential subsidence zone which would comply with pertinent government legislation, i.e., Executive Order 11593 "Protection and Enhancement of Cultural Environment" (Federal Register, Vol. 36, No. 95, May 15, 1971), and "The Archeological and Historical Data Conservation Act of 1974," which is an amendment of "The Reservoir Salvage Act of 1960" (74 Stat. 220). For additional information on this Utah Power and Light Company development, please refer to the mine plan application.

AERC's field evaluations in this locality actually began in the summer of 1976 when, as a consultant to UPL AERC began evaluating proposed exploratory drill locations and access roads. AERC activities on East Mountain for UPL from 1976 through 1979, were documented in the following reports: UPL-76-6 (August 9 and 24, 1976), UPL-77-5 (May 26, 1977), UPL-77-9 (August 2, 1977), UPL-77-10 (August 26, 1977), UPL-77-12 (September 8, 1977), UPL-78-6 (July 6, 1978), UPL-78-10 (September 21, 1978), UPL-79-10 (June 27, 1979), UPL-79-14 (November 21, 1979) and UPL-79-14 (December 12, 1979).

5E

6E

7E



ARCHAEOLOGICAL ENVIRONMENTAL RESEARCH CORPORATION

Salt Lake City, Utah

9E

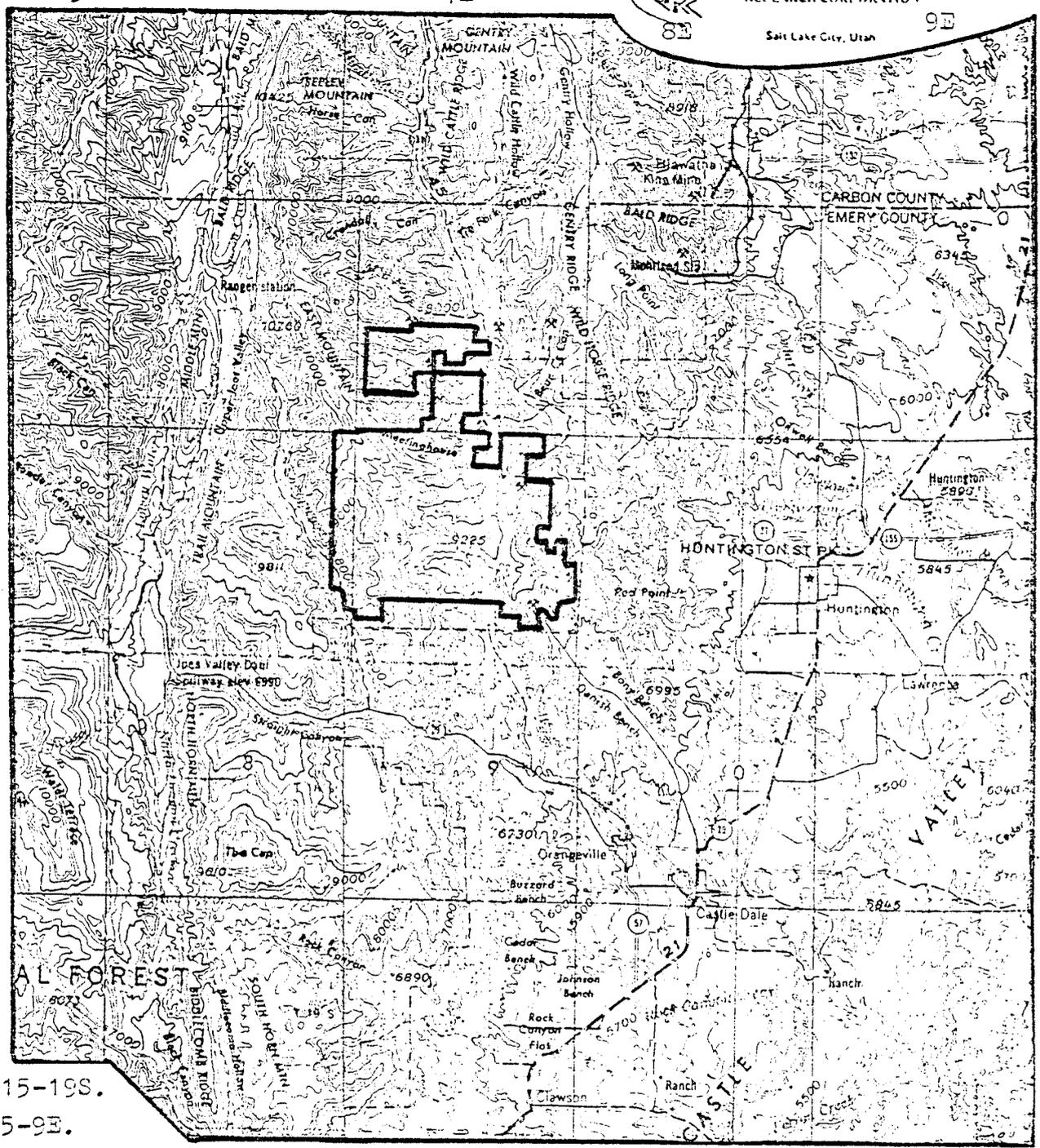
15S

16S

17S

18S

19S



T. 15-19S.

R. 5-9E.

Meridian: Salt Lake B. & N.

Quad:

Project: UPL-80-1
Series: Central Utah
Date: 9-26-80

Figure 1
General Project Area
on
East Mountain

Price, Utah
1:250,000 Scale



Legend:
Sample Survey Zone



1" = 4 miles

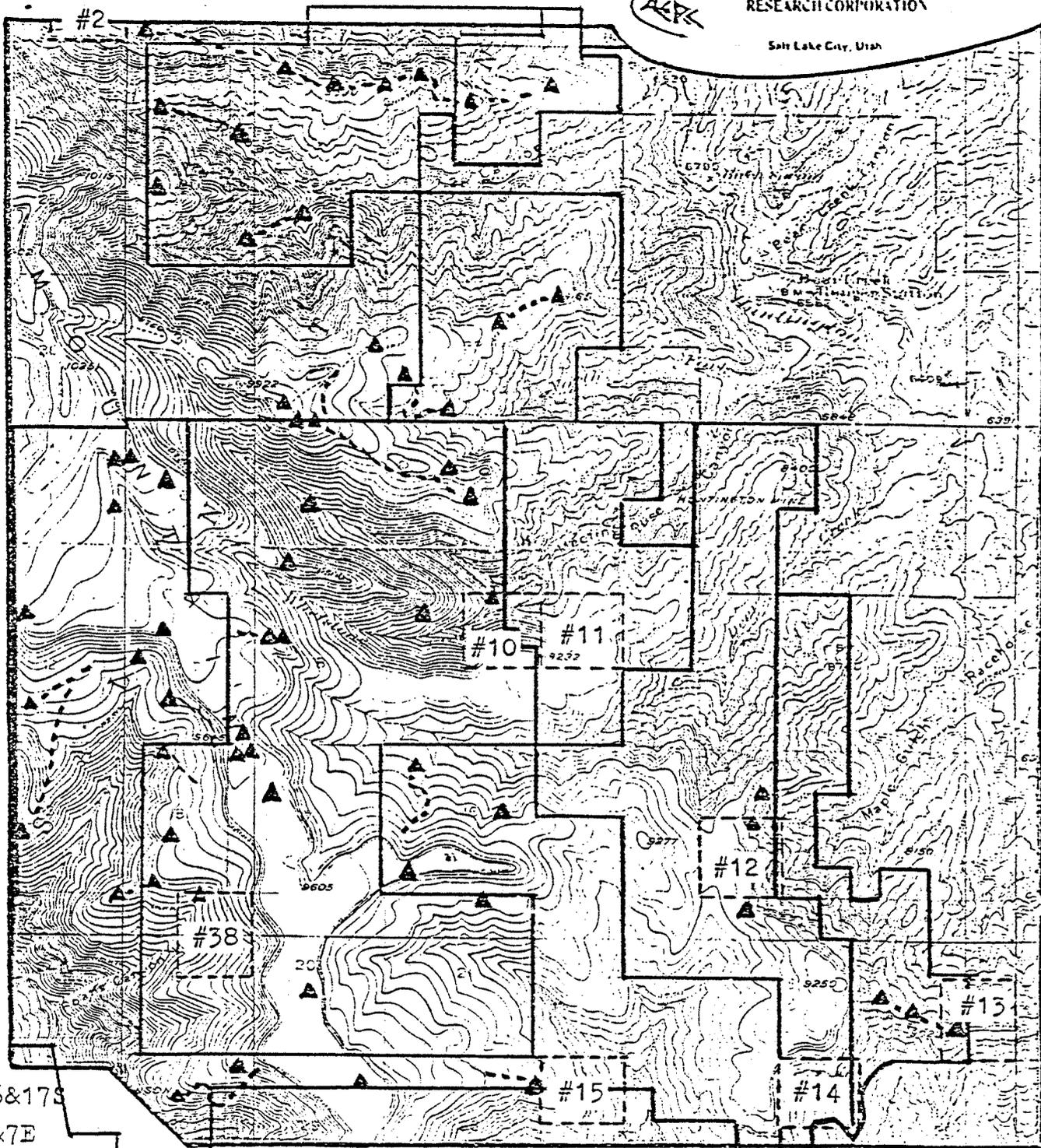
Scale

These evaluations were conducted under various U.S. Forest Service Region 4 blanket antiquities permits. During these surveys, some 62 proposed drilling locations were examined, at an average size of a quarter acre each, and about 13 miles of access route were evaluated for historic and prehistoric remains. No cultural resource sites were recorded although the observance of two isolated artifacts indicated the presence of limited prehistoric activity in the project area. The general location of these earlier surveys is demonstrated on Figure 2. The eight 160 acre sample units shown on Figure 2 are the locations intensively surveyed by AERC crews in 1976 during the Central Utah Coal Project (Hauck 1979a, Hauck et al. 1977). Three cultural resource sites were found and recorded during these earlier surveys.

The 1980 resource inventory (UPL-80-1) consisted of intensive examinations of 86 sample survey units generally composed of ten to 40 acre parcels. Some 43 of these sample units, totaling 1310 acres, were situated within National Forest lands administrated by the Manti-LaSal National Forest. The remaining 43 sample units were positioned upon privately owned surfaces within the permit area and comprised a total of 1395 acres which were evaluated by the AERC team. This total surveyed acreage, 2705 acres, comprises a 15% sampling of the approximately 18,000 acres situated in the potential subsidence zone of the mine plan permit application area. Future and past mining operations in the coal seams within East Mountain could result in surface subsidence. The purpose of this research, therefore, was to ascertain through non-random sample analysis, the probability for existence of historic and/or prehistoric cultural resource sites that would be highly susceptible to impact through subsidence. Figures 3 and 4 show the land ownership boundaries within the project area and demonstrate the position of the 86 sample units.

Some four prehistoric sites and 11 isolated artifacts were recorded during the course of the sample survey project.

All survey areas are situated within Township 16 South, Range 7 East and Township 17 South, Ranges 6 and 7 East. The



T. 16&17S

R. 6&7E

Meridian: Salt Lake B&M

Quad:

Hiawatha, Utah

15 Minute USGS

Project: UPL-80-1

Series: Central Utah

Date: 9-26-80

Figure 2

EARLIER SURVEY LOCALITIES

IN THE

PROJECT AREA

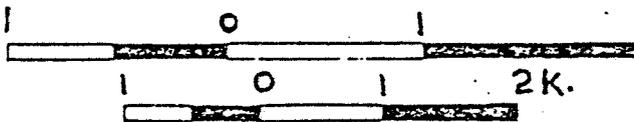
Legend:

Project & Mine
Boundaries

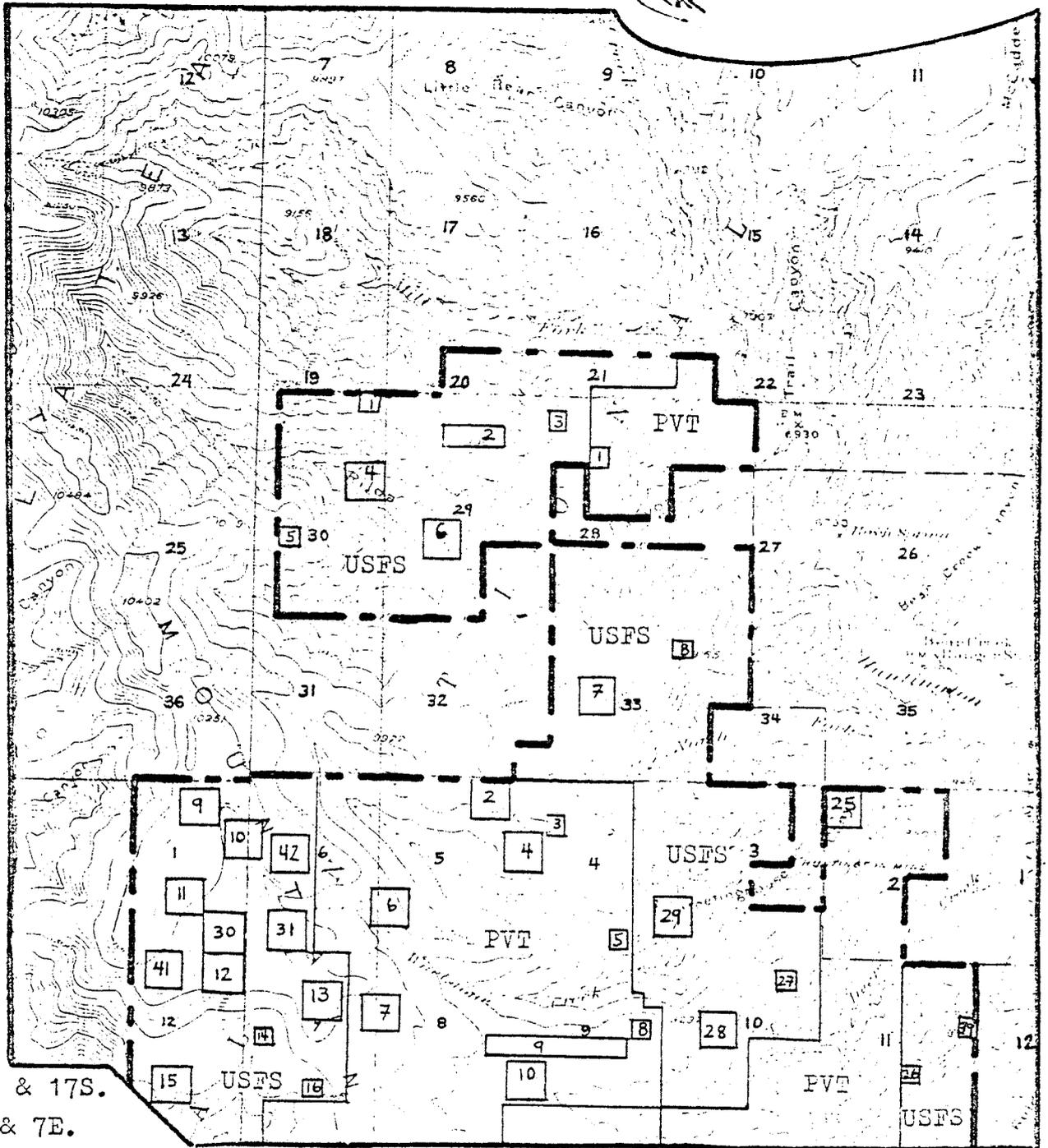
2M. Well Location

Access Road

Sample Unit



Scale



T. 16 & 17S.
R. 6 & 7E.

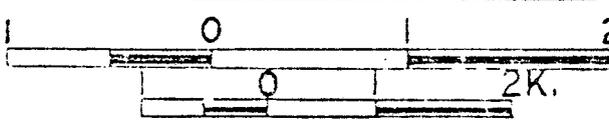
Meridian: Salt Lake B. & M.

Quad: Hiawatha, Utah
15 Minute USGS

Project: UPL-80-1
Series: Eastern Utah
Date: 9-26-80

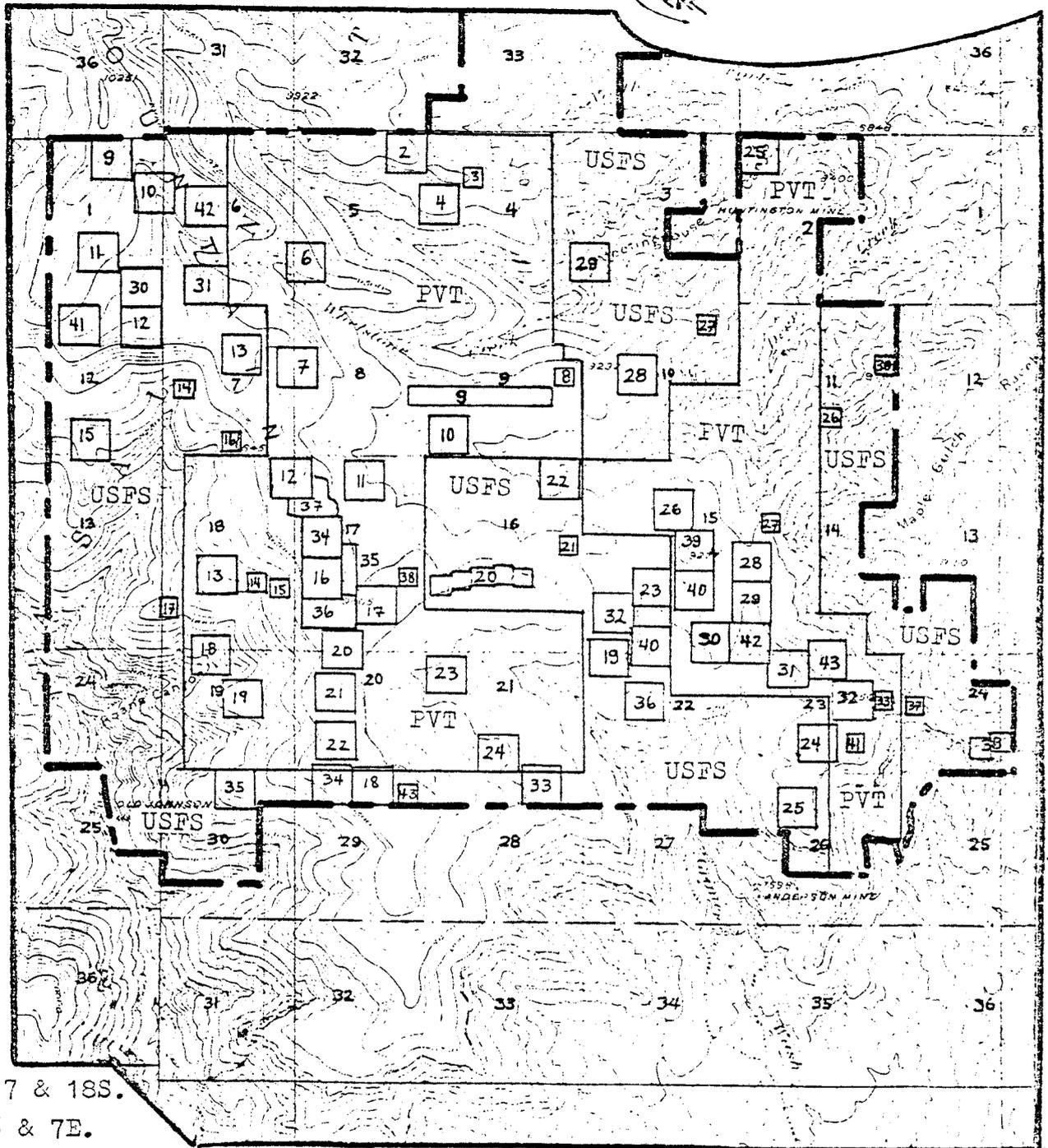
Figure 3
Land Ownership and
Sample Unit Locations
in the
Northern Segment
of the Project Area

Legend:
Project Boundary



Scale

2 M. Sample Survey Unit
40 acre
10 acre



T. 17 & 18S.
R. 6 & 7E.

Meridian: Salt Lake B. & M.

Quad:

Project: UPL-80-1
Series: Central Utah
Date: 9-26-80

Figure 4
Land Ownership and
Sample Unit Locations
in the
Southern Segment
of the Project Area

Hiawatha, Utah
15 Minute USGS

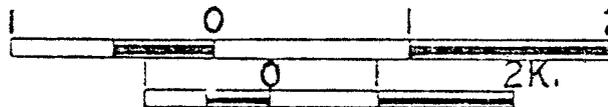


Legend:

Project Boundary

2 M. Sample Survey
Unit

40 acre
10 acre



Scale



project area is actually located on the southern and eastern top and slopes of East Mountain and flanked to the east and west by Huntington Canyon and Cottonwood Canyon. The survey area is on the Hiawatha, Utah USGS 15 minute topographic quad.

All field notes and site data are filed at AERC headquarters in Bountiful, Utah. Site reports are being submitted to the Utah State Historic Preservation Office as well as to all relevant government agencies.

Attachment 2: INFORMATION CONCERNING SAMPLE
UNIT SIZES AND LOCATION

In 1980, Utah Power and Light requested that AERC initiate a 15% sample survey of approximately 18,000 acre survey universe incorporated within their East Mountain Mine Plan Permit Area in Emery County, Utah. The Principal Investigator determined that about 1310 acres, totaling 15% of the National Forest lands and 1395 acres, totaling about 15% of the privately owned lands on East Mountain would result in a survey coverage of 2705 acres or 15% of the total 18,000 acres in the mine plan permit. The eight sample survey units of 160 acres each, evaluated on East Mountain in 1977, were not included in the sample design. This resulted in a reevaluation of 210 acres in 1980.

Previous archeological research on East Mountain had demonstrated the scarcity of cultural resources in this high altitude locality. Therefore, the determination was made to conduct a non-random sample survey and to bias all the sample units to those terrain features which could contain a good potential for prehistoric and historic activity. The areas chosen for this sampling approach included sparsely vegetated drainage and spring areas, saddles, open ridges, and south facing slopes. Because of the complexity of the terrain, a decision was made to create a variety of sample units based on ten acre units which could be combined to form 20, 30, 40, or 50 acre plots. The positioning of these units and their relative sizes were designed to meet the terrain characteristics within each area deemed to be suitable for testing. Thus, 40 acre units were positioned on broad ridge tops, 10 acre units on smaller terrain surfaces, and linear series of ten acre units established on the long, thin ridge lines to completely cover those flat areas where site remains could likely be found. This sampling design resulted in some 43 sample units on National Forest and 43 sample units on private land for a total of 86 sample units.

B. Environment and Locality

The project locality is situated on the top and sides of East Mountain in Emery County, Utah. East Mountain is a high ridge which extends in a NW-SE direction from the Wasatch Plateau and overlooks Castle Valley. The top of East Mountain varies in elevation between about 9200 and 9600 feet in elevation and drops off steeply into Huntington Canyon (ca. 6500 feet elevation) to the northeast and into Cottonwood Canyon (ca. 7800 feet elevation) to the southwest. The East Mountain locality is drained by several canyons, such as Meeting House Canyon, Whetstone Creek and Deer Creek, which flow generally east or northeast into Huntington Creek, and by numerous small creeks which flow southwestward into Cottonwood Creek. Huntington Creek and Cottonwood Creek flow generally eastwards and join with Ferron Creek to form the San Rafael River. Even though both Cottonwood Creek and Huntington Creek are perennial streams, the drainages which flow into them from the East Mountain project locality are all seasonally intermittent. Considerable surface water is available on East Mountain, however, in the form of numerous small springs and seeps.

The high elevations of the Wasatch Plateau have a strong effect on the local climate. The annual precipitation in the project locality varies from 16 inches along the southern rim of East Mountain to 30 inches at the northern end. Summer precipitation varies from six inches to ten inches, respectively, indicating that two-thirds of the annual precipitation falls in the form of snow. For a similar reason, the freeze-free growing period is also highly variable in the project locality. The annual freeze-free period along Cottonwood Creek at the south end of East Mountain is 120 to 140 days, but decreases rapidly with elevation to as few as 20 days at the north end of the project locality.

Because of the deep entrenchment of both Huntington and Cottonwood Creeks, the surface geology is highly variable. In small areas at the highest elevations on East Mountain are erosion remnants of the Flagstaff Limestone, a freshwater deposit of Paleocene and Eocene age. The majority of the plateau surface on East Mountain is an exposure of the North Horn Formation, a deposit of fluvial sandstone and mudstone of Cretaceous or Tertiary age. Along the sides of Cottonwood and Huntington Canyons below the North Horn Formation, a series of Cretaceous age formations are exposed. The first is the Price River Group, consisting of fluvial and marine deposits of interbedded sandstone and mudstone. Below that is the Castlegate Sandstone, a cliff-forming deposit of deltaic origin. Underneath the Castlegate is the Black Hawk Group, a series of fluvial and marine deposits consisting of sandstone, mudstone, shale, and coal. Below that is the Star Point Sandstone, which consists of marine, deltaic, and beach deposits of interbedded shale and sandstone. Along the lower slopes immediately above Cottonwood and Huntington Creeks, the Masuk member of the Mancos Shale is exposed.

The high elevation of the project locality places the top of East Mountain within the Montane ecozone although the bottoms of both Huntington and Cottonwood Canyons are characterized by vegetation of the Pinyon-Juniper ecozone. The characteristic arboreal vegetation of the Montane ecozone in the project locality is shown below (after Johnson 1970):

Montane Arboreal Species

Bristlecone pine	<u>Pinus aristata</u>
Blue spruce	<u>Picea pungens</u>
Subalpine fir	<u>Abies lasiocarpa</u>
White fir	<u>Abies concolor</u>
Common juniper	<u>Juniperus communis</u>
Aspen	<u>Populus tremuloides</u>

The top of East Mountain is characterized by scattered communities of the above trees intermixed with open meadows of various grasses and sagebrush Artemisia tridentata.

At lower elevations along the canyon sides, several other plant species are typically present: Utah juniper Juniperus osteosperma, Rocky Mountain juniper Juniperus scopulorum, Gambel's oak Quercus gambelii, serviceberry Amelanchier utahensis, Amelanchier alnifolia, mountain mahogany Cercocarpus ledifolius and Douglas fir Pseudotsuga menziesii (Johnson 1970). In the canyon bottoms, the elevations are low enough to allow pinyon pine Pinus edulis to exist.

The project locality is situated in the Northern High Plateau Subcenter of the Middle Rocky Mountain Faunal area and is characterized by a wide variety of species. The following data summarize the mammal species known to exist in the general project area according to Durrant (1952):

Local Mammalian Species

Order Insectivora

Shrews

Sorex spp.

Order Lagomorpha

White-tailed jack rabbit

Lepus townsendii

Snowshoe rabbit

Lepus americanus

Black-tailed jack rabbit

Lepus californicus

Cottontail rabbit

Sylvilagus nuttallii

Order Chiroptera (Bats)

Silvery-haired bat

Myotis spp.

Big brown bat

Lasionycteris spp.

Red bat

Eptesicus spp.

Long-eared bat

Lasiurus spp.

Big free-tailed bat

Corynorhinus spp.

Tadarida spp.

Order Rodentia

Squirrels
Chipmunks
Northern pocket gopher
Beaver
Western harvest mouse
Mouse
Meadow mouse
Wood rat
Porcupine
Marmot

Citellus spp.
Eutamias spp.
Thomomys talpoides
Castor canadensis
Reithrodontomys megalotis
Peromyscus spp.
Microtus spp.
Neotoma cinerea
Erethizon dorsatum
Marmota flaviventer

Order Carnivora

Coyote
Wolf (formerly in area)
Red fox
Gray fox
Grizzly bear
(formerly in area)
Black bear
Ring-tailed cat
Ermine
Long-tailed weasel
Marten
Badger
Striped skunk
Spotted skunk
Canada lynx
Bobcat
Mountain lion

Canis latrans
Canis lupus
Vulpes fulva
Urocyon cinereoargenteus

Ursus horribilis
Ursus americanus
Bassaricus astutus
Mustela erminea
Mustela frenata
Martes caurina
Taxidea taxus
Mephitis mephitis
Spilogale gracilis
Lynx canadensis
Lynx rufus
Felis concolor

Order Artiodactyla

Elk
Mule deer
Mountain sheep
(formerly in area)

Cervus canadensis
Odocoileus hemionus

Ovis canadensis

The montane ecozone also supports a wide variety of avian species, some of which are summer migrants. These species are listed below according to Hayward et al. (1976). Those species which migrate into the area from out of the state are indicated as summer residents. The other species are present during the entire year but generally migrate to somewhat lower elevations during the winter months.

Local Avian Species

Coniferous Niche

Red-breasted nuthatch	<u>Sitta canadensis</u> (summer)
Golden-crowned kinglet	<u>Regulus satrapa</u>
Ruby-crowned kinglet	<u>Regulus calendula</u>
Yellow-rumped warbler	<u>Dendroica coronata</u> (summer)
Western tanager	<u>Piranga ludoviciana</u> (summer)

Aspen Niche (Hole nesting)

Tree swallow	<u>Tachycineta bicolor</u>
Violet-green swallow	<u>Tachycineta thalassina</u> (summer)
House wren	<u>Troglodytes aedon</u> (summer)
Black-capped chickadee	<u>Parus atricapillus</u>
Yellow-bellied sapsucker	<u>Sphyrapicus varius</u>
Downy woodpecker	<u>Picoides pubescens</u>
Common flicker	<u>Colaptes auratus</u>
Chipping sparrow	<u>Spizella passerina</u> (summer)
Cassin's finch	<u>Carpodacus cassinii</u> (summer)
Black-headed grosbeak	<u>Pheucticus melanocephalus</u> (summer)
Western wood pewee	<u>Contopus sordidulus</u> (summer)
Mountain bluebird	<u>Sialia currucoides</u> (summer)
Hermit thrush	<u>Catharus guttatus</u>

Predators

Goshawk	<u>Accipiter gentilis</u>
Cooper's hawk	<u>Accipiter cooperii</u>
Red-tailed hawk	<u>Buteo jamaicensis</u>
Golden eagle	<u>Aquila chrysaetos</u>
Great horned owl	<u>Bubo virginianus</u>

C. Prehistory and History of the Region

The variety of human cultures which have inhabited the project region can be examined from several perspectives. The temporal continuum extending over a range of 12,000 years involves such diverse groups as the early prehistoric big game hunters, the archaic hunter-gatherers, the semi-horticultural Fremont, the Shoshonean bands, the early historic explorers and fur trappers, the Mormon colonists, the coal and cattle barons, the final influx of farmers, small town settlers, and merchants. Man's social and technological variations mirror the complexity of his changing ecological system.

The Prehistoric Period

The Prehistoric period within the project region can be subdivided into four main temporal phases: Paleo Indian, Archaic, Fremont, and Shoshonean.

PALEO INDIAN PHASE

The Paleo Indian phase began at approximately 12,000 B.P. (Before Present) and terminated by about 7000 B.P., and is generally divided into three subphases which are known as the Llano, Folsom, and Plano cultures (Jennings 1974:81).

The Llano culture was characterized by the hunting of mammoth during a time period between 12,000 B.P. and 10,000 B.P. Since the Llano culture has been defined primarily from the excavation of mammoth kill sites, very little is known about the overall subsistence activities of this culture.

Evidence of the Llano culture has been found over a widespread area in the Intermountain West and Southwest. The Clovis point, a large, lanceolate, fluted spear point is the only artifact which can be used confidently to infer the presence of the Llano hunters. Clovis points, in association with mammoth remains, have been found in New Mexico, Oklahoma, Colorado, Arizona, and Wyoming.

Based on these sites, which are characterized by mammoth-Clovis point association, the core area of the Llano culture is limited to eastern Colorado, most of New Mexico, and eastern Arizona. However, the Clovis point by itself has a much larger distribution. Clovis points, or very similar fluted points, have been found throughout the entire United States.

Within the project region of Utah, no characteristic Llano sites have been found, although several isolated Clovis points and one fluted point site have been reported. An isolated Clovis point was reported from Sevier County, Utah (Tripp 1966). Gunnerson (1956) performed a test excavation on a small rockshelter in Emery County (42Em8) from which a local collector had obtained a Clovis point. The test excavation did not, however, recover any additional Clovis points. An unusual fluted point very closely resembling the Cumberland fluted points commonly found east of the Mississippi River was found by an amateur collector in the San Rafael Swell and reported by Hauck (1979, see Figure 5-14c and d).

The Folsom culture (ca. 11,000 B.P. to 9000 B.P.) immediately followed the Llano culture, but several differences in subsistence and artifacts allow a clear distinction to be drawn. Although the primary evidence of the Folsom culture is also from kill sites, the fauna hunted and the projectile points used are different from the Llano culture. The Folsom point is a lanceolate, fluted, and usually eared projectile point generally smaller and thinner than the Clovis point. In addition, the Folsom point is associated at kill sites with the extinct Bison antiquus.

Folsom kill sites occur predominantly within the same region as the Llano core area but isolated Folsom points are not as widely distributed as Clovis points. Isolated Folsom points are almost entirely limited to the High Plains immediately east of the Rocky Mountains. A total of 11 Folsom points has been found in Utah but only one of these, found by an amateur

collector somewhere in the San Rafael Swell, is known from the project region (Tripp 1967).

The Plano subphase of the Paleo Indian phase extends from ca. 9000 B.P. to 7000 B.P. The Plano culture, like the Llano and Folsom cultures before it, was economically partially dependent on large game, bison, in particular. However, the Plano culture is characterized by a great diversity of projectile point types. Plano culture projectile points are typically lanceolate, precisely flaked, and non-fluted.

A new hunting technique also became widespread during the Plano subphase, the jump-kill. The jump-kill hunting technique entailed the driving of a herd of bison over the edge of a cliff or arroyo in order to injure or kill the bison.

Evidence of Plano culture inhabitation is predominantly limited to the High Plains east of the Rocky Mountains. The presence of Plano culture hunters in Utah is not widely acknowledged.

The presence of Paleo Indian cultures within Utah was minimal even during the Llano subphase, and tended to decrease with time. The slight Paleo Indian utilization of Utah can possibly be tied to the relative scarcity of the large game species in Utah compared to the Great Plains east of the Rocky Mountains. The widespread increase in aridity following the end of the Pleistocene was more acute west of the Rocky Mountains than on the eastern side, and as a result, the large herbivorous animals utilized by the Paleo Indian cultures were present on the Great Plains in considerably greater numbers.

ARCHAIC PHASE

Because of the relatively arid conditions of Utah and the Great Basin, large mammal hunting was not a viable subsistence technique in that area. The Great Basin and

adjacent Colorado Plateau of eastern Utah were occupied at an early date by Indian groups who were engaged in a subsistence pattern dependent on smaller game animals and the gathering of wild plant foods.

The utilization of caves and rockshelters by Archaic cultures in Utah has resulted in good temporal sequences for the entire Archaic phase. Radiocarbon dates from Danger Cave (Jennings 1957) verify human inhabitation of the Great Basin as early as 10,000 B.P., but the artifacts retrieved from the lowest levels of Danger Cave are not diagnostic of any recognized culture group.

In addition to Danger Cave, Hogup Cave (Aikens 1970) in the Great Basin, Sudden Shelter (Jennings, Schroedl, Holmer 1980) in the southern Wasatch Mountains, and Cowboy Cave (Jennings et al. 1980) in southeastern Utah, have all supplied important data pertinent to the development of a cultural sequence for the Archaic inhabitants of Utah. The Archaic has been divided into three phases based on changes in projectile point types.

The Early Archaic period begins at approximately 8500 B.P. and continues until about 6000 B.P. Subsistence during this period was based on generalized gathering and hunting techniques. A large variety of plant, animal, and insect resources was utilized. Hunting was primarily limited to deer and mountain sheep, although antelope and bison were also utilized. The trapping of rabbits and small rodents was also an important source of protein.

The prevalent utilization of caves and rockshelters as habitations in conjunction with the aridity of the area has resulted in conditions suited to the preservation of normally perishable materials. Due to the excellent preservation, it is known that the spear thrower (atlatl) was the implement used for hunting. The atlatl was used with a two- or three-component shaft and stone dart point throughout the Archaic phase. The

Early Archaic period was characterized by four types of dart points, the Pinto, Humboldt, Elko, and the Northern Side-notch (Holmer 1978). During this time period, the Elko point type had a limited areal extent confined primarily to the northeastern Great Basin and the northern Colorado Plateau. The Pinto and Humboldt points, generally found in close association in archeological contexts, had the same distribution as the Elko points, but are also found in sites in southern and central Idaho at this time period. The Northern Side-notch point had a very wide distribution during the Early Archaic period encompassing the northern Great Basin, Columbia Plateau, Northern Colorado Plateau, and Great Plains.

The Middle Archaic period began about 6000 B.P. and ended about 4500 B.P. Subsistence techniques and the utilization of caves were the same as during the Early Archaic but dart point styles changed and also diversified. Dart points such as the Rocker Side-notched, Sudden Side-notched, McKean Lanceolate, and San Rafael Side-notched were characteristic of this period (Holmer 1978). The Elko point continued to be used during this period in the same areas as it had been during the Early Archaic period. Although the Rocker Side-notched and Sudden Side-notched points were limited in their distribution to central Utah, the McKean Lanceolate and San Rafael Side-notched styles had wider distributions including the Great Plains at this time. Another point style made its appearance during the Middle Archaic, the Gypsum point (Holmer 1978). This point style was very common in the southern Great Basin and northern Colorado Plateau and continued to be utilized through the end of the Late Archaic period.

The Late Archaic period began about 4500 B.P. and ended at roughly 1700 B.P. Subsistence techniques were essentially unchanged from the earlier Archaic periods and the utilization of the Elko and Gypsum points styles was continued although the latter style is generally limited in its occurrence to the

southern half of Utah. At the end of the Late Archaic period, two new technological developments occurred which mark a significant change in prehistoric subsistence patterns: the introduction of corn and the bow and arrow.

Evidence of corn horticulture in the latter part of the Late Archaic period has been found at several locations: Cowboy Cave (Jennings et al. 1980), Cottonwood Cave in western Colorado (Hurst 1948), and Clyde's Cavern in central Utah (Winter 1973, Winter and Wylie 1974). At all three locations, corn caches were found which dated generally between 1600 B.P. and 2000 B.P. The very late portion of the Late Archaic period also witnessed the advent of the bow and arrow. At Cowboy Cave (Jennings et al. 1980), Rose Spring arrowheads were recovered from the uppermost level and were dated about 1700 B.P.

The entire Archaic phase is characterized by a gathering and hunting subsistence mode and a sequence of dart point styles which have been defined through the analysis of excavated cave and rock shelter sites. Transient habitation of these caves during the annual migratory round is the most widely accepted interpretation of the Archaic subsistence pattern.

The atlatl was the universal Archaic hunting implement until the very last centuries of the Late Archaic period. However, the advent of the bow and arrow around 1700 B.P. does not seem to have eliminated the utilization of the atlatl during the Late Archaic. Gypsum dart points continued to be manufactured even after the appearance of Rose Spring arrowheads at Cowboy Cave (Holmer in Jennings et al. 1980).

FREMONT PERIOD

The Fremont culture of Utah has traditionally been divided into five regional variants: Parowan, Sevier, Great Salt Lake, Uintah, and San Rafael. However, a recent

re-evaluation has resulted in a three-fold division. The Sevier culture now includes the Sevier, Great Salt Lake, and Parowan variants; the Uintah variant is replaced by an, as yet, unnamed northeastern Utah culture, and the San Rafael variant is designated as the Fremont culture. No cultural entity has been defined that can take into account the variation present between these three groups or areas. The differences are ascribed to separate origins (Madsen and Lindsay 1977).

All of these Utah cultures are characterized by the utilization of permanent dwelling, ceramics, and some degree of corn horticulture. According to Madsen, the Sevier culture (ca. 1300-650 B.P.) can be distinguished from the Fremont culture because of the former's primary dependence on wild foods collected from marshland environments west of the Wasatch Plateau. Madsen notes that Sevier villages are normally located near marshland or riverine biomes and consist of deep semi-subterranean dwellings which are frequently clay-lined. In addition, adobe surface storage structures are prevalent.

The Fremont culture is found east of the Wasatch Plateau and north of the Colorado River and dates from between 1500 to 700 B.P. The Fremont culture relied heavily on corn horticulture and is characterized by a settlement pattern which is also distinctly different from the Sevier culture (Madsen and Lindsay 1977). Fremont culture villages are relatively small and are located adjacent to permanent streams such as Ivie Creek, Muddy Creek, Ferron Creek, Cottonwood Creek, and Huntington Creek. Fremont culture architecture also differs from that of the Sevier; rock-lined, semi-subterranean dwellings and coursed masonry surface storage structures predominate. In addition, Anasazi tradewares are considerably more prevalent in the Fremont culture sites than in the Sevier culture sites.

The unnamed plains-derived culture of northern and northeastern Utah existed from about 1300 to 650 B.P. (Madsen and Lindsay 1977). This culture was dependent upon hunting of bison and the collecting of wild plants. The dwellings are normally shallow basin structures without any clear evidence of the type of superstructure utilized. Unlike the coiled pottery of the Sevier, Fremont, and Anasazi cultures, the unnamed culture produced pottery by the paddle and anvil techniques. It is important to note that there is a considerable spatial overlap of the unnamed culture and the Fremont culture traits in the northern portion of the latter's distribution. There is insufficient data at the present to determine whether the spatial trait overlap is due to alternate occupation, simultaneous occupation by the two cultures, or a combination of these two possibilities.

Hunting activities among the Sevier, Fremont, and unnamed cultures are evident from the many varieties of small arrowheads which have been recovered from excavations. Small, stemmed corner-notched (Rose Spring) arrowpoints are present in the earlier phases of all three cultures, but after about 1100 B.P., numerous regional variants developed. Side-notch arrowpoint styles (Bear River Side-notched and Uinta Side-notched) were common in the northern part of Utah while Parowan Basal-notched and Bull Creek arrowpoint styles were common in the southwestern and south-central portions of Utah respectively. The Bull Creek points are of particular interest because they are found in high frequencies at both Kayenta Anasazi sites in southern Utah and Fremont sites along the east side of the Wasatch Mountains (Coombs Village, Bull Creek sites, Snake Rock Village, Old Woman, and Poplar Knob) and probably indicate the reciprocal exchange of males for matrimonial purposes (Holmer and Weder 1980).

Dart points, the Elko series and Gypsum, in particular, are also found in association with Fremont sites. This association has been used by Schroedl (1976) to verify the indigenous development of the Fremont culture from Archaic antecedents. Dart points, during the Archaic, were used as both projectile points and knives (Weder in Jennings et al. 1980) but their function in the Fremont context has not yet been evaluated.

In reference to Utah, the Mesa Verde and Kayenta variants of the Anasazi culture are of particular importance. The San Juan Anasazi culture was centered around the Four Corners area where Colorado, New Mexico, Arizona, and Utah meet. The Kayenta Anasazi inhabited the extreme southern periphery of Utah from the San Juan River west to central Utah. As has already been noted, Kayenta influence is particularly evident in a narrow band of sites running from Coombs Village northwards past the Henry Mountains to the Snake Rock Village site adjacent to Interstate 70 on the east side of the Wasatch Plateau.

SHOSHONEAN PHASE

The Shoshonean populations, who were the sole inhabitants of Utah at the time of Euro-American contact, have been in the northeastern Great Basin region since approximately 650 B.P. Their origin has been the subject of considerable controversy, however. Several hypotheses have been expressed.

One hypothesis maintains that the Shoshoneans came from the southwest of the Great Basin at about the time of the dispersal of the Sevier, Fremont, and Anasazi agriculturalists (Madsen 1975b and Lamb 1958). Gunnerson's hypothesis (1962) states that the Fremont, Sevier, and Virgin cultures were Shoshonean peoples who had taken up

horticultural and ceramic techniques diffused from the Anasazi, but later reverted to an Archaic subsistence style after a climatic change which made agricultural subsistence techniques unproductive.

Regardless of which hypothesis is correct, Shoshonean groups (Ute, Paiute, Shoshone, and Bannock) were inhabiting the Great Basin into eastern Utah at ca. A.D. 1300, roughly coincident with the disappearance of the Fremont and Sevier cultures.

The Shoshonean subsistence pattern was quite similar to the Archaic adaptation. Small familial bands were engaged in a gathering and hunting subsistence utilizing a wide variety of non-domesticated plant, mammal, and insect species.

Very little archeological evidence is available for this time period. Two characteristic artifact types can generally be associated with the Shoshonean occupation of Utah. The bow and arrow was utilized for hunting and a type of arrowhead, the Desert Side-notch point, has been correlated with the Shoshonean occupation (Holmer and Weder 1980). The Shoshoneans also utilized ceramics to a small degree.

Shoshonean ceramics are easily distinguished from Sevier, Fremont, and Anasazi wares by the former's relative crudeness. Shoshonean ceramics are typically thick-walled, have large temper particles, are poorly smoothed, exhibit little decoration, and have been fired in an uncontrolled or oxidizing atmosphere.

The Protohistoric Period

The prehistoric Shoshonean occupation of the Intermountain West continued up to and through the period of Euro-American contact. The Indian groups inhabiting the area of eastern Utah within which the project locality is situated came to be called the Utes.

PRECONTACT

The Utes are a group belonging to the Shoshonean (Uto-Aztecan) linguistic family of which there are three branches: Ute-Chemehuevi, Shoshoni, and Mono-Paviotso. The Ute-Chemehuevi branch includes those groups which came to be known as the Utes, Southern Paiutes, and Chemehuevi. Although there is little archeological evidence, the Utes probably were characterized by a social organization and subsistence mode quite similar to all of the other aboriginal groups in the Great Basin and Colorado Plateau. The Utes were pedestrian gatherers and hunters who utilized a relatively large area of western Colorado and eastern Utah (Steward 1974).

The Utes were grouped into loosely organized bands consisting of extended families. Leadership was present only for subsistence task groups. The Utes could be reliably distinguished from the other contemporary aboriginal groups only in terms of linguistic differences.

Group territoriality was developed only in a statistical sense. A particular Ute band might consider a certain area as a home, but the seasonal round of each band was highly variable from year to year. The area with which any band was most familiar was not exclusively utilized by that band. Inter-marriage among the various Ute bands tended to maintain linguistic unity but blur the definition of a territorial homeland for any particular band. Except for those Utes who were utilizing the aquatic resources around Utah Lake, local populations were small and mobile (Steward 1974).

EARLY CONTACT

The presence of the Spanish colony at Santa Fe by 1598 resulted in the first contact between the Utes and Euro-American groups. The relationship which developed

between the Utes and the Spaniards was consistently friendly and resulted in the spread of the horse among the Ute bands. When the Utes obtained the horse, a change in their subsistence occurred. The equestrian Ute was able to travel more widely and more effectively and concentrate on bison hunting (O'Neill 1973).

The utility of the horse was strongly mitigated by environmental factors, however. The maintenance of an extensive horse herd required substantial supplies of grass which generally limited the advantage of the horse to those areas where grass was plentiful such as western Colorado, the Uintah Basin, and along the western slopes of the Wasatch Mountains. The supply of grass also determined the distribution of the bison. The horse was, therefore, not equally valuable to all of the Ute bands. The bands in Colorado were able to support their horses whereas those bands in Utah, eastern Utah, in particular, were unable to utilize the horse effectively and were more likely to eat a horse than to ride it.

Considerable trading activity with the Utes was occurring during the 17th and 18th Centuries. Of particular importance was slave trade (O'Neill 1973). The Utes were able to conduct slave raids on neighboring tribes (especially the Navajo) because of their equestrian status. They then exchanged their slaves for horses and other Spanish goods. Whether the slaves were exchanged with traders travelling into Ute territory, or were driven by the Utes to Spanish settlements, is unknown because of the lack of documented evidence. Until the 1770s, there was little official Spanish interest in the territory of the Utes. However, at that time, King Charles III of Spain decided that an exploration of the areas north of Santa Fe would be beneficial to Spanish control. His developing interest was a reaction to the growing influence and explorations by the British and French in the West.

Charles III felt that it was important to ensure control of trade by the Spaniards since he considered the British and French traders as a threat to Spanish rule (O'Neill 1973).

The first documented Spanish exploration of the area north of Santa Fe was the Dominguez-Escalante Expedition of 1776-1777. This expedition was also the first officially sponsored exploration, the purpose of which was to find a route between Santa Fe and the Spanish settlements in California. Although the expedition was unsuccessful in reaching its goal, it did extensively explore the territory occupied by the Utes who, in all recorded instances, welcomed the Spaniards.

A trail was eventually established between Santa Fe and California which came to be known as the Spanish Trail. The origins of the Spanish Trail are obscure; however, this trail was probably utilized in prehistoric times as evidenced by its association with archeological sites.

LATE CONTACT

Beginning in the early 1800s, the fur trade became active in Utah. The Arze-Garcia expedition traded for furs with the Utes at Utah Lake in 1813 and soon thereafter trappers began to actively exploit the area. Etienne Provost was a member of the Choteau-DeMun exploration of 1815 to 1817 and, subsequently, founded his own trapping company which operated primarily within Ute territory. He was subsequently killed by the Utes near the site of the city which now bears his name, Provo (O'Neill 1973).

During this time, more detailed information on the Shoshonean peoples of the area was recorded. In particular, specific Ute bands are mentioned with reference to their respective territories. Within the project region, the Weeminuche band conducted its yearly rounds (O'Neill 1973).

The Adams-Onis treaty of 1819, which gave Mexico its independence, resulted in an influx of Americans to Santa Fe. Most of the Americans came to engage in trapping. The newly arrived trappers caused a considerable increase in traffic along the Spanish Trail and an increase in competition for the available fur resources. This competition was not welcomed by the Utes, who were no longer consistently friendly with the Euro-Americans.

Although there were a large number of independent trappers operating in Utah, their activities have not been well documented. Antoine Robidoux was an important trapper, who by 1824, was operating primarily in the Uinta Mountains. William Ashley and Peter Skene Ogden were trapping in the northern Ute territory during the summer of 1824 and, about the same time, Jedediah Smith was exploring eastern Ute territories to evaluate their trapping potential (O'Neill 1973).

The growing traffic along the Spanish Trail had an important effect on the local Ute bands. Wakara, a Tumpanuwache leader, became quite powerful in the 1820s by conducting horse raids in southern California and returning to Utah by way of the Spanish Trail (Lyman and Denver 1970). He enhanced his power and wealth by exacting tribute from travelers along the trail and by the trading of stolen horses and Pahvant and Paiute slaves (O'Neill 1973). In addition, Wakara and his band actively engaged in fur trapping.

By the late 1830s, there was considerable competition for the fur resources of Utah and western Colorado. Robidoux established a permanent fort and trading center in 1837 near White Rocks in the Uinta Basin to capitalize on the beaver-laden streams of the Uinta Mountains.

The prosperity of the fur trade was not destined to last very long, however. The fierce competition over trapping areas led to widespread disruptive conflicts and, most importantly, the demand for furs used to make the beaver

skin hats which were fashionable in Europe and the eastern United States declined rapidly about 1840 as the fashions changed. Fort Robidoux was burned in 1844 by the Utes, who apparently blamed the trappers for the declining value of their furs (O'Neill 1973; Lyman and Denver 1970).

The decline of the fur trade had a serious impact on the Ute bands of Utah. The entire economic base of the Utes began to disintegrate after 1840. The trading activities with Santa Fe began to dwindle with the decline in the horse and slave trade. The termination of Mexican control of the area in 1846 and the subsequent loss of contact for slave trade into Mexico (Lyman and Denver 1970) was very disruptive to the relationships existing between Utah and Santa Fe.

During the declining years of the fur trade, the largest invasion of Ute territory occurred. Beginning in 1847, Mormon pioneers began to move into Utah and rapidly swelled their numbers through immigration. At first, there was little conflict with the Utes because the major Mormon settlement, Salt Lake City, was on the periphery of the Ute territory and the earliest Mormon expansion was to the north. In 1849, Fort Utah (later to become the town of Provo) was founded near Utah Lake on the traditional campsite of the Tumpanuwache band. Since the Tumpanuwache band, still under the leadership of Wakara, had been forced to revert to their earlier mode of subsistence due to the decline of the fur trade, their utilization of the resources around Utah Lake became of vital importance. The conflicting interests in the Utah Lake vicinity escalated into a series of raids and counterraid during the 1850s which became known as the Walker War. In the end, the Utes were forced to leave the valley and moved east across the Wasatch Mountains (O'Neill 1973).

The next few years were difficult for the Utes, who were being gradually forced to split up into small bands and resume a subsistence mode similar to the precontact period. Some of the bands, however, chose to raid Mormon settlements

and farms to obtain cattle so that they could avoid starvation. These raids became more prevalent during the 1860s. Raids were conducted on the Mormon settlers west of the Wasatch and the Utes returned to the unsettled areas east of the Wasatch with the stolen cattle (O'Neill 1973). Although several bands were responsible for these raids, one man, by the name of Black Hawk, became the focus of the blame for all the raiding.

The areas east of the Wasatch Mountains remained under Ute domination for several years. A Mormon attempt to colonize at Moab was undertaken in 1855, but the Mormon settlers were harassed by the Utes and forced to return to Salt Lake City. It was not until 1877, by which time the Utes had been removed to the Uintah Reservations, that Mormon colonists were able to safely settle east of the Wasatch Mountains (O'Neill 1973).

The Historic Period

The history of the east-central coal areas of Utah begins with the exploration and colonization efforts of the Spanish during the last quarter of the 18th Century. East-central Utah was first explored and mapped by the Dominguez-Escalante Expedition of the 1776-1777, in its efforts to establish a line of communication between the Spanish settlements of New Mexico and Monterey, California (Miller 1968).

Though the Dominguez-Escalante Expedition failed to achieve this end, subsequent attempts from the New Mexico settlements and the travelings of Spanish and American fur trappers, traders, and frontiersmen resulted in a connecting route known as the Old Spanish Trail (Miller 1968:Map 20). Along this route, which came up from Santa Fe through the San Juan country, across the Colorado River at Moab, over the Green River at the present site of Green River, across the San Rafael Desert into Castle Valley, then south through

Salina Canyon to southwestern Utah and southern California, passed thousands of horses and numerous trading, trapping, and Indian slave trade expeditions (Miller 1968).

By the 1830s, the trail was well established, portions of its route being followed in 1853 by explorer, John C. Fremont and government surveyor, John W. Gunnison, who reported several sets of well-worn tracks near Green River where Interstate 70 presently runs. Other sections of the trail still remain near the Big Hole Wash in Emery County. The primary route of the Old Spanish Trail, plus divergent trails to Utah Lake, Fort Robidoux, and Fort Kit Carson, brought the first extended contact into the project area (Miller 1968: Map 20).

Though forts and trading posts were scattered sparsely through southern and central Utah, the first attempts at organized settlement were undertaken by the Mormon Church. In 1855, the Elk Mountain Mission passed southward through Castle Valley to the area of Moab intending to establish a permanent settlement, but Indian hostility forced a quick retreat. The combination of hostile Indians, the desolate appearance of the region, the hardships involved in securing sufficient water for irrigation, and doubts about the quality of the soil caused further attempts at colonization of the eastern area of what was then Sanpete County to be dropped for over 20 years (McElprang et al. 1949:16).

At a priesthood meeting at Mt. Pleasant on September 22, 1877, encouragement was given to settle Castle Valley; soon after 75 men from Sanpete Stake were called with Christian G. Larsen as leader. Very few responded, however, because of the aforementioned reasons. Orange Seely was subsequently given the responsibility of superintending the founding of settlements and another call for colonizers was

issued by the Church in the fall of 1878. Some of the earliest settlers of the area who dwelt in dugouts in hills or washes until log houses could be erected were Elias and John Cox, Ben Jones, William Avery and Anthony Humbel. By the fall of 1878, the crops were sufficient and the situation stable enough for the families of these men to join them, a sure sign of an intent to remain (McElprang et al.1949).

Work progressed on the agricultural settlements of Castle Valley and roads were built through the Wasatch Mountains to the more stable areas of western Sanpete County. Additionally, in the fall of 1878, the "Star-Mail Route" was opened between Salina and Ouray, Colorado; it followed the paths of the Old Spanish Trail and the "Gunnison" Trail of years before (McElprang et al. 1949:19-21). In just three years the towns of Castle Dale, Wilsonville, Ferron, Green-river (Blake), Huntington, Lawrence, Molen, and Orangeville had been established and the Legislative Assembly in February, 1880, created Emery Coutny, which embraced all of present-day Carbon, Emery, and Grand Counties (Lever 1898:593).

Though the project region was settled for its agricultural and grazing possibilities, it was the area that inspired active settlement and set the mining-dominated industrial base that central and eastern Utah retains to the present.

The first recorded discovery of coal in eastern Utah was by the Gunnison Expedition of 1853 (Powell 1976:13) when they located deposits of coal approximately three miles east of present-day Emery. The isolated location of the Gunnison find, coupled with the hope that the deposits already discovered at Coalville and Wales would prove sufficient for the territory's needs, caused Gunnison's discovery to be forgotten. The subsequent failure of the efforts at Wales to produce good coking coal, and the Union Pacific Railroad's monopolization and price-fixing on the deposits at Coalville, caused a re-evaluation of the potential coal producing areas east of the Sanpete settlements (Powell 1976:13).

As a result, the first effort to exploit the newly found eastern coal deposits was undertaken in 1875 at Connellsville in the upper reaches of Huntington Canyon. The Fairview Coal Mining and Coke Company was organized by men from New York, Salt Lake City, and Fairview. Eleven coke ovens were constructed and the coke was hauled by wagon into Springville. The expense involved with the hauling and the questionable quality of the coke produced caused the failure and abandonment of Connellsville by 1878 after only three years of operation (Powell 1976:13).

The next development of coal resources was begun in the Pleasant Valley area, also in 1875. The Pleasant Valley Coal Company, headed by Milan O. Packard, constructed a wagon road from Springville up Spanish Fork Canyon to Pleasant Valley coal lands in 1876; 1877 saw the opening of the Number 1 Mine in Winter Quarters Canyon (Powell 1976:14). A narrow gauge rail line was completed from Springville through Spanish Fork Canyon in October of 1879 by the Pleasant Valley Railroad Company as the haul to Springville by the wagon road occupied four days in good weather while in winter the road was impassable. This Pleasant Valley area proved to be extremely productive. The first three large scale mines in eastern Utah were established in this area when the Mud Creek Mine was reopened in 1882 followed by the 1884 opening of the Union Pacific Mine at Scofield just east of Winter Quarters (Powell 1976:15).

From the earliest times, the railroads sought to control the supply of coal in the territory, e.g., the Coalville resources and Union Pacific Railroad's control over that source. During the early 1880s, the Denver and Rio Grande Railroad was extending its lines from Colorado through Utah. Though originally graded through Castle Valley and Salina Canyon, the route of the railroad was altered, going through Price and Spanish Fork Canyon and thus taking in the rich coal areas of what was to become Carbon County (McElprang et al. 1949:22).

Further expressing its interest in eastern Utah coal, the Denver and Rio Grande Western (Denver and Rio Grande's Utah

holdings) purchased the independently owned Pleasant Valley Railroad Company and Pleasant Valley Coal Company in 1882. Shortly thereafter, Union Pacific Railroad Company (UPRR) penetrated the Pleasant Valley area in order to protect its threatened monopoly on Utah coal (Powell 1976:16). The UPRR formed the Utah Central Coal Company in 1882 and opened the Union Pacific Mine near Scofield in 1884. With the Denver and Rio Grande's Pleasant Valley Coal development (1882), the establishment of Utah Fuel Company in 1887 and the creation of Utah Central Coal of Union Pacific, the railroad companies almost totally dominated the ownership and production of the Utah mines until the early 1900s (Reynolds et al. 1948:195).

In 1888, a mine was opened at Castle Gate on the Price River near the mouth of Price Canyon. In about 1899, a new mine began operations at Sunnyside just 24 miles east of present-day Price at the base of the Book Cliffs. The Sunnyside Number 2 Mine also began its production in 1899 with the coal obtained there, and also at Castle Gate, being utilized for coking purposes (Powell 1976:17-18).

In 1906, the first of the coal operations which would remain free from railroad control began production at Kenilworth, three miles east of Helper. This enterprise was financially backed by James Wade and F. A. Sweet and was called the Independent Coal and Coke Company because of its unique ownership status. Sweet, one of Utah's most prominent coal authorities, also opened a mine on the middle fork of Miller Creek in 1908 and named the camp Hiawatha (Reynolds et al. 1948:213). This locality at the foot of Gentry Mountain, about 18 miles southeast of Price, was the scene of further coal mining development in 1911 when Black Hawk mine was opened by Brown and Eccles. Just a few miles to the south in northern Emery County, a small wagon mine was purchased by the Castle Valley Fuel Company and the town, Mohrland, named from the initials of the company's four major figures--Mays, Orem, Heiner

and Rice--was begun. Mr. W. H. Wattis undertook the last development in this area in 1916 at Wattis, several miles north of Hiawatha on the flank of Castle Valley Mountain.

The decade from 1911-1920 saw an increase in activity in the coal regions of east-central Utah with many new mines being opened in hitherto undeveloped areas within the Utah coal producing regions. In 1911, Frank Cameron prospected the region around Panther Canyon on the Price River, and in 1914, the first coal was shipped out by the Utah Fuel Company which had leased the properties to Cameron for development. Cameron also developed and opened a small camp at the base of Castle Rock, about five miles northwest of Helper. Located directly on the main line of the Denver and Rio Grande Western Railroad, the camp's name was changed many times as was its ownership. Originally known as Bear Canyon, it soon was called Cameron, for its developer, then Rolapp, and finally, Royal (Reynolds et al. 1948:244).

In 1912, Jesse Knight, one of the most prominent men in Utah mining history, bought 1600 acres of coal land west of Helper to provide coal for his smelting operations in the Tintic District. His mine, at what eventually became known as Spring Canyon, began production in 1913 and was the first of many mines in the Spring Canyon District, one of the most prolific coal producing areas in eastern Utah. Soon after the establishment of Storrs (Spring Canyon), F. A. Sweet opened another mine in Spring Canyon at Standardville, so called because it was considered to be the standard for the development of future mining camps. The year 1914 saw the opening of the Latuda Mine and camp by Liberty Fuel Company while mines were opened in 1916 at Peerless and Rains. The last mining development undertaken in the Spring Canyon District was Mutual Coal Company's Mutual and Little Standard operations, begun in 1921 and 1925, respectively.

The final major coal producing area to be opened in east-central Utah was the Gordon Creek District. This region had first been prospected in 1908, but was really brought to prominence in 1920 by A. E. Gibson, the superintendent of the Spring Canyon Mine. Mines were developed in this area up until 1925 by Consumers Mutual Coal Company, National Coal Company, and Sweet Coal Company. The operations of all three companies ceased by 1950 (Carr 1972:81).

After the development of the Gordon Creek area, further work on the coal regions was undertaken in areas that had been opened previously. In 1922, Columbia Steel Company opened a mine at Columbia near the location of Sunnyside in order to further exploit the excellent coking coal obtainable from that region. One very late development of the same coal veins that supported the Columbia operation was initiated in Horse Canyon in 1942 by the United States government to aid steel production at its Geneva plant (Reynolds et al. 1948:252). Both mine and steel plant were taken over by U.S. Steel after WWII and continue in operation to the present.

Most of the mines in east-central Utah continued production through the heavy demand years of WWI and the years of prosperity that followed but a combination of overdevelopment, the increased use of other natural fuels, rising costs associated with expensive underground haulage, and the Depression of the late 1920s and early 1930s caused several camps to be abandoned. Among the first mines to succumb were the long exploited Pleasant Valley mines. Winter Quarters, near Scofield, was closed down in 1928 while Scofield and Clearcreek experienced reductions of operations during the early 1920s and 1930s, respectively. Rains was also forced to cut back on operations in 1930. Despite these setbacks, as of

1929, there were 22 coal mines operating in Carbon, Emery, and Grand Counties, the production of these mines providing 98% of the state's output (Sutton 1949:852).

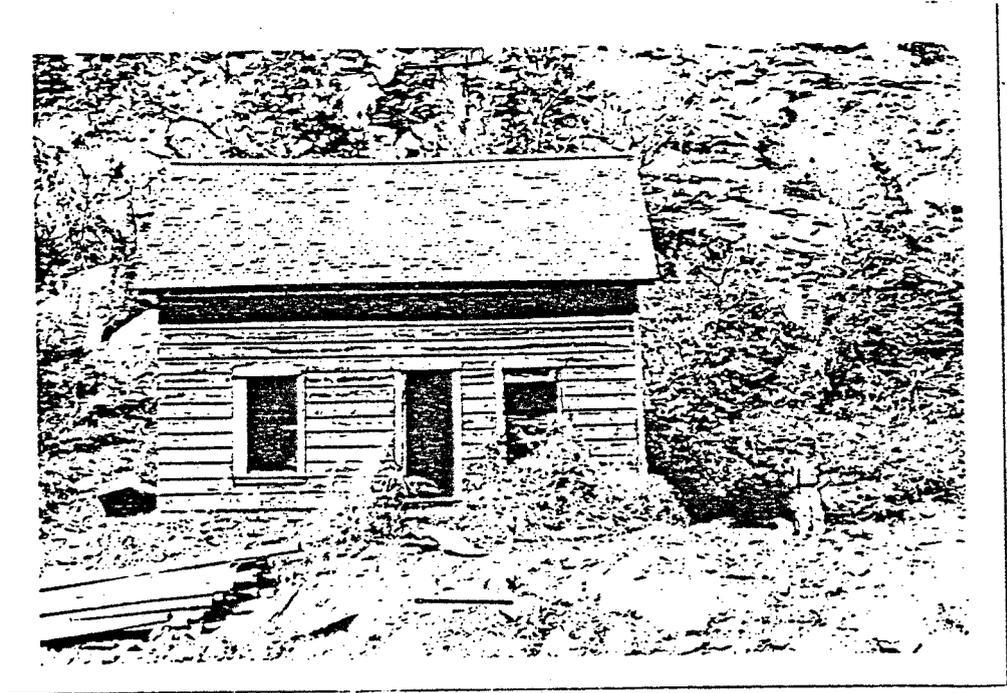
Economic and production difficulties continued to plague Utah's coal industry during the decade of the 1930s, forcing the closure of the Mutual and Mohrland mines in 1938. World War II brought a temporary respite to the general downward trend with many mines achieving their highest production levels during the war years and immediately thereafter.

The decade of the 1950s signalled the end for a great number of the eastern Utah coal mining operations as the adaptation of coal for new uses was insufficient to keep pace with this fuel's replacement in many of its traditional roles. The increasing use of natural gas for heating homes and heavy industry use and the railroad's switch to diesel power were among the developments which severely hurt the coal industry. This bleak picture has drastically changed with the advent of America's "energy shortage," and new technologies for coal use in the future have caused an upswing in coal production in east-central Utah. Mines which were closed, or kept running with skeleton crews, have begun to increase operations during the last decade and the possibility of a new sustained burst of coal mining activity definitely exists (Alexander 1963:244-247).

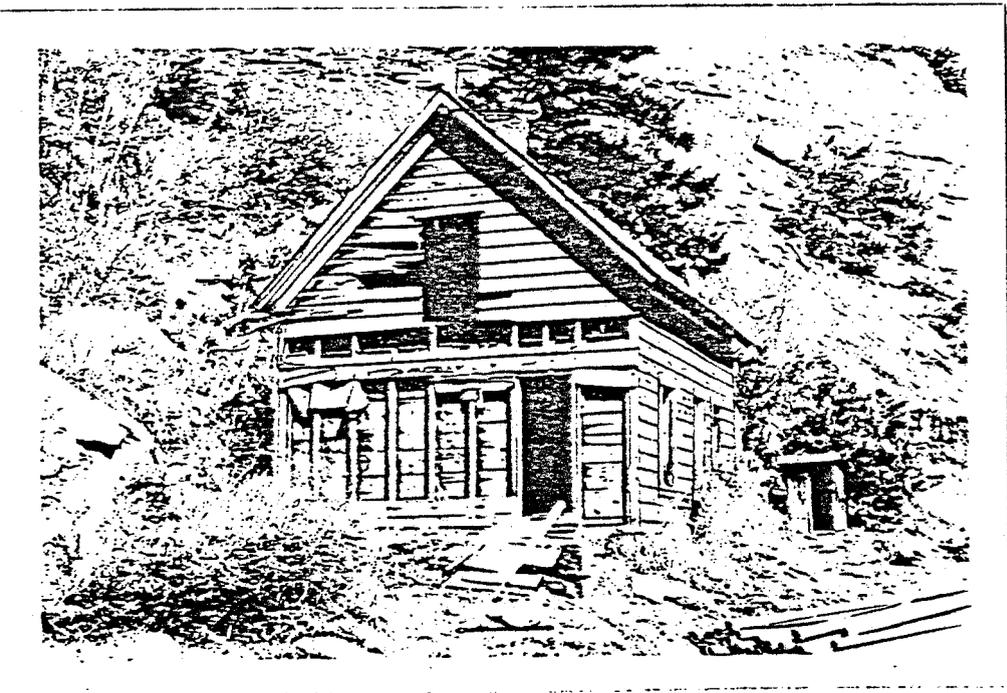
Attachment 3: INFORMATION CONCERNING HISTORIC
MINES IN THE GENERAL PROJECT AREA

Three historic coal mines are situated in the general project area. These sites include the Huntington, Anderson, and Old Johnson Mines. The Huntington Mine is located in Meetinghouse Canyon, Section 3, Township 17 South, Range 7 East. It does not fall within the project boundaries nor will it be adversely affected by the Utah Power & Light mining operations. The Anderson Mine site is also located outside the project boundaries in Grimes Wash Canyon. It is situated in Section 26, Township 17 South, Range 7 East, on the southwest facing wall of the canyon. The Anderson Mine will not be adversely affected by the Utah Power & Light operations.

The third historic site consists of the Old Johnson Mines which are located on private land in Cottonwood Canyon, Section 25, Township 17 South, Range 6 East. This historic site which was actively mining coal from 1909 until 1948, is situated on the east wall of Cottonwood Canyon opposite the presently active Trail Mountain Coal Mine. The Old Johnson Mines including the Twin City, Shumway, and Cottonwood Portals are situated on the periphery of the Utah Power & Light Project western boundary and could be adversely affected by the mining operations. Such impact would be of an indirect nature related to subsidence or to further expansion of the Cottonwood Canyon road. The Old Johnson Mines site has been recorded as an historic resource and provided with the Smithsonian registration number 42Em1633. An analysis of the site by F. R. Hauck of AERC has resulted in a determination that this mine is of historic significance and has the potential for nomination to the National Register. A copy of the site report with accompanying photographs is presented in Attachment 6.



WEIGH HOUSE



WEIGH HOUSE

Old Johnson Mines Site



WEIGH HOUSE & ROOT CELLAR



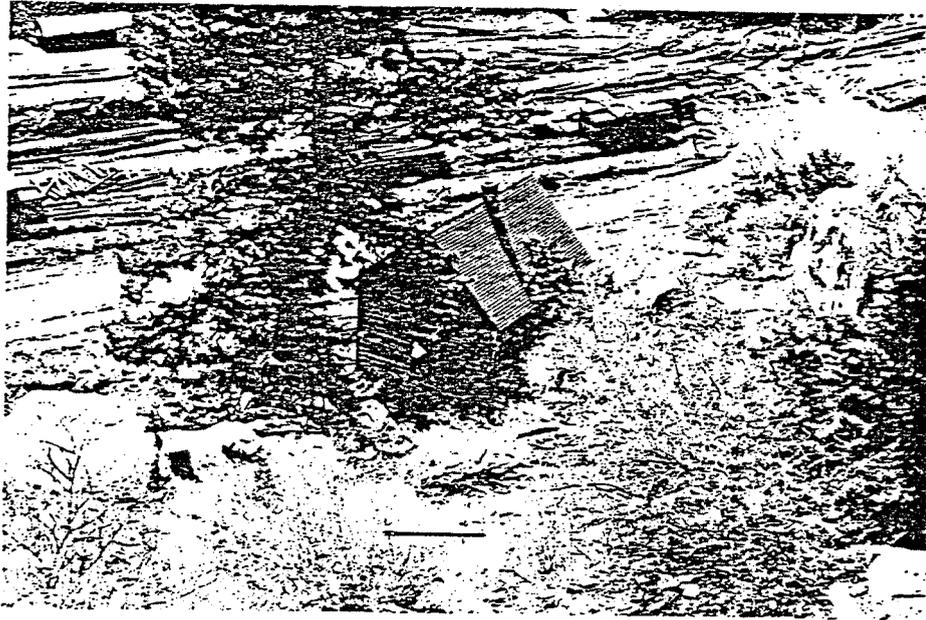
WEIGH HOUSE



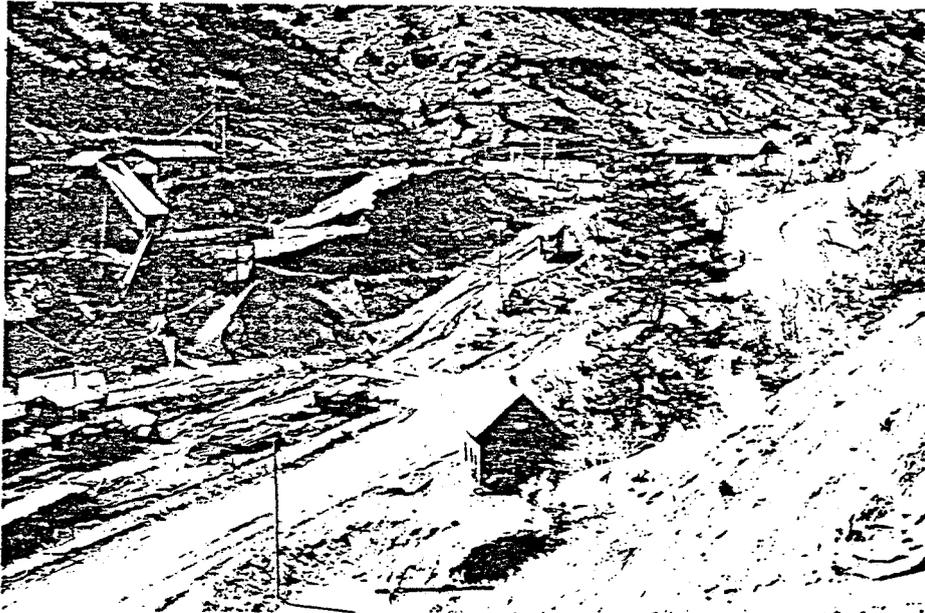
WEIGH
HOUSE
Front
Construction

42Em1633

Old Johnson Mines Site

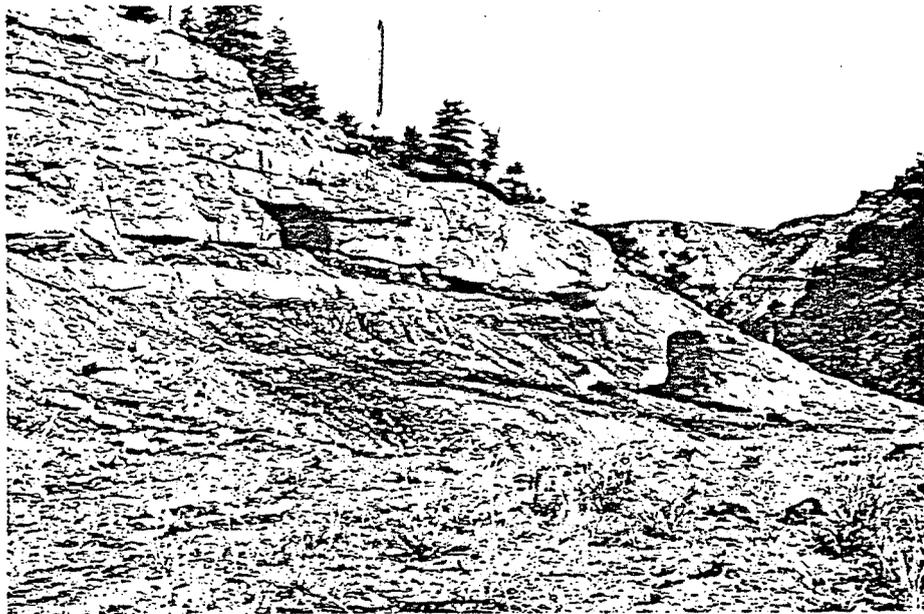


COTTONWOOD CANYON ROAD & WEIGH HOUSE
From the Portal Terrace

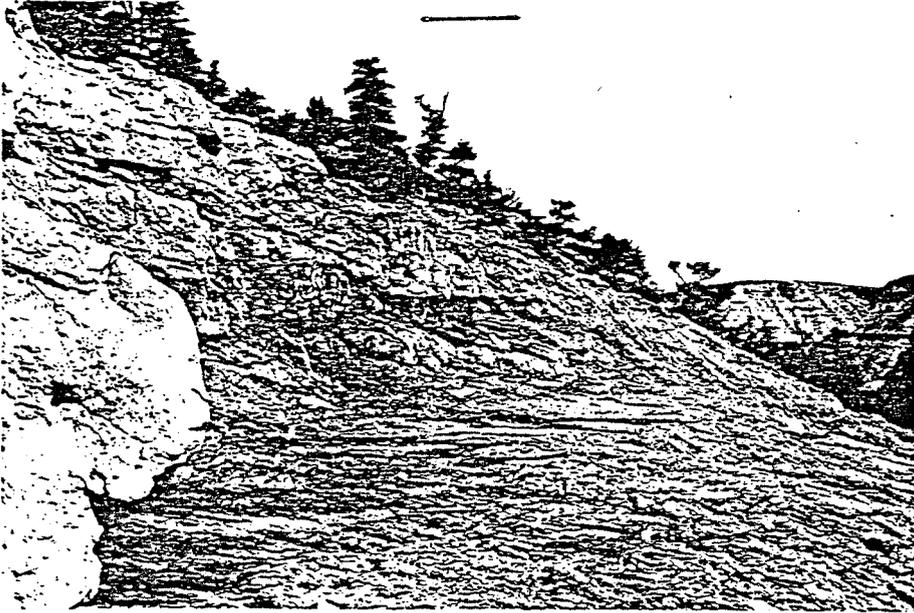




PORTAL TERRACE Looking North



PORTAL TERRACE Looking South



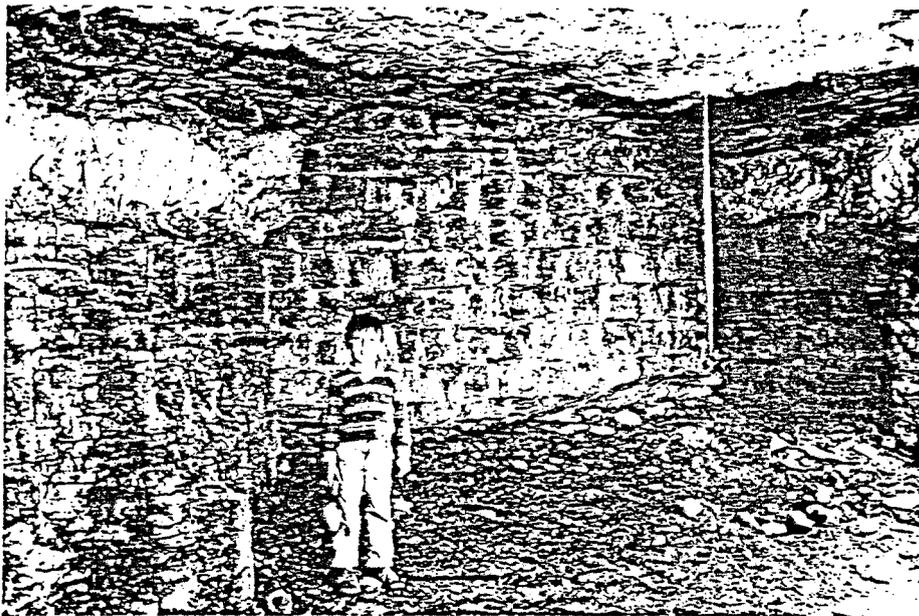
SOUTHERN END OF PORTAL TERRACE



EXPOSED COAL SEAM ON PORTAL TERRACE



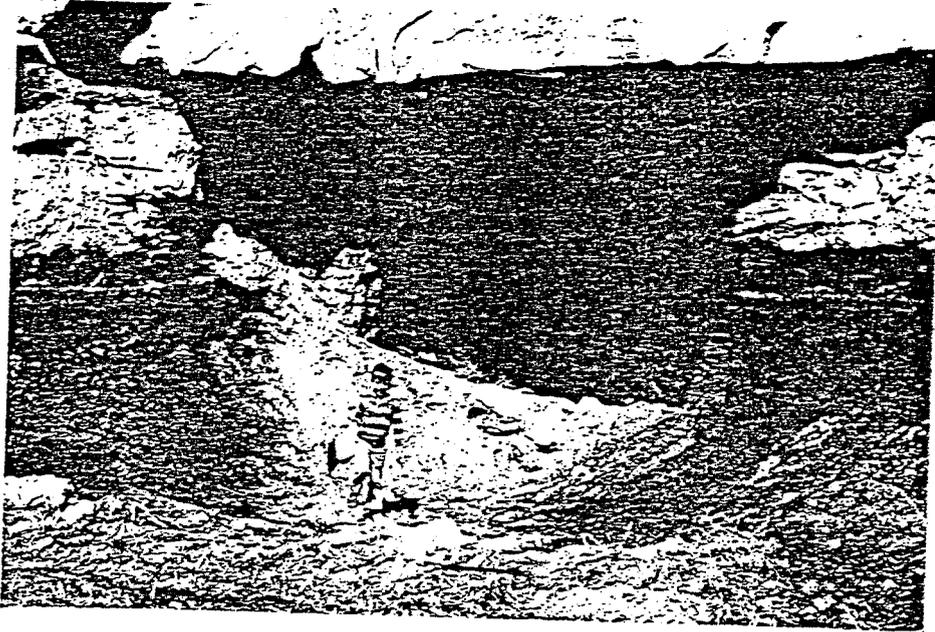
NORTH PORTAL ENTRANCE



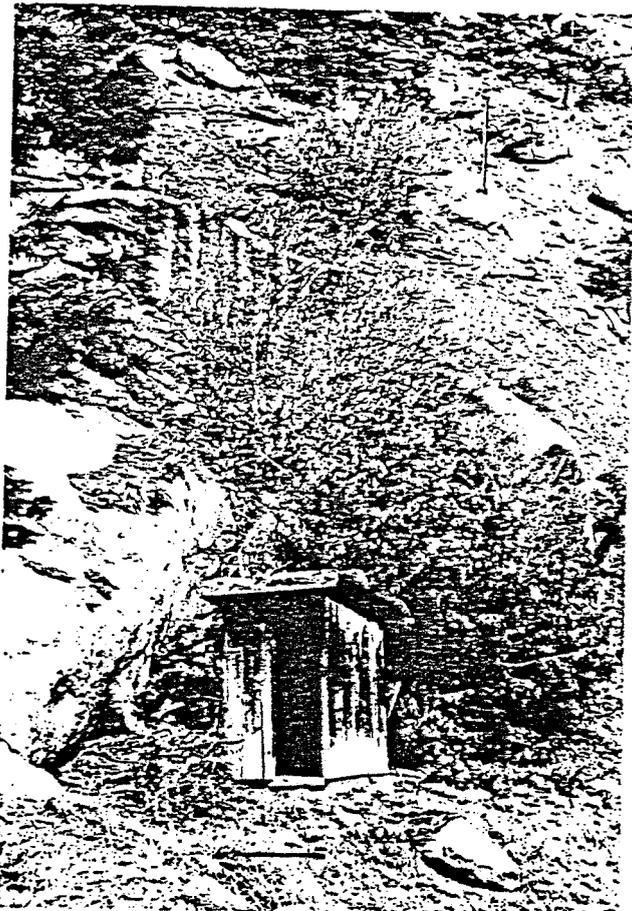
NORTH PORTAL IN DETAIL

42Em1633

Old Johnson Mines Site



SOUTH PORTAL ENTRANCE

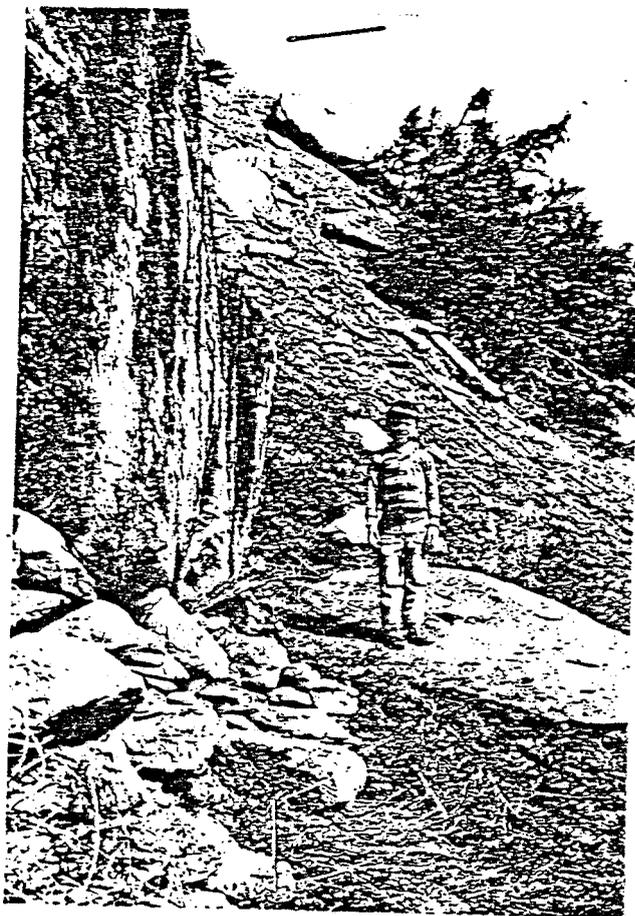


OUTHOUSE

Portal Terrace is
in the Background
at the top of the
Picture

42Em1633

Old Johnson Mines Site



WALL FRONTING BOULDER

Construction Creates
a Storage Area Under
the Rock

Slope Where Coal Shute
was Located is in the
Background



ROCK WALL DETAILED SHOWING CAVITY
UNDER THE BOULDER

D. Previous Investigations in the Region

Archeological research in the Castle Valley locality began with the Claflin Emerson Expedition. In 1929, Noel Morss and Henry Roberts conducted explorations and limited test excavations under the auspices of this expedition along the Fremont River and as far north as the Muddy River in Emery County. Morss' work resulted in the original definition of the Fremont cultural entity (Morss 1931, Gunnerson 1969). Morss' description of Fremont sites north of the Colorado River was an important contribution to the understanding of the prehistoric horticultural adaptation in the American Southwest.

With the exception of Reagan's description of the large petroglyph panel in Buckhorn Draw (Reagan 1935), there were no archeological investigations in the Castle Valley region for the next 15 years. Between 1952 and 1957, the University of Utah conducted a series of surveys in order to better define the nature of the Fremont occupation in Utah. A large number of Fremont sites was located along the east side of the Wasatch Plateau and several of the sites were subjected to limited test excavations, including 42Em5, the Emery Site (42Em47), and Snake Rock Village (42Sv5). Each of these three sites were Fremont habitations (Gunnerson 1957). In addition to these Fremont sites, Gunnerson also tested a shallow rock shelter on Silverhorn Wash (42Em8) as a result of a local collector's report that a fluted projectile point resembling the Clovis style had been found eroding from the shelter deposits. Little additional information was obtained by the excavation, however (Gunnerson 1956).

In the 1970s, there was a significant upsurge in archeological activity in the Castle Valley region. In 1970, three sites endangered by vandalism were excavated by the University of Utah. These sites, Windy Ridge Village (42Em73), Crescent Ridge (42Em74), and Power Pole Knoll (42Em75) all proved to be Fremont habitation sites (Madsen 1975a) dating between about 980 B.P. and 1260 B.P.

During the following year, the University of Utah conducted excavations at Clyde's Cavern (42Em177). Clyde's cavern was a locus of summer plant gathering activities during the Late Archaic period, but the majority of the cultural deposits were shown to be the result of summer maize cultivation and wild plant harvesting activities during the subsequent Fremont period (Wylie 1972, Winter and Wylie 1974).

The next site to be excavated in the study area was Joe's Valley Alcove (42Em693). During the summer of 1974, the United States Forest Service excavated this site which had cultural strata, dated by both radiocarbon and typological means, from the Early Archaic, Late Archaic and Fremont periods (E. DeBloois, personal communication). That same summer, a University of Utah field school excavated the Innocents Ridge site, which proved to be yet another Fremont habitation locus (Schroedl and Hogan 1975).

During the early fall of 1975, the Antiquities Section, Division of State History (Utah) conducted an excavation of a small rockshelter as a part of the cultural resource mitigation program for Consolidation Coal Company of Denver, Colorado. This site, known as Pint Size Shelter (42Em625), had two main cultural strata, one dated to the Late Archaic and the other dated to the early Fremont period. Both of these occupations were evidently the result of wild plant procurement activities (Lindsay and Lund 1976).

Other Fremont habitation sites, located farther to the south, have been excavated. These sites include Snake Rock Village (Aikens 1967), Old Woman and Poplar Knob (Taylor 1957), and the Old Road Site and Ivie Ridge Site (Wilson and Smith 1976). These five sites were all Fremont period habitations although Kayenta and Mesa Verde Anasazi ceramics were recovered at low frequencies indicating that there was contact with other cultural groups located farther south.

In addition to these Fremont sites, a deeply stratified rockshelter (Sudden Shelter, 42Sv6) was found to contain occupational strata spanning the entire Archaic period, ca. 8000 B.P. to 3000 B.P. (Jennings et al. 1980). The original site report indicated that Fremont diagnostics were present on the site when it was originally documented, but these artifacts were no longer present when the excavations were begun. The Sudden Shelter site is of particular importance to the local prehistory and the prehistory of the eastern Great Basin and northern Colorado Plateau because of its numerous well-defined occupational strata which has allowed a fine-grain correlation between certain diagnostic projectile point types and the temporal phases of the Archaic period.

A test excavation of two heavily vandalized rockshelter sites (42Em959 and 42Em960) in Cottonwood Canyon conducted by AERC in 1979 seem to mirror the results of the excavations at the nearby Joe's Valley Alcove. Radiocarbon analyses have not yet been completed, but projectile point correlations indicate that these two sites were occupied during the Early Archaic, Late Archaic, and, most heavily, during the Fremont period (Weder and Hauck, n.d.).

Since 1970, the level of survey intensity has increased drastically. The various cultural resource inventories conducted during the 1970s have generally been the result of natural resource development programs and are too numerous to summarize in the present context. Summaries of these inventories performed before 1978 can be found in Sargent (1977) and Hauck (1979a). The combined inventory results as of 1977 indicate that the majority of the culturally identifiable sites in the general area are Fremont although Archaic sites are also well represented. Protohistoric Numic sites are present but rare (Hauck 1979a:110).

A number of cultural resource inventories have been conducted in the general project locality. An inventory along Grimes Creek, about three and one-half miles east of Cottonwood Creek, reported four lithic scatters, a quarry, and a rockshelter (42Em763-768). Three of the lithic scatters had diagnostic artifacts indicative of both the Archaic and Fremont occupations. These sites are all between 6700 feet and 7000 feet in elevation and are located adjacent to, or near, Grimes Creek (Hauck 1977a).

In 1977, AERC field crews conducted intensive surveys of eight sample survey units all containing 160 acres and situated within, or adjacent to, the East Mountain mine plan permit area (see Hauck 1979a). These surveys involved the Forest Central Planning Area and included units 2, 10, 11, 12, 13, 14, 15 and 38 (see Figure 2). Three prehistoric cultural resource sites (05F/44, 45, and 46) were recorded during these surveys and were given permanent site numbers of 42Em853, 854 and 855. These sites were all sparse lithic scatters of low significance which were probably related to prehistoric hunting activities on East Mountain.

An intensive inventory of the Cottonwood Creek valley, conducted by AERC in 1979, revealed a similar situation. In addition to the earlier reported sites, 42Em959 and 960, five additional sites were recorded by AERC. Three of these sites are lithic scatters and one is a rock alignment, all of unknown cultural affiliation. The fifth site is a lithic and ceramic scatter with ceramics of the Fremont period (Smith and Hauck 1979b, Hauck 1979c).

AERC has conducted numerous drill hole and access road inventories on East Mountain within the mine plan permit application area, finding only three cultural resource sites (see Hauck 1976a, 1976b; 1977a, 1977b; Hauck, et al. 1977; Weder and Hauck 1977; Norman and Hauck 1977; Hauck 1978a, 1978b;

Smith and Hauck, 1979; and Hauck 1979a). These sites include 42Em853-855. A single isolated projectile point (see Figure 6H) and an isolated mano have been found on East Mountain during the earlier AERC surface surveys conducted for Utah Power and Light Company.

The National Register of Historic Places has been consulted and no registered sites are situated within the permit area on East Mountain.

E. Research Design

AERC's research design, which has been developed for the general central Utah region consists of the following:

1. The determination of presence or absence of a continual sequence of Paleo Indian, Archaic, Fremont, and Shoshonean utilization of the project area and the local manifestations of these cultural phases when present;
2. the determination of presence or absence of cultural materials which demonstrate the utilization patterns of the East Mountain locality;
3. the determination of which types of prehistoric cultural activity were conducted in the project area based upon patterns in artifact associations or predominance of particular types of sites;
4. the determination of presence or absence of early historic Euro-American habitation, trapping, trade, or travel within the project area; and,
5. the determination, on a regional level, of whether the sites in the project area contained any remains demonstrating local interaction between the Sevier and San Rafael variants of the Fremont culture.

Based upon the preceding research conducted in the general project area, which includes Huntington Canyon, Grimes Creek, and Cottonwood Canyon, AERC has hypothesized that the high density of cultural resources is confined to the sub-7500 foot elevations within the pinyon-juniper woodland ecozone and situated in the proximity of permanent water sources. Elevations above 8000 feet contain a low density of

limited activity cultural resources, primarily consisting of lithic scatters, small surface quarries, temporary campsites, and rockshelters. (The minimal definition of a limited activity site is an association of four or more flakes and/or lithic tools and/or ceramic sherds observed within the original context of deposition.)

Chapter II - METHODOLOGY

A. Field Research

During July and August, 1980, a cultural resource inventory of 86 sample units was conducted by AERC for Utah Power and Light Company in the East Mountain project area of Emery County, Utah.

Michael Sloan of AERC was in charge of the field crew with F. R. Hauck as Principal Investigator. Team members included Monika Williams, Bunny Melendez, Robert Stevenson, John Hayes and Mark Melendez.

The sample survey project area is between the 7250 and 10,200 foot elevations with the majority of sample units situated between 9000 and 10,000 foot contours. This is the area where future surface disturbance resulting from underground subsidence could occur. A 15% surface survey involving 2705 acres within a total of the 18,000 acre survey universe was conducted by performing intensive evaluations of a total of 86 units. These sample units were plotted within the subsidence zone to maximize coverage of those upland surfaces containing the greatest potential for historic and prehistoric sites (see Figures 3 and 4).

Locations of the sample units, their acreage, and cultural resource presence are shown on Table 1.

An analysis of the basic environments of the 86 sample units involving combinations of wooded or open, ridge top or slope, and presence or absence of drainage indicates that 58% of the sample unit acreage lay in open flats and sloping surfaces where grasses and low shrubs were the primary vegetation community. Some 21% of the sample unit acreage was situated in woodland-open area combinations involving both flat terrain on the mountain, narrow ridgelines, slopes, and drainages. Wooded slopes and wooded drainages contained

Table 1

<u>U.S. Forest Sample Unit</u>	<u>Acreage</u>	<u>Location</u>	<u>Cultural Resource</u>
1	10	T.16S., R.7E., Sec. 19	None
2	30	" " " 20	"
3	10	" " " 21	"
4	40	" " " 29	"
5	10	" " " 30	"
6	40	" " " 29	"
7	40	" " " 33	"
8	10	" " " 34	"
9	40	T.17S., R.6E., " 1	"
10	40	" " " 1	"
		and	
		" R.7E., " 6	"
11	40	" R.6E., " 1	"
12	40	" " " 12	"
13	40	T.17S., R.7E., " 7	"
14	10	" " " 7	"
15	40	T.17S., R.6E., " 12	
		and	443R/X8
		" 13	
16	10	T.17S., R.7E., " 7	None
17	10	" " " 18	
		and	"
		" 19	
18	40	" " " 20	
		and	443R/X4
		" 29	
19	40	" " " 22	None
20	50	" " " 16	"
21	10	" " " 16	"
22	40	" " " 16	"
23	40	" " " 15	"
24	40	" " " 23	"

Table 1 (cont'd.)

<u>U.S. Forest Sample Unit</u>	<u>Acreage</u>	<u>Location</u>	<u>Cultural Resource</u>
25	40	T.17S., R.7E., Sec. 26	None
26	10	" " " 11	"
27	10	" " " 10	"
28	40	" " " 10	"
29	40	" " " 3 and " 4	"
30	40	T.17S., R.6E., " 1	"
31	40	T.17S., R.7E., " 6	"
32	40	" " " 15 and " 22	443R/X9
33	40	" " " 21 and " 28	None
34	40	" " " 20 and " 29	"
35	40	" " " 30	"
36	40	" " " 22	443R/X10
37	10	" " " 24	None
38	20	" " " 24	"
39	10	" " " 11	"
40	40	" " " 22	"
41	40	T.17S., R.6E., " 1 and " 12	"
42	40	T.17S., R.7E., " 6	"
43	10	" " " 29	"

1310 acre total

Table 1 (cont'd.)

<u>Private Sample Unit</u>	<u>Acreage</u>	<u>Location</u>	<u>Cultural Resource</u>
1	10	T.16S., R.7E., Sec. 21	None
2	40	T.17S., R.7E., " 5	"
3	10	" " " 4	"
4	40	" " " 4 and " 5	"
5	10	" " " 4	"
6	40	" " " 5	"
7	40	" " " 8	"
8	10	" " " 9	"
9	70	" " " 8 and " 9	443R/3 (42Em1309)
10	40	" " " 9	"
11	40	" " " 17	"
12	40	" " " 17	"
13	40	" " " 18	"
14	10	" " " 18	"
15	10	" " " 17	"
16	40	" " " 17	443R/2 (42Em1308)
17	40	" " " 17 and " 20	None
18	40	" " " 19	"
19	40	" " " 19	443R/X1
20	40	" " " 20	None
21	40	" " " 20	443R/1 (42Em1307)
22	40	" " " 20	None
23	40	" " " 21	"
24	40	" " " 21	"
25	40	" " " 2	"

Table 1 (cont'd.)

<u>Private Sample Unit</u>	<u>Acreage</u>	<u>Location</u>	<u>Cultural Resource</u>
26	40	T.17S., R.7E., Sec. 15	None
27	10	" " " 14	"
28	40	" " " 14 and " 15	443R/4 (42Em1310)
29	40	" " " 14 and 15, 22, and 23	None
30	40	" " Sec. 22	443R/X3
31	40	" " " 23	None
32	40	" " " 23	"
33	10	" " " 23	"
34	40	" " " 17	443R/2 (42Em1308)
35	10	" " " 17	443R/2 (42Em1308)
36	40	" " " 17 and " 20	None
37	15	" " " 17	"
38	10	" " " 17	"
39	40	" " " 15	"
40	40	" " " 15	443R/X2
41	10	" " " 23	443R/X5 and X6
42	40	" " " 22 and " 23	
43	40	" " " 23	

1395 acre total

15% of the sample unit acreage with the final 6% being situated on wooded mountain flats, wooded ridgelines, and wooded slope-wooded flat combinations.

All inventoried sample survey units were examined by survey personnel walking parallel transects with individual spacing ranging from 10 to 20 meters (30 to 60 feet) apart. Shorter intervals and zigzag transects were utilized for intensive examination of specific areas judged to be of high site potential.

A total of four prehistoric resource sites was recorded following the survey. These sites include 42Em1307, 42Em1308, 42Em1309 and 42Em1310. Some 13 isolated artifacts were collected during the field evaluation. These isolates have been marked utilizing the project number (AERC 443R) and the isolate number (X1-11). The location of sites and isolates are all demonstrated on Figure 6. No historic sites were observed or recorded during the project.

Sites 42Em853, 854 and 855 are also shown on Figure 6. These three sites were recorded in the project area by AERC during the Central Utah Coal Survey project of 1977 (see Hauck 1979a). Isolate 43A/X1 was collected by AERC in 1977 while conducting an evaluation of a proposed drilling location for Utah Power and Light Company.

All cultural resource sites were recorded on Bureau of Land Management site forms, photographed, sketched, and their locations were marked on a Hiawatha, Utah 15 minute U.S.G.S. topographic map. Site reports for the four newly recorded sites will be forwarded to all relevant government agencies as an appendix to this report.

B. Laboratory Research

The analyses to be performed in the AERC laboratory for this project concerns the evaluation of projectile points and miscellaneous lithics.

Projectile point analyses include identification of manufacturing techniques, e.g., heat treatment, blank and preform preparation, edge grinding, edge reworking, and use wear analyses. Arrow and atlatl points were catalogued according to type.

The evaluation of miscellaneous lithics involves obsidian trace element analysis and the identification of various tool styles and manufacturing techniques.

C. Artifact Inventory and Analysis

Chronological evaluations of prehistoric sites were accomplished through artifact correlation with established types and varieties. The various projectile point types collected from the field were generally identifiable with similar Great Basin, Eastern Great Basin, Colorado Plateau, and Western Plains types.

Table 2 contains a list of sites and a description of artifacts collected from East Mountain by AERC personnel.

Table 2

<u>AERC No.</u>	<u>Permanent Site No.</u>	<u>Artifact</u>
03/44	42Em853	Not collected
03/45	42Em854	Not collected
03/46	42Em855	Not collected
443R/1	42Em1307	Not collected
443R/2	42Em1308	Seven projectile point fragments, three small scrapers
443R/3	42Em1309	Not collected
443R/4	42Em1310	Two projectile point fragments
43A/X1	Isolate	
443R/X1	"	Projectile point fragment
443R/X2	"	Secondary flake
443R/X3	"	Unfinished projectile point base fragment
443R/X4	"	Two secondary flakes and one biface blade base fragment
443R/X5	"	Projectile point fragment
443R/X6	"	" " "
443R/X7	"	" " "

Table 2 (cont'd.)

<u>AERC No.</u>	<u>Permanent Site No.</u>	<u>Artifact</u>
443R/X8	Isolate	Biface blade fragment
443R/X9	"	Projectile point fragment
443R/X10	"	Projectile point fragment
443R/X11	"	Biface blade fragment

Some 25 artifacts have been collected during various surveys AERC has conducted on East Mountain. All these artifacts were collected from surfaces within the mine plan permit area. All artifacts are of prehistoric origin. The diagnostic artifacts collected from the project area are shown on Figure 5.

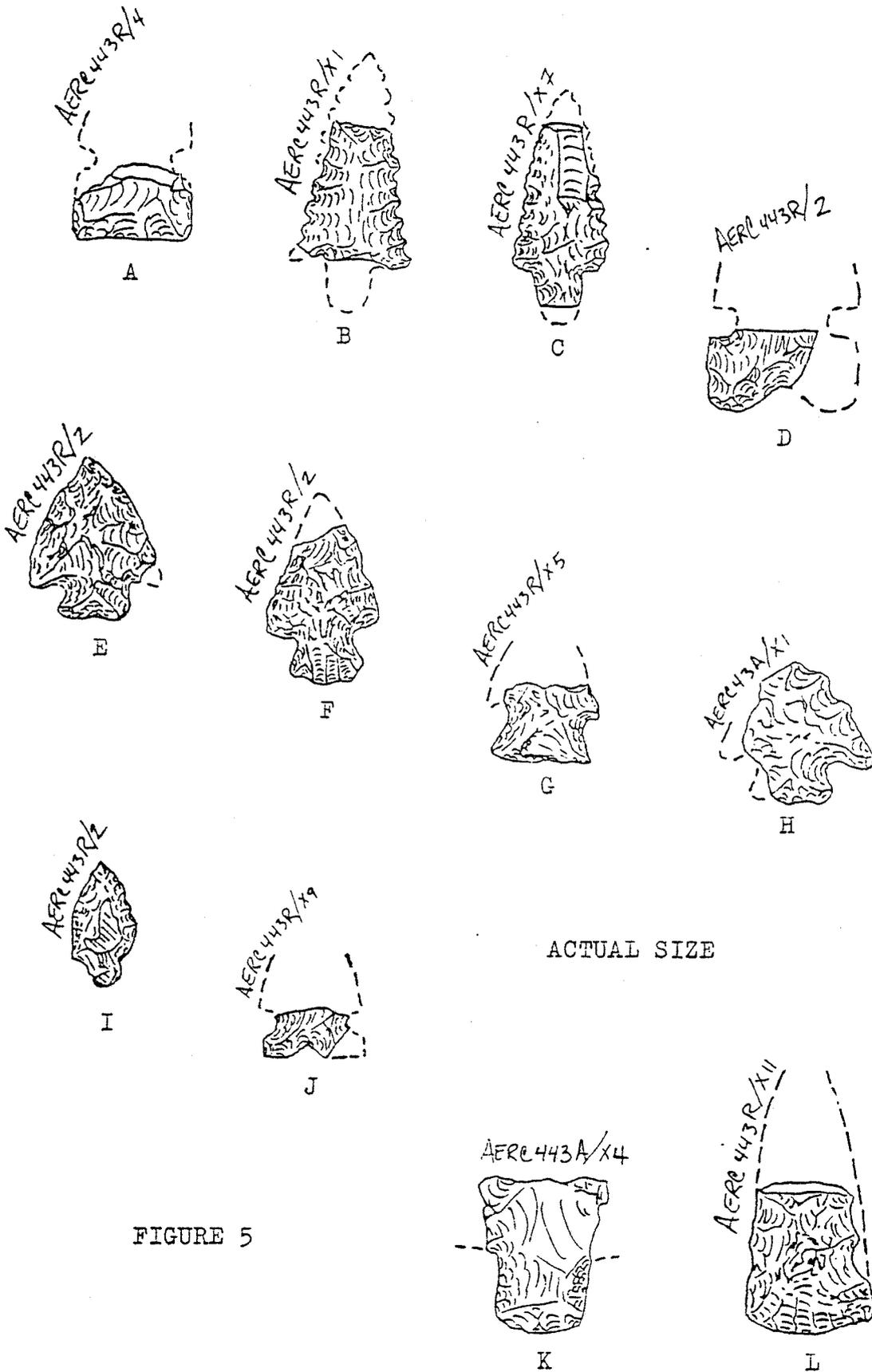


FIGURE 5

Chapter III - CULTURAL RESOURCE DESCRIPTIONS

A. Site Analyses

A total of four previously unrecorded cultural resource sites was located during the sample survey, three of which are located on upland slopes surrounding the upper drainages of Deer Creek. A summary of the pertinent site characteristics of all the known sites situated in the permit area is given on Table 3. All seven sites are lithic scatters with hunting and hide preparation activities suggested by the types of artifacts observed. Diagnostic projectile points show a definite predominating Archaic period presence on the mountain, with a minor post-Archaic, possibly Fremont and later Shoshonean, intrusion.

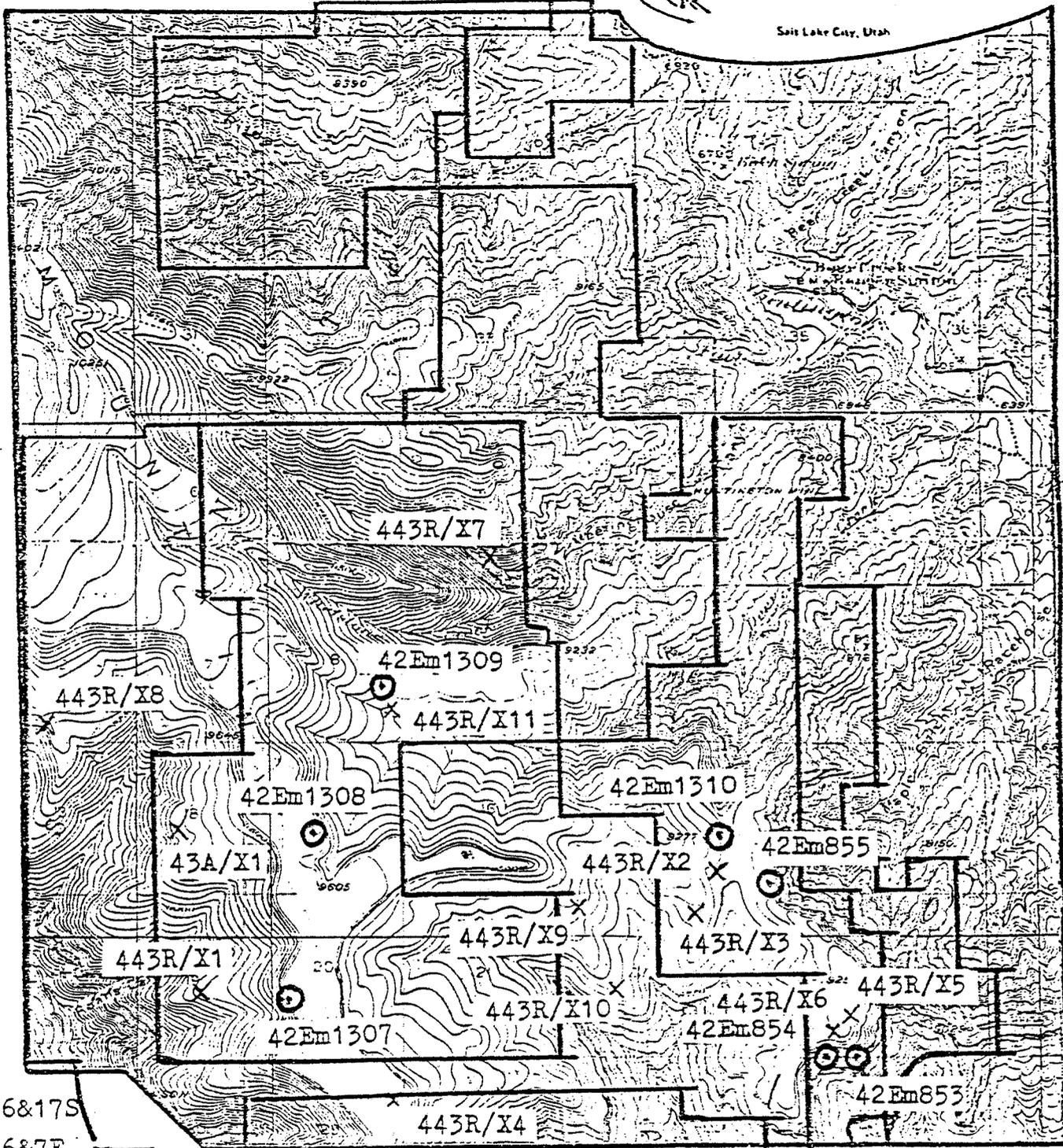
Based on the definitions of cultural resource significance (see Chapter IV), one of the seven cultural resource sites listed in Table 3 is considered eligible for nomination to the National Register of Historic Places (NRHP). Site 443R/2 (42Em1308) is a potential candidate for nomination to the Register because of its size, the presence of diagnostics, its environmental location, and its moderate depth (5 to 20 cm.) potential. This site has been given a CRRS:S-2 rating. Sites 443R/3 and 4 (42Em1309 and 1310) have been given CRRS:S-3 ratings and do have minimal scientific value based upon marginal depth (0 to 10 cm.) potential. The other four sites including AERC 443R/1 (42Em1307), AERC O3F/44 (42Em853), AERC O3F/45 (42Em854), and AERC O3F/46 (42Em855) have been given CRRS:S-4 status, i.e., having marginal scientific value. Should additional research on any of these sites provide information showing that any site has greater cultural value than presently assigned, the site rating will be adjusted accordingly.

Table 3

Cultural Resource Site Summary

<u>AERC</u> <u>Site No.</u>	<u>Permanent</u> <u>Site No.</u>	<u>Site Type</u>	<u>Culture</u>	<u>Land</u> <u>Ownership</u>
03F/44	42Em853	Lithic Scatter	Unknown	Private
03F/45	42Em854	Hunting Station- Lithic Scatter	Unknown	Private
03F/46	42Em855	Hunting Station- Lithic Scatter	Unknown	Private
443R/1	42Em1307	Lithic Scatter	Unknown	Private
443R/2	42Em1308	Lithic Scatter- Possible Temporary Campsite	Archaic and Post-Archaic	Private
443R/3	42Em1309	Lithic Scatter- Possible Temporary Campsite	Unknown	Private
443R/4	42Em1310	Hunting Station- Lithic Scatter	Archaic	Private

Site and isolated artifact locations are shown on Figure 6. This map gives the relationship of all seven sites and 12 isolate artifact locations within the subsidence zone and the mine plan permit area. Additional information on the sites is contained in the site reports which are being provided to all relevant government agencies as an appendix to this report.



T. 16&17S
R. 6&7E

Meridian: Salt Lake B&M

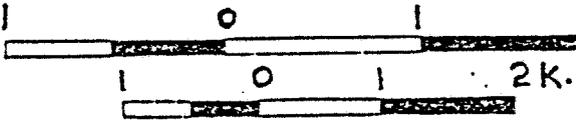
Quod: Hiawatha, Utah

Project: UPL-80-1
Series: Central Utah
Date: 9-16-80

Figure 6
CULTURAL RESOURCES
IN THE
PROJECT AREA

15 Minute USGS

- Legend:
- Project & Mine Boundaries
 - 2M. Archeological Site
 - Isolated Artifact



B. Comparative Resource Analysis

All of the seven sites situated in the potential subsidence zone of the mine plan permit area are prehistoric. All of the sites are lithic scatters although two sites (42Em1308 and 42Em1309) may have been temporary campsites as suggested by their locations and by the grinding tool fragments observed on the sites (see Table 3). Three other sites, including 42Em854, 855 and 1310, were possibly hunting loci as indicated by the artifacts and their environmental locations. The two remaining sites, (42Em853 and 1307), are lithic scatters and presently permit no further use identification.

As Figure 6 demonstrates, the majority of cultural resources which have been located in the project area are primarily clustered along the eastern ridge with a secondary clustering of materials along the southern end of the mountain ridge. The density of cultural material declines along the ridge to the northwest. Isolated artifact and site locations, therefore, suggest that prehistoric activity was highest along those ridges and drainages which are associated with Deer Creek which may have been the primary prehistoric access route leading up to the mountain. The southeastern resource clustering also indicates the possibility of access routes extending up the cliffs in that locality, perhaps originating in Maple Gulch or in Grimes Wash.

The artifacts collected from the project area show a temporal range of ca. 6900 B.P. to possibly as late as 450 B.P. A possible Northern Side-notch fragment (see Figure 5A), recovered from site 443R/4 (42Em1310) which dates from 6900 B.P. to 6300 B.P., signals an Early Archaic presence. The Gypsum points shown in Figure 5B and C came from two isolated locations. These two points could range from Middle to Late Archaic since the Gypsum Series was utilized in central Utah from ca. 5000 to

after 1000 B.P. (Holmer 1978:70). The Sudden Side-notch point fragment shown in Figure 5D demonstrates a Middle Archaic period presence on East Mountain. This type of atlatl point was in use from 4600 to 3700 B.P. (Holmer 1978:69). The four Elko Corner-notched points shown in Figure 5E through H were collected from site 42Em1508 and from two isolated locations. Like the Gypsum points, the Elko series projectile points extend over a long period in the Eastern Great Basin, from the Early Archaic through to the Late Prehistoric period. Radiocarbon analyses of strata associated with Elko series points demonstrates that they were in use as early as 7600 B.P. and possibly persisted in use into the Historic period (Holmer 1978:62).

The Rose Spring arrowpoint shown in Figure 5I demonstrates a Post-Archaic presence upon the mountain which could have been of Fremont origin. The Rose Spring point type in central Utah occurred from 1650 to 1000 B.P. (Holmer and Weder 1980:67).

Isolate 443R/X9 (see Figure 5J) is possibly the fragmented base of a Shoshonean Desert Side-notch point. This fragment is the only evidence of Shoshonean peoples utilizing East Mountain. The temporal range for this point extends from ca. 600 to 100 B.P.

The biface blades shown in Figure 5K and L are not presently identifiable with any specific cultural phase or period.

Chapter IV - EVALUATIONS AND RECOMMENDATIONS

A. Resource Significance Evaluations

An outline of cultural resource significance for the seven known prehistoric sites situated in the subsidence zone of the East Mountain mine plan permit area is presented in Table 4. Here the site quality indicators are presented with a statement on site condition. The field assessment of significance utilizing the CRRS system is provided in the fourth column. The CRRS system is best explained by quoting from the BLM definition sheet:

Cultural Resource Rating System

The following criteria are established as guidelines. The Bureau recognizes that the assignment of a particular rating is a professional judgment; however, the rationale of these judgments will be explicitly documented as part of the evaluation process.

Assign an evaluation rating (S1, S2, S3, S4) to each site according to the following guidelines and record on the BLM form 6400-3:

S1. S1 sites are those sites which are worthy of preservation in situ. In general, they are sites in relatively good condition with integrity (both internal and external); and are unique or representative; and/or have associations with important events or personages; and /or have yielded, or have a clear potential for yielding, highly significant scientific or educational information.

S2. S2 sites are those sites which contain important scientific or educational data but yet are not worthy of preservation in situ. They are generally not particularly unique, representative, nor do they have important associations. Many contemporary sites may be S2 sites because, although they cannot be clearly and immediately assessed as such, they may become highly significant when evaluated from a future historical perspective.

S3. S3 sites are those sites whose main worth are their potential for contributing data in regards to solving larger problems, such as reconstruction of

paleo-environments and human use patterns. These kinds of sites generally show little concentration of artifacts, few features, no important associations, and little or no uniqueness or representativeness.

S4. S4 sites are those sites which have minimal information retrieval possibilities, or which have no integrity, uniqueness, representativeness, or no important associations."

No sites were accorded CRRS:S-1 status as being definite candidates for the National Register of Historic Places.

One site, 42Em1308 (AERC 443R/2), is rated as a CRRS:S-2 level having the potential for inclusion on the National Register. Two sites were accorded CRRS:S-3 ratings and the remaining four sites (see Table 4) are of CRRS:S-4 value. Should future research on any one of these seven sites provide data demonstrating a site has a greater cultural value than presently accorded, the CRRS rating will be appropriately upgraded.

Table 4

Site Significance

<u>Site</u>	<u>Quality*</u>	<u>Condition</u>	<u>CRRS</u> <u>Value Rating</u>
42Em853	d	Good	S-4
42Em854	d	Poor	S-4
42Em855	c, d	Good	S-4
42Em1307	d	Good	S-4
42Em1308	a, b, c, d, f, g	Good	S-2
42Em1309	c, d	Fair	S-3
42Em1310	d	Poor	S-3

*AERC Quality Indicators are:

- a) size or layout is unique;
- b) quantity and/or quality of artifacts is unique;
- c) indication of depth;
- d) environmental location is unique;
- e) existence of unique artifacts, architecture, art or structure;
- f) condition is excellent for preservation of materials or data;
- g) site contains specific cultural data relevant to temporal and spatial identifications;
- h) site is scene of an important event; and
- i) site is associated with an important person.

B. National Register Criteria of Eligibility

Application of the National Register Criteria of Eligibility, defined under 36 CFR 60.6, to each of the seven sites that are situated in the subsidence zone of the permit area provides the following information:

- a) None of the seven sites is associated with events that have had a significant contribution to the broad patterns of our history; or
- b) none of the seven sites is associated with the lives of persons significant in our past; or
- c) none of the seven sites embodies the distinctive characteristics of a type, period, or method of construction, or that represents the work of a master, or that possesses high artistic values, or that represents a significant and distinguishable entity whose components may lack individual distinction.
- d) one site of the seven evaluated in this report has provided important information on the prehistory of the region and has the potential for yielding additional data important to understanding past human activities in the high elevation areas of central Utah. This site, 42Em1308, which has been rated at a CRRS:S-2 level of significance, is considered as eligible for inclusion on the National Register of Historic Places (NRHP).

One CRRS:S-3 site, 42Em1309, and 42Em855 (CRRS:S-4) are categorized as unevaluated. These sites do not presently meet the criteria for eligibility and further testing is required before a determination of eligibility can be made.

Sites 42Em853, 854, 1307, and 1310 (see Table 4) are not eligible for inclusion on the National Register of Historic Places since they do not meet any of the four criteria established in 36 CFR 60.6.

C. Discussion of Impact Potential on Cultural Resource Sites

Direct impact potential of cultural resource sites is related to possible subsidence of surface areas on East Mountain within the project area that could result in the future from the removal of coal seams within the plateau.

Direct impact stemming from project development, e.g., bulldozing, portal development, etc., is not being considered in this report since direct impact to archeological sites due to these kinds of activities is being mitigated through avoidance procedures by AERC. Inasmuch as no historic or prehistoric site types which are susceptible to extensive disturbance from subsidence are known within the subsidence zone, the potential for direct impact of these types of sites is considered to be nil.

Indirect impact is a greater threat to the archeological sites. This, however, would result primarily from non-project related hunting and camping activity by casual visitors and not from mining operations. Site AERC 443R/2 (42Em1308) is most vulnerable to this type of destruction because of its extent and accessibility (see Table 5). This site has already been partially disturbed by disking and revegetation activities which were conducted within the past 20 years. Thus, future ranching activities on this privately owned land could cause further disruption to this valuable site.

Table 5

Cultural Resource Impact Potential

<u>Site</u>	<u>CRRS Status</u>	<u>Direct Impact*</u>	<u>Indirect Impact</u>	<u>Impact Agent</u>
42Em853	S-4	Low	Low	Casual visitors
42Em854	S-4	Low	Low	Casual visitors
42Em855	S-4	Low	Moderate	Vandalism
42Em1307	S-4	Low	Low	Casual visitors
42Em1308	S-2	Low	High	Vandalism
42Em1309	S-3	Low	Moderate	Casual visitors and erosion
42Em1310	S-3	Low	Low	Casual visitors and erosion

*Impact specifically limited to subsidence

D. Recommendations

There are three basic kinds of adverse impact which can occur to both known and unknown cultural resource sites in the mine plan permit area.

The first of these is direct, or project-related, disturbance resulting from development activities. Ongoing archeological consultation with Utah Power and Light Company can preclude direct impact of any known or unknown sites during any phase of project development. AERC, therefore, recommends that Utah Power and Light Company policy be continued involving archeological evaluations of surfaces prior to initiating exploration or developmental projects in the mine plan permit area.

The second aspect of adverse impact which may occur in the mine plan permit area relates to vandalism of sites. To curtail this activity, AERC suggests that the Utah Power and Light Company administrators acquaint all personnel with the federal antiquities laws concerning the preservation of cultural resource sites. AERC further recommends that all field personnel be made aware of the value of the resources and be watchful for visitors into the mine plan permit area who may be intent on destroying cultural resource sites. Site 42Em1308 (AERC 443R/2) has not been vandalized and its resource value has yet to be finalized. AERC recommends that basic subsurface testing of this site be conducted. This site is the largest known lithic scatter and possible temporary campsite at this elevation (9600 feet ASL) in central Utah and detailed subsurface testing could provide important information on the temporal-cultural utilization period and on prehistoric seasonal subsistence activities conducted in the high elevations.

The third type of adverse impact which can occur in the mine plan permit area is disruption through subsidence.

With the future removal of coal seams under East Mountain, the potential increases for future disturbance on the surface of the plateau. Extensive AERC surface evaluations conducted from 1976 through 1980 involving both sample survey, drill location evaluation, and access road evaluation have demonstrated that no architectural cultural resources which would be highly susceptible to subsidence exist in the mine plan permit area or, more specifically, within the subsidence zone. The limited activity sites which are the most common within the project area involve prehistoric lithic scatters and hunting and camping sites. Depth potential on these types of sites is generally low in this area, hence should subsidence occur in the future, only marginal or no disruption of these sites is anticipated. AERC, therefore, concludes that subsidence does not constitute a viable potential impact to any significant or susceptible cultural resource sites situated within the mine plan permit area. Should surface tension cracking occur in the future and pose a threat to any of the seven cultural resource sites reported in this document, Utah Power and Light Company should have a professional archeologist prepare a damage assessment and site mitigation planning statement for evaluation by relevant governmental authorities.

The mitigative and avoidance comments presented herein are considered sufficient to provide a high level of protection to the cultural resource sites which are situated within the permit area. AERC recommends that Utah Power and Light Company be granted a cultural resource clearance based upon these recommendations to facilitate their future mine development and exploration.

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APPENDIX

(Site Forms sent under separate
cover to relevant government agencies)

Attachment 4: INFORMATION CONCERNING SITE RECORDING

All survey units sampled in 1980 were identified by a four-person AERC team with survey personnel walking parallel transects. Individual spacing ranged from ten to 20 meters during these transect surveys. Shorter intervals between personnel and zig zag transects were utilized for a more intensive examination of specific areas where surface materials indicated site potential. At the completion of the surface survey, the Principal Investigator visited each site or possible site with the crew chief and conducted an evaluation of the resource, its function and significance. The site reports were prepared during this second visit to each site. Sites were photographed, sketched, and noted on the 15 minute USGS map for the area. Diagnostic artifacts, i.e., projectile points were collected during the survey as were any lithic tools useful in studying manufacture techniques, lithic type and source, and site utilization.

Attachment 5: SITE DESCRIPTIONS AND
ELIGIBILITY RECOMMENDATION

Site 42Em853 (AERC 03F/44)

This prehistoric lithic scatter is situated on private lands in the Ferron District of the Manti-LaSal National Forest on the south facing slope near the crest of the East Mountain plateau. The site measures 40 x 40 meters in size and is of sparse density measuring one flake per two square meters. The detritus consists of secondary and tertiary flakes. One nondiagnostic projectile point tip was observed on the site. No artifacts were collected.

National Register status: This site is not significant.

Site 42Em854 (AERC 03F/45)

This prehistoric hunting station is situated on private lands in the Ferron District of the Manti-LaSal National Forest on the south facing slope near the crest of the East Mountain plateau. The site was probably utilized by hunters waiting for game to travel an adjacent game trail. The site measures 15 x 15 meters in size and is of sparse density. The detritus consists of secondary and tertiary flakes. One nondiagnostic projectile point fragment and several blade fragments were observed. No artifacts were collected.

National Register status: This site is not significant.

Site 42Em855 (AERC 03F/46)

This prehistoric hunting station is situated on private lands in the Ferron District of the Manti-LaSal National Forest on the east facing slope near the crest of the East Mountain plateau. The site was probably utilized by hunters waiting for game to travel across the lower slope. The site measures 7 x 7 meters in size and is of sparse density. The artifacts observed on the site include one biface blade and a nondiagnostic projectile point fragment. No artifacts were collected.

National Register status: This site is not significant.

Site 42Em1307 (AERC 443R/1)

This prehistoric lithic scatter is situated on private lands in the Ferron District of the Manti-LaSal National Forest upon the top of the East Mountain plateau. The site measures 15 x 15 meters in size and is of sparse density containing primary flakes. No tools were observed, nor was the site collected.

National Register status: This site is not significant.

Site 42Em1308 (AERC 443R/2)

This prehistoric lithic scatter is situated on private lands in the Ferron District of the Manti-LaSal National Forest upon the top of the East Mountain plateau. The site may have been utilized as a campsite as suggested by its size, depth potential, and variety of artifacts present. The site measures 300 x 150 meters in size and has a range of detritus from primary flakes through pressure retouch flakes. Three diagnostic projectile points were collected along with four fragments of points and three small scrapers. Artifacts were of the Archaic and Post archaic periods.

National Register status: This site is significant and could provide future researchers with pertinent information on occupation in an high altitude environment.

Site 42Em1309 (AERC 443R/3)

This prehistoric butchering-hide preparation station is located on private lands in the Ferron District of the Manti-LaSal National Forest upon the top of the East Mountain plateau. Artifacts on the site suggest it is the locus of butchering and hide preparation activities. The site measures 30 x 30 meters in size and contains a sparse scatter of butchering tools and flakes. The site was not collected.

National Register status: This site is significant and could provide future researchers with pertinent information on game preparation techniques.

Site 42Em1310 (AERC 443R/4)

This prehistoric lithic scatter-hunting site is located on private lands in the Ferron District of the Manti-LaSal National Forest upon the edge of a north draining arroyo upon the top of the East Mountain plateau. The site measures 30 x 20 meters in size and is of sparse density containing primary and secondary chert flakes. One Northern Side-notch projectile point fragment recovered from the site indicates an Early Archaic activity locus. Two projectile point fragments were collected from this site.

National Register status: This site is marginally significant.

Site 42Em1633 (AERC 797R/1)

This site, the historic Old Johnson Mines, is located on private lands in the Ferron District of the Manti-LaSal National Forest upon the east slope of Cottonwood Canyon. The Old Johnson Mines were actively mining coal from 1909 until 1948. The site presently consists of two portals, a portal terrace, a coal chute area which has been dismantled, a walled boulder which may have been a storage/

powder house area, an outhouse, and the weighhouse structure.
The site has been greatly modified and impacted by the
expansion of the Cottonwood Canyon road.

National Register status: This site is significant.

ARCHEOLOGICAL - ENVIRONMENTAL
RESEARCH CORPORATION

Prehistoric and Historic
Archeological Site Inventory Sheet

1. Permanent Site No.: 42Em853
2. Date Issued: 8/5/77
3. AERC Site No.: 03F/44, Forest Central 14, USFS
4. Date of Survey: 7/19/77
5. Type of Site: Lithic scatter
6. Significance Rating: S-4
7. Project: CCP--77
8. Contract No.: 14-08-0001-16479
9. Contract Date: 5/13/77
10. Site Noted in Report: CCP Final Report — 1977
11. Site Name: None given
12. State: Utah
13. County: Emery
14. T & R Location: T.17S, R.7E, S.26,
15. Meridian: Salt Lake B & M
16. UTM Grid: NA
17. Map Reference: Hiawatha Quad. 15'
18. Aerial Photo Data: NA
19. Reported by: AERC
20. Recorded by: Michael Benson
21. Site Location Relative to Landmarks: The site is located on the edge of the rim of canyon NE of Peabody Mine. (Drill site 40 m. NW—#PB3)

Environmental Information

22. Soil Type: Sandy loam
23. Soil Origin: Residual
24. Site Elevation: 8900'
25. Predominant Vegetation: Sage, pinyon
26. General Ecosystem or Ecozone: 5 c 5
27. Topographic Location: On small, gentle saddle overlooking a large canyon
28. Aspect of Site: Open
29. Water Resources Type: Wash; stream
30. Water Resources Distance & Direction: Grimes Wash, 1.8 km. W
31. Presence of Game Trails: Yes
32. Misc.: Lithic density is 1 flake/2 sq. meters

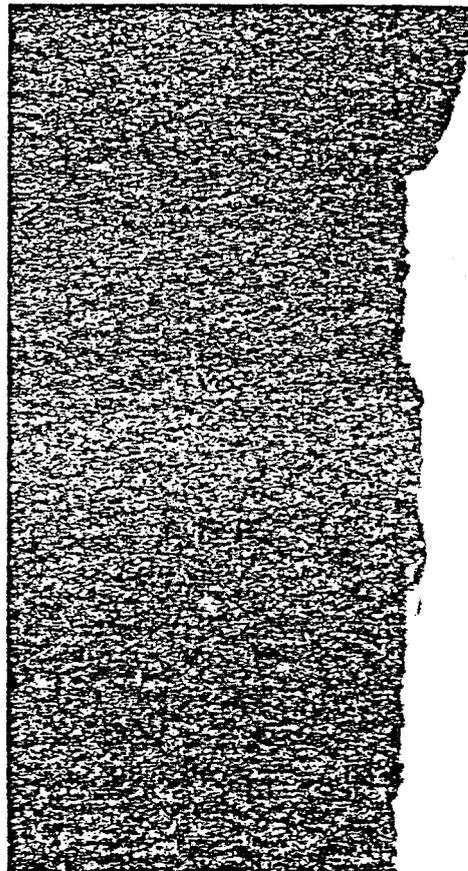
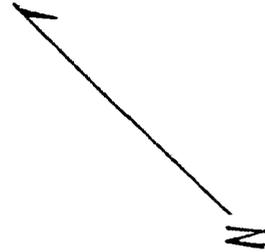
Archeological Information

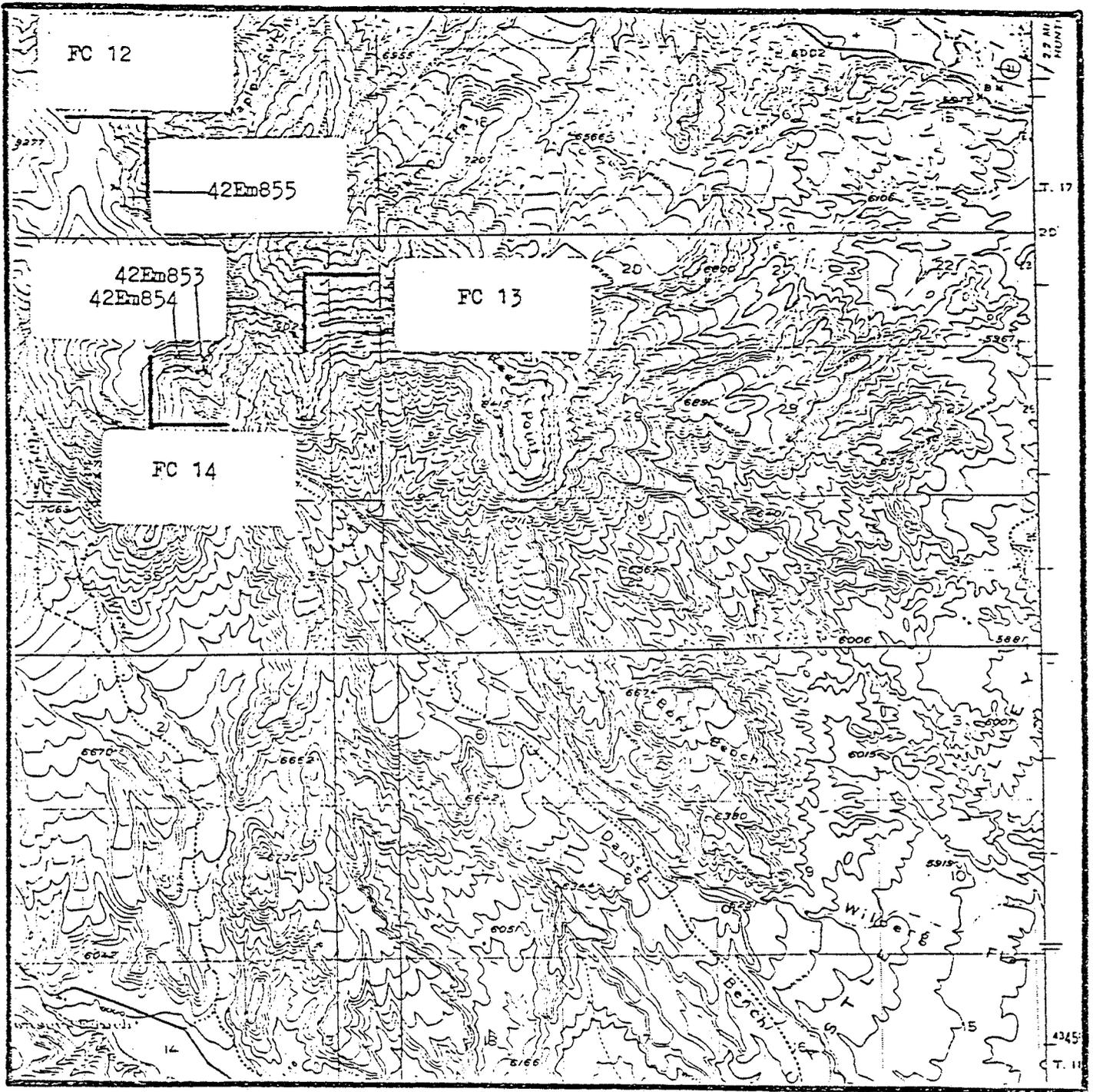
33. Cultural Classification: Unknown
34. Approximate Temporal Range Involved: Unknown
35. Size of Site: 40 m. X 40 m.
36. Number of Components and Location: -
None

Site No.: 42Em853

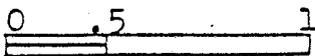
AERC 03F/44

37. Type of Architecture: NA
38. Measurements of Structure: NA
39. Kinds of Artifacts: Lithics
40. Lithic Artifact Types: Secondary and tertiary waste flakes and projectile point tip
41. Artifact Counts after Processing: None collected
42. Location of Collection: NA
43. Condition of Site: Good
44. Type of Impact Expected: NA
45. Mitigation Procedures Initiated: M-1
46. Mitigation Procedures Recommended: NA
47. Photographs: 03F-3(12)
48. Additional Information Attached: No





SCALE in miles



15 Minute Series

Hiawatha
Topographic Quad.
Utah



Site No.: 42Em854 AERC 03F/45

Environmental Information

22. Soil Type: Sandy loam
23. Soil Origin: Residual
24. Site Elevation: 9000'
25. Predominant Vegetation: Pinyon
26. General Ecosystem or Ecozone: 5J 3
27. Topographic Location: On rim of canyon overlooking Peabody mine in open area between two stands of pine.
28. Aspect of Site: NW, 2° slope
29. Water Resources Type: Stream
30. Water Resources Distance & Direction: Grimes wash, 1.4 km. W
31. Presence of Game Trails: Yes
32. Misc.: Site density is sparse

Archeological Information

33. Cultural Classification: Unknown
34. Approximate Temporal Range Involved: Unknown
35. Size of Site: 15 m. X 15 m.
36. Number of Components and Location: None

ARCHEOLOGICAL - ENVIRONMENTAL
RESEARCH CORPORATION

Prehistoric and Historic
Archeological Site Inventory Sheet

1. Permanent Site No.: 42Em855
2. Date Issued: 8/5/77
3. AERC Site No.: 03F/46, Forest Central #12, Forest Service
4. Date of Survey: 7/20/77
5. Type of Site: Hunting station
6. Significance Rating: S 4
7. Project: CCP--77
8. Contract No.: 14-08-0001-16479
9. Contract Date: 5/13/77
10. Site Noted in Report: CCP Final Report - 1977
11. Site Name: None given
12. State: Utah
13. County: Emery
14. T & R Location: T.17S, R.7E, S.14, SW $\frac{1}{4}$, SE $\frac{1}{4}$, SW $\frac{1}{4}$
15. Meridian: Salt Lake B & M
16. UTM Grid: NA
17. Map Reference: Hiawatha Quad. 15'
18. Aerial Photo Data: NA
19. Reported by: AERC
20. Recorded by: Mike Benson
21. Site Location Relative to Landmarks: Located 70 m. E of dirt road to Red Point. On edge of canyon rim overlooking Maple Gulch.

Environmental Information

22. Soil Type: Sandy loam and gravel
23. Soil Origin: Residual
24. Site Elevation: 9050'
25. Predominant Vegetation: Pinyon, sage brush, common juniper, bristle cone pine?, wild flowers
26. General Ecosystem or Ecozone: Alpine
27. Topographic Location: On the edge of a canyon (rim) overlooking Maple Gulch. Gentle slope to W.
28. Aspect of Site: W 3^o slope
29. Water Resources Type: Head of Deer Creek
30. Water Resources Distance & Direction: .8 km. NW
31. Presence of Game Trails: Yes
32. Misc.: Possible small hunting area due to the location and tools noticed. Not very dense.

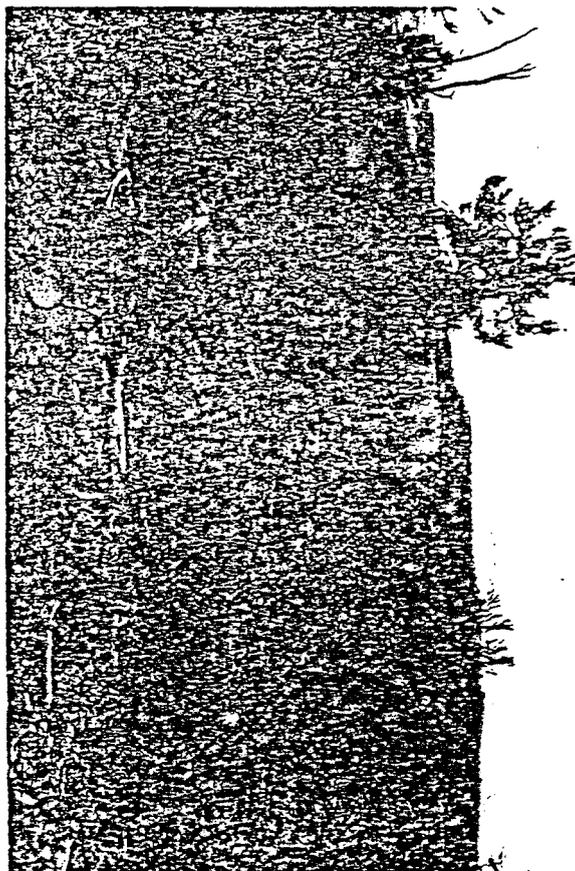
Archeological Information

33. Cultural Classification: Unknown
34. Approximate Temporal Range Involved: Unknown
35. Size of Site: 7 m. X 7 m.
36. Number of Components and Location: None

Site No.: 42EmB55

AERC 03F/46

37. Type of Architecture: NA
38. Measurements
of Structure: NA
39. Kinds of Artifacts: Lithics
40. Lithic
Artifact Types: Blade and projectile point
41. Artifact Counts
after Processing: None collected
42. Location
of Collection: NA
43. Condition of Site: Good
44. Type of
Impact Expected: NA
45. Mitigation Proce-
dures Initiated: M-1
46. Mitigation Proce-
dures Recommended: NA
47. Photographs: 03F-3 (11)
48. Additional Infor-
mation Attached: No



1. Site No. 443R/1
 2. County Emery
 3. Temp. No. AEBC 443R/1

4. Class: X Prehistoric Historic Paleontologic
 5. Cultural Site Type (interpreted function): Lithic scatter
 6. Paleontological Site Type: Invertebrate; Vertebrate; Flora
 7. Elevation [I/11-15] 8600 ft. X.3048 m.
 Elevation source: Contour
 8. UTM Grid; [I/16-30] zone 12; 480860 m E; 4553020 m N
 [II/1-16] NW of NE or SW of Section 20 T. 17S.; R. 7E.
 10. Map Reference: Hiawatha Series: 15 Date: 1923
 11. Aerial Photo Data: NA

12. Site Location: Site is situated 50 m. N of Snow Lake junction on East Mountain.

13. Land Owner [II/17-18]: Private
 BLM District/Forest [II/19]: NA

14. Site Name/Previous Designations: NA

15. Description of Site: Site is a limited activity area - sparse lithic scatter. CRRS:S-4

CLASS	QUANTITY	CLASS	TYPE	QUANTITY
Debitage [II/30]	<u>8</u>	Ceramics [III/10-21]		
Bifaces [III/1-9]		Proj Pot [III/1-9]		
Serpenters [III/1-9]		Gnd Stn [III/22-29]		
Utilized Flakes		Glass [II/22-29]		
		Metal [II/22-29]		
		Nails [II/22-29]		
		Cans [II/22-29]		
		Wood [II/22-29]		
		Other [II/22-29]		

Description: Site contains scattered primary flakes of various chert types.

17. Non-Structural Features: (describe and locate on site map) [III/22-27]

- | | | | |
|--|--|---|--|
| <input type="checkbox"/> hearth/firepit (EE) | <input type="checkbox"/> rubble mound (EM) | <input type="checkbox"/> earthen mound (EM) | <input type="checkbox"/> trail/road (TR) |
| <input type="checkbox"/> hidden (HD) | <input type="checkbox"/> stone circle (SC) | <input type="checkbox"/> burial (BU) | <input type="checkbox"/> LE grade (EG) |
| <input type="checkbox"/> depression (DE) | <input type="checkbox"/> rock alignment (RA) | <input type="checkbox"/> pictograph (PI) | <input type="checkbox"/> stream way/flood (TW) |
| <input type="checkbox"/> water control (WC) | <input type="checkbox"/> mine tailings (MT) | <input type="checkbox"/> petroglyph (PE) | <input type="checkbox"/> other (OT) |

Description: NA

18. Structural Features: (describe and locate on site map) [III/28-IV/6]

CLASS	MATERIAL	QUANTITY	CLASS	MATERIAL	QUANTITY
Single rm			Tower		
Multiple rm			Cairn		
Granary			Corral		
Cist			Dugout		
Pithouse			Kiln		
Kiva			Monument		
Well			Mine		

Description: NA

19. Cultural Affiliation [IV/7-14]: Unknown
 How Determined? NA
 20. Site Dimensions: 15 m x 15 m; Area [IV/17-21]: 225 sq m
 21. Were surface artifacts collected? Yes; No; [IV/22] if yes,
 attach a continuation sheet describing sampling method used.
 22. Estimated depth of fill [IV/23]: 0
 Subsurface test? Yes; X No (include location of test on site map)
 Description:
 23. Site Condition [IV/25]: Excellent; Good; X Fair; Poor
 Agent of Impact:
 24. Nat. Register Potential [IV/1]: Significant (C); X Non-Significant (D)
 Justification: Site has no depth potential, contains no
features and has no diagnostics.

25. Research Potential: None
 26. Recommended Mitigation: Avoidance
 27. Direction/Distance to Permanent Water [V/5-10]: NORTH / 1.8 =
 Type/Name of Water Source [V/11]: Spring
 Distance to nearest other Water Source [V/2+4]: 1.5 mile
 Type of other water source: Snow Lake
 Distance to Cultivable Soil [V/12-14]: 1 miles

28. Topographic Location (check one under each heading) [V/15-18]

PRIMARY LANDFORM	POSITION ON LANDFORM	DEPOSITIONAL ENVIRONMENT	SECONDARY POSITION
<input type="checkbox"/> mountain spine(A)	<input checked="" type="checkbox"/> top/crest/peak(A)	<input type="checkbox"/> fan(A)	<input checked="" type="checkbox"/> top/crest/ridge(A)
<input type="checkbox"/> hill/burgle(B)	<input type="checkbox"/> edge(B)	<input type="checkbox"/> talus(B)	<input type="checkbox"/> edge(B)
<input checked="" type="checkbox"/> tableland/besa(C)	<input type="checkbox"/> slope(C)	<input type="checkbox"/> dune(C)	<input type="checkbox"/> slope(C)
<input type="checkbox"/> ridge(D)	<input type="checkbox"/> toe/foot/bottom(D)	<input type="checkbox"/> stream terrace(D)	<input type="checkbox"/> toe/foot(D)
<input type="checkbox"/> valley(E)	<input type="checkbox"/> saddle/pass(E)	<input type="checkbox"/> playa(E)	<input type="checkbox"/> cutbank(E)
<input type="checkbox"/> plain(F)	<input type="checkbox"/> bench/ledge(F)	shore feature	<input type="checkbox"/> detached embankment(F)
<input type="checkbox"/> canyon(G)	<input type="checkbox"/> rimrock(G)	<input type="checkbox"/> extinct lake(F)	<input type="checkbox"/> interior(G)
	<input type="checkbox"/> interior(H)	<input type="checkbox"/> extant lake(G)	<input type="checkbox"/> step(H)
		<input type="checkbox"/> alluvial plain(H)	<input type="checkbox"/> riser(I)
		<input type="checkbox"/> coluvium(I)	<input type="checkbox"/> post-geo-feature(J)
		<input type="checkbox"/> terraces(J)	<input type="checkbox"/> spring mound/bog(K)
		<input type="checkbox"/> flood plain(K)	<input type="checkbox"/> cave(L)
			<input type="checkbox"/> alcove/shelter(M)
			<input type="checkbox"/> patterned ground(N)

Description: Site is on top of flats upon East Mtn

29. Degree/Aspect of slope [V/19-23]: 0°
 30. Vegetation COMMUNITY and association [V/24-25]:

<input type="checkbox"/> ALPINE GRASSLAND(AA)	<input type="checkbox"/> YELLOW PINE-OAK(BE)	<input type="checkbox"/> COLD DESERT SCRUB(FE)	<input type="checkbox"/> SALT DESERT SCRUB(GE)	<input type="checkbox"/> WARM DESERT SCRUB
<input type="checkbox"/> SPRUCE FIR(BB)	<input checked="" type="checkbox"/> Ponderosa pine(BA)	<input type="checkbox"/> sagebrush(FA)	<input type="checkbox"/> greasewood(GA)	<input type="checkbox"/> desert saltbrush
<input type="checkbox"/> Gambel's(BA)	<input type="checkbox"/> sagebrush(DB)	<input type="checkbox"/> small sagebrush(FB)	<input type="checkbox"/> greewood-shadsal(GB)	<input type="checkbox"/> creosote bush(E)
<input type="checkbox"/> white fir-spruce(BB)	<input type="checkbox"/> mountain brush(DC)	<input type="checkbox"/> little rabbitbrush(FC)	<input type="checkbox"/> deepweed(GC)	<input type="checkbox"/> creosote/bushyag
<input checked="" type="checkbox"/> ALPINE DOUGLAS FIR(CC)	<input type="checkbox"/> aspen(BD)	<input type="checkbox"/> shadsal(FD)	<input type="checkbox"/> yellow/red/sapphire(GD)	<input type="checkbox"/> Joshua tree(ED)
<input type="checkbox"/> limber pine(CA)	<input type="checkbox"/> streamside(BE)	<input type="checkbox"/> horsebrush(FE)	<input type="checkbox"/> saltgrass(GE)	<input type="checkbox"/> MARSH COMMUNITY
<input type="checkbox"/> douglas fir(CB)		<input type="checkbox"/> vistar-fac(FY)	<input type="checkbox"/> alkali sacaton(GF)	
<input type="checkbox"/> lodgepole pine(CC)	<input type="checkbox"/> PLAINS/PRAIRIE(HH)	<input type="checkbox"/> boy-sage/blkbush(FG)	<input type="checkbox"/> rabbitbrush(GG)	<input type="checkbox"/> ALPINE FLATS/MT
<input type="checkbox"/> bristlecone pine(CD)	<input type="checkbox"/> grasslands(HA)	<input type="checkbox"/> bud sagebrush(FH)		<input type="checkbox"/> FLATS/DRY LAKE/
<input type="checkbox"/> aspen(CE)	<input type="checkbox"/> juniper-juniper(HB)	<input type="checkbox"/> fat saltbrush(FI)		<input type="checkbox"/> WASTELAND(HI)
<input type="checkbox"/> streamside(CE)	<input type="checkbox"/> streamside(HC)	<input type="checkbox"/> gray wolly(FJ)		
<input type="checkbox"/> meadow grassland(CE)		<input type="checkbox"/> streamside(FK)		<input type="checkbox"/> CULTIVATED LAND

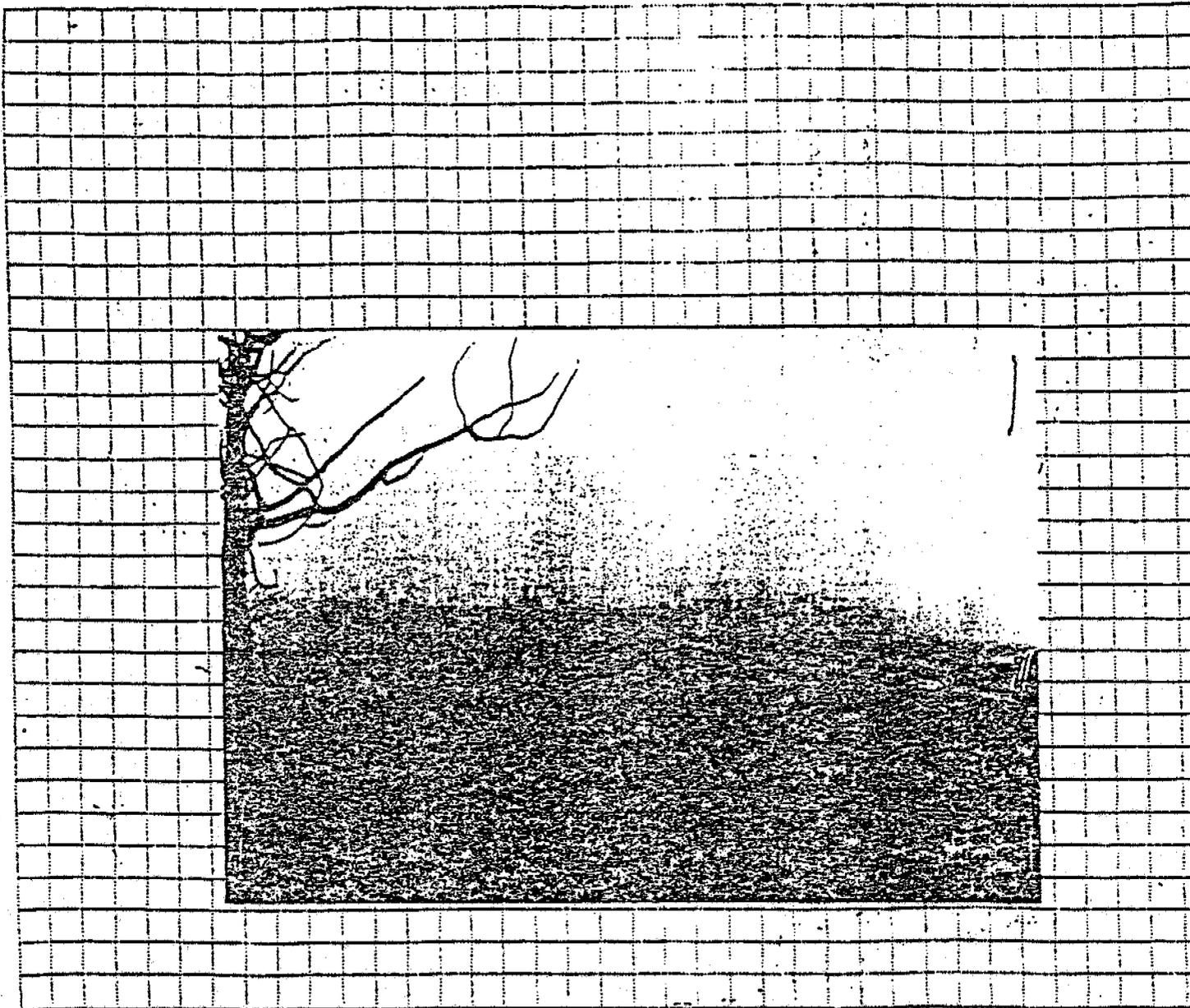
(Check COMMUNITY only if association cannot be determined)

Description: Interface between high altitude sage flats and a
span in Montane ecozone.

31. Next nearest plant association/distance:
 32. Photograph Numbers [V/26]: 445R-1 (1)
 33. Recorded by: F. R. Hauck
 Survey Org. [V/27-28]: AERC Date: 9-9-80
 Assisting Crew Members: V. G. Norman, Michael Sloan

34. Sponsoring Agency: UPI-80-1 Contract No. NA

SITE NO. 42Em1307 443R/1



35. Encoding Form: (all entries are right justified)

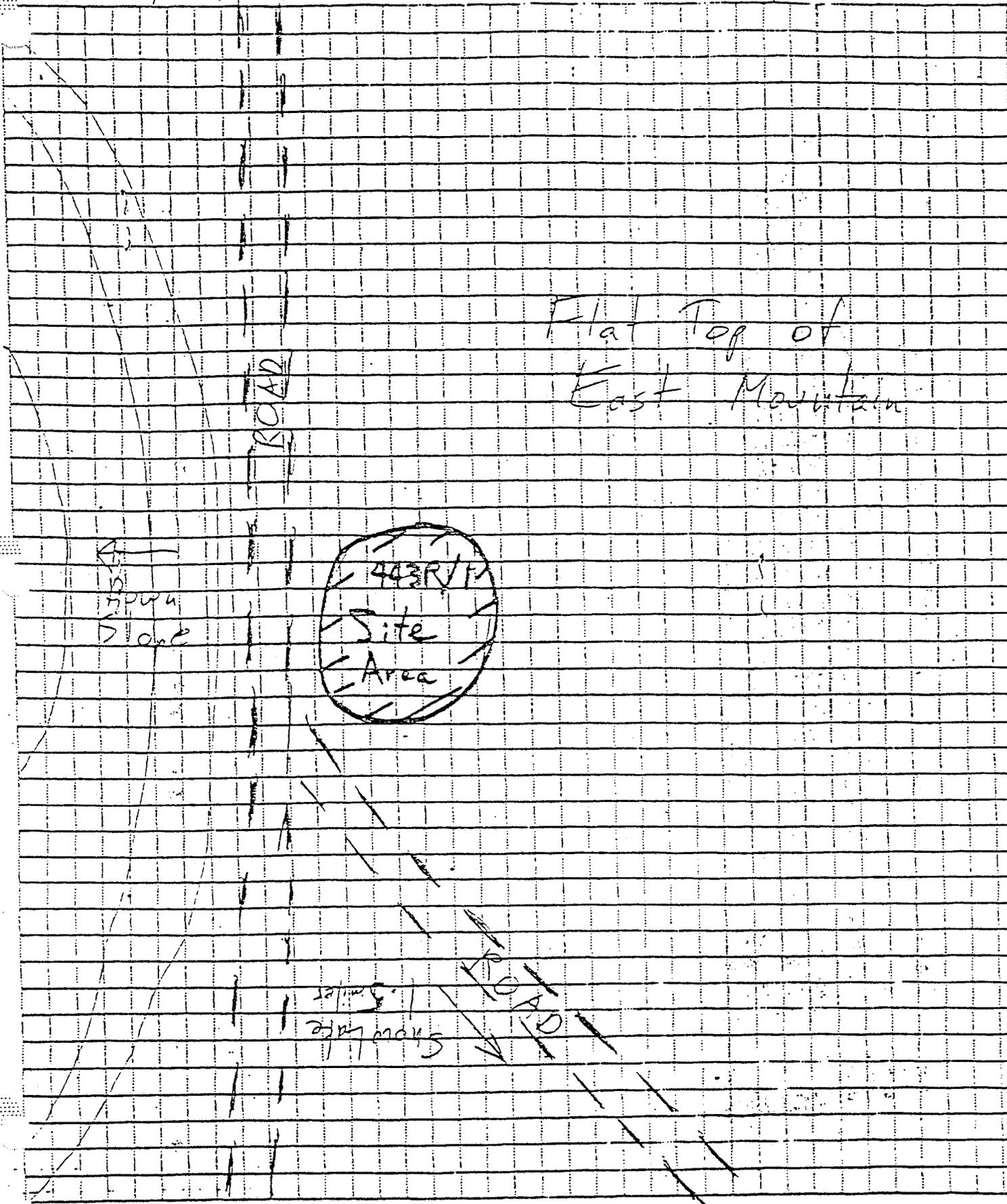
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
I	4	2	E	M	,	1	3	0	7	9	6	0	0	.	1	2	4	8	0	8	6	0	4	3	5	3	0	2	0		
II	N	W	N	E	S	W	2	0	1	7	S	7	E		P	R					L	S									
III	A	A																													
IV																															
V	D																														
VI																															

Form must be accompanied by a site map; photocopy of U.S.G.S. topo map with T., R., scale, and quad name; photographs of the site; and artifact sketches (if applicable).

9-9-80

Area 443 R-1

UPL 80-1



2. County Emery
 3. Temp. No. AERC 143D/2

4. Class: X Prehistoric Historic Paleontologic
 5. Cultural Site Type (interpreted function): Lithic scatter
 6. Paleontological Site Type: Invertebrate; Vertebrate; Flora
 7. Elevation [I/11-15] 9600 ft. X. 3048 ft.
 Elevation source: Map contour
 8. UTM Grid: [I/16-30] zone 12; 486140 m E; 4354600 m N
 9. [II/1-16] NA of NE or SW or Section 17 T. 17S. R. 7E
 10. Map Reference: Hiawatha, Utah Series: 15M Date: 1923
 11. Aerial Photo Data: NA

12. Site Location: Site is situated on east side of flats upon East Mountain, ca. 100 m. north of Burnt Tree Spring

13. Land Owner [II/17-18]: Private
 BLM District/Forest [II/19]: NA NA
 14. Site Name/Previous Designations: NA

15. Description of site: Site is a large lithic scatter which extends ca. 300 m. N-S by 150 m. E-W. Site consists primarily of scattered detritus although fragmented manos and complete points were also observed. Site has range from primary flakes to pressure retouch flakes. Obsidian also observed. CRRS:S-2

16. Artifacts:	Artifacts	CLASS	TYPE	QUANTITY
should be described/drawn on a continuation sheet and their locations plotted on the site map.		Ceramics [III/10-21]	various	2
		Proj Pnt [III/1-9]		
		Gnd Stn [II/22-29]		
		Glass [II/22-29]		
		Metal [II/22-29]		
		Nails [II/22-29]		
		Cans [II/22-29]		
		Wood [II/22-29]		
		Other [II/22-29]		
		Utilized flakes		

Description: 1 Rose Spring (obsidian), 2 Elko corner notched, 2 mid sections

17. Non-Structural Features: (describe and locate on site map) [III/22-27]

<input type="checkbox"/> hearth/firepit(HX)	<input type="checkbox"/> rubble mound(ZM)	<input type="checkbox"/> earthen mound(EM)	<input type="checkbox"/> trail/road(TR)
<input type="checkbox"/> midden(MD)	<input type="checkbox"/> stone circle(SC)	<input type="checkbox"/> burial(BU)	<input type="checkbox"/> ridge grade(RG)
<input type="checkbox"/> depression(DE)	<input type="checkbox"/> rock alignment(RA)	<input type="checkbox"/> pictograph(PI)	<input type="checkbox"/> stream way/road(TW)
<input type="checkbox"/> water control(WC)	<input type="checkbox"/> mine tailings(MT)	<input type="checkbox"/> petroglyph(PG)	<input type="checkbox"/> other(OT)

Description: None

18. Structural Features: (describe and locate on site map) [III/28-IV/6]	CLASS	MATERIAL	QUANTITY	CLASS	MATERIAL	QUANTITY
Single rm				Tower		
Multiple rm				Cairn		
Granary				Corral		
Cist				Dugout		
Pit-house				Kiln		
Kiva				Monument		
Well				Mine		

Description: None

SITE NO.

How Determined? Point types

20. Site Dimensions : 250 m x 150 m; Area [IV/17-21] : 37500 sq m

21. Were surface artifacts collected? X Yes; No; [IV/22] If yes, attach a continuation sheet describing sampling method used. grab

22. Estimated depth of fill [IV/23] : to 5 cm
Subsurface test? Yes; X No (Include location of test on site map)

23. Site Condition [IV/25] : X Excellent; Good; Fair; Poor
Agent of Impact: Reclamation & revegetation of 20% site surface

24. Nat. Register Potential [V/11] : Significant (C); Non-Significant (D)
Justification: Site has size, marginal depth potential and presence of diagnostic artifacts.

25. Research Potential: Excellent

26. Recommended Mitigation: Avoidance

27. Direction/Distance to Permanent Water [V/5-10] : NW / 1 mi. m
Type/Name of Water Source [V/11] : Spring
Distance to nearest other Water Source [V/2-4] : 1.4 miles
Type of other water source: Whetstone Creek
Distance to Cultivable Soil [V/12-14] : 5 miles

28. Topographic Location (check one under each heading) [V/15-18]

PRIMARY LANDFORM	POSITION ON LANDFORM	DEPOSITIONAL ENVIRONMENT	SECONDARY POSITION
<input type="checkbox"/> mountain spine(A)	<input checked="" type="checkbox"/> top/crest/peak(A)	<input type="checkbox"/> fan(A)	<input checked="" type="checkbox"/> top/crest/ridge(A)
<input type="checkbox"/> hill/butte(B)	<input type="checkbox"/> edge(B)	<input type="checkbox"/> talus(B)	<input type="checkbox"/> edge(B)
<input checked="" type="checkbox"/> tableland/mesa(C)	<input type="checkbox"/> slope(C)	<input type="checkbox"/> dune(C)	<input type="checkbox"/> slope(C)
<input type="checkbox"/> ridge(D)	<input type="checkbox"/> toe/foot/bottom(D)	<input type="checkbox"/> stream terrace(D)	<input type="checkbox"/> toe/foot(D)
<input type="checkbox"/> valley(E)	<input type="checkbox"/> saddle/pass(E)	<input type="checkbox"/> plays(E)	<input type="checkbox"/> cutbank(Z)
<input type="checkbox"/> plain(F)	<input type="checkbox"/> bench/ledge(F)	shore feature	<input type="checkbox"/> detached nonolith
<input type="checkbox"/> canyon(G)	<input type="checkbox"/> rimrock(G)	<input type="checkbox"/> extinct lake(F)	<input type="checkbox"/> interior(G)
	<input type="checkbox"/> interior(H)	<input type="checkbox"/> extant lake(G)	<input type="checkbox"/> step(E)
		<input type="checkbox"/> alluvial plain(E)	<input type="checkbox"/> riser(I)
		<input type="checkbox"/> coluvium(I)	<input type="checkbox"/> pycn. geo. feature
		<input type="checkbox"/> moraine(J)	<input type="checkbox"/> spring mound/bog
		<input type="checkbox"/> flood plain(K)	<input type="checkbox"/> eye(L)
			<input type="checkbox"/> slope/shelter(M)
			<input type="checkbox"/> patterned ground

Description: Site is upon top of East Mountain.

29. Degree/Aspect of slope [V/19-23] : 0°

30. Vegetation COMMUNITY and association [V/24-25];

<input type="checkbox"/> ALPINE GRASSLAND(AA)	<input type="checkbox"/> YELLOW PINE-OAK(DZ)	<input type="checkbox"/> COLD DESERT SHRUB(FZ)	<input type="checkbox"/> SALT DESERT SHRUB(GZ)	<input type="checkbox"/> WARM DESERT
<input type="checkbox"/> SPEDCEY FIR(BZ)	<input type="checkbox"/> ponderosa pine(DA)	<input type="checkbox"/> sagebrush(FA)	<input type="checkbox"/> greasewood(GA)	<input type="checkbox"/> desert saltb
<input type="checkbox"/> Gambel's(BA)	<input type="checkbox"/> oakbrush(DB)	<input type="checkbox"/> small sagebrush(FB)	<input type="checkbox"/> junwood-shadscl(GB)	<input type="checkbox"/> creosote bus
<input type="checkbox"/> white fir-spruce(BB)	<input type="checkbox"/> mountain brush(DC)	<input type="checkbox"/> little rabbitbrush(FC)	<input type="checkbox"/> sageweed(GC)	<input type="checkbox"/> creosote/bur
<input checked="" type="checkbox"/> ASPEN DOUGLAS FIR(CC)	<input type="checkbox"/> maple(DD)	<input type="checkbox"/> shadscale(FD)	<input type="checkbox"/> pickleweed/sambira(GD)	<input type="checkbox"/> joshua tree
<input type="checkbox"/> timber pine(CA)	<input type="checkbox"/> streamside(DE)	<input type="checkbox"/> horsebrush(FE)	<input type="checkbox"/> saltgrass(GE)	<input type="checkbox"/> MARSH COMMON
<input type="checkbox"/> douglas fir(CB)		<input type="checkbox"/> vine-fac(FE)	<input type="checkbox"/> alkali sacaton(GE)	
<input type="checkbox"/> lodgepole pine(CC)	<input type="checkbox"/> FLAINS/PRAIRIE(HH)	<input type="checkbox"/> bog-sage/blkbrsh(FG)	<input type="checkbox"/> rabbitbrush(GG)	<input type="checkbox"/> ALPINE FLATS
<input type="checkbox"/> bristlecone pine(CD)	<input type="checkbox"/> grasslands(EA)	<input type="checkbox"/> bud sagebrush(FE)		<input type="checkbox"/> FLAINS/DRY LA
<input checked="" type="checkbox"/> aspen(CE)	<input type="checkbox"/> piñon-juniper(EB)	<input type="checkbox"/> nat saltbrush(FI)		<input type="checkbox"/> WASTELAND(XE)
<input type="checkbox"/> streamside(CD)	<input type="checkbox"/> streamside(EC)	<input type="checkbox"/> gray wolly(FJ)		
<input type="checkbox"/> meadow grassland(CC)		<input type="checkbox"/> streamside(FK)		<input type="checkbox"/> CULTIVATED I

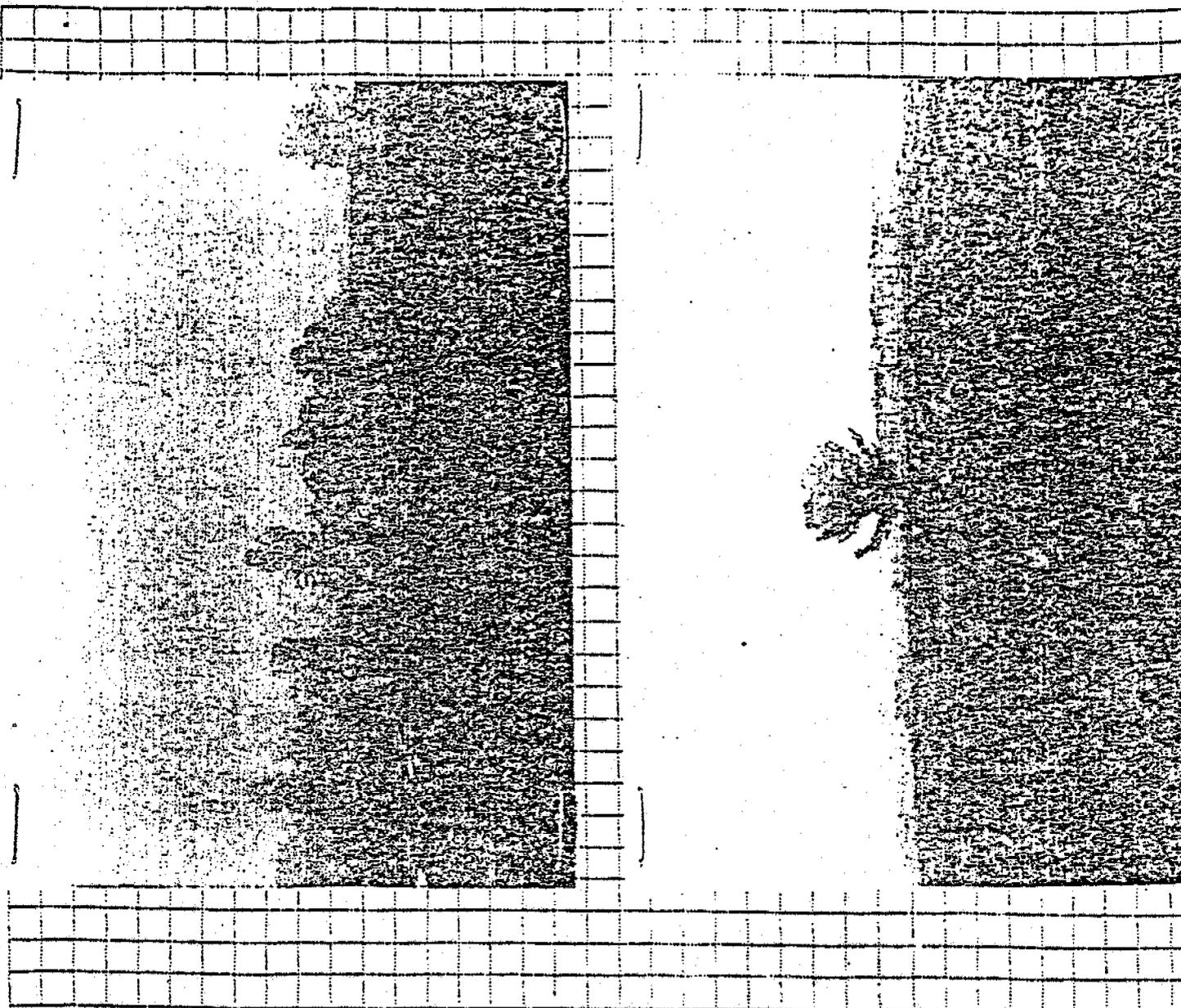
(Check COMMUNITY only if association cannot be determined)

Description: Interface between sage flats and high altitude aspen flats.

31. Next nearest plant association/distance: NA

32. Photograph Numbers [V/26] : 433R-1 (2 & 3)

33. Recorded by: E. R. Hawk
Survey Org. [V/27-28]: AERC Date: 9-9-80
Assisting Crew Members: V. G. Norman and M. Sloan



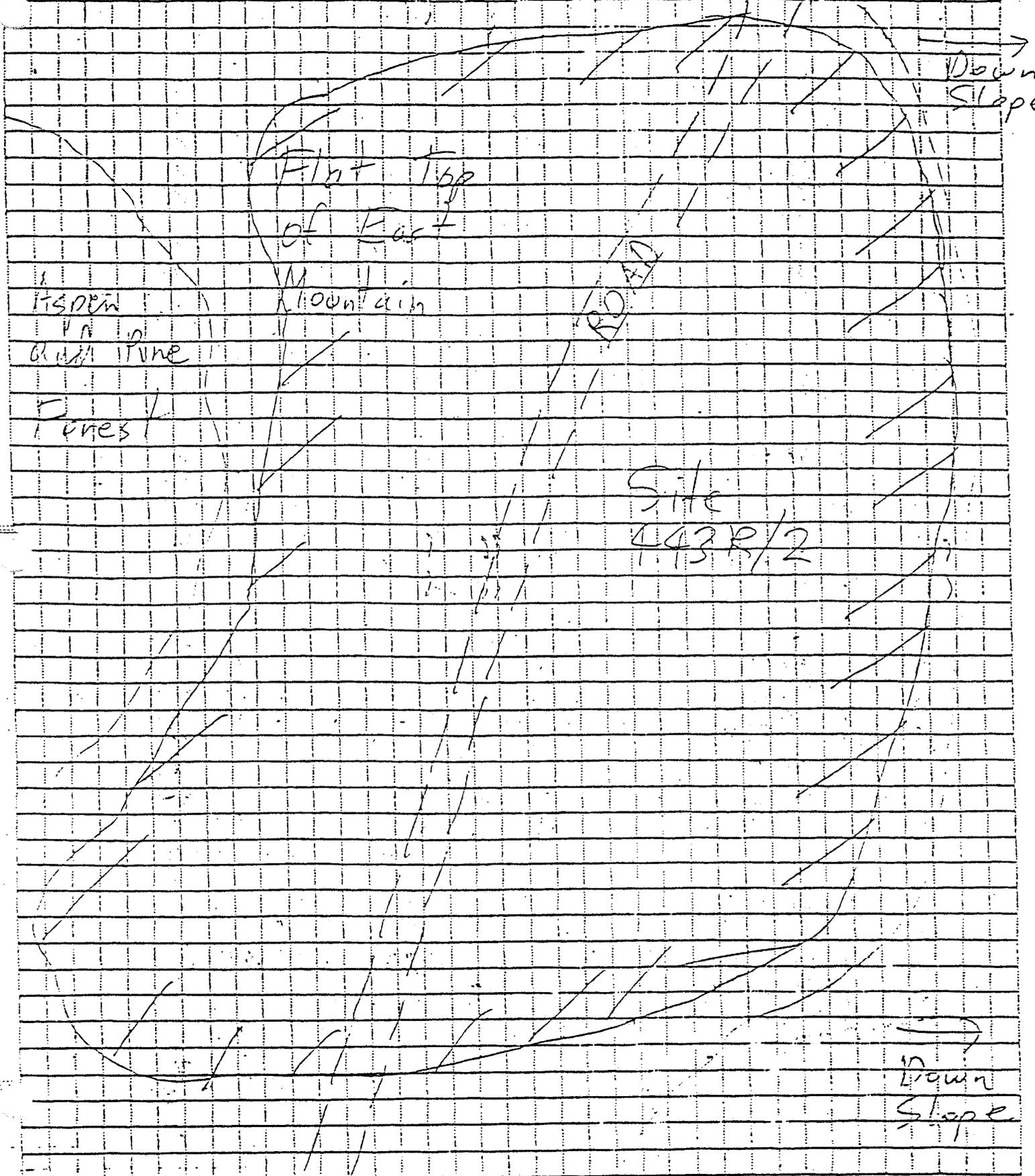
35. Encoding Form: (all entries are right justified)

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I	4	2	E	M	.	1	3	0	8	9	6	0	0	1	2	4	8	6	1	4	0	4	3	5	4	6	0	0				
II	N	A	M	E	S	W	1	7	1	7	S	7	E	P	R							L	S								E	
III	T	F	2	9	G	2	1	D	C	R	C	A																				
IV							F	R	A	R												3	7	5	0	0	B	B	C	A	E	R
V	C	1	0	3	1	0	1	0	A	8	0	R	A	P	A	0						0	0	C	2	B	A	E				
VI																																

Form must be accompanied by a site map; photocopy of U.S.G.S. topo map with T., R., scale, and quad name; photographs of the site; and artifact sketches (if applicable).

AERC 443R/2 UPL 80-1

9-9-80



4. Class: X Prehistoric Historic Paleontologic
 5. Cultural Site Type (interpreted function): Butchering-Hide Preparation
 6. Paleontological Site Type: Invertebrate; Vertebrate; Flora
 7. Elevation [I/11-15] 8200 ft. X. 3048 = =
 elevation source: Map contours
 8. UTM Grid: [I/16-30] zone 12; 486820 m E; 4356100 m N
 9. [II/1-16] SE of NE or SE of section 8 T. 17S, R. 7E
 10. Map Reference: Hiawatha, Utah Series: 15 Date: 1925
 11. Aerial Photo Data: NA

12. Site Location: Site is situated on the southern edge of a flat which drains to the south into Deer Creek Canyon. The top of East Mountain lies ca. two miles to the west of the site.

13. Land Owner [II/17-18]: Private
 BLM District/Forest [II/19]: NA
 14. Site Name/Previous Designations: NA Forest

15. Description of Site: Site consists of a scatter of flakes and tools and was probably the locus of butchering and hide preparation activities. CRKS:5-2

CLASS	QUANTITY	CLASS	TYPE	QUANTITY
Artifacts should be described/drawn on a continuation sheet and their locations plotted on the site map.		Ceramics [III/10-21]		
		Proj Pnt [III/1-9]		
		Gnd Str [II/22-29]		
		Class [II/22-29]		
		Metal [II/22-29]		
Debitage [II/30]	<u>25+</u>	Nails [II/22-29]		
Bifaces [III/1-9]	<u>4+</u>	Cans [II/22-29]		
Scrapers [III/1-9]	<u>5+</u>	Wood [II/22-29]		
Utilized Flakes	<u>2+</u>	Other [II/22-29]		

Description: Scrapers are all unifacially worked, thin blades with rounded work surfaces.

17. Non-Structural Features: (describe and locate on site map) [III/22-27]
- | | | | |
|---|---|--|--|
| <input type="checkbox"/> hearth/firepit(HI) | <input type="checkbox"/> rubble mound(RM) | <input type="checkbox"/> earthen mound(EM) | <input type="checkbox"/> trail/road(TR) |
| <input type="checkbox"/> midden(MD) | <input type="checkbox"/> stone circle(SC) | <input type="checkbox"/> burial(BU) | <input type="checkbox"/> LL grade(2G) |
| <input type="checkbox"/> depression(DI) | <input type="checkbox"/> rock alignment(RA) | <input type="checkbox"/> pictograph(PI) | <input type="checkbox"/> tram way/road(TW) |
| <input type="checkbox"/> water control(WC) | <input type="checkbox"/> mine tailings(MT) | <input type="checkbox"/> petroglyph(PL) | <input type="checkbox"/> other(OT) |

Description: None

CLASS	MATERIAL	QUANTITY	CLASS	MATERIAL	QUANTITY
Single rd			Tower		
Multiple rd			Cairn		
Granary			Corral		
Cist			Dugout		
Pit-house			Kiln		
Kiva			Monument		
Well			Mine		

Description: None

SITE NO. 42Em1309 (AERC 443R/1)

19. Cultural Affiliation [IV/7-14]: Unknown
20. How Determined? NA
21. Site Dimensions: 20 m x 20 m; Area [IV/17-21]: 900 sq
22. Were surface artifacts collected? Yes; x No; [IV/22] yes; attach a continuation sheet describing sampling method used.
23. Estimated depth of fill [IV/23]: 0-5 cm.
24. Subsurface test? Yes; x No (include location of test on site map)
25. Description: _____
26. Site Condition [IV/25]: Excellent; x Good; _____ Fair; _____ Poor
27. Agent of Impact: Cattle
28. Nat. Register Potentially [V/1]: x Significant (C); _____ Non-Significant (D)
- Justification: Site is locus of specialized activities and has marginal depth potential, hence diagnostic points are probably present.
29. Research Potential: Moderate
30. Recommended Mitigation: Avoidance
31. Direction/Distance to Permanent Water [V/5-10]: SW / 150 =
- Type/Name of Water Source [V/11]: Tributary of Deer Creek
- Distance to nearest other Water Source [V/2-4]: _____
- Type of other water source: _____
- Distance to Cultivable Soil [V/12-14]: _____

LANDFORM	POSITION ON LANDFORM	DEPOSITIONAL ENVIRONMENT	SECONDARY POSITION
<input checked="" type="checkbox"/> Mountain spine (A)	<input checked="" type="checkbox"/> top/crest/peak (A)	<input type="checkbox"/> fan (A)	<input checked="" type="checkbox"/> top/crest/ridge (A)
<input type="checkbox"/> Hill/butte (B)	<input type="checkbox"/> edge (B)	<input type="checkbox"/> talus (B)	<input type="checkbox"/> edge (B)
<input type="checkbox"/> Tableland/mesa (C)	<input type="checkbox"/> slope (C)	<input type="checkbox"/> scarp (C)	<input type="checkbox"/> slope (C)
<input type="checkbox"/> Ridge (D)	<input type="checkbox"/> toe/foot/bottom (D)	<input type="checkbox"/> stream terrace (D)	<input type="checkbox"/> toe/foot (D)
<input type="checkbox"/> Valley (E)	<input type="checkbox"/> saddle/pass (E)	<input type="checkbox"/> playa (E)	<input type="checkbox"/> cutbank (E)
<input type="checkbox"/> Plain (F)	<input type="checkbox"/> bench/ledge (F)	<input type="checkbox"/> shore feature	<input type="checkbox"/> detached monolith (F)
<input type="checkbox"/> Canyon (G)	<input type="checkbox"/> rimrock (G)	<input type="checkbox"/> extinct lake (F)	<input type="checkbox"/> interior (G)
	<input type="checkbox"/> incision (H)	<input type="checkbox"/> extant lake (C)	<input type="checkbox"/> step (E)
		<input type="checkbox"/> alluvial plain (E)	<input type="checkbox"/> river (I)
		<input type="checkbox"/> coluvium (I)	<input type="checkbox"/> post-pro. feature (J)
		<input type="checkbox"/> moraine (J)	<input type="checkbox"/> spring mound/bog (K)
		<input type="checkbox"/> flood plain (I)	<input type="checkbox"/> crye (L)
			<input type="checkbox"/> alcove/shelter (M)
			<input type="checkbox"/> saturated ground (N)

Description: Site lies on a flat along the ridgetop on east slopes of East Mountain

29. Degree/Aspect of slope [V/19-23]: _____
30. Vegetation COMMUNITY and association [V/24-25]: _____

<input type="checkbox"/> ALBY GRASSLAND (AA)	<input type="checkbox"/> YELLOW PINE-OAK (DE)	<input type="checkbox"/> COLD DESERT SHRUB (FE)	<input type="checkbox"/> SALT DESERT SHRUB (GE)	<input type="checkbox"/> CANYON DESERT SE
<input type="checkbox"/> SPICE TREE (BE)	<input type="checkbox"/> ponderosa pine (DA)	<input type="checkbox"/> sagebrush (FA)	<input type="checkbox"/> greasewood (GA)	<input type="checkbox"/> desert saltbush
<input type="checkbox"/> Gambel's (BA)	<input type="checkbox"/> oakbrush (DA)	<input type="checkbox"/> small sagebrush (FB)	<input type="checkbox"/> juniper-sagebrush (GA)	<input type="checkbox"/> creosote bush (A)
<input type="checkbox"/> white fir spruce (BA)	<input type="checkbox"/> mountain brush (DC)	<input type="checkbox"/> little rabbitbrush (FC)	<input type="checkbox"/> mesquite (GC)	<input type="checkbox"/> creosote/bursera
<input checked="" type="checkbox"/> ALBY DOUGLAS FIR (CA)	<input type="checkbox"/> maple (DD)	<input type="checkbox"/> chadscale (FD)	<input type="checkbox"/> pickleweed/sagebrush (GA)	<input type="checkbox"/> Joshua tree (BA)
<input type="checkbox"/> limber pine (CA)	<input type="checkbox"/> streamside (DE)	<input type="checkbox"/> horsebrush (FE)	<input type="checkbox"/> saltgrass (GL)	<input type="checkbox"/> MARSH COMMUNITY
<input type="checkbox"/> Douglas fir (CB)		<input type="checkbox"/> vine-leaf (FF)	<input type="checkbox"/> alkali saguaro (GA)	
<input type="checkbox"/> lodgepole pine (CC)	<input type="checkbox"/> FLATS/PRAIRIE (HE)	<input type="checkbox"/> boy-sage/bkbrush (FC)	<input type="checkbox"/> rabbitbrush (GC)	<input type="checkbox"/> ALPINE FLATS/SE
<input type="checkbox"/> bristlecone pine (C)	<input type="checkbox"/> grasslands (LA)	<input type="checkbox"/> bad sagebrush (FE)		<input type="checkbox"/> FLATS/DRY LAKE
<input type="checkbox"/> aspen (CH)	<input type="checkbox"/> piñon-juniper (HA)	<input type="checkbox"/> nat saltbrush (FE)		<input type="checkbox"/> WASTELAND (CA)
<input type="checkbox"/> streamside (C)	<input type="checkbox"/> streamside (HC)	<input type="checkbox"/> gray molly (FE)		
<input type="checkbox"/> meadow grassland (CC)		<input type="checkbox"/> streamside (FE)		<input type="checkbox"/> WASTELAND (CA)

(Check COMMUNITY only if association cannot be determined)

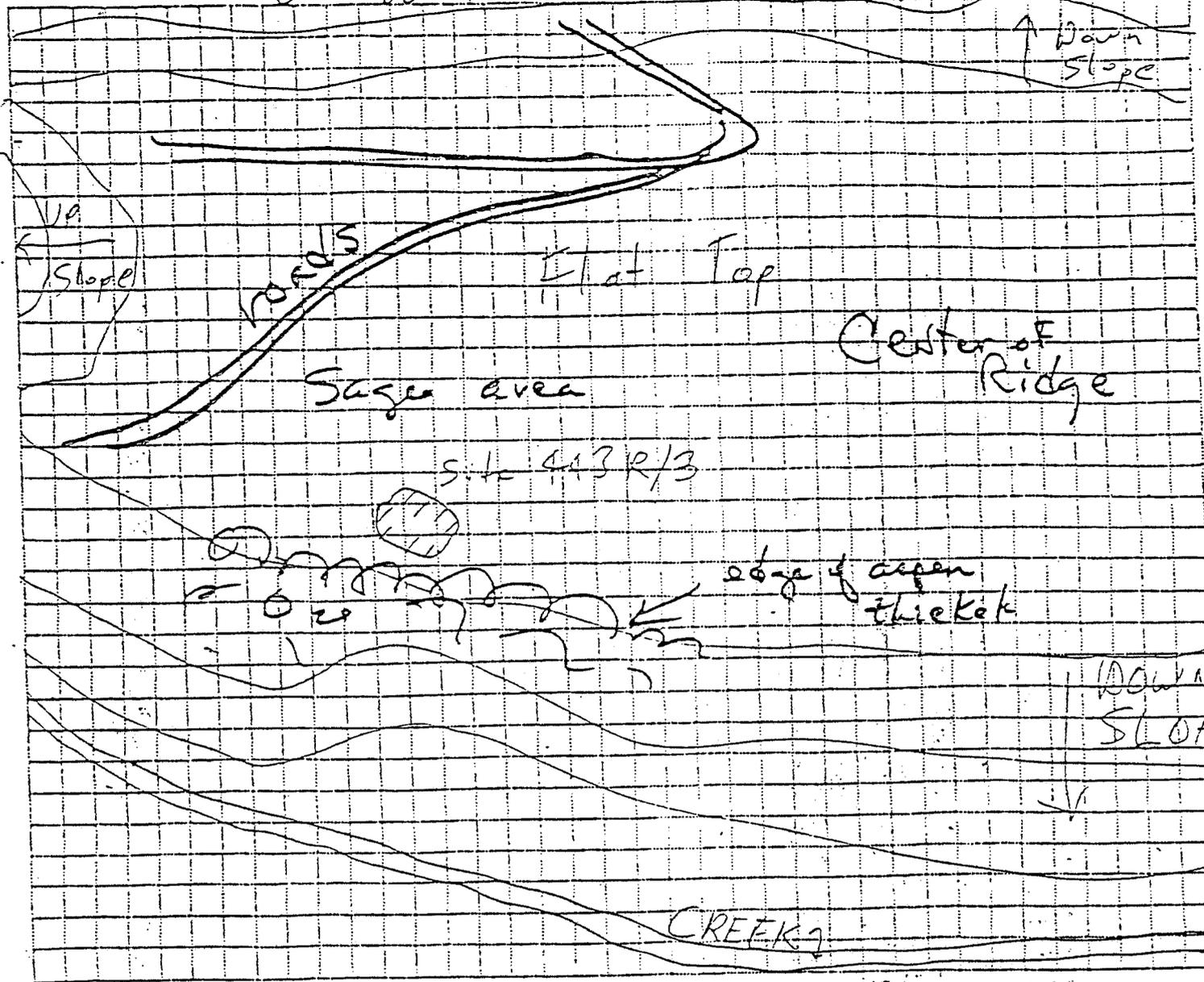
Description: Site lies in low sage community which covers the flat. The aspen community begins along south periphery of site where the slope down into the canyon begins.

31. Next nearest plant association/distance: NA
32. Photograph Numbers [V/26]: 443R-1 (5)
33. Recorded by: F. R. Hauck
- Survey Org. [V/27-28]: AERC Date: 9-9-80
- Assisting Crew Members: V. G. Norman, M. Sloan

UPL 80-1

9-9-80

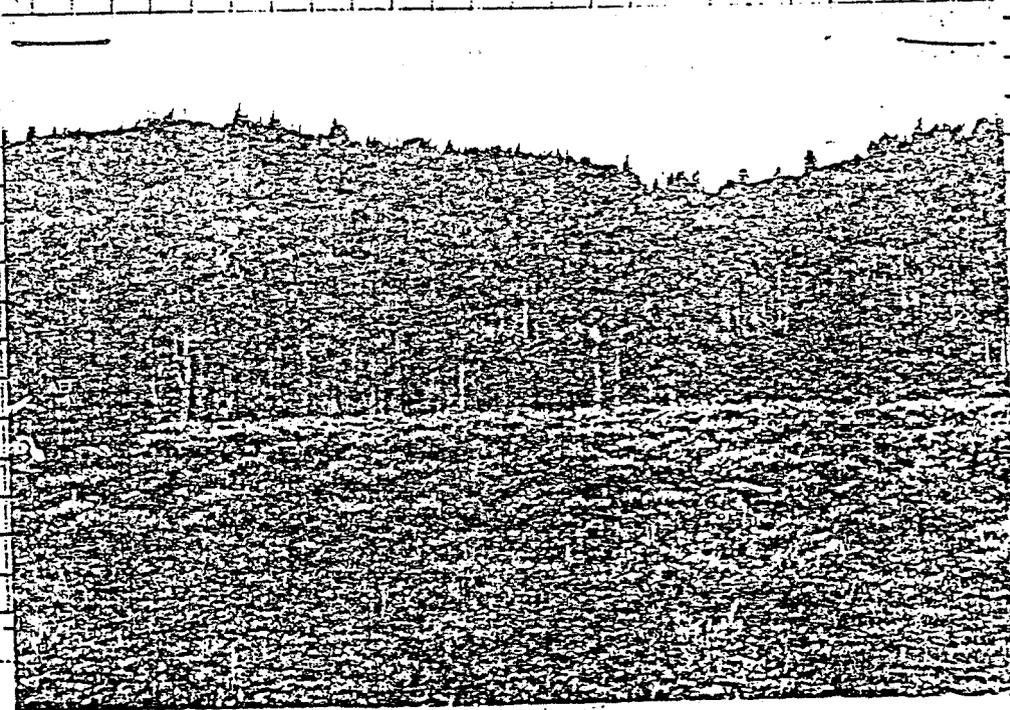
443R/3



35. Encoding Form: (all entries are right justified)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
I	42	EM				1309						9200																					
II	SE	SE				8/7	S					7	E	PR								LS										D	
III	5F	2	6G	2																													
IV							22																										
V	D					12.25																											
VI																																	

Form must be accompanied by a site map; photocopy of U.S.G.S. topo map with T., R., scale, and quad name; photographs of the site; and artifact sketches (if applicable).



2. County Emery
 3. Temp. No. AERC 443R/4

4. Class: Prehistoric Historic Paleontologic
 5. Cultural Site Type (interpreted function): Lithic Scatter-Hunting
 6. Paleontological Site Type: Invertebrate; Vertebrate; flora
 7. Elevation [I/11-15] 9050 ft. X. 3048-
 Elevation source: Contour lines
 8. UTM Grid: [I/16-30] zone 12; 490140 = 2; 4554260 = N
 9. [II/1-16] NE of NE or SE of Section 15 T. 17S. R. 7E.
 10. Map Reference: Hiawatha, Utah Series: 15M Date: 1923
 11. Aerial Photo Data: NA

12. Site location: Site is situated on a low knoll lying at the head of a draw - south fork of Deer Creek. Site lies between forks of drainage and ca. 100 m. south of aspen tree line which extends across (E-W) the draw.

13. Land Owner [II/17-18]: Private
 BLM District/Forest [II/19]: ME

14. Site Name/Previous Designations: NA

15. Description of Site: Site consists of a sparse scatter of flakes and tool fragments. CRRS:S-3

16. Artifacts:	CLASS	TYPE	QUANTITY
Artifacts should be described/drawn on a continuation sheet and their locations plotted on the site map.	Ceramics [III/10-21]		
	Proj Pat [III/1-9]	<u>Northern Side</u>	<u>1</u>
	Gnd Stn [II/22-29]		
	Glass [II/22-29]		
	Metal [II/22-29]		
	Nails [II/22-29]		
	Cans [II/22-29]		
	Wood [II/22-29]		
	Other [II/22-29]		
CLASS QUANTITY			
Debitage [II/30] <u>20?</u>			
Bifaces [III/1-9] <u>2?</u>			
Scrapers [III/1-9] _____			
Utilized Flakes _____			

Description: Primary and secondary flakes of chert.

17. Non-Structural Features: (describe and locate on site map) [III/22-27]

<input type="checkbox"/> hearth/firepit (HE)	<input type="checkbox"/> rubble mound (RM)	<input type="checkbox"/> earthen mound (EM)	<input type="checkbox"/> trail/road (TR)
<input type="checkbox"/> midden (MD)	<input type="checkbox"/> stone circle (SC)	<input type="checkbox"/> burial (BU)	<input type="checkbox"/> LB grade (LG)
<input type="checkbox"/> depression (DE)	<input type="checkbox"/> rock alignment (RA)	<input type="checkbox"/> pictograph (PI)	<input type="checkbox"/> tram way/road (TW)
<input type="checkbox"/> water control (WC)	<input type="checkbox"/> mine tailings (MT)	<input type="checkbox"/> petroglyph (PE)	<input type="checkbox"/> other (OT)

Description: NA

18. Structural Features: (describe and locate on site map) [III/28-IV/6]

CLASS	MATERIAL	QUANTITY	CLASS	MATERIAL	QUANTITY
Single <input type="checkbox"/>			Tower		
Multiple <input type="checkbox"/>			Cairn		
Granary			Corral		
Cist			Dugout		
Pit-house			Kiva		
Kiva			Monument		
Well			Mine		

Description: NA

42Em1310 (443R/4)
SITE NO.

19. Cultural Affiliation [IV/7-14]: Archaic
How Determined? Point typology
20. Site Dimensions: 30 m x 20 m; Area [IV/17-21]: 600 sq
21. Were surface artifacts collected? Yes; No; [IV/22] 1: yes;
attach a continuation sheet describing sampling method used.
22. Estimated depth of fill [IV/23]: unknown - marginal
Subsurface test? Yes; No (include location of test on site map)
Description:
23. Site Condition [IV/25]: Excellent; Good; Fair; Poor
Agent of Impact: Erosion
24. Nat. Register Potential [V/1]: Significant (C); Non-Significant (D)
Justification: Site has been displaced due to erosion. Marginal
depth potential.

25. Research Potential: Low
26. Recommended Mitigation: Avoidance
27. Direction/Distance to Permanent Water: [V/3-10]: north / 1 mile
Type/Name of Water Source [V/11]: Deer Creek
Distance to nearest other Water Source [V/2-4]: unknown
Type of other water source: NA
Distance to Cultivable Soil [V/12-14]: 5 miles
28. Topographic Location (check one under each heading) [V/15-16]

PRIMARY LANDFORM	POSITION ON LANDFORM	DEPOSITIONAL ENVIRONMENT	SECONDARY POSITION
<input type="checkbox"/> mountain spine(A)	<input type="checkbox"/> top/crest/peak(A)	<input type="checkbox"/> fan(A)	<input type="checkbox"/> top/crest/ridge(A)
<input type="checkbox"/> hill/butte(B)	<input type="checkbox"/> edge(B)	<input type="checkbox"/> talus(B)	<input type="checkbox"/> edge(B)
<input type="checkbox"/> tableland/basa(C)	<input checked="" type="checkbox"/> slope(C)	<input type="checkbox"/> dune(C)	<input checked="" type="checkbox"/> slope(C)
<input checked="" type="checkbox"/> ridge(D)	<input type="checkbox"/> toe/foot/bottom(B)	<input type="checkbox"/> stream terrace(D)	<input type="checkbox"/> toe/foot(B)
<input type="checkbox"/> valley(E)	<input type="checkbox"/> saddle/pass(E)	<input type="checkbox"/> playa(E)	<input type="checkbox"/> cutbank(E)
<input type="checkbox"/> plain(F)	<input type="checkbox"/> bench/ledge(F)	<input type="checkbox"/> shore feature	<input type="checkbox"/> detached monolith(F)
<input type="checkbox"/> canyon(G)	<input type="checkbox"/> rimrock(G)	<input type="checkbox"/> extinct lake(F)	<input type="checkbox"/> interior(G)
	<input type="checkbox"/> incision(E)	<input type="checkbox"/> extant lake(G)	<input type="checkbox"/> step(E)
		<input type="checkbox"/> alluvial plain(H)	<input type="checkbox"/> fissure(I)
		<input type="checkbox"/> coluvium(I)	<input type="checkbox"/> bott. fac. feature(J)
		<input type="checkbox"/> moraine(J)	<input type="checkbox"/> spring mound/bog(I)
		<input type="checkbox"/> flood plain(I)	<input type="checkbox"/> cave(L)
			<input type="checkbox"/> alcove/shelter(M)
			<input type="checkbox"/> patterned ground(N)

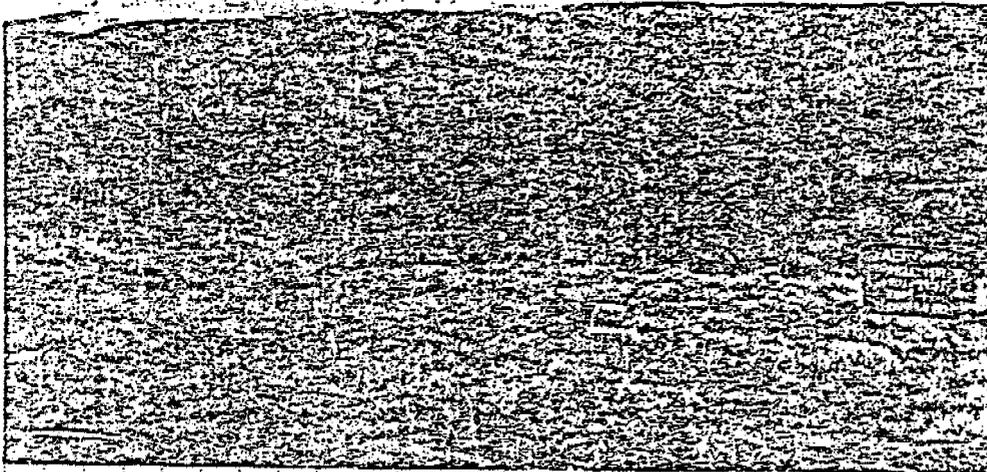
Description: Site is situated on a north-facing
slope in a sage flat which is flanked on the east and west by
tributaries of Deer Creek.

29. Degree/Aspect of slope [V/19-23]: _____
30. Vegetation COMMUNITY and association [V/24-25]: _____

<input type="checkbox"/> ALPINE GRASSLAND(A)	<input type="checkbox"/> YELLOW PINE-OAK(B)	<input type="checkbox"/> COLD DESERT SCRUB(F)	<input type="checkbox"/> SALT DESERT SCRUB(G)	<input type="checkbox"/> WARM DESERT SCRUB(H)
<input type="checkbox"/> SPRUCE FIR(B)	<input type="checkbox"/> ponderosa pine(BA)	<input type="checkbox"/> sagebrush(FA)	<input type="checkbox"/> greasewood(GA)	<input type="checkbox"/> desert saltwort
<input type="checkbox"/> shrubs(BB)	<input type="checkbox"/> oakbrush(BB)	<input type="checkbox"/> small sagebrush(FB)	<input type="checkbox"/> juniper-shadsal(GB)	<input type="checkbox"/> creosote bush
<input type="checkbox"/> white fir(BB)	<input checked="" type="checkbox"/> mountain brush(BC)	<input type="checkbox"/> little rabbitbrush(FC)	<input type="checkbox"/> seepweed(GC)	<input type="checkbox"/> creosote/bursa
<input type="checkbox"/> ALPINE DOUGLAS FIR(CC)	<input type="checkbox"/> maple(BD)	<input type="checkbox"/> shadscale(FB)	<input type="checkbox"/> pickleweed/sambire(GD)	<input type="checkbox"/> joshua tree(EH)
<input type="checkbox"/> limber pine(CA)	<input type="checkbox"/> creosote(BE)	<input type="checkbox"/> bottlebrush(FE)	<input type="checkbox"/> saltgrass(GE)	<input type="checkbox"/> MAIZE COMMUNITY
<input type="checkbox"/> douglas fir(CC)		<input type="checkbox"/> winter-st(FE)	<input type="checkbox"/> alkali sacaton(GF)	
<input type="checkbox"/> lodgepole pine(CC)	<input type="checkbox"/> PAINS/PRAIRIE(E)	<input type="checkbox"/> boy-sage/bikbrush(FG)	<input type="checkbox"/> rabbitbrush(GG)	<input type="checkbox"/> ARID FLAT/PL
<input type="checkbox"/> bristlecone pine(CD)	<input type="checkbox"/> grasslands(EA)	<input type="checkbox"/> bud sagebrush(FE)		<input type="checkbox"/> FLAT/DIR LAK
<input checked="" type="checkbox"/> aspen(CD)	<input type="checkbox"/> piñon-juniper(EB)	<input type="checkbox"/> sac saltbrush(FE)		<input type="checkbox"/> WASTELAND(EI)
<input type="checkbox"/> creosote(CD)	<input type="checkbox"/> creosote(EC)	<input type="checkbox"/> gray molly(FJ)		
<input type="checkbox"/> meadow grassland(CC)		<input type="checkbox"/> creosote(FK)		<input type="checkbox"/> CULTIVATED LA

Description: Site is on sage covered slope with aspen
communities to the west and north.

31. Next nearest plant association/distance: Douglas Fir-Ponderosa to W
32. Photograph Numbers [V/26]: 433R-1 (4)
33. Recorded by: F. R. Hauck
Survey Org. [V/27-28]: AERC Date: 9-9-80
Assisting Crew Members: V. G. Norman and M. Sloan



A large grid of empty lines for data entry, consisting of approximately 15 rows and 30 columns.

35. Encoding Form: (all entries are right justified)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
I	4	2	E	M	.	1	3	/	P	9	0	5	0	1	2	4	9	0	1	4	0	4	3	5	4	2	6	0			
II	N	E	N	E	S	E	1	5	/	7	S	7	E	P	R		L	S													C
III	2	F	2	1	C	B																									
IV							A	R														G	O	P	B	B	C	C	E	R	
V	D	1	G	.	0	1	6	B	8	0	D	C	-	C																	
VI																															

Form must be accompanied by a site map; photocopy of U.S.G.S. topo map with T., R., scale, and quad name; photographs of the site; and artifact sketches (if applicable).

AERC 443R/4

UPL 80-1

9-9-80

